

## Revised Data Sets Processed by the WOUDC in 1997

### Summary

This report is divided into the three main data types: total ozone, ozonesonde and Umkehr analysis and retrievals. A summary table indicating the stations, instruments and temporal range of the revision is followed by additional notes that are often specific to an individual station or instrument. A commentary by the WOUDC will complete the notes for each data type.

These data are published in a Special Edition of the *Ozone Data for the World - Revised Data for 1997*.

### **Total Ozone**

Several large data sets were received by the WOUDC in early 1997, but the data were reported in the last issue of *Ozone Data for the World*. These data (indicated by an asterisks (\*)) have been included in this summary, however, these data will not appear in the special edition of *Ozone Data for the World - Revised Data for 1997*.

### **Summary Table of Other Recent Revised Total Ozone Data Sets - 1995-96**

Stn #	Station Name	Country	Agency	Date Range
19	Bismark	USA	NOAA-CMDL	1962-12-18 to 1996-12-31
20	Caribou	USA	NOAA-CMDL	1962-08-30 to 1996-12-31
40	Haute Province	FRA	NOAA-CMDL	1983-09-02 to 1996-12-30
50	Potsdam	DEU	DWD	1964-01-13 to 1996-12-30
53	Uccle	BEL	MIB	1971-07-28 to 1996-10-31
159	Perth	AUS	NOAA-CMDL	1984-07-30 to 1996-12-31
200	Cachoeira Paulista	BRA	INPE	1977-09-04 to 1996-04-30
213	El Arenosillo	ESP	INTA	1980-02-25 to 1994-05-18
256	Lauder	NZL	NOAA-CMDL	1987-01-29 to 1996-06-28

### **Summary Table of Revised Total Ozone Data Sets - 1997**

Stn #	Station Name	Country	Agency	Date Range
31	Mauna Loa	USA	NOAA-CMDL	1963-12-03 to 1995-08-31
35	Arosa	CHE	SMI	1926-07-23 to 1996-12-31
67	Boulder	USA	NOAA-CMDL	1966-09-01 to 1994-04-30

77	Churchill	CAN	AES	1964-12-10 to 1989-08-31
99	Hohenpeissenberg	DEU	DWD-MOHp	1967-05-11 to 1996-12-31
99	Hohenpeissenberg+	DEU	DWD-MOHp	1984-01-02 to 1996-12-31
106	Nashville	USA	NOAA-CMDL	1962-07-26 to 1995-08-31
107	Wallops Island	USA	NOAA-CMDL	1967-06-23 to 1995-08-31
110	Huancayo	PER	NOAA-CMDL	1964-02-14 to 1992-12-31
111	Amundsen-Scott	USA	NOAA-CMDL	1963-12-01 to 1994-07-31
191	Samoa	USA	NOAA-CMDL	1975-12-18 to 1995-08-31
199	Barrow	USA	NOAA-CMDL	1973-07-29 to 1996-10-31
208	Xianghe	CHN	CAS-IAP	1979-01-01 to 1991-12-31
217	Poker Flat	USA	NOAA-CMDL	1984-03-06 to 1992-05-01
244	Fresno	USA	NOAA-CMDL	1983-06-22 to 1994-08-10

+ Indicates Brewer spectrophotometer data. All other data are from Dobson instruments.

### Additional Notes

Riga's ozone station data for 1973-1991, has been corrected according to the Bass-Paur scale. The 1973-91 data sent on 22 May 1996 represented the Vigroux scale and looked identical to those received from MGO. Up to 1991, the ozone measurements made at the Riga station had been supervised by MGO and hopefully, also revised.

There has been a malfunction in the ozonemeter M-124 No 203. Therefore, the ozone data for the period since February 1996 have to be rejected. Since October 1996, we have resumed observations with M-125 No. 486 checked in MGO in August 1996 and hope that our observations are of appropriate quality.

### Ozonesondes

#### Summary Table of Revised Ozonesonde Data Sets - 1997

Stn #	Station Name	Country	Agency	Date Range
18	Alert	CAN	AES	1987-12-05 to 1993-12-29
21	Edmonton	CAN	AES	1979-08-22 to 1993-12-29
24	Resolute Bay	CAN	AES	1979-12-01 to 1993-12-29
67	Boulder	USA	NOAA-CMDL	1979-03-12 to 1996-12-27
76	Goose Bay	CAN	AES	1980-09-02 to 1993-12-29
77	Churchill	CAN	AES	1979-09-23 to 1993-10-27
99	Hohenpeissenberg	DEU	DWD-MOHp	1966-11-02 to 1997-08-27

<b>109</b>	Hilo	USA	NOAA-CMDL	1982-09-21 to 1997-02-05

### **Additional Notes**

Data prior to the dates given the revised data set are for the ECC data. Data after 1993 are considered good - no further revisions are foreseen

## Umkehr Data - N-values

### Summary Table of Revised Umkehr Processed N-Value Data - 1997

Stn #	Station Name	Country	Agency	Date Range
7	Kagoshima*	JPN	JMA	1958-03-19 to 1993-12-29
12	Sapporo*	JPN	JMA	1958-03-23 to 1993-12-16
14	Tateno*	JPN	JMA	1957-08-01 to 1993-12-29
31	Mauna Loa	USA	NOAA-CMDL	1984-03-12 to 1995-12-30
40	Haute Provence	FRA	NOAA-CMDL	1983-09-03 to 1995-12-19
67	Boulder	USA	NOAA-CMDL	1978-02-23 to 1995-12-29
101	Syowa*	JPN	JMA	1977-02-23 to 1995-01-29
105	Fairbanks	USA	NOAA-CMDL	1993-04-23 to 1995-10-17
159	Perth	AUS	NOAA-CMDL	1984-07-31 to 1995-12-31
190	Naha*	JPN	JMA	1974-07-01 to 1993-12-26
217	Poker Flat	USA	NOAA-CMDL	1984-03-06 to 1992-04-27
256	Lauder	NZL	NOAA-CMDL	1987-02-04 to 1995-12-30

\*These data were received by the WOUDC in 1996, but not processed until 1997.

#### Additional Notes

*ALL processed data through the MK2V4 C-Umkehr program have been adjusted to the Bass-Paur scale using the standard DS on AD correction of 0.9743.* There are a couple of exceptions: the Indian data and the Arosa data. These stations have been adjusted to the Bass-Paur scale using a different conversion factor. Refer to the notes with those stations.

The following stations (re-evaluated by NOAA-CMDL) have submitted raw N-values with the Total ozone in Bass-Paur. This is why these stations are designed “*rev\_stn#.umr*” to indicate that the raw data are in BP scale.

**Stations: 31, 40, 67, 105, 159, 217 and 256.**

## Umkehr Retrievals

These data have been processed through the Mateer C-Umkehr (April 1995 Version) Program. All data sets within the WOUDC archive have been regenerated. Total ozone values reported in the vertical profile outputs have been adjusted to the Bass and Paur scale.

**Summary Table of Revised Umkehr Vertical Profile Data - 1997**

Stn#	Station Name	Country	# N-Records	# Profiles	Date Range
7	Kagoshima	JPN	1351	1277	1958-03-19 to 1995-12-27
8	Kodaikanal	IND	184	172	1958-01-19 to 1989-02-02
9	Mount Abu	IND	732	731	1951-10-21 to 1980-06-19
10	New Delhi	IND	1666	1325	1957-09-09 to 1995-12-18
12	Sapporo	JPN	1190	1150	1958-03-23 to 1995-12-27
13	Srinagar	IND	237	227	1955-11-08 to 1989-08-06
14	Tateno	JPN	5572	5358	1957-08-01 to 1995-12-31
15	Torishima	JPN	51	Insufficient input data, no profiles generated.	
17	Argentine Is.	ATA	65	64	1957-10-07 to 1972-11-24
21	Edmonton	CAN	399	346	1958-10-09 to 1988-02-28
23	Moosonee	CAN	64	52	1957-07-20 to 1961-05-05
24	Resolute	CAN	185	165	1957-08-23 to 1984-04-27
26	Aspendale	AUS	940	888	1962-01-09 to 1982-12-22
27	Brisbane	AUS	1022	959	1962-06-25 to 1991-12-26
29	Macquarie Island	AUS	515	302	1966-01-13 to 1991-12-09
30	Minamitorishima (Marcus Is.)	JPN	73	Insufficient input data, no profiles generated.	
31	Mauna Loa	USA	14449	4232	1982-08-25 to 1995-12-30
35	Arosa	CHE	9967	9563	1956-01-03 to 1996-12-29
40	Haute Provence	FRA	8721	2680	1983-09-03 to 1995-12-19
50	Potsdam	DEU	63	58	1964-02-25 to 1965-11-15
57	Halley Bay	ATA	35	30	1957-10-18 to 1972-10-19
64	Sterling	USA	11	Insufficient input data, no profiles generated.	
65	Toronto	CAN	180	167	1959-12-17 to 1973-02-12
66	Fort Collins	USA	195	Insufficient input data, no profiles generated.	
67	Boulder	USA	8303	2675	1978-02-23 to 1995-12-29
68	Belsk	POL	2601	1745	1963-04-05 to 1995-10-25
70	Mont Louis	FRA	563	557	1963-06-22 to 1978-05-29
71	Pretoria	ZAF	1252	1227	1964-08-01 to 1972-02-16
73	Ahmedabad	IND	581	580	1960-11-04 to 1984-12-19
74	Varanasi	IND	1352	1174	1964-02-01 to 1995-12-17
75	Dum Dum	IND	222	218	1963-11-13 to 1973-01-02
76	Goose	CAN	199	171	1963-02-27 to 1984-08-14

77	Churchill	CAN	84	76	1965-03-24 to 1976-04-26
79	Tallahassee	USA	181	Insufficient input data, no profiles generated.	
81	Base King Baudoin	ATA	41	31	1965-09-24 to 1966-11-09
82	Lisbon	PRT	1796	1716	1967-06-30 to 1995-11-23
84	Darwin	AUS	385	343	1966-04-30 to 1991-12-20
91	Buenos Aires	ARG	375	Insufficient input data, no profiles generated.	
92	Hobart	AUS	241	186	1969-01-09 to 1991-11-25
101	Syowa	JPN	1346	168	1977-02-23 to 1995-12-01
102	Bracknell	GBR	6	1	1986-02-13 to 1986-02-13
105	Fairbanks	USA	882	135	1993-04-23 to 1995-09-28
110	Huancayo	PER	108	108	1985-04-23 to 1995-09-21
152	Cairo	EGY	694	615	1968-11-01 to 1995-11-20
159	Perth	AUS	10273	3180	1969-03-25 to 1995-12-31
175	Nairobi	KEN	2	2	1984-05-10 to 1984-05-17
180	Invercargill	NZL	371	352	1971-03-19 to 1987-09-01
182	Aralskoe More	KAZ	9	2	1991-07-01 to 1991-07-04
187	Poona	IND	1398	898	1973-04-04 to 1995-12-23
190	Naha	JPN	733	689	1974-07-01 to 1995-12-13
192	Mexico City	MEX	88	28	1994-10-25 to 1995-03-07
205	Thivandrum	IND	66	22	1982-11-22 to 1983-04-02
214	Singapore	SGP	603	362	1979-04-01 to 1995-09-23
217	Poker Flat	USA	1703	443	1984-03-11 to 1992-04-27
218	Manila	PHL	7	Insufficient input data, no profiles generated.	
245	Aswan	EGY	2702	2344	1985-04-14 to 1995-12-31
252	Seoul	KOR	751	703	1986-02-06 to 1995-12-21
253	Melbourne	AUS	86	86	1985-01-06 to 1991-11-21
256	Lauder	NZL	4216	1133	1987-02-04 to 1995-12-30
260	Table Mountain	USA	60	19	1989-07-19 to 1989-08-01
265	Irene	ZAF	1917	563	1990-07-09 to 1995-12-28
275	Skovorodino	RUS	1	Insufficient input data, no profiles generated.	
340	Springbok	ZAF	511	115	1995-03-01 to 1995-12-28

### Additional Notes on the Retrieval Summary

The following limits are applied to each retrieval output generated by the MK2V4CUM program. These files are typically given the extension UMN. UMN files are preprocessed before loading begins into the database and limits on the output values have been established (Mateer, 1995) to yield a warning of values that are considered unacceptable. These log files indicate these warnings and the data record from which it was generated. This section will briefly outline the criteria used for these limits.

Data records with data fields meeting the following criteria will generate a warning.

1. An RMS value  $\geq 200$
2. A DFMRS value  $> 0.060$
3. The combination of Iterations  $= 5$  and DFRMS  $> 0.010$  and FEPS  $> 0.15$

Since discovering this “new” problem with Carl’s MK2V4CUM program I have had to rerun all the UMN data. This is coupled with the problem of the ODW reports which had difficulty with reading the UMN files (MA96 and MJ96) because of the LF CR problem. (see MA96 and MJ96 notes) Action: ODW\_INDEX TABLE needed to be updated, as did umk\_vdf\_new, therefore, all data were dropped and reloaded.

#### 4. Station by Station Summary

**Argentina** has only recent data and since these data were processed in 1996, there is no change.

**Australia** does not include the stn159 data that CMDL processed (July 84 - Dec 95) All data occur before Jan 1992, therefore have been converted to the BP scale.

**Canada** has been completed with values adjusted for BP since none of the data is past Jan 1992.

The **Egyptian** data set has several years which have been processed recently such as 1991. However, the data set was re-done for completeness. A note to users should follow. Years that are good, but repeated are:

Station	Year(s)
152	1991, 1995
245	1991, 1995

The only data from **France** is from Mont Louis. OHP has been done by CMDL.

The **German** data set is from Potsdam is quite small, pre-1992..

Manilla station, **Philippines** was run through decode and no values were accepted.

**Indian** data has some problems to be addressed, namely the calculation of the total ozone value and the appropriate correction. The wavelength pairs used may not be AD.

The **Japanese** data still remains a question. Will follow up again. I must re-run the 92-95 data to be sure.

Data set from Kazakhstan and Kenya are small.

No problems to report for **Korea, Mexico, Portugal, Philippines** or **Singapore**.

There are some questions in terms of the total ozone record for **Peru** which may have some impact on the values reported within the Umkehr data file. Some further investigation is required and needs to be reported.

The **Polish** data is only from Belsk. The scaling difference I have noticed from this data set may be from the wavelengths and observation type. Not all values were reported as AD DS. I must investigate this further.

Data from **New Zealand** are from Invercargill only and pre-1992.

Skovorodino station in **Russia** has only one record and there is no station information to add it to the stnindex.dat file, therefore, no processing was done.

The **USA** data file contains older US stations that have not been re-evaluated by the NOAA-CMDL group. All these stations are pre-1992. These stations were not included in the stnindex.dat file, why, I do not know.

### **Supplementary Notes on the Revision of Umkehr Vertical Profiles**

A major re-analysis of all the Umkehr vertical profile data was done in May, 1997. This was in response to minor changes to the Mateer C-Umkehr program (April 1995) that had not yet been implemented by the World Ozone and Ultraviolet Radiation Data Centre (WOUDC). Included in this revision were two independent sets of revised data that were processed in conjunction with the aforementioned re-analysis. A summary of the sets that were received by the WOUDC and additional notes may be found in a file called "revumk97.txt". Revumk97.txt details the specific information pertinent to the individual data sets.

This document is a supplementary commentary on several changes that were implemented to the existing data (that were re-analysed in May 1997). Several files have subsequently undergone another re-analysis in order to correct problems in the original data presentation.

A brief description of the problems with the data are given in Table 1. Refer to the expanded notes for more detail.

**Table 1.** Summary of Changes to Umkehr Profile Data

<b>Station</b>	<b>Name</b>	<b>Date-Range</b>	<b>Comments - Problems</b>
7	Kagoshima	1957-91	Data were adjusted for B-P scale twice.
12	Sapporo	1958-91	Data were adjusted for B-P scale twice.
14	Tateno	1958-91	Data were adjusted for B-P scale twice.
101	Syowa	1975-91	Data were adjusted for B-P scale twice.
190	Naha	1974-91	Data were adjusted for B-P scale twice.



Station	Name	Date-Range	Comments - Problems
68	Belsk	1963-81	Revised data from 1987 was not used.*
82	Lisbon	1963-95	Data not included.**
152	Cairo	1991	Data were adjusted for B-P scale twice.
245	Aswan	1991	Data were adjusted for B-P scale twice.

\* The original data set of N-values used to produce the retrieved profiles was mistakenly used for the years 1963-1981, and did not take into account the revised data submitted in 1987. The revised data set of 1987 has since been located and re-analysed.

\*\* The Lisbon data set inadvertently was left out of the analysed data sets. It should be noted, however, that uncertainty with the total ozone values provided has arisen since a re-evaluation of the Dobson total ozone data occurred in 1993 for the years 1967-1994. These data have been received by the WOUDC, but no information is available to indicate whether the total ozone supplied with the Umkehr data has been revised. It is unlikely. Caution should be exercised when using these data.

The WOUDC regrets any inconvenience these changes may have caused.

- WOUDC  
September, 1997