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The Rand Weather Data Bank (RAWDAB): An Evolving Base of Accessible Weather Data

Esperanza Rodriguez and Ralph E. Huschke

A Report prepared for
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PREFACE

The global atmosphere has a characteristic which makes historical weather records extremely valuable: for most atmospheric variables, behavior over a period of about ten years can be used as a statistical prediction of behavior in succeeding years--past frequencies are good estimates of future probabilities. This attribute of climatological data has many applications, from weather prediction, per se, to the prediction of the behavior of complex man/machine operations as a function of the probability distributions of atmospheric variables or "weather events" which affect those operations. It is the latter type of application which led to the creation of the Rand Weather Data Bank (RAWDAB).

The Rand Corporation engages in a wide variety of system analyses and operations analyses for the United States Air Force. The predominant purpose of those studies is to examine the validity of operational concepts (weapon systems, strategy and tactics, logistics, force structure, etc.) proposed for future adoption. Since weather conditions affect the performance of nearly all military systems, some to a critical degree, analysts are increasingly and rightfully demanding weather data in a format appropriate to their studies. Before RAWDAB existed, Rand analysts relied mainly on published weather statistics for their inputs, which seldom were the precisely desired data.

The major consumer of RAWDAB products has been USAF Project RAND, particularly projects conducted under the General Purpose Forces and Strategic Studies Programs. Major contributions have also been made to two Air Force Systems Command Mission Analyses. RAWDAB products have been made available to a number of Air Force contractors and Air Force agencies. This report has been prepared in order to inform the defense establishment of the existence of this data bank, thus making its products available to a larger number of users.

Support for the development of this data bank to date has come exclusively from USAF Project RAND.

SUMMARY

Weather studies should be considered as one of the basic elements in the analysis of defense systems, since weather conditions can influence to a great extent the probability of success or failure of a military campaign. The absence of weather studies in an analysis is often due to the lack of accessibility of weather data. The Rand Weather Data Bank (RAWDAB) was designed to meet the demand for weather inputs to studies of systems that can be influenced by weather conditions.

The Rand Weather Data Bank contains the data from weather observations taken at weather stations strategically located around the globe. The following are some of the characteristics of the data base:

- (a) Fixed format--this offers uniform reporting of all the data and therefore rapid access to the weather information;
- (b) Intensive information--up to 50 basic weather elements are extracted or computed from each weather observation;
- (c) Continuity--the average length of continuous weather information for the weather stations in RAWDAB is 12 years;
- (d) Volume--the data base contains information from over 47 million weather observations; the average size of the files (one file per station) is 57,500 records (one record per weather observation).

The data base structure is described in detail. Flow charts and one of the programs designed for the conversion of the weather data into RAWDAB format are presented in an appendix. A list of the location, the WMO number, the dates of record, and other important information for all of the weather stations in RAWDAB is presented in tabular form.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to the USAF-ETAC personnel for their prompt response to our requests for data tapes and their sincere concern in the progress of this study.

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I. INTRODUCTION

One of the problems facing the scientist or analyst who must tap the huge reservoir of historical weather information is interpretation of the various scales and formats in which the data are presently stored by national agencies. Even though several "standard formats" have been adopted in an approach to uniform recording, the user of these data still faces tremendous work in gathering the information necessary for a reliable study. He often cannot use published climatological statistics, for they were not calculated with his problem specifically in mind. A solution to this discouraging situation is to adopt a uniform filing system into which the basic data, archived in a variety of formats, may easily be put--and allow this data bank to respond quickly and flexibly to users' changing needs.

RAWDAB, the Rand Weather Data Bank, was introduced at The Rand Corporation to bring a mass of useful weather data into the real world of study variability and tight deadlines. RAWDAB is an *experimental* data base: it grows only in response to Rand research needs, and its format occasionally changes as experience dictates. At present it contains only surface weather observations (RAWDAB-S). In the near future it will contain six years of northern hemisphere, multi-level, grid-point, weather map analyses and a concurrent period of sea-surface temperature analyses.

We do not contend that RAWDAB is the ideal design for a weather data base. It is a compromise among costs, convenience, hardware and software availability, and input-data quality. The initial effort put into "designing" RAWDAB has paid off well, but some mistakes were made: e.g., RAWDAB files have been updated twice to add data that were initially thought unnecessary. Some of the input data had been processed only for purposes of numerical weather prediction, and hence were not of "climatological quality." Where practical, these data are being replaced or simply dropped from the files. The files are on magnetic tape; transfer of RAWDAB-S to magnetic disk or other more accessible storage system has not been warranted to date. (The

grid-point analysis files, mentioned above, will be put on disks.)
For many of the simpler applications of RAWDAB, it would be ideal if
RAWDAB files were accessible via an on-line interactive system.

II. RAWDAB-S DATA SOURCES

RAWDAB-S, a computer file of surface weather observational data, filed by station, presently contains data from 83 locations around the world. The station file grows in response to the needs of Rand studies. Appendix A gives a list of all current RAWDAB-S station files along with the dates and length of record, the predominant observing interval (mostly hourly and three-hourly), the total number of observations, the hours difference between Greenwich Mean Time (GMT) and Local Standard Meridian Time (LSMT)^{*}, and the Environmental Technical Applications Center (ETAC) tapes, from which the data were taken.

SOURCE TAPES FOR RAWDAB-S

Nearly all, and certainly the most reliable, of the RAWDAB-S files come from two "tape data families" (TDFs) processed by USAF ETAC and the National Environmental Data Service, and archived by the latter. Quality control over these data is quite thorough.

TDF-13, the principal source, derives from weather observations recorded in the international surface synoptic code for land stations; the first six 5-digit "groups" of the surface synoptic code are mandatory in weather reporting throughout the world. Additional 5-digit groups of supplemental data can be recorded according to national or WMO regulations or both. All TDF-13 tape decks follow the synoptic code content and format very closely. Hence, the decks share a standard set of data fields that correspond in content to the six mandatory groups of the synoptic code.[†] The decks differ in the presentation of the supplemental data fields; and the differences are mainly national or regional in origin, or reflect temporal changes in coding

^{*} Local Standard Meridian Time is local time at the nearest standard meridian. The standard meridians are every 15 degrees of longitude starting at 0° Long. LSMT often differs from Local Standard Time, for the latter is politically defined.

[†] Actually 5.4 groups, for the last three digits of the sixth group differ between tropical and nontropical stations.

procedures. It should be noted that, despite a large number of relatively trivial changes in observing and encoding procedures, the synoptic code has remained basically unchanged for decades. Synoptic reports were originally intended to be used for subjective (pre-computer) weather-map analysis and forecasting, then to be discarded. With the advent of efficient mass data-storage techniques, however, these reports have become the main body of recent historical weather data, a function for which they are not ideally suited.

The TDF-14 tape decks are created from the surface weather observations taken for aviation purposes--the "airways observations." The airways code differs from the synoptic code mainly in the greater explicitness and detail in which cloud conditions, obstructions to vision, and weather phenomena are reported. There are no supplemental data; therefore, all TDF-14 decks are of a single standard length and format. Most TDF-14 data are hourly observations (opposed to the predominantly 3-hourly intervals of TDF-13 data), which greatly enhances their value in statistical studies of rapidly changing weather conditions that affect aviation systems.

The third source of RAWDAB data was The Air Weather Service's "COLDFACT" program for retention of operational weather data. For its numerical analyses and predictions, the Air Force Global Weather Central (AFGWC) ingests essentially all the global weather data being continuously gathered and transmitted by the Air Force's Automated Weather Network. AFGWC lightly processes those raw data for its own operational purposes, amounting to some objective editing, culling, and reformatting. The resulting data stream contains gaps, duplications, inconsistencies, and losses of information that cause problems in a permanent data base. A small amount of COLDFACT information was used among the early RAWDAB inputs, but most of this information will be replaced or removed.

Table 1 summarizes the information transfer from the TDF-13 and TDF-14 tape decks to RAWDAB-S. The data listed are those from the mandatory fields in the input decks plus certain supplemental data selected for transfer to RAWDAB-S, and include some data not yet transferred.

Table 1

BASIC CONTENT OF TDF-13 AND TDF-14 TAPE DECKS AND PARAMETERS
TRANSFERRED TO RAWDAB-S FILES

(Key: M = mandatory, S = supplemental, S(i) = supplemental (infrequent),
S(v) = supplemental (variable reporting rules), D = direct*, C = converted)

Atmospheric Variables and Phenomena	Source Decks		Data Transferred to RAWDAB-S	
	TDF-13	TDF-14	Manner of Transfer	Units
Atmospheric state variables				
Station pressure	S	M	**	
Sea-level pressure ^{#,a}	M	M	D	xxxx.x, mb
Pressure tendency/change ^b	S	M	**	
Temperature (dry bulb)	M	M	D	±xxx, °F
Maximum temperature ^c	M	-	**	
Minimum temperature ^c	M	-	**	
Wet bulb temperature	S	M	**	
Dew point temperature	M	M	D	±xxx, °F
Relative humidity [#]	M	M	D	xxx, %
Wind direction	M	M	D	xx, tens of deg
Wind speed	M	M	D	xxx, kt
Peak wind gusts	S(i)	-	D	xx, kt
Weather phenomena and obstructions to vision				
Visibility	M	M	D	code
Precipitation amount [#]	S(v)	-	D	xx.xx, in
Present weather ^d	M	M	D(13),C(14)	code
Past weather ^e	M	-	D	code
Cloud data				
Total cloud amount	M	M	D	x, 8ths
Total opaque cloud amount	S(i)	M	**	
Low (or middle) cloud amount ^f	M	-	D	x, 8ths
Cloud layer amounts ^g	S	M	D	x, 8ths
Ceiling height ^h	S(i)	M	C(13),D(14)	xxx, hundreds of ft
Low (or middle) cloud height ^f	M	-	D	code
Cloud layer heights ^g	S	M	D	xxx, hundreds of ft
Cloud layer types ^{f,g}	M	M	D	code
Ground conditions				
Ground temperature [#]	S	-	D	±xx, °F
State of the ground [#]	S	-	D	code
Snow depth [#]	S	-	D	code

a: Reduced to mean sea level from station level by formula.

b: Character and amount of 3-hr pressure change (24-hr in tropics).

c: 24-hr maximum and minimum.

d: Includes types and intensities of obstructions to vision and precipitation.

e: Generalized predominant weather during preceding 6 hours.

f: Minimal cloud data contained in fourth mandatory group of synoptic code.

g: Detailed cloud data contained in supplemental significant-cloud-layer "8-groups" of synoptic code (TDF-13) and in complete airways reports (TDF-14).

h: Height of that cloud layer above which less than half the sky is observable.

*"Direct" transfer to RAWDAB-S may include minor scale conversions.

** Data not stored at present.

Will be added to RAWDAB-S files as time permits.

DATA TRANSFER AND CONVERSION

The initial policy of data transfer was to save only those data that we could see as potentially useful in support of Rand research. Experience has shown that we should have adopted something slightly closer to the "save everything" policy. Our present intention, however, is to add those parameters marked by "#" in Table 1, and nothing more. Most of the data were transferred to RAWDAB-S in their source-tape form with, at most, minor sign-convention and scale conversions. Two of the parameters required substantial logical conversion: present weather from the TDF-14 tapes, and ceiling derived from the TDF-13 tapes.

TDF-13 (synoptic code) tapes contain present-weather data in the form of a 100-number (00-99) code, whereas TDF-14 (airways code) tapes contain present-weather data in the form of a numerical equivalent of the alphabetic code used in the original records. The latter can exist in many more than 100 combinations. It was decided to use the 00-99 present weather code of TDF-13 as the standard for RAWDAB-S, and the TDF-14 data were converted thereto by the logic detailed in Appendix C.

Ceiling height is explicitly recorded in all TDF-14 tapes but is not recorded, except rarely as supplemental data, in TDF-13 tapes. Because of the pervasive need for ceiling height in the analysis of aviation operations, it was decided that approximations of ceiling height be calculated from the cloud-layer data on TDF-13 tapes, and that these estimates would be entered directly into RAWDAB-S. The best data for this purpose are the supplemental significant-cloud-layer groups, "8-groups." In the absence of 8-group data, information in the 4th mandatory group is used to make a coarse estimate. Each RAWDAB-S record contains space for four ceiling heights. In order of reliability they are:

- H_1 -- transferred directly from TDF-14.
- H_9 -- (rare) transferred directly from TDF-13 supplemental data.
- H_8 -- calculated from 8-group data, mandatory in TDF-14 and supplemental in TDF-13.
- H_4 -- calculated from TDF-13 mandatory 4th group data.

The logical routines for calculating H_8 and H_4 are also found in Appendix C. Both H_1 and H_8 are derived from all TDF-14 tapes, and excellent agreement is found between the H_8 estimate and the H_1 observation of ceiling heights.

III. TAPE DESCRIPTION

All of the data in RAWDAB-S are written on 9-track labeled magnetic tapes in EBCDIC mode at a density of 1600 bits per inch. A general depiction of the format of a labeled tape is given in Fig. 1.

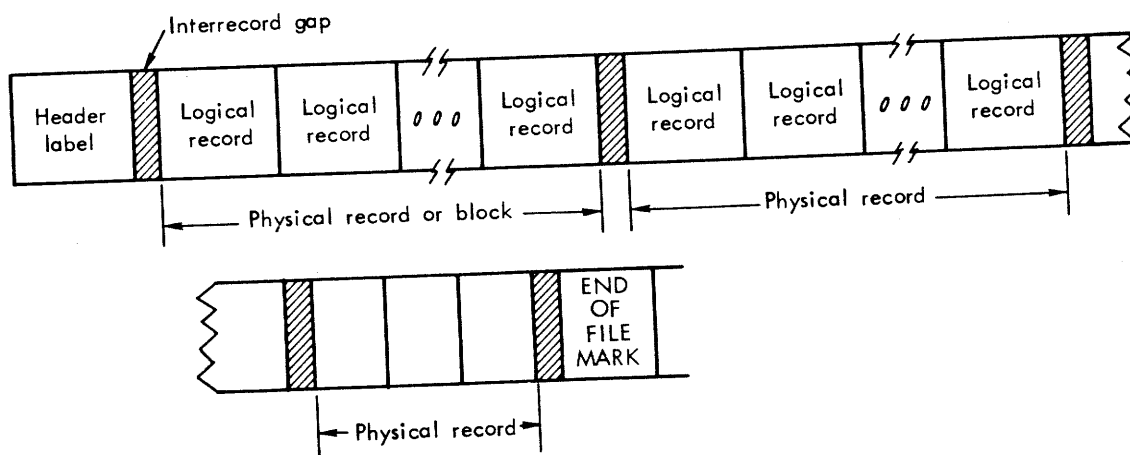


Fig. 1 — General arrangement of labeled tape

The header label contains the description of the tape and an identification tag. In RAWDAB-S the identification tag is a string of 3 characters "WMØ" followed by the 5-digit WMØ* station number of the weather station recorded (i.e., the identification tag for a tape from WMØ station 17200 is "WMØ17200."

Each logical record corresponds to a single weather observation. The weather observations are recorded in chronological order and only those observations having an amount of information above an arbitrary minimum (at least the surface visibility and pressure, or the surface visibility and ceiling) appear on tape. The length of the logical record is fixed at 96 characters. See Tables 2 and 3 for detailed descriptions of the logical records. The conversion tables referred to in Tables 2 and 3 are listed in Appendix D. Each physical record, with the possible exception of the last one, is a block of 50 logical records (4800 characters long).

* World Meteorological Organization.

Form
Loc. of last digit
on tape
Conversion Table

Yr	Mo	Da	Hr	Stn	Source Code	Wind			VV	ww	W	Temp	N	H1
						Dir	Spd	gg						
xx	xx	xx	xx	xxxxx	xx	ixx	ixxx	ixx	ixx	ixx	ix	ixxxx	ix	ixxx
2	4	6	8	13	15	18	22	25	28	31	33	38	40	44
			1		2	3	4	5	6	7	8	9	10	11

H8	H9	Cloud Group 4						Significant Clouds												Dp Temp	Nsg	Sn
								1st Group			2nd Group			3rd Group			4th Group					
		H4	N4	h4	L	M	H	n	h	c	n	h	c	n	h	c	n	h	c			
ixxx	ixxx	ixxx	x	x	x	x	x	ix	xxx	xx	ix	xxx	xx	ix	xxx	xx	ix	xxx	xx	ixxx	x	xx
48	52	56	57	58	59	60	61	63	66	68	70	73	75	77	80	82	84	87	89	93	94	96
11	11	11	10	12	15	16	17	10	11	14	10	11	14	10	11	14	10	11	14	13		

i = data indicator

i = 0 - value ≥ 0

i = 1 - value < 0

i = 9 - value not recorded

TABLE 2 - RAWDAB Record Format for one Observation
(abbreviations are explained in Table 4)

Table 3
RAWDAB-S RECORD FORMAT
(Descriptive Summary)

Name	Description	Location	Conversion Table
Identification			
YR	Year	1-2	
MO	Month	3-4	
DA	Day	5-6	
HR	Hour	7-8	1
STN	WMO station number	9-13	
ii	Data source indicator	14-15	2
Weather Data			
i	Data indicator for DIR	16	
DIR	Wind direction	17-18	3
i	Data indicator for SPD	19	
SPD	Wind speed	20-22	4
i	Data indicator for gg	23	
gg	Speed of peak gusts	24-25	5
i	Data indicator for VV	26	
VV	Horizontal visibility	27-28	6
i	Data indicator for ww	29	
ww	Present weather	30-31	7
i	Data indicator for W	32	
W	Past weather	33	8
i	Data indicator for TEMP	34	
TEMP	Air temperature	35-38	9
i	Data indicator for N	39	
N	Total sky cover	40	10
Ceiling Observations & Estimates			
i	Data indicator for H ₁	41	
H ₁	Reported cloud ceiling	42-44	11
i	Data indicator for H ₈	45	
H ₈	Ceiling estimated from significant cloud (group 8) data	46-48	11
i	Data indicator for H ₉	49	
H ₉	Reported ceiling (suppl. data)	50-52	11
i	Data indicator for H ₄	53	
H ₄	Ceiling estimated from standard cloud (group 4) data	54-56	11
Cloud Group 4			
N ₄	Cloud amount of cloud whose height is reported by h ₄	57	10
h ₄	Height of lowest cloud (low or middle clouds only)	58	12
L	Low cloud type	59	15
M	Middle cloud type	60	16
H	High cloud type	61	17
Significant Cloud Groups			
i	Data indicator for 1st group	62	
n	Cloud amount	63	10
h	Cloud height	64-66	11
c	Cloud type	67-68	14
i	Data indicator for 2nd group	69	
n	Cloud amount	70	10
h	Cloud height	71-73	11
c	Cloud type	74-75	14
i	Data indicator for 3rd group	76	
n	Cloud amount	77	10
h	Cloud height	78-80	11
c	Cloud type	81-82	14
i	Data indicator for 4th group	83	
n	Cloud amount	84	10
h	Cloud height	85-87	11
c	Cloud type	88-89	14
Miscellaneous and Added Data			
i	Data indicator for DP	90	
DP	Dew point temperature (F°)	91-93	13
NSG	Number of significant cloud groups reported	94	
S _n	Sum of cloud amount for all significant cloud groups reported	95-96	--

Appendix A

STATIONS IN RAWDAB-S FILES

The number of RAWDAB-S station files grows erratically. For example, 11 TDF-14 tapes for U.S. stations are currently waiting in the wings for a project approval. They do not appear in the station list given in Table A-1, and will not until they have active value. In the column labeled "Reporting Interval," the capital letters in brackets signify that there were different intervals between observations during different dates of record--and these are detailed in Table A-2.

Table A-1

LIST OF ACTIVE STATION DATA

Station	WMO No.	Location (deg min)		Dates of Record (mo/yr)		Reporting Interval (hrs) ^a	Number of Observations	Time Zone Factor, GMT to LSMT ^b	ETAC Source Tape Format
		Lat.	Long.	From	To				
<u>CONGO, Democratic Republic</u> (see Zaire)									
<u>CYPRUS</u>									
Nicosia (Airfield)	17606	35 09N	033 17E	1/54	12/68	3	29,276	+2	TDF 13
<u>CZECHOSLOVAKIA</u>									
Plzen	11448	49 40N	013 17E	10/60	12/63	3	8,592	+1	TDF 13
Praha (Prague)	11518	50 06N	014 17E	1/52	12/63	3	23,914	+1	TDF 13
<u>EGYPT</u>									
Cairo	62366	30 08N	031 34E	1/57	12/66	3	19,577	+2	TDF 13
<u>GERMANY, EAST (GDR)</u>									
Berlin	10384	52 28N	013 24E	3/46	12/63	1	155,468	+1	TDF 14
Dresden	10488	51 08N	013 46E	1/52	12/63	3	14,298	+1	TDF 13
Erfurt/Bindersleben	10554	50 59N	010 58E	1/59	12/63	3	12,535	+1	TDF 13
Leinefelde/Kalteneber	10449	51 23N	010 19E	1/52	12/60	6	13,025	+1	TDF 13
Leipzig/Mockau	10471	51 19N	012 25E	1/52	12/60	6	12,907	+1	TDF 13
Magdeburg	10361	52 06N	011 35E	1/52	12/63	3	22,796	+1	TDF 13
<u>GERMANY, WEST (FRG)</u>									
Bitburg	10610	49 57N	006 34E	3/52	12/67	1	135,521	0	TDF 14
Bremerhaven	10129	53 32N	008 35E	1/49	11/71	3	45,424	+1	TDF 13
Emden-Hafen	10203	53 20N	007 12E	4/60	11/71	3	12,902	+1	TDF 13
Essen	10410	51 24N	006 58E	1/49	11/71	3	62,268	+1	TDF 13
Fulda		50 33N	009 41E	9/60	12/70	1	58,854	+1	TDF 14
Grafenwohr	10687	49 42N	011 57E	6/62	12/70	1	75,247	+1	TDF 14
Hamburg	10147	53 38N	009 59E	1/49	11/71	1	120,204	+1	TDF 13
Hannover	10338	52 28N	009 42E	1/49	11/71	1	94,094	+1	TDF 13
Heidelberg	10734	49 24N	008 39E	4/51	12/70	1	172,595	+1	TDF 14
Kitzingen	10659	49 42N	010 06E	7/63	12/70	1	62,252	+1	TDF 14
Munster	10313	51 58N	007 36E	8/59	11/71	3	32,594	+1	TDF 13
Neubiberg	10864	48 04N	011 38E	2/46	1/58	1	104,778	+1	TDF 14
<u>IRAN</u>									
Tehran (Mehrabad Airport)	40754	35 41N	051 19E	1/65	6/69	1	11,868	+3	COLDFACT
				1/43	12/45	1	17,697		TDF 13
<u>NORTH KOREA (DPRK)</u>									
Sinuiju (Sin-Euzoo)	47035	40 06N	124 23E	2/57	12/63	3	14,968	+8	TDF 13
Wonsan	47055	39 11N	127 26E	2/57	12/63	3	14,955	+8	TDF 13
<u>LAOS</u>									
Seno	48948	16 40N	105 00E	1/49	11/60	3	9,169	+7	TDF 13
<u>LEBANON</u>									
Beirut (Beyrouth)	40100	33 49N	035 29E	1/63	6/69	[A]	18,734	+2	TDF 13
<u>LIBERIA</u>									
Roberts Field (Marshall)	65660	06 20N	010 45W	7/42	6/69	[B]	44,834	-1	TDF 14
<u>NETHERLANDS</u>									
Soesterberg	06265	52 08N	005 16E	1/55	12/66	1	103,957	0	TDF 13
<u>POLAND</u>									
Danzig (Gdansk-Wrzeszcz)	12150	54 23N	018 36E	1/52	12/63	3	23,820	+1	TDF 13
Poznan	12330	52 25N	016 50E	1/52	12/63	3	23,870	+1	TDF 13
Warsaw (Warsawa)	12375	52 09N	020 59E	1/52	12/63	3	23,869	+1	TDF 13
<u>THAILAND</u>									
Nakhon Phanom	48357	17 30N	104 20E	7/52	12/67	[C]	30,182	+7	TDF 13
<u>TURKEY</u>									
Adana	17350	37 00N	035 25E	1/50	12/67	1	137,640	+2	TDF 13
Diyarbakir	17280	37 53N	040 11E	1/50	12/54	1	35,296	+3	TDF 13
Malatya	17200	38 26N	038 05E	1/50	12/68	[D]	38,398	+3	TDF 13

^a In some instances there is more than one interval length reported. For these cases, which are listed in this column in brackets, see Table A-2.

^b Local Standard Meridian Time, not necessarily Local Standard Time.

Table A-1 (Continued)

Station	WMO No.	Location (deg min)		Dates of Record (mo/yr)		Reporting Interval (hrs) ^a	Number of Observations	Time Zone Factor, GMT to LSMT ^b	ETAC Source Tape Format
		Lat.	Long.	From	To				
<u>UNITED KINGDOM</u>									
Ascension Island	61900	07 55S	014 25W	9/42	12/68	1	122,160	-1	TDF 14 COLDFACT
Ascension Island	61902	07 58S	014 24W	3/65	6/69	3	8,168	-1	
<u>USSR</u>									
Archangel (Arhangel'sk)	22550	64 35N	040 30E	1/65	12/68	3	11,130	+3	TDF 13
Dudinka	23074	69 24N	086 10E	1/65	12/68	3	8,614	+6	TDF 13
Irkutsk	30710	52 16N	104 21E	1/65	12/68	3	10,501	+7	TDF 13
Isit	24951	60 49N	125 19E	1/65	12/68	3	10,617	+8	TDF 13
Kiev	33345	50 24N	030 27E	1/65	12/68	3	11,403	+2	TDF 13
Kuybyshev/Bezencuk	28900	53 15N	050 27E	1/65	12/68	3	10,214	+3	TDF 13
Moscow (Moskva)	27612	55 45N	037 34E	1/65	12/68	3	11,248	+3	TDF 13
Novosibirsk	29634	55 02N	082 54E	1/65	12/68	3	11,045	+6	TDF 13
Ohotsk	31088	59 22N	143 12E	1/65	12/68	3	11,255	+10	TDF 13
Poset	31969	42 39N	130 48E	1/65	12/68	3	10,360	+9	TDF 13
Sverdlovsk	28440	56 48N	060 38E	1/65	12/68	3	10,118	+4	TDF 13
Tashkent	38457	41 16N	069 16E	1/65	12/68	3	6,388	+5	TDF 13
<u>USA</u>									
Altus, OK AFB	72352	34 39N	099 16W	1/61	1/71	1	87,648	-6	TDF 14
Austin, TX/Bergst AFB	73257	30 12N	097 40W	1/61	1/71	1	87,647	-6	TDF 14
Bismarck, ND	72764	46 46N	100 45W	1/48	1/71	1	166,566	-7	TDF 14
Burns, OR	72683	43 35N	119 03W	1/48	4/64	3	46,503	-8	TDF 14
Cheyenne, WY	72564	41 09N	104 49W	1/48	1/71	1	166,378	-7	TDF 14
Columbia, MO	72445	38 49N	092 13W	1/45	12/68	1	186,631	-6	TDF 14
Dayton, OH/W-P AFB	74570	39 50N	084 03W	1/61	1/71	1	87,647	-5	TDF 14
Falmouth, MA/Otis AFB	73566	41 39N	070 31W	1/61	1/71	1	87,546	-5	TDF 14
Fort Worth, TX/Crawll		32 46N	097 25W	1/61	1/71	1	87,648	-6	TDF 14
Goldsboro, NC/S-J AFB	73349	35 20N	077 58W	1/61	1/71	1	87,647	-5	TDF 14
Great Falls, MT	72775	47 29N	111 22W	1/48	1/71	1	166,525	-7	TDF 14
Gwinn, MI/KIS AFB	73734	46 20N	087 23W	1/61	1/71	1	87,614	-6	TDF 14
Mekinock, ND/ Grand Forks AFB	73731	47 57N	097 24W	1/61	1/71	1	87,640	-6	TDF 14
Plattsburgh, NY AFB	73467	44 41N	073 31W	1/61	1/71	1	87,640	-5	TDF 14
Rapid City, SD/ Ellsworth AFB	73627	44 08N	103 06W	1/61	1/71	1	87,645	-7	TDF 14
Riverside, CA/March AFB	72286	33 54N	117 15W	1/61	1/71	1	87,641	-8	TDF 14
Sacramento, CA/ Mather AFB	73439	38 34N	121 18W	1/61	1/71	1	87,627	-8	TDF 14
Spokane, WA/Fairc AFB	73728	47 36N	117 39W	1/61	1/71	1	87,646	-8	TDF 14
Tampa, FL/MacDill AFB	73269	27 50N	082 30W	1/61	1/71	1	87,646	-5	TDF 14
Tonopah, NV	72485	38 04N	117 05W	4/51	1/64	1	111,581	-8	TDF 14
Topeka, KS/Forbes AFB	73839	38 57N	095 40W	1/61	1/71	1	87,645	-6	TDF 14
Tucson, AZ/Davis Mon. AFB	73153	32 11N	110 54W	1/61	1/71	1	88,924	-7	TDF 14
Wrightstown, NJ/McG AFB	73564	40 00N	074 35W	1/61	1/71	1	87,772	-5	TDF 14
Yuma, AZ	72280	32 40N	114 36W	1/48	8/67	1	148,152	-7	TDF 14
<u>VIETNAM, NORTH (DRV)</u>									
Dong Hoi	48848	17 29N	106 36E	1/50	12/65	3	14,725	+7	TDF 13
Hanoi	48820	21 01N	105 51E	4/49	12/65	3	18,053	+7	TDF 13
Ha Tinh	48846	18 21N	105 54E	5/59	7/63	3	6,911	+7	TDF 13
Vinh	48845	18 39N	105 41E	2/58	9/64	3	9,827	+7	TDF 13
<u>VIETNAM, SOUTH (RV)</u>									
Hue	48852	16 24N	107 41E	1/50	12/65	[E]	48,316	+7	TDF 13 TDF 14
Quang Tri	48851	16 44N	107 11E	8/58	12/65	[F]	19,117	+7	TDF 14
<u>ZAIRE</u>									
Brazzaville	64450	04 15S	015 15E	3/49	12/53	12	2,220	+1	TDF 13
Leopoldville and Kinshasa	64210	04 23S	015 19E	7/49	2/59	24	1,940	+1	TDF 13

^aIn some instances there is more than one interval length reported. For these cases, which are listed in this column in brackets, see Table A-2.

^bLocal Standard Meridian Time, not necessarily Local Standard Time.

Table A-2

LIST OF MULTIPLE TIME INTERVALS

No. From Table A-1	Reporting Interval (hr)	Dates	Source
[A]	3	1/63-12/68	TDF 13
	1	1/69-6/69	COLDFACT
[B]	1	7/42-3/47	TDF 14
	3	3/65-6/69	COLDFACT
[C]	3	7/52-12/65	TDF 13
	1	12/65-12/67	COLDFACT
[D]	1	1/50-12/54	TDF 13
	3	1/63-12/68	TDF 13
[E]	3	00-12, 21-23 only are reported	TDF 13
	1	00-12, 21-23 only are reported	TDF 14
[F]	1	00-03, 06-09, 23 only are reported	TDF 14

Appendix B

STATION INVENTORIES OF OBSERVATIONS BY MONTH AND HOUR

As each station is added to RAWDAB-S, the program that does so also produces a tabular summary of the time distribution of the observations in that file. This provides the user with a quick and easy way to judge the adequacy of a file for many particular applications.

The tables that follow are arranged in the station order given in Table A-1.

Table B-1

Time Distribution of All Observations in RAWAB- S

NICOSIA (AIRFIELD), CYPRUS

TOTAL NUMBER OF OBSERVATIONS = 29276

WMO 17606

BEGIN 1954 1 1 0

END 1968 12 31 21

MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11	12	HOUR
0	454	410	458	442	454	441	459	449	436	456	439	456	0
1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	155	141	158	162	168	158	170	164	163	169	156	177	3
4	0	0	0	0	0	0	0	0	0	0	0	0	4
5	0	0	0	0	0	0	0	0	0	0	0	0	5
6	454	417	463	447	454	445	458	457	441	457	444	454	6
7	0	0	0	0	0	0	0	0	0	0	0	0	7
8	0	0	0	0	0	0	0	0	0	0	0	0	8
9	157	150	171	167	178	162	167	168	171	176	163	174	9
10	0	0	0	0	0	0	0	0	0	0	0	0	10
11	0	0	0	0	0	0	0	0	0	0	0	0	11
12	457	418	460	437	456	442	459	453	440	456	445	451	12
13	0	0	0	0	0	0	0	0	0	0	0	0	13
14	0	0	0	0	0	0	0	0	0	0	0	0	14
15	156	142	159	167	170	164	168	166	167	174	162	172	15
16	0	0	0	0	0	0	0	0	0	0	0	0	16
17	0	0	0	0	0	0	0	0	0	0	0	0	17
18	446	414	457	441	456	445	460	458	441	452	438	451	18
19	0	0	0	0	0	0	0	0	0	0	0	0	19
20	0	0	0	0	0	0	0	0	0	0	0	0	20
21	143	146	156	152	166	154	166	160	158	164	150	171	21
22	0	0	0	0	0	0	0	0	0	0	0	0	22
23	0	0	0	0	0	0	0	0	0	0	0	0	23
OBS/MO	2422	2238	2482	2415	2502	2411	2507	2475	2417	2504	2397	2506	OBS

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Table B-1 continued

PLZEN, CZECHOSLOVAKIA

WMO 11448

TOTAL NUMBER OF OBSERVATIONS = 8592

BEGIN 1960 10 1 3

END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	89	80	92	57	59	86	88	91	88	117	116	114
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	86	80	86	56	61	81	89	87	82	120	117	117
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	89	79	88	59	62	88	89	88	86	114	111	118
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	86	81	86	57	62	88	92	86	86	118	107	119
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	89	76	88	58	61	86	88	85	83	121	115	118
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	91	79	89	58	61	87	91	90	84	119	117	115
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	93	82	91	57	60	88	89	90	88	114	115	117
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	89	80	87	59	62	88	89	88	83	121	116	119
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	712	637	707	461	488	692	715	705	680	944	914	937

Table B-1 continued

PRAGUE, CZECHOSLOVAKIA

WMO 11518

TOTAL NUMBER OF OBSERVATIONS = 23914

BEGIN 1952 1 1 0

END 1963 12 31 21

HOUR	MONTH												HOUR
	1	2	3	4	5	6	7	8	9	10	11	12	
0	356	321	349	334	355	353	355	363	328	345	328	358	0
1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	153	136	151	141	148	146	152	152	149	153	148	147	3
4	0	0	0	0	0	0	0	0	0	0	0	0	4
5	0	0	0	0	0	0	0	0	0	0	0	0	5
6	365	327	350	344	368	349	344	362	332	357	343	360	6
7	0	0	0	0	0	0	0	0	0	0	0	0	7
8	0	0	0	0	0	0	0	0	0	0	0	0	8
9	150	135	151	143	153	148	154	146	149	151	147	150	9
10	0	0	0	0	0	0	0	0	0	0	0	0	10
11	0	0	0	0	0	0	0	0	0	0	0	0	11
12	360	328	361	357	359	352	364	347	336	358	351	365	12
13	0	0	0	0	0	0	0	0	0	0	0	0	13
14	0	0	0	0	0	0	0	0	0	0	0	0	14
15	149	137	154	144	151	148	149	151	149	153	145	150	15
16	0	0	0	0	0	0	0	0	0	0	0	0	16
17	0	0	0	0	0	0	0	0	0	0	0	0	17
18	358	320	354	356	364	354	354	362	338	357	346	353	18
19	0	0	0	0	0	0	0	0	0	0	0	0	19
20	0	0	0	0	0	0	0	0	0	0	0	0	20
21	150	136	152	147	150	145	151	151	149	153	145	152	21
22	0	0	0	0	0	0	0	0	0	0	0	0	22
23	0	0	0	0	0	0	0	0	0	0	0	0	23
OBS/MO	2041	1840	2022	1966	2048	1995	2023	2034	1930	2027	1953	2035	OBS

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Table B-1 continued

CAIRO, EGYPT

WHO 62366

TOTAL NUMBER OF OBSERVATIONS = 19577

BEGIN 1957 1 1 0

END 1966 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	298	271	299	288	301	292	307	309	299	306	295	305
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	77	77	90	80	108	98	117	106	100	112	94	86
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	300	266	301	292	307	297	308	303	298	307	295	303
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	97	113	114	105	122	108	115	119	109	126	107	114
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	303	277	302	294	308	294	308	308	297	309	299	309
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	90	103	112	105	128	114	125	135	127	126	103	99
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	291	261	300	293	305	295	308	305	297	304	298	302
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	89	103	102	110	124	115	137	140	126	144	115	97
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1545	1471	1620	1567	1703	1613	1725	1725	1653	1734	1606	1615

Table B-1 continued

BERLIN (TEMPLEHOF), GERMANY
 TOTAL NUMBER OF OBSERVATIONS = 155468
 BEGIN 1946 3 31 23
 END 1963 12 31 22

WMO 10384

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HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	525	480	527	540	558	538	557	558	540	557	540	557
1	527	480	527	540	558	537	558	558	540	557	540	557
2	527	480	527	540	558	538	558	558	540	557	540	557
3	526	480	527	540	558	538	558	558	540	557	540	557
4	525	480	527	540	558	538	558	558	540	556	540	557
5	527	480	527	540	558	538	558	558	540	557	540	557
6	526	480	527	540	558	538	557	558	540	557	540	555
7	527	480	527	540	558	538	558	558	540	557	540	557
8	524	480	527	540	558	538	558	558	540	557	540	557
9	527	480	527	540	558	539	558	558	540	554	540	557
10	527	480	527	539	558	538	558	558	540	555	540	557
11	527	480	527	540	557	536	558	558	540	557	540	557
12	527	480	527	540	558	538	558	558	540	557	540	557
13	527	480	527	540	558	538	558	558	540	557	540	557
14	527	480	527	540	557	538	558	558	540	556	540	557
15	527	480	527	540	557	538	558	558	540	556	540	557
16	527	480	527	540	556	538	558	558	540	557	540	557
17	527	480	527	540	558	538	558	558	540	557	540	557
18	524	480	527	540	558	538	558	558	540	557	540	557
19	526	480	527	540	557	538	558	558	540	554	540	557
20	527	480	526	540	557	538	558	558	540	556	539	557
21	527	480	527	540	558	538	558	558	540	557	539	557
22	527	480	527	539	558	538	558	558	540	557	539	556
23	526	480	528	540	558	537	556	558	540	555	540	555
OBS/MO	12634	11520	12648	12958	13385	12909	13388	13392	12960	13354	12957	13363

WC

Table B-1 continued

DRESDEN, EAST GERMANY

WHO 10488

TOTAL NUMBER OF OBSERVATIONS = 14298

BEGIN 1952 1 1 0

END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	279	255	279	271	280	270	279	279	271	279	269	278
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	29	28	31	30	19	30	27	31	19	30	28	31
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	280	255	279	271	280	271	279	279	271	280	270	279
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	30	27	31	28	1	27	0	30	1	30	29	29
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	279	255	279	270	279	271	279	279	271	279	270	279
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	31	27	30	30	0	28	0	30	1	30	29	31
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	279	255	279	271	279	270	279	279	271	280	270	279
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	30	29	30	29	0	28	0	31	3	32	29	30
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/NO	1237	1131	1238	1200	1138	1195	1143	1238	1108	1240	1194	1236

Table B-1 continued

ERFURT/BINDERSLEBEN, EAST GERMANY
 TOTAL NUMBER OF OBSERVATIONS = 12535
 BEGIN 1959 1 1 0
 END 1983 12 31 21

WMO 10554

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	155	141	155	149	154	150	155	155	150	155	150	155
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	113	109	121	116	107	118	113	119	107	118	112	118
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	154	141	155	150	155	150	155	155	150	155	150	155
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	121	105	124	117	92	112	90	118	86	112	83	114
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	155	141	155	150	155	150	155	155	150	155	150	155
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	121	102	121	115	89	114	89	119	89	118	89	122
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	155	141	155	150	155	150	155	155	150	155	150	155
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	120	109	122	120	92	116	83	120	89	119	90	116
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1099	989	1108	1067	999	1060	995	1096	971	1087	974	1090

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Table B-1 continued

LEINEFELDE/KALTENEGER, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 13025

WMO 10449

BEGIN 1952 1 1 0

END 1960 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	279	255	279	270	279	270	279	248	270	279	270	279
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	278	255	279	270	279	270	279	248	270	279	270	279
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	278	255	279	270	279	270	279	248	270	279	269	279
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	278	255	279	270	279	270	280	248	270	279	270	279
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1113	1020	1116	1080	1116	1080	1117	992	1080	1116	1079	1116

Table B-1 continued

LEIPZIG, GERMANY

WMO 10471

TOTAL NUMBER OF OBSERVATIONS = 12907

BEGIN 1952 1 1 0

END 1960 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	279	255	279	270	279	240	248	279	270	279	270	279
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	279	255	279	270	279	240	248	279	270	279	270	279
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	279	255	279	270	279	240	248	279	270	279	270	278
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	279	255	279	270	280	240	248	279	270	279	270	279
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1116	1020	1116	1080	1117	960	992	1116	1030	1116	1080	1114

Table B-1 continued

MAGDEBURG, EAST GERMANY

WMO 10361

TOTAL NUMBER OF OBSERVATIONS = 22796

BEGIN 1952 1 1 0

END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	372	339	372	360	372	360	372	372	360	372	360	372
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	119	109	123	115	110	117	120	120	111	119	110	122
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	372	339	372	360	372	360	372	372	360	372	360	372
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	122	104	124	115	94	111	93	118	86	119	85	114
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	372	339	372	360	372	360	372	371	359	372	360	372
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	120	105	118	115	87	115	92	118	88	117	87	120
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	372	339	372	360	372	360	371	372	360	372	360	372
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	118	113	123	119	89	117	87	121	90	121	91	116
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1967	1787	1976	1904	1868	1900	1879	1964	1814	1964	1813	1960

WMC 10610

TOTAL NUMBER OF OBSERVATIONS = 135521

BEGIN 1952 3 31 23

END 1967 12 31 22

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	465	423	465	451	469	480	496	496	450	465	450	482
1	465	423	465	451	469	480	496	496	450	465	450	482
2	465	423	465	451	469	480	496	496	450	465	450	482
3	465	423	465	451	469	480	496	496	450	465	450	482
4	465	423	465	451	469	480	496	496	450	465	450	482
5	465	423	465	456	469	480	496	496	480	496	480	496
6	465	423	465	456	469	480	496	496	480	496	480	496
7	465	423	465	456	469	480	496	496	480	496	480	496
8	465	423	465	456	469	480	496	496	480	496	480	496
9	465	423	465	456	469	480	496	496	480	496	480	496
10	465	423	465	456	470	480	496	496	480	496	480	496
11	465	423	465	456	470	480	496	496	480	496	480	496
12	465	423	465	456	470	480	496	496	480	496	480	496
13	465	423	465	456	470	480	496	496	480	496	480	496
14	465	423	465	456	470	480	496	496	480	496	480	496
15	465	423	465	456	470	480	496	496	480	496	480	496
16	465	423	465	450	470	480	496	496	480	496	480	496
17	465	423	465	449	470	480	496	496	450	465	450	482
18	465	423	465	449	470	480	496	496	450	465	450	482
19	465	423	465	449	470	480	496	496	450	465	450	482
20	465	423	465	449	470	480	496	496	450	465	450	482
21	465	423	465	449	470	480	496	496	450	465	450	481
22	465	424	465	449	470	480	496	496	450	465	450	482
23	464	422	466	450	470	480	496	495	450	465	450	482

OBS/MO 11159 10152 11161 10865 11270 11520 11904 11903 11160 11532 11160 11735

Table B-1 continued

BREMERHAVEN, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 45424

WMO 10129

BEGIN 1949 1 1 9

END 1971 11 30 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	350	323	349	337	349	328	350	334	318	334	342	315
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	342	328	343	340	357	314	344	333	305	324	341	327
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	532	489	528	521	524	510	530	536	493	544	522	511
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	526	485	530	524	526	520	529	534	506	538	514	501
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	529	484	523	512	525	505	532	525	490	543	516	515
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	534	483	520	531	529	515	537	530	515	540	533	519
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	526	480	522	515	525	509	527	524	497	542	516	506
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	537	490	530	521	525	515	533	527	510	529	523	510
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
DBS/MO	3876	3562	3845	3801	3360	3716	3882	3843	3634	3894	3807	3704

Table B-1 continued

EMDEN-HAFEN, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 12902

WMO 10203

BEGIN 1960 4 1 3

END 1971 11 30 15

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	35	54	26	25	24	6	6	38	27
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	186	154	184	216	209	196	185	190	188	202	193	196
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	259	233	261	269	254	251	266	264	263	282	274	254
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	260	240	251	272	254	243	265	267	276	282	262	256
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	204	140	165	208	215	182	175	176	194	220	235	219
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	138	37	113	157	164	124	98	92	105	131	143	150
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	35	54	30	31	31	13	8	41	26
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1047	854	974	1192	1204	1052	1045	1044	1045	1131	1186	1128

Table B-1 continued

ESSEN, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 62268

WMO 10410

BEGIN 1949 1 1 0

END 1971 11 30 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	667	609	660	643	653	629	656	660	633	673	641	644
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	661	608	659	639	658	633	662	657	623	676	637	642
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	668	609	655	645	664	639	663	663	630	663	657	649
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	658	601	662	649	657	646	665	663	643	669	641	628
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	663	607	648	643	655	630	662	663	626	675	648	645
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	662	605	653	644	653	644	668	669	654	679	655	643
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	663	605	662	648	656	634	660	664	630	675	648	640
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	664	604	655	640	655	644	665	664	645	666	647	630
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	5306	4848	5254	5151	5251	5099	5301	5303	5084	5376	5174	5121

Table B-1 continued

GRAFENWOHR, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 75247

WMO 10687

BEGIN 1962 6 1 0

END 1970 12 31 22

MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
0	248	226	248	240	248	270	279	279	270	279	270	279
1	248	226	248	240	248	270	279	279	270	279	270	279
2	248	226	248	240	248	270	279	279	270	279	270	279
3	248	226	248	240	248	270	279	279	270	279	270	279
4	248	226	248	240	248	270	279	279	270	279	270	279
5	248	226	248	240	248	270	279	279	270	279	270	279
6	248	226	248	240	248	270	279	279	270	279	270	279
7	248	226	248	240	248	270	279	279	270	279	270	279
8	248	226	248	240	248	270	279	279	270	279	270	279
9	248	226	248	240	248	270	279	279	270	279	270	279
10	248	226	248	240	248	270	279	279	270	279	270	279
11	248	226	248	240	248	270	279	279	270	279	270	279
12	248	226	248	240	248	270	279	279	270	279	270	279
13	248	226	248	240	248	270	279	279	270	279	270	279
14	248	226	248	240	248	270	279	279	270	279	270	279
15	248	226	248	240	248	270	279	279	270	279	270	278
16	248	226	248	240	248	270	279	279	270	279	270	278
17	248	226	248	240	248	270	278	279	270	279	270	278
18	248	226	248	240	248	270	278	279	270	279	270	278
19	248	226	248	240	248	270	278	279	270	279	270	278
20	248	226	248	240	248	270	278	279	270	279	270	278
21	248	226	248	240	248	270	278	279	270	279	270	278
22	248	226	248	240	248	270	278	279	270	279	270	277
23	248	226	248	240	248	270	279	279	269	279	270	278
OBS/MO	5952	5424	5952	5760	5952	6480	6690	6696	6479	6696	6480	6686

Table B-1 continued

HAMBURG, GERMANY

WMO 10147

TOTAL NUMBER OF OBSERVATIONS = 120204

BEGIN 1949 1 1 0

END 1971 11 30 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	660	608	660	641	658	625	658	652	640	667	643	632
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	649	608	653	636	660	623	652	639	626	662	642	641
4	310	282	310	300	310	299	310	310	300	310	300	310
5	310	282	310	299	310	300	310	310	300	310	300	310
6	658	604	655	637	660	623	648	658	636	666	649	641
7	309	282	310	300	310	300	310	310	300	310	299	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	653	598	659	649	651	636	659	646	620	658	634	624
10	309	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	299	310	310	300	310	300	310
12	657	610	655	635	653	634	655	665	648	688	653	649
13	310	282	310	300	310	299	309	310	299	310	300	310
14	310	282	310	300	310	299	310	310	300	310	300	310
15	655	594	646	643	653	633	652	649	641	667	649	646
16	310	282	310	300	310	300	310	308	298	310	300	310
17	310	282	309	300	310	300	310	309	300	310	300	309
18	654	603	656	646	652	631	646	659	635	677	641	635
19	310	280	310	300	310	298	310	309	300	310	300	310
20	310	282	310	300	310	300	309	309	300	310	300	310
21	656	601	656	640	650	636	653	646	631	652	640	631
22	309	281	309	300	310	300	310	308	300	310	300	308
23	310	282	310	292	310	299	310	309	300	310	300	309
JBS/MD	10199	9335	10198	9918	10197	9834	10181	10166	9874	10297	9950	10055

Table B-1 continued

HANNOVER, GERMANY
 TOTAL NUMBER OF OBSERVATIONS = 94094
 BEGIN 1949 1 1 0
 END 1971 11 30 21

WMO 10338

HOJR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	660	608	658	642	658	626	660	653	640	669	645	634
1	155	141	155	150	155	150	155	155	150	155	159	186
2	154	141	155	149	155	150	155	155	150	155	159	186
3	647	593	651	644	654	620	658	640	617	664	640	646
4	155	141	155	150	155	150	155	155	150	155	159	186
5	154	141	149	149	148	119	124	142	150	153	159	185
6	654	599	649	640	662	628	651	666	637	674	656	646
7	186	168	186	180	186	180	186	186	180	186	180	186
8	186	167	186	178	183	179	183	179	178	183	179	185
9	654	597	657	644	655	634	656	647	624	657	640	624
10	186	167	185	179	182	173	182	186	180	186	179	185
11	185	168	184	179	186	176	186	183	178	186	179	185
12	659	605	652	642	654	631	656	670	645	684	647	644
13	186	169	186	180	186	180	186	186	180	186	180	186
14	186	169	186	180	186	180	186	186	180	186	180	185
15	655	593	642	640	650	626	656	647	640	662	650	647
16	185	169	186	180	186	180	186	186	180	186	180	186
17	186	169	186	180	186	180	186	186	180	186	180	186
18	652	595	650	643	653	628	649	664	641	677	647	642
19	155	141	155	150	155	150	155	155	150	155	159	186
20	155	141	155	150	155	150	155	155	150	155	159	186
21	652	594	656	638	649	637	657	645	630	651	643	631
22	155	141	155	150	155	150	155	155	150	155	159	185
23	155	141	155	150	155	150	155	155	150	155	159	186
OBS/MO	7957	7258	7934	7767	7949	7627	7933	7937	7710	8061	7877	8084

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Table B-1 continued

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HEIDELBERG, GERMANY
TOTAL NUMBER OF OBSERVATIONS = 172595
BEGIN 1951  4 19 23
END      1970 12 31 22

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WMO 10734

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	589	537	589	581	620	600	620	620	599	620	596	619
1	589	537	589	581	620	600	620	620	599	620	597	619
2	589	537	589	581	620	600	620	620	599	620	599	619
3	589	537	589	581	620	600	620	620	600	620	599	618
4	589	537	589	581	620	600	620	620	600	620	599	619
5	589	537	589	581	620	600	620	620	600	620	599	620
6	588	537	589	581	620	600	620	620	600	620	597	617
7	589	537	589	581	620	600	620	620	600	620	598	617
8	589	537	589	581	620	600	620	620	600	620	599	619
9	589	537	589	581	620	600	620	620	600	620	599	617
10	589	537	589	581	620	600	620	620	600	620	598	619
11	589	537	589	581	620	600	620	620	600	620	597	617
12	589	537	589	581	620	600	620	620	600	620	597	615
13	589	537	589	581	620	600	620	620	600	620	598	618
14	589	537	589	581	620	600	620	620	600	620	598	616
15	589	537	589	581	620	600	620	620	600	620	598	616
16	589	537	589	581	620	600	620	620	600	620	598	617
17	589	537	589	581	620	600	620	620	600	620	597	616
18	589	537	589	581	620	600	620	620	600	620	598	616
19	589	537	589	581	620	600	620	620	600	620	599	616
20	589	537	589	581	620	600	620	620	600	620	600	615
21	589	537	589	581	620	600	620	620	599	620	599	617
22	588	537	589	581	620	600	620	620	600	620	599	618
23	589	537	589	582	620	600	620	620	600	620	600	618

OBS/MO 14134 12888 14136 13945 14880 14400 14880 14880 14396 14880 14358 14818

Table B-1 continued

KITZINGEN, GERMANY
 TOTAL NUMBER OF OBSERVATIONS = 62252
 BEGIN 1963 7 31 23
 END 1970 12 31 22

WMO 10659

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	184	186	211	206	209	206	211	241	229	240	224	223
1	205	186	211	206	209	206	211	241	229	240	224	223
2	205	186	210	206	210	206	211	241	229	240	224	223
3	205	186	211	206	210	206	211	241	229	240	225	224
4	205	187	211	206	210	206	211	241	229	240	225	231
5	207	188	212	206	210	206	211	241	229	240	226	236
6	207	187	211	206	210	206	211	241	229	240	226	237
7	207	187	211	206	210	206	211	241	229	240	226	237
8	207	187	211	206	210	206	211	241	229	240	226	237
9	207	187	211	206	210	206	211	241	229	240	226	237
10	207	188	211	206	210	206	211	241	229	240	226	236
11	207	188	211	206	210	206	211	241	229	240	226	236
12	207	187	210	206	210	206	211	241	229	240	226	231
13	207	187	210	206	210	206	211	241	229	240	226	232
14	207	187	210	206	210	206	211	241	229	240	226	232
15	207	188	210	206	210	206	211	241	229	240	226	231
16	207	188	210	206	210	206	211	241	229	240	226	226
17	207	187	210	206	210	206	211	241	229	240	226	226
18	188	187	209	206	210	206	211	241	229	240	226	226
19	135	187	210	206	210	199	211	241	229	240	226	222
20	185	187	210	206	209	199	211	241	229	240	226	221
21	185	187	210	206	209	199	211	241	229	240	226	221
22	185	187	211	206	210	199	211	241	229	240	226	221
23	187	188	212	206	209	199	212	241	229	240	226	220
OBS/MO	4810	4490	5054	4944	5035	4909	5065	5784	5496	5760	5416	5489

Table B-1 continued

FULDA, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 58854

WMO

BEGIN 1960 9 8 7

END 1970 12 31 11

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	62	56	62	62	92	74	63	62	62	62	90	63
1	62	56	62	63	92	74	63	62	61	62	90	63
2	61	56	63	62	92	75	63	62	62	62	91	64
3	148	134	149	151	176	162	148	145	140	135	142	150
4	225	205	226	247	277	263	243	252	234	240	233	210
5	275	250	284	277	279	279	278	283	265	281	253	269
6	289	264	299	292	296	296	293	305	285	301	276	295
7	291	266	299	292	296	296	293	305	305	326	297	303
8	291	266	300	292	296	296	293	305	305	327	300	311
9	291	266	300	293	296	296	293	306	305	327	300	312
10	291	266	300	293	296	296	294	306	305	327	300	312
11	291	266	300	293	296	296	294	306	303	327	300	311
12	282	259	292	288	293	292	289	303	295	313	289	282
13	282	259	292	288	293	292	289	303	295	313	289	282
14	282	259	292	288	293	292	289	302	295	313	289	282
15	282	258	292	288	293	292	289	301	295	313	289	282
16	266	242	271	264	268	265	265	275	264	293	262	258
17	246	223	248	264	268	265	265	274	254	272	242	243
18	148	134	148	149	184	176	177	176	169	166	143	148
19	148	134	148	149	186	160	146	144	139	135	141	148
20	62	56	62	60	101	75	62	62	61	62	90	62
21	62	56	62	60	101	75	63	63	62	62	90	62
22	63	56	62	60	96	74	63	62	62	62	90	62
23	62	56	62	61	94	73	63	62	62	62	89	64
OBS/MO	4762	4343	4875	4836	5254	5034	4883	5026	4885	5143	4975	4838

Table B-1 continued

MUNSTER, GERMANY

WMO 10313

TOTAL NUMBER OF OBSERVATIONS = 32594

BEGIN 1959 8 5 0

END 1971 11 30 21

HOUR	MONTH												HOUR
	1	2	3	4	5	6	7	8	9	10	11	12	
0	347	328	350	337	344	324	344	344	327	351	337	323	
1	0	0	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	0	0	
3	336	316	340	341	340	324	345	332	320	346	328	322	
4	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	
6	346	321	346	339	350	334	347	356	333	362	350	329	
7	0	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	0	0	0	0	
9	343	318	349	349	346	339	352	340	325	345	334	311	
10	0	0	0	0	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0	1
12	349	323	344	334	351	337	348	353	346	372	352	341	1
13	0	0	0	0	0	0	0	0	0	0	0	0	1
14	0	0	0	0	0	0	0	0	0	0	0	0	1
15	341	314	336	346	339	333	346	352	333	351	345	327	1
16	0	0	0	0	0	0	0	0	0	0	0	0	1
17	0	0	0	0	0	0	0	0	0	0	0	0	1
18	351	317	349	343	345	331	346	358	336	370	349	331	1
19	0	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	0	0	0	0	2
21	342	322	342	344	340	339	344	351	330	341	337	313	2
22	0	0	0	0	0	0	0	0	0	0	0	0	2
23	0	0	0	0	0	0	0	0	0	0	0	0	2
OBS/MO	2755	2559	2756	2733	2755	2661	2772	2786	2650	2838	2732	2597	OB

Table B-1 continued

NEUBIBERG, GERMANY

TOTAL NUMBER OF OBSERVATIONS = 104778

WMO 10864

BEGIN 1946 2 1 0

END 1958 1 31 17

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	341	339	372	359	372	360	372	372	360	371	360	372
1	341	339	372	359	372	359	372	371	360	372	360	372
2	341	339	372	359	372	360	372	371	360	372	360	371
3	341	339	372	359	372	360	372	372	360	372	360	372
4	341	339	372	359	372	360	372	372	360	372	360	372
5	371	339	372	359	372	360	372	372	360	372	360	372
6	372	339	372	359	372	360	372	372	360	371	360	372
7	372	339	372	359	372	360	372	372	360	372	360	372
8	372	339	372	359	372	360	372	372	360	372	360	372
9	372	339	372	359	372	360	372	372	360	372	360	372
10	372	338	372	359	372	360	372	372	360	371	360	372
11	372	338	372	359	372	359	372	372	360	372	360	372
12	372	339	372	359	372	360	372	372	360	372	360	372
13	372	339	372	359	372	360	372	372	360	372	360	372
14	372	339	372	359	372	360	371	372	360	372	360	372
15	372	339	371	359	372	360	371	372	360	372	360	372
16	372	339	372	360	372	360	372	372	360	372	360	372
17	372	336	372	360	372	358	372	372	360	372	360	372
18	341	334	372	360	372	360	372	371	360	371	360	372
19	341	336	372	360	372	360	372	372	359	372	360	372
20	341	336	372	360	372	360	372	372	360	372	360	372
21	341	336	372	360	372	360	372	372	360	372	360	372
22	341	336	372	358	372	360	371	372	358	370	359	372
23	341	336	372	359	372	360	371	372	359	368	360	372
OBS/MO	8586	8111	8927	8621	8928	8636	8924	8925	8636	8918	8639	8927

Table B-1 continued

TEHRAN (MEHERABAD AIRPORT), IRAN
 TOTAL NUMBER OF OBSERVATIONS = 11868
 BEGIN 1965 1 1 0
 END 1969 6 30 22

WMO 40754

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	124	92	121	134	140	126	114	108	95	107	99	104
1	21	8	15	24	22	26	3	9	20	20	18	19
2	18	7	14	22	22	24	0	13	15	20	21	22
3	76	61	91	92	110	78	77	66	64	68	70	73
4	14	10	17	21	24	20	0	11	16	10	13	17
5	14	10	21	24	28	21	2	11	15	7	8	10
6	109	77	123	116	119	118	96	85	100	93	86	91
7	12	14	24	23	21	26	2	9	16	16	10	12
8	18	13	20	27	22	23	3	12	22	7	14	14
9	77	66	99	94	108	94	78	83	65	70	75	76
10	12	11	17	24	24	18	2	13	20	15	13	14
11	17	13	20	24	22	16	2	13	24	18	10	16
12	127	92	132	143	145	130	111	117	112	110	111	117
13	21	14	22	23	20	21	1	14	14	18	11	18
14	10	12	22	26	25	21	0	11	24	16	15	14
15	76	66	86	87	101	93	74	76	79	75	58	68
16	13	18	15	21	21	17	3	13	20	19	12	19
17	11	15	21	22	27	27	3	12	21	22	14	10
18	92	74	96	108	121	111	90	86	77	79	86	86
19	18	10	14	25	24	19	1	11	19	11	16	17
20	16	13	17	22	27	21	2	14	25	14	18	21
21	72	50	76	86	99	87	61	60	56	63	56	58
22	16	10	14	22	26	21	0	15	24	18	19	22
23	19	8	14	21	21	19	2	11	14	15	11	13
OBS/HO	1003	764	1111	1231	1319	1177	727	873	957	911	864	931

Table B-1 continued

SINUIJU, NORTH KOREA
 TOTAL NUMBER OF OBSERVATIONS = 14968
 BEGIN 1957 2 2 0
 END 1963 12 31 21

WMO 47035

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	144	185	194	180	192	181	189	192	175	201	194	196
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	132	126	136	136	140	138	138	149	148	169	134	141
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	141	180	196	189	193	179	182	195	178	207	190	197
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	116	105	114	115	120	115	112	127	141	148	117	115
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	148	185	201	195	198	191	203	199	196	205	192	195
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	101	94	112	109	119	115	109	126	137	141	112	116
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	138	184	201	193	203	192	197	206	156	204	199	195
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	115	107	119	106	111	115	114	125	137	147	112	111
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1035	1166	1273	1223	1276	1226	1244	1319	1268	1422	1250	1266

Table B-1 continued

WONSAN (GENSAN), NORTH KOREA
 TOTAL NUMBER OF OBSERVATIONS = 14 955
 BEGIN 1957 2 2 0
 END 1963 12 31 21

WHO 47055

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	140	187	191	177	193	182	190	203	178	208	189	194
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	131	131	130	131	140	137	140	148	154	173	131	133
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	143	184	199	183	189	186	183	193	182	206	190	200
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	112	103	110	112	116	110	113	130	135	146	113	111
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	140	181	203	190	199	193	202	198	195	207	190	187
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	101	92	109	102	118	116	117	126	136	148	112	111
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	144	181	206	194	204	190	198	208	155	204	204	204
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	118	108	116	107	116	112	114	127	139	152	116	105
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1029	1167	1264	1196	1275	1226	1257	1333	1274	1444	1245	1245

Table B-1 continued

SEN0, LAOS

TOTAL NUMBER OF OBSERVATIONS = 9169

WMO 48948

BEGIN 1949 1 1 6
END 1960 11 18 0

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	154	122	142	120	133	158	156	216	205	227	190	169
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	125	118	112	76	70	90	120	143	152	163	143	148
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	191	152	154	137	128	136	150	203	196	206	185	186
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	91	94	122	103	82	113	107	166	165	161	136	121
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	115	105	55	100	133	128	162	108	146	134	167	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	12	12	11	18	12	4	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	18	16	13	18	10	7	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	54	35	41	44	33	48	52	61	71	63	56	44
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	730	626	626	582	579	703	775	921	971	976	888	792

Table B-1 continued

BEIRUT, LEBANON

WMO 40100

TOTAL NUMBER OF OBSERVATIONS = 18734

BEGIN 1963 1 17 0

END 1969 6 30 23

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	175	175	194	189	187	183	166	149	148	146	150	154
1	18	26	30	25	26	26	0	0	13	2	1	1
2	18	27	29	24	25	29	1	4	14	0	1	0
3	137	137	162	151	158	162	147	142	125	126	120	125
4	16	25	28	24	23	28	0	1	12	0	0	0
5	10	23	27	27	26	27	1	2	11	0	1	1
6	191	187	211	200	199	197	179	180	173	171	166	169
7	15	25	29	18	26	28	1	0	14	2	0	2
8	19	25	27	20	28	26	1	2	12	1	0	1
9	187	181	200	192	197	176	168	165	166	161	160	165
10	16	27	29	21	30	26	1	3	11	1	2	4
11	14	27	28	27	29	25	0	1	12	1	2	1
12	190	191	207	200	205	195	180	180	173	173	170	173
13	15	26	30	22	28	28	1	1	15	0	1	0
14	16	26	30	21	27	26	0	0	12	0	1	2
15	158	160	189	175	187	179	157	146	163	144	147	132
16	16	24	30	26	29	25	1	0	12	2	0	0
17	13	25	28	25	28	28	1	1	13	1	0	0
18	175	183	201	200	199	187	175	174	159	162	158	163
19	15	25	32	23	28	28	0	1	12	0	1	0
20	17	26	29	25	30	29	0	3	10	1	3	0
21	148	143	168	158	175	166	147	134	124	135	134	118
22	17	27	28	23	27	29	0	0	12	0	1	0
23	15	27	29	20	24	27	0	0	12	0	0	0
OBS/MO	1611	1768	1995	1836	1941	1880	1327	1289	1428	1229	1219	1211

Table B-1 continued

ROBERTS FIELD (MARSHALL), LIBERIA
 TOTAL NUMBER OF OBSERVATIONS = 44834
 BEGIN 1942 7 6 12
 END 1969 6 30 12

WMO 85060

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	206	187	198	193	192	179	209	216	218	244	227	239
1	96	90	94	90	94	89	118	124	120	123	119	130
2	99	95	94	90	94	90	119	124	120	126	121	125
3	180	159	188	172	188	151	194	191	201	212	209	203
4	94	88	97	90	93	90	119	124	121	126	121	125
5	124	111	120	121	126	122	151	156	121	153	149	154
6	240	205	213	201	203	196	231	233	195	254	238	233
7	155	141	133	121	124	120	148	155	120	154	150	155
8	157	142	134	120	126	121	149	155	121	157	150	156
9	240	210	231	206	215	199	228	236	207	254	231	233
10	157	141	133	120	125	120	150	154	122	156	149	157
11	155	141	134	120	125	121	150	156	120	155	151	156
12	263	243	257	244	250	230	264	265	229	271	263	266
13	155	141	133	121	124	120	150	155	120	155	150	155
14	155	140	133	120	123	120	150	155	120	155	150	155
15	251	218	239	217	224	218	240	243	215	255	237	237
16	155	141	133	121	124	120	150	156	120	155	150	156
17	156	141	133	120	124	121	150	155	120	156	150	155
18	213	213	226	213	212	201	244	253	222	253	241	233
19	99	91	94	90	94	90	119	123	120	124	120	127
20	102	91	94	90	93	92	118	122	122	124	121	130
21	169	140	154	145	155	159	210	202	190	186	176	209
22	100	87	90	90	93	90	120	124	121	126	122	129
23	98	89	94	90	93	90	119	124	119	125	120	131
OBS/MO	3824	3445	3549	3305	3394	3249	4006	4101	3604	4195	4015	4149

Table B-1 continued

SOESTERBERG, NETHERLANDS
 TOTAL NUMBER OF OBSERVATIONS = 103957
 BEGIN 1955 1 1 11
 END 1966 12 31 23

#40 6265

MONTH

HOJR	1	2	3	4	5	6	7	8	9	10	11	12
0	365	330	371	351	358	359	368	369	352	370	356	360
1	349	315	357	339	354	347	353	359	342	359	345	351
2	349	315	356	339	354	348	354	359	347	358	347	351
3	371	329	372	360	371	359	365	371	350	372	358	371
4	371	329	372	360	371	360	364	371	360	372	359	372
5	371	330	371	360	371	360	367	371	360	372	359	372
6	371	330	372	360	371	360	367	371	360	372	359	372
7	371	330	372	360	371	360	369	372	360	372	359	371
8	371	330	372	360	372	360	369	371	360	372	359	372
9	370	330	372	359	372	360	371	372	360	372	351	372
10	371	329	372	360	372	360	370	371	351	371	358	372
11	372	330	372	359	372	360	371	372	355	372	358	372
12	372	330	372	360	372	360	370	372	360	372	358	372
13	371	330	372	360	372	360	371	372	360	372	359	372
14	372	330	372	360	372	360	370	372	360	372	359	371
15	371	330	371	360	372	360	371	372	350	372	359	372
16	371	330	372	359	372	360	369	371	360	372	359	372
17	370	329	372	360	372	360	371	372	360	372	359	372
18	371	330	371	360	372	360	370	372	360	372	359	372
19	371	330	372	360	372	360	369	372	360	372	352	372
20	372	330	372	360	372	360	370	371	357	372	359	372
21	371	330	372	360	372	359	369	372	358	372	359	372
22	350	315	357	338	356	348	354	360	346	358	347	343
23	349	315	357	338	356	348	353	360	346	359	347	343
OBS/MO	8813	7856	8863	8542	8851	8588	8795	8867	8554	8871	8544	8813

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Table B-1 continued

DANZIG, POLAND

TOTAL NUMBER OF OBSERVATIONS = 23820

WHO 12150

BEGIN 1952 1 1 0

END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	360	321	349	339	359	346	356	363	325	357	348	362
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	151	135	152	140	151	140	149	146	147	151	146	149
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	354	324	354	343	365	346	349	357	333	360	350	358
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	150	135	147	140	150	145	147	149	145	149	145	143
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	362	321	366	356	359	347	355	356	330	361	352	366
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	145	136	146	141	152	144	148	149	142	151	143	149
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	345	322	359	351	362	349	352	365	335	357	343	363
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	149	133	151	147	146	143	149	150	147	153	142	150
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	2016	1827	2024	1957	2044	1960	2005	2035	1904	2039	1969	2040

Table B-1 continued

POZNAN (LUWICA), POLAND

WHO 12330

TOTAL NUMBER OF OBSERVATIONS = 23870

BEGIN 1952 1 1 6

END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	350	321	353	346	361	346	355	361	326	357	346	363
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	150	134	153	143	152	139	152	151	148	149	145	149
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	356	323	354	348	369	344	343	355	341	365	349	356
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	147	132	151	142	151	144	147	149	146	146	145	147
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	362	322	363	355	363	340	361	361	337	361	350	360
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	148	136	146	144	147	146	147	152	145	150	148	150
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	353	320	365	346	364	347	355	362	338	358	348	360
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	146	135	147	145	152	146	148	151	146	151	146	147
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	2012	1823	2032	1969	2059	1952	2008	2042	1927	2037	1977	2032

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Table B-1 continued

WARSAW, POLAND

TOTAL NUMBER OF OBSERVATIONS = 23869

WMO 12375

BEGIN 1952 1 1 6
END 1963 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	356	321	350	340	359	351	359	359	328	357	348	365
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	152	138	151	143	153	140	147	153	142	150	145	150
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	357	328	355	346	365	345	344	352	336	359	345	358
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	148	130	148	138	152	141	147	152	145	149	146	146
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	364	326	362	355	360	346	358	361	336	363	352	366
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	149	136	146	139	148	139	144	151	145	148	149	149
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	352	330	360	350	368	352	352	358	339	357	345	365
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	151	135	149	146	149	143	149	153	144	153	141	147
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	2029	1844	2021	1957	2054	1957	2000	2039	1915	2036	1971	2046

Table B-1 continued

NAKHAN PHANOM, THAILAND

WMO 48357

TOTAL NUMBER OF OBSERVATIONS = 30162

BEGIN 1952 7 7 12

END 1967 12 31 16

HOUR	MONTH												HOUR
	1	2	3	4	5	6	7	8	9	10	11	12	
0	258	236	275	264	275	276	299	300	268	297	278	272	0
1	62	56	62	60	62	60	62	62	60	62	60	62	1
2	62	56	62	60	62	60	62	62	60	62	60	62	2
3	260	216	207	214	224	239	259	266	223	265	272	287	3
4	62	56	62	60	62	59	62	62	60	62	60	62	4
5	62	56	62	60	62	60	62	62	60	62	60	62	5
6	296	260	270	261	248	293	304	298	275	293	307	315	6
7	62	56	62	60	62	58	62	62	60	62	60	62	7
8	62	56	62	60	62	60	62	62	60	62	60	62	8
9	267	206	231	236	252	213	252	267	243	262	254	279	9
10	62	56	62	60	62	60	62	62	60	62	60	62	10
11	62	56	62	60	62	60	62	62	60	61	60	62	11
12	277	235	246	267	249	249	279	272	259	286	285	302	12
13	62	56	62	60	62	60	62	62	60	62	60	62	13
14	62	56	62	60	62	60	62	62	60	62	60	62	14
15	63	56	63	60	62	60	62	63	60	62	60	62	15
16	62	56	62	60	62	60	62	62	60	62	60	61	16
17	62	56	61	60	62	60	62	62	59	61	60	61	17
18	105	99	110	90	106	99	108	118	103	111	96	84	18
19	62	56	62	60	62	60	62	62	60	62	60	62	19
20	62	56	62	60	62	60	62	62	60	62	60	62	20
21	62	57	62	60	62	60	62	62	60	62	60	62	21
22	62	56	62	60	62	60	62	62	60	62	60	62	22
23	62	56	62	60	62	60	62	62	60	62	60	62	23
OBS/MO	2580	2261	2455	2412	2470	2446	2617	2638	2450	2628	2572	2653	OBSA

TOTAL NUMBER OF OBSERVATIONS = 137640

BEGIN 1950 1 5 0

DESTR	1950	1	5	0
END	1967	12	31	23

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	439	447	496	501	514	496	521	526	509	520	508	526
1	430	396	438	467	489	449	463	464	449	459	448	464
2	430	395	450	468	489	450	463	464	448	458	448	464
3	491	451	509	506	518	503	525	526	509	520	507	526
4	430	395	450	469	489	449	464	464	449	460	448	464
5	430	394	450	469	489	450	463	464	449	459	448	464
6	491	452	514	507	518	504	524	526	508	521	508	526
7	491	451	514	506	519	503	524	526	509	521	508	525
8	491	452	514	507	519	504	524	526	509	521	508	526
9	489	451	514	507	519	504	526	526	509	521	508	526
10	491	452	514	507	518	504	526	525	509	520	508	526
11	490	450	514	507	518	502	525	525	506	519	507	523
12	491	452	514	507	520	504	526	526	509	521	508	526
13	483	450	514	507	518	501	525	524	506	518	505	522
14	484	447	513	507	517	502	524	523	506	518	505	520
15	430	394	447	470	461	457	464	464	449	462	448	464
16	430	395	444	468	461	433	464	464	448	461	447	464
17	430	395	439	446	461	433	464	464	449	460	448	464
18	491	452	497	478	490	488	526	526	509	521	508	526
19	430	395	438	441	461	433	464	463	449	460	448	464
20	430	395	438	440	461	433	464	464	449	460	448	464
21	430	395	438	439	461	433	464	464	449	460	448	464
22	430	395	438	439	491	448	464	464	449	460	448	464
23	430	395	438	439	490	448	462	463	448	460	448	465

OBS/MO 11032 10146 11435 11502 11891 11331 11859 11871 11483 11760 11463 11867

Table B-1 continued

DIYARBAKIR, TURKEY

WMO 17280

TOTAL NUMBER OF OBSERVATIONS = 35296

BEGIN 1950 1 1 0

END 1954 12 31 23

HOUR	MONTH												HOU
	1	2	3	4	5	6	7	8	9	10	11	12	
0	153	140	153	118	155	150	152	155	148	155	149	147	0
1	104	86	110	111	124	95	93	93	90	93	91	87	1
2	104	86	110	111	124	96	92	93	89	94	89	87	2
3	153	139	154	118	155	149	155	155	148	155	149	147	3
4	105	109	122	119	123	96	95	94	92	94	96	98	4
5	113	110	123	119	124	103	107	93	91	93	90	92	5
6	152	140	154	118	151	150	155	155	148	155	149	148	6
7	153	140	155	119	154	150	126	129	147	153	149	149	7
8	153	141	155	119	154	149	125	130	148	153	149	149	8
9	151	141	155	119	154	150	124	131	148	153	148	149	9
10	153	141	155	119	154	149	125	131	147	153	149	149	10
11	153	141	155	119	154	149	127	132	146	152	149	148	11
12	152	141	155	119	150	149	150	155	148	155	148	148	12
13	153	141	154	119	154	147	127	132	146	140	147	148	13
14	152	139	153	119	154	145	112	100	141	133	145	146	14
15	119	111	122	118	125	115	109	94	91	95	90	89	15
16	108	111	124	119	124	96	93	93	92	94	90	87	16
17	106	111	122	119	124	98	94	93	91	93	90	87	17
18	153	140	155	119	155	148	155	155	148	155	149	149	18
19	103	84	109	112	124	96	94	93	90	93	90	87	19
20	102	84	110	112	124	95	93	93	90	93	90	87	20
21	103	84	109	112	124	95	93	93	90	93	90	86	21
22	103	83	109	112	124	95	93	92	90	93	90	87	22
23	102	84	108	111	122	95	93	93	90	93	90	87	23
OBS/MO	3103	2827	3231	2800	3330	2960	2782	2777	2849	2933	2866	2838	OBS/

Table B-1 continued

MALATYA, TURKEY

TOTAL NUMBER OF OBSERVATIONS = 38398

WMO 17200

BEGIN 1950 1 6 6

END 1968 12 31 15

MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
0	265	239	267	263	271	260	274	277	262	274	253	269
1	87	84	93	90	67	34	31	31	30	31	31	31
2	87	84	93	90	67	34	31	31	31	34	30	31
3	246	221	249	250	266	253	256	255	262	270	249	260
4	87	84	94	90	94	35	33	33	40	42	38	37
5	87	84	93	90	94	66	53	35	45	40	34	39
6	262	243	265	264	267	263	265	271	264	275	256	269
7	112	112	124	120	124	120	124	123	119	123	118	118
8	112	112	124	120	124	119	124	122	120	123	117	118
9	248	228	268	254	264	252	257	268	259	269	248	262
10	112	112	124	120	124	119	124	122	120	124	117	118
11	112	112	124	120	124	119	124	122	120	124	117	118
12	256	244	271	261	266	254	270	267	259	274	255	267
13	112	112	121	118	120	116	124	120	117	123	115	114
14	88	84	93	90	94	83	95	97	96	93	61	62
15	224	205	222	223	236	191	200	205	202	203	184	207
16	88	84	93	90	66	33	31	31	32	32	30	31
17	88	84	93	90	65	33	31	31	30	31	30	31
18	258	238	273	260	276	258	270	267	267	278	255	264
19	88	84	93	90	65	33	31	31	30	31	30	31
20	88	84	93	90	65	33	31	31	30	31	30	31
21	223	197	218	218	227	188	197	190	199	186	149	171
22	88	84	93	90	65	33	31	31	30	31	30	31
23	88	84	93	90	65	33	31	31	30	31	30	31
OBS/MO	3506	3299	3674	3581	3496	2967	3038	3022	2994	3073	2807	2941

Table B-1 continued

ASCENSION ISLAND, UNITED KINGDOM

WMU 61900

TOTAL NUMBER OF OBSERVATIONS = 122160

BEGIN 1942 9 1 1

END 1968 12 1 0

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	462	445	468	432	433	418	433	433	489	522	508	471
1	403	355	372	343	341	329	341	341	401	434	417	410
2	403	355	372	343	341	330	341	341	402	433	416	410
3	403	360	376	343	341	330	341	341	402	434	417	409
4	403	353	372	341	340	330	341	367	415	434	417	407
5	403	354	371	361	372	360	372	372	416	431	417	407
6	495	449	471	478	491	449	465	465	507	527	507	495
7	449	422	442	430	446	425	437	440	484	500	484	453
8	447	421	439	437	448	424	437	440	482	500	484	452
9	478	428	451	453	467	424	437	440	482	499	485	476
10	447	420	439	432	444	424	437	440	483	499	484	453
11	448	420	439	434	446	424	437	440	483	500	484	453
12	495	452	477	480	492	450	465	465	509	524	510	495
13	449	414	441	426	440	423	437	440	483	500	485	453
14	448	413	442	424	441	422	437	440	483	500	484	454
15	478	427	451	453	460	424	437	440	483	500	482	476
16	449	414	438	423	440	423	436	438	482	498	485	453
17	448	414	439	422	439	423	435	440	483	500	485	454
18	465	450	476	464	462	420	434	461	507	526	509	465
19	403	353	372	343	341	326	341	368	415	434	418	404
20	401	353	372	343	341	329	341	368	418	434	417	402
21	402	360	373	342	341	330	340	368	419	434	417	404
22	403	353	372	343	340	330	341	368	417	432	417	404
23	402	357	371	343	340	330	340	340	401	434	414	404
* OBS/MO	10484	9542	10036	9633	9787	9297	9603	9796	10946	11429	11043	10564

Table B-1 continued

ASCENSION ISLAND, UNITED KINGDOM

TOTAL NUMBER OF OBSERVATIONS = 8168

WMO 61902

BEGIN 1965 3 7 9

END 1969 6 30 18

MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
0	106	97	129	135	147	146	115	81	113	106	101	103
1	0	0	0	0	0	0	2	0	0	0	0	0
2	1	0	0	1	1	0	0	0	0	0	1	0
3	20	0	21	29	27	28	22	25	32	31	19	13
4	0	1	0	0	1	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	1	1	1	0	1
6	112	97	130	146	140	135	109	80	106	111	100	109
7	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0	1	1	0	1	1	2	0	0	0	1
9	90	67	102	103	112	107	82	61	85	84	77	74
10	0	2	1	2	2	0	1	1	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	113	96	139	143	142	139	112	82	115	116	99	111
13	1	0	0	0	1	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	87	67	97	108	112	108	83	69	86	88	73	72
16	1	0	1	1	0	0	0	0	0	1	0	1
17	0	1	0	0	0	0	0	0	0	0	0	0
18	111	96	137	141	141	136	106	85	105	108	99	100
19	1	0	1	0	0	3	0	0	1	0	1	0
20	0	0	2	0	1	0	0	0	1	0	0	0
21	21	0	19	24	26	25	24	20	23	20	14	14
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	2	0	0	0	1	0	0	0	0
OBS/MO	665	524	780	836	853	828	657	508	668	666	584	599

Table B-1 continued

ARCHANGEL, USSR

TOTAL NUMBER OF OBSERVATIONS = 11130

WMO 22550

BEGIN 1965 1 1 0

END 1968 12 31 18

MONTH

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
0	118	112	122	120	121	118	124	123	120	124	118	123
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	112	100	109	114	107	114	120	119	110	120	114	120
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	122	109	120	117	118	119	123	124	118	124	120	122
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	109	93	108	104	118	112	118	116	111	117	113	118
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	122	111	119	119	124	120	123	124	119	123	120	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	114	100	105	109	117	114	112	120	114	123	110	121
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	122	110	120	118	123	118	124	123	119	121	116	123
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	108	99	98	102	110	111	116	110	110	117	113	117
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	927	834	901	903	938	926	960	959	921	969	924	968

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Table B-1 continued

DUDINKA, USSR
 TOTAL NUMBER OF OBSERVATIONS = 8614
 BEGIN 1965 1 1 0
 END 1968 12 31 21

WMO 23074

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	124	107	119	120	122	103	118	122	115	121	117	115
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	68	62	71	67	52	52	56	48	56	85	76	65
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	124	109	121	116	120	104	121	120	112	113	120	114
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	65	50	57	62	55	52	60	71	61	74	65	56
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	109	123	120	124	110	123	123	111	124	117	116
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	62	58	67	71	78	66	78	79	66	82	62	57
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	121	109	119	117	120	100	121	124	114	121	114	116
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	70	46	57	59	58	47	58	45	50	66	66	59
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	757	650	734	732	729	634	735	732	685	791	737	698

Table B-1 continued

IRKUTSK, USSR

WMO 30710

TOTAL NUMBER OF OBSERVATIONS = 10501

BEGIN 1965 1 1 0

END 1968 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	124	113	124	120	123	118	124	124	120	124	120	124
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	101	92	94	92	92	91	108	108	106	108	112	98
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	123	112	123	117	124	118	121	123	119	123	120	123
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	118	94	97	90	97	107	115	115	115	122	112	116
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	113	122	120	124	118	124	123	120	124	120	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	102	87	93	88	83	84	94	89	82	91	94	99
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	122	110	123	117	124	118	122	121	120	123	119	124
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	110	99	101	90	78	73	74	89	92	97	104	106
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	923	820	877	834	845	827	882	892	874	912	901	914

Table B-1 continued

ISIT, USSR
 TOTAL NUMBER OF OBSERVATIONS = 10617
 BEGIN 1965 1 1 0
 END 1968 12 31 15

WMO 24951

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	122	111	120	118	122	118	123	121	120	124	120	122
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	104	97	109	95	91	94	97	97	89	107	106	118
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	124	109	122	119	122	118	121	121	119	124	120	122
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	108	90	89	80	87	97	99	103	91	112	108	117
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	122	112	124	120	123	118	122	122	119	123	118	123
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	112	105	103	105	110	108	99	113	104	106	100	108
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	123	112	122	117	123	116	123	124	117	123	119	119
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	116	102	109	85	84	84	89	89	95	113	112	115
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	931	838	898	839	862	853	873	890	854	932	903	944

Table B-1 continued

KIEV, USSR

WMO 33345

TOTAL NUMBER OF OBSERVATIONS = 11403

BEGIN 1965 1 1 0

END 1968 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	123	112	122	117	123	118	123	123	119	123	119	122
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	122	110	115	116	113	116	120	120	117	122	120	122
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	124	111	122	119	121	119	122	124	120	124	120	123
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	117	105	117	114	120	113	119	123	113	118	117	123
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	110	124	119	124	120	123	123	119	123	118	122
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	118	107	114	110	117	109	118	119	116	124	117	121
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	122	112	121	117	124	120	123	124	120	124	120	124
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	119	107	120	110	114	118	123	119	117	122	120	120
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MD	968	874	955	922	956	933	971	975	941	980	951	977

Table B-1 continued

KUYBYSHEV/BEZENCUK, USSR

TOTAL NUMBER OF OBSERVATIONS = 10214

WMO 28900

BEGIN 1965 1 1 0

END 1968 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	121	111	121	120	123	120	123	123	120	123	120	124
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	101	83	81	88	94	79	89	96	82	96	88	90
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	124	110	121	119	122	119	123	123	119	123	119	124
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	79	68	79	98	103	83	90	99	90	94	89	73
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	111	124	119	124	120	122	124	120	124	119	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	104	91	97	97	106	87	91	103	96	108	110	94
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	119	111	122	119	124	118	124	124	118	124	120	124
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	96	75	89	89	96	99	108	95	92	106	92	85
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	867	760	834	849	892	825	870	887	837	898	857	838

Table B-1 continued

MOSCOW, USSR
 TOTAL NUMBER OF OBSERVATIONS = 11248
 BEGIN 1965 1 1 0
 END 1968 12 31 18

WMO 27612

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	120	112	122	118	122	120	123	124	120	122	117	124
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	117	104	110	109	115	115	122	119	113	119	116	121
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	123	111	121	118	119	118	124	124	117	123	118	124
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	118	104	112	109	117	112	123	114	110	118	112	116
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	111	121	119	124	119	124	123	119	123	117	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	112	103	113	105	115	115	112	115	112	120	115	121
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	121	109	119	116	121	120	124	123	119	124	118	122
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	116	106	108	108	115	115	120	122	112	119	114	123
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	950	860	926	902	948	934	972	964	922	968	927	975

Table B-1 continued

NOVOSIBIRSK, USSR

TOTAL NUMBER OF OBSERVATIONS = 11045

WMO 29634

BEGIN 1965 1 1 0

END 1968 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	124	113	122	119	123	120	122	124	118	123	120	123
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	89	79	105	86	97	94	103	109	113	114	113	114
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	122	112	123	119	123	117	121	124	120	124	120	124
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	120	103	110	98	113	109	116	119	120	124	116	121
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	124	113	122	118	124	119	124	124	119	124	120	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	107	103	115	111	107	94	103	115	114	121	112	124
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	123	110	122	120	124	119	121	124	117	123	118	124
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	111	100	115	111	114	108	106	112	110	118	112	117
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	920	833	934	882	925	880	916	951	931	971	931	971

Table B-1 continued

OHOTSK, USSR

WMO 31088

TOTAL NUMBER OF OBSERVATIONS = 11255

BEGIN 1965 1 1 0

END 1968 12 31 21

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	122	112	119	117	118	118	121	122	116	121	117	123
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	122	111	117	119	121	118	121	121	119	121	115	122
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	122	108	116	112	120	115	112	119	120	123	118	123
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	120	109	118	118	119	116	120	121	119	118	116	120
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	109	119	117	124	117	123	123	119	123	117	122
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	108	100	114	113	114	108	117	116	115	118	114	113
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	122	105	108	112	114	108	118	116	119	124	115	120
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	119	110	120	119	122	111	121	119	117	122	113	120
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	958	864	931	927	952	911	953	957	944	970	925	963

Table B-1 continued

POSET, USSR
 TOTAL NUMBER OF OBSERVATIONS = 10360
 BEGIN 1965 1 1 0
 END 1968 12 31 21

WMO 31969

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	114	98	103	109	104	104	115	108	103	116	111	108
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	107	103	116	109	115	110	116	116	109	115	105	111
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	107	97	111	108	103	105	109	101	106	114	101	111
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	108	106	115	105	111	101	114	112	110	114	101	110
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	108	100	111	109	117	107	117	118	115	111	103	112
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	107	95	110	111	116	108	114	109	105	112	101	108
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	107	97	109	102	112	95	102	96	107	109	98	103
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	106	102	111	104	114	111	111	108	104	110	98	110
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	864	798	891	857	892	841	898	868	859	901	818	873

Table B-1 continued

WMO 28440

SVERDLOVSK, USSR
 TOTAL NUMBER OF OBSERVATIONS = 10118
 BEGIN 1965 1 1 0
 END 1968 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	123	111	122	119	124	119	123	123	119	122	118	123
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	85	66	78	73	84	96	94	103	98	107	106	102
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	118	103	121	118	122	119	121	122	120	123	120	124
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	106	98	111	102	105	105	98	105	111	111	104	111
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	123	111	124	120	124	120	123	124	118	124	120	124
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	94	89	78	74	81	70	70	93	83	73	75	87
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	118	110	122	118	124	119	123	124	119	123	120	124
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	93	66	77	78	86	90	88	93	76	85	88	91
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	860	754	833	802	850	838	840	887	844	873	851	886

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Table B-1 continued

TASHKENT, USSR

TOTAL NUMBER OF OBSERVATIONS = 6388

WMO 38457

BEGIN 1965 1 1 0

END 1968 12 31 18

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	121	107	122	117	121	117	123	120	117	122	118	119
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	17	18	8	7	11	18	23	20	8	19	30	18
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	95	88	99	101	111	113	115	120	115	114	115	110
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	25	23	23	12	17	15	24	17	12	26	9	18
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	120	107	118	120	124	120	124	124	120	124	119	121
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	15	18	8	17	17	12	16	16	25	33	17	21
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	106	89	104	111	116	115	119	119	114	114	115	122
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	20	19	18	15	18	21	25	25	21	22	25	21
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	519	469	500	500	535	531	569	561	532	574	548	550

Table B-1 continued

ALTUS OK AFB, USA

TOTAL NUMBER OF OBSERVATIONS = 87648

BEGIN 1961 1 1 6

END 1971 1 1 5

WMO 72352

AUS

TOT

BEG

END

HOUR	MONTH												HOU
	1	2	3	4	5	6	7	8	9	10	11	12	
0	310	282	310	300	310	300	310	310	300	310	300	310	0
1	310	282	310	300	310	300	310	310	300	310	300	310	1
2	310	282	310	300	310	300	310	310	300	310	300	310	2
3	310	282	310	300	310	300	310	310	300	310	300	310	3
4	310	282	310	300	310	300	310	310	300	310	300	310	4
5	310	282	310	300	310	300	310	310	300	310	300	310	5
6	310	282	310	300	310	300	310	310	300	310	300	310	6
7	310	282	310	300	310	300	310	310	300	310	300	310	7
8	310	282	310	300	310	300	310	310	300	310	300	310	8
9	310	282	310	300	310	300	310	310	300	310	300	310	9
10	310	282	310	300	310	300	310	310	300	310	300	310	10
11	310	282	310	300	310	300	310	310	300	310	300	310	11
12	310	282	310	300	310	300	310	310	300	310	300	310	12
13	310	282	310	300	310	300	310	310	300	310	300	310	13
14	310	282	310	300	310	300	310	310	300	310	300	310	14
15	310	282	310	300	310	300	310	310	300	310	300	310	15
16	310	282	310	300	310	300	310	310	300	310	300	310	16
17	310	282	310	300	310	300	310	310	300	310	300	310	17
18	310	282	310	300	310	300	310	310	300	310	300	310	18
19	310	282	310	300	310	300	310	310	300	310	300	310	19
20	310	282	310	300	310	300	310	310	300	310	300	310	20
21	310	282	310	300	310	300	310	310	300	310	300	310	21
22	310	282	310	300	310	300	310	310	300	310	300	310	22
23	310	282	310	300	310	300	310	310	300	310	300	310	23
OBS/MO	7440	6768	7440	7200	7440	7200	7440	7440	7200	7440	7200	7440	08

Table B-1 continued

AUSTIN TX/BERGST AFB

TOTAL NUMBER OF OBSERVATIONS = 87647

WMO 73257

BEGIN 1961 1 1 6

END 1971 1 1 5

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	299	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7440	6768	7440	7200	7440	7200	7440	7440	7200	7440	7199	7440

Table B-1 continued

BISMARCK N.DAK, USA

WMO 72764

TOTAL NUMBER OF OBSERVATIONS = 166566

BEGIN 1948 1 1 6

END 1971 1 1 3

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	712	650	713	690	713	690	713	713	690	713	690	713
1	527	481	527	510	527	510	527	527	510	527	510	527
2	527	481	527	510	527	510	527	527	510	527	510	527
3	713	650	713	690	713	690	713	713	690	713	690	713
4	527	481	527	510	527	510	527	527	510	527	510	527
5	527	481	527	510	527	510	527	527	510	527	510	527
6	713	650	713	690	713	690	713	713	690	713	690	713
7	527	481	527	510	527	510	527	527	510	527	510	527
8	527	481	527	510	527	510	527	527	510	527	510	527
9	713	650	713	690	713	690	713	713	690	712	690	713
10	527	481	527	510	527	510	527	527	510	527	510	527
11	527	481	527	510	527	510	527	527	510	527	510	527
12	713	650	713	690	713	690	713	713	690	713	690	713
13	527	481	527	510	527	510	527	527	510	527	510	527
14	527	481	527	510	527	510	527	527	510	527	510	527
15	713	650	713	689	713	690	713	713	690	713	690	713
16	527	481	527	510	527	510	527	527	510	527	510	527
17	527	481	527	510	527	510	527	527	510	527	510	527
18	713	650	713	690	713	690	713	713	690	713	690	713
19	527	481	527	510	527	510	527	527	510	527	510	527
20	527	482	527	510	527	510	527	527	510	527	510	527
21	713	650	713	690	713	690	713	713	690	713	690	713
22	527	481	527	510	527	510	527	527	510	527	510	527
23	527	481	527	510	527	510	527	527	510	527	510	527

OBS/MO 14135 12897 14136 13679 14136 13680 14136 14136 13680 14135 13680 14136

Table B-1 continued

BURNS, OREG

WMO 72683

TOTAL NUMBER OF OBSERVATIONS = 46503

BEGIN 1948 1 1 9

END 1964 4 1 6

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	494	452	526	481	495	480	496	496	480	496	451	465
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	495	452	526	481	496	480	496	496	480	496	451	465
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	495	452	526	481	496	480	496	496	480	496	451	465
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	496	452	527	480	496	480	496	495	480	496	450	465
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	496	452	527	479	496	480	496	496	480	496	450	465
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	495	452	526	480	496	480	496	496	480	495	450	465
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	496	452	527	480	496	480	496	496	480	495	450	465
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	496	452	527	480	496	480	496	496	480	495	450	465
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MJ	3963	3616	4212	3842	3967	3840	3968	3967	3840	3965	3603	3720

Table B-1 continued

CHEYENNE WY, USA

WMO 72564

TOTAL NUMBER OF OBSERVATIONS = 166378

BEGIN 1948 1 1 7

END 1971 1 1 6

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	712	650	713	689	713	690	713	713	688	712	690	713
1	527	479	527	510	527	509	527	527	509	526	509	526
2	527	481	527	510	527	508	526	528	507	527	510	525
3	712	649	713	690	713	688	713	712	687	712	690	712
4	527	481	527	509	527	509	527	524	509	526	510	526
5	527	480	527	509	526	509	527	527	510	526	509	527
6	712	650	713	689	713	690	713	713	690	712	689	713
7	525	480	527	510	527	508	526	527	509	527	509	527
8	527	480	527	509	526	510	526	527	510	527	510	526
9	711	649	713	688	713	690	713	713	690	713	690	712
10	527	479	527	509	527	510	527	527	510	527	510	525
11	527	479	527	508	526	509	527	527	509	526	510	525
12	712	649	713	689	711	689	713	713	690	713	690	712
13	527	480	526	509	526	510	527	527	510	527	510	527
14	527	479	526	510	527	511	527	527	509	527	510	526
15	712	648	712	689	713	689	711	712	690	713	690	711
16	526	480	525	509	527	509	527	525	509	527	510	526
17	525	479	526	509	527	509	526	523	509	527	510	527
18	712	648	712	689	713	689	712	713	688	713	689	713
19	525	480	526	509	527	509	527	527	508	527	509	526
20	523	480	526	509	527	510	526	527	509	527	508	524
21	711	649	712	690	713	689	712	713	688	713	689	712
22	526	480	526	510	527	508	527	527	509	527	510	527
23	526	480	525	510	527	509	527	527	505	527	510	527
OBS/MO	14113	12869	14123	13662	14130	13661	14127	14126	13652	14129	13671	14115

Table B-1 continued

COLUMBIA MO, USA

WMO 72445

TOTAL NUMBER OF OBSERVATIONS = 186631

BEGIN 1945 1 1 6

END 1968 12 1 3

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	742	678	744	720	744	720	743	743	719	744	720	714
1	620	565	620	600	619	600	619	620	599	620	600	620
2	620	565	620	600	620	600	619	620	599	620	600	620
3	743	677	744	720	744	720	743	744	719	744	719	714
4	620	565	619	600	620	600	619	619	598	620	600	620
5	619	565	619	600	620	600	619	620	598	620	600	620
6	743	678	742	720	744	719	743	744	719	743	720	713
7	620	565	620	600	619	600	619	620	599	619	600	618
8	620	565	619	600	619	600	619	620	599	620	600	620
9	744	678	743	720	744	720	743	744	719	743	720	713
10	620	565	618	600	620	600	619	620	599	620	599	620
11	620	565	618	600	620	599	619	620	598	620	600	620
12	744	678	744	719	743	719	743	744	719	743	720	713
13	620	565	619	600	619	600	619	620	599	620	600	619
14	620	565	620	600	620	600	619	620	599	620	600	619
15	744	678	744	720	743	719	743	743	719	744	718	713
16	620	565	620	600	620	600	619	620	599	620	599	620
17	620	565	620	600	620	600	619	618	599	620	599	620
18	744	678	744	719	744	720	743	742	719	744	719	713
19	620	564	620	598	620	600	618	619	599	620	599	618
20	620	564	620	599	620	600	617	619	599	619	599	620
21	743	678	743	719	744	720	741	742	719	743	720	713
22	620	565	619	600	620	600	618	619	599	620	599	620
23	620	565	619	600	620	600	619	620	598	620	600	620

OBS/MO 15866 14461 15858 15354 15866 15356 15842 15860 15332 15866 15350 15620

Table B-1 continued

DAYTON OH/W-P USAFB

WMO 74570

TOTAL NUMBER OF OBSERVATIONS = 87647

BEGIN 1961 1 1 5

END 1971 1 1 4

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	299	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7440	6768	7440	7200	7440	7199	7440	7440	7200	7440	7200	7440

Table B-1 continued

PALMOUTH RA/OTIS APB

TOTAL NUMBER OF OBSERVATIONS = 87546

HNO 73566

BEGIN 1961 1 1 5

END 1971 1 1 4

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	295	310
1	310	282	310	300	310	300	310	310	300	310	296	310
2	310	282	310	300	310	300	310	310	300	310	296	310
3	310	282	310	300	310	300	310	310	300	310	296	310
4	310	282	310	300	310	300	310	310	300	310	296	310
5	310	282	310	300	310	300	310	310	300	310	296	310
6	310	282	310	300	310	300	310	310	300	310	296	310
7	310	282	310	300	310	300	310	310	300	310	296	310
8	310	282	310	300	310	300	310	310	300	310	296	310
9	310	282	310	300	310	300	310	310	300	310	296	310
10	310	282	310	300	310	300	310	310	300	310	296	310
11	310	282	310	300	310	300	310	310	299	310	296	310
12	310	282	310	300	310	300	310	310	300	310	296	310
13	310	282	310	300	310	300	310	310	300	310	296	310
14	310	282	310	300	310	300	310	310	300	310	296	310
15	310	282	310	300	310	300	310	310	300	310	296	310
16	310	282	310	300	310	300	310	310	300	310	296	310
17	310	282	310	300	310	300	310	310	300	310	296	310
18	310	282	310	300	310	300	310	310	300	310	296	310
19	310	282	310	300	310	300	310	310	300	310	296	310
20	310	282	310	300	310	300	310	309	300	310	296	310
21	310	282	310	300	310	300	310	310	300	310	295	310
22	310	282	310	300	310	300	310	310	300	310	295	310
23	310	282	310	300	310	300	310	310	300	310	295	310
SS/HO	7440	6768	7440	7200	7440	7200	7440	7439	7199	7440	7100	7440

Table B-1 continued

FORT WORTH TX/ CRSWLL

WMO

TOTAL NUMBER OF OBSERVATIONS = 87648

BEGIN 1961 1 1 6

END 1971 1 1 5

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7440	6768	7440	7200	7440	7200	7440	7440	7200	7440	7200	7440

Table B-1 continued

GREAT FALLS MONT, USA

TOTAL NUMBER OF OBSERVATIONS = 166525

WMO 72775

BEGIN 1943 1 1 7

END 1971 1 1 6

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	713	650	713	690	713	690	713	713	690	708	690	712
1	527	481	527	509	527	510	527	527	510	527	510	527
2	527	481	527	510	527	509	526	526	510	527	510	527
3	713	650	713	690	713	690	713	713	690	711	690	713
4	527	481	527	510	527	510	527	527	510	527	510	527
5	527	481	527	510	527	510	527	527	510	527	510	527
6	713	650	713	690	713	689	713	713	690	712	690	713
7	527	481	527	510	527	510	527	527	510	527	510	527
8	527	481	527	510	526	510	527	527	510	527	510	527
9	713	650	713	690	713	690	713	713	690	712	690	713
10	527	481	527	510	527	509	526	526	510	527	510	527
11	527	481	527	510	527	509	527	527	510	527	510	527
12	713	650	713	690	713	689	713	713	689	711	690	713
13	527	481	527	510	526	510	527	527	510	527	510	527
14	527	481	527	510	526	511	527	527	510	527	510	527
15	713	650	713	690	712	690	713	713	690	713	690	713
16	527	480	527	510	526	510	527	527	510	527	510	527
17	527	481	527	510	526	510	527	527	510	527	510	527
18	713	650	713	690	712	690	713	713	690	708	690	713
19	527	481	527	510	527	511	527	527	510	527	510	527
20	527	481	527	510	527	508	527	527	510	527	509	526
21	713	650	713	690	713	689	713	713	689	712	690	713
22	527	481	527	510	527	510	527	527	510	527	509	527
23	527	481	527	510	527	510	527	527	510	527	510	526
OBS/MO	14136	12895	14136	13679	14129	13674	14134	14134	13678	14119	13678	14133

Table B-1 continued

GOLDSBORO NC/S-J AFB

WHO 73349

TOTAL NUMBER OF OBSERVATIONS = 87647

BEGIN 1961 1 1 5

END 1971 1 1 4

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	309	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/HO	7440	6768	7440	7200	7440	7200	7439	7440	7200	7440	7200	7440

Table B-1 continued

CHINN HI/K I S AFB

WFO 73734

TOTAL NUMBER OF OBSERVATIONS = 87614

BEGIN 1961 1 1 6

END 1971 1 1 5

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	309	300	310	300	310	310	300	310	300	310
1	310	282	309	300	310	300	310	310	300	310	300	308
2	310	282	309	300	310	300	310	310	300	310	300	310
3	310	282	309	300	310	300	310	310	300	310	300	309
4	310	282	309	300	310	300	310	310	300	310	300	310
5	310	282	309	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	309	300	310	300	310	310	300	310	300	310
8	310	282	309	300	310	300	310	310	300	310	300	310
9	310	282	309	300	310	300	310	310	300	310	300	310
10	310	282	309	300	310	300	310	310	300	310	300	310
11	310	282	309	300	310	300	310	310	300	310	300	310
12	309	282	309	300	310	300	310	310	300	310	300	310
13	309	282	309	300	310	300	310	310	300	310	300	310
14	309	282	309	300	310	300	310	310	300	310	300	310
15	309	282	309	300	310	300	310	310	300	310	300	310
16	309	282	309	300	310	300	310	310	300	310	300	309
17	309	282	309	300	310	300	310	310	300	310	300	310
18	310	282	309	300	310	300	310	310	300	310	300	310
19	310	282	309	300	310	300	310	310	300	310	300	310
20	310	282	309	300	310	300	310	310	300	310	300	310
21	310	282	309	300	310	300	310	310	299	310	300	310
22	310	282	309	300	310	300	310	310	300	310	300	310
23	310	282	309	300	310	300	310	310	300	310	300	310
OBS/HO	7434	6768	7417	7200	7440	7200	7440	7440	7199	7440	7200	7436

Table B-1 continued

MEKINOCK ND/G.F. AFB

TOTAL NUMBER OF OBSERVATIONS = 87640

WMO 73731

BEGIN 1961 1 1 6

END 1971 1 1 5

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	309	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	299	310	310	300	310	300	310
13	310	282	310	300	310	299	310	310	300	310	300	310
14	310	282	310	300	310	299	310	310	300	310	300	310
15	310	282	310	300	310	299	310	310	300	310	300	310
16	310	282	310	300	310	299	310	310	300	310	300	310
17	310	282	310	300	310	299	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	299	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7439	6768	7440	7200	7440	7194	7440	7440	7200	7440	7199	7440

Table B-1 continued

PLATTSBURGH NY AFB

TOTAL NUMBER OF OBSERVATIONS = 87640

WMO 73467

BEGIN 1961 1 1 5
END 1971 1 1 4

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	299	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	309	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	309	300	310	300	310
11	310	282	310	300	310	300	310	309	300	310	300	310
12	310	282	310	300	310	300	310	309	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	309	282	310	300	310	300	310	310	300	310	300	310
20	309	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	309	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7436	6768	7440	7200	7440	7199	7440	7437	7200	7440	7200	7440

Table B-1 continued

RAPID CITY, SD/ELLSWORTH AFB
 TOTAL NUMBER OF OBSERVATIONS = 87645
 BEGIN 1961 1 1 6
 END 1971 1 1 5

WMO 73627

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	309	282	310	300	310	300	310	310	300	310	300	309
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	299	310	300	310
OBS/MO	7439	6768	7440	7200	7440	7200	7440	7440	7199	7440	7200	7439

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Table B-1 continued

RIVERSIDE CA/MARCH AFB

WMO 72286

TOTAL NUMBER OF OBSERVATIONS = 87641

BEGIN 1961 1 1 8

END 1971 1 1 7

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	309	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	281	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	309	300	309	300	310
8	310	282	309	300	309	300	310	310	300	309	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/MO	7439	6767	7439	7200	7439	7200	7440	7439	7200	7438	7200	7440

Table B-1 continued

SACRAMENTO CA/MATHER AFB

WMO 73439

TOTAL NUMBER OF OBSERVATIONS = 87627

BEGIN 1961 1 1 8

END 1971 1 1 7

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	309	310	300	310	300	310
5	310	282	310	300	310	300	309	310	300	310	300	310
6	310	282	310	300	310	300	309	310	300	310	300	310
7	310	282	310	300	310	300	309	310	300	310	300	310
8	310	282	309	300	310	300	309	310	300	310	300	310
9	310	282	310	300	310	300	309	310	300	310	300	310
10	310	282	310	300	310	300	309	310	300	310	300	310
11	310	282	310	300	310	300	309	310	300	310	300	310
12	310	282	310	300	310	300	309	310	300	310	300	310
13	310	282	310	300	310	300	309	310	300	310	300	310
14	310	282	310	300	310	300	309	310	300	310	300	310
15	310	282	310	300	310	300	309	310	300	310	300	310
16	310	282	310	300	310	300	309	310	300	310	300	310
17	310	282	310	300	310	300	309	310	300	310	300	310
18	310	282	310	300	310	300	309	310	300	310	300	310
19	310	282	310	300	310	300	309	310	300	310	300	310
20	310	282	310	300	310	300	309	310	300	310	300	310
21	310	282	310	300	310	300	309	310	300	310	300	310
22	310	282	310	300	310	300	309	310	300	310	300	310
23	310	282	310	300	310	300	309	310	300	310	300	310
OBS/MO	7440	6768	7439	7200	7440	7200	7420	7440	7200	7440	7200	7440

Table B-1 continued

SPOKANE WA/FAIRC APB

WMO 73728

TOTAL NUMBER OF OBSERVATIONS = 87646

BEGIN 1961 1 1 3

END 1971 1 1 7

MONTH

HOURL	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	309	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	310	300	310	300	310
7	310	282	310	300	310	300	310	310	300	310	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	309	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/HO	7440	6768	7439	7200	7440	7200	7439	7440	7200	7440	7200	7440

Table B-1 continued

TAMPA FL/MACDILL AFB
 TOTAL NUMBER OF OBSERVATIONS = 87646
 BEGIN 1961 1 1 5
 END 1971 1 1 4

WMO 73269

TJN
 TOT
 BEG
 END

HOUR	MONTH												HOU
	1	2	3	4	5	6	7	8	9	10	11	12	
0	310	282	310	300	310	300	310	310	300	310	300	310	
1	310	282	310	300	310	300	310	310	300	310	300	310	
2	310	282	310	300	310	300	310	310	300	310	300	310	
3	310	282	310	300	310	300	310	310	300	310	300	310	
4	310	282	310	300	310	300	310	310	300	310	300	310	
5	310	282	310	300	310	300	310	310	299	310	300	310	
6	310	282	310	300	310	300	310	310	300	310	300	310	
7	310	282	310	300	310	300	310	310	300	310	300	310	
8	310	282	310	300	310	300	310	310	300	310	300	310	
9	310	282	310	300	310	300	310	310	300	310	300	310	
10	310	282	310	300	310	300	310	310	300	310	300	310	
11	310	282	310	300	310	300	310	310	300	310	300	310	
12	310	282	310	300	310	300	310	310	300	310	300	310	
13	310	282	310	300	310	300	310	310	300	310	300	310	
14	310	282	310	300	310	300	310	310	300	310	300	310	
15	310	282	310	300	310	300	310	310	300	310	300	310	
16	310	282	310	300	310	300	310	310	300	310	300	310	
17	310	282	310	300	310	300	310	310	300	310	300	310	
18	310	282	310	300	310	300	310	310	300	310	300	310	
19	310	282	310	300	310	300	310	310	300	310	300	310	
20	310	282	310	300	310	300	310	310	300	310	300	310	
21	310	282	310	300	310	300	310	310	300	310	300	310	
22	310	282	310	300	310	300	310	310	300	310	300	310	
23	310	282	310	300	310	300	310	310	300	309	300	310	
OBS/MO	7440	6768	7440	7200	7440	7200	7440	7440	7199	7439	7200	7440	

Table B-1 continued

TJNOPAH, NEV
 TOTAL NUMBER OF OBSERVATIONS = 111581
 BEGIN 1951 4 2 16
 END 1964 1 1 7

WMO 72485

MONTH

HOURL	1	2	3	4	5	6	7	8	9	10	11	12
0	373	339	367	388	403	390	402	403	390	403	390	403
1	373	338	367	388	403	388	401	402	390	403	390	403
2	372	339	367	388	402	390	403	403	390	403	390	403
3	373	339	367	388	403	390	403	403	390	403	390	403
4	372	339	367	388	403	389	403	402	390	403	390	403
5	372	339	367	388	403	390	402	402	390	403	390	402
6	373	339	367	388	403	390	403	403	390	403	390	403
7	373	339	367	388	403	389	402	403	389	403	390	403
8	371	339	367	387	403	390	403	403	390	403	386	400
9	370	339	368	388	403	390	401	403	390	402	390	402
10	371	338	367	388	403	390	403	403	390	403	390	403
11	371	339	367	388	403	390	403	403	389	403	390	403
12	371	339	367	388	403	390	403	403	390	403	390	403
13	372	339	367	388	403	390	402	403	390	403	390	403
14	372	339	367	388	403	390	403	403	390	402	390	403
15	372	339	367	388	403	389	403	403	390	401	390	403
16	371	339	367	389	403	390	403	403	390	403	390	403
17	371	339	367	389	403	388	403	403	390	403	390	403
18	372	339	367	389	403	390	403	401	390	403	390	403
19	372	339	367	389	403	390	403	402	390	403	389	402
20	371	339	367	389	403	390	402	403	390	403	389	403
21	371	339	367	389	403	390	403	403	389	402	390	403
22	371	339	367	389	403	390	403	403	390	403	390	403
23	372	339	367	389	403	390	403	403	390	403	390	403
OBS/MO	8922	8134	8809	9319	9671	9353	9663	9666	9357	9667	9354	9666

Table B-1 continued

TOPEKA KS/FORBES AFB

WFO 73839

TOTAL NUMBER OF OBSERVATIONS = 87645

BEGIN 1961 1 1 6

END 1971 1 1 5

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	310	282	310	300	310	300	310	310	300	310	300	310
1	310	282	310	300	310	300	310	310	300	310	300	310
2	310	282	310	300	310	300	310	310	300	310	300	310
3	310	282	310	300	310	300	310	310	300	310	300	310
4	310	282	310	300	310	300	310	310	300	310	300	310
5	310	282	310	300	310	300	310	310	300	310	300	310
6	310	282	310	300	310	300	310	309	300	310	300	309
7	310	282	310	300	310	300	310	310	300	309	300	310
8	310	282	310	300	310	300	310	310	300	310	300	310
9	310	282	310	300	310	300	310	310	300	310	300	310
10	310	282	310	300	310	300	310	310	300	310	300	310
11	310	282	310	300	310	300	310	310	300	310	300	310
12	310	282	310	300	310	300	310	310	300	310	300	310
13	310	282	310	300	310	300	310	310	300	310	300	310
14	310	282	310	300	310	300	310	310	300	310	300	310
15	310	282	310	300	310	300	310	310	300	310	300	310
16	310	282	310	300	310	300	310	310	300	310	300	310
17	310	282	310	300	310	300	310	310	300	310	300	310
18	310	282	310	300	310	300	310	310	300	310	300	310
19	310	282	310	300	310	300	310	310	300	310	300	310
20	310	282	310	300	310	300	310	310	300	310	300	310
21	310	282	310	300	310	300	310	310	300	310	300	310
22	310	282	310	300	310	300	310	310	300	310	300	310
23	310	282	310	300	310	300	310	310	300	310	300	310
OBS/HO	7440	6768	7440	7200	7440	7200	7440	7439	7200	7439	7200	7439

Table B-1 continued

TUCSON AZ/DAVIS MONT AFB

TOTAL NUMBER OF OBSERVATIONS = 88924

WMO 73153

BEGIN 1961 1 1 7
END 1971 1 1 6

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	339	306	310	300	310	300	310	310	300	310	300	309
1	339	306	310	300	310	300	310	310	300	310	300	310
2	339	306	310	300	310	300	310	310	300	310	300	310
3	339	306	310	300	310	300	310	310	300	310	300	310
4	339	306	310	300	310	300	310	310	300	310	300	310
5	339	306	310	300	310	300	310	310	300	310	300	310
6	339	306	310	300	310	300	310	310	300	310	300	310
7	340	306	310	300	310	300	310	310	300	310	300	310
8	340	306	310	300	310	300	310	310	300	310	300	310
9	340	306	310	300	310	300	310	310	300	310	300	310
10	340	306	310	300	310	300	310	310	300	310	300	310
11	340	306	310	300	310	300	310	310	300	310	300	310
12	340	306	310	300	310	300	310	310	300	310	300	310
13	340	306	310	300	310	300	310	310	300	310	299	310
14	340	306	310	300	310	300	310	310	300	310	299	310
15	341	306	310	300	310	300	310	310	300	310	299	310
16	341	306	310	300	310	300	310	310	300	310	299	310
17	341	306	310	300	310	300	310	310	300	310	299	310
18	341	306	310	300	310	300	310	310	300	310	299	310
19	340	305	310	300	310	300	310	310	300	310	299	310
20	340	305	310	300	310	300	310	310	300	310	299	310
21	340	305	310	300	310	300	310	310	300	310	299	310
22	340	305	310	300	310	300	310	310	300	310	299	310
23	340	305	310	300	310	300	310	310	300	310	299	310
OBS/MO	8157	7339	7440	7200	7440	7200	7440	7440	7200	7440	7189	7439

Table B-1 continued

WRIGHTSTOWN NJ/MCG AFB

WMO 73564

TOTAL NUMBER OF OBSERVATIONS = 87772

BEGIN 1961 1 1 5

END 1971 1 1 4

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	317	281	310	299	310	300	310	310	300	310	300	310
1	317	281	310	299	310	300	310	310	300	310	300	310
2	317	281	310	299	310	300	310	310	300	310	300	310
3	317	281	310	299	310	300	310	310	300	310	300	310
4	317	280	310	299	310	300	310	310	300	310	300	310
5	318	281	310	299	310	300	309	310	300	310	299	310
6	318	281	310	299	310	300	310	310	300	310	299	310
7	318	281	310	299	310	300	310	310	300	310	300	310
8	318	281	310	299	310	300	310	310	300	310	300	310
9	318	281	310	299	310	300	310	310	300	310	300	310
10	318	281	310	299	310	300	310	310	300	310	300	310
11	317	281	310	298	310	300	310	310	300	310	300	310
12	317	281	310	299	310	300	310	310	300	310	300	310
13	317	281	310	299	310	300	310	310	300	310	300	310
14	317	281	310	299	310	300	310	310	300	310	300	310
15	317	282	310	299	310	300	310	310	300	310	300	310
16	317	282	310	299	310	300	310	310	300	310	300	310
17	317	282	310	299	310	300	310	310	300	310	300	310
18	317	282	310	299	310	300	310	310	300	310	300	310
19	317	281	310	299	310	300	310	310	300	310	300	310
20	317	281	309	299	310	300	310	310	300	310	300	310
21	317	281	310	299	310	300	310	310	300	310	300	310
22	317	281	310	299	310	300	310	310	300	310	300	310
23	317	281	310	299	310	300	310	310	300	310	300	310
OBS/MO	7614	6747	7439	7175	7440	7200	7439	7440	7200	7440	7198	7440

WMO 72280

END	1967	8	1	6
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HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	559	506	557	569	589	567	588	559	559	589	570	589
1	467	424	465	479	496	477	495	496	499	527	510	527
2	466	424	465	476	494	477	495	496	498	527	510	526
3	558	508	557	569	589	567	588	559	559	589	570	589
4	467	424	465	477	496	477	495	496	498	522	510	527
5	466	424	465	479	496	476	495	496	499	527	510	527
6	558	508	556	569	589	567	588	558	559	589	570	589
7	463	424	465	480	496	476	496	495	499	527	510	527
8	464	424	465	480	492	477	496	496	500	527	510	527
9	557	508	558	570	589	567	589	558	560	589	570	589
10	465	424	465	478	496	477	495	496	500	527	510	527
11	465	424	465	480	496	477	496	496	500	527	510	526
12	558	508	558	568	588	567	589	558	560	589	570	589
13	465	424	465	480	494	477	496	495	500	526	510	527
14	465	424	465	479	495	477	496	496	500	527	510	527
15	558	508	558	570	587	567	589	558	560	589	570	589
16	460	424	465	480	495	477	495	496	500	527	510	526
17	465	424	465	480	495	477	496	496	500	527	508	526
18	557	508	557	570	589	567	589	558	560	589	570	589
19	464	424	465	480	496	477	496	496	500	527	510	527
20	465	422	465	480	496	477	496	496	500	527	510	527
21	558	508	557	570	589	567	589	558	560	589	570	589
22	464	424	465	479	492	477	495	496	500	527	510	526
23	463	424	465	473	496	476	496	496	500	527	510	527

0BS/MJ 11897 10844 11898 12215 12630 12165 12638 12400 12470 13138 12718 13139

Table B-1 continued

DONG HOI, NORTH VIETNAM

WMO 48848

TOTAL NUMBER OF OBSERVATIONS = 14725

BEGIN 1950 1 2 9

END 1965 12 30 12

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	266	231	246	232	242	235	238	228	211	223	226	272
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	168	152	154	145	138	157	135	138	111	119	135	138
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	234	207	228	218	229	235	216	209	195	187	185	218
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	83	87	128	140	136	152	136	138	100	86	67	69
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	213	202	241	235	244	230	210	218	204	198	213	224
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	111	101	116	114	122	111	107	107	91	90	84	86
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	122	121	135	135	138	133	124	128	113	127	121	122
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	88	75	85	119	88	78	71	78	52	49	59	69
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1285	1176	1333	1338	1337	1331	1237	1244	1077	1079	1090	1198

Table B-1 continued

HANOI, NORTH VIETNAM
 TOTAL NUMBER OF OBSERVATIONS = 18053
 BEGIN 1949 4 1 12
 END 1965 12 30 12

WMO 48820

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	293	259	278	253	293	279	295	294	283	249	255	311
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	162	141	155	144	146	145	139	152	137	127	123	166
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	282	253	272	234	260	261	267	262	244	228	224	288
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	81	80	129	141	141	137	148	146	114	73	70	93
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	299	280	302	330	345	335	328	342	311	304	304	325
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	116	117	150	161	139	135	130	147	117	104	100	98
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	166	147	191	194	189	195	193	218	175	159	163	173
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	79	77	95	134	106	102	106	115	67	49	64	70
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	1478	1354	1572	1591	1619	1589	1606	1676	1448	1293	1303	1524

Table B-1 continued

HATINH(HATINS), NORTH VIETNAM
 TOTAL NUMBER OF OBSERVATIONS = 6911
 BEGIN 1959 5 1 18
 END 1963 7 27 6

WMO 48846

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	116	91	111	93	127	118	116	86	87	91	96	96
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	89	80	80	75	81	88	79	57	50	61	57	59
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	104	82	103	82	113	100	105	84	71	80	69	87
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	8	8	29	60	53	54	55	32	10	1	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	108	90	105	94	117	116	113	80	74	89	93	102
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	79	78	89	85	93	83	86	60	55	58	58	61
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	81	77	89	86	115	113	115	84	85	89	79	90
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	3	8	27	56	52	41	41	27	9	3	0	1
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	588	514	633	631	751	713	710	510	441	472	452	496

Table B-1 continued

VINH, NORTH VIETNAM

WFO 48845

TOTAL NUMBER OF OBSERVATIONS = 9827

BEGIN 1958 12 2 0

END 1964 9 10 6

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	164	137	160	145	165	161	146	121	119	122	128	152
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	123	103	108	103	109	110	97	93	79	89	80	89
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	138	120	143	126	145	135	127	128	104	111	99	127
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	37	34	55	88	83	79	70	66	38	31	30	32
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	142	125	149	134	160	150	126	117	107	124	125	136
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	111	107	117	118	120	110	105	107	84	88	87	90
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	125	112	138	135	147	135	126	108	100	113	107	110
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	21	27	39	75	71	63	55	57	28	18	13	16
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	861	765	909	924	1000	943	852	797	659	696	669	752

Table B-1 continued

WMO 48852

HUE, SOUTH VIETNAM
 TOTAL NUMBER OF OBSERVATIONS = 48316
 BEGIN 1950 1 1 6
 END 1965 12 31 12

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	363	333	366	369	374	374	361	355	348	379	331	341
1	223	210	234	235	246	239	229	220	207	233	209	222
2	222	207	233	236	246	240	229	223	209	234	208	218
3	321	287	329	312	305	296	305	317	304	335	310	331
4	223	212	236	236	245	240	230	219	211	234	207	221
5	222	211	236	236	245	240	230	219	211	233	208	222
6	354	323	369	343	355	373	335	320	326	372	331	366
7	223	211	234	236	245	238	227	224	209	234	207	221
8	224	212	235	237	246	239	228	224	210	233	206	221
9	304	278	333	327	341	325	329	331	315	350	304	317
10	224	212	236	235	246	238	222	223	211	233	208	218
11	118	109	124	117	124	120	127	147	142	149	142	144
12	250	243	251	268	291	286	256	235	241	264	230	263
13	1	0	0	0	0	0	2	0	0	1	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	2	0	0	1	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	2	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	1	0	0	1	0	2	0	0	2	0	0
20	30	30	27	28	32	29	0	0	0	2	0	0
21	258	251	282	275	272	260	255	237	247	259	239	273
22	221	206	231	235	245	239	221	213	212	223	204	222
23	220	205	230	236	245	239	220	213	212	224	203	219
OBS/MO	4001	3741	4186	4161	4304	4215	4012	3920	3815	4195	3747	4019

Table B-1 continued

QUANG TRI, SOUTH VIETNAM

WMO 49851

TOTAL NUMBER OF OBSERVATIONS = 19117

BEGIN 1958 8 13 9

END 1965 12 31 9

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	199	185	203	196	194	195	207	213	210	191	200	210
1	196	181	202	194	194	194	206	212	212	191	198	209
2	193	182	202	193	192	192	206	210	211	192	198	210
3	197	184	203	194	196	194	207	212	212	192	197	210
4	0	0	0	0	0	1	0	0	1	0	0	0
5	0	0	0	0	0	1	1	0	1	0	0	1
6	160	148	169	163	148	160	162	161	167	155	162	170
7	130	118	143	139	127	142	147	146	141	130	135	145
8	126	117	144	136	126	142	147	150	143	129	130	145
9	155	148	167	164	148	160	159	162	168	155	162	171
10	0	0	0	0	0	0	0	0	1	0	0	0
11	0	0	0	0	0	0	1	0	0	0	0	0
12	0	0	0	0	0	0	2	4	0	1	0	0
13	0	0	0	0	0	0	2	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	2	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	1	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	198	181	206	196	196	195	207	213	207	196	199	210
OBS/MO	1554	1444	1639	1575	1521	1576	1656	1684	1674	1532	1581	1681

Table B-1 continued

BRAZZAVILLE, ZAIRE

WMO 64450

TOTAL NUMBER OF OBSERVATIONS = 2220

BEGIN 1949 3 7 12

END 1953 12 31 12

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	31	28	30	30	31	30	31	31	60	62	60	62
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	124	113	149	130	153	150	155	155	150	155	145	155
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	155	141	179	160	184	180	186	186	210	217	205	217

Table B-1 continued

LEOPOLDVILLE AND KINSHASA, ZAIRE

TOTAL NUMBER OF OBSERVATIONS = 1940

WMO 64210

BEGIN 1949 7 4 12

END 1959 2 28 15

HOUR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
0	31	21	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	31	21	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	31	28	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	31	28	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	145	128	117	112	114	111	139	136	142	143	128	139
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	31	28	0	0	0	0	0	0	0	0	0	1
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	31	20	0	0	0	0	0	0	0	0	0	1
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	31	20	0	0	0	0	0	0	0	0	0	1
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
OBS/MO	362	294	117	112	114	111	139	136	142	143	128	142

Appendix C
CONVERSION LOGIC AND PROGRAMS

Three computer programs were written to handle the data conversion to the RAWDAB-S format. Each program is designed to convert the data from one of the three major sources, TDF-13, TDF-14, and COLDFACT. These programs were written in FORTRAN IV for the IBM 360/65 system. A flow chart and listing of the program used to convert TDF-13 data to RAWDAB-S format is included at the end of this appendix. The major differences in programming for the three sources are found in the data conversion subroutines. These differences are described and the subroutines flow-charted in the following paragraphs and figures.

CONVERSION PROCEDURE FOR TDF-13 DATA

The TDF-13 code does not contain a reported cloud ceiling height, H_1 , but ceiling heights H_8 and H_4 were estimated from the significant cloud data (the "8-groups") and the mandatory cloud data (the "4-group"), respectively. Flow charts describing these computations are given in Figs. C-1 through C-3 and Table C-1.

In computing the preferred H_8 , the main uncertainty occurs with multiple cloud layers when the cumulative sum of the layer amounts (starting with the lowest layer) reaches $5/8$. Since the "8-group" layer amounts are estimates of the *total* amount in each layer, some of which may be hidden by lower clouds, the actual amount of sky obscured by clouds can be less than $5/8$, in which case the clouds would not constitute a "ceiling." The way we decide whether such an occurrence is to be designated as a "ceiling" is detailed in Fig. C-1--in essence, we "flip a coin" and then check the result for consistency with the total sky cover, N , reported elsewhere in the observation.

The computation of H_4 follows the logic diagrammed in Fig. C-2. The mandatory "4-group" provides only enough information to make a coarse estimate of ceiling height--cloud heights above 8000 ft are not given at all, and below 8000 ft the height code corresponds to 9 strata. Furthermore, the amount and height data, N_4 and h_4 , refer only to the

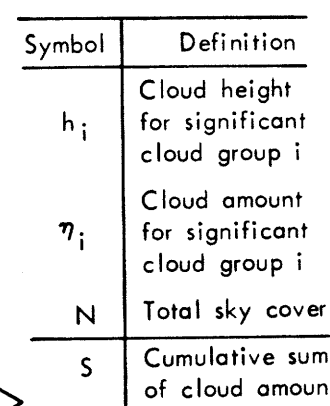


Fig. C-1 — Computation of ceiling height, H_8 , from significant cloud-group data

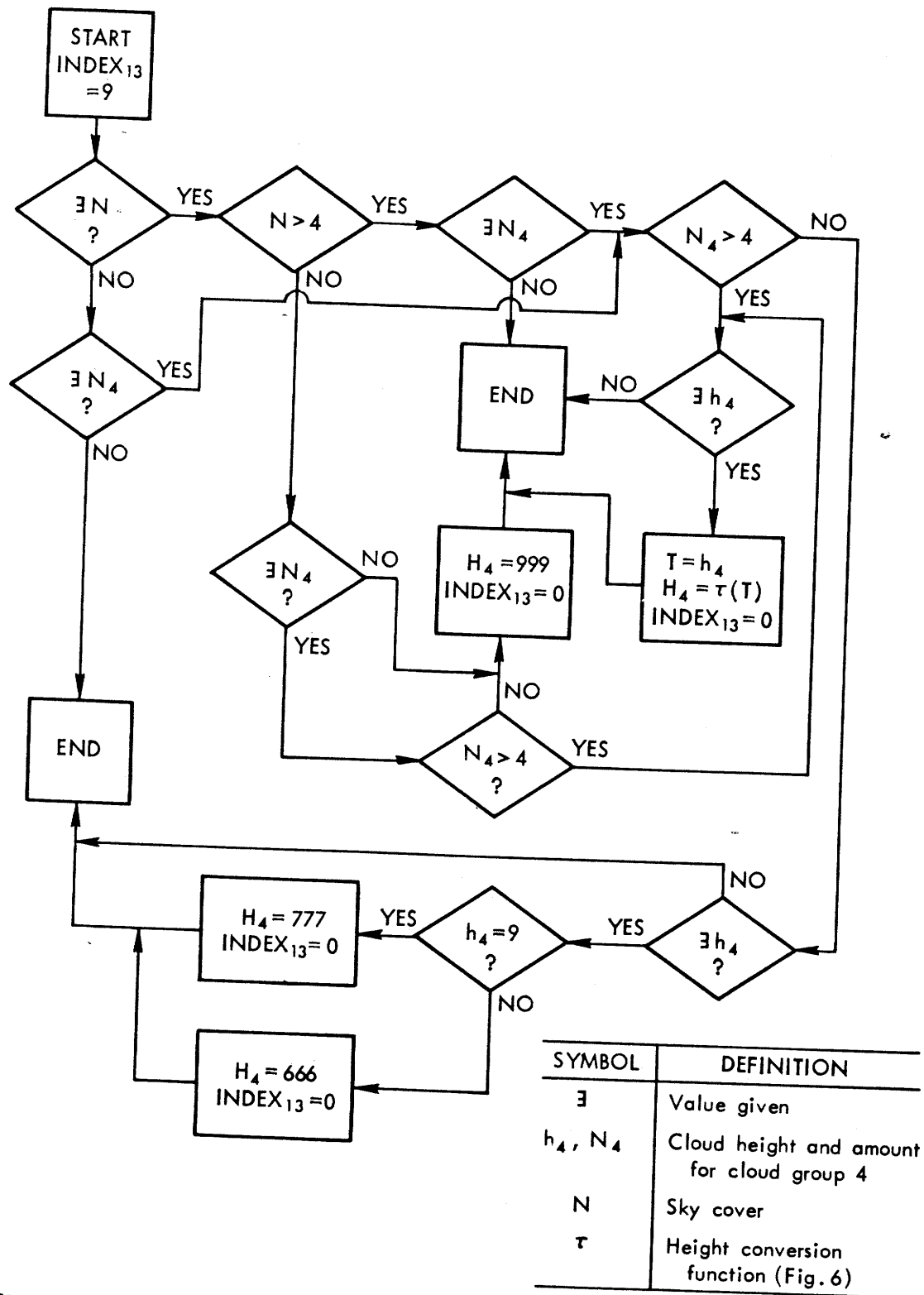


Fig. C-2—Computation of ceiling height, H_4 , from mandatory cloud-group data

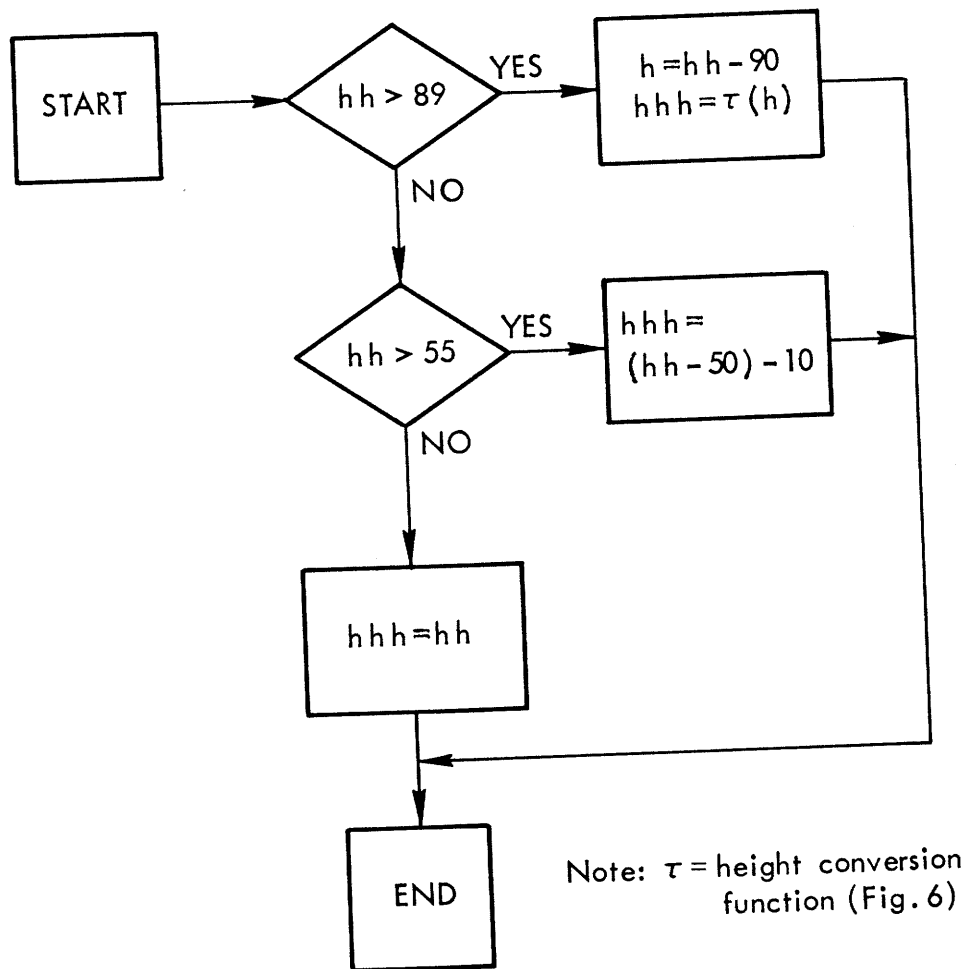


Fig. C-3— Conversion of 2-digit cloud height to the 3-digit RAWDAB format.

Table C-1

HEIGHT CONVERSION FUNCTION, $\tau(T)$

T	$\tau(T)$
0	1
1	2
2	4
3	8
4	15
5	27
6	42
7	57
8	72
9	777

lower of either low or middle clouds; hence, in multiple-layer situations where total sky cover, N , indicates a ceiling, but N_4 does not, the ceiling height is very uncertain.

The cloud heights in TDF-13 "8-groups" and "4-groups" are coded in 2 digits and 1 digit, respectively. Figure C-3 and Table C-1 give the procedure for converting those data to the 3-digit height code used in RAWDAB-S. In Table C-1, the numbers in the right-hand column are the heights (in hundreds of feet) of the midpoints of the nine strata below 8000 ft, except for the "777" which simply indicates "above 8000 ft."

CONVERSION PROCEDURE FOR TDF-14 DATA

The procedure used to convert the TDF-14 data into RAWDAB format parallels the TDF-13 data conversion procedure except for the following differences:

- (1) TDF-14 weather data is reported at Local Standard Time and must be converted to Greenwich Mean Time.
- (2) The TDF-14 code does not contain the mandatory ("4-group") cloud data but does record the reported cloud ceiling, H_1 , and the significant ("8-group") data. H_8 is calculated as per Fig. C-1, but the cloud height reported for the

significant clouds is in the 3-digit format so that no height-code conversion is necessary.

- (3) The conversion of the eight codes for various weather phenomena and obstructions to vision used in TDF-14 to the "present weather" code, ww, used in TDF-13 and in RAWDAB-S requires more than simple code interpretation. The TDF-14 codes are given in Tables C-2a through C-2h, and the "ww" code is found in Appendix D, Table D-8. The method used to compute the present weather from the TDF-14 data code is described in Fig. C-4.
- (4) TDF-14 tapes contain no wind gust data.

CONVERSION PROCEDURE FOR COLDFACT DATA

The procedure used to convert the COLDFACT data into RAWDAB format parallels the TDF-13 data conversion procedure except for the following differences:

- (1) COLDFACT weather data are reported in Local Standard Time and are converted to Greenwich Mean Time.
- (2) Temperature values are converted from Celsius to Fahrenheit.

FLOW CHART AND FORTRAN LISTING FOR TDF-13 CONVERSION

Figure C-5 is the flow chart for converting TDF-13 data to RAWDAB-S format. The flow of TDF-14 and COLDFACT conversion is parallel, the main differences being in the subroutines as described earlier in this appendix.

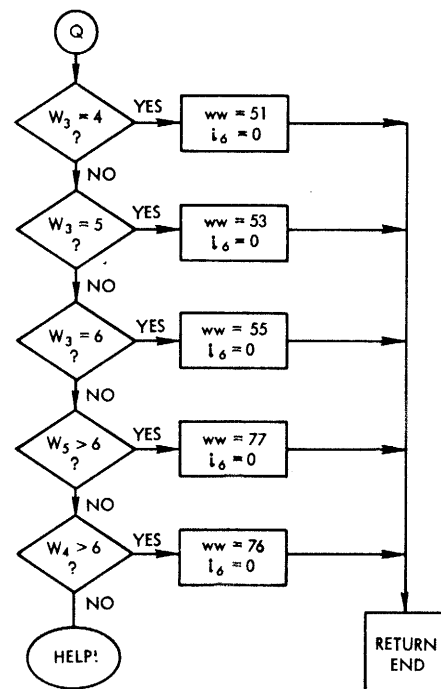
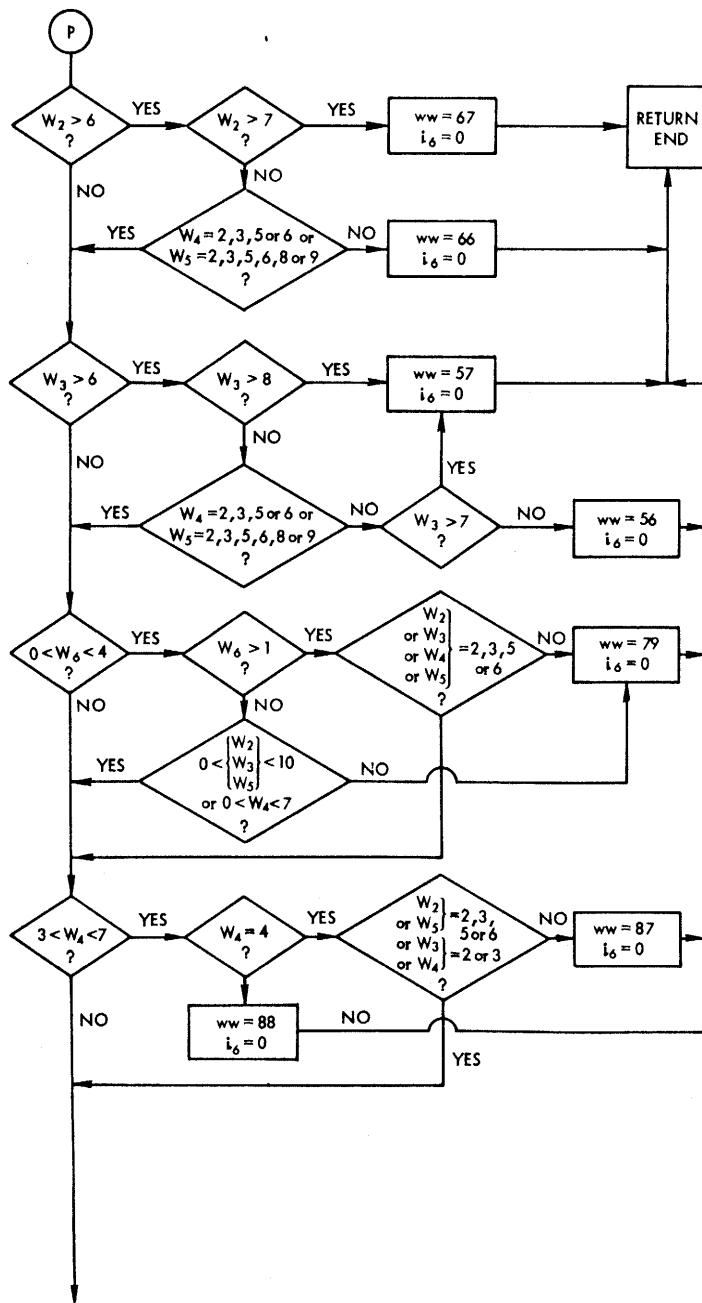
Following Fig. C-5, in Table C-3, is the complete FORTRAN listing for TDF-13 conversion.

Table C-2

TDF-14 CODES FOR WEATHER PHENOMENA AND OBSTRUCTIONS TO VISION

Code	Symbol	Code Definition
(a) W ₁		
0		No thunderstorm, tornado, squall, or other listed phenomena
1	T	Thunderstorm
2	T+	Heavy thunderstorm
3	TORNADO	Tornado (report of tornado or waterspout never abbreviated)
4	Q-	Light squall
5	Q	Moderate squall
6	Q+	Heavy squall
7		
8		
9		
H		Signs of hurricane (not reported from WBAN sources)
b		Unknown
*		Invalid
(b) W ₂		
0		No rain, rain showers, or freezing rain
1	R-	Light rain
2	R	Moderate rain
3	R+	Heavy rain
4	RW-	Light rain showers
5	RW	Moderate rain showers
6	RW+	Heavy rain showers
7	ZR-	Light freezing rain
8	ZR	Moderate freezing rain
9	ZR+	Heavy freezing rain
b		Unknown
*		Invalid
(c) W ₃		
0		No drizzle or freezing drizzle
1	RQ-	Light rain squalls
2	RQ	Moderate rain squalls
3	RQ+	Heavy rain squalls
4	L-	Light drizzle
5	L	Moderate drizzle
6	L+	Heavy drizzle
7	ZL-	Light freezing drizzle
8	ZL	Moderate freezing drizzle
9	ZL+	Heavy freezing drizzle
b		Unknown
*		Invalid
(d) W ₄		
0		No snow, snow pellets, or ice crystals
1	S-	Light snow
2	S	Moderate snow
3	S+	Heavy snow
4	SP-	Light snow pellets
5	SP	Moderate snow pellets
6	SP+	Heavy snow pellets
7	IC-	Light ice crystals
8	IC	Moderate ice crystals
9	IC+	Heavy ice crystals
b		Unknown
*		Invalid

Code	Symbol	Code Definition
(e) W ₅		
0		No snow showers or snow grains
1	SW-	Light snow showers
2	SW	Moderate snow showers
3	SW+	Heavy snow showers
4	SQ-	Light snow squall
5	SQ	Moderate snow squall
6	SQ+	Heavy snow squall
7	SG-	Light snow grains
8	SG	Moderate snow grains
9	SG+	Heavy snow grains
b		Unknown
*		Invalid
(f) W ₆		
0		No sleet, hail, or small hail
1	E-,EW-	Light sleet or sleet showers
2	E, EW	Moderate sleet or sleet showers
3	E+,EW+	Heavy sleet or sleet showers
4	A-	Light hail
5	A	Moderate hail
6	A+	Heavy hail
7	AP-	Light small hail
8	AP	Moderate small hail
9	AP+	Heavy small hail
b		Unknown
*		Invalid
(g) W ₇		
0		None listed below
1	F	Fog
2	IF	Ice fog
3	GF	Ground fog
4	BD	Blowing dust
5	BN	Blowing sand
6		
7		
8		
9		
b		Unknown
*		Invalid
(h) W ₈		
0		None listed below
1	K	Smoke
2	H	haze
3	KH	Smoke and haze
4	D	Dust
5	BS	Blowing snow
6	BY	Blowing spray
7		
8		
9		
b		Unknown
*		Invalid



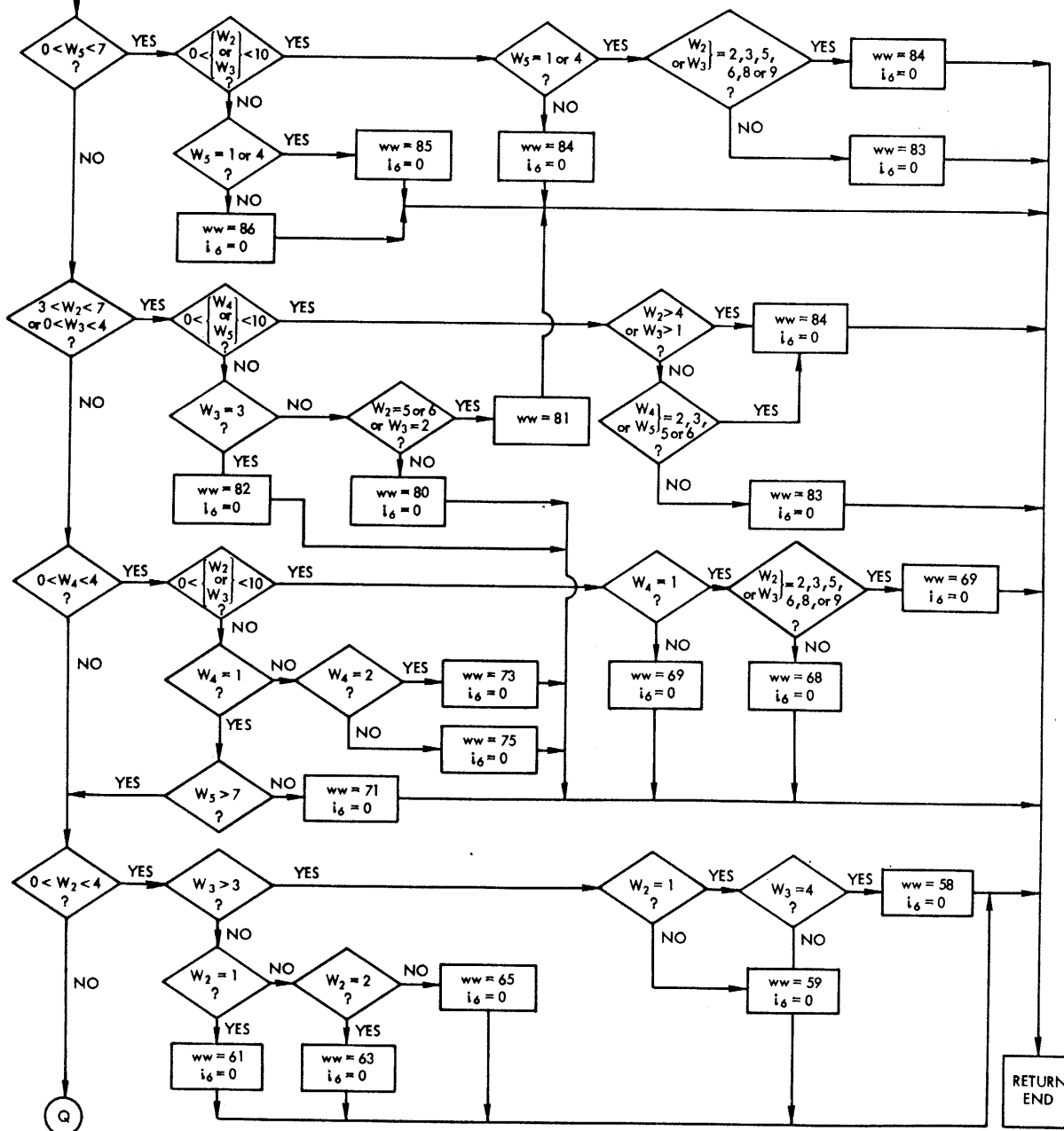
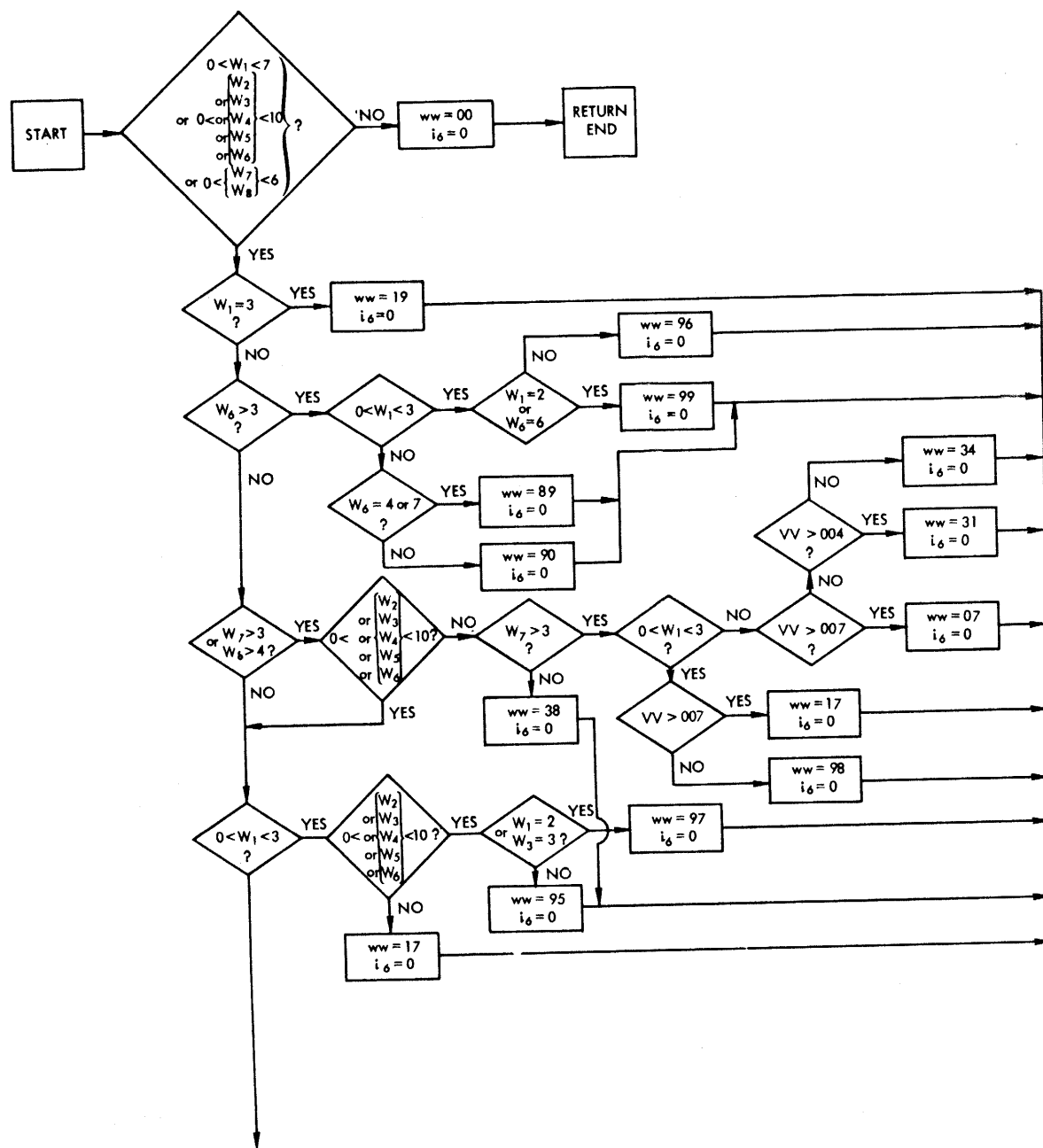


Fig.C-4— Computation of present weather code, ww, from TDF-14 data codes for weather phenomena and abstractions to vision (continued)



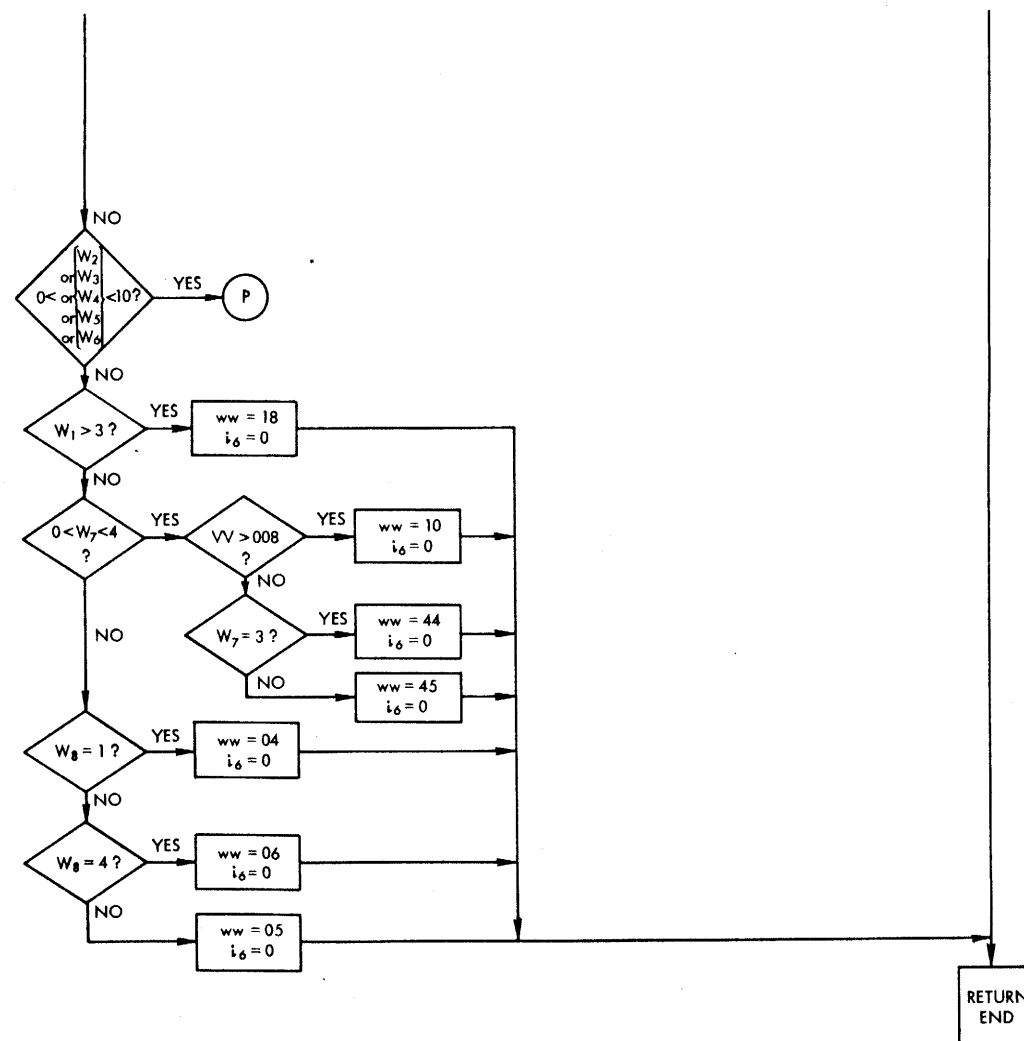


Fig. C-4a — Computation of present weather code, ww, from TDF-14 data codes for weather phenomena and obstructions to vision

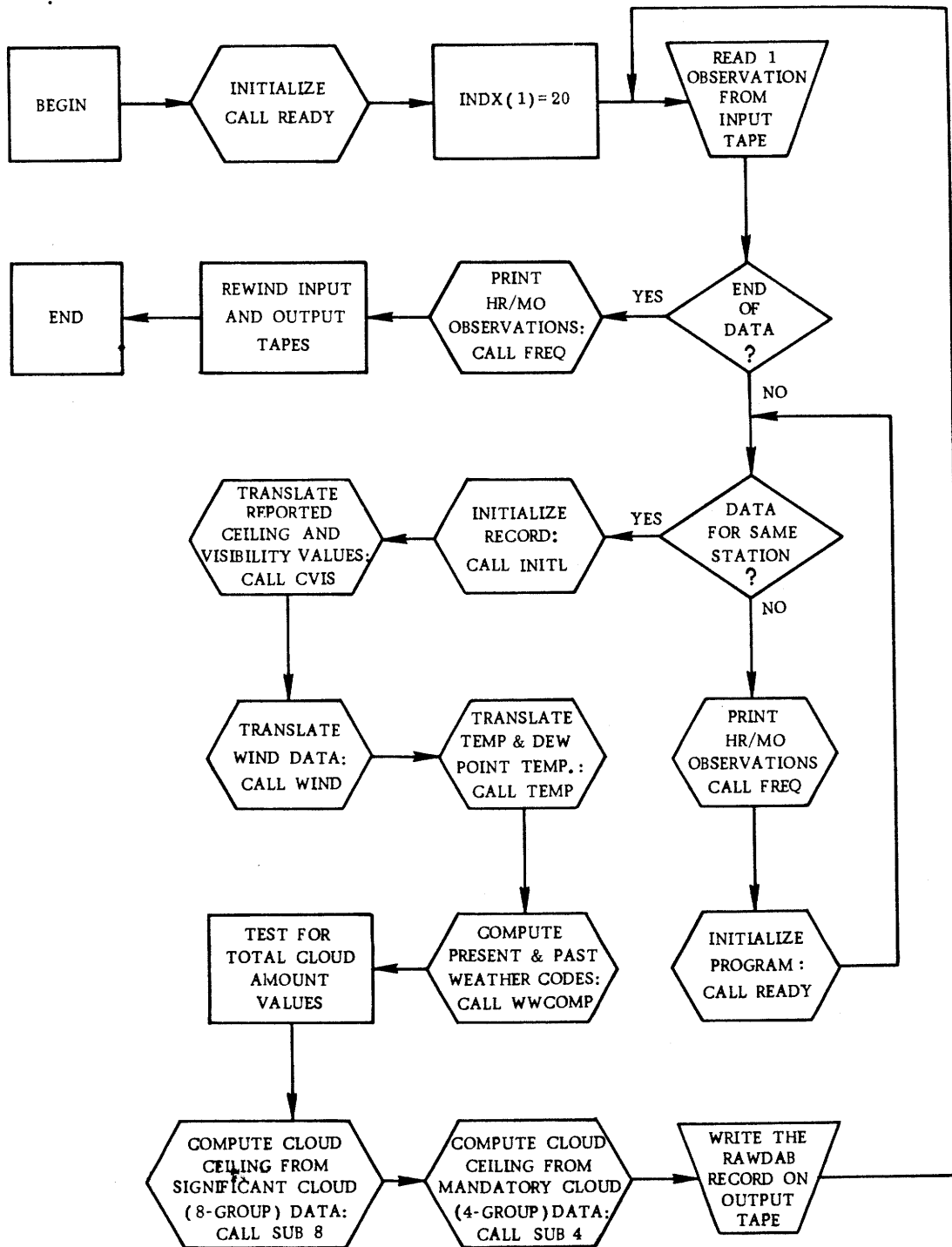


Fig. C-5—Flow chart of TDF 13 conversion control program

-111-
Table C-3

FORTRAN LISTING FOR TDF-13 CONVERSION

```

C THIS PROGRAM CONVERTS TDF-13 WEATHER DATA TO RAWDAB FORMAT
C
      IMPLICIT INTEGER (A,B,H)
      COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
      COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE, IDECK
      COMMON /CC03/ INDX(20)
      COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
      COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
      COMMON /CC06/ H1H1, H8H8, H9H9
      COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
      COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
      COMMON /CC09/ GAT(128), STAR, GBLNK
      COMMON /CC11/ BEGIN(4), BEND(4)
      COMMON /CC12/ XSTN(5), AWMO
      COMMON /CC13/ KNH8(35,12), KNH4(35,12), KNHR8(24,35,12)
1      , KNHR4(24,35,12)

C
C
      NAMELIST /XX/ ASTN,AYR,AMO,ADA,AHR, BEGIN,BEND
1      , NOBS, NOBM, NREC
      NAMELIST /ZZ/ NOB

C
      CALL READY
      INDX(1) = 20
      H = 8
      REWIND H
5      FORMAT (2I5)

C
      NTREC = 800000
      NREC = 0
C      READ 1 RECORD
      GO TO 103
100      CONTINUE
      CALL FRQ
      WRITE (6,904)
      WRITE (6,XX)
      WRITE (6,ZZ)
      CALL READY
      GO TO 105
103      CONTINUE

C
C NEXT CARD USED ONLY DURING DEBBUGING PHASE
C      IF (NREC.GE.NTREC) GO TO 901
      READ (H,8,END=901,ERR=902) IDECK, ISTN, AYR, AMO, ADA, AHR, LENGTH
1      , TZ, (GAT(I),I=23,128)
8      FORMAT ( I4, I5, 4I2, I3, A2, 106A1, 37X )
      NREC = NREC+1
C      WRITE (6,XX)
105      CONTINUE

C *** USE THE NEXT CARD ONLY IF READING ONE STATION FROM TAPE ***
C *** CONTAINING MORE THAN ONE STATION *****
C      IF (ISTN.NE.ASTN) GO TO 103
      IF (ISTN.NE.ASTN) GO TO 100
C      WRITE (6,11) GAT
11      FORMAT ( 2X, 128A1)
C

```

Table C-3 (continued)

```

C      CALL INITL
C
C      COMPUTE H1H1H1 AND VVV
C      CALL CVIS
C      INDX(10) = 9
C      IF (GAT(44).EQ.GBLNK .AND. INDX(5).EQ.9) GO TO 103
C
C      CALL WIND
C
C      CALL TEMP
C
C      CALL WWCOMP
C
C      IF (GAT(24).EQ.STAR .OR. GAT(24).EQ.GBLNK) GO TO 20
C      CALL CONVRT (1,1,GAT(24),AN1)
C      DO 30 I=1,10
C      K = I-1
C      IF (AN1.EQ.K) GO TO 12
30    CONTINUE
C      AN1 = 0
C      GO TO 20
12    CONTINUE
C      INDX(9) = 0
20    CONTINUE
C
C      CALL SUB8
C      CALL SUB4
C
C      IF (NOBS.NE.0) GO TO 17
C      ** BEGINNING DATE **
C      BEGIN(1) = AYR
C      BEGIN(2) = AMO
C      BEGIN(3) = ADA
C      BEGIN(4) = AHR
C      WRITE (6,18) BEGIN
18    FORMAT ('0 BEGIN', 4I3 )
C
C      17 CONTINUE
C      NOBS = NOBS+1
C      NOBM(AMO ) = NOBM(AMO ) + 1
C      NOB(AHR +1,AMO ) = NOB(AHR +1,AMO ) + 1
C      ** LAST DATE **
C      BEND(1) = AYR
C      BEND(2) = AMO
C      BEND(3) = ADA
C      BEND(4) = AHR
C
C      145 CONTINUE
C      IF (INDX(8).EQ.1) ATT=-ATT
C      IF (INDX(19).EQ.1) ADP=-ADP
C
C      WRITE (ITAPE,9) AYR, AMO, ADA, AHR, AWMO
1      , INDX(1), INDX(2), ADD, INDX(3), AFF
2      , INDX(4), AGG, INDX(5), AVV, INDX(6), AWW
3      , INDX(7), AW, INDX(8), ATT, INDX(9), AN1
4      , INDX(10), H1H1, INDX(11), H8H8, INDX(12), H9H9

```

Table C-3 (continued)

```

5          , INDX(13), H4H4, AN4, ALH4, ACL4, ACM4, ACH4
6          , INDX(14), AN8(1), ALH8(1), AC8(1)
7          , INDX(15), AN8(2), ALH8(2), AC8(2)
8          , INDX(16), AN8(3), ALH8(3), AC8(3)
9          , INDX(17), AN8(4), ALH8(4), AC8(4)
A          , INDX(19), ADP, ANN8, ASN8
9  FORMAT ( 4I2, I5, I2, I1, I2, I1, I3, 3(I1, I2), 3I1, I4, 2I1
1          , 4(I1, I3), 5I1, 4(2I1, I3, I2), I1, I3, I1, I2 )
C
      IF (NOBS.LT.30 .OR. MOD(NOBS,999).EQ.1)
9WRITE(6,10)  AYR    , AMO    , ADA    , AHR, AMMO
1          , INDX(1), INDX(2), ADD, INDX(3), AFF
2          , INDX(4), AGG, INDX(5), AVV, INDX(6), AWW
3          , INDX(7), AW, INDX(8), ATT, INDX(9), AN1
4          , INDX(10), H1H1, INDX(11), H8H8, INDX(12), H9H9
5          , INDX(13), H4H4, AN4, ALH4, ACL4, ACM4, ACH4
6          , INDX(14), AN8(1), ALH8(1), AC8(1)
7          , INDX(15), AN8(2), ALH8(2), AC8(2)
8          , INDX(16), AN8(3), ALH8(3), AC8(3)
9          , INDX(17), AN8(4), ALH8(4), AC8(4)
A          , INDX(19), ADP, ANN8, ASN8
10 FORMAT(1X,4I2, I5, I2, I1, I2, I1, I3, 3(I1, I2), 3I1, I4, 2I1
1          , 4(I1, I3), 5I1, 4(2I1, I3, I2), I1, I3, I1, I2 )
500  CONTINUE
C
      GO TO 103
C
801  CONTINUE
      IF (H.EQ.8) GO TO 804
      IF (H.EQ.11) GO TO 805
      IF (H.EQ.12) GO TO 901
      WRITE (6,806) NREC,H,IDECK,ISTN,AYR,AMO,ADA,AHR
806  FORMAT (10I10)
      WRITE (6,807)
807  FORMAT ('0 HELP, HELP ... , WRONG TAPE DRIVE. ')
      CALL EXIT
804  H = 11
      GO TO 808
805  H = 12
      GO TO 808
808  REWIND H
      WRITE (6,XX)
      GO TO 103
901  WRITE (6,XX)
C      WRITE FREQUENCY TABLES
      CALL FRQ
      WRITE (6,904)
904  FORMAT ('1')
902  WRITE (6,ZZ)
C
903  CONTINUE
      REWIND ITAPE
      REWIND 8
      CALL EXIT
      END

```

Table C-3 (continued)

```

SUBROUTINE READY
IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, RSTN
COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK
COMMON /CC12/ XSTN(5), AWMO
COMMON /CC13/ KNH8(35,12), KNH4(35,12), KNHR8(24,35,12)
1      , KNHR4(24,35,12)

C
C      READ (5,4) XSTN, AWMO
4      FORMAT ( 5A4, I10)
C      READ (5,5) ASTN, ALAT, ALON, AZ, ADATE, JRT, ITAPE
5      FORMAT ( I5, 2A8, 4I5 )
C      READ (5,6) STAR, GBLNK
6      FORMAT (2A1)

C
C      NOBS = 0
C      DO 8 I=1,12
C      NOBM(I) = 0
C      DO 7 K=1,24
C      NOB(K,I) = 0
7      CONTINUE
8      CONTINUE

C
C
C      WRITE (6,11) ASTN,AZ,J RT,ITAPE
11     FORMAT (5I6)

C
C      REWIND ITAPE
C      IF (J RT.NE.1) GO TO 20
C      WRITE ID RECORD ON TAPE
C      WRITE (ITAPE,10) ASTN, ALAT, ALON
10     FORMAT ( I5, 2A8 )

C
20     CONTINUE
C      DO 30 I=1,12
C      DO 30 J=1,35
C      KNH8(J,I) = 0
C      KNH4(J,I) = 0
C      DO 30 K=1,24
C      KNHR8(K,J,I) = 0
C      KNHR4(K,J,I) = 0
30     CONTINUE

C
C      RETURN
C      END

```

Table C-3 (continued)

```
SUBROUTINE INITL
IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC02/ IYR, IMO, IDA, AYR(6), AMO(6), ADA(6), AHR(6), ISTN
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(80,6), STAR, GBLNK
COMMON /CC10/ J
```

```
C
DO 20 I=2,20
  INDX(I) = 9
20 CONTINUE
```

```
C
A = 0
H1H1 = A
H4H4 = A
H8H8 = A
H9H9 = A
```

```
C
AN1 = A
ANN8 = A
ASN8 = A
DO 25 I=1,4
  AN8(I)=A
  AC8(I)=A
  ALH8(I)= A
25 CONTINUE
```

```
C
AN4 = A
ALH4 = A
ACL4 = A
ACM4 = A
ACH4 = A
```

```
C
ADD = A
AFF = A
AWW = A
AW = A
AGG = A
AVV = A
ATT = A
```

```
C
RETURN
END
```

SUBROUTINE CVIS

Table C-3 (continued)

```

IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NORM(12), NOB(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK
DIMENSION IG(3)

C
C  **  CALCULATE VISIBILITY **
      K = 0
      DO 20 I=33,34
      K = K + 1
      IF (GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 25
      CALL CONVRT (1,1,GAT(I),IG(K))
20    CONTINUE
      IVIS = IG(1)*10 + IG(2)

C
      IF (IVIS.LT.0 .OR. IVIS.GT.99) GO TO 25

C
      IF (IVIS.EQ.90) GO TO 41
      IF (IVIS.EQ.91) GO TO 41
      IF (IVIS.EQ.92) GO TO 42
      IF (IVIS.EQ.93) GO TO 43
      IF (IVIS.EQ.94) GO TO 44
      IF (IVIS.EQ.95) GO TO 45
      IF (IVIS.EQ.96) GO TO 46
      IF (IVIS.EQ.97) GO TO 47
      IF (IVIS.EQ.98) GO TO 48
      IF (IVIS.EQ.99) GO TO 49

C
22    AVV = IVIS
      INDX(5) = 0
      RETURN

C
41    IVIS = 0
      GO TO 22
42    IVIS = 2
      GO TO 22
43    IVIS = 5
      GO TO 22
44    IVIS = 10
      GO TO 22
45    IVIS = 20
      GO TO 22
46    IVIS = 40
      GO TO 22
47    IVIS = 60
      GO TO 22
48    IVIS = 70
      GO TO 22
49    IVIS = 85
      GO TO 22

```


Table C-3 (continued)

25 CONTINUE
RETURN
END

```
SUBROUTINE WIND
  IMPLICIT INTEGER (A,B,H)
  COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
  COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
  COMMON /CC03/ INDX(20)
  COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
  COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
  COMMON /CC06/ H1H1, H8H8, H9H9
  COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
  COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
  COMMON /CC09/ GAT(128), STAR, GBLNK

C
  DIMENSION IG(3)
C
C  ** COMPUTE WIND DIRECTION **
  K = 0
  DO 20 I=26,27
    K = K+1
    IF(GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 25
    CALL CONVRT(1,1,GAT(I),IG(K))
  20 CONTINUE
  ADD = IG(1)*10 + IG(2)
  INDX(2) = 0
C
  25 CONTINUE
C  ** CALCULATE WIND SPEED **
  K = 0
  DO 30 I=29,31
    K = K + 1
    IF (GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 35
    CALL CONVRT(1,1,GAT(I),IG(K))
  30 CONTINUE
C
  AFF = IG(1)*100 + IG(2)*10 + IG(3)
  INDX(3) = 0
C
  35 CONTINUE
  RETURN
  END
```

```
SUBROUTINE TEMP
  IMPLICIT INTEGER (A,B,H)
  DATA POS/ZC0404040/, EEG/ZD0404040/
  COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
  COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
```

Table C-3 (continued)

```

COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK

C
DIMENSION IG(3)

C
C ** CALCULATE AIR TEMP **
K=0
DO 20 I=46,47
K = K + 1
IF (GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 45
CALL CONVRT(1,1,GAT(I),IG(K))
20 CONTINUE
IF (GAT(48).EQ.STAR ) GO TO 45
IF (GAT(48).EQ.POS .OR. GAT(48).EQ.EEG) GAT(48) = GBLNK
CALL ALPH2(GAT(48),IG(3),ISGN)
IF (ISGN.EQ.0) GO TO 45

C
ATT = IG(1)*100 + IG(2)*10 + IG(3)
INDX(8) = 0
IF (ISGN.EQ.2) INDX(8)=1
45 CONTINUE

C
C ** CALCULATE DEW POINT TEMP **
IF (GAT(55).EQ.STAR .OR. GAT(55).EQ.GBLNK) GO TO 65
CALL CONVRT(1,1,GAT(55),IG(1))
IF (GAT(56).EQ.STAR ) GO TO 65
IF (GAT(56).EQ.POS .OR. GAT(56).EQ.EEG) GAT(56) = GBLNK
CALL ALPH2(GAT(56),IG(2),ISGN)
IF (ISGN.EQ.0) GO TO 65
ADP = IG(1)*10 + IG(2)
INDX(19) = 0
IF (ISGN.EQ.2) INDX(19)=1
65 CONTINUE

C
RETURN
END

SUBROUTINE ALPH2 (G,I,ISGN)

C
DIMENSION ALPHA(22)
DATA ALPHA/' ','*','+','A','B','C','D','E','F','G','H','I'
1 ,'-','J','K','L','M','N','O','P','Q','R' /
ISGN = 0
IF (G.NE.ALPHA(1)) GO TO 60
ISGN = 1
I = 0
GO TO 90

C

```

-119-
Table C-3 (continued)

```

60  CONTINUE
    J = -1
    DO 80 K=3,12
    J = J+1
    IF (G.NE.ALPHA(K)) GO TO 80
    I = J
    ISGN = 1
    GO TO 90
80  CONTINUE
    CALL ALPH1 (G,I,ISGN)
C
90  CONTINUE
    RETURN
    END

```

```

C      SUBROUTINE ALPH1 (G, I, ISGN)
C
C      DIMENSION ALPHA(22)
C      DATA ALPHA/' ','*','+','A','B','C','D','E','F','G','H','I'
1     ,'-','J','K','L','M','N','O','P','Q','R' /
C
C      ISGN = 0
C      I = 0
C
C      J = -1
C      DO 70 K=13,22
C      J = J+1
C      IF (G.NE.ALPHA(K)) GO TO 70
C      ISGN = 2
C      I = J
C      GO TO 90
70  CONTINUE
90  CONTINUE
    RETURN
    END

```

```

SUBROUTINE WWCOMP
IMPLICIT INTEGER (A,B,H,W,V)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK
DIMENSION IG(3)
DIMENSION PAST(12), WPAST(12)

```

Table C-3 (continued)

```

DATA PAST/'A','B','C','D','E','F','G','H','I','J','K','L'/
DATA WPAST/0,0,0, 2, 0,0, 9,9, 0,0, 9, 8/

C
C
C  **  CALCULATE PRESENT WEATHER  **
C
    K = 0
    DO 30 I=36,38
    K = K+1
    IF (GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 50
    CALL CONVRT(1,1,GAT(I),IG(K))
30  CONTINUE
    AWT = IG(1)*100 + IG(2)*10 + IG(3)
    CALL WWSUB(AWT,AWW,INDX(6))
    IF (AWT.GE.100) GO TO 50
    AWW = AWT
    INDX(6) = 0

C
50  CONTINUE

C
C
C  **  CALCULATE PAST WEATHER  $$
C
    IF (GAT(40).EQ.STAR .OR. GAT(40).EQ.GBLNK) GO TO 80
    CALL CONVRT (1,1,GAT(40),AP)
    DO 60 I=1,10
    J=I-1
    IF (AP.NE.J) GO TO 60
    AW = J
    INDX(7) = 0
    GO TO 80
60  CONTINUE

C
    DO 70 I=1,12
    IF (GAT(40).NE. PAST(I)) GO TO 70
    AW = WPAST(I)
    INDX(7) = 0
    GO TO 80
70  CONTINUE

C
80  CONTINUE

C
    RETURN
    END

```

```

SUBROUTINE WWSUB(AWWT,AWW,INDX)
IMPLICIT INTEGER (A,B)
IF (AWWT.LT.100) GO TO 500
IF (AWWT.GE.100 .AND. AWW.LE.119) GO TO 101
IF (AWWT.EQ.120) GO TO 103
IF (AWWT.EQ.128) GO TO 103
IF (AWWT.EQ.129) GO TO 103
IF (AWWT.EQ.130) GO TO 105
IF (AWWT.EQ.131) GO TO 106

```

Table C-3 (continued)

```
IF (AWWT.EQ.134) GO TO 107
IF (AWWT.EQ.136) GO TO 108
IF (AWWT.EQ.140) GO TO 109
IF (AWWT.EQ.142) GO TO 110
IF (AWWT.EQ.144) GO TO 111
IF (AWWT.EQ.146) GO TO 112
IF (AWWT.EQ.148) GO TO 113
IF (AWWT.EQ.150) GO TO 115
IF (AWWT.EQ.157) GO TO 115
IF (AWWT.EQ.160) GO TO 116
IF (AWWT.EQ.167) GO TO 116
IF (AWWT.EQ.169) GO TO 117
IF (AWWT.EQ.170) GO TO 118
IF (AWWT.EQ.177) GO TO 118
IF (AWWT.EQ.180) GO TO 119
IF (AWWT.EQ.181) GO TO 119
IF (AWWT.EQ.185) GO TO 120
IF (AWWT.EQ.186) GO TO 120
IF (AWWT.EQ.188) GO TO 121
IF (AWWT.EQ.189) GO TO 121
IF (AWWT.EQ.190) GO TO 122
IF (AWWT.EQ.191) GO TO 122
IF (AWWT.EQ.192) GO TO 123
IF (AWWT.EQ.193) GO TO 124
IF (AWWT.EQ.194) GO TO 122
GO TO 500
101 AWW = 0
GO TO 300
102 AWW = 20
GO TO 300
103 AWW = AWWT - 100
GO TO 300
105 AWW = 31
GO TO 300
106 AWW = 06
GO TO 300
107 AWW = 09
GO TO 300
108 AWW = 36
GO TO 300
109 AWW = 45
GO TO 300
110 AWW = 10
GO TO 300
111 AWW = 05
GO TO 300
112 AWW = 45
GO TO 300
113 AWW = 0
GO TO 300
115 AWW = 51
GO TO 300
116 AWW = 61
GO TO 300
117 AWW = 79
GO TO 300
118 AWW = 71
```

Table C-3 (continued)

```

      GO TO 300
119   AWW = 80
      GO TO 300
120   AWW = 85
      GO TO 300
121   AWW = 89
      GO TO 300
122   AWW = 95
      GO TO 300
123   AWW = 96
      GO TO 300
124   AWW = 97
      GO TO 300
300   INDX = 0
500   RETURN
      END

```

```

SUBROUTINE SUB8
IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE, IDECK
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NOBM(12), NOR(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK

```

C

```
DATA GMIN/ '-'/
```

C

```
C I = NUMBER OF COLUMN CONTAINING THE CLOUD AMOUNT FOR THE SIGNIFICANT
C CLOUD GROUP
```

```
C NOTE THAT THE VALUES OF I WILL HAVE TO BE CHANGED CORRESPONDING TO
C DECK NO.
```

C

```
C COMPUTE '8' GROUPS
C IF (IDECK.EQ.1370) GO TO 1000
```

C

```
C DECK NO. 1320, 1353
C I = 79
C CALL H8GRP (I,INDX(14),1)
```

C

```
I = 86
CALL H8GRP (I,INDX(15),2)
GO TO 1001
```

C

```
C DECK NO. 1370
1000 CONTINUE
I = 85
```

Table C-3 (continued)

```

CALL H8GRP (I,INDX(14),1)
I = 92
CALL H8GRP (I,INDX(15),2)
I = 99
CALL H8GRP (I,INDX(16),3)
C
1001 CONTINUE
C
    COMPUTE H8H8H8
    CALL SH8
C
    RETURN
    END

SUBROUTINE H8GRP (I,INDX,K)
C
    IMPLICIT INTEGER (A,B,H)
    COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
    COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
    COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
    COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
    COMMON /CC06/ H1H1, H8H8, H9H9
    COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
    COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
    COMMON /CC09/ GAT(128), STAR, GBLNK
    DIMENSION A(3)
    DATA GMIN/ '-'/
C
    IF (GAT(I).EQ.STAR .OR. GAT(I).EQ.GBLNK) GO TO 80
    IF (GAT(I).NE.GMIN) GO TO 41
    AN8T = 8
    INDX = 0
    GO TO 50
41 CONTINUE
    CALL CONVRT (1,1,GAT(I),AN)
C
50 CONTINUE
    IF (INDX.EQ.9) GO TO 80
    IF (GAT(I+2).EQ.STAR .OR. GAT(I+2).EQ.GBLNK) GO TO 60
    CALL TBLCK (GAT(I+2),AC8(K))
    IF (AC8(K).EQ.0) GO TO 88
C
60 CONTINUE
    L1 = I+4
    L2 = I+5
    DO 70 L=L1,L2
    IF (GAT(L).EQ.STAR .OR. GAT(L).EQ.GBLNK) GO TO 88
    IF (GAT(L).EQ.GMIN) GO TO 88
    CALL CONVRT(1,1,GAT(L),A(L-L1+1))
70 CONTINUE
C
    AL8 = A(1)*10 + A(2)
    IF (AL8.GT.89) GO TO 71
    IF (AL8.GT.55) GO TO 73
    ALH8(K) = AL8
    GO TO 78

```

Table C-3 (continued)

```

71  H8 = AL8-90
    CALL TABL4 (H8,ALH8(K))
    GO TO 78
73  ALH8(K) = (AL8-50)*10
78  CONTINUE

```

C

```

    ANN8=ANN8+1
    AN8(K) = AN8T
    ASN8=ASN8+AN8(K)
80  CONTINUE
    RETURN
88  CONTINUE
    INDX = 9
    RETURN
    END

```

```

SUBROUTINE SH8
IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC02/ AYR, AMO, ADA, AHR, ISTN, ITAPE
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT, ADP
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(128), STAR, GBLNK

```

C

```

    AT = 0
    I = 1
    K = 15
    A = 0
    IF (ANN8.EQ.A) GO TO 300
    AT = AN8(1)
    IF (A N8(I).GT.4 ) GO TO 250

```

C

```

150 IF (INDX(K).EQ.9) GO TO 224
220 I= I+1
    AT = AT+AN8(I)
    IF (AT.GT.4) GO TO 180
223 K= K+1
    IF (INDX(K).NE.9) GO TO 220
224 IF (INDX(9).EQ.9) GO TO 280
    IF (AN1.LE.4) GO TO 280
    IF (AT.LT.AN1) GO TO 300
    GO TO 250
180 CONTINUE
    IF (AT.EQ.5) GO TO 230
190 IF (INDX(9).EQ.9) GO TO 250
    IF (AN1.GT.4) GO TO 250
    GO TO 223
230 CONTINUE
    CALL RANDOM(R)
    IF (R.GE.0.5) GO TO 190

```


Table C-3 (continued)

```

GO TO 223
C
250 H8H8 = ALH8(1)
GO TO 290
C
280 CONTINUE
H8H8 = 999
290 INDX(11) = 0
300 CONTINUE
RETURN
END

SUBROUTINE TBLCK (G,IC8)
C
COMMON /CC03/ INDX(20)
DIMENSION A(19)
DATA A/'0','1','2','3','4','5','6','7','8','9','K','M','N','O',
1      'P','R','-','!','/' /
C
C      COMPUTE CLOUD TYPE
C
IF (G.EQ.A(18)) GO TO 12
DO 10 I=1,19
J = I-1
IF (G.NE.A(I)) GO TO 10
IC8 = J
INDX(18) = 0
GO TO 12
10 CONTINUE
C
12 CONTINUE
RETURN
END

SUBROUTINE SUB4
C
C      ** COMPUTE H4H4H4 **
C
IF (INDX(9).EQ.0) GO TO 110
IF (GAT(50).EQ.STAR .OR. GAT(50).EQ.GBLNK) GO TO 800
CALL CONVRT (1,1,GAT(50),AN4)
GO TO 515
C
110 CONTINUE
IF (AN1.GT.4) GO TO 120
IF (GAT(50).EQ.STAR .OR. GAT(50).EQ.GBLNK) GO TO 506
CALL CONVRT (1,1,GAT(50),AN4)
IF (AN4.GT.4) GO TO 520

```

Table C-3 (continued)

```

506 CONTINUE
    H4H4 = 999
    INDX(13) = 0
    IF (GAT(52).EQ.STAR .OR. GAT(52).EQ.GBLNK) GO TO 508
    CALL CONVRT (1,1,GAT(52),ALH4)
C
508 IF (GAT(51).EQ.STAR .OR. GAT(51).EQ.GBLNK) GO TO 610
    CALL CONVRT (1,1,GAT(51),ACL4)
C
610 IF (GAT(53).EQ.STAR .OR. GAT(53).EQ.GBLNK) GO TO 620
    CALL CONVRT (1,1,GAT(53),ACM4)
C
620 IF (GAT(54).EQ.STAR .OR. GAT(54).EQ.GBLNK) GO TO 800
    CALL CONVRT (1,1,GAT(54),ACH4)
C
    GO TO 800
120 IF (GAT(50).EQ.STAR .OR. GAT(50).EQ.GBLNK) GO TO 800
    CALL CONVRT (1,1,GAT(50),AN4)
C
515 IF (AN4.GT.4) GO TO 520
    IF (GAT(52).EQ.STAR .OR. GAT(52).EQ.GBLNK) GO TO 700
    CALL CONVRT (1,1,GAT(52),ALH4)
    H4H4 = 666
    IF (ALH4.EQ.9) H4H4 = 777
    INDX(13) = 0
    GO TO 508
C
520 IF (GAT(52).EQ.STAR .OR. GAT(52).EQ.GBLNK) GO TO 700
    CALL CONVRT (1,1,GAT(52),ALH4)
    CALL TABL4 (ALH4,H4H4)
    INDX(13) = 0
    GO TO 508
700 AN4 = 0
800 RETURN
    END

```

```

SUBROUTINE TABL4 (I4, IH4)
  DIMENSION IT(10)
  DATA IT/1,2,4,8,15,27,42,57,72,777/
  IH4 = IT(I4+1)
  RETURN

```

```

SUBROUTINE FRQ
IMPLICIT INTEGER (A,B,H)
COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
COMMON /CC03/ INDX(20)
COMMON /CC04/ AN1, AN8(4), AC8(4), ALH8(4), ANN8, ASN8
COMMON /CC05/ AN4, H4H4, ALH4, ACL4, ACM4, ACH4
COMMON /CC06/ H1H1, H8H8, H9H9
COMMON /CC07/ ADD, AFF, AGG, AVV, AWW, AW, ATT
COMMON /CC08/ NOBS, NOBM(12), NOB(24,12)
COMMON /CC09/ GAT(80,6), STAR, GBLNK
COMMON /CC10/ J
COMMON /CC11/ BEGIN(4), BEND(4)
COMMON /CC12/ XSTN(5), AWM0
PRINT TABLES FOR HOURLY OBSERVATIONS

```

```
WRITE (16,60) XSTN, AWM0  
      ,NOBS, BEGIN, BEND,      (I,I=1,12),GBLNK
```

```
DO 680 I=1,24
  IHR = I - 1
  WRITE (16,62) IHR, (NOB(I,K),K=1,12)
CONTINUE
```

```
WRITE (16,61) (NOBM(I),I=1,12)
```

RETURN

60 FORMAT (1H1, 5A4, 48X, ' WMO ', I5 /

3
1 VATIONS =', I8 / ' BEGIN 19', I2, 3I3/

4 ' END 19', 12, 313/

5 '0', 36X, 'MONTH'/ '0', 6X, 1216/ ' HOUR', A1)

```
61  FORMAT ( 'OBS/MO', 12I6 )
```

```
62  FORMAT ( 1H0, I3, 3X, 12I6 )
```

END

Table C-3 (continued)

SUBROUTINE TIME (AH, ADY, AMO, AYR)

```
C
C  ** CHANGE TIME ZONE TO GMT **
C
  IMPLICIT INTEGER (A,B,H)
  COMMON /CC01/ ASTN, ALAT, ALON, AZ, ADATE, BSTN
  DIMENSION AHR(1)
  AHR(1) = AH

C
  IA = AHR(1) + AZ
  IF (IA.GT.23) GO TO 305
  IF (IA.LT.0 ) GO TO 325
  AHR (1) = IA
  AH = AHR(1)
  RETURN

C
305  IA = IA - 24
     AHR (1) = IA
     AH = AHR(1)
     A27 = 27
     IF (ADY.GT.A27) GO TO 310
     ADY = ADY + 1
     RETURN

C
310  A31 = 31
     IF (ADY.EQ.A31) GO TO 315
     A31 = 30
     IF (ADY.EQ.A31) GO TO 318
     A27 = 2
     IF (AMO.EQ.A27) GO TO 320
313  ADY = ADY + 1
     RETURN

C
315  A12 = 12
     IF (AMO.EQ.A12) GO TO 316
317  ADY = 1
     AMO = AMO + 1
     RETURN
316  ADY = 1
     AMO = 1
     AYR = AYR + 1
     RETURN

C
318  IMO = AMO
     IF (IMO.EQ.4 .OR. IMO.EQ.6 .OR. IMO.EQ.9 .OR. IMO.EQ.11)GO TO 317
     GO TO 313

C
320  A27 = 29
     IF (ADY.EQ.A27) GO TO 323
     G1= FLOAT(AYR)/4.0
     G2= AYR/4
     IF (G1.EQ.G2) GO TO 313
323  ADY = 1
     AMO = 3
```

-129-
Table C-3 (continued)

```

      RETURN
C
325  CONTINUE
      AHR(1) = 24 + 1A
      AH = AHR(1)
      A1 = 1
      IF (ADY.EQ.1) GO TO 328
      ADY = ADY - 1
      RETURN
328  IF (AMO.EQ.A1) GO TO 345
      A1 = 3
      IF (AMO.EQ.A1) GO TO 350
      IMO = AMO
      IF (IMO.EQ.5 .OR. IMO.EQ.7 .OR. IMO.EQ.10 .OR. IMO.EQ.12)GO TO
1 330
      ADY = 31
      AMO = AMO-1
      RETURN
330  ADY = 30
      AMO = AMO-1
      RETURN
C
345  ADY = 31
      AMO = 12
      AYR = AYR - 1
      RETURN
C
350  G1 = FLOAT(AYR)/4.0
      G2 = AYR/4
      IF (G1.EQ.G2) GO TO 354
      ADY = 28
      AMO = 2
      RETURN
354  ADY = 29
      AMO = 2
      RETURN
C
      END

```

SAMPLE OF INPUT FOR CONVERSION OF A TAPE
CONTAINING INFORMATION FOR MORE THAN ONE WEATHER STATION.

```

//GO.FT05F001 DD DDNAME=SYSIN
//GO.FT06F001 DD SYSOUT=A
//GO.FT07F001 DD DUMMY
//GO.FT08F001 DD UNIT=TAPE7,VOL=SER=000347,DISP=(OLD,KEEP),
// DCR=(RECFM=FB,BLKSIZE=5280,LRECL=165),LABEL=(,NL)

```

Table C-3 (continued)

```
//GO.FT11F001 DD UNIT=TAPE9,DSN=A10147,VOL=SER=000814,DISP=(NEW,KEEP),
// DCB=(DEN=3,RECFM=FB,LRECL=096,BLKSIZE=4800)
//GO.FT12F001 DD UNIT=TAPE9,DSN=A10338,VOL=SER=000938,DISP=(NEW,KEEP),
// DCB=(DEN=3,RECFM=FB,LRECL=096,BLKSIZE=4800)
//GO.FT16F001 DD SYSOUT=(F,,0001),DCB=(RECFM=FBA)
//GO.FT22F001 DD DUMMY
//GO.SYSIN DD *
HAMBURG 10147 11
10147
*
HANNOVER 10338 12
10338
/*
//GO.SYSUDUMP DD SYSOUT=A
//
```

Appendix D

RAWDAB-S DATA INTERPRETATION TABLES

P),
P),
The following tables give the meaning of every piece of data in the RAWDAB-S files. Most correspond closely, if not exactly, to the international surface-synoptic and airways-weather reporting codes. It should be noted that in RAWDAB-S, the data indicators, i, are used otherwise than in the TDF-13 and TDF-14 codes.

The RAWDAB-S record format to which these tables refer is given in Table 2 in the main body of this report.

Table D-1

LOCATIONS: 16, 19, 23,
26, 29, 32, 34, 39, 41,
45, 49, 53, 62, 69, 76,
83, 90
DATA INDICATOR, 1

Code	Definition
0	Value \geq zero
1	Value < zero
9	Value not recorded

Table D-2

LOCATION 7-8
HOUR OF OBSERVATION, Hr

Code	Definition
00--23	Hour 00 to Hour 23 (GMT)

Table D-3

LOCATION 14-15
DATA SOURCE INDICATOR, 1

Code	Definition
00	Converted from COLDFACT data
10	Converted from TDF-14 data
20	Converted from TDF-13 data

Table D-4

LOCATION 17-18
WIND DIRECTION, Dir

Code	Definition
00	Calm
01--36	10° to 360°, tens of degrees from which the wind is blowing

Table D-5

LOCATION 20-22
WIND SPEED, Spd

Code	Definition
000--999	0 to 999 knots

Table D-6
LOCATION 24-25
SPEED OF PEAK GUSTS, gg

Code	Definition
00--99	0 to 99 knots

Table D-7
LOCATION 27-28
HORIZONTAL VISIBILITY, VV

Code	Code Definition			Code	Code Definition		
	Kilometers	Yards Approximate	Statute Miles Approximate		Kilometers	Yards Approximate	Statute Miles Approximate
00	0.1	110	1/16	43	4.3	4,730	2 11/16
01	0.1	110	1/16	44	4.4	4,840	2 3/4
02	0.2	220	1/8	45	4.5	4,950	2 13/16
03	0.3	330	3/16	46	4.6	5,060	2 7/8
04	0.4	440	1/4	47	4.7	5,170	2 15/16
05	0.5	550	5/16	48	4.8	5,280	3
06	0.6	660	3/8	49	4.9	5,390	3 1/16
07	0.7	770	7/16	50	5	5,500	3 1/8
08	0.8	880	1/2	51-55 Not used			
09	0.9	990	9/16	56	6	6,600	3 3/4
10	1	1,100	5/8	57	7	7,700	4 3/8
11	1.1	1,210	11/16	58	8	8,800	5
12	1.2	1,320	3/4	59	9	9,900	5 5/8
13	1.3	1,430	13/16	60	10	11,000	6 1/4
14	1.4	1,540	7/8	61	11	12,100	6 7/8
15	1.5	1,650	15/16	62	12	13,200	7 1/2
16	1.6	1,760	1	63	13	14,300	8 1/8
17	1.7	1,870	1 1/16	64	14	15,400	8 3/4
18	1.8	1,980	1 1/8	65	15	16,500	9 3/8
19	1.9	2,090	1 3/16	66	16	17,600	10
20	2	2,200	1 1/4	67	17	18,700	10 5/8
21	2.1	2,310	1 5/16	68	18	19,800	11 1/4
22	2.2	2,420	1 3/8	69	19	20,900	11 7/8
23	2.3	2,530	1 7/16	70	20	22,000	12 1/2
24	2.4	2,640	1 1/2	71	21	23,100	13 1/8
25	2.5	2,750	1 9/16	72	22	24,200	13 3/4
26	2.6	2,860	1 5/8	73	23	25,300	14 3/8
27	2.7	2,970	1 11/16	74	24	26,400	15
28	2.8	3,080	1 3/4	75	25	27,500	15 5/8
29	2.9	3,190	1 13/16	76	26	28,600	16 1/4
30	3	3,300	1 7/8	77	27	29,700	16 7/8
31	3.1	3,410	1 15/16	78	28	30,800	17 1/2
32	3.2	3,520	2	79	29	31,900	18 1/8
33	3.3	3,630	2 1/16	80	30	33,000	18 3/4
34	3.4	3,740	2 1/8	81	35		21 7/8
35	3.5	3,850	2 3/16	82	40		25
36	3.6	3,960	2 1/4	83	45		28 1/8
37	3.7	4,070	2 5/16	84	50		31 1/4
38	3.8	4,180	2 3/8	85	55		34 3/8
39	3.9	4,290	2 7/16	86	60		37 1/2
40	4	4,400	2 1/2	87	65		40 5/8
41	4.1	4,510	2 9/16	88	70		43 3/4
42	4.2	4,620	2 5/8	89	> 70		> 43 3/4

NOTE: The horizontal visibility is estimated by the distance visible to known check points. If it is not the same in different directions, the shorter distance is recorded, and if the distance is between two of the distances given in the code table, the code figure for the smaller distance is reported.

Table D-8

LOCATION 30-31--PRESENT WEATHER, ww

[WMO Code 4677]

Symbol ww=Present Weather

00-49: No precipitation at the station at the time of observation.

00-19: No precipitation, fog, ice fog (except for 11 and 12), duststorm, drifting or blowing snow at the station at the time of observation or, except for 09 and 17, during the preceding hour.

- | | | | | | |
|-------------------------------|---|----|--|---|---|
| No meteors except photometers | { | 00 | Cloud development not observed or not observable. | } Characteristic change of the state of sky during past hour. | |
| | | 01 | Clouds generally dissolving or becoming less developed. | | |
| | | 02 | State of sky on the whole unchanged. | | |
| | | 03 | Clouds generally forming or developing. | | |
| Haze, dust, sand or smoke | { | 04 | Visibility reduced by smoke, e.g., veldt or forest fires, industrial smoke or volcanic ashes. | } | |
| | | 05 | Haze. | | |
| | | 06 | Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation. | | |
| | | 07 | Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen: or, in the case of ships, blowing spray at the station. | | |
| | | 08 | Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour, or at the time of observation, but no duststorm or sandstorm. | | |
| | | 09 | Duststorm or sandstorm within sight at the time of observation or at station during the preceding hour. | | |
| | | 10 | Light fog. ¹ (Vis. 1,100 yds. or more.) | | |
| | | 11 | Patches of | | } shallow fog or ice fog at the station, whether on land or sea, not deeper than about 6 feet on land or 33 feet at sea. (Apparent vis. less than 1,100 yds.) |
| | | 12 | More or less continuous | | |
| | | 13 | Lightning visible, no thunder heard. | | |
| | | 14 | Precipitation within sight, but not reaching the ground or the surface of the sea. | | |
| | | 15 | Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e., estimated to be more than 3.1 miles) from the station. | | |
| | | 16 | Precipitation within sight, reaching the ground or the surface of the sea near to but not at the station. | | |
| | | 17 | Thunderstorm, but no precipitation at the time of observation. | | |
| | | 18 | Squalls at or within sight of the station during the preceding hour or at the time of observation. | | |
| | | 19 | Funnel cloud(s) (i.e., tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation. | | |

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20-29: Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation.

- | | | |
|----|---|-----------------------------|
| 20 | Drizzle (not freezing) or snow grains | } Not falling as shower(s). |
| 21 | Rain (not freezing) | |
| 22 | Snow | |
| 23 | Rain and snow or ice pellets (type a) | |
| 24 | Freezing drizzle or freezing rain | |
| 25 | Shower(s) of rain. | |
| 26 | Shower(s) of snow, or of rain and snow. | |
| 27 | Shower(s) of hail, ² or of rain and hail. ³ | |
| 28 | Fog or ice fog. (Vis. less than 1,100 yds.). | |
| 29 | Thunderstorm (with or without precipitation). | |

30-39: Duststorm, sandstorm, drifting or blowing snow.

- | | | |
|----|---|--|
| 30 | { Slight or moderate duststorm or sandstorm | Has decreased during the preceding hour. |
| 31 | | No appreciable change during the preceding hour. |
| 32 | | Has begun or has increased during the preceding hour. |
| 33 | { Severe duststorm or sandstorm | Has decreased during the preceding hour. |
| 34 | | No appreciable change during the preceding hour. |
| 35 | | Has begun or has increased during the preceding hour. |
| 36 | | Slight or moderate drifting snow, generally low. (Less than 6 ft.) |
| 37 | | Heavy drifting snow, generally low. (Less than 6 ft.) |
| 38 | | Slight or moderate blowing snow, generally high. (6 ft. or more) |
| 39 | | Heavy blowing snow, generally high. (6 ft. or more) |

40-49: Fog or ice fog at the time of observation. (Vis. less than 1,100 yds.)

- | | | |
|----|--|--|
| 40 | Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer. | |
| 41 | Fog or ice fog in patches | |
| 42 | Fog or ice fog, sky discernible | } Has become thinner during the preceding hour. |
| 43 | Fog or ice fog, sky not discernible | |
| 44 | Fog or ice fog, sky discernible | } No appreciable change during the preceding hour. |
| 45 | Fog or ice fog, sky not discernible | |

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Table D-8 (continued)

- | | |
|---|--|
| 46 Fog or ice fog, sky discernible | } Has begun or has become thicker during the preceding hour. |
| 47 Fog or ice fog, sky not discernible | |
| 48 Fog, depositing rime, sky discernible. | |
| 49 Fog, depositing rime, sky not discernible. | |

50—99: Precipitation at the station at the time of observation

50—59: Drizzle.

- | | |
|--|---|
| 50 Drizzle, not freezing, intermittent | } Slight at time of observation. |
| 51 Drizzle, not freezing, continuous | |
| 52 Drizzle, not freezing, intermittent | } Moderate at time of observation. |
| 53 Drizzle, not freezing, continuous | |
| 54 Drizzle, not freezing, intermittent | } Heavy (dense) at time of observation. |
| 55 Drizzle, not freezing, continuous | |
| 56 Drizzle, freezing, slight. | |
| 57 Drizzle, freezing, moderate or heavy (dense). | |
| 58 Drizzle and rain, slight. | |
| 59 Drizzle and rain, moderate or heavy. | |

60—69: Rain.

- | | |
|---|------------------------------------|
| 60 Rain, not freezing, intermittent | } Slight at time of observation. |
| 61 Rain, not freezing, continuous | |
| 62 Rain, not freezing, intermittent | } Moderate at time of observation. |
| 63 Rain, not freezing, continuous | |
| 64 Rain, not freezing, intermittent | } Heavy at time of observation. |
| 65 Rain, not freezing, continuous | |
| 66 Rain, freezing, slight. | |
| 67 Rain, freezing, moderate or heavy. | |
| 68 Rain or drizzle and snow, slight. | |
| 69 Rain or drizzle and snow, moderate or heavy. | |

70—79: Solid precipitation not in showers

- | | |
|---------------------------------------|------------------------------------|
| 70 Intermittent fall of snow flakes | } Slight at time of observation. |
| 71 Continuous fall of snow flakes | |
| 72 Intermittent fall of snow flakes | } Moderate at time of observation. |
| 73 Continuous fall of snow flakes | |
| 74 Intermittent fall of snow flakes | } Heavy at time of observation. |
| 75 Continuous fall of snow flakes | |
| 76 Ice prisms (with or without fog). | |
| 77 Snow grains (with or without fog). | |

- 78 Isolated starlike snow crystals (with or without fog).
- 79 Ice pellets (type a) (sleet, U.S. definition).

80—99: Showery precipitation, or precipitation with current or recent thunderstorm

- | | |
|--|--|
| 80 Rain shower(s), slight. | |
| 81 Rain shower(s), moderate or heavy. | |
| 82 Rain shower(s), violent. | |
| 83 Shower(s) of rain and snow mixed, slight. | |
| 84 Shower(s) of rain and snow mixed, moderate or heavy. | |
| 85 Snow shower(s), slight. | |
| 86 Snow shower(s), moderate or heavy. | |
| 87 } Shower(s) of snow pellets, or ice pellets (type b) with or without rain or rain and snow mixed. | } Slight.
Moderate or heavy. |
| 88 } | |
| 89 } Shower(s) of hail, ² with or without rain or rain and snow mixed, not associated with thunder. | } Slight.
Moderate or heavy. |
| 90 } | |
| 91 Slight rain at time of observation. | |
| 92 Moderate or heavy rain at time of observation. | } Thunderstorm during the preceding hour but not at time of observation. |
| 93 Slight snow or rain and snow mixed or hail ³ at time of observation. | |
| 94 Moderate or heavy snow, or rain and snow mixed or hail ³ at time of observation. | |
| 95 Thunderstorm, slight or moderate, without hail ³ but with rain and/or snow at time of observation. | } Thunderstorm at time of observation. |
| 96 Thunderstorm, slight or moderate, with hail ³ at time of observation. | |
| 97 Thunderstorm, heavy, without hail, ³ but with rain and/or snow at time of observation. | |
| 98 Thunderstorm combined with duststorm or sandstorm at time of observation. | } Thunderstorm at time of observation. |
| 99 Thunderstorm, heavy with hail ³ at time of observation. | |

¹ The U.S. term, "light fog" is synonymous with the European term "mist."

² Refers to "hail" only.

³ Refers to snow pellets, ice pellets (type b), and hail.

NOTE.—With respect to precipitation, "at the station" means "at the point where the observation is normally taken."

Table D-9

LOCATION 33--PAST WEATHER, W

Code	Definition
0	Cloud covering 1/2 or less of the celestial dome throughout the appropriate period.
1	Cloud covering more than 1/2 of the celestial dome during part of the appropriate period and covering 1/2 or less during part of the period.
2	Cloud covering more than 1/2 of the celestial dome throughout the appropriate period.
3	Sandstorm, duststorm, or drifting or blowing snow.
4	Fog or thick haze.
5 ^a	Drizzle.
6	Rain.
7 ^b	Snow, rain and snow mixed, or ice pellets.
8 ^b	Shower(s).
9	Thunderstorm(s), with or without precipitation.

NOTE: The term "ice pellets" is synonymous with the U.S. term "sleet."

^aWhen precipitation or thunderstorms have occurred and have not been reported by ww, code figures 5 to 9 will be used as appropriate even though they do not represent the generally prevailing weather.

^bWhen code figure 8 or 9 is reported and the showers or thunderstorms were accompanied by hail add "past hail" to end of message.

Table D-10

LOCATIONS 35-38
AIR TEMPERATURE, Temp

Code	Definition
000 to ±199°	0° to ±199° fahrenheit

Table D-11

LOCATIONS: 40, 57, 63, 70, 77, 84
CLOUD AMOUNT, N, N4, n

Code	Definition
0	No clouds.
1 to 8	One to 8 eighths.
9	Sky obscured, or cloud amount cannot be estimated.

Table D-12

LOCATIONS: 42-44, 46-48, 50-52, 54-56, 64-66,
71-73, 78-80, 85-87
CLOUD AND/OR CEILING HEIGHT, H1, H8, H9, H4, h

Code	Definition
000	Zero (< 50) feet.
001 to 600	100 to 60,000 feet.
666	Ceiling at unknown height (but > h4) with scattered clouds below 8,000 feet.
777	Above 8,000 feet.
888	Ceiling formed by cirriform clouds at unknown height.
999	Unlimited ceiling (i.e., less than 5/8 total cloud cover).

Table D-13

LOCATION 58
LOW (OR MIDDLE) CLOUD HEIGHT, h4

Code	Definition	
	1955 English Units	
0	0 to	149 feet
1	150 to	299 feet
2	300 to	599 feet
3	600 to	999 feet
4	1000 to	1999 feet
5	2000 to	3499 feet
6	3500 to	4999 feet
7	5000 to	6499 feet
8	6500 to	7999 feet
9	> 8000 feet or no low (or middle) clouds	

Table D-14

LOCATION 91-93
DEW POINT TEMPERATURE, Dp

Code	Definition
00 to ±99	0° to ±99° fahrenheit

NOTE: + sign not recorded.

Table D-15

LOCATION 59
LOW CLOUD TYPE, L

Code	Definition
0	No lower clouds.
1	Cumulus of fine weather.
2	Cumulus, heavy and swelling, without anvil top.
4	Stratocumulus formed by the flattening of cumulus clouds.
6	Layer of stratus or stratocumulus.
7	Low broken up clouds of bad weather.
8	Cumulus of fine weather and stratocumulus.
9	Heavy or swelling cumulus or cumulonimbus, and low ragged clouds of bad weather.

Table D-16

LOCATION 60
MIDDLE CLOUD TYPE, M

Code	Definition
0	No middle clouds.
1	Typical altostratus, thin.
2	Typical altostratus, thick (or nimbostratus).
3	Alto cumulus, or high stratocumulus, sheet at one level.
4	Alto cumulus in small isolated patches, more or less lenticular in shape.
5	Alto cumulus arranged in more or less parallel bands.
6	Alto cumulus formed by a spreading out of the tops of cumulus.
7	Alto cumulus associated with altostratus, or altostratus with a partially alto cumulus character.
8	Alto cumulus castellatus, or scattered cumuli-form tufts.
9	Alto cumulus in several sheets at different levels, generally associated with thick fibrous veils of clouds and a chaotic appearance of the sky.

Table D-17

LOCATION 61
HIGH CLOUD TYPE, H

Code	Definition
0	No high clouds (no cirrus clouds).
1	Cirrus, delicate, not increasing, scattered and isolated masses.
2	Cirrus, delicate, not increasing, abundant, but not forming a continuous layer.
3	Cirrus of anvil clouds, usually dense.
4	Cirrus, increasing, generally in the form of hooks ending in a point or in a small tuft.
5	Cirrus, often in polar bands, or cirrostratus advancing over the sky but not more than 45° above the horizon.
6	Cirrus, often in polar bands, or cirrostratus advancing over the sky and more than 45° above the horizon.
7	Veil of cirrostratus covering the whole sky.
8	Cirrostratus, not increasing and not covering the whole sky.
9	Cirrocumulus predominating, associated with a small quantity of tufts.

Table D-18

LOCATIONS: 67-68, 74-75, 81-82, 88-89
CLOUD TYPE, c

Code	Definition
0	None.
1	Fog.
2	Stratus.
3	Stratocumulus.
4	Cumulus.
5	Cumulonimbus.
6	Altostratus.
7	Alto cumulus.
8	Cirrus.
9	Cirrostratus.
10	Fractostratus.
11	Fractocumulus.
12	Cumulomammatus.
13	Nimbostratus.
14	Alto cumulus castellatus.
15	Cirrocumulus.
16	Obscuration other than fog.
17	Thin obscuration other than fog (reportable Aug 1947 to May 1951 only).
18	Thin fog (reportable Aug 1947 to May 1951 only).
99	Cloud type not recorded for reported cloud.

Appendix E

EXAMPLES OF RAWDAB-S INQUIRY PROGRAMS

The list of programs briefly described in this section was compiled from a library of programs written specifically for making inquiries of RAWDAB-S. This set of programs represents the type of individual requests that have been made by the research staff at Rand. It is stressed that they reflect only a small fraction of the inquiries of RAWDAB-S that can be of great value in research projects requiring estimates of weather-event probabilities and a small fraction of the other information and insights that can be gained from historical weather records.

Included in the brief description of each program are the programming language used to code the procedure and the main storage requirements for both the procedure and system subroutines. The central processing units (CPU) give a measure of the computer time required to complete a given task in an IBM 360/65 computer system. Clearly, the total CPU time is a function of the size of the particular RAWDAB-S file that is being analyzed. Most durations are stated in X sec per 1000 ob, where an "ob" is one logical record. Since input calls from the RAWDAB-S file make up a large portion of the "costly" operations involved in the data analysis, the programs were designed so that only one pass through the RAWDAB-S file is required for each task.

1. CFLOS

This program computes the probability of having a cloud-free line of sight between any two points, one on earth and one in space. The program uses (1) Shanklin and Landwehr's photographically derived probability of cloud-free line of sight as a function of look angle and cloud amount, and (2) the frequency distribution of clouds as a function of cloud height and amount as computed by Program 2, FREQ.

Language: FORTRAN IV
Core Req: 54K
CPU: 7 seconds per table produced by FREQ

2. FREQ

Tabulates the frequency of cloud at mutually exclusive height intervals for each eighth of sky cover.

Language: FORTRAN IV
Core Req: 66K
CPU: 41 sec/1000 ob

3. OCT10-30

Lists in chronological order the ceiling (ft), sky cover (eighths), visibility (mi), and weather conditions that obstruct vision (i.e., rain, haze, etc.) for every sixth hour in a given calendar period.

Language: PL/1
Core Req: 58K
CPU: Strict dependence on size of the file and length of observation period.

4. CUMPROB

Computes the cumulative joint probability (CP) for visibility and ceiling-height intervals:

$$CP = \sum_{i=1}^K \sum_{j=1}^L P(i, j)$$

where K = number of visibility intervals

L = number of ceiling-height intervals

P(i, j) = joint probability of ith visibility interval and jth ceiling-height interval.

The program can distinguish between seasons of the year, and daytime/nighttime hours of the day.

Language: FORTRAN IV
Core Req: 62K
CPU: 21 sec/1000 ob

5. RVW

1. Computes the average hourly probability of "visual" and "radar" weather (categories of ceiling, visibility, and precipitation) for daytime and nighttime hours for each month and for each year in the RAWDAB file. Since the number of daylight hours is a function of season and latitude, the program requires the average monthly sunrise and sunset times.

2. Computes the average "utility level" for daytime and nighttime hours for each month and year in the file:

$$\text{Avg utility level for day(night)} = \text{Avg prob for day(night)} \times \frac{\text{no. of day(night) hours}}{24}$$

3. Computes the normalized count of cloud cover by month and year.

4. Computes the "system capability utility level" by month and year.

Language: FORTRAN IV
Core Req: 68K
CPU: 8 sec/1000 ob

6. VISWW

Computes raw and normalized joint frequencies for several class intervals of visibility and each of the possible present weather values. Prints out only nonzero frequencies.

Language: FORTRAN IV
Core Req: 46K
CPU: 2.5 sec/1000 ob

7. HUSCHKEGRAMS

Computes the probability of a "weather event," which can be a combination of several variables, for each hour of the day and each calendar month. A table scaled for drawing isopleths of probability as a function of hour-of-day and month is produced for each weather event considered.

Language: FORTRAN IV
Core Req: 68K
CPU: 40 sec (two weather events and 11,200 obs)

8. JPP

Computes the individual and joint occurrence probabilities of class intervals of ceiling, visibility, and dew-point temperature which relate to the capabilities of visual and infrared target acquisition systems:

1. The joint probability of cloud ceiling, visibility, and dew-point temperature, $P(I, J, K)$.
2. The joint probability of ceiling and visibility for fixed intervals of dew-point temperature, $P(I, J, K)$, $K = 1, \dots, K'$ where $K' =$ number of intervals in range of dew-point temperature values.
3. The joint probability of ceiling and visibility, $P(I, J)$.
4. The probability of ceiling, $P(I)$.
5. The probability of visibility, $P(J)$.
6. The probability of dew-point temperature, $P(K)$.
7. The probability of classes of combined ceiling and visibility values.

In the above notation

I = ith interval in range of cloud ceiling values.

J = jth interval in range of visibility codes.

K = kth interval in range of dew-point temperature values.

L = lth interval in range of amount of lowest cloud values.

M = mth interval in range of height of lowest cloud values.

N = nth class of combined ceiling and visibility values.

Generates the tables described above for each season of the year and time of day as follows:

Seasons:

- (1) Winter: November to February
- (2) Summer: May to August
- (3) Spring/Fall: March, April, September, and October

Times-of-Day:

- (1) Day: sunrise to sunset
- (2) Forenoon: sunrise to 1100 (LMT)
- (3) Afternoon: 1200 to sunset (LMT)
- (4) Night: sunset to sunrise
- (5) All hours: 0000 to 2300 (LMT)

Language: FORTRAN IV

Core Req: 100K

CPU: 12 sec/1000 ob

9. DUR

Computes the conditional probability that a composite weather state, S, has duration of T hours given that S occurs. Let

$$P(S, T) = N(S, T) / \sum_S \sum_T N(S, T)$$

where $N(S, T)$ is the frequency count. Then

$$P(T|S) = P(S, T) / \sum_T P(S, T)$$

and the expected duration T for each S

$$E[T(S)] = \sum_T TP(T|S)$$

The data are broken down by seasons and daylight hours as described in the JPP Program above.

Language: PL/1

Core Req: 194K

CPU: .005 sec/1000 ob

10. CONDP

Defines the events:

$E(I, J, H, A, S, \text{POD})$ = the joint occurrence of ceiling I , visibility J , at hour H , at station A , in season S , during period-of-day POD .

$F(\text{II}, \text{JJ}, H-\tau, B, S, \text{POD})$ = the joint occurrence of ceiling II , visibility JJ , at τ hours before hour H , at station B , in season S , during period-of-day POD .

Computes the conditional probability:

$$P(F|E)$$

In the above notation

$I, \text{II}, J, \text{JJ}$ are class intervals.

S and POD are time periods bounded by given calendar dates and hours, respectively.

Language: FORTRAN IV

Core Req: 216K

CPU: 1.2 sec/1000 ob, for three seasons (using a previously prepared working file for each station being analyzed).

11. FORECAST

Let $\{u_i\}$ and $\{x_i\}$ be weather events that occur at times t and $t - \tau$, respectively. Let $\{a_i\}$ be the predicted weather events, and C_{ji} the probability of forecasting error τ hours before the event a_i . The probability of a "correct" forecast is computed as follows:

$$P\{a_i = u_i | u_i\} = P\{x_i = u_i | u_i\} + [k_1 + k_2 P\{u_i\}][1 - P\{x_i = u_i | u_i\}]$$

where $P\{x_i = u_i | u_i\}$ = persistence as computed by Program CONDP

$P\{u_i\}$ = probability of event u_i

k_1, k_2 = skill scores for "correct" forecasts and the probability of an "incorrect" forecast is

$$P\{a_i | u_j\}_{i \neq j} = C_{ji} [1 - P\{a_i = u_i | u_i\}].$$

Language: FORTRAN IV

Core Req: 180K

CPU: 7.5 sec (using tables produced by programs CONDP and JPP)

BIBLIOGRAPHY

1. *AWS Data Families 12-13: Electronic Data Processing Reference Manual (Synoptic Observations, Chapter 3, The Observations), Vols. I and II, September 1960.*
2. *AWS Data Family 14: Electronic Data Processing Reference Manual (Airways Observations), June 1958.*
3. *Federal Meteorological Handbook No. 2: Synoptic Code (Standards and Procedures for the Coding of Synoptic Reports), January 1, 1969.*
4. *Weather Reporting: Observing Stations, Vol. A, World Meteorological Organization, WMO/OMM-No. 9, TP.4, May 1972.*