ECMWF Global Data Monitoring Report

November 2022

European Centre for Medium-Range Weather Forecasts
Europäisches Zentrum für mittelfristige Wettervorhersage
Centre européen pour les prévisions météorologiques à moyen terme

Contents

Summary of Revisions (in reverse order)

Revision 28 (June 15) – Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.

Revision 27 (Feb 15) – Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1.
Different criteria applied to Manual and Automatic SHIPs.

Revision 26 (Dec 14) – Coverage chart for ATOVS AMSU-A for Noaa_16 removed

Revision 25 (Mar 13) – Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.

Revision 24 (Aug 06) – North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23).
Airep tables removed from this section.

Revision 23 (Dec 00) – Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.

Revision 22 (Aug 99) – Coverage charts for TOVS thickness 300-100 hPa replaced by (A)TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).

Revision 21 (May 99) – Monitoring statistics ceased for Noaa_11 as satellite is no more available.

Revision 20 (Sep 98) – Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.

Revision 19 (Jul 98) – From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.

Revision 18 (Apr 98) – Changes to tables and annex to introduce the usage of accepted numbers and observations instead of precentage of rejection.

1 Introduction

The ECMWF global data monitoring report is a monthly publication intended to give an overview of the availability and quality of observations from the Global Observing System within the World Weather Watch of the World Meteorological Organisation. It should be recognised that the statistics given in this report refer to data as received at ECMWF in time for the appropriate analysis. The annex of the report gives further explanations of the methods applied to compile the statistics and on the reference used to establish the quality of observations.

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. It should be recognised that although the quality of the first-guess is of a generally high standard this is only true to a limited extent in certain areas, such as the tropics and data-sparse areas of both northern and southern hemispheres. The data quality results should therefore be used with care when assessing the absolute quality of a particular observing platform. Other indicators such as long-term trends of station performance, particularly in comparison with nearby stations, can be more useful in this respect.

The global monitoring results presented in this report are meant to serve a wider meteorological community as well as to support special WMO programmes such as TOGA and EUCOS. The contents of the report may therefore be adapted for special requirements as necessary.

As recommended at the ninth session of the Commission for Basic Systems at Geneva 1988, lead centres have been appointed for each main type of observation which should liaise with the participating centres and co-ordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

ECMWF produces this monthly report as part of its routine monitoring activity in order to facilitate the exchange of monitoring information. Tables are presented according to the CBS recommended standards for the exchange of monitoring results. Copies of the report will be provided to major GDPS centres participating in data monitoring activities as initiated and recommended at the ninth session of the Commission for Basic Systems in Geneva 1988, and to the WMO Secretariat and the International TOGA office in Geneva.

Any comments on the contents and the format of the report are welcome and should be addressed to:

ECMWF
Attn. Head of Evaluation Section
Shinfield Park
Reading, Berkshire, RG2 9AX
United Kingdom

2 Data summary - History of events

2.1 Radiosondes

The following is a list of land-based stations showing a change in reporting frequency (of 500 hPa geopotential) of at least 10 observations compared with the average over the previous 3 months. The number of reports received at ECMWF for the current and previous month is shown in addition to the observation time.

Ident	Time	Oct	Nov	Ident	Time	Oct	Nov
01400	(00)	24	13	04089	(12)	16	30
16332	(00)	31	16	24908	(00)	1	30
16332	(12)	31	16	24908	(12)	0	30
27707	(00)	27	1	40417	(12)	11	27
27707	(12)	24	0	41883	(00)	6	27
41316	(00)	19	6	41891	(00)	4	23
42867	(00)	31	15	41923	(00)	6	29
42867	(12)	31	14	41923	(12)	6	30
68842	(00)	17	0	41977	(00)	6	23
68842	(12)	14	0	42369	(00)	0	14
71081	(00)	29	17	48453	(00)	5	29
72208	(00)	31	16	61980	(12)	1	26
72208	(12)	31	16	62403	(12)	3	16
72249	(00)	30	17	68263	(00)	0	15
72249	(12)	30	17	74006	(00)	1	16
72403	(00)	31	2	78807	(00)	0	26
72403	(12)	31	1	85469	(00)	0	15
72451	(00)	31	7	89662	(00)	8	29
72451	(12)	31	6	89662	(12)	9	28
72520	(00)	31	13	94374	(00)	23	35
72520	(12)	31	13	97230	(00)	5	30
82599	(00)	24	13	97690	(00)	5	30
82599	(12)	26	14	-	-	-	-
82824	(00)	21	0	-	-	-	-
82824	(12)	19	0	-	-	-	-
91376	(12)	30	6	-	-	-	-
91680	(12)	26	0	-	-	-	-
96481	(00)	30	2	-	-	-	-
96481	(12)	31	1	-	-	-	-
98558	(00)	24	12	-	-	-	-
98558	(12)	31	15	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1711** drifting buoys were received during the month.

3 Global monitoring statistics

The following figures and tables provide information on both the availability and quality of various data types as received at ECMWF during the month. A brief description of each figure/table is given below. For a full explanation please refer to the Annex.

3.1 Data Availability

Figures 1-9 are global charts for each data type showing the average number of observations received in 24 hours in 5 degree boxes. The average daily number of observations (global) is also displayed with a breakdown, where appropriate, for each WMO region (figures 1, 3 and 4) and Ocean (figures 1-4).

Fig	Observation Type	Parameter	Level/Layer
1	SYNOP/SHIP	MSL Pressure	Surface
2	DRIFTER	MSL Pressure	Surface
3	TEMP	Geopotential	500 hPa
4	TEMP/PILOT	Wind	300 hPa
5	AIRCRAFT (AIREP/AMDAR etc.)	Wind	300-150 hPa
6	SATOB	Wind	400-150 hPa
7	SATOB	Wind	1000-700 hPa
9	TOVS (120 km) - NOAA14	Thickness	300-100 hPa

(Figure 1 includes data from fixed marine platforms e.g. moored buoys.)

3.2 Data Quality

Tables 1-8 contain lists of suspect stations in the format according to Recommendation 3 CBS-Ext(85).

Tab	Observation Type	Parameter	Level/Layer
1	SHIP	MSL Pressure	Surface
2	SHIP	Wind Speed	Surface
3	SHIP	Wind Direction	Surface
4	DRIFTER	MSL Pressure	Surface
5	DRIFTER	Wind Speed	Surface
6	DRIFTER	Wind Direction	Surface
7	TEMP	Geopotential	1000- 30 hPa
8	TEMP/PILOT	Wind	1000-100 hPa
9	TEMP/PILOT	Wind Direction	500-150 hPa

(SHIP tables include data from fixed marine platforms e.g. moored buoys.)

Figures 10-13 show the locations of suspect stations given in tables 7 and 8.

Fig	Observation Type	Parameter	Observation Time
10	TEMP	Geopotential	00 UTC
11	TEMP	Geopotential	12 UTC
12	TEMP/PILOT	Wind	00 UTC
13	TEMP/PILOT	Wind	12 UTC

Tables 10 and 11 provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month.

Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

Figures 14–18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

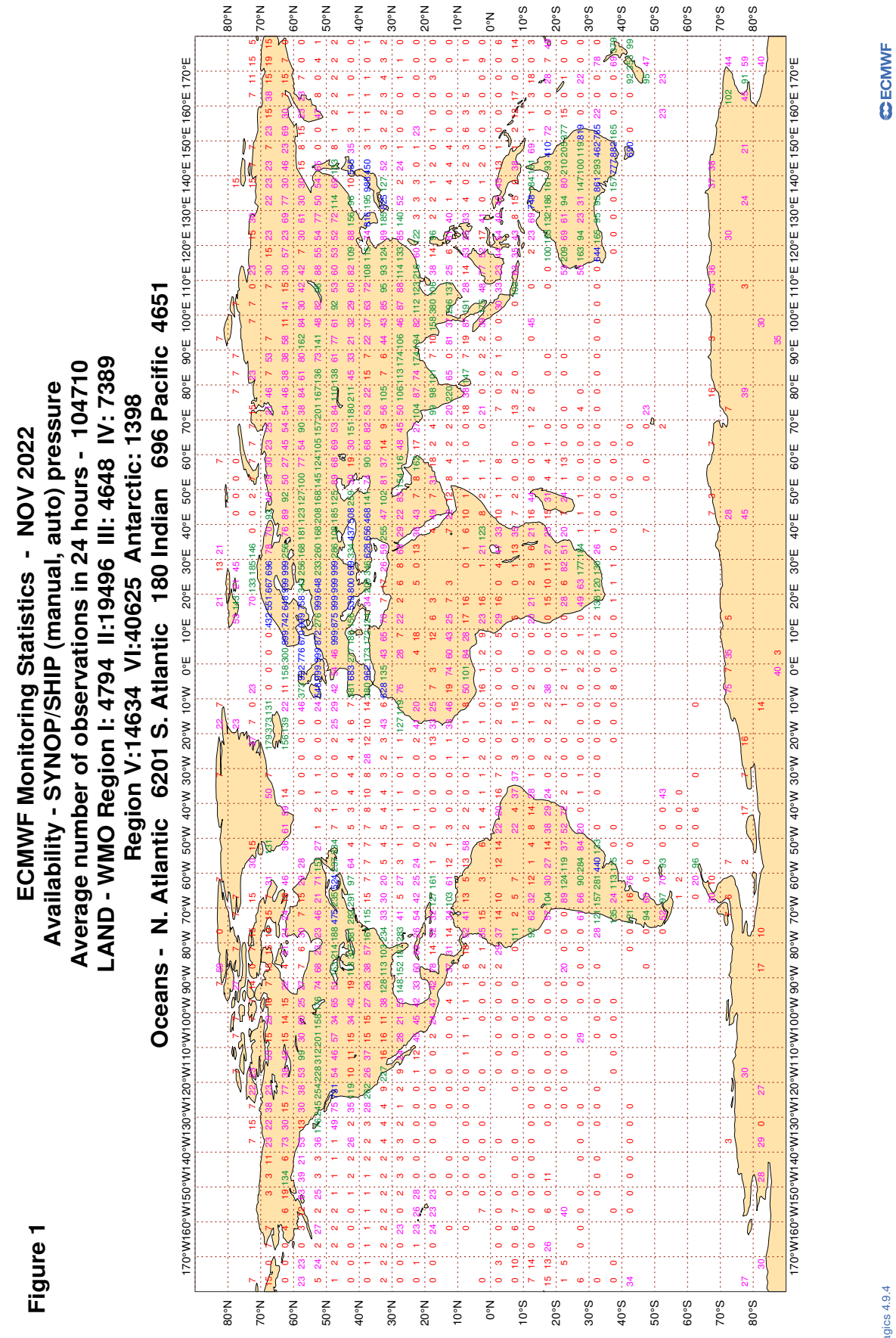


Figure 1

3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

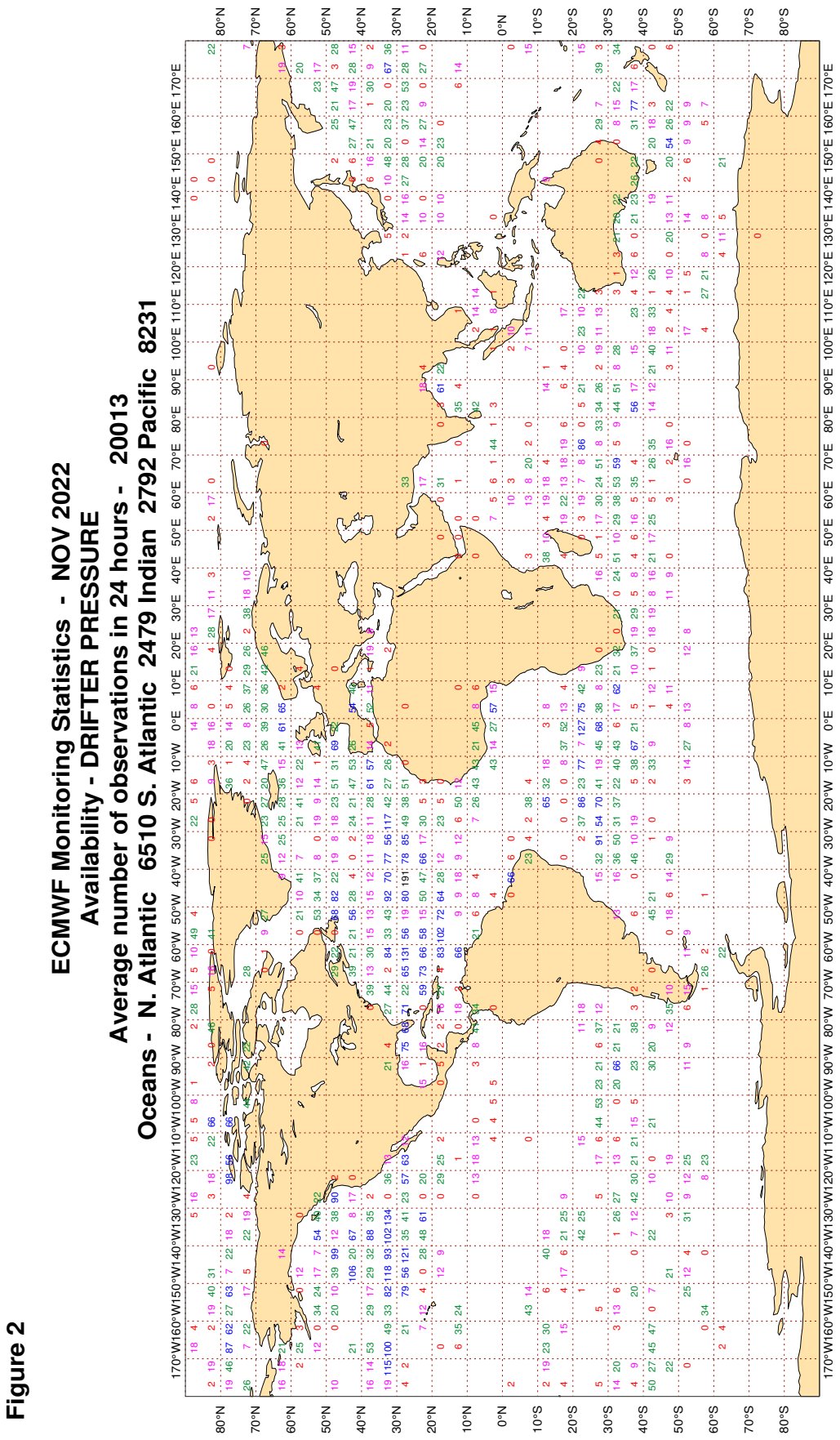
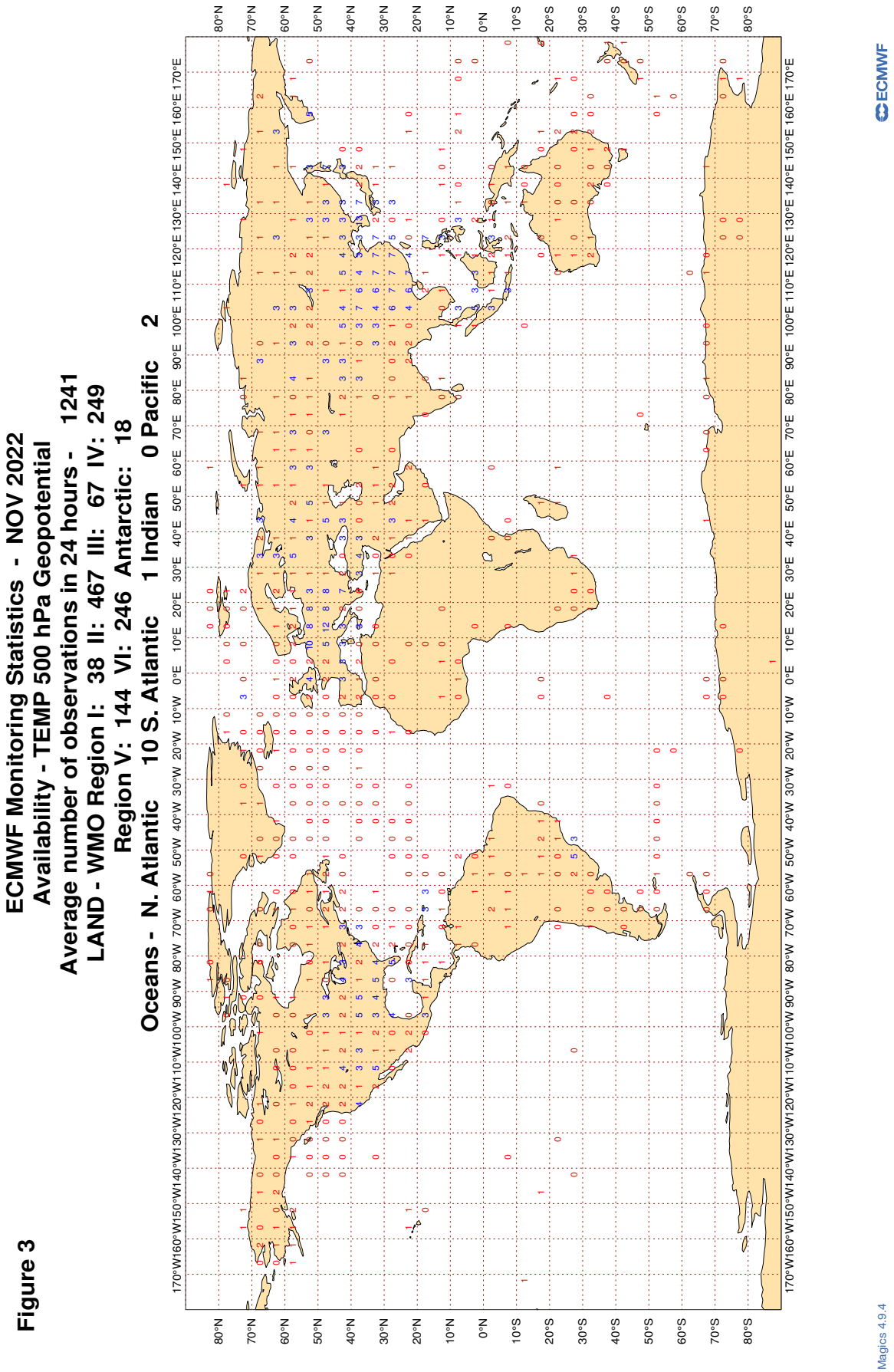


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind

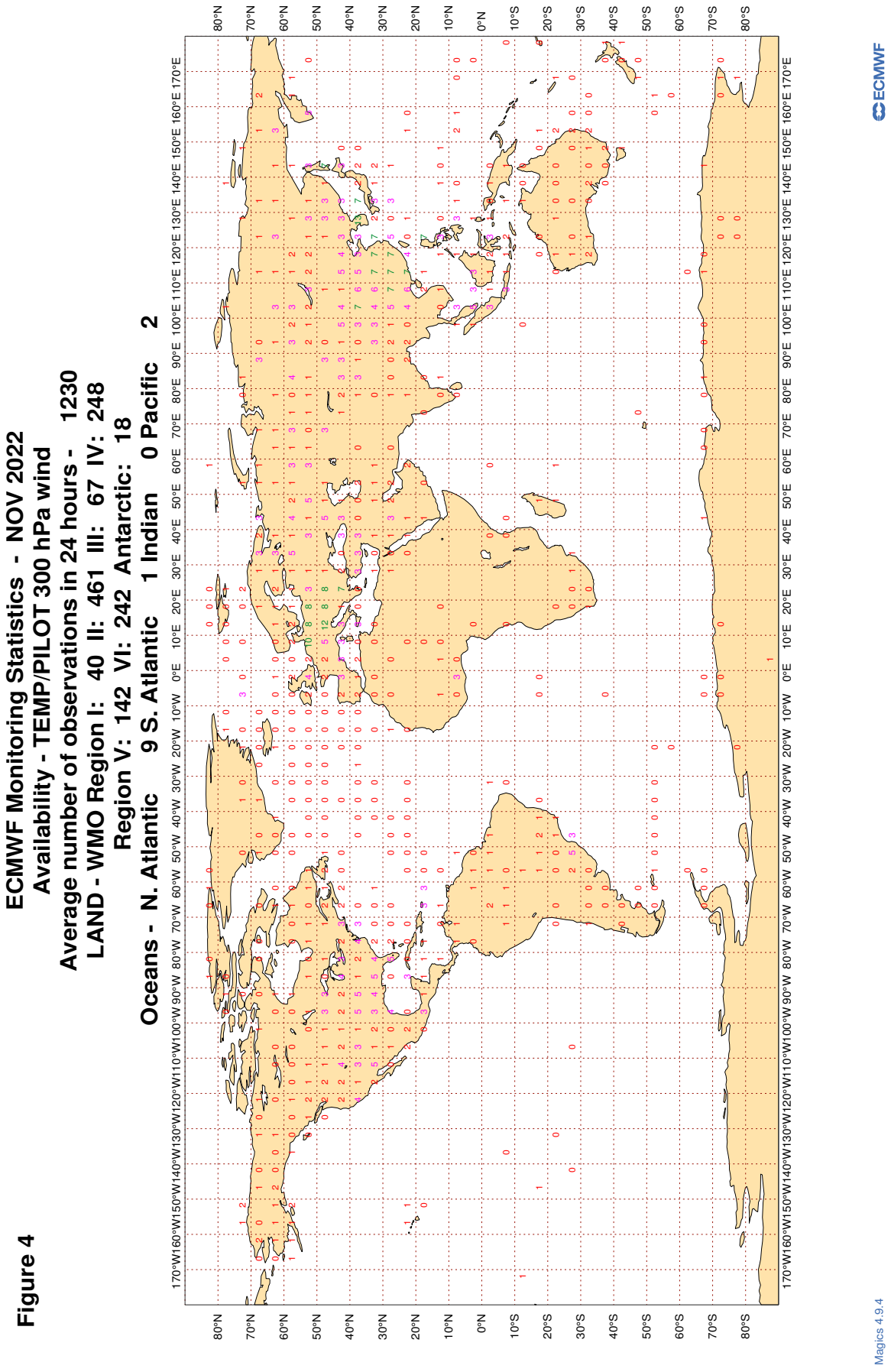


Figure 4

3.2.5 Figure 5 - Availability - AIRCRAFT winds 300-150 hPa

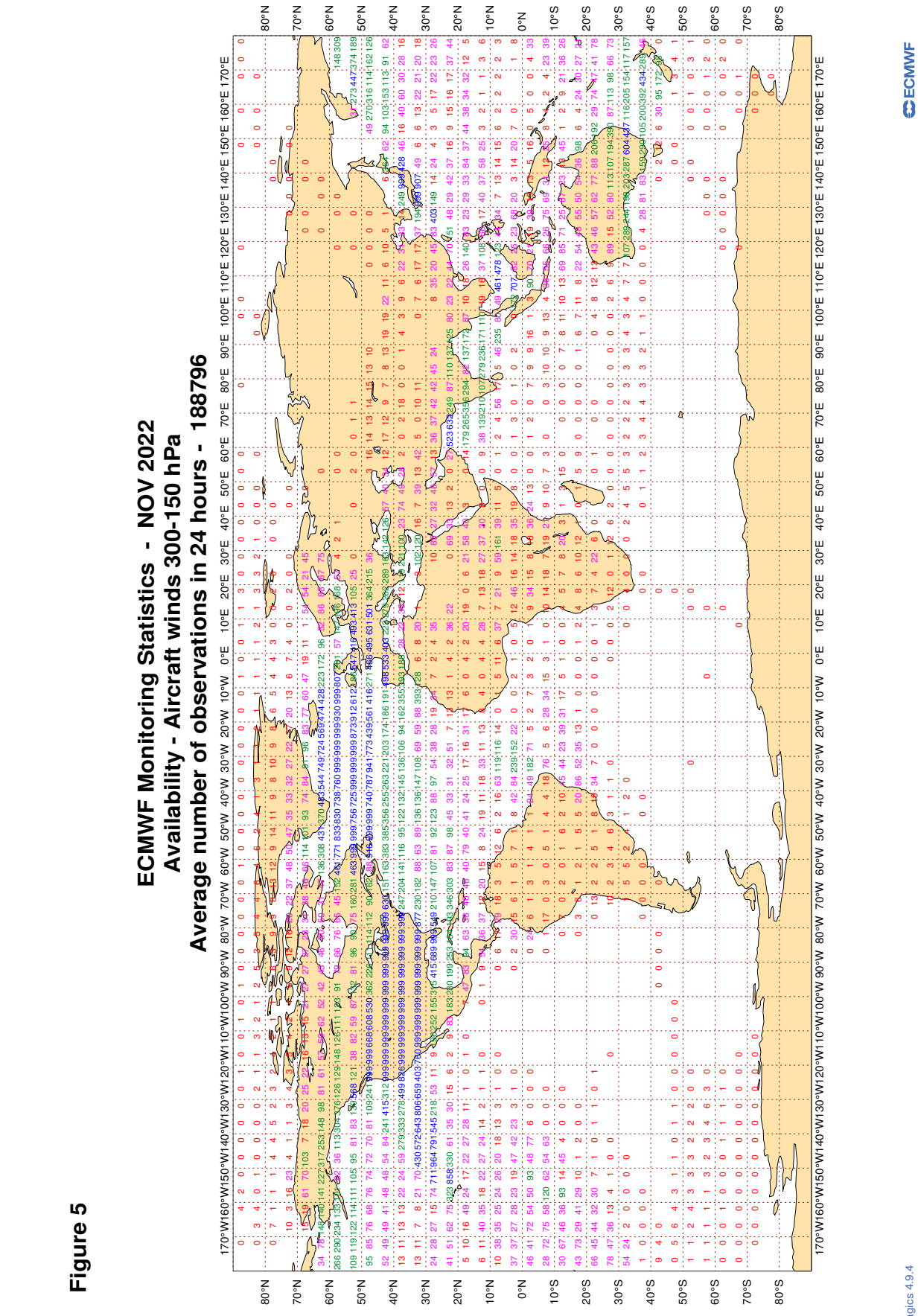


Figure 5

3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

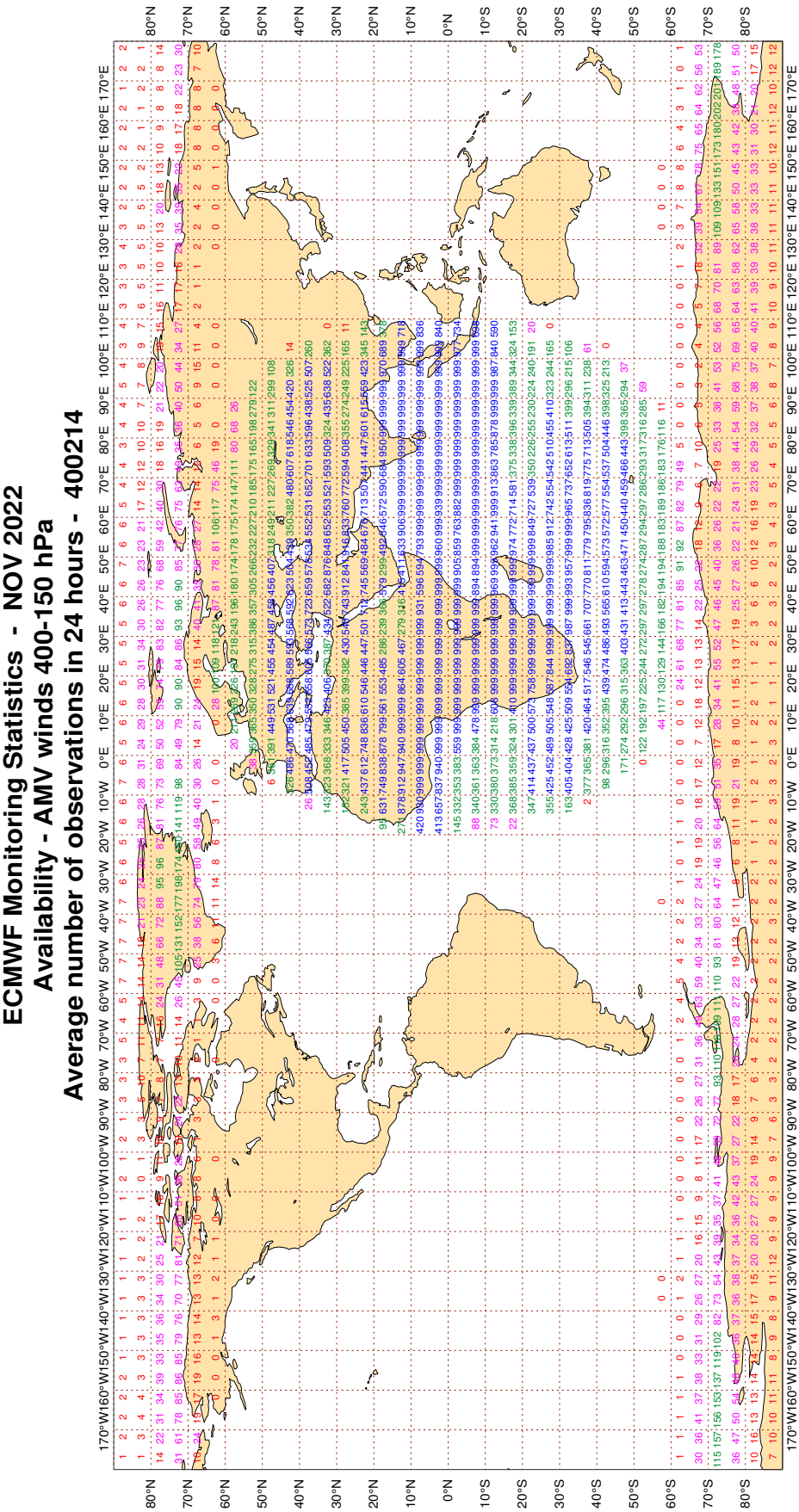


Figure 6

3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

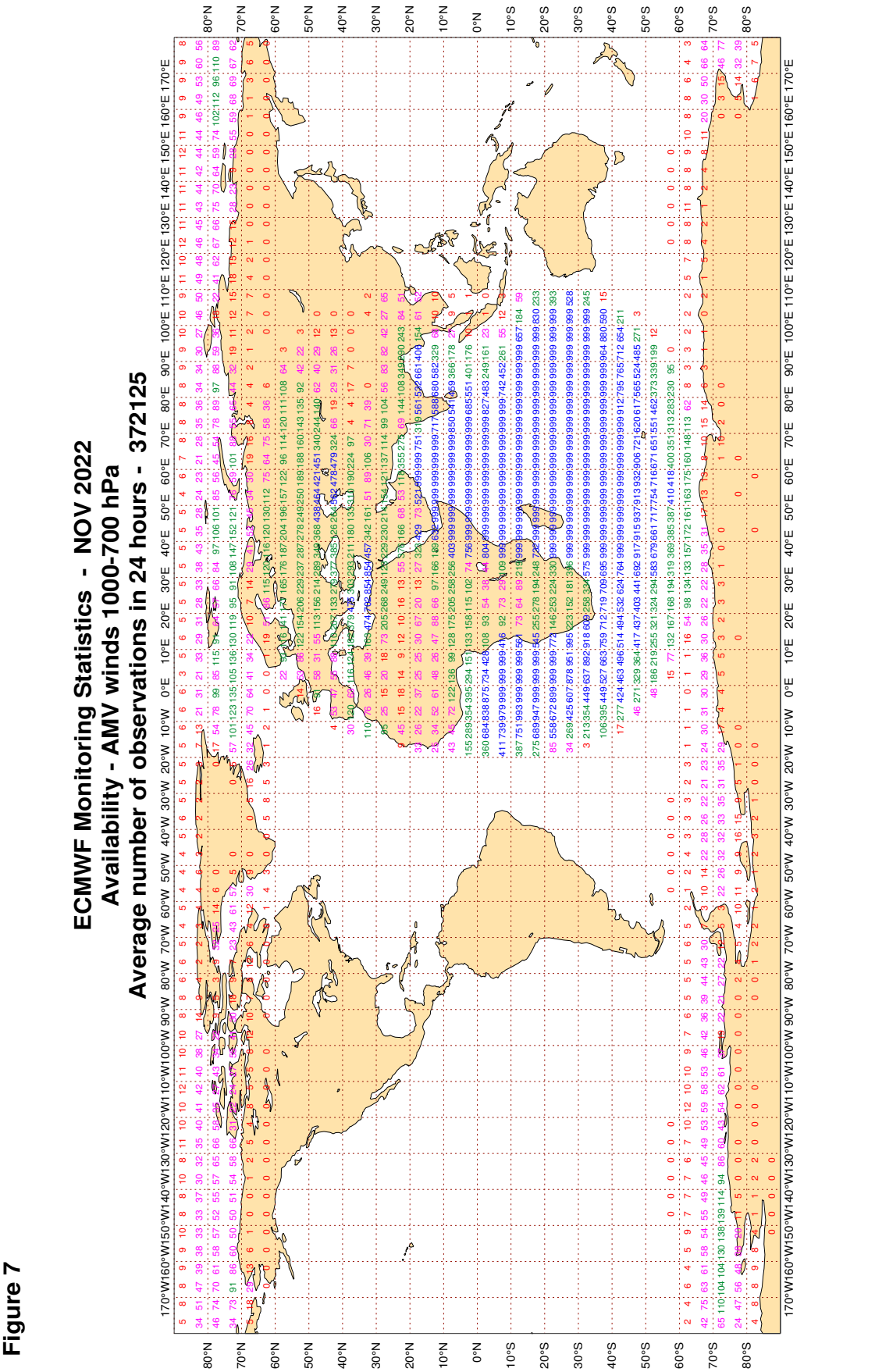
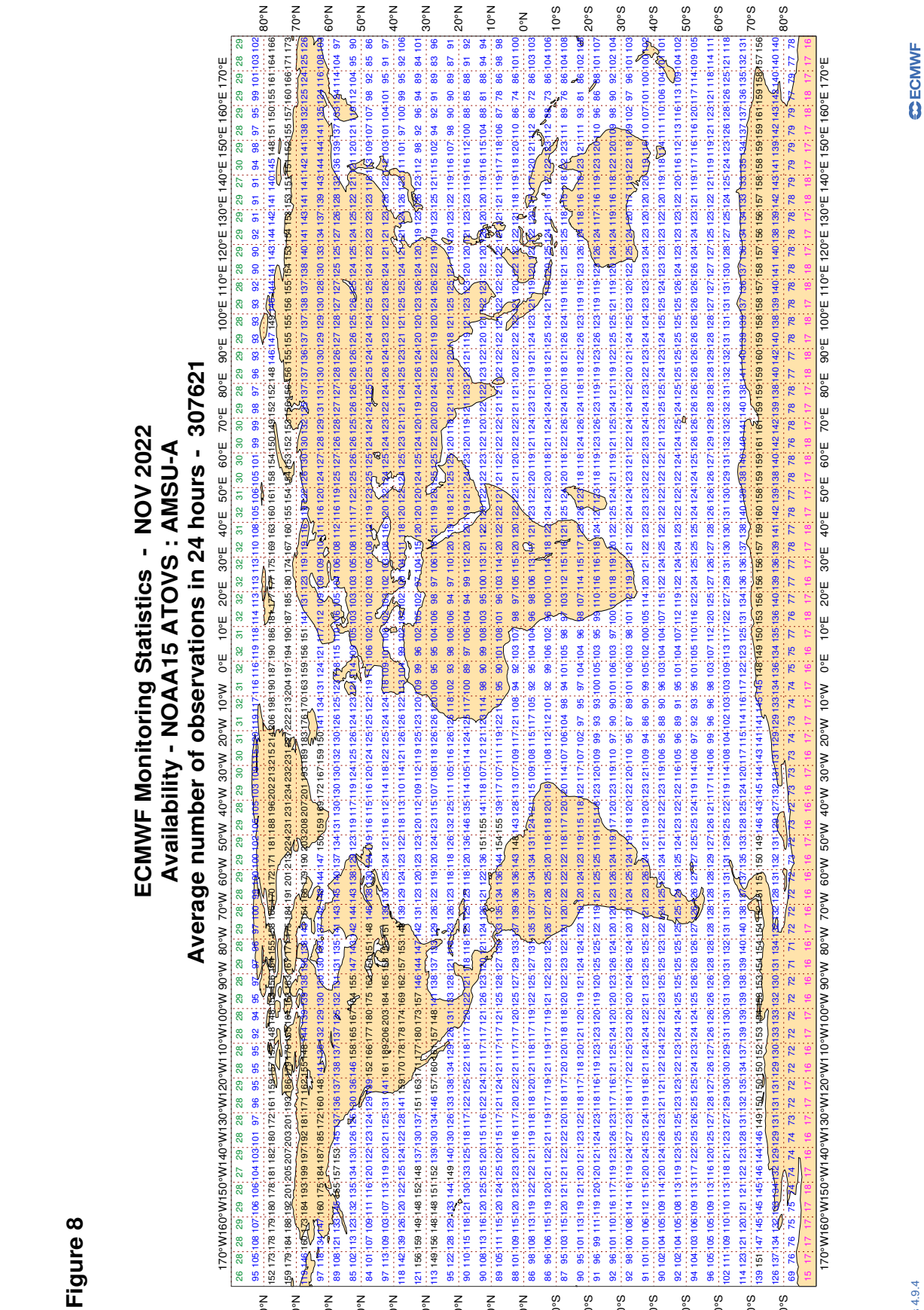


Figure 7

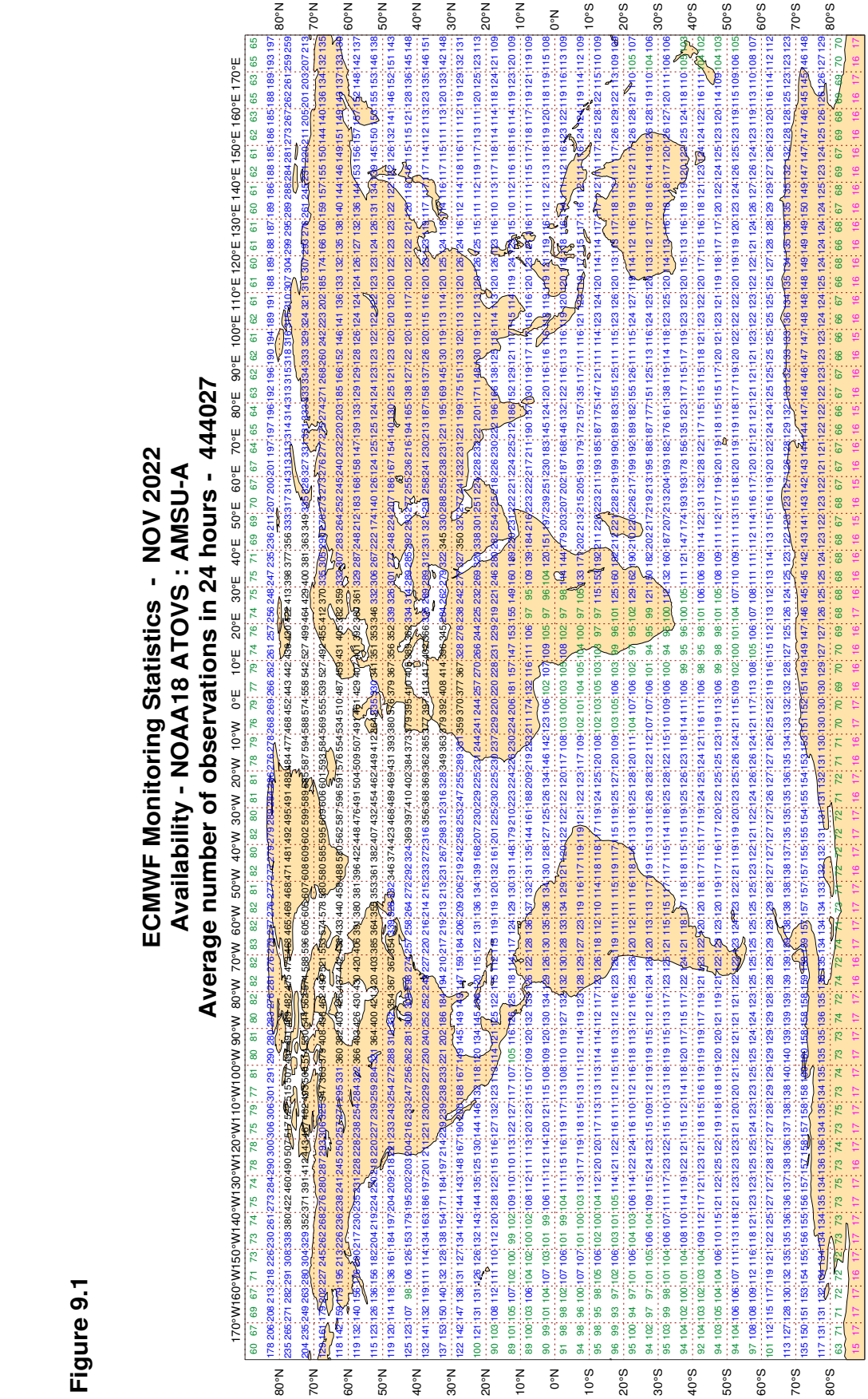
3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8



3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1



3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

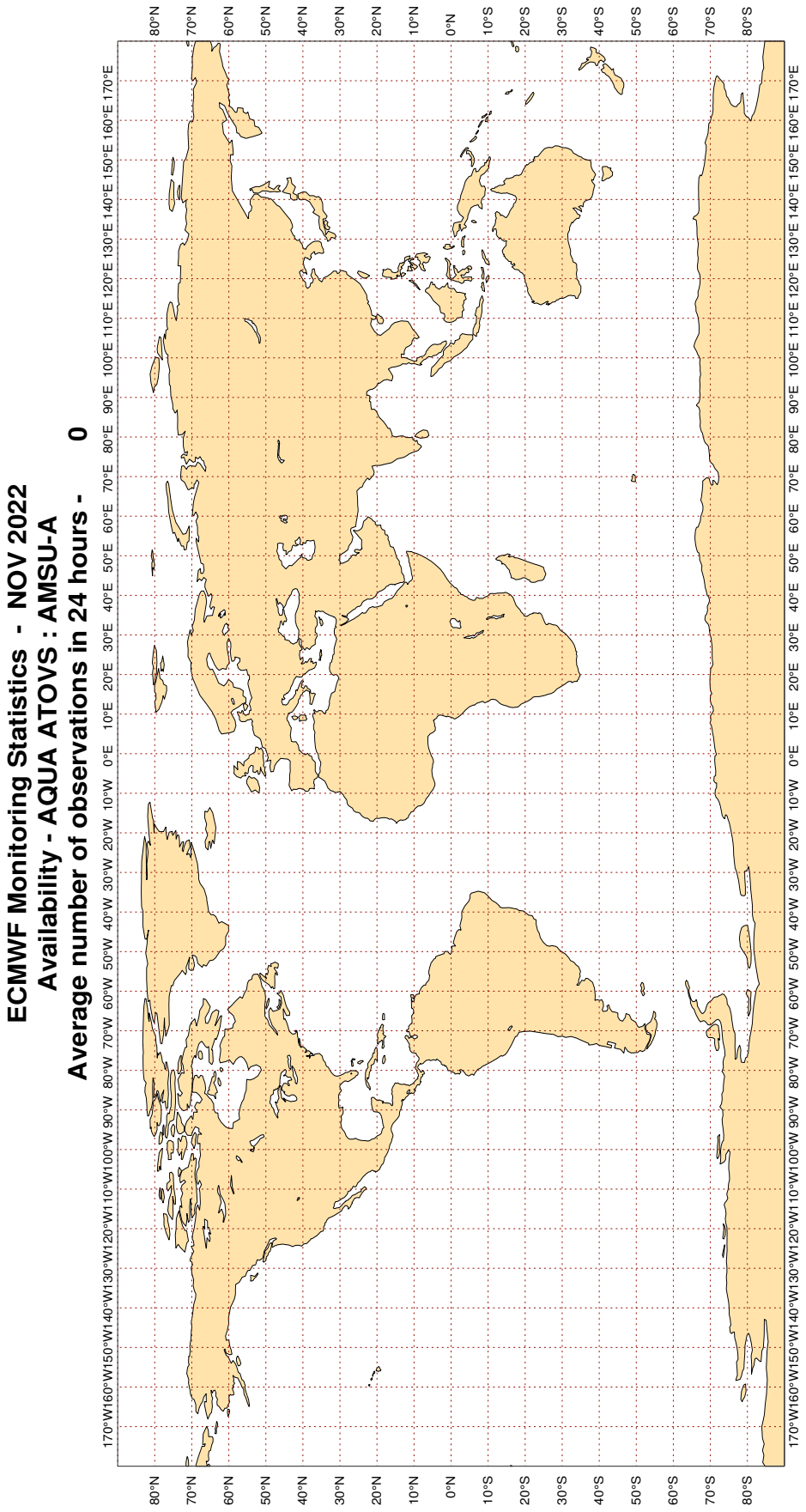


Figure 9.2

3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

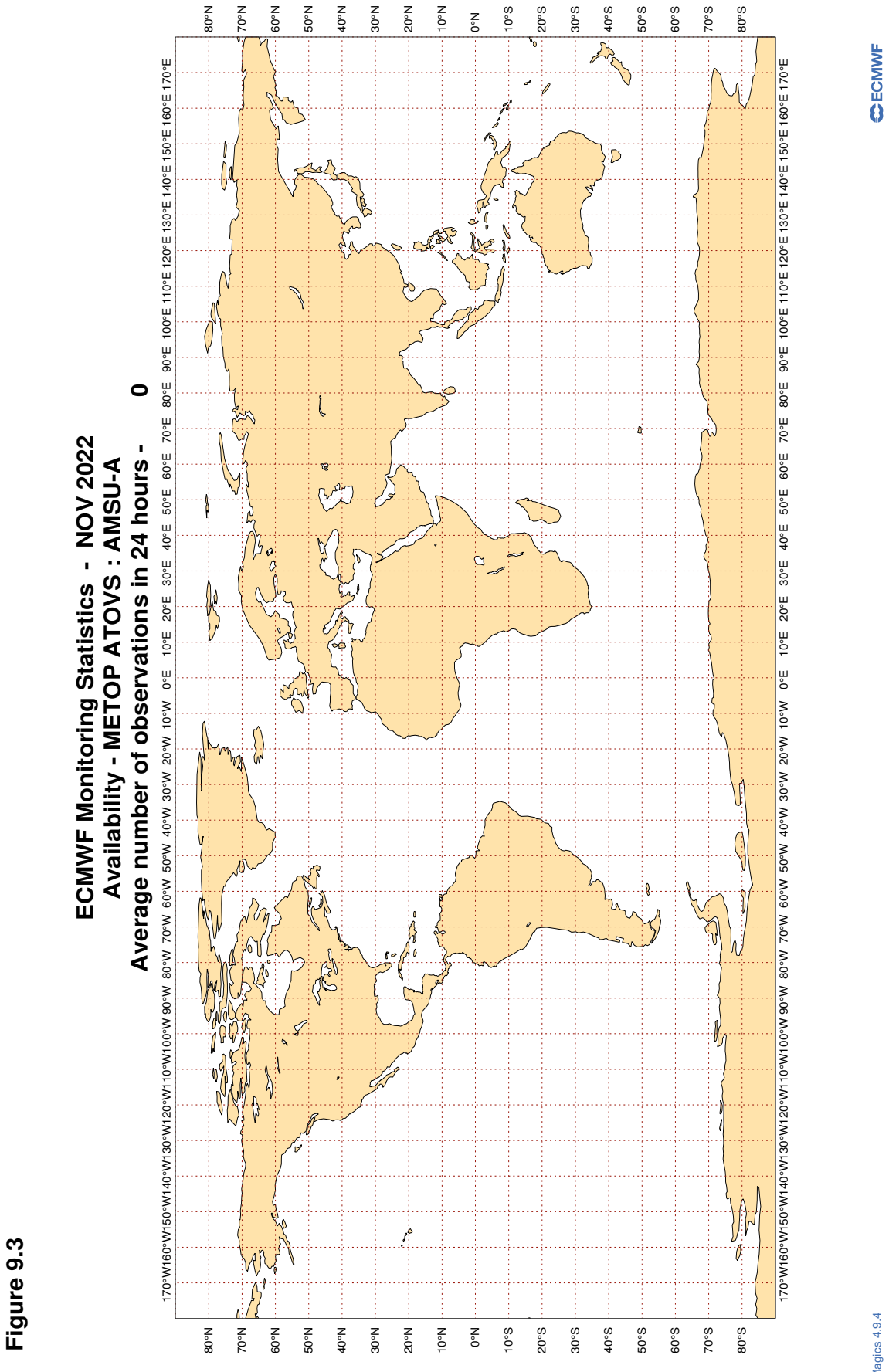


Figure 9.3

3.2.12 Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa)

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : SURFACE PRESSURE (HPA)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 15(50), AND,
Manual (Automatic)  ABSOLUTE BIAS         >= 3(2) HPA, OR,
                    STANDARD DEVIATION    >= 5(4) HPA, OR,
                    % GROSS ERROR         >= 25(15)
                    (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
00000	99	P	SUR	112	2	0.5	-13.9	13.9
3FJB3	99	P	SUR	47	0	0.6	3.5	3.5
3FYD4	99	P	SUR	16	1	2.2	5.3	5.8
5LBU2	99	P	SUR	16	0	2.5	3.1	4.0
62141	99	P	SUR	119	0	0.9	7.1	7.2
7JQF	99	P	SUR	16	0	0.7	-5.4	5.5
7JWH	99	P	SUR	90	0	0.7	5.3	5.4
7JXX	99	P	SUR	27	0	0.6	-3.4	3.4
9HA4612	99	P	SUR	18	0	1.5	3.1	3.5
9HA4638	99	P	SUR	39	0	1.3	4.7	4.9
9HA5063	99	P	SUR	17	0	2.5	3.3	4.1
9HA5475	99	P	SUR	28	0	1.4	-3.2	3.5
9HRJ9	99	P	SUR	44	0	0.4	3.5	3.6
9V3286	99	P	SUR	31	0	2.6	5.6	6.2
9V5669	99	P	SUR	63	0	1.7	6.5	6.7
9V6207	99	P	SUR	68	2	1.6	4.8	5.0
9V6408	99	P	SUR	102	0	1.3	-7.4	7.5
9V7979	99	P	SUR	15	0	2.7	-3.7	4.6
9V9404	99	P	SUR	22	0	2.5	-3.7	4.4
ATVK	99	P	SUR	120	120	0.0	0.0	0.0
BHJG	99	P	SUR	34	0	2.9	8.0	8.5
C6XS8	99	P	SUR	97	96	0.0	-13.2	13.2
CCGV	99	P	SUR	17	0	2.5	-3.9	4.6
GCWP	99	P	SUR	120	0	2.2	-6.4	6.8
H8EW	99	P	SUR	20	0	1.0	6.0	6.1
JMJRCES	99	P	SUR	112	31	2.6	-7.8	8.2
KIAB	99	P	SUR	44	0	1.0	7.0	7.0
LAJF7	99	P	SUR	17	0	1.1	3.0	3.2
LAPD7	99	P	SUR	57	0	3.2	4.7	5.7
LAPE7	99	P	SUR	15	0	0.8	6.2	6.3
LAQJ7	99	P	SUR	21	0	1.1	-4.4	4.6
ONGI	99	P	SUR	31	0	1.3	3.6	3.8

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : SURFACE PRESSURE (HPA)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
OZDK2	99	P	SUR	17	0	1.5	3.5	3.8
S6LT3	99	P	SUR	22	0	1.5	4.3	4.6
SHIP	99	P	SUR	426	2	6.0	-4.0	7.2
SJA4RSK	99	P	SUR	86	6	1.8	-5.2	5.5
SKEC	99	P	SUR	70	0	0.6	-3.9	3.9
TBWUK74	99	P	SUR	36	0	0.7	4.0	4.1
UBAW	99	P	SUR	24	0	0.8	-11.0	11.0
UBNJ7	99	P	SUR	16	6	3.6	-7.1	7.9
UCQX	99	P	SUR	30	14	4.9	8.4	9.7
UFJN	99	P	SUR	21	0	2.1	-3.4	4.0
V7A5139	99	P	SUR	27	0	0.6	4.1	4.1
V7QS7	99	P	SUR	28	0	0.8	-5.9	6.0
V7TM3	99	P	SUR	18	0	1.6	-4.7	4.9
V7UX2	99	P	SUR	34	0	1.1	3.7	3.9
V7XV6	99	P	SUR	26	0	1.3	4.1	4.3
V7YW2	99	P	SUR	17	0	2.2	3.1	3.8
VGWM	99	P	SUR	16	0	5.0	1.6	5.2
VRCB4	99	P	SUR	18	0	0.7	-4.6	4.7
VRCI9	99	P	SUR	21	0	1.4	3.8	4.1
VRFS2	99	P	SUR	20	0	1.8	3.5	3.9
VRFW9	99	P	SUR	16	0	1.3	3.8	4.0
VRFX4	99	P	SUR	26	0	0.7	3.0	3.1
VRGO8	99	P	SUR	51	0	1.5	3.7	4.0
VRIB2	99	P	SUR	41	0	1.4	3.3	3.6
VRME7	99	P	SUR	25	0	3.8	7.8	8.7
VRNR6	99	P	SUR	21	0	1.2	-5.3	5.5
VRSJ8	99	P	SUR	38	0	0.7	-4.3	4.4
VRSR7	99	P	SUR	36	0	0.8	5.1	5.1
VRWN4	99	P	SUR	18	0	0.6	-5.4	5.5
VRWQ2	99	P	SUR	16	0	1.9	-5.5	5.8
VTOT	99	P	SUR	15	0	1.7	-4.0	4.3
VTSJ	99	P	SUR	28	28	0.0	0.0	0.0
VWXS	99	P	SUR	107	0	1.5	-3.5	3.8
WGEB	99	P	SUR	30	0	4.7	7.9	9.2

3.2.13 Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND SPEED (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 15(50), AND,
Manual (Automatic)  ABSOLUTE BIAS         >= 4(4) M/S, OR,
                    % GROSS ERROR         >= 25(15)
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
46181	99	SPEED	SUR	120	0	0	3.1	4.3	5.2
62153	99	SPEED	SUR	120	0	0	5.4	-5.6	7.8

3.2.14 Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES)

```
          LIST OF SUSPECT STATIONS        : SHIPS + FIXED MARINE PLATFORMS
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 15(50) (WIND SPEEDS > 3M/S), AND ,
Manual (Automatic)  ABSOLUTE BIAS         >= 30(25) DEGREES, OR,
                    STANDARD DEVIATION    >= 70(50) DEGREES
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44037	99	DIRN	SUR	93	0	0	12.1	37.4	39.3
45143	99	DIRN	SUR	58	0	0	21.9	-89.0	91.6
46035	99	DIRN	SUR	94	0	0	9.5	43.5	44.6
46205	99	DIRN	SUR	57	0	0	19.3	39.7	44.2
46208	99	DIRN	SUR	16	0	0	26.0	33.4	42.3

3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
                    AREA                   : GLOBAL
                    PERIOD                 : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.            >= 20, AND,
                    ABSOLUTE BIAS          >= 4 HPA, OR,
                    STANDARD DEVIATION     >= 6 HPA, OR,
                    % GROSS ERROR          >= 25
                    (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
00000	99	P	SUR	44	-79	670	19	0.5	-13.9	13.9
1301763	99	P	SUR	11	-26	42	42	0.0	0.0	0.0
1501696	99	P	SUR	-29	-9	676	0	2.4	-4.9	5.4
3301580	99	P	SUR	-59	-50	41	11	6.5	-4.8	8.1
3801550	99	P	SUR	88	-116	720	720	0.0	0.0	0.0
4201647	99	P	SUR	31	-89	137	0	0.5	-12.6	12.6
4402748	99	P	SUR	70	-68	271	165	3.2	-1.9	3.8
4701658	99	P	SUR	72	-95	662	662	0.0	0.0	0.0
4701738	99	P	SUR	70	-67	695	695	0.0	0.0	0.0
4701744	99	P	SUR	78	-106	714	714	0.0	0.0	0.0
4701747	99	P	SUR	77	-122	717	717	0.0	0.0	0.0
4801636	99	P	SUR	79	-139	563	71	6.6	-3.1	7.3
4801670	99	P	SUR	86	-64	157	88	5.6	4.4	7.1
4802605	99	P	SUR	75	-160	688	545	7.0	-4.6	8.4
4802655	99	P	SUR	79	-122	720	628	8.8	-4.2	9.8
5102809	99	P	SUR	6	-116	679	0	0.4	-9.6	9.6
5103563	99	P	SUR	31	-158	705	7	2.6	7.2	7.7
5601568	99	P	SUR	-37	-73	73	0	0.4	-8.8	8.8
5601693	99	P	SUR	-61	122	671	2	0.9	12.3	12.4
6102804	99	P	SUR	40	3	689	0	0.4	-7.0	7.0
62141	99	P	SUR	58	0	1428	0	0.9	7.1	7.2
6402587	99	P	SUR	49	-48	616	0	2.9	6.4	7.0
6402659	99	P	SUR	70	19	126	5	5.6	7.3	9.2
6501679	99	P	SUR	67	-29	520	189	5.8	5.8	8.2
6600021	99	P	SUR	55	14	280	276	0.3	-0.3	0.4
7201512	99	P	SUR	-28	153	142	0	0.4	-4.5	4.5

3.2.16 Table 5 - Suspect drifters: Wind speed (m/s)

```
          LIST OF SUSPECT STATIONS        : DRIFTER
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND SPEED (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.           >= 20, AND,
                    ABSOLUTE BIAS         >= 5 M/S, OR,
                    % GROSS ERROR         >= 25
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400069	99	SPEED	SUR	41	-73	99	0	0	2.9	5.9	6.6
4500132	99	SPEED	SUR	42	-81	223	0	0	2.6	-6.4	6.9
62153	99	SPEED	SUR	57	2	1435	0	0	5.5	-5.5	7.8

3.2.17 Table 6 - Suspect drifters: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: NO. OF OBS.            >= 20 (WIND SPEEDS > 3M/S), AND ,
                    ABSOLUTE BIAS          >= 20 DEGREES, OR,
                    STANDARD DEVIATION     >= 60 DEGREES
                    (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
00000	99	DIRN	SUR	44	-79	56	0	0	15.8	-35.8	39.1
2300453	99	DIRN	SUR	8	73	34	0	0	32.5	-48.7	58.5
23099	99	DIRN	SUR	13	80	190	0	0	38.6	51.1	64.0
23451	99	DIRN	SUR	15	69	151	0	0	23.7	-23.8	33.6
23453	99	DIRN	SUR	8	73	56	0	0	26.3	-38.4	46.5
23491	99	DIRN	SUR	12	93	64	0	0	93.6	56.2	109.2
3100005	99	DIRN	SUR	-19	-35	232	0	0	21.5	-21.0	30.0
4400037	99	DIRN	SUR	43	-68	550	0	0	12.7	37.0	39.2
44037	99	DIRN	SUR	44	-68	551	0	0	13.0	37.0	39.3
4500203	99	DIRN	SUR	41	-83	2736	0	0	55.2	-24.9	60.6
45143	99	DIRN	SUR	45	-81	347	0	0	23.9	-91.3	94.4
45203	99	DIRN	SUR	41	-83	508	0	0	54.3	-25.3	59.9
4600035	99	DIRN	SUR	57	-178	559	0	0	10.8	44.1	45.4
4600080	99	DIRN	SUR	58	-150	90	35	0	121.6	77.2	144.0
4600092	99	DIRN	SUR	37	-122	221	0	0	21.8	29.8	36.9
4600145	99	DIRN	SUR	54	-132	171	0	0	16.1	21.6	26.9
4600204	99	DIRN	SUR	51	-129	209	0	0	23.3	23.0	32.8
4600205	99	DIRN	SUR	54	-134	132	0	0	15.9	39.8	42.8
46035	99	DIRN	SUR	57	-178	558	0	0	10.9	43.6	44.9
46080	99	DIRN	SUR	58	-150	90	35	0	124.0	72.4	143.6
46092	99	DIRN	SUR	37	-122	196	0	0	25.4	30.1	39.4
46131	99	DIRN	SUR	50	-125	344	0	0	55.0	-29.4	62.3
46204	99	DIRN	SUR	51	-129	558	0	0	25.0	21.0	32.6
46205	99	DIRN	SUR	54	-134	357	0	0	17.8	39.3	43.2
46206	99	DIRN	SUR	49	-126	514	0	0	36.7	20.2	41.9
46208	99	DIRN	SUR	53	-133	89	0	0	19.7	37.7	42.6
6200086	99	DIRN	SUR	55	6	447	0	0	15.9	23.5	28.4
6600022	99	DIRN	SUR	54	14	264	0	0	69.0	31.7	76.0

3.2.18 Table 7 - Suspect radiosondes: Geopotential height (metres)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: AT LEAST 3 LEVELS WITH
                    10 OBS AND 100 M WEIGHTED RMS


ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)
```

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	00	Z	1000	57	3	13	0	3.8	71.2	71.3
01400	12	Z	1000	57	3	13	1	3.8	72.5	72.6
04417	12	Z	1000	73	-38	28	27	0.0	-93.2	93.2
31770	12	Z	300	49	140	27	1	76.3	-32.7	83.0
47122	12	Z	70	37	127	24	1	74.2	157.7	174.3
47122	00	Z	50	37	127	26	0	118.2	104.7	157.9
47158	12	Z	70	35	127	21	1	105.2	128.8	166.3
48698	12	Z	250	1	104	15	0	18.2	74.5	76.7
62378	00	Z	400	30	31	10	0	56.4	70.3	90.1
62403	12	Z	850	26	33	16	1	40.2	31.0	50.8
76644	12	Z	1000	21	-90	24	0	2.5	30.5	30.6
76644	00	Z	1000	21	-90	28	0	5.5	29.6	30.1
83566	00	Z	1000	-20	-44	30	0	8.1	-66.0	66.5
83566	12	Z	1000	-20	-44	30	0	6.7	-55.9	56.3
89009	00	Z	1000	-90	0	28	17	7.4	-90.1	90.4
89009	12	Z	1000	-90	0	29	18	7.3	-87.8	88.1
89625	12	Z	1000	-75	123	27	25	0.0	-92.7	92.7
97690	00	Z	925	-3	141	30	1	4.3	92.0	92.1
98233	00	Z	1000	18	122	30	0	29.0	44.6	53.2
98558	12	Z	1000	11	126	15	0	26.4	17.2	31.5
98558	00	Z	1000	11	126	12	0	31.8	35.0	47.3
JNKN7J	12	Z	1000	50	-7	14	0	4.7	37.2	37.5
JNKN7J	00	Z	1000	50	-11	11	0	12.1	39.5	41.3
KMPLHP	12	Z	1000	43	-65	10	0	27.2	45.6	53.1

3.2.19 Table 8 - Suspect radiosondes: Wind (m/s)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND (M/S)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 10 OBS AND 15 M/S RMS VECTOR WIND

STANDARD LEVEL (1000-100 HPA) WITH HIGHEST RMS IS SHOWN
```

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
71811	12	V	300	50	-66	29	0	2.8	1.2	18.7

3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

```
          LIST OF SUSPECT STATIONS        : RADIOSONDES
                    MONITORING CENTRE     : ECMWF
                    ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
                    AREA                  : GLOBAL
                    PERIOD                : NOV 2022
                    STANDARD OF COMPARISON: FIRST-GUESS FIELD


SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS >= 5 M/S
                    NO. OF OBSERVATIONS   >= 5, AND,
                    ABSOLUTE BIAS         >= 10 DEGREES, WITH
                    STANDARD DEVIATION    <  30 DEGREES, AND,
                    VERTICAL SPREAD       < 10 DEGREES
                    (AVERAGE BETWEEN 500 AND 150 HPA)
```

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
42667	00	DD	23	77	11	-29.3	7.7	9.9

3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC

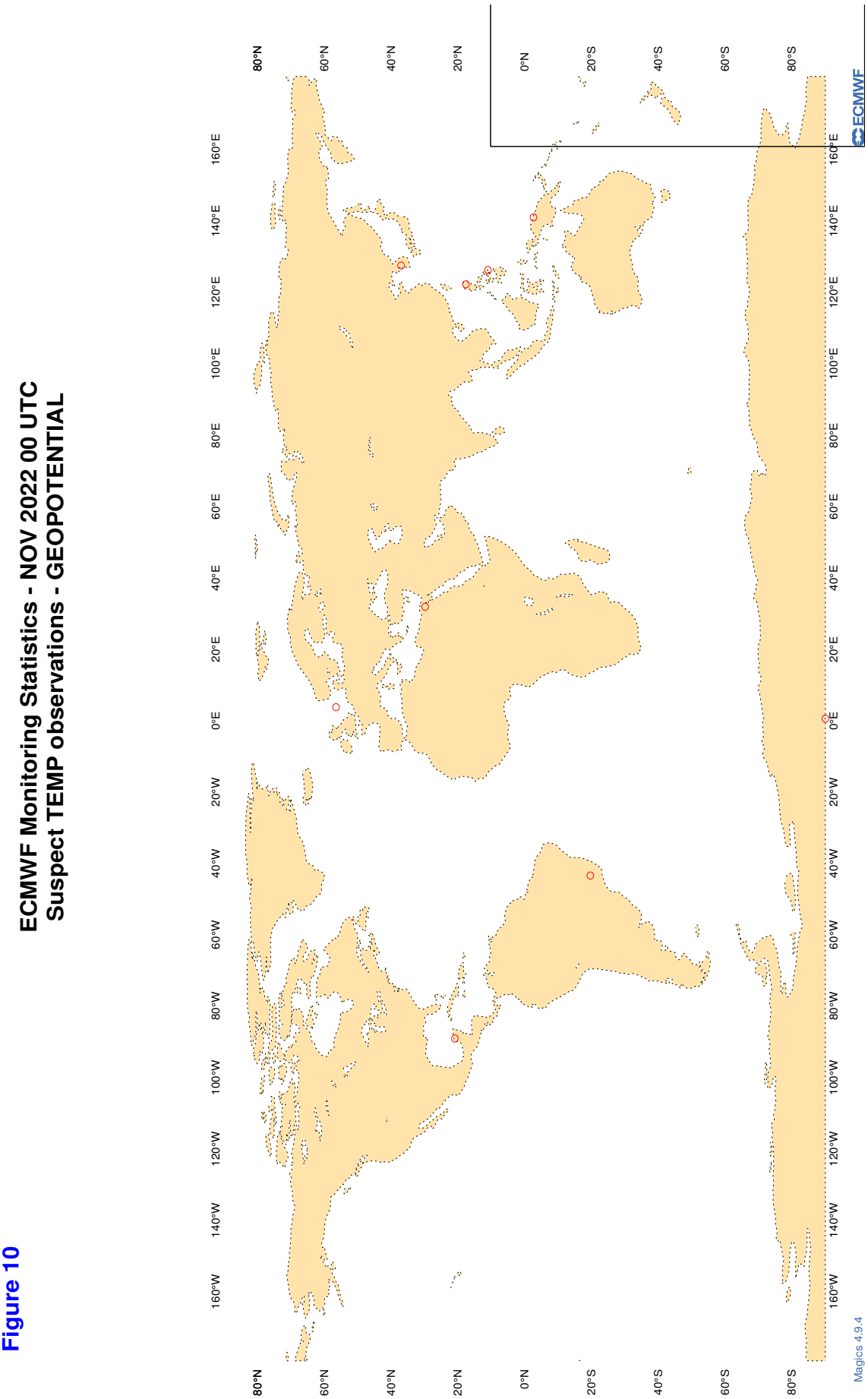
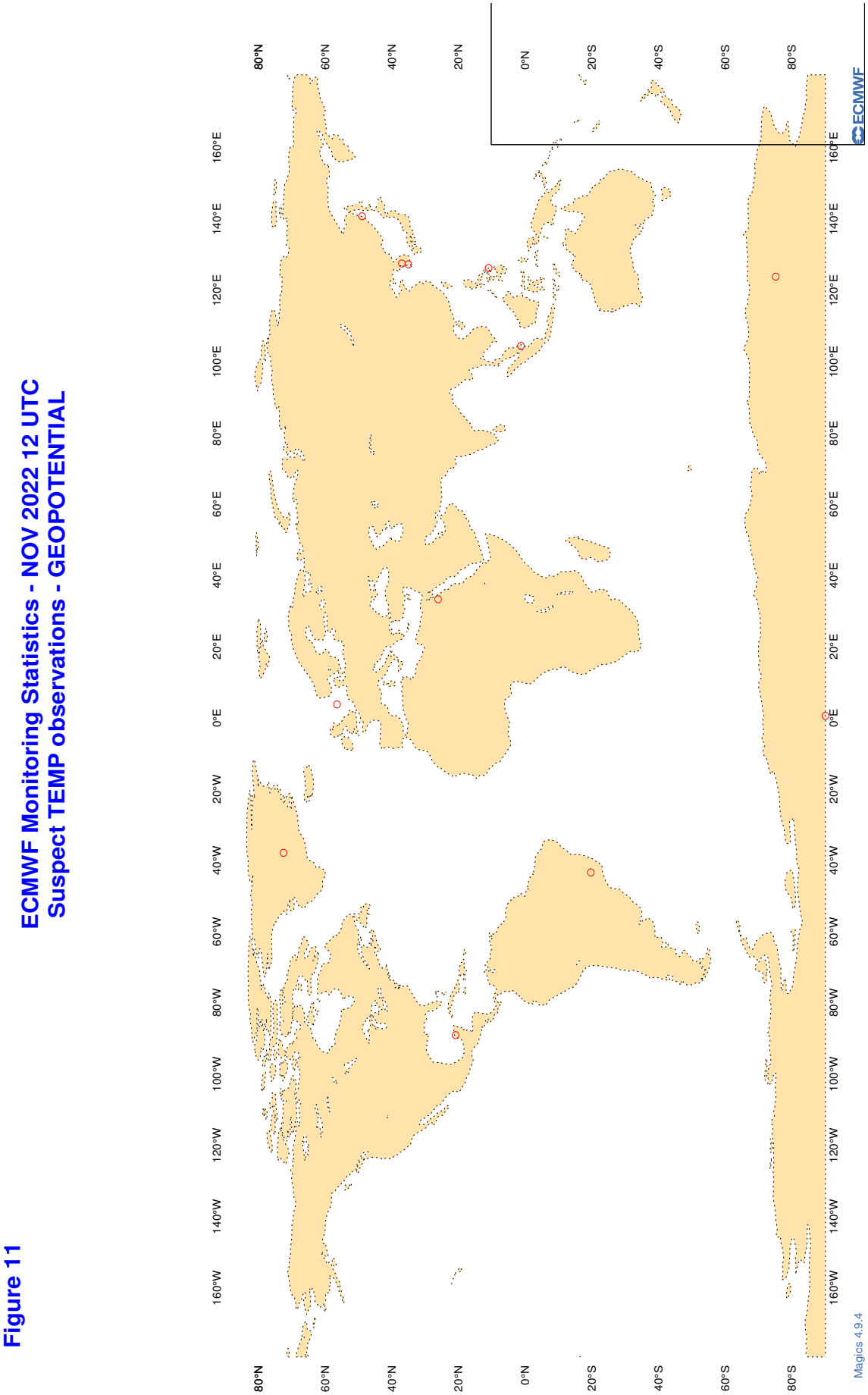
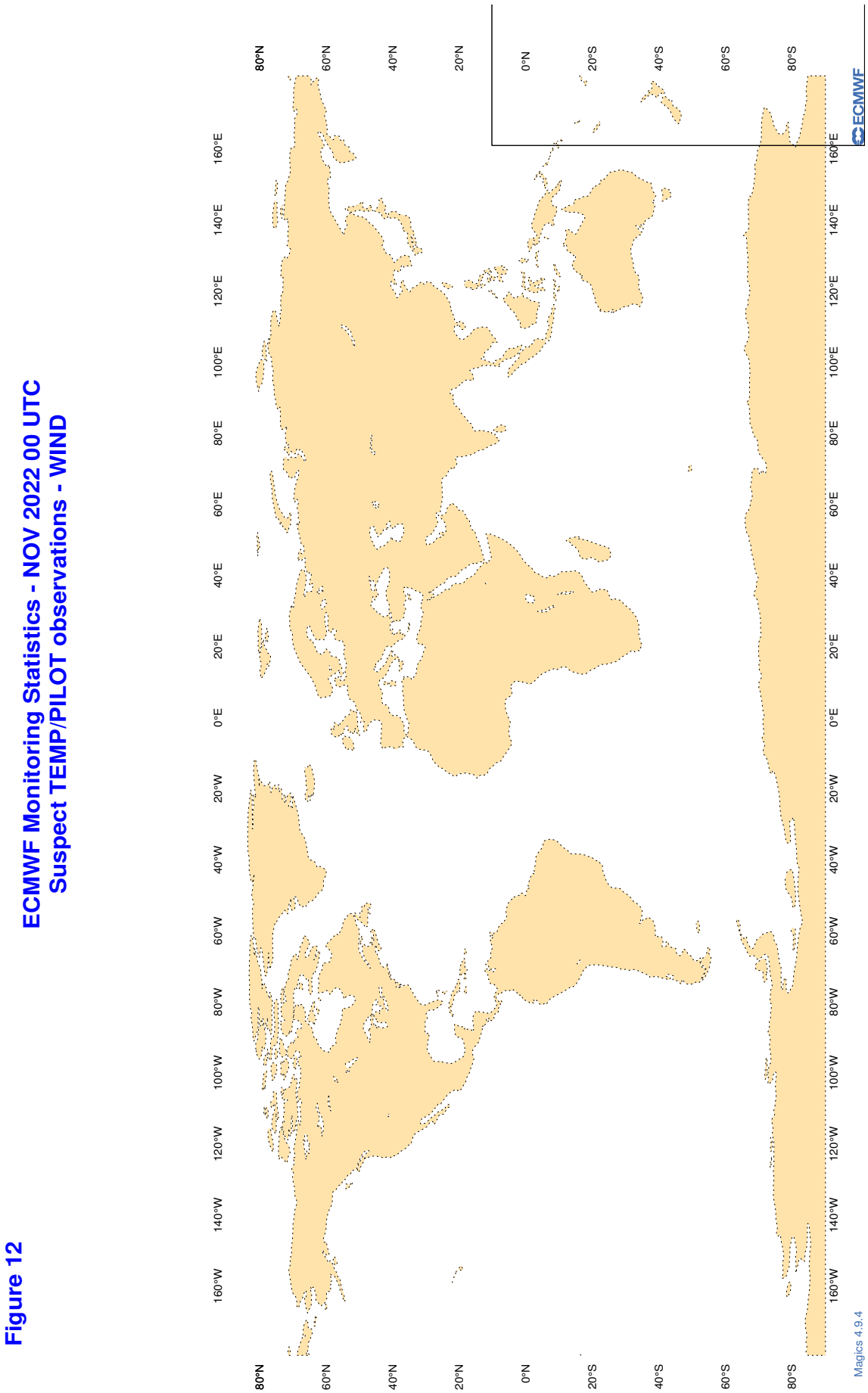


Figure 10

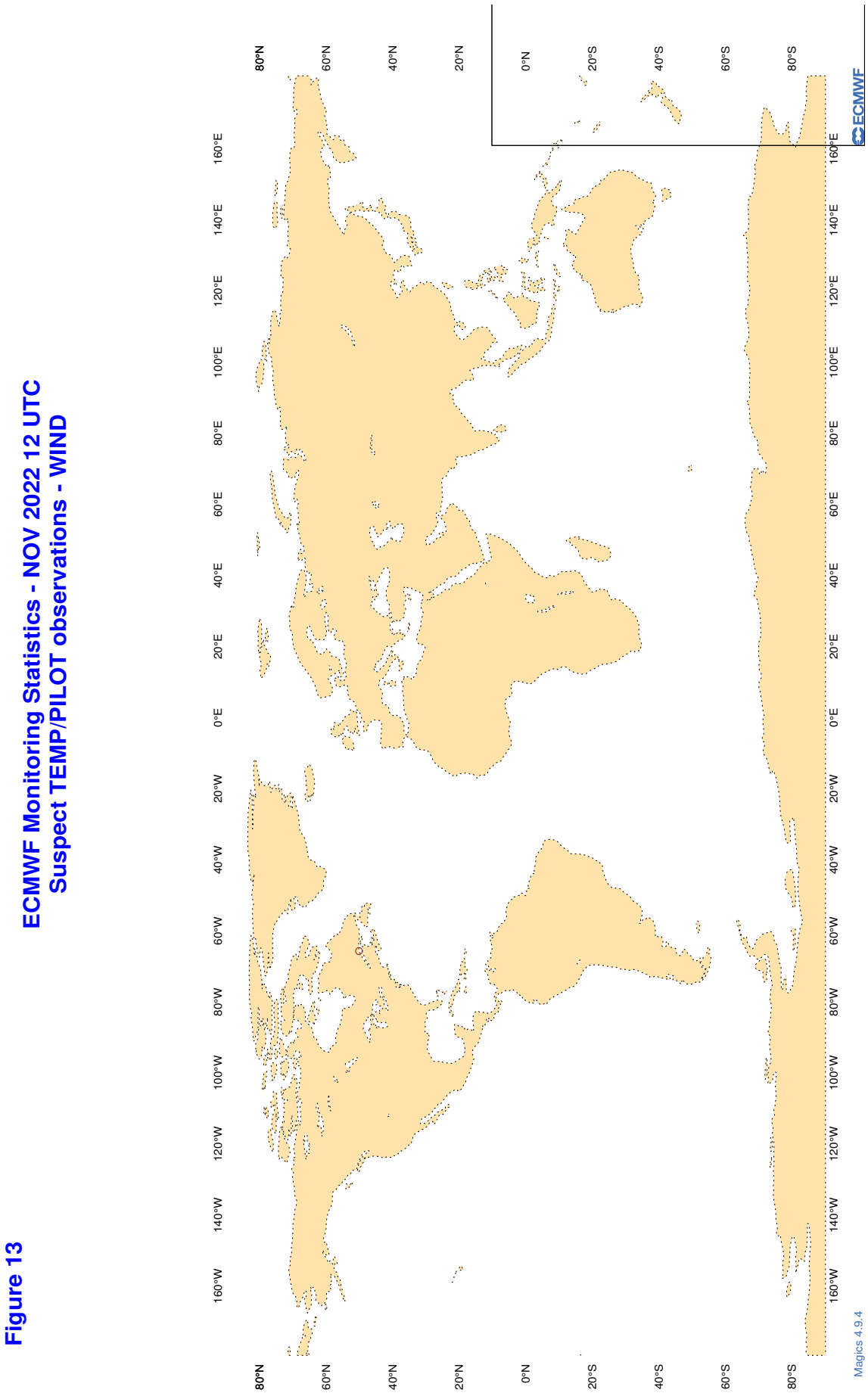
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC



3.2.24 Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC



3.2.25 Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	7	15.4	3.3
7JUNA4	00	Z	100	6	12.8	4.0
9ZT9MR	12	Z	100	3	14.7	-12.3
ASDE09	12	Z	100	3	15.2	12.7
ATGU3F	00	Z	100	3	21.1	-20.6
ATGU3F	12	Z	100	1	21.3	-21.3
BPMWB2	12	Z	100	6	43.6	-9.6
BPMWB2	00	Z	100	5	21.4	15.0
DBLK	12	Z	100	20	13.1	10.3
FPUW5G	00	Z	100	1	4.9	4.9
FPUW5G	12	Z	100	2	8.3	4.1
JNKN7J	12	Z	100	12	21.4	19.8
JNKN7J	00	Z	100	8	24.9	21.6
JPBN	00	Z	100	4	6.0	-0.2
KJJF9X	00	Z	100	5	12.4	8.7
KJJF9X	12	Z	100	5	18.0	17.4
KMPLHP	12	Z	100	9	74.8	64.4
KMPLHP	00	Z	100	6	31.5	26.6
LAGZ8	12	Z	100	1	100.1	100.1
LRYQE3	12	Z	100	10	9.6	-3.6
LRYQE3	00	Z	100	12	14.8	-9.1
USBOD	12	Z	100	3	5.6	-5.2
USBOD	00	Z	100	3	10.1	-5.8
USSIO	12	Z	100	2	11.6	-11.2
USSIO	00	Z	100	0	0.0	0.0
USSOD	12	Z	100	0	0.0	0.0
USSOD	00	Z	100	1	6.2	6.2
USYES	00	Z	100	2	11.2	-10.6
USYUB	12	Z	100	6	9.6	-7.3
USYUB	00	Z	100	5	17.5	-15.3
UXK5JT	00	Z	100	7	8.3	-0.7
UXK5JT	12	Z	100	7	6.7	3.8
WDK38H	12	Z	100	13	11.5	-10.5
XKQLWQ	12	Z	100	19	38.5	36.7
XQFJRG	12	Z	100	8	14.3	-12.4
XQFJRG	00	Z	100	8	14.1	-10.9
YLV96W	12	Z	100	3	20.1	-9.8
YLV96W	00	Z	100	2	13.2	-12.7
ZVQEQC	12	Z	100	2	7.9	5.3

3.2.26 Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s)

```
RADIOSONDE MONITORING STATISTICS (SHIPS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : GLOBAL
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	7	3.6	0.6	1.9
7JUNA4	00	V	100	6	4.9	-2.1	1.1
9ZT9MR	12	V	100	3	3.8	0.6	1.6
ASDE09	12	V	100	3	2.3	-0.5	0.3
ATGU3F	00	V	100	3	2.0	0.5	-0.1
ATGU3F	12	V	100	1	3.5	1.2	-3.3
BPMWB2	12	V	100	6	3.6	-1.5	1.8
BPMWB2	00	V	100	5	4.9	-2.9	0.3
DBLK	12	V	100	20	3.6	0.3	-0.2
FPUW5G	00	V	100	1	1.5	-0.9	-1.2
FPUW5G	12	V	100	2	3.2	0.2	-2.8
JNKN7J	12	V	100	12	3.3	0.8	-0.3
JNKN7J	00	V	100	8	4.7	0.8	2.1
JPBN	00	V	100	4	5.7	-1.8	2.9
KJJF9X	00	V	100	5	2.9	0.5	0.2
KJJF9X	12	V	100	5	4.8	-0.9	1.5
KMPLHP	12	V	100	9	4.2	-0.4	0.8
KMPLHP	00	V	100	6	4.2	0.0	2.1
LAGZ8	12	V	100	1	1.8	-1.7	0.5
LRYQE3	12	V	100	10	3.8	1.4	0.1
LRYQE3	00	V	100	12	3.1	-0.5	-0.2
USBOD	12	V	100	2	4.0	-2.2	1.0
USBOD	00	V	100	3	3.7	-2.0	1.6
USSIO	12	V	100	1	5.5	-5.5	0.5
USSIO	00	V	100	0	0.0	0.0	0.0
USSOD	12	V	100	0	0.0	0.0	0.0
USSOD	00	V	100	1	2.9	1.3	-2.6
USYES	00	V	100	1	7.3	-5.0	-5.3
USYUB	12	V	100	2	7.9	2.8	1.1
USYUB	00	V	100	3	3.4	-0.3	3.2
UXK5JT	00	V	100	7	3.8	-0.1	-1.9
UXK5JT	12	V	100	7	3.9	0.2	-1.4
WDK38H	12	V	100	13	2.8	-0.8	-1.2
XKQLWQ	12	V	100	18	3.3	-0.5	0.3
XQFJRG	12	V	100	8	4.4	-1.5	-1.1
XQFJRG	00	V	100	8	3.4	0.1	0.5
YLV96W	12	V	100	3	2.9	2.3	0.3
YLV96W	00	V	100	2	3.4	1.5	1.5
ZVQEQC	12	V	100	2	3.1	-0.8	-2.4

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

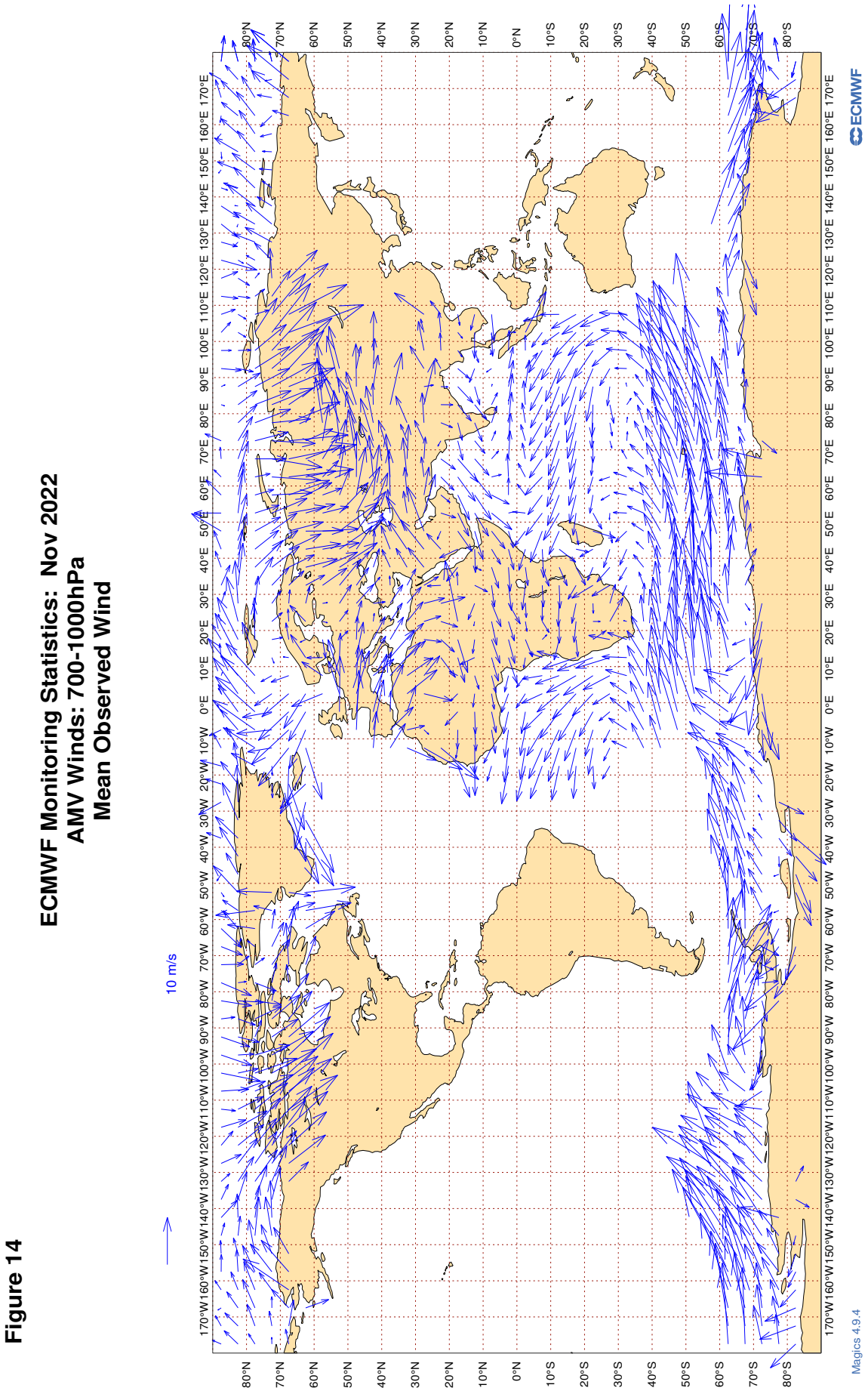


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

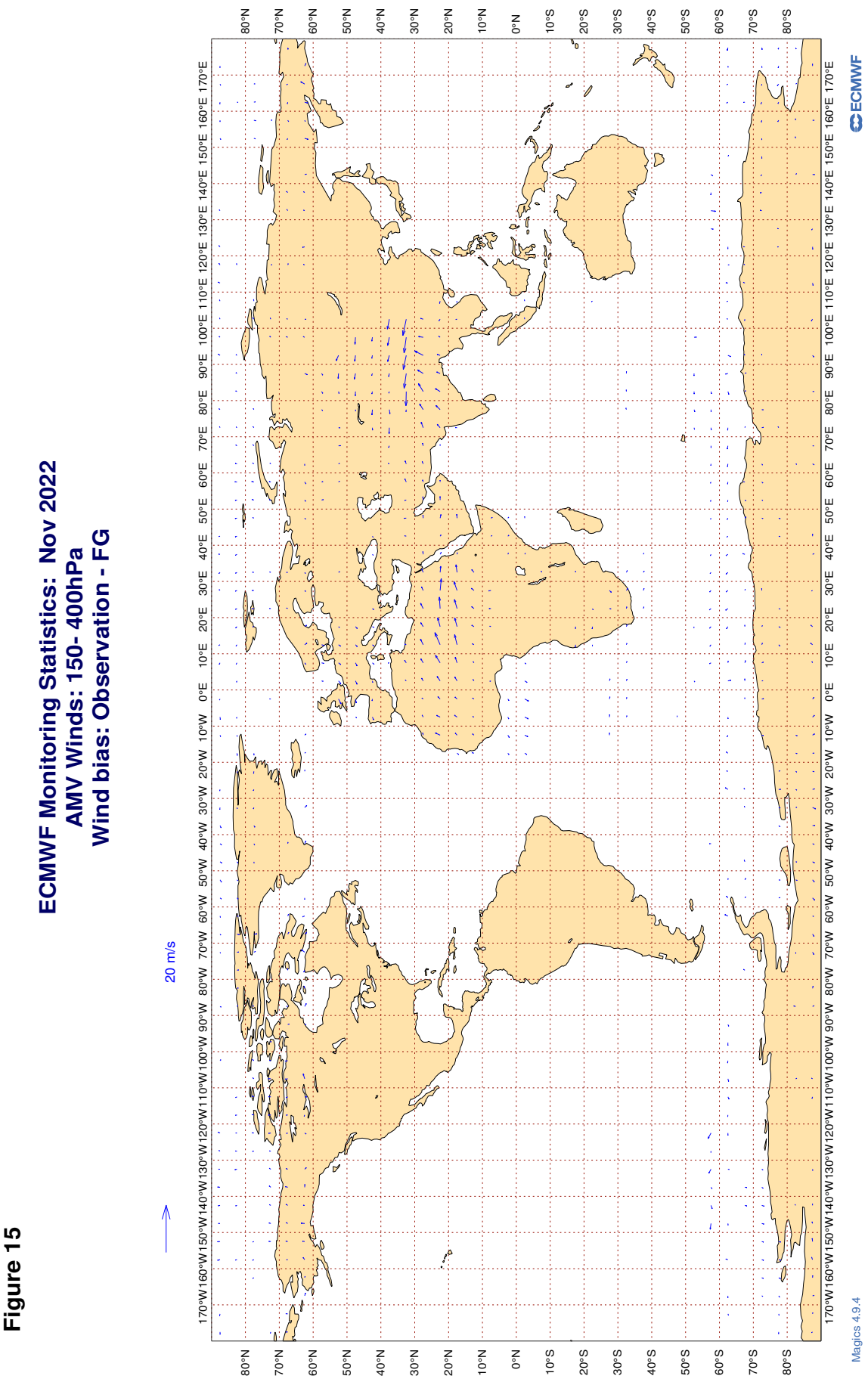


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

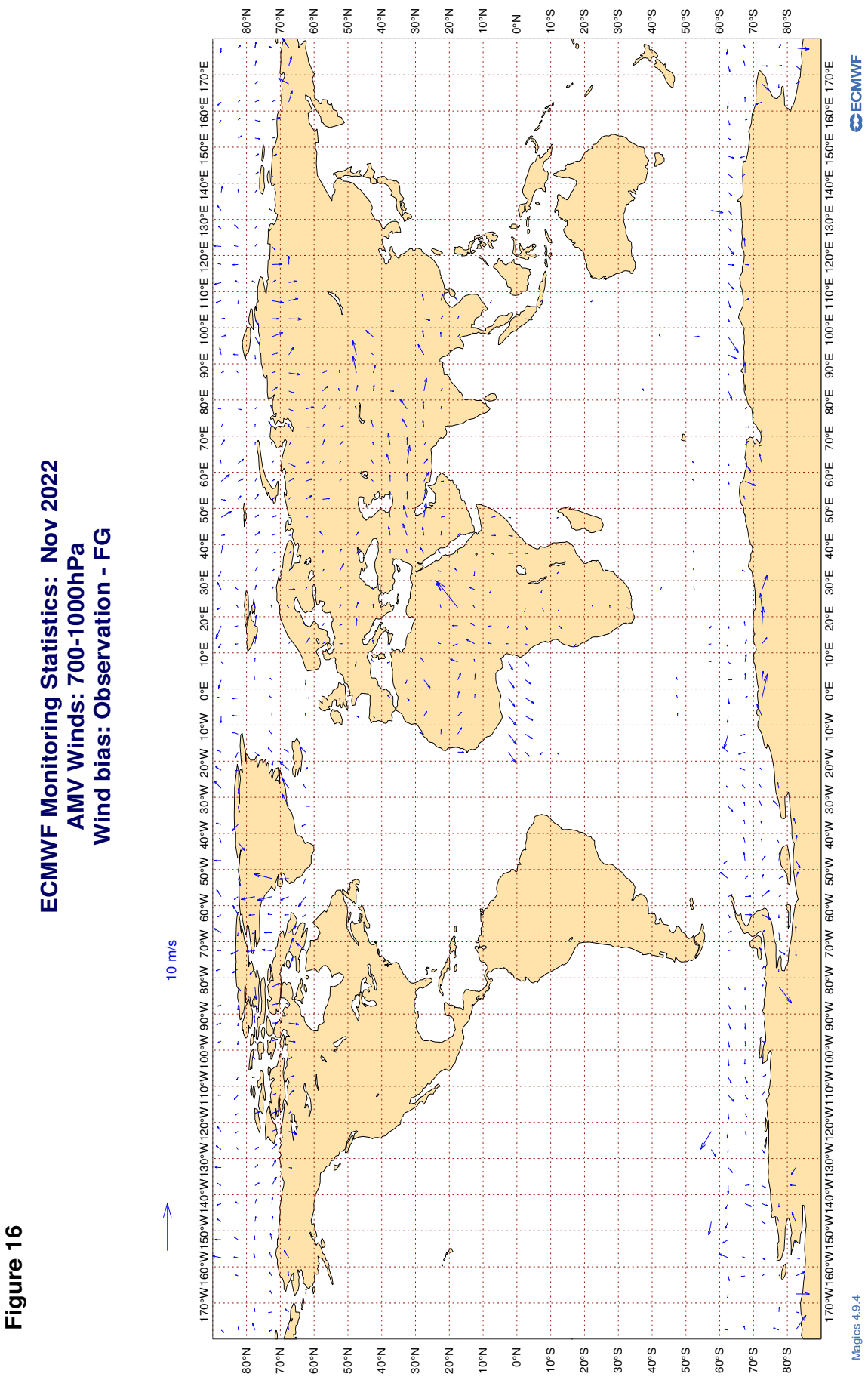


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

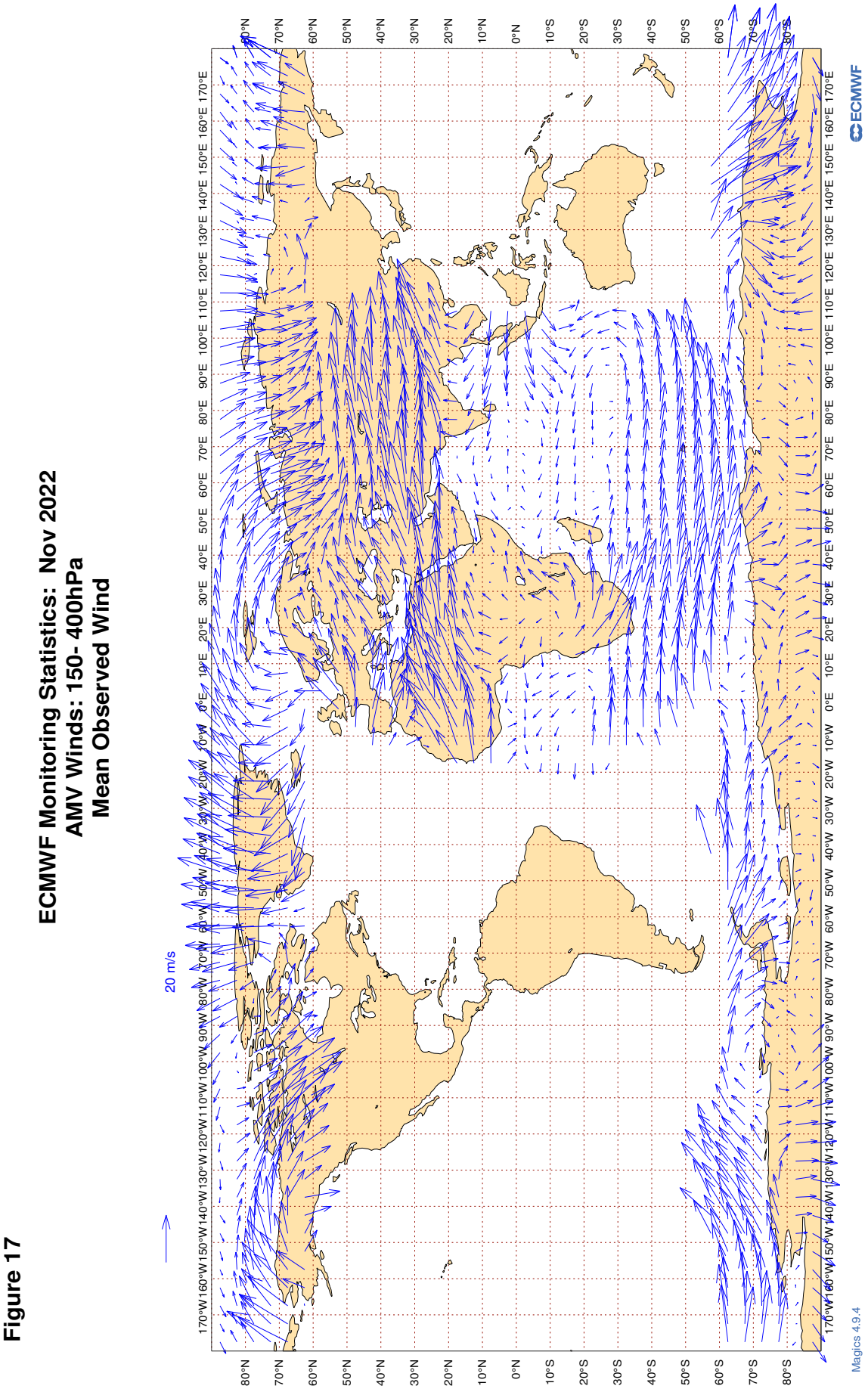


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

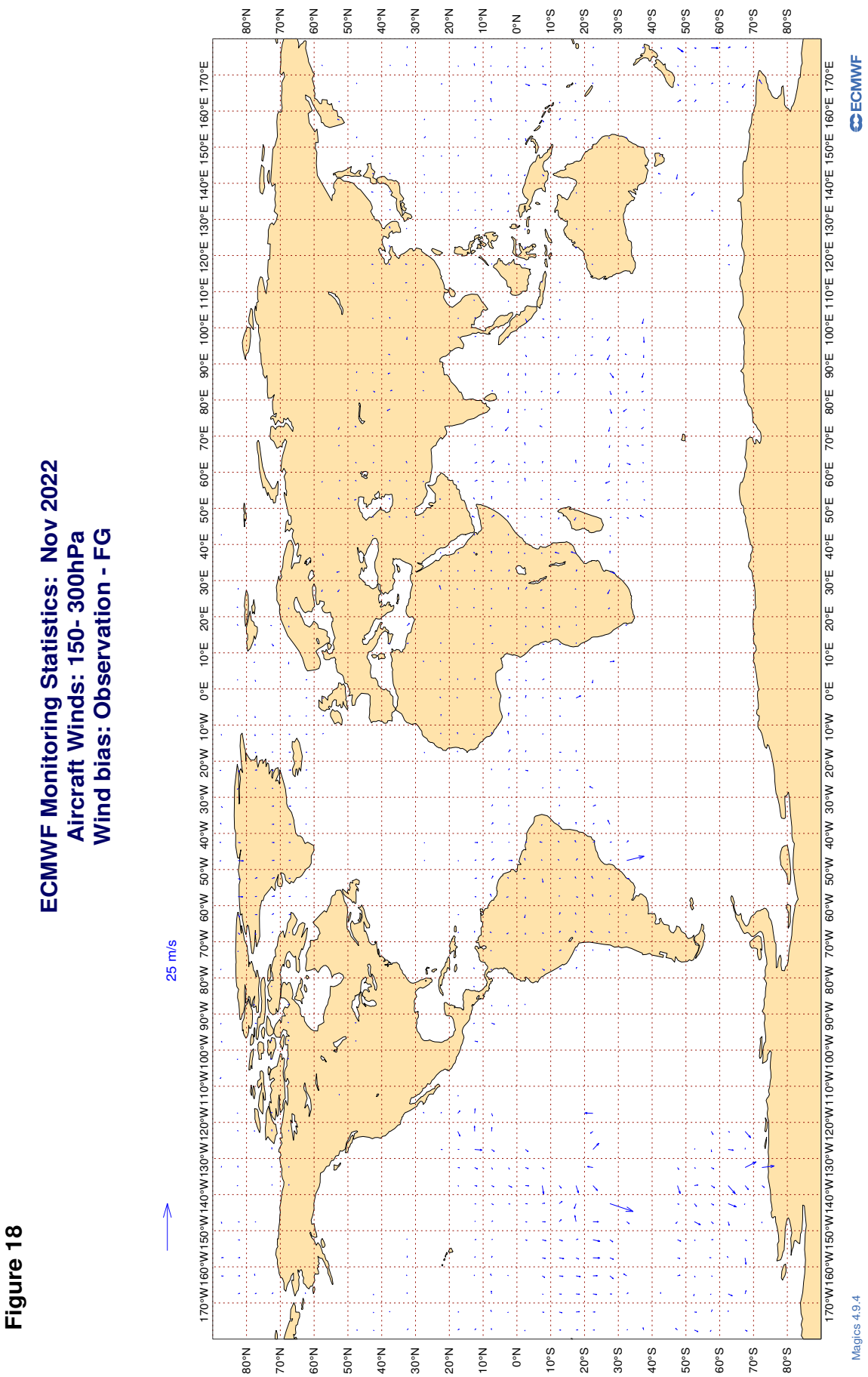


Figure 18

3.2.32 Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : VECTOR WIND (M/S)
AREA : GLOBAL
PERIOD : NOV 2022
STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT ON VECTOR WIND = 40 M/S

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	134	0	0	3.4	-0.2
AAL	99	V	300-150	34373	4	0	5.2	0.1
AAR	99	V	300-150	197	0	0	3.8	-1.0
ABB	99	V	300-150	236	0	0	3.6	0.2
ABD	99	V	300-150	1288	0	0	4.2	-0.3
ABP	99	V	300-150	134	0	0	4.3	-0.5
ABX	99	V	300-150	92	0	0	3.6	0.1
ACA	99	V	300-150	22337	4	0	5.8	0.0
ACI	99	V	300-150	366	0	0	4.3	0.5
AEA	99	V	300-150	708	7	1	4.4	-0.3
AFR	99	V	300-150	29825	1	0	4.1	0.1
AHO	99	V	300-150	376	0	0	3.6	0.2
AIC	99	V	300-150	2767	3	0	7.2	0.0
AJT	99	V	300-150	186	0	0	3.9	0.4
ALE	99	V	300-150	40	0	0	3.0	0.0
ALK	99	V	300-150	2031	0	0	3.1	0.4
AMX	99	V	300-150	3440	11	0	7.0	-0.1
ANZ	99	V	300-150	18592	2	0	5.7	0.3
AOJ	99	V	300-150	185	0	1	3.6	-0.2
ARG	99	V	300-150	20	0	0	3.2	0.9
ASA	99	V	300-150	27	0	0	6.5	1.8
ASJ	99	V	300-150	65	0	0	3.7	-0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ASL	99	V	300-150	327	0	0	4.0	0.2
ASY	99	V	300-150	40	0	0	3.6	0.6
ATC	99	V	300-150	141	1	0	10.6	0.7
ATG	99	V	300-150	28	0	0	3.2	2.3
ATN	99	V	300-150	124	0	1	4.1	-0.4
AUA	99	V	300-150	2795	0	0	4.1	-0.1
AUH	99	V	300-150	75	0	0	6.9	0.2
AVA	99	V	300-150	448	9	0	5.2	0.1
AWC	99	V	300-150	480	0	0	5.4	-0.4
AXB	99	V	300-150	46	0	0	3.5	0.6
AXM	99	V	300-150	121	1	0	5.5	1.4
AXY	99	V	300-150	40	0	0	3.3	0.7
AYY	99	V	300-150	89	0	0	3.7	0.4
AZG	99	V	300-150	635	0	0	4.5	-0.6
BAF	99	V	300-150	23	0	0	3.3	-0.4
BAW	99	V	300-150	43229	2	0	4.8	0.1
BBC	99	V	300-150	906	7	0	5.1	0.5
BCS	99	V	300-150	3755	0	0	3.4	0.2
BEL	99	V	300-150	768	0	0	3.8	0.3
BFF	99	V	300-150	104	0	0	9.0	2.6
BFY	99	V	300-150	40	0	0	3.7	0.5
BLU	99	V	300-150	32	0	0	2.8	-0.1
BLX	99	V	300-150	244	7	0	7.6	0.2
BMW	99	V	300-150	62	0	0	3.0	0.5
BOB	99	V	300-150	58	0	0	5.8	-2.6
BOX	99	V	300-150	3698	0	0	3.5	0.2
BOX	99	V	300-150	57	0	0	4.5	0.5
BRJ	99	V	300-150	42	0	0	3.5	0.5
BTX	99	V	300-150	110	0	0	3.5	-0.2
BVR	99	V	300-150	37	0	0	3.8	0.1
CAL	99	V	300-150	351	0	0	3.5	0.3
CAZ	99	V	300-150	35	0	0	4.5	1.1
CEB	99	V	300-150	153	0	1	3.7	0.6
CES	99	V	300-150	158	1	0	4.5	-0.1
CFC	99	V	300-150	303	0	1	4.1	0.3
CFG	99	V	300-150	4606	0	0	4.2	0.1
CHG	99	V	300-150	940	0	0	4.2	-0.5
CHU	99	V	300-150	28	0	0	4.8	-0.9
CJT	99	V	300-150	1547	0	0	3.8	0.1
CKS	99	V	300-150	661	0	0	3.8	0.1
CLX	99	V	300-150	4579	0	0	3.8	-0.3
CLY	99	V	300-150	23	0	0	3.5	0.3
CMB	99	V	300-150	1448	0	0	4.0	-0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CNK	99	V	300-150	79	0	1	3.9	-1.0
CNV	99	V	300-150	66	0	0	3.4	0.0
CPA	99	V	300-150	497	0	0	3.7	0.5
CRL	99	V	300-150	830	0	1	3.9	-0.1
CRV	99	V	300-150	84	0	0	4.1	0.2
CSC	99	V	300-150	81	0	0	2.8	0.2
CSN	99	V	300-150	356	2	0	4.0	0.6
CTM	99	V	300-150	214	0	0	4.0	0.4
CWG	99	V	300-150	64	0	0	4.5	0.8
DAH	99	V	300-150	628	0	0	3.6	0.2
DAL	99	V	300-150	45363	0	0	3.6	0.0
DCS	99	V	300-150	24	0	0	3.2	0.3
DCW	99	V	300-150	23	0	0	3.0	0.5
DGX	99	V	300-150	77	0	0	3.3	-0.8
DHK	99	V	300-150	1951	0	0	3.8	-0.3
DHX	99	V	300-150	68	0	0	2.9	0.5
DJT	99	V	300-150	1643	0	0	3.8	0.2
DLH	99	V	300-150	19211	0	0	3.6	0.0
DUB	99	V	300-150	34	0	0	3.8	0.0
EAL	99	V	300-150	78	0	0	4.7	-0.5
EAU	99	V	300-150	75	0	0	3.8	0.7
EDC	99	V	300-150	88	0	0	3.9	0.6
EDG	99	V	300-150	115	30	0	10.2	0.2
EDW	99	V	300-150	992	0	0	3.8	0.3
EFF	99	V	300-150	32	0	3	4.9	1.4
EIN	99	V	300-150	14007	0	0	3.5	0.2
EJM	99	V	300-150	940	0	0	3.9	0.1
ELY	99	V	300-150	4325	8	0	6.2	-0.1
ESW	99	V	300-150	20	0	0	3.0	0.7
ETD	99	V	300-150	8938	3	0	6.6	0.1
ETH	99	V	300-150	5604	2	0	6.0	0.1
EUK	99	V	300-150	1525	0	0	3.8	0.3
EUW	99	V	300-150	38	0	0	2.5	-0.5
EVA	99	V	300-150	103	3	0	5.6	-0.1
EXS	99	V	300-150	114	0	0	3.5	-0.1
EXV	99	V	300-150	74	0	0	3.6	0.4
FBU	99	V	300-150	1804	0	0	3.7	0.2
FDX	99	V	300-150	7481	0	0	3.6	0.2
FFM	99	V	300-150	27	0	0	3.9	0.6
FIA	99	V	300-150	129	0	0	7.2	0.9
FIN	99	V	300-150	1045	0	0	3.4	0.1
FJI	99	V	300-150	2119	0	0	4.3	0.5
FLC	99	V	300-150	20	0	0	3.8	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FPY	99	V	300-150	1959	0	0	3.2	0.1
FRV	99	V	300-150	39	0	0	3.4	0.4
FWI	99	V	300-150	1271	0	1	4.1	-0.2
FYG	99	V	300-150	63	0	0	4.0	0.3
GAF	99	V	300-150	199	0	0	3.8	0.3
GCK	99	V	300-150	107	0	0	3.5	0.1
GEC	99	V	300-150	1735	0	0	3.9	0.2
GES	99	V	300-150	118	29	0	3.6	0.2
GFA	99	V	300-150	477	5	0	6.6	0.3
GIA	99	V	300-150	670	0	0	3.3	0.3
GJE	99	V	300-150	33	0	0	3.2	0.3
GLH	99	V	300-150	52	0	0	2.8	-0.4
GLJ	99	V	300-150	35	0	0	4.2	-0.1
GMA	99	V	300-150	70	0	1	3.8	0.3
GNJ	99	V	300-150	63	0	0	3.8	0.7
GRP	99	V	300-150	58	0	0	3.5	0.3
GSM	99	V	300-150	20	0	0	5.2	-0.3
GTI	99	V	300-150	1739	0	0	4.0	-0.4
GTR	99	V	300-150	284	0	0	3.7	0.1
HAL	99	V	300-150	887	0	0	4.5	0.4
HFM	99	V	300-150	43	0	0	3.6	0.6
HFY	99	V	300-150	26	0	0	4.8	1.4
HKC	99	V	300-150	102	0	0	3.9	0.4
HLF	99	V	300-150	44	0	0	2.0	0.5
HRN	99	V	300-150	122	0	0	4.7	-1.0
HRT	99	V	300-150	113	0	0	5.1	-0.7
IBE	99	V	300-150	3766	0	1	3.9	0.2
ICE	99	V	300-150	5801	0	0	3.4	0.1
ICV	99	V	300-150	363	0	0	4.2	-0.4
IFA	99	V	300-150	243	0	0	3.7	0.0
IJM	99	V	300-150	104	0	1	3.5	0.0
ITY	99	V	300-150	4470	0	0	3.8	0.2
IXR	99	V	300-150	28	0	0	4.2	-0.4
JAF	99	V	300-150	677	9	0	5.5	0.3
JAL	99	V	300-150	67	0	0	9.9	-0.4
JAS	99	V	300-150	179	0	0	4.1	-0.9
JBU	99	V	300-150	5027	0	0	3.9	0.2
JCO	99	V	300-150	115	0	0	3.3	-0.2
JCT	99	V	300-150	35	0	0	4.3	-0.6
JEF	99	V	300-150	47	0	0	3.2	0.8
JET	99	V	300-150	28	0	0	5.9	-1.2
JME	99	V	300-150	63	0	0	3.7	0.0
JML	99	V	300-150	40	0	0	3.8	0.9

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JST	99	V	300-150	60	0	0	3.9	-0.3
KAC	99	V	300-150	1667	0	0	3.3	0.3
KAF	99	V	300-150	37	0	0	2.8	0.0
KAI	99	V	300-150	115	0	0	3.8	0.8
KAL	99	V	300-150	196	0	0	5.0	0.7
KAY	99	V	300-150	310	0	0	3.1	0.5
KIW	99	V	300-150	55	2	0	5.8	0.1
KLM	99	V	300-150	16949	5	0	5.5	0.1
KOC	99	V	300-150	65	0	0	4.5	0.3
KQA	99	V	300-150	107	4	1	5.8	0.0
LAE	99	V	300-150	353	0	0	3.7	0.6
LAN	99	V	300-150	1120	7	0	5.0	0.0
LCO	99	V	300-150	555	0	0	3.9	-1.0
LDX	99	V	300-150	47	0	0	3.9	0.9
LEA	99	V	300-150	84	0	1	3.8	0.3
LMJ	99	V	300-150	35	0	0	3.5	1.0
LNI	99	V	300-150	2560	0	0	3.2	0.5
LNX	99	V	300-150	46	0	0	4.7	-0.5
LOT	99	V	300-150	3443	8	0	6.9	-0.3
LRT	99	V	300-150	34	0	0	3.9	-0.8
LUC	99	V	300-150	43	0	0	3.8	1.2
LXJ	99	V	300-150	333	0	0	4.2	0.3
MAS	99	V	300-150	5564	0	0	3.7	0.7
MAU	99	V	300-150	319	0	0	4.1	0.7
MED	99	V	300-150	42	0	0	3.4	-0.1
MHV	99	V	300-150	84	0	0	3.6	0.4
MJE	99	V	300-150	26	0	0	3.6	-0.5
MJF	99	V	300-150	56	0	0	3.4	0.7
MLM	99	V	300-150	116	0	0	3.4	0.0
MLN	99	V	300-150	35	0	0	4.8	0.3
MLT	99	V	300-150	21	0	0	3.0	0.8
MMD	99	V	300-150	368	0	0	3.8	0.6
MNB	99	V	300-150	603	0	0	3.5	0.0
MPH	99	V	300-150	593	0	0	4.1	-0.7
MSR	99	V	300-150	1880	2	0	4.5	0.0
MVJ	99	V	300-150	22	0	0	3.2	-0.1
NBT	99	V	300-150	1803	10	0	6.9	0.2
NCR	99	V	300-150	180	0	1	4.4	-0.2
NJE	99	V	300-150	481	0	0	3.7	0.3
NOJ	99	V	300-150	51	0	0	3.8	0.4
NOS	99	V	300-150	1035	8	0	7.1	0.2
NSP	99	V	300-150	54	0	0	9.4	3.6
OAE	99	V	300-150	586	0	0	4.5	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
OCN	99	V	300-150	4858	0	0	3.8	0.1
OLI	99	V	300-150	32	0	3	3.6	-0.6
OMA	99	V	300-150	1576	4	0	8.3	0.3
PAC	99	V	300-150	901	0	0	3.8	-0.5
PAL	99	V	300-150	553	0	0	2.7	0.4
PEG	99	V	300-150	56	0	0	4.5	0.3
PIA	99	V	300-150	61	0	0	2.9	-0.1
PJS	99	V	300-150	34	0	0	2.7	0.4
PLF	99	V	300-150	145	0	0	4.1	-0.7
PVA	99	V	300-150	140	0	0	3.3	-0.4
PVG	99	V	300-150	40	0	0	3.4	-0.6
QFA	99	V	300-150	5771	3	0	6.2	0.3
QQE	99	V	300-150	123	0	0	2.8	0.4
QTR	99	V	300-150	24397	1	0	4.6	0.2
RAM	99	V	300-150	426	8	0	5.0	0.3
RBA	99	V	300-150	128	7	0	10.2	-0.1
RCH	99	V	300-150	1767	0	0	4.7	0.2
RDN	99	V	300-150	21	0	0	3.0	-0.2
RHH	99	V	300-150	34	0	0	8.3	-1.7
RJA	99	V	300-150	1028	7	0	7.7	-0.1
RJR	99	V	300-150	22	0	0	3.2	0.3
RKS	99	V	300-150	26	0	0	3.2	0.5
ROJ	99	V	300-150	45	0	0	3.8	0.0
RRR	99	V	300-150	172	0	0	3.8	-0.3
RYR	99	V	300-150	565	0	1	3.5	0.3
RZO	99	V	300-150	166	0	5	3.8	0.1
SAM	99	V	300-150	464	0	0	4.2	-0.2
SAS	99	V	300-150	4797	0	0	3.4	0.2
SAZ	99	V	300-150	115	0	0	4.1	0.7
SCX	99	V	300-150	110	0	2	5.6	0.0
SEY	99	V	300-150	55	0	0	3.0	0.7
SHE	99	V	300-150	55	0	0	3.6	0.5
SIA	99	V	300-150	10567	0	0	4.1	0.4
SIO	99	V	300-150	46	0	0	3.4	1.0
SLM	99	V	300-150	64	0	3	3.3	0.7
SON	99	V	300-150	114	0	0	3.6	0.4
SPA	99	V	300-150	150	0	0	4.2	-0.3
SRA	99	V	300-150	60	0	0	5.3	-0.3
SUI	99	V	300-150	38	0	0	4.5	1.1
SVA	99	V	300-150	7797	1	0	5.5	0.3
SVF	99	V	300-150	41	0	0	2.4	0.4
SVW	99	V	300-150	100	0	0	3.8	0.3
SWR	99	V	300-150	9335	0	1	3.8	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SYB	99	V	300-150	100	0	0	3.5	0.1
TAM	99	V	300-150	24	0	4	2.9	0.3
TAP	99	V	300-150	2620	0	1	3.9	0.3
TAR	99	V	300-150	149	0	0	3.5	0.3
TAY	99	V	300-150	326	0	0	4.1	0.0
TBJ	99	V	300-150	37	0	0	3.9	-0.6
TEU	99	V	300-150	72	0	0	3.4	0.9
TFL	99	V	300-150	1569	12	0	5.2	0.0
TGW	99	V	300-150	1026	1	0	7.8	0.4
THA	99	V	300-150	580	0	0	5.8	0.3
THT	99	V	300-150	3513	3	0	8.3	0.4
THY	99	V	300-150	12034	1	0	4.4	0.0
TMN	99	V	300-150	271	0	0	4.1	0.5
TOM	99	V	300-150	5312	10	0	5.5	0.2
TOW	99	V	300-150	69	0	0	4.1	-0.6
TSC	99	V	300-150	3828	0	0	4.0	0.4
TVS	99	V	300-150	23	0	0	3.2	1.0
TWY	99	V	300-150	606	0	0	3.6	0.0
UAE	99	V	300-150	25990	0	0	3.5	0.2
UAF	99	V	300-150	55	0	0	2.7	0.2
UAL	99	V	300-150	62565	2	1	5.2	0.0
ULC	99	V	300-150	133	0	0	3.5	0.4
UPS	99	V	300-150	5705	0	0	3.7	-0.3
UZB	99	V	300-150	154	4	1	8.7	-0.5
VCG	99	V	300-150	90	0	0	4.4	0.0
VIR	99	V	300-150	18004	3	0	4.8	0.0
VJT	99	V	300-150	1660	0	0	3.7	0.4
VKG	99	V	300-150	69	0	0	3.8	-0.2
VMP	99	V	300-150	69	0	0	6.0	1.8
VNA	99	V	300-150	21	0	0	4.5	1.9
VOZ	99	V	300-150	20	0	15	3.4	0.4
VTI	99	V	300-150	397	0	0	2.9	0.5
VXS	99	V	300-150	37	0	0	3.3	0.6
WFL	99	V	300-150	36	0	3	4.4	-2.1
WGN	99	V	300-150	44	0	0	2.8	-0.5
WJA	99	V	300-150	1132	4	0	7.5	0.4
XAX	99	V	300-150	417	0	0	3.6	0.5
XEN	99	V	300-150	33	0	0	4.5	-1.3
XLS	99	V	300-150	50	0	0	3.4	0.4
XRO	99	V	300-150	63	0	0	3.8	0.8

4 EUCOS Area Monitoring Statistics

The following tables provide information on the quality of upper-air data and surface DRIFTER data over the EUCOS area as received at ECMWF during the month.

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area $10\,^{\circ}$N - $90\,^{\circ}$N, $70\,^{\circ}$W - $40\,^{\circ}$E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.
Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area $10\,^{\circ}$N - $90\,^{\circ}$N, $70\,^{\circ}$W - $40\,^{\circ}$E. The statistics are in the same form as tables 4-6.

4.1 Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	7.2	2.8
01001	00	Z	50	28	21.7	-17.5
01028	12	Z	50	29	6.1	0.0
01028	00	Z	50	30	6.1	3.2
01400	12	Z	50	8	85.4	83.0
01400	00	Z	50	5	75.2	74.0
01415	12	Z	50	30	7.9	-0.9
01415	00	Z	50	30	15.5	1.7
02365	00	Z	50	27	6.0	1.5
02365	12	Z	50	26	8.5	2.3
02836	12	Z	50	31	5.2	1.0
02836	00	Z	50	28	5.1	1.5
02963	00	Z	50	30	9.1	5.3
02963	12	Z	50	29	7.4	1.5
03005	12	Z	50	30	8.1	-2.2
03005	00	Z	50	26	12.1	-3.1
03238	12	Z	50	5	4.0	3.1
03238	00	Z	50	30	9.4	1.1
03808	12	Z	50	26	11.2	1.9
03808	00	Z	50	27	9.6	-1.0
03918	12	Z	50	6	13.1	5.6
03918	00	Z	50	30	15.0	5.6
03953	12	Z	50	30	12.1	-6.7
03953	00	Z	50	29	11.9	-6.1
04018	12	Z	50	29	6.3	-2.7
04018	00	Z	50	27	8.6	1.9
04220	12	Z	50	28	12.7	-9.8
04220	00	Z	50	29	14.8	-12.6
04270	12	Z	50	28	19.6	-17.3
04270	00	Z	50	29	19.4	-15.6
04320	12	Z	50	30	8.0	2.7
04320	00	Z	50	28	13.0	-3.5
04339	00	Z	50	29	20.0	-11.5
04339	12	Z	50	28	16.6	-12.2
04360	12	Z	50	26	17.3	-14.9
04360	00	Z	50	24	64.4	0.9
06011	12	Z	50	9	13.5	6.7
06011	00	Z	50	4	12.2	10.4
06260	12	Z	50	4	16.7	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	50	29	11.1	1.1
06610	00	Z	50	29	9.5	1.2
06610	12	Z	50	30	8.7	2.5
07110	12	Z	50	25	12.9	-1.3
07110	00	Z	50	26	24.6	-4.3
07510	12	Z	50	30	27.1	3.9
07510	00	Z	50	27	10.3	-3.1
07645	00	Z	50	24	16.8	6.0
07645	12	Z	50	28	18.0	13.8
07761	12	Z	50	29	14.2	-1.5
07761	00	Z	50	29	10.3	-1.2
08001	00	Z	50	29	14.2	2.1
08001	12	Z	50	30	10.6	3.9
08221	12	Z	50	30	10.6	4.4
08221	00	Z	50	29	9.2	6.0
08302	00	Z	50	30	8.8	-2.3
08302	12	Z	50	30	9.6	-3.7
08508	12	Z	50	30	8.6	2.2
08522	12	Z	50	30	4.5	1.1
10035	00	Z	50	30	16.6	14.6
10035	12	Z	50	30	12.0	10.2
10393	00	Z	50	30	6.0	2.9
10393	12	Z	50	30	9.3	0.7
10410	00	Z	50	30	6.3	0.8
10410	12	Z	50	30	7.0	-1.6
10739	00	Z	50	30	8.9	2.6
10739	12	Z	50	30	6.0	2.0
11035	12	Z	50	29	11.4	5.2
11035	00	Z	50	30	6.1	3.1
12982	12	Z	50	30	5.5	2.7
12982	00	Z	50	30	7.7	3.8
16245	00	Z	50	29	8.4	5.7
16245	12	Z	50	29	9.3	4.8
16429	00	Z	50	26	10.7	7.9
16429	12	Z	50	28	9.1	5.4
16622	00	Z	50	27	14.9	12.4
16754	00	Z	50	22	9.5	6.3
17607	12	Z	50	20	9.7	1.4
26435	12	Z	50	11	5.8	2.3
60018	00	Z	50	30	11.4	10.2
60018	12	Z	50	29	7.5	5.8
7JUNA4	12	Z	50	4	18.7	10.8
7JUNA4	00	Z	50	3	27.2	19.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	50	3	15.9	-14.4
ASDE09	12	Z	50	3	22.5	20.6
ATGU3F	00	Z	50	3	19.0	-17.7
ATGU3F	12	Z	50	1	20.2	-20.2
BPMWB2	12	Z	50	5	34.9	13.6
BPMWB2	00	Z	50	5	45.6	36.9
FPUW5G	00	Z	50	1	4.4	4.4
FPUW5G	12	Z	50	2	8.1	-3.7
JNKN7J	12	Z	50	10	27.1	25.6
JNKN7J	00	Z	50	8	25.5	21.5
KJJF9X	00	Z	50	5	15.0	13.0
KJJF9X	12	Z	50	4	18.6	17.1
KMPLHP	12	Z	50	8	132.8	115.6
KMPLHP	00	Z	50	6	36.1	30.1
LRYQE3	12	Z	50	10	12.2	3.0
LRYQE3	00	Z	50	12	15.3	-7.0
UXK5JT	00	Z	50	7	8.0	4.2
UXK5JT	12	Z	50	7	11.3	6.5
WDK38H	12	Z	50	12	9.8	-9.0
XKQLWQ	12	Z	50	19	51.6	49.6
XQFJRG	12	Z	50	8	9.9	-9.1
XQFJRG	00	Z	50	5	15.2	-11.1
YLV96W	12	Z	50	3	18.6	-3.8
YLV96W	00	Z	50	2	32.8	14.3
ZVQEQC	12	Z	50	2	7.7	7.2

4.2 Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 :  50 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	3.3	0.0	-0.6
01001	00	V	50	27	2.8	0.4	-0.2
01028	12	V	50	29	2.6	0.4	0.3
01028	00	V	50	28	3.0	-0.3	-0.2
01400	12	V	50	6	3.5	1.9	-0.3
01400	00	V	50	4	3.6	-1.2	1.7
01415	12	V	50	30	4.0	0.7	1.0
01415	00	V	50	28	4.0	0.8	-0.2
02365	00	V	50	20	3.2	-0.3	0.2
02365	12	V	50	24	2.9	-0.3	0.3
02836	12	V	50	29	3.3	-0.1	0.4
02836	00	V	50	28	3.3	-0.1	-0.4
02963	00	V	50	30	3.0	0.2	0.4
02963	12	V	50	29	3.6	-0.6	0.3
03005	12	V	50	30	3.0	1.1	-0.3
03005	00	V	50	23	4.1	0.9	0.4
03238	12	V	50	5	2.5	-0.4	0.0
03238	00	V	50	27	4.0	1.4	0.3
03808	12	V	50	26	4.0	0.1	-0.5
03808	00	V	50	26	4.8	1.4	0.0
03918	12	V	50	6	5.6	3.7	1.3
03918	00	V	50	30	4.3	0.1	-0.3
03953	12	V	50	30	3.9	-0.2	-0.8
03953	00	V	50	27	3.9	0.8	-0.1
04018	12	V	50	29	2.8	0.3	0.2
04018	00	V	50	22	3.2	0.0	0.4
04220	12	V	50	28	3.4	-0.1	-0.1
04220	00	V	50	23	3.0	0.4	0.6
04270	12	V	50	28	4.1	0.8	-0.3
04270	00	V	50	29	3.5	-0.2	0.2
04320	12	V	50	30	3.0	-0.4	-0.7
04320	00	V	50	27	3.2	-0.3	0.0
04339	00	V	50	28	3.5	-0.3	0.2
04339	12	V	50	28	3.3	0.1	1.0
04360	12	V	50	26	3.3	-0.2	0.0
04360	00	V	50	24	3.4	-0.5	0.1
06011	12	V	50	9	3.5	1.0	-0.5
06011	00	V	50	4	2.4	0.1	-1.2
06260	12	V	50	4	4.0	-0.4	-1.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	50	28	3.5	-0.3	-0.1
06610	00	V	50	28	4.4	0.1	-1.2
06610	12	V	50	30	4.7	0.4	-1.2
07110	12	V	50	25	3.3	0.4	0.4
07110	00	V	50	24	3.5	1.6	0.1
07510	12	V	50	30	3.6	0.7	0.3
07510	00	V	50	25	3.8	-0.2	-0.2
07645	00	V	50	23	4.9	-1.0	0.3
07645	12	V	50	28	4.5	0.2	-1.1
07761	12	V	50	29	4.2	-0.3	-0.7
07761	00	V	50	29	4.2	0.1	0.1
08001	00	V	50	29	4.2	-0.3	0.1
08001	12	V	50	30	3.7	0.3	0.6
08221	12	V	50	30	4.3	0.1	-0.2
08221	00	V	50	29	4.9	-1.4	0.3
08302	00	V	50	30	3.7	0.6	0.1
08302	12	V	50	30	4.0	-1.4	0.1
08508	12	V	50	30	3.8	0.0	-0.5
08522	12	V	50	30	2.9	-0.4	-0.5
10035	00	V	50	28	3.1	-0.1	0.1
10035	12	V	50	30	3.3	-0.2	-0.5
10393	00	V	50	30	3.2	1.1	-0.6
10393	12	V	50	30	2.9	0.6	-0.5
10410	00	V	50	30	3.1	-0.4	0.2
10410	12	V	50	30	3.1	-0.4	-0.2
10739	00	V	50	28	3.5	-0.2	-0.5
10739	12	V	50	30	4.0	0.3	-1.5
11035	12	V	50	29	3.0	0.7	-0.9
11035	00	V	50	26	3.3	0.0	-0.7
12982	12	V	50	30	3.4	0.7	-0.4
12982	00	V	50	26	3.2	0.6	-0.7
16245	00	V	50	29	4.8	0.7	-0.1
16245	12	V	50	29	3.3	-0.5	0.9
16429	00	V	50	24	4.7	-0.5	-1.3
16429	12	V	50	28	3.7	-0.5	-0.3
16622	00	V	50	22	2.8	0.3	-0.3
16754	00	V	50	20	4.1	0.3	-0.2
17607	12	V	50	4	3.6	1.3	-1.8
26435	12	V	50	10	3.0	-0.7	-0.3
60018	00	V	50	30	3.0	0.3	-0.3
60018	12	V	50	28	3.2	-0.8	-0.1
7JUNA4	12	V	50	4	3.3	-1.1	-0.4
7JUNA4	00	V	50	3	4.1	2.9	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	50	3	3.2	2.2	-0.8
ASDE09	12	V	50	3	4.9	-2.8	1.0
ATGU3F	00	V	50	3	2.9	-0.9	0.6
ATGU3F	12	V	50	1	2.0	1.7	-1.1
BPMWB2	12	V	50	5	4.1	-1.9	1.4
BPMWB2	00	V	50	5	3.9	1.5	0.7
FPUW5G	00	V	50	1	4.2	0.5	-4.2
FPUW5G	12	V	50	2	3.2	0.2	2.7
JNKN7J	12	V	50	10	3.4	-1.7	0.0
JNKN7J	00	V	50	8	2.0	-0.4	0.2
KJJF9X	00	V	50	5	2.3	-0.7	-0.8
KJJF9X	12	V	50	4	2.5	1.5	-1.1
KMPLHP	12	V	50	8	4.5	2.3	-1.3
KMPLHP	00	V	50	6	4.3	-1.5	0.6
LRYQE3	12	V	50	10	2.8	0.8	0.2
LRYQE3	00	V	50	12	4.2	0.3	0.1
UXK5JT	00	V	50	7	3.0	1.4	0.2
UXK5JT	12	V	50	7	2.8	0.3	-0.6
WDK38H	12	V	50	10	3.5	-0.5	0.2
XKQLWQ	12	V	50	17	4.2	-0.5	0.6
XQFJRG	12	V	50	7	3.3	-0.6	0.7
XQFJRG	00	V	50	5	2.7	1.3	-1.5
YLV96W	12	V	50	3	2.5	-0.3	1.3
YLV96W	00	V	50	2	2.2	-0.1	1.8
ZVQEQC	12	V	50	2	5.2	-0.1	-0.1

4.3 Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	6.8	-0.8
01001	00	Z	100	30	23.8	-21.0
01028	12	Z	100	30	6.5	-4.4
01028	00	Z	100	30	4.3	-1.2
01400	12	Z	100	10	77.8	75.9
01400	00	Z	100	10	69.0	68.5
01415	12	Z	100	30	8.6	-4.1
01415	00	Z	100	30	9.9	-0.5
02365	00	Z	100	29	6.6	-1.8
02365	12	Z	100	28	7.3	-1.0
02836	12	Z	100	32	4.1	-1.6
02836	00	Z	100	28	5.3	-2.8
02963	00	Z	100	30	4.5	0.2
02963	12	Z	100	29	5.5	-1.5
03005	12	Z	100	31	8.6	-5.3
03005	00	Z	100	26	11.7	-5.8
03238	12	Z	100	6	4.7	-1.5
03238	00	Z	100	30	9.8	-1.7
03808	12	Z	100	29	8.5	-1.7
03808	00	Z	100	30	8.5	-2.6
03918	12	Z	100	6	9.2	-0.7
03918	00	Z	100	30	10.3	2.1
03953	12	Z	100	30	11.3	-8.1
03953	00	Z	100	30	14.5	-6.1
04018	12	Z	100	29	6.5	-4.9
04018	00	Z	100	27	6.3	-1.5
04220	12	Z	100	29	13.4	-11.6
04220	00	Z	100	30	15.1	-13.7
04270	12	Z	100	30	17.5	-16.7
04270	00	Z	100	29	19.4	-16.5
04320	12	Z	100	30	6.2	-1.4
04320	00	Z	100	29	14.3	-6.8
04339	00	Z	100	29	18.2	-15.5
04339	12	Z	100	29	17.3	-14.3
04360	12	Z	100	26	17.6	-15.9
04360	00	Z	100	25	42.8	-5.1
06011	12	Z	100	11	6.5	0.7
06011	00	Z	100	4	10.5	6.1
06260	12	Z	100	4	10.6	-1.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	100	30	10.6	-2.9
06610	00	Z	100	30	7.2	-0.6
06610	12	Z	100	30	7.4	-0.6
07110	12	Z	100	27	10.9	-4.3
07110	00	Z	100	26	17.2	-7.4
07510	12	Z	100	30	19.6	-0.1
07510	00	Z	100	28	9.5	-4.7
07645	00	Z	100	27	10.5	-0.3
07645	12	Z	100	28	10.9	6.7
07761	12	Z	100	29	12.4	-5.9
07761	00	Z	100	30	12.4	-6.8
08001	00	Z	100	29	10.8	-1.3
08001	12	Z	100	30	9.8	0.2
08221	12	Z	100	30	8.9	0.3
08221	00	Z	100	30	7.3	1.8
08302	00	Z	100	30	11.1	-7.5
08302	12	Z	100	30	9.7	-7.0
08508	12	Z	100	30	7.8	2.9
08522	12	Z	100	30	6.0	4.4
10035	00	Z	100	30	12.3	11.0
10035	12	Z	100	30	11.0	8.7
10393	00	Z	100	30	4.9	-1.3
10393	12	Z	100	30	6.8	-0.7
10410	00	Z	100	31	5.8	-2.2
10410	12	Z	100	30	7.0	-3.5
10739	00	Z	100	30	5.6	0.3
10739	12	Z	100	30	5.9	0.9
11035	12	Z	100	31	6.8	-0.8
11035	00	Z	100	30	4.2	-1.3
12982	12	Z	100	30	5.1	0.8
12982	00	Z	100	30	6.2	0.2
16245	00	Z	100	30	5.3	0.3
16245	12	Z	100	30	6.1	1.1
16429	00	Z	100	27	6.8	3.5
16429	12	Z	100	29	6.2	2.6
16622	00	Z	100	30	9.5	7.4
16754	00	Z	100	25	8.1	5.0
17607	12	Z	100	29	5.5	1.7
26435	12	Z	100	15	3.7	-1.7
60018	00	Z	100	30	7.8	6.9
60018	12	Z	100	30	6.5	4.4
7JUNA4	12	Z	100	7	15.4	3.3
7JUNA4	00	Z	100	6	12.8	4.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	100	3	14.7	-12.3
ASDE09	12	Z	100	3	15.2	12.7
ATGU3F	00	Z	100	3	21.1	-20.6
ATGU3F	12	Z	100	1	21.3	-21.3
BPMWB2	12	Z	100	6	43.6	-9.6
BPMWB2	00	Z	100	5	21.4	15.0
FPUW5G	00	Z	100	1	4.9	4.9
FPUW5G	12	Z	100	2	8.3	4.1
JNKN7J	12	Z	100	12	21.4	19.8
JNKN7J	00	Z	100	8	24.9	21.6
KJJF9X	00	Z	100	5	12.4	8.7
KJJF9X	12	Z	100	5	18.0	17.4
KMPLHP	12	Z	100	9	74.8	64.4
KMPLHP	00	Z	100	6	31.5	26.6
LRYQE3	12	Z	100	10	9.6	-3.6
LRYQE3	00	Z	100	12	14.8	-9.1
UXK5JT	00	Z	100	7	8.3	-0.7
UXK5JT	12	Z	100	7	6.7	3.8
WDK38H	12	Z	100	13	11.5	-10.5
XKQLWQ	12	Z	100	19	38.5	36.7
XQFJRG	12	Z	100	8	14.3	-12.4
XQFJRG	00	Z	100	8	14.1	-10.9
YLV96W	12	Z	100	3	20.1	-9.8
YLV96W	00	Z	100	2	13.2	-12.7
ZVQEQC	12	Z	100	2	7.9	5.3

4.4 Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 100 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	2.6	0.0	0.0
01001	00	V	100	28	2.3	0.1	0.4
01028	12	V	100	30	2.5	0.1	-0.2
01028	00	V	100	28	2.8	0.3	-0.4
01400	12	V	100	9	3.0	1.8	-0.2
01400	00	V	100	7	2.6	0.3	0.7
01415	12	V	100	30	4.3	0.1	0.3
01415	00	V	100	30	4.7	0.0	-0.8
02365	00	V	100	25	3.0	0.3	0.3
02365	12	V	100	27	3.1	0.6	0.2
02836	12	V	100	30	2.8	-0.8	-0.5
02836	00	V	100	28	3.4	0.6	0.2
02963	00	V	100	30	2.8	1.0	0.4
02963	12	V	100	29	3.7	0.4	-0.2
03005	12	V	100	30	3.6	0.5	0.4
03005	00	V	100	24	3.5	1.6	-0.1
03238	12	V	100	6	3.3	1.0	1.0
03238	00	V	100	27	4.0	-0.3	0.6
03808	12	V	100	29	3.8	0.7	-0.2
03808	00	V	100	29	4.0	0.5	-0.2
03918	12	V	100	6	4.6	2.7	1.0
03918	00	V	100	30	3.4	0.3	-0.6
03953	12	V	100	30	3.7	0.5	0.1
03953	00	V	100	27	3.9	0.4	0.4
04018	12	V	100	29	2.9	0.0	0.4
04018	00	V	100	27	3.1	0.6	-0.5
04220	12	V	100	29	2.8	-0.2	-0.5
04220	00	V	100	30	2.7	0.7	0.7
04270	12	V	100	30	2.4	0.4	-0.5
04270	00	V	100	29	3.2	0.9	0.8
04320	12	V	100	30	2.7	-0.4	-0.6
04320	00	V	100	29	2.9	-0.4	-0.4
04339	00	V	100	29	2.9	0.2	0.1
04339	12	V	100	29	2.9	-0.1	0.1
04360	12	V	100	26	2.8	0.3	0.7
04360	00	V	100	25	3.0	-0.2	0.1
06011	12	V	100	11	3.1	-0.4	-1.5
06011	00	V	100	4	2.0	0.3	-0.3
06260	12	V	100	4	5.0	-1.2	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	100	30	3.1	-0.2	-0.2
06610	00	V	100	30	4.7	-0.9	0.2
06610	12	V	100	30	3.8	0.5	-0.4
07110	12	V	100	27	3.5	-1.1	-0.2
07110	00	V	100	24	3.7	-0.7	0.8
07510	12	V	100	30	3.8	0.1	-0.2
07510	00	V	100	25	3.4	0.6	-0.2
07645	00	V	100	26	5.2	-0.7	-1.4
07645	12	V	100	28	4.1	0.0	0.8
07761	12	V	100	29	3.5	0.5	-0.6
07761	00	V	100	30	4.9	-1.0	-0.7
08001	00	V	100	29	3.3	0.5	-0.7
08001	12	V	100	30	4.1	0.2	-0.2
08221	12	V	100	30	3.7	-0.4	-0.7
08221	00	V	100	30	4.0	0.3	0.3
08302	00	V	100	30	3.8	0.1	-0.6
08302	12	V	100	30	4.4	-0.1	0.2
08508	12	V	100	30	4.4	-0.7	1.5
08522	12	V	100	30	4.1	-0.8	0.0
10035	00	V	100	30	3.0	-0.1	-0.3
10035	12	V	100	30	2.9	-0.2	-0.3
10393	00	V	100	30	3.0	0.5	0.0
10393	12	V	100	30	3.2	0.5	-0.8
10410	00	V	100	30	3.2	-0.4	0.0
10410	12	V	100	30	3.1	-0.2	-0.1
10739	00	V	100	30	3.4	0.1	-0.4
10739	12	V	100	30	3.8	1.2	0.1
11035	12	V	100	30	3.6	-0.5	-0.5
11035	00	V	100	27	3.4	0.5	-0.6
12982	12	V	100	30	3.3	-0.6	-0.5
12982	00	V	100	29	3.5	0.9	0.4
16245	00	V	100	30	3.9	0.9	0.9
16245	12	V	100	29	4.0	1.0	-0.1
16429	00	V	100	27	4.0	0.4	-0.5
16429	12	V	100	29	3.7	0.4	0.0
16622	00	V	100	25	2.8	0.4	0.8
16754	00	V	100	22	4.2	1.1	0.6
17607	12	V	100	6	3.6	1.4	0.1
26435	12	V	100	15	1.9	0.1	0.1
60018	00	V	100	30	3.5	0.5	0.8
60018	12	V	100	30	3.5	0.1	1.0
7JUNA4	12	V	100	7	3.6	0.6	1.9
7JUNA4	00	V	100	6	4.9	-2.1	1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	100	3	3.8	0.6	1.6
ASDE09	12	V	100	3	2.3	-0.5	0.3
ATGU3F	00	V	100	3	2.0	0.5	-0.1
ATGU3F	12	V	100	1	3.5	1.2	-3.3
BPMWB2	12	V	100	6	3.6	-1.5	1.8
BPMWB2	00	V	100	5	4.9	-2.9	0.3
FPUW5G	00	V	100	1	1.5	-0.9	-1.2
FPUW5G	12	V	100	2	3.2	0.2	-2.8
JNKN7J	12	V	100	12	3.3	0.8	-0.3
JNKN7J	00	V	100	8	4.7	0.8	2.1
KJJF9X	00	V	100	5	2.9	0.5	0.2
KJJF9X	12	V	100	5	4.8	-0.9	1.5
KMPLHP	12	V	100	9	4.2	-0.4	0.8
KMPLHP	00	V	100	6	4.2	0.0	2.1
LRYQE3	12	V	100	10	3.8	1.4	0.1
LRYQE3	00	V	100	12	3.1	-0.5	-0.2
UXK5JT	00	V	100	7	3.8	-0.1	-1.9
UXK5JT	12	V	100	7	3.9	0.2	-1.4
WDK38H	12	V	100	13	2.8	-0.8	-1.2
XKQLWQ	12	V	100	18	3.3	-0.5	0.3
XQFJRG	12	V	100	8	4.4	-1.5	-1.1
XQFJRG	00	V	100	8	3.4	0.1	0.5
YLV96W	12	V	100	3	2.9	2.3	0.3
YLV96W	00	V	100	2	3.4	1.5	1.5
ZVQEQC	12	V	100	2	3.1	-0.8	-2.4

4.5 Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	5.6	2.6
01001	00	Z	500	30	10.8	-8.0
01028	12	Z	500	30	2.9	1.9
01028	00	Z	500	30	3.9	2.2
01400	12	Z	500	13	78.4	77.0
01400	00	Z	500	13	69.4	69.0
01415	12	Z	500	30	4.7	1.3
01415	00	Z	500	30	4.4	3.3
02365	00	Z	500	30	4.8	3.5
02365	12	Z	500	29	4.2	3.0
02836	12	Z	500	32	4.2	2.2
02836	00	Z	500	30	3.4	2.5
02963	00	Z	500	30	3.6	2.8
02963	12	Z	500	30	4.9	2.5
03005	12	Z	500	32	4.3	-1.5
03005	00	Z	500	28	4.2	0.5
03238	12	Z	500	6	3.3	2.0
03238	00	Z	500	30	4.0	2.2
03808	12	Z	500	29	3.1	0.8
03808	00	Z	500	30	4.3	2.0
03918	12	Z	500	6	6.8	6.6
03918	00	Z	500	30	5.6	4.8
03953	12	Z	500	30	4.9	-2.4
03953	00	Z	500	30	5.3	-2.8
04018	12	Z	500	29	4.8	1.5
04018	00	Z	500	27	2.6	1.8
04220	12	Z	500	29	6.6	-5.7
04220	00	Z	500	30	8.2	-7.2
04270	12	Z	500	30	9.3	-8.1
04270	00	Z	500	30	12.0	-9.6
04320	12	Z	500	30	5.3	3.7
04320	00	Z	500	31	12.0	0.4
04339	00	Z	500	29	10.8	-8.5
04339	12	Z	500	30	10.3	-7.5
04360	12	Z	500	28	9.4	-7.3
04360	00	Z	500	27	10.3	-6.1
06011	12	Z	500	11	6.1	1.9
06011	00	Z	500	5	28.3	15.0
06260	12	Z	500	4	2.3	1.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	500	30	5.3	-1.1
06610	00	Z	500	30	3.1	1.7
06610	12	Z	500	30	2.8	0.6
07110	12	Z	500	27	4.0	-2.4
07110	00	Z	500	28	11.8	-3.5
07510	12	Z	500	30	4.9	3.2
07510	00	Z	500	30	4.5	0.8
07645	00	Z	500	28	7.2	-3.5
07645	12	Z	500	31	4.2	-0.4
07761	12	Z	500	31	7.2	-5.3
07761	00	Z	500	30	9.3	-7.7
08001	00	Z	500	30	3.8	2.7
08001	12	Z	500	30	4.4	3.1
08221	12	Z	500	30	5.7	4.1
08221	00	Z	500	30	4.5	4.0
08302	00	Z	500	30	7.3	-6.0
08302	12	Z	500	30	6.2	-5.4
08508	12	Z	500	30	7.9	5.9
08522	12	Z	500	30	7.3	6.7
10035	00	Z	500	30	13.5	13.3
10035	12	Z	500	30	12.9	12.2
10393	00	Z	500	30	3.3	0.7
10393	12	Z	500	30	2.9	0.2
10410	00	Z	500	31	2.5	-0.6
10410	12	Z	500	31	2.0	-0.2
10739	00	Z	500	30	5.3	4.5
10739	12	Z	500	30	4.7	3.3
11035	12	Z	500	31	4.6	-1.4
11035	00	Z	500	30	3.7	2.1
12982	12	Z	500	31	5.3	1.1
12982	00	Z	500	30	4.7	2.2
16245	00	Z	500	30	3.9	2.5
16245	12	Z	500	30	3.6	2.0
16429	00	Z	500	29	4.3	3.8
16429	12	Z	500	29	4.6	3.4
16622	00	Z	500	30	10.3	9.8
16754	00	Z	500	26	5.2	2.9
17607	12	Z	500	29	5.9	3.7
26435	12	Z	500	15	2.0	0.6
60018	00	Z	500	30	6.2	5.4
60018	12	Z	500	30	7.3	6.9
7JUNA4	12	Z	500	11	7.8	-3.4
7JUNA4	00	Z	500	11	10.7	-4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	500	3	23.7	-21.0
ASDE09	12	Z	500	4	9.7	9.3
ATGU3F	00	Z	500	3	15.8	-14.7
ATGU3F	12	Z	500	2	22.5	-21.8
BPMWB2	12	Z	500	7	17.2	13.3
BPMWB2	00	Z	500	8	11.9	7.2
FPUW5G	00	Z	500	1	0.4	0.4
FPUW5G	12	Z	500	2	4.0	0.8
JNKN7J	12	Z	500	14	33.2	32.7
JNKN7J	00	Z	500	9	32.3	31.6
KJJF9X	00	Z	500	5	4.5	0.1
KJJF9X	12	Z	500	5	5.7	5.3
KMPLHP	12	Z	500	10	45.9	40.3
KMPLHP	00	Z	500	6	45.4	43.6
LRYQE3	12	Z	500	10	6.2	-2.8
LRYQE3	00	Z	500	12	10.9	-5.7
UXK5JT	00	Z	500	8	8.8	-6.1
UXK5JT	12	Z	500	7	8.1	1.5
WDK38H	12	Z	500	15	7.1	-6.2
XKQLWQ	12	Z	500	19	20.1	19.1
XQFJRG	12	Z	500	8	8.6	-6.4
XQFJRG	00	Z	500	10	9.7	-7.6
YLV96W	12	Z	500	8	10.6	-5.1
YLV96W	00	Z	500	8	7.7	-6.2
ZVQEQC	12	Z	500	2	3.3	2.5

4.6 Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 500 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.7	0.4	-0.3
01001	00	V	500	30	2.0	-0.1	-0.1
01028	12	V	500	30	2.1	0.1	-0.8
01028	00	V	500	30	2.5	0.1	-0.4
01400	12	V	500	13	2.8	1.1	-0.8
01400	00	V	500	13	2.4	0.3	0.1
01415	12	V	500	30	2.8	-0.4	-0.1
01415	00	V	500	30	5.1	0.0	-0.9
02365	00	V	500	30	2.4	0.5	0.1
02365	12	V	500	29	2.3	0.3	-0.3
02836	12	V	500	30	2.3	0.1	-0.3
02836	00	V	500	30	2.0	0.6	0.1
02963	00	V	500	30	1.8	-0.2	-0.1
02963	12	V	500	30	2.2	0.5	0.0
03005	12	V	500	30	2.7	0.1	-0.2
03005	00	V	500	28	3.7	0.8	-0.2
03238	12	V	500	6	1.7	0.6	-0.2
03238	00	V	500	30	3.0	0.1	0.0
03808	12	V	500	29	3.0	0.0	0.6
03808	00	V	500	29	3.7	0.5	0.8
03918	12	V	500	6	3.0	-0.4	-0.5
03918	00	V	500	30	3.3	0.0	0.9
03953	12	V	500	30	3.8	-0.3	0.1
03953	00	V	500	30	3.5	0.5	0.2
04018	12	V	500	29	2.9	-0.2	-0.1
04018	00	V	500	27	3.2	-0.5	0.4
04220	12	V	500	29	2.3	0.4	0.6
04220	00	V	500	30	2.7	-0.3	-0.3
04270	12	V	500	30	3.0	-0.4	0.3
04270	00	V	500	30	3.4	0.1	0.1
04320	12	V	500	30	2.9	0.6	0.1
04320	00	V	500	30	3.0	0.3	0.1
04339	00	V	500	29	2.7	0.0	0.3
04339	12	V	500	30	2.9	-0.5	-0.3
04360	12	V	500	28	3.7	0.1	0.1
04360	00	V	500	27	3.3	0.2	-0.3
06011	12	V	500	11	3.9	1.3	0.2
06011	00	V	500	5	2.5	-1.2	1.1
06260	12	V	500	4	2.9	0.7	-2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	500	30	2.8	-0.9	0.5
06610	00	V	500	30	2.6	0.2	-0.1
06610	12	V	500	30	2.5	0.5	-0.1
07110	12	V	500	27	3.4	0.0	0.0
07110	00	V	500	27	3.2	0.1	-0.2
07510	12	V	500	30	2.7	0.1	-0.2
07510	00	V	500	30	2.7	0.0	0.5
07645	00	V	500	28	2.8	-0.1	-0.4
07645	12	V	500	28	2.9	0.6	0.2
07761	12	V	500	30	3.7	-0.4	-0.3
07761	00	V	500	30	3.4	0.2	-0.4
08001	00	V	500	30	3.6	0.1	0.4
08001	12	V	500	30	3.4	-0.2	0.9
08221	12	V	500	30	2.8	0.6	-0.4
08221	00	V	500	30	2.5	-0.6	0.5
08302	00	V	500	30	2.3	0.5	0.0
08302	12	V	500	30	3.2	0.1	0.2
08508	12	V	500	30	2.7	0.5	-0.2
08522	12	V	500	30	2.6	0.1	-0.4
10035	00	V	500	30	2.9	1.0	-0.1
10035	12	V	500	30	2.5	0.1	-0.3
10393	00	V	500	30	2.9	0.1	0.2
10393	12	V	500	30	2.6	0.0	-0.4
10410	00	V	500	30	2.8	-0.6	-0.1
10410	12	V	500	30	3.2	0.1	-0.4
10739	00	V	500	30	2.7	-0.4	0.2
10739	12	V	500	30	2.8	0.4	0.3
11035	12	V	500	30	2.8	-0.3	0.1
11035	00	V	500	29	2.6	0.1	0.2
12982	12	V	500	30	2.5	-0.2	-0.2
12982	00	V	500	30	2.9	0.1	0.1
16245	00	V	500	30	3.8	0.3	0.1
16245	12	V	500	30	3.7	-0.1	0.5
16429	00	V	500	29	3.2	0.2	-0.2
16429	12	V	500	29	3.4	0.6	-0.2
16622	00	V	500	30	2.5	0.5	0.4
16754	00	V	500	26	2.4	0.7	-0.3
17607	12	V	500	16	3.3	0.3	0.2
26435	12	V	500	15	2.1	0.5	0.5
60018	00	V	500	30	2.4	0.5	-0.1
60018	12	V	500	30	1.8	0.1	-0.3
7JUNA4	12	V	500	11	4.5	-1.4	0.0
7JUNA4	00	V	500	11	3.7	-0.5	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	500	3	1.5	-0.9	0.3
ASDE09	12	V	500	3	3.0	0.2	0.7
ATGU3F	00	V	500	3	1.5	1.0	-0.5
ATGU3F	12	V	500	2	1.5	0.8	0.8
BPMWB2	12	V	500	7	2.6	-0.1	-0.9
BPMWB2	00	V	500	8	1.9	-0.1	-0.1
FPUW5G	00	V	500	1	4.1	1.1	4.0
FPUW5G	12	V	500	2	1.1	-0.5	0.5
JNKN7J	12	V	500	14	3.5	-0.1	0.4
JNKN7J	00	V	500	9	2.7	0.5	0.2
KJJF9X	00	V	500	5	1.9	0.8	0.7
KJJF9X	12	V	500	5	1.5	-0.5	-0.9
KMPLHP	12	V	500	10	3.2	1.1	0.9
KMPLHP	00	V	500	6	3.8	2.1	1.0
LRYQE3	12	V	500	10	4.2	0.0	1.0
LRYQE3	00	V	500	12	3.6	-1.4	0.5
UXK5JT	00	V	500	8	2.3	-1.0	-0.5
UXK5JT	12	V	500	7	3.7	2.1	-0.5
WDK38H	12	V	500	15	1.8	0.2	-0.1
XKQLWQ	12	V	500	19	2.5	-0.4	0.8
XQFJRG	12	V	500	8	2.3	0.2	-0.7
XQFJRG	00	V	500	10	3.6	2.1	-0.2
YLV96W	12	V	500	8	1.6	0.2	-0.2
YLV96W	00	V	500	8	3.6	-0.8	-0.4
ZVQEQC	12	V	500	2	1.9	1.0	1.2

4.7 Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres)

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : GEOPOTENTIAL HEIGHT (METRES)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	3.1	0.7
01001	00	Z	850	30	7.7	-7.2
01028	12	Z	850	30	2.8	0.8
01028	00	Z	850	30	2.5	0.8
01400	12	Z	850	13	73.1	73.1
01400	00	Z	850	13	71.7	71.5
01415	12	Z	850	30	3.6	2.9
01415	00	Z	850	30	3.1	2.3
02365	00	Z	850	30	4.6	3.9
02365	12	Z	850	29	4.6	3.6
02836	12	Z	850	31	4.1	2.7
02836	00	Z	850	30	3.9	2.7
02963	00	Z	850	30	2.6	2.1
02963	12	Z	850	30	3.0	2.6
03005	12	Z	850	32	3.7	-1.3
03005	00	Z	850	28	2.7	-1.5
03238	12	Z	850	6	3.0	2.3
03238	00	Z	850	30	3.4	1.7
03808	12	Z	850	29	3.3	2.3
03808	00	Z	850	30	3.9	2.1
03918	12	Z	850	6	7.9	7.3
03918	00	Z	850	30	7.4	6.9
03953	12	Z	850	30	3.8	-1.0
03953	00	Z	850	30	2.7	-1.2
04018	12	Z	850	29	4.6	1.9
04018	00	Z	850	27	2.4	0.7
04220	12	Z	850	29	4.2	-3.4
04220	00	Z	850	30	5.6	-4.8
04270	12	Z	850	31	6.0	-5.0
04270	00	Z	850	30	6.8	-5.6
04320	12	Z	850	30	3.3	1.0
04320	00	Z	850	31	12.8	-1.4
04339	00	Z	850	29	9.4	-8.4
04339	12	Z	850	29	8.8	-6.6
04360	12	Z	850	29	8.2	-6.6
04360	00	Z	850	27	8.9	-7.7
06011	12	Z	850	11	3.9	0.3
06011	00	Z	850	5	2.7	-0.1
06260	12	Z	850	4	3.0	2.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	850	30	5.1	-1.4
06610	00	Z	850	30	3.4	1.6
06610	12	Z	850	30	3.1	0.6
07110	12	Z	850	27	4.1	-1.8
07110	00	Z	850	28	5.2	-3.5
07510	12	Z	850	30	3.2	1.2
07510	00	Z	850	30	2.8	1.3
07645	00	Z	850	28	3.6	-2.2
07645	12	Z	850	32	4.0	-2.2
07761	12	Z	850	31	5.5	-4.1
07761	00	Z	850	31	6.4	-5.6
08001	00	Z	850	31	3.2	-0.3
08001	12	Z	850	31	3.3	0.9
08221	12	Z	850	30	2.2	0.9
08221	00	Z	850	30	2.2	1.2
08302	00	Z	850	30	8.2	-8.0
08302	12	Z	850	30	9.3	-9.0
08508	12	Z	850	30	6.0	5.0
08522	12	Z	850	30	4.0	3.5
10035	00	Z	850	30	12.6	12.4
10035	12	Z	850	30	13.4	13.2
10393	00	Z	850	30	2.1	0.3
10393	12	Z	850	30	1.9	0.1
10410	00	Z	850	31	2.8	-0.4
10410	12	Z	850	31	2.5	-0.3
10739	00	Z	850	30	4.2	3.6
10739	12	Z	850	30	4.7	4.0
11035	12	Z	850	31	2.5	-0.7
11035	00	Z	850	30	2.5	0.8
12982	12	Z	850	31	4.7	0.5
12982	00	Z	850	30	4.0	2.1
16245	00	Z	850	30	4.2	1.7
16245	12	Z	850	30	2.9	1.5
16429	00	Z	850	29	3.5	2.9
16429	12	Z	850	30	3.0	2.4
16622	00	Z	850	30	9.6	8.9
16754	00	Z	850	26	3.7	1.9
17607	12	Z	850	29	4.8	3.2
26435	12	Z	850	15	1.3	-0.6
60018	00	Z	850	30	2.9	1.6
60018	12	Z	850	30	2.6	1.6
7JUNA4	12	Z	850	12	11.2	-7.2
7JUNA4	00	Z	850	12	7.3	-3.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	850	3	13.2	-13.0
ASDE09	12	Z	850	5	6.0	5.2
ATGU3F	00	Z	850	4	28.2	-25.4
ATGU3F	12	Z	850	3	23.7	-22.5
BPMWB2	12	Z	850	7	12.2	10.7
BPMWB2	00	Z	850	9	10.0	6.9
FPUW5G	00	Z	850	1	1.1	-1.1
FPUW5G	12	Z	850	2	7.3	-4.4
JNKN7J	12	Z	850	15	37.2	37.0
JNKN7J	00	Z	850	10	41.5	39.8
KJJF9X	00	Z	850	5	2.3	0.0
KJJF9X	12	Z	850	5	4.4	3.0
KMPLHP	12	Z	850	9	52.6	45.4
KMPLHP	00	Z	850	7	50.4	48.6
LRYQE3	12	Z	850	10	5.8	0.2
LRYQE3	00	Z	850	12	6.2	-0.6
UXK5JT	00	Z	850	7	3.6	-2.8
UXK5JT	12	Z	850	7	5.0	2.2
WDK38H	12	Z	850	16	7.7	-7.0
XKQLWQ	12	Z	850	19	14.0	12.4
XQFJRG	12	Z	850	8	8.0	-6.4
XQFJRG	00	Z	850	10	9.3	-7.9
YLV96W	12	Z	850	8	7.6	-6.4
YLV96W	00	Z	850	8	7.0	-5.8
ZVQEQC	12	Z	850	2	4.8	2.5

4.8 Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s)

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RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	3.3	-0.2	1.2
01001	00	V	850	30	3.4	0.4	0.6
01028	12	V	850	30	2.3	0.4	-0.6
01028	00	V	850	30	2.3	-0.4	-0.9
01400	12	V	850	13	2.3	0.8	0.3
01400	00	V	850	13	3.3	0.1	0.7
01415	12	V	850	30	3.6	0.9	0.6
01415	00	V	850	30	3.5	0.2	0.5
02365	00	V	850	30	2.8	0.5	0.5
02365	12	V	850	29	2.5	0.3	-0.4
02836	12	V	850	30	2.5	-0.1	0.2
02836	00	V	850	30	2.4	0.4	0.0
02963	00	V	850	30	2.2	-0.6	-0.3
02963	12	V	850	30	2.2	-0.5	0.4
03005	12	V	850	30	3.0	0.3	0.0
03005	00	V	850	28	3.0	0.0	0.6
03238	12	V	850	6	1.8	-0.2	-0.4
03238	00	V	850	30	3.2	0.6	-0.1
03808	12	V	850	29	2.9	0.3	-0.6
03808	00	V	850	30	3.4	0.4	-1.0
03918	12	V	850	6	3.2	0.3	0.5
03918	00	V	850	30	2.3	0.1	0.1
03953	12	V	850	30	3.5	0.4	-0.6
03953	00	V	850	30	3.1	0.1	-0.2
04018	12	V	850	29	2.9	-0.3	0.4
04018	00	V	850	27	3.7	0.3	-0.3
04220	12	V	850	29	2.9	-0.3	0.6
04220	00	V	850	30	2.9	0.0	0.2
04270	12	V	850	30	4.5	-0.9	-0.4
04270	00	V	850	30	3.5	0.2	-0.1
04320	12	V	850	30	2.9	0.4	-0.5
04320	00	V	850	30	3.2	0.3	-0.5
04339	00	V	850	29	4.7	0.5	-0.1
04339	12	V	850	29	4.3	1.0	0.5
04360	12	V	850	28	9.1	5.7	1.8
04360	00	V	850	27	8.5	5.0	1.4
06011	12	V	850	11	3.0	0.6	-0.1
06011	00	V	850	5	2.3	-0.1	-1.3
06260	12	V	850	4	4.3	-0.2	-1.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	850	30	2.6	-0.6	0.1
06610	00	V	850	30	3.1	0.4	0.5
06610	12	V	850	30	2.5	0.2	0.6
07110	12	V	850	27	2.7	-0.1	-0.2
07110	00	V	850	27	2.8	0.4	-0.7
07510	12	V	850	30	3.2	0.3	0.9
07510	00	V	850	30	3.5	0.6	-0.8
07645	00	V	850	28	3.0	-0.9	0.6
07645	12	V	850	28	3.7	-0.8	0.1
07761	12	V	850	30	3.6	0.4	0.6
07761	00	V	850	30	3.0	0.3	-0.1
08001	00	V	850	30	2.8	0.0	0.0
08001	12	V	850	30	3.5	0.1	-0.3
08221	12	V	850	30	3.0	0.1	0.2
08221	00	V	850	30	3.7	0.0	-0.3
08302	00	V	850	30	2.9	0.2	0.1
08302	12	V	850	30	3.8	0.0	0.6
08508	12	V	850	30	3.1	0.3	-0.9
08522	12	V	850	30	2.7	0.1	0.1
10035	00	V	850	30	2.6	-0.3	-0.1
10035	12	V	850	30	2.7	0.8	-0.4
10393	00	V	850	30	2.3	-0.1	0.0
10393	12	V	850	30	2.2	-0.2	0.2
10410	00	V	850	30	2.1	-0.1	-0.3
10410	12	V	850	30	2.2	0.3	0.5
10739	00	V	850	30	2.4	-0.3	0.1
10739	12	V	850	30	2.4	-0.2	0.0
11035	12	V	850	30	2.9	0.8	-0.5
11035	00	V	850	30	2.7	0.1	-0.5
12982	12	V	850	30	2.7	-0.5	0.2
12982	00	V	850	30	2.5	0.0	-0.1
16245	00	V	850	30	4.3	-0.5	0.2
16245	12	V	850	30	4.0	-0.7	0.2
16429	00	V	850	29	2.8	0.4	0.3
16429	12	V	850	30	2.9	-0.1	0.6
16622	00	V	850	30	3.0	0.7	0.4
16754	00	V	850	26	3.0	0.2	0.3
17607	12	V	850	27	3.2	0.6	0.9
26435	12	V	850	15	2.4	-0.2	0.0
60018	00	V	850	30	3.6	1.3	0.7
60018	12	V	850	30	3.3	0.4	0.5
7JUNA4	12	V	850	12	4.8	-0.5	-0.3
7JUNA4	00	V	850	12	2.9	0.9	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	850	3	3.0	-1.3	-0.7
ASDE09	12	V	850	5	1.7	0.5	0.2
ATGU3F	00	V	850	4	4.2	-1.2	-1.6
ATGU3F	12	V	850	3	10.3	-1.5	-0.9
BPMWB2	12	V	850	7	1.8	-0.3	-0.6
BPMWB2	00	V	850	9	3.2	-0.4	-1.0
FPUW5G	00	V	850	1	2.3	-2.1	-0.9
FPUW5G	12	V	850	2	1.7	0.3	1.0
JNKN7J	12	V	850	15	3.3	-0.2	-0.2
JNKN7J	00	V	850	10	2.5	0.0	-0.6
KJJF9X	00	V	850	5	2.4	0.8	-0.5
KJJF9X	12	V	850	5	2.1	0.9	-0.4
KMPLHP	12	V	850	9	3.2	-0.7	-1.1
KMPLHP	00	V	850	7	2.1	0.1	0.8
LRYQE3	12	V	850	10	2.9	-0.7	-0.8
LRYQE3	00	V	850	12	2.5	-0.9	0.1
UXK5JT	00	V	850	7	1.7	0.4	-0.5
UXK5JT	12	V	850	7	1.9	0.1	-0.4
WDK38H	12	V	850	16	3.0	-0.2	0.4
XKQLWQ	12	V	850	19	3.2	-0.4	-0.3
XQFJRG	12	V	850	8	1.8	-0.5	0.2
XQFJRG	00	V	850	10	2.9	-1.2	0.2
YLV96W	12	V	850	8	3.0	-0.1	-0.2
YLV96W	00	V	850	8	5.5	-2.0	1.8
ZVQEQC	12	V	850	2	4.4	-1.9	0.0

4.9 Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa)

```
DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE      : ECMWF
         ELEMENT MONITORED      : SURFACE PRESSURE (HPA)
         AREA                   : 10N - 90N, 70W - 40E
         PERIOD                 : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT = 15 HPA
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	1434	0	0.4	-0.2	0.5
1300001	99	P	SUR	11	-23	580	0	0.3	0.2	0.4
1300008	99	P	SUR	15	-38	600	0	0.3	0.1	0.3
1300130	99	P	SUR	28	-16	715	0	0.3	0.2	0.4
1300131	99	P	SUR	28	-17	718	0	0.3	0.3	0.4
1301603	99	P	SUR	33	-49	719	2	1.0	0.0	1.0
1301608	99	P	SUR	33	-49	719	4	1.2	-0.2	1.2
1301610	99	P	SUR	53	-10	471	0	0.5	-0.4	0.7
1301612	99	P	SUR	27	-58	719	7	2.3	0.3	2.3
1301622	99	P	SUR	10	-26	719	0	0.4	0.0	0.4
1301629	99	P	SUR	17	-26	719	0	0.3	0.2	0.3
1301699	99	P	SUR	27	-31	641	0	0.2	-0.5	0.5
1301700	99	P	SUR	21	-57	653	0	0.3	-0.1	0.3
1301706	99	P	SUR	22	-50	678	0	0.3	0.0	0.3
1301708	99	P	SUR	14	-17	378	0	0.3	-0.4	0.5
1301712	99	P	SUR	23	-48	669	0	0.3	0.0	0.3
1301713	99	P	SUR	16	-46	675	0	0.3	0.1	0.3
1301714	99	P	SUR	25	-44	673	0	0.3	0.1	0.3
1301718	99	P	SUR	26	-37	679	0	0.2	0.1	0.3
1301719	99	P	SUR	23	-44	674	0	0.3	0.6	0.6
1301720	99	P	SUR	24	-27	680	0	0.2	0.2	0.3
1301722	99	P	SUR	24	-42	673	0	0.3	0.0	0.3
1301723	99	P	SUR	36	-13	678	0	0.2	0.8	0.8
1301724	99	P	SUR	34	-11	672	0	0.2	0.1	0.2
1301725	99	P	SUR	25	-22	678	0	0.2	0.2	0.3
1301726	99	P	SUR	24	-27	673	0	0.2	0.1	0.3
1301728	99	P	SUR	12	-23	671	0	0.3	0.2	0.4
1301731	99	P	SUR	26	-29	714	0	0.2	0.3	0.4
1301735	99	P	SUR	28	-42	675	0	0.3	-0.4	0.5
1301736	99	P	SUR	27	-46	675	0	0.3	0.2	0.4
1301737	99	P	SUR	26	-57	670	0	0.3	0.0	0.3
1301756	99	P	SUR	11	-64	686	0	0.4	-0.8	0.9
1301763	99	P	SUR	11	-26	42	42	0.0	0.0	0.0
1301765	99	P	SUR	22	-19	184	0	0.2	0.4	0.5
1301766	99	P	SUR	19	-22	162	0	0.2	0.3	0.4
1301768	99	P	SUR	26	-16	214	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
1501772	99	P	SUR	10	-33	687	0	0.4	0.0	0.4
1801560	99	P	SUR	23	-68	935	0	0.4	0.2	0.5
1801599	99	P	SUR	22	-59	2	0	0.1	0.3	0.3
3801561	99	P	SUR	45	-67	718	0	0.6	0.3	0.7
3801562	99	P	SUR	42	-70	694	0	3.3	0.1	3.3
4100043	99	P	SUR	21	-65	4297	0	0.3	-1.5	1.5
4100044	99	P	SUR	22	-59	4305	0	0.3	0.4	0.5
4100046	99	P	SUR	24	-68	4301	0	0.3	0.4	0.5
4100048	99	P	SUR	32	-70	4317	0	0.3	0.4	0.5
4100049	99	P	SUR	27	-63	4296	0	0.3	-1.4	1.4
4100053	99	P	SUR	18	-66	4296	0	0.3	-0.9	0.9
4100056	99	P	SUR	18	-65	4239	0	0.3	-1.1	1.1
4100139	99	P	SUR	20	-38	716	0	0.2	0.2	0.3
4100300	99	P	SUR	16	-57	676	0	0.3	0.1	0.4
4101557	99	P	SUR	29	-24	525	0	0.2	0.3	0.3
4101613	99	P	SUR	30	-55	719	0	0.4	0.3	0.5
4101616	99	P	SUR	31	-44	719	0	0.3	0.0	0.3
4101618	99	P	SUR	25	-48	719	0	0.3	0.1	0.4
4101621	99	P	SUR	27	-41	525	0	0.3	0.2	0.4
4101663	99	P	SUR	29	-32	719	0	0.2	0.0	0.2
4101664	99	P	SUR	52	-18	525	0	0.5	-0.5	0.7
4101665	99	P	SUR	68	1	632	0	0.4	-0.2	0.4
4101696	99	P	SUR	34	-40	719	0	0.3	-0.1	0.3
4101702	99	P	SUR	31	-28	719	0	0.4	0.2	0.4
4101714	99	P	SUR	30	-68	719	0	0.6	0.2	0.6
4101717	99	P	SUR	16	-37	718	0	0.3	0.0	0.3
4101718	99	P	SUR	39	-32	464	8	4.4	0.5	4.4
4101719	99	P	SUR	38	-23	719	0	0.7	0.1	0.8
4101720	99	P	SUR	26	-48	490	0	2.9	1.2	3.1
4101723	99	P	SUR	24	-66	719	0	0.3	0.1	0.3
4101724	99	P	SUR	23	-64	719	0	0.3	-0.3	0.5
4101725	99	P	SUR	18	-63	719	0	0.3	-0.1	0.3
4101727	99	P	SUR	35	-20	718	0	0.3	-0.1	0.3
4101728	99	P	SUR	32	-40	717	0	0.3	0.2	0.4
4101729	99	P	SUR	31	-44	718	0	0.4	0.0	0.4
4101743	99	P	SUR	34	-44	719	23	2.1	-0.4	2.1
4101753	99	P	SUR	33	-52	718	0	0.5	0.2	0.6
4101755	99	P	SUR	31	-63	719	0	0.5	0.2	0.5
4101756	99	P	SUR	12	-62	687	0	0.4	-0.8	0.9
4101842	99	P	SUR	69	16	646	0	0.5	-0.4	0.6
4101843	99	P	SUR	71	3	672	0	0.3	0.0	0.3
4101844	99	P	SUR	16	-59	659	0	0.3	0.2	0.4
4101845	99	P	SUR	64	4	669	0	0.4	0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101848	99	P	SUR	28	-65	667	0	0.3	0.2	0.4
4101850	99	P	SUR	42	-9	662	0	0.4	-0.2	0.4
4101851	99	P	SUR	24	-61	649	0	0.3	0.0	0.3
4102547	99	P	SUR	25	-62	661	0	0.3	0.3	0.5
4102549	99	P	SUR	22	-64	656	0	0.3	0.4	0.5
4102551	99	P	SUR	18	-56	662	0	0.3	0.0	0.3
4102558	99	P	SUR	13	-61	682	0	0.4	-0.4	0.5
4102559	99	P	SUR	15	-64	672	0	0.4	-0.1	0.4
4102560	99	P	SUR	15	-61	698	0	0.3	-0.8	0.8
4102566	99	P	SUR	36	-56	155	0	0.8	-0.8	1.1
4102567	99	P	SUR	42	-46	155	0	0.7	-0.3	0.8
41043	99	P	SUR	21	-65	715	0	0.4	-1.5	1.5
41044	99	P	SUR	22	-59	719	0	0.4	0.4	0.5
41046	99	P	SUR	24	-68	717	0	0.4	0.4	0.5
41048	99	P	SUR	32	-70	720	0	0.4	0.4	0.6
41049	99	P	SUR	28	-63	719	0	0.4	-1.4	1.5
41053	99	P	SUR	19	-66	720	0	0.4	-0.9	1.0
41056	99	P	SUR	18	-66	715	0	0.4	-1.1	1.2
4200059	99	P	SUR	15	-67	4292	0	0.4	0.0	0.4
4200060	99	P	SUR	16	-63	4302	0	0.4	0.1	0.4
4200085	99	P	SUR	18	-67	3212	0	0.3	-0.9	0.9
4201703	99	P	SUR	43	-23	656	0	0.4	-0.2	0.4
42059	99	P	SUR	15	-68	718	0	0.5	0.0	0.5
42060	99	P	SUR	16	-63	713	0	0.5	0.2	0.5
42085	99	P	SUR	18	-67	701	0	0.4	-0.9	1.0
4400005	99	P	SUR	43	-69	718	0	0.6	-0.7	0.9
4400008	99	P	SUR	40	-69	4277	0	0.4	-1.0	1.1
4400011	99	P	SUR	41	-67	4307	0	0.4	0.2	0.5
4400027	99	P	SUR	44	-67	4308	0	0.5	-0.7	0.9
4400032	99	P	SUR	44	-69	720	0	0.5	-0.9	1.0
4400033	99	P	SUR	44	-69	720	0	0.4	-1.1	1.2
4400034	99	P	SUR	44	-68	720	0	0.5	-0.5	0.7
4400137	99	P	SUR	42	-62	216	0	0.5	-0.4	0.7
4400139	99	P	SUR	44	-57	215	0	0.9	-0.2	0.9
4400150	99	P	SUR	43	-64	220	0	0.5	-0.3	0.6
4400258	99	P	SUR	45	-63	76	0	0.4	-0.2	0.4
44005	99	P	SUR	43	-69	720	0	0.6	-0.7	0.9
4400777	99	P	SUR	31	-30	719	0	0.2	0.1	0.2
44008	99	P	SUR	41	-69	714	0	0.5	-1.0	1.2
4400857	99	P	SUR	35	-41	719	0	0.4	0.0	0.4
44011	99	P	SUR	41	-67	720	0	0.5	0.2	0.6
4401563	99	P	SUR	20	-62	719	0	0.3	-0.5	0.5
4401576	99	P	SUR	30	-63	719	0	0.9	0.4	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401581	99	P	SUR	31	-59	718	0	0.4	0.0	0.4
4401582	99	P	SUR	32	-29	719	0	0.2	0.3	0.4
4401584	99	P	SUR	28	-37	719	0	0.3	0.5	0.6
4401585	99	P	SUR	24	-37	719	0	0.2	0.3	0.4
4401587	99	P	SUR	74	1	719	0	0.3	0.3	0.4
4401588	99	P	SUR	68	-14	718	0	0.3	0.0	0.3
4401859	99	P	SUR	17	-57	527	0	0.3	-0.1	0.3
4401863	99	P	SUR	14	-51	662	0	0.3	-0.9	1.0
4401864	99	P	SUR	21	-61	652	0	0.3	0.1	0.3
4401867	99	P	SUR	35	-55	719	0	0.6	-0.1	0.6
4401872	99	P	SUR	32	-60	719	0	0.4	0.0	0.4
4401874	99	P	SUR	26	-65	719	0	0.3	-0.3	0.4
4402603	99	P	SUR	60	-2	648	0	0.4	0.1	0.4
4402604	99	P	SUR	44	-20	673	0	0.4	-0.3	0.5
4402606	99	P	SUR	57	-24	623	0	0.5	0.0	0.5
4402607	99	P	SUR	46	-19	626	0	0.4	-0.4	0.6
4402608	99	P	SUR	63	-31	660	0	0.5	0.3	0.6
4402609	99	P	SUR	61	-24	671	0	0.5	-0.2	0.5
4402611	99	P	SUR	49	-21	630	0	0.5	-0.4	0.7
4402613	99	P	SUR	42	-19	633	0	0.4	-0.5	0.6
4402615	99	P	SUR	47	-11	627	0	1.5	0.3	1.5
4402618	99	P	SUR	32	-60	668	0	0.5	0.1	0.5
4402656	99	P	SUR	34	-40	625	0	0.5	0.3	0.6
4402660	99	P	SUR	28	-18	700	0	0.3	0.3	0.4
4402663	99	P	SUR	39	-13	662	0	0.3	-0.2	0.4
4402665	99	P	SUR	29	-65	685	0	0.4	0.3	0.5
4402670	99	P	SUR	23	-38	656	0	0.2	0.0	0.2
4402671	99	P	SUR	17	-58	668	0	0.3	0.1	0.3
4402672	99	P	SUR	17	-43	651	2	0.5	0.1	0.5
4402673	99	P	SUR	14	-46	672	0	0.3	0.2	0.4
4402674	99	P	SUR	17	-52	661	0	0.3	0.3	0.4
4402675	99	P	SUR	30	-34	644	0	0.2	0.1	0.2
4402676	99	P	SUR	28	-39	645	0	0.3	0.3	0.4
44027	99	P	SUR	44	-67	720	0	0.7	-0.6	1.0
4402721	99	P	SUR	47	-28	679	0	0.5	-0.2	0.6
4402723	99	P	SUR	46	-53	659	0	0.5	0.1	0.5
4402726	99	P	SUR	52	-43	677	0	0.6	-0.2	0.6
4402727	99	P	SUR	56	-25	675	0	0.5	-0.4	0.7
4402732	99	P	SUR	49	-50	660	0	0.5	0.2	0.6
4402733	99	P	SUR	53	-53	683	0	0.5	0.1	0.5
4402734	99	P	SUR	53	-54	675	0	0.5	0.0	0.5
4402735	99	P	SUR	54	-56	685	0	0.5	0.0	0.5
4402736	99	P	SUR	49	-50	716	0	0.9	0.5	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402742	99	P	SUR	47	-45	645	0	0.6	0.0	0.6
4402743	99	P	SUR	45	-52	551	0	0.6	-0.4	0.7
4402744	99	P	SUR	44	-51	555	0	0.5	0.3	0.6
4402745	99	P	SUR	47	-50	49	0	0.3	-0.1	0.3
4402746	99	P	SUR	49	-52	716	106	1.6	0.4	1.6
4402748	99	P	SUR	70	-68	271	165	3.2	-1.9	3.8
4402749	99	P	SUR	55	-48	676	0	0.5	-0.2	0.6
4402750	99	P	SUR	55	-44	675	0	0.6	-0.6	0.8
4402878	99	P	SUR	43	-61	666	0	0.5	0.5	0.7
4402880	99	P	SUR	40	-58	657	0	0.7	0.5	0.9
44032	99	P	SUR	44	-69	720	0	0.5	-0.9	1.0
44033	99	P	SUR	44	-69	720	0	0.5	-1.0	1.1
44034	99	P	SUR	44	-68	720	0	0.5	-0.5	0.7
4403556	99	P	SUR	48	-11	720	7	1.7	0.5	1.8
4403557	99	P	SUR	57	-12	703	0	0.5	0.5	0.7
4403558	99	P	SUR	48	-23	715	0	0.5	-0.2	0.5
4403568	99	P	SUR	46	-52	718	0	0.5	0.4	0.7
4403569	99	P	SUR	43	-51	717	0	0.5	0.2	0.6
44078	99	P	SUR	60	-40	436	0	0.6	-1.0	1.2
44137	99	P	SUR	42	-62	688	0	0.5	-0.3	0.7
44139	99	P	SUR	44	-57	704	0	0.7	-0.2	0.7
44150	99	P	SUR	43	-64	712	0	0.5	-0.3	0.6
44258	99	P	SUR	45	-63	648	0	0.5	-0.3	0.6
44488	99	P	SUR	45	-61	720	0	0.6	-0.2	0.7
44489	99	P	SUR	46	-61	715	0	0.6	-0.1	0.6
4601782	99	P	SUR	40	-28	628	0	0.5	0.2	0.5
4601812	99	P	SUR	89	-67	689	0	0.5	0.3	0.6
4601813	99	P	SUR	83	23	697	0	0.5	0.2	0.5
4601817	99	P	SUR	87	22	671	0	0.5	0.0	0.5
4701518	99	P	SUR	75	-19	61	0	0.7	0.2	0.7
4701738	99	P	SUR	70	-67	695	695	0.0	0.0	0.0
4801668	99	P	SUR	79	-5	689	0	0.5	0.0	0.5
4801670	99	P	SUR	86	-64	157	88	5.6	4.4	7.1
4801723	99	P	SUR	72	27	718	0	0.3	0.0	0.3
4801761	99	P	SUR	81	-3	720	0	0.6	0.0	0.6
4801763	99	P	SUR	85	-58	720	0	0.6	-0.2	0.6
4801765	99	P	SUR	86	-57	720	0	0.6	0.0	0.6
4801767	99	P	SUR	82	-11	720	0	0.6	-0.3	0.7
4801770	99	P	SUR	86	-30	719	0	0.5	-0.1	0.5
4801771	99	P	SUR	84	-60	720	0	0.5	0.1	0.5
4802506	99	P	SUR	85	-22	720	0	0.6	0.5	0.8
4802602	99	P	SUR	88	16	689	0	0.5	0.0	0.5
4802663	99	P	SUR	84	-61	718	0	0.5	0.4	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
5801965	99	P	SUR	45	-67	700	0	0.6	0.2	0.6
6100001	99	P	SUR	43	8	719	0	0.4	-0.3	0.5
6100002	99	P	SUR	42	5	714	0	0.4	-0.2	0.5
6100196	99	P	SUR	42	4	718	0	0.4	0.2	0.4
6100197	99	P	SUR	40	4	718	0	0.4	0.5	0.6
6100198	99	P	SUR	37	-2	717	0	0.4	0.4	0.6
6100280	99	P	SUR	41	1	717	0	0.5	0.2	0.5
6100281	99	P	SUR	40	0	717	0	0.6	0.1	0.6
6100417	99	P	SUR	38	0	717	0	0.4	0.4	0.6
6100430	99	P	SUR	40	2	718	0	0.4	0.2	0.4
6101003	99	P	SUR	40	25	140	0	0.5	-0.2	0.6
6101007	99	P	SUR	36	25	127	0	0.4	-0.6	0.7
6101008	99	P	SUR	37	22	156	0	0.5	-0.2	0.5
6101009	99	P	SUR	35	25	3	3	0.0	0.0	0.0
6102731	99	P	SUR	38	19	279	0	0.5	0.1	0.5
6102732	99	P	SUR	38	19	292	0	0.5	0.1	0.5
6102733	99	P	SUR	39	19	295	0	0.5	-0.1	0.5
6102786	99	P	SUR	32	15	84	0	0.2	-0.8	0.8
6102792	99	P	SUR	39	8	7	0	0.8	-0.8	1.1
6102793	99	P	SUR	36	-1	682	0	0.3	0.5	0.6
6102796	99	P	SUR	41	8	159	0	0.3	-0.1	0.4
6102797	99	P	SUR	37	-3	156	0	0.3	-3.3	3.4
6102804	99	P	SUR	40	3	689	0	0.4	-7.0	7.0
6102805	99	P	SUR	41	7	699	0	0.4	0.0	0.4
6102806	99	P	SUR	41	3	715	0	0.4	-0.2	0.4
6102807	99	P	SUR	40	2	664	0	0.5	0.0	0.5
6102808	99	P	SUR	39	2	138	0	0.3	0.0	0.3
6102809	99	P	SUR	39	2	396	0	0.4	-0.7	0.8
6102810	99	P	SUR	39	1	408	0	0.5	-0.1	0.5
6102811	99	P	SUR	39	1	397	0	0.4	0.2	0.4
6200001	99	P	SUR	45	-5	711	0	0.4	0.1	0.4
6200024	99	P	SUR	44	-3	86	0	0.4	0.3	0.5
6200025	99	P	SUR	44	-6	718	0	0.6	0.0	0.6
6200082	99	P	SUR	44	-8	715	0	0.6	-0.1	0.6
6200083	99	P	SUR	43	-9	203	0	0.4	0.0	0.4
6200084	99	P	SUR	42	-9	139	3	4.2	3.4	5.4
6200085	99	P	SUR	36	-7	717	0	0.3	0.3	0.4
6200086	99	P	SUR	55	6	464	0	0.3	-0.4	0.5
6200087	99	P	SUR	55	7	461	0	0.5	-0.6	0.8
6200091	99	P	SUR	53	-5	720	0	0.5	-0.3	0.5
6200092	99	P	SUR	51	-11	719	0	0.5	-0.3	0.6
6200093	99	P	SUR	55	-10	719	0	0.5	-0.3	0.6
6200094	99	P	SUR	52	-7	719	0	0.5	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200095	99	P	SUR	53	-16	720	0	0.6	-0.5	0.8
6200191	99	P	SUR	41	-10	44	0	0.4	0.0	0.4
6200192	99	P	SUR	40	-10	44	0	0.2	0.1	0.2
6200199	99	P	SUR	40	-9	44	0	0.2	0.1	0.2
6200200	99	P	SUR	36	-8	42	0	0.1	0.1	0.2
6201065	99	P	SUR	54	7	704	0	0.4	1.0	1.1
6201066	99	P	SUR	55	7	702	0	0.4	0.4	0.6
6201081	99	P	SUR	38	-9	44	0	0.2	-0.3	0.4
6202623	99	P	SUR	72	32	719	0	0.3	-0.4	0.5
6202624	99	P	SUR	66	10	525	0	0.3	-0.4	0.5
6202627	99	P	SUR	61	-5	668	0	0.3	0.1	0.4
6202630	99	P	SUR	46	-7	719	0	0.4	0.0	0.4
6202632	99	P	SUR	67	-53	719	0	1.7	-0.3	1.7
6202633	99	P	SUR	80	1	7	0	0.2	-0.3	0.3
6202637	99	P	SUR	69	-3	719	0	0.3	0.1	0.3
6202639	99	P	SUR	30	-43	719	0	0.3	-0.1	0.3
6202640	99	P	SUR	33	-40	719	0	0.4	0.0	0.4
6202643	99	P	SUR	18	-62	719	0	0.3	0.0	0.3
6202644	99	P	SUR	36	-44	719	0	0.5	-0.3	0.6
62029	99	P	SUR	49	-12	1434	0	0.4	-0.5	0.7
62030	99	P	SUR	50	-4	1048	0	0.4	0.0	0.4
6203516	99	P	SUR	43	-55	603	0	0.5	-0.2	0.5
6203588	99	P	SUR	54	-42	122	0	0.7	0.2	0.7
6203607	99	P	SUR	32	-30	718	0	0.3	0.3	0.4
6203612	99	P	SUR	32	-52	718	0	0.6	0.1	0.6
6203614	99	P	SUR	32	-65	266	0	0.4	0.2	0.5
6203615	99	P	SUR	25	-64	719	0	0.3	-0.2	0.3
6203616	99	P	SUR	25	-59	719	0	0.3	0.2	0.4
6203617	99	P	SUR	20	-56	718	0	0.3	0.2	0.3
6203621	99	P	SUR	31	-25	718	0	0.3	0.0	0.3
6203622	99	P	SUR	40	-27	185	0	1.1	2.3	2.5
6203625	99	P	SUR	30	-30	719	0	0.2	-0.2	0.3
6203627	99	P	SUR	24	-70	719	0	0.3	0.3	0.4
6203632	99	P	SUR	24	-38	719	0	0.2	0.2	0.3
6203633	99	P	SUR	68	15	718	0	0.5	0.2	0.5
6203634	99	P	SUR	28	-32	719	0	0.2	0.2	0.3
6203639	99	P	SUR	29	-28	719	0	0.2	-0.1	0.2
6203640	99	P	SUR	23	-41	718	2	2.0	-0.5	2.1
6203642	99	P	SUR	17	-54	719	0	0.4	-0.2	0.5
6203643	99	P	SUR	25	-64	718	0	0.3	0.4	0.5
6203651	99	P	SUR	46	-36	720	0	0.5	0.2	0.6
6203730	99	P	SUR	26	-64	633	0	0.3	0.2	0.3
6203734	99	P	SUR	15	-24	3	0	0.3	0.0	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203737	99	P	SUR	27	-42	670	0	0.3	0.3	0.4
6203741	99	P	SUR	62	-15	645	0	0.5	0.0	0.5
6203742	99	P	SUR	63	-15	228	0	0.4	0.1	0.4
6203744	99	P	SUR	63	-7	652	0	0.4	0.2	0.5
6203745	99	P	SUR	66	-13	648	0	0.4	0.3	0.5
6203747	99	P	SUR	68	15	84	0	0.2	0.0	0.2
6203750	99	P	SUR	69	14	134	0	0.3	0.1	0.3
6203753	99	P	SUR	60	-24	653	0	0.6	-0.4	0.7
6203755	99	P	SUR	40	-16	647	0	0.3	-0.8	0.9
6203760	99	P	SUR	56	13	130	0	0.3	-0.3	0.4
6203765	99	P	SUR	25	-44	676	0	0.3	0.4	0.5
6203767	99	P	SUR	19	-53	671	0	0.2	-0.7	0.8
6203768	99	P	SUR	34	-15	686	0	0.2	0.3	0.3
6203771	99	P	SUR	24	-39	660	0	0.2	0.1	0.2
6203772	99	P	SUR	33	-60	667	0	0.5	0.1	0.5
6203773	99	P	SUR	31	-48	676	0	0.4	-0.5	0.6
6203776	99	P	SUR	32	-28	653	0	0.2	0.0	0.2
6203825	99	P	SUR	70	-3	677	0	0.6	0.5	0.8
6203827	99	P	SUR	61	-5	719	0	0.4	0.1	0.4
6203838	99	P	SUR	15	-53	674	0	0.3	0.3	0.4
6203839	99	P	SUR	24	-47	673	0	0.3	0.0	0.3
6203840	99	P	SUR	26	-41	675	0	0.3	0.2	0.3
6203841	99	P	SUR	29	-16	676	0	0.3	-1.3	1.4
6203842	99	P	SUR	39	-35	664	0	0.5	-0.1	0.5
6203844	99	P	SUR	47	-15	676	0	0.4	0.1	0.4
6203845	99	P	SUR	49	-32	680	0	0.5	-0.4	0.7
6203846	99	P	SUR	30	-23	669	0	0.2	0.0	0.2
6203848	99	P	SUR	37	-61	671	0	0.5	0.0	0.5
6203849	99	P	SUR	33	-21	661	0	0.3	0.1	0.3
6203850	99	P	SUR	36	-22	665	0	0.3	0.2	0.3
6203853	99	P	SUR	59	-9	663	0	0.4	0.1	0.4
6203854	99	P	SUR	58	-28	675	0	0.6	0.1	0.6
6203855	99	P	SUR	66	8	671	0	0.3	0.2	0.4
6203856	99	P	SUR	60	0	685	0	0.4	0.6	0.7
6203857	99	P	SUR	61	-1	718	0	0.4	0.1	0.4
6203863	99	P	SUR	67	-20	658	1	1.7	0.9	1.9
6203864	99	P	SUR	67	-8	672	0	0.4	0.1	0.4
6203865	99	P	SUR	69	-12	664	0	0.5	0.1	0.5
6203866	99	P	SUR	62	1	690	0	0.4	0.3	0.5
6203867	99	P	SUR	50	-9	717	0	0.5	0.3	0.6
62050	99	P	SUR	50	-4	1436	0	0.5	-0.1	0.5
62081	99	P	SUR	51	-13	1436	0	0.5	-0.3	0.5
62091	99	P	SUR	53	-5	712	0	0.5	-0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62092	99	P	SUR	51	-11	711	0	0.5	-0.3	0.6
62093	99	P	SUR	55	-10	711	0	0.5	-0.3	0.6
62094	99	P	SUR	52	-7	711	0	0.5	-0.1	0.5
62095	99	P	SUR	53	-16	712	0	0.6	-0.5	0.8
62102	99	P	SUR	58	2	1418	0	0.9	0.8	1.2
62103	99	P	SUR	50	-3	1434	0	0.4	-0.4	0.6
62104	99	P	SUR	57	1	1436	0	0.6	0.2	0.6
62105	99	P	SUR	55	-13	1435	0	0.5	-0.3	0.6
62107	99	P	SUR	50	-6	835	0	0.4	-0.2	0.5
62112	99	P	SUR	58	0	1436	0	0.4	0.4	0.6
62113	99	P	SUR	58	0	1436	0	0.7	0.0	0.7
62114	99	P	SUR	58	0	1436	0	0.4	0.2	0.5
62115	99	P	SUR	58	-3	1424	0	0.5	-0.2	0.5
62116	99	P	SUR	58	1	1425	0	0.6	0.3	0.7
62118	99	P	SUR	58	1	1435	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	1428	0	0.4	0.1	0.4
62120	99	P	SUR	56	2	1436	0	0.4	-0.2	0.5
62121	99	P	SUR	54	3	1426	0	0.7	0.7	1.0
62122	99	P	SUR	57	2	1435	0	0.4	0.0	0.4
62124	99	P	SUR	54	-4	1436	0	0.4	0.1	0.5
62129	99	P	SUR	58	0	766	0	0.7	0.5	0.8
62130	99	P	SUR	59	1	1434	0	0.5	-0.2	0.5
62131	99	P	SUR	54	1	1247	0	0.5	0.7	0.9
62132	99	P	SUR	56	2	1421	0	0.4	0.2	0.5
62133	99	P	SUR	57	1	1428	0	0.8	0.6	1.0
62134	99	P	SUR	58	1	254	0	0.3	0.4	0.5
62135	99	P	SUR	54	2	134	0	0.6	0.3	0.7
62138	99	P	SUR	54	0	1401	0	0.6	0.7	0.9
62140	99	P	SUR	57	1	1436	0	0.4	0.3	0.5
62141	99	P	SUR	58	0	1428	0	0.9	7.1	7.2
62143	99	P	SUR	58	2	1426	0	0.4	0.5	0.6
62144	99	P	SUR	53	2	1427	0	0.4	0.3	0.5
62145	99	P	SUR	53	3	1436	0	0.5	0.3	0.6
62146	99	P	SUR	57	2	1332	0	0.4	-0.1	0.4
62148	99	P	SUR	54	2	1151	0	0.4	0.4	0.6
62149	99	P	SUR	54	1	1434	0	0.4	0.7	0.8
62151	99	P	SUR	57	2	1150	0	0.6	0.6	0.9
62152	99	P	SUR	57	2	1432	0	0.4	0.3	0.5
62153	99	P	SUR	57	2	1435	0	0.4	0.2	0.4
62154	99	P	SUR	56	2	1436	0	0.5	0.1	0.5
62155	99	P	SUR	58	1	1435	0	0.4	0.4	0.6
62157	99	P	SUR	58	0	1422	0	0.4	0.0	0.4
62160	99	P	SUR	57	2	1432	0	0.6	0.7	0.9

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62161	99	P	SUR	58	1	1436	0	0.6	0.0	0.6
62162	99	P	SUR	57	1	1435	0	0.4	0.0	0.4
62163	99	P	SUR	48	-8	1435	0	0.4	-0.3	0.5
62164	99	P	SUR	57	1	1432	0	0.4	0.4	0.5
62165	99	P	SUR	54	1	1427	0	0.5	0.2	0.5
62168	99	P	SUR	58	1	1428	0	0.4	0.0	0.4
62170	99	P	SUR	51	2	1437	0	0.4	-0.2	0.5
62296	99	P	SUR	53	2	1406	0	0.5	0.1	0.5
62297	99	P	SUR	59	2	1436	0	0.5	0.0	0.5
62302	99	P	SUR	61	-2	1425	0	0.6	0.0	0.6
62304	99	P	SUR	51	2	1435	0	0.5	-0.1	0.5
62305	99	P	SUR	50	0	1437	0	0.4	-0.2	0.5
62442	99	P	SUR	49	-16	1435	0	0.5	-0.5	0.7
6301001	99	P	SUR	64	5	720	0	0.3	0.0	0.3
6301004	99	P	SUR	72	20	5	0	1.5	-2.3	2.8
6301572	99	P	SUR	65	-34	719	0	0.6	0.0	0.6
6301575	99	P	SUR	70	-21	718	0	0.9	0.1	0.9
6301576	99	P	SUR	59	-16	718	0	0.7	-0.1	0.7
6301577	99	P	SUR	66	-1	720	0	0.4	0.5	0.6
6301846	99	P	SUR	81	21	616	89	3.9	-2.5	4.6
63055	99	P	SUR	61	2	1427	0	0.5	-0.2	0.6
63056	99	P	SUR	60	2	1435	0	0.7	1.0	1.2
63057	99	P	SUR	59	2	1435	0	0.4	0.0	0.4
63058	99	P	SUR	53	2	1720	0	0.5	0.4	0.7
63059	99	P	SUR	58	-1	1435	0	0.4	0.2	0.5
63101	99	P	SUR	61	1	1435	0	0.5	0.6	0.8
63102	99	P	SUR	61	1	1435	0	0.4	-0.2	0.5
63103	99	P	SUR	61	1	1435	0	0.8	1.1	1.3
63108	99	P	SUR	61	2	1431	0	0.5	-0.1	0.5
63109	99	P	SUR	60	2	1435	0	0.5	-0.5	0.7
63110	99	P	SUR	60	2	1411	0	0.7	0.2	0.7
63111	99	P	SUR	61	2	1430	0	0.4	-0.3	0.5
63112	99	P	SUR	61	1	1435	0	0.4	-0.3	0.5
63115	99	P	SUR	62	1	1430	0	0.4	-0.1	0.4
63117	99	P	SUR	61	1	1437	0	0.6	0.9	1.1
63118	99	P	SUR	60	2	1385	0	0.5	-0.4	0.6
6401531	99	P	SUR	53	-9	128	0	0.5	-0.3	0.6
6401578	99	P	SUR	78	-19	568	0	0.7	0.4	0.8
6401582	99	P	SUR	84	32	716	0	0.5	0.3	0.6
6401583	99	P	SUR	71	-14	718	0	0.6	0.2	0.6
6401584	99	P	SUR	86	20	718	0	0.5	0.2	0.6
6401587	99	P	SUR	75	-19	718	0	0.6	0.2	0.7
6401589	99	P	SUR	66	-36	583	0	0.6	-0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401590	99	P	SUR	85	-4	719	0	0.6	0.2	0.6
6401591	99	P	SUR	66	-35	137	0	0.5	-0.2	0.5
6401592	99	P	SUR	70	11	719	0	0.3	0.2	0.4
6401758	99	P	SUR	64	1	188	0	1.7	-0.1	1.7
6401759	99	P	SUR	56	-40	718	0	0.6	0.2	0.6
6401760	99	P	SUR	65	-56	719	0	0.4	0.3	0.5
6401762	99	P	SUR	66	-2	718	0	0.4	0.3	0.5
6401763	99	P	SUR	66	12	717	0	0.5	-0.2	0.5
6401839	99	P	SUR	73	16	129	0	0.2	0.2	0.3
6401843	99	P	SUR	73	18	124	0	0.3	0.1	0.3
6402539	99	P	SUR	69	14	604	0	0.4	0.1	0.4
6402544	99	P	SUR	71	14	121	0	0.3	0.2	0.3
6402547	99	P	SUR	59	-18	424	0	0.5	0.0	0.5
6402551	99	P	SUR	50	-49	617	0	0.5	0.3	0.6
6402552	99	P	SUR	76	9	133	0	0.3	0.1	0.3
6402557	99	P	SUR	79	6	4	0	0.3	0.5	0.6
6402560	99	P	SUR	72	10	430	0	0.3	-0.1	0.3
6402562	99	P	SUR	58	-47	428	0	0.4	-0.1	0.4
6402563	99	P	SUR	72	24	629	0	0.6	0.2	0.6
6402587	99	P	SUR	49	-48	616	0	2.9	6.4	7.0
6402592	99	P	SUR	52	-47	460	0	0.6	-0.6	0.8
6402594	99	P	SUR	57	-53	654	0	0.5	0.0	0.5
6402596	99	P	SUR	64	-30	627	0	0.5	0.2	0.6
6402597	99	P	SUR	51	-41	624	0	0.6	-0.2	0.6
6402599	99	P	SUR	50	-30	597	0	0.6	-0.2	0.6
6402611	99	P	SUR	50	-30	462	0	0.7	0.0	0.7
6402615	99	P	SUR	16	-46	664	0	0.3	0.2	0.4
6402616	99	P	SUR	28	-44	657	0	0.3	-0.2	0.4
6402617	99	P	SUR	26	-44	662	0	0.3	0.4	0.5
6402618	99	P	SUR	25	-33	665	0	0.2	0.2	0.3
6402619	99	P	SUR	39	-14	674	0	0.3	0.0	0.3
6402620	99	P	SUR	46	-7	668	0	0.4	0.3	0.5
6402621	99	P	SUR	43	-15	668	0	0.4	0.2	0.5
6402622	99	P	SUR	38	-18	675	0	0.3	0.1	0.3
6402655	99	P	SUR	70	4	72	0	1.7	0.5	1.8
6402659	99	P	SUR	70	19	126	5	5.6	7.3	9.2
6402661	99	P	SUR	63	-7	115	0	0.4	0.1	0.4
6402666	99	P	SUR	64	-21	124	0	0.3	-0.2	0.4
6402667	99	P	SUR	64	-20	74	0	0.3	-0.8	0.9
6402668	99	P	SUR	71	29	106	0	0.3	0.0	0.3
64041	99	P	SUR	61	-3	1436	0	0.5	-0.1	0.5
64045	99	P	SUR	59	-12	1434	0	0.4	-0.3	0.5
64046	99	P	SUR	61	-4	1435	0	0.4	-0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6501679	99	P	SUR	67	-29	520	189	5.8	5.8	8.2
6600021	99	P	SUR	55	14	280	276	0.3	-0.3	0.4
6600022	99	P	SUR	54	14	295	0	0.4	-0.5	0.6
7801563	99	P	SUR	45	-65	717	0	0.6	0.3	0.7

4.10 Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s)

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          DRIFTER MONITORING STATISTICS (EUCOS)
                   MONITORING CENTRE     : ECMWF
                   ELEMENT MONITORED     : WIND SPEED (M/S)
                   AREA                  : 10N - 90N, 70W - 40E
                   PERIOD                : NOV 2022
                   STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS


GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	580	0	0	0.7	0.5	0.9
1300002	99	SPEED	SUR	20	-23	570	0	0	0.7	0.3	0.7
1300008	99	SPEED	SUR	15	-38	600	0	0	0.8	-0.1	0.8
1300130	99	SPEED	SUR	28	-16	711	0	0	0.9	-0.1	0.9
1300131	99	SPEED	SUR	28	-17	716	0	0	1.8	1.8	2.6
1801560	99	SPEED	SUR	23	-68	935	0	0	1.3	-0.5	1.4
1801599	99	SPEED	SUR	22	-59	2	0	0	0.2	-1.3	1.3
4100026	99	SPEED	SUR	12	-38	230	0	0	1.0	-0.6	1.1
4100043	99	SPEED	SUR	21	-65	4311	0	0	1.1	-0.3	1.1
4100046	99	SPEED	SUR	24	-68	4297	0	0	1.0	-0.2	1.0
4100049	99	SPEED	SUR	27	-63	4309	0	0	1.3	0.1	1.3
4100052	99	SPEED	SUR	18	-65	4283	0	0	1.0	-0.4	1.1
4100053	99	SPEED	SUR	18	-66	4296	0	0	1.5	1.0	1.8
4100056	99	SPEED	SUR	18	-65	4239	0	0	1.3	-0.9	1.6
4100139	99	SPEED	SUR	20	-38	716	0	0	0.8	-0.1	0.8
4100300	99	SPEED	SUR	16	-57	673	0	0	1.1	-0.9	1.4
41043	99	SPEED	SUR	21	-65	720	0	0	1.2	-0.3	1.2
41046	99	SPEED	SUR	24	-68	715	0	0	1.1	-0.3	1.2
41049	99	SPEED	SUR	28	-63	719	0	0	1.4	0.0	1.4
41052	99	SPEED	SUR	18	-65	720	0	0	1.0	-0.3	1.1
41053	99	SPEED	SUR	19	-66	720	0	0	1.4	0.3	1.5
41056	99	SPEED	SUR	18	-66	715	0	0	1.4	-0.7	1.5
4200059	99	SPEED	SUR	15	-67	4304	0	0	1.3	0.2	1.4
4200085	99	SPEED	SUR	18	-67	3287	0	0	1.5	-0.7	1.6
42059	99	SPEED	SUR	15	-68	720	0	0	1.4	0.1	1.4
42085	99	SPEED	SUR	18	-67	716	0	0	1.4	-0.3	1.5
4400005	99	SPEED	SUR	43	-69	718	0	0	1.4	0.2	1.4
4400008	99	SPEED	SUR	40	-69	4303	0	0	1.5	-0.3	1.5
4400027	99	SPEED	SUR	44	-67	4308	0	0	1.5	0.2	1.5
4400032	99	SPEED	SUR	44	-69	720	0	0	1.3	0.0	1.3
4400033	99	SPEED	SUR	44	-69	720	0	0	1.6	-0.1	1.6
4400034	99	SPEED	SUR	44	-68	720	0	0	1.4	-0.2	1.4
4400037	99	SPEED	SUR	43	-68	575	0	0	1.1	-0.4	1.2
4400150	99	SPEED	SUR	43	-64	220	0	0	1.4	-0.2	1.4

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND SPEED (M/S) (CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400258	99	SPEED	SUR	45	-63	75	0	0	1.5	1.2	1.9
44005	99	SPEED	SUR	43	-69	720	0	0	1.4	0.2	1.5
44008	99	SPEED	SUR	41	-69	720	0	0	1.5	-0.4	1.6
44027	99	SPEED	SUR	44	-67	720	0	0	1.6	0.2	1.6
44032	99	SPEED	SUR	44	-69	720	0	0	1.4	0.0	1.4
44033	99	SPEED	SUR	44	-69	720	0	0	1.6	0.4	1.7
44034	99	SPEED	SUR	44	-68	720	0	0	1.4	-0.2	1.5
44037	99	SPEED	SUR	44	-68	576	0	0	1.1	-0.3	1.2
44078	99	SPEED	SUR	60	-40	437	0	0	1.9	-2.0	2.8
44150	99	SPEED	SUR	43	-64	712	0	0	1.5	-0.3	1.5
44258	99	SPEED	SUR	45	-63	647	0	0	1.6	0.5	1.7
44488	99	SPEED	SUR	45	-61	720	0	0	2.0	0.8	2.2
44489	99	SPEED	SUR	46	-61	715	0	0	1.9	1.2	2.3
6100001	99	SPEED	SUR	43	8	715	0	0	2.2	-0.7	2.3
6100002	99	SPEED	SUR	42	5	710	0	0	1.4	-0.7	1.6
6100196	99	SPEED	SUR	42	4	711	0	0	1.8	-0.1	1.8
6100197	99	SPEED	SUR	40	4	710	0	0	1.6	-0.4	1.6
6100198	99	SPEED	SUR	37	-2	695	0	0	1.7	-0.7	1.9
6100280	99	SPEED	SUR	41	1	709	0	0	1.7	-0.5	1.8
6100281	99	SPEED	SUR	40	0	714	0	0	2.2	1.2	2.5
6100417	99	SPEED	SUR	38	0	701	0	0	1.5	-0.5	1.6
6100430	99	SPEED	SUR	40	2	712	0	0	1.5	-0.6	1.7
6101003	99	SPEED	SUR	40	25	140	0	0	2.1	-0.1	2.1
6101007	99	SPEED	SUR	36	25	128	0	0	1.8	-0.7	1.9
6101008	99	SPEED	SUR	37	22	158	0	0	1.9	-0.4	2.0
6101009	99	SPEED	SUR	35	25	16	0	0	1.2	-4.3	4.5
6200001	99	SPEED	SUR	45	-5	707	0	0	1.4	-1.6	2.1
6200024	99	SPEED	SUR	44	-3	77	0	0	1.3	-0.4	1.3
6200025	99	SPEED	SUR	44	-6	715	0	0	1.8	-0.5	1.9
6200082	99	SPEED	SUR	44	-8	715	0	0	1.4	-1.2	1.8
6200083	99	SPEED	SUR	43	-9	203	0	0	0.9	0.0	1.0
6200084	99	SPEED	SUR	42	-9	123	0	0	1.5	-0.9	1.8
6200085	99	SPEED	SUR	36	-7	712	0	0	1.1	-0.5	1.2
6200086	99	SPEED	SUR	55	6	463	0	0	2.1	2.2	3.0
6200087	99	SPEED	SUR	55	7	463	0	0	1.7	1.8	2.5
6200091	99	SPEED	SUR	53	-5	720	0	0	1.3	0.7	1.4
6200092	99	SPEED	SUR	51	-11	719	0	0	1.5	-0.9	1.7
6200093	99	SPEED	SUR	55	-10	719	0	0	1.6	-0.3	1.6
6200094	99	SPEED	SUR	52	-7	719	0	0	1.4	-1.3	1.9
6200095	99	SPEED	SUR	53	-16	720	0	0	1.5	0.1	1.5
6200192	99	SPEED	SUR	40	-10	44	0	0	1.1	0.2	1.1

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND SPEED (M/S) (CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200199	99	SPEED	SUR	40	-9	44	0	0	1.5	0.3	1.5
6201066	99	SPEED	SUR	55	7	699	0	0	2.0	0.4	2.0
6201081	99	SPEED	SUR	38	-9	44	0	0	0.7	0.2	0.8
62029	99	SPEED	SUR	49	-12	1434	2	0	1.3	0.8	1.5
62050	99	SPEED	SUR	50	-4	1406	4	0	1.3	0.4	1.4
62081	99	SPEED	SUR	51	-13	1436	4	0	1.4	0.8	1.6
62091	99	SPEED	SUR	53	-5	712	0	0	1.3	0.7	1.5
62092	99	SPEED	SUR	51	-11	711	0	0	1.4	-0.5	1.5
62093	99	SPEED	SUR	55	-10	711	0	0	1.6	0.1	1.6
62094	99	SPEED	SUR	52	-7	711	0	0	1.3	-1.0	1.6
62095	99	SPEED	SUR	53	-16	712	0	0	1.5	0.5	1.6
62102	99	SPEED	SUR	58	2	1418	0	0	1.6	0.3	1.6
62103	99	SPEED	SUR	50	-3	1434	4	0	1.6	-0.8	1.8
62104	99	SPEED	SUR	57	1	1436	0	0	1.3	-0.6	1.4
62105	99	SPEED	SUR	55	-13	1423	4	0	1.6	0.9	1.8
62107	99	SPEED	SUR	50	-6	689	0	0	1.7	0.1	1.7
62112	99	SPEED	SUR	58	0	1436	0	0	2.4	-0.9	2.6
62113	99	SPEED	SUR	58	0	1436	0	0	1.6	0.4	1.7
62114	99	SPEED	SUR	58	0	1436	0	0	1.6	0.8	1.8
62118	99	SPEED	SUR	58	1	1435	0	0	1.5	0.8	1.7
62119	99	SPEED	SUR	57	2	1428	0	0	1.5	-0.7	1.7
62120	99	SPEED	SUR	56	2	1436	0	0	1.2	0.2	1.2
62121	99	SPEED	SUR	54	3	1426	0	0	1.9	-0.8	2.0
62122	99	SPEED	SUR	57	2	1435	0	0	1.3	0.0	1.3
62129	99	SPEED	SUR	58	0	766	0	0	1.5	0.5	1.6
62131	99	SPEED	SUR	54	1	1125	0	0	2.3	-0.5	2.3
62132	99	SPEED	SUR	56	2	1421	0	0	1.9	-1.3	2.3
62133	99	SPEED	SUR	57	1	1428	0	0	1.5	0.4	1.5
62134	99	SPEED	SUR	58	1	254	0	0	1.1	0.3	1.2
62140	99	SPEED	SUR	57	1	1436	0	0	1.1	-0.3	1.2
62143	99	SPEED	SUR	58	2	1426	0	0	2.1	-1.0	2.3
62144	99	SPEED	SUR	53	2	1427	0	0	2.6	-0.9	2.7
62145	99	SPEED	SUR	53	3	1436	0	0	1.8	0.4	1.8
62146	99	SPEED	SUR	57	2	1332	0	0	1.4	-0.3	1.4
62148	99	SPEED	SUR	54	2	1151	0	0	1.4	-0.1	1.4
62149	99	SPEED	SUR	54	1	1434	0	0	1.5	0.3	1.6
62152	99	SPEED	SUR	57	2	1432	0	0	1.6	-0.7	1.7
62153	99	SPEED	SUR	57	2	1435	0	0	5.5	-5.5	7.8
62154	99	SPEED	SUR	56	2	1436	0	0	1.3	0.5	1.4
62155	99	SPEED	SUR	58	1	1042	0	0	1.7	0.1	1.8
62163	99	SPEED	SUR	48	-8	1423	2	0	1.2	0.2	1.2

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND SPEED (M/S) (CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62164	99	SPEED	SUR	57	1	1432	0	0	1.6	-1.5	2.2
62165	99	SPEED	SUR	54	1	1427	0	0	1.6	-0.6	1.7
62170	99	SPEED	SUR	51	2	1436	0	0	1.8	0.6	1.9
62304	99	SPEED	SUR	51	2	1402	0	0	1.9	0.9	2.1
62305	99	SPEED	SUR	50	0	1437	0	0	1.7	0.7	1.8
62442	99	SPEED	SUR	49	-16	1435	0	0	1.3	0.5	1.4
6301001	99	SPEED	SUR	64	5	720	0	0	1.5	-0.2	1.5
6301004	99	SPEED	SUR	72	20	5	0	0	2.5	-4.9	5.5
63055	99	SPEED	SUR	61	2	1431	0	0	1.4	-1.3	1.9
63056	99	SPEED	SUR	60	2	1435	0	0	1.7	0.4	1.7
63057	99	SPEED	SUR	59	2	1435	0	0	2.3	0.0	2.3
63058	99	SPEED	SUR	53	2	796	0	0	1.5	-0.1	1.5
63101	99	SPEED	SUR	61	1	1431	0	0	1.6	-0.6	1.7
63103	99	SPEED	SUR	61	1	1435	0	0	1.9	-0.5	1.9
63106	99	SPEED	SUR	61	2	1361	0	0	2.4	-1.7	2.9
63108	99	SPEED	SUR	61	2	1431	0	0	1.5	0.0	1.5
63109	99	SPEED	SUR	60	2	1435	0	0	1.7	0.0	1.7
63110	99	SPEED	SUR	60	2	1411	0	0	1.7	0.1	1.7
63112	99	SPEED	SUR	61	1	1433	0	0	1.4	-0.8	1.6
63115	99	SPEED	SUR	62	1	1428	0	0	1.3	-1.1	1.7
63117	99	SPEED	SUR	61	1	1437	0	0	1.5	-0.3	1.5
64041	99	SPEED	SUR	61	-3	1436	0	0	1.3	0.0	1.3
64045	99	SPEED	SUR	59	-12	1434	0	0	1.6	1.0	1.9
64046	99	SPEED	SUR	61	-4	1413	2	0	1.4	0.8	1.6
6600021	99	SPEED	SUR	55	14	280	0	0	1.2	0.7	1.3
6600022	99	SPEED	SUR	54	14	295	0	0	1.4	0.3	1.5

4.11 Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction

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DRIFTER MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND DIRECTION (DEGREES)
         AREA                  : 10N - 90N, 70W - 40E
         PERIOD                : NOV 2022
         STANDARD OF COMPARISON: FIRST-GUESS FIELD


TIME = 99 => AVERAGE OF ALL OBSERVATIONS
GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S
WIND SPEEDS > 3M/S USED
```

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
00000	99	DIRN	SUR	44	-79	56	0	0	15.8	-35.8	39.1
1300001	99	DIRN	SUR	11	-23	539	0	0	12.1	2.8	12.4
1300002	99	DIRN	SUR	20	-23	568	0	0	6.3	-2.8	6.8
1300008	99	DIRN	SUR	15	-38	600	0	0	8.1	4.5	9.2
1300130	99	DIRN	SUR	28	-16	654	0	0	10.0	-0.5	10.0
1300131	99	DIRN	SUR	28	-17	528	0	0	15.4	11.7	19.4
1801560	99	DIRN	SUR	23	-68	877	0	0	20.9	-0.4	21.0
1801599	99	DIRN	SUR	22	-59	2	0	0	7.0	1.3	7.1
4100001	99	DIRN	SUR	35	-72	3777	0	0	10.9	9.3	14.3
4100002	99	DIRN	SUR	32	-75	4100	0	0	17.1	4.2	17.6
4100004	99	DIRN	SUR	33	-79	4134	0	0	15.2	4.6	15.9
4100008	99	DIRN	SUR	31	-81	634	0	0	21.7	2.5	21.9
4100009	99	DIRN	SUR	29	-80	3645	0	0	17.1	2.6	17.3
4100010	99	DIRN	SUR	29	-78	3958	0	0	13.8	6.8	15.4
4100013	99	DIRN	SUR	33	-78	4074	0	0	18.8	8.8	20.8
4100024	99	DIRN	SUR	34	-78	547	0	0	18.6	6.6	19.7
4100025	99	DIRN	SUR	35	-75	4067	0	0	19.0	2.4	19.2
4100026	99	DIRN	SUR	12	-38	230	0	0	14.4	-8.4	16.7
4100029	99	DIRN	SUR	33	-80	570	0	0	20.3	0.7	20.3
4100033	99	DIRN	SUR	32	-80	582	0	0	20.0	7.0	21.2
4100037	99	DIRN	SUR	34	-77	624	0	0	20.1	4.5	20.6
4100038	99	DIRN	SUR	34	-78	577	0	0	18.2	-0.7	18.2
4100043	99	DIRN	SUR	21	-65	3919	0	0	16.8	-0.1	16.8
4100046	99	DIRN	SUR	24	-68	3546	0	0	15.7	7.5	17.4
4100047	99	DIRN	SUR	27	-71	2885	0	0	25.8	8.8	27.3
4100049	99	DIRN	SUR	27	-63	3331	0	0	17.5	5.3	18.2
4100052	99	DIRN	SUR	18	-65	4255	0	0	14.4	7.3	16.1
4100053	99	DIRN	SUR	18	-66	2592	0	0	17.7	8.8	19.8
4100056	99	DIRN	SUR	18	-65	4122	0	0	17.6	6.7	18.8
4100064	99	DIRN	SUR	34	-77	622	0	0	19.2	0.7	19.2
4100066	99	DIRN	SUR	33	-80	607	0	0	18.9	3.6	19.3
41001	99	DIRN	SUR	35	-72	622	0	0	12.0	7.5	14.2

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND DIRECTION (DEGREES)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4100139	99	DIRN	SUR	20	-38	716	0	0	8.9	4.0	9.7
41002	99	DIRN	SUR	32	-75	684	0	0	17.4	2.4	17.6
4100300	99	DIRN	SUR	16	-57	673	0	0	11.1	-10.9	15.6
41004	99	DIRN	SUR	33	-79	684	0	0	15.7	3.2	16.0
41008	99	DIRN	SUR	31	-81	628	0	0	21.3	1.4	21.4
41009	99	DIRN	SUR	29	-80	593	0	0	16.4	1.0	16.4
41010	99	DIRN	SUR	29	-79	578	0	0	14.0	5.1	14.9
41013	99	DIRN	SUR	33	-78	681	0	0	19.4	7.9	21.0
41024	99	DIRN	SUR	34	-79	547	0	0	19.7	7.0	20.9
41025	99	DIRN	SUR	35	-76	674	0	0	17.6	0.4	17.6
4102649	99	DIRN	SUR	27	-83	1350	0	0	35.5	-8.1	36.4
41029	99	DIRN	SUR	33	-80	561	0	0	21.9	0.5	21.9
41033	99	DIRN	SUR	32	-80	574	0	0	20.1	6.8	21.2
41037	99	DIRN	SUR	34	-77	624	0	0	20.2	3.8	20.6
41038	99	DIRN	SUR	34	-78	568	0	0	18.8	0.1	18.8
41043	99	DIRN	SUR	21	-65	632	0	0	16.9	-0.4	16.9
41046	99	DIRN	SUR	24	-68	565	0	0	15.9	7.3	17.5
41047	99	DIRN	SUR	28	-72	476	0	0	25.6	6.8	26.5
41049	99	DIRN	SUR	28	-63	551	0	0	19.1	3.4	19.3
41052	99	DIRN	SUR	18	-65	713	0	0	14.2	7.2	16.0
41053	99	DIRN	SUR	19	-66	484	0	0	18.8	8.2	20.5
41056	99	DIRN	SUR	18	-66	688	0	0	17.7	6.3	18.8
41064	99	DIRN	SUR	34	-77	621	0	0	20.4	1.5	20.5
41066	99	DIRN	SUR	33	-80	609	0	0	20.3	3.8	20.7
4200013	99	DIRN	SUR	27	-83	1105	0	0	15.4	-2.4	15.6
4200022	99	DIRN	SUR	28	-84	1220	0	0	13.3	-2.4	13.5
4200023	99	DIRN	SUR	26	-83	3	0	0	5.3	0.1	5.3
4200036	99	DIRN	SUR	29	-85	3902	0	0	13.5	2.5	13.7
4200056	99	DIRN	SUR	20	-85	3754	0	0	12.9	5.5	14.1
4200059	99	DIRN	SUR	15	-67	4130	0	0	16.5	8.3	18.5
4200085	99	DIRN	SUR	18	-67	2929	0	0	27.1	17.4	32.2
42013	99	DIRN	SUR	27	-83	546	0	0	16.0	-2.6	16.2
42022	99	DIRN	SUR	28	-84	598	0	0	14.2	-2.7	14.5
42023	99	DIRN	SUR	26	-83	1	0	0	0.0	-8.0	8.0
42036	99	DIRN	SUR	29	-85	647	0	0	13.6	1.1	13.7
42056	99	DIRN	SUR	20	-85	614	0	0	13.8	4.6	14.6
42059	99	DIRN	SUR	15	-68	687	0	0	16.1	7.7	17.8
42085	99	DIRN	SUR	18	-67	606	0	0	26.2	15.4	30.4
4400005	99	DIRN	SUR	43	-69	657	0	0	12.6	3.0	12.9
4400007	99	DIRN	SUR	44	-70	3828	0	0	18.2	7.1	19.6
4400008	99	DIRN	SUR	40	-69	3716	0	0	13.6	7.6	15.6

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND DIRECTION (DEGREES)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400009	99	DIRN	SUR	38	-75	3824	0	0	12.9	7.4	14.9
4400013	99	DIRN	SUR	42	-71	3678	0	0	13.7	6.7	15.3
4400017	99	DIRN	SUR	41	-72	3742	0	0	11.8	4.4	12.6
4400018	99	DIRN	SUR	42	-70	3769	0	0	12.6	8.0	15.0
4400020	99	DIRN	SUR	41	-70	3852	0	0	11.9	7.2	13.9
4400022	99	DIRN	SUR	41	-74	684	0	0	13.2	4.8	14.0
4400027	99	DIRN	SUR	44	-67	3928	0	0	12.1	8.5	14.8
4400029	99	DIRN	SUR	43	-71	642	0	0	13.0	7.1	14.8
4400030	99	DIRN	SUR	43	-70	637	0	0	17.1	5.2	17.9
4400032	99	DIRN	SUR	44	-69	650	0	0	12.7	-3.5	13.2
4400033	99	DIRN	SUR	44	-69	619	0	0	16.7	14.3	22.0
4400034	99	DIRN	SUR	44	-68	657	0	0	11.6	-4.2	12.4
4400037	99	DIRN	SUR	43	-68	550	0	0	12.7	37.0	39.2
4400039	99	DIRN	SUR	41	-73	464	1	0	41.5	4.7	41.8
4400040	99	DIRN	SUR	41	-74	847	0	0	13.5	0.2	13.5
4400041	99	DIRN	SUR	37	-77	1219	0	0	22.2	6.0	23.0
4400042	99	DIRN	SUR	38	-76	4766	0	0	22.2	2.5	22.3
4400058	99	DIRN	SUR	38	-76	5206	0	0	23.6	4.5	24.1
4400062	99	DIRN	SUR	39	-76	4887	0	0	20.2	6.1	21.1
4400063	99	DIRN	SUR	39	-76	4514	0	0	18.9	0.4	18.9
4400064	99	DIRN	SUR	37	-76	4872	0	0	22.2	4.8	22.8
4400065	99	DIRN	SUR	40	-74	3559	0	0	14.5	13.2	19.7
4400066	99	DIRN	SUR	40	-73	3822	0	0	14.6	8.5	16.8
4400072	99	DIRN	SUR	37	-76	4773	0	0	23.9	6.7	24.8
4400075	99	DIRN	SUR	40	-71	579	0	0	14.0	-13.6	19.5
4400076	99	DIRN	SUR	40	-71	736	0	0	12.6	-8.9	15.4
4400077	99	DIRN	SUR	40	-71	551	0	0	14.8	-10.4	18.0
4400150	99	DIRN	SUR	43	-64	201	0	0	18.7	10.5	21.5
4400258	99	DIRN	SUR	45	-63	71	0	0	8.9	-5.8	10.6
44005	99	DIRN	SUR	43	-69	654	0	0	12.8	2.5	13.0
44007	99	DIRN	SUR	44	-70	641	0	0	19.6	6.8	20.8
44008	99	DIRN	SUR	41	-69	611	0	0	14.1	6.0	15.3
44009	99	DIRN	SUR	39	-75	625	0	0	13.4	5.5	14.5
44013	99	DIRN	SUR	42	-71	593	0	0	13.0	4.6	13.8
44017	99	DIRN	SUR	41	-72	615	0	0	12.6	3.3	13.0
44018	99	DIRN	SUR	42	-70	625	0	0	12.7	6.4	14.2
44020	99	DIRN	SUR	42	-70	639	0	0	12.6	6.1	14.0
44022	99	DIRN	SUR	41	-74	368	0	0	13.4	5.7	14.5
44027	99	DIRN	SUR	44	-67	649	0	0	13.3	7.7	15.3
44029	99	DIRN	SUR	43	-71	626	0	0	13.7	7.0	15.3
44030	99	DIRN	SUR	43	-70	632	0	0	17.4	5.2	18.2

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND DIRECTION (DEGREES)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44032	99	DIRN	SUR	44	-69	645	0	0	13.5	-3.7	14.0
44033	99	DIRN	SUR	44	-69	610	0	0	17.6	14.4	22.8
44034	99	DIRN	SUR	44	-68	655	0	0	11.7	-4.2	12.5
44037	99	DIRN	SUR	44	-68	551	0	0	13.0	37.0	39.3
44039	99	DIRN	SUR	41	-73	457	1	0	40.6	4.5	40.9
44040	99	DIRN	SUR	41	-74	402	0	0	13.2	-0.1	13.2
44041	99	DIRN	SUR	37	-77	139	0	0	26.1	3.0	26.2
44042	99	DIRN	SUR	38	-76	495	0	0	22.8	2.0	22.9
44058	99	DIRN	SUR	38	-76	487	0	0	22.8	1.0	22.8
44062	99	DIRN	SUR	39	-76	518	0	0	20.8	4.4	21.3
44063	99	DIRN	SUR	39	-76	469	0	0	18.9	-0.1	18.9
44064	99	DIRN	SUR	37	-76	564	0	0	22.4	2.9	22.6
44065	99	DIRN	SUR	40	-74	574	0	0	14.7	11.9	18.9
44066	99	DIRN	SUR	40	-73	634	0	0	15.5	6.9	17.0
44069	99	DIRN	SUR	41	-73	68	0	0	10.9	-19.8	22.6
44072	99	DIRN	SUR	37	-76	529	0	0	24.5	5.0	24.9
44075	99	DIRN	SUR	40	-71	126	0	0	12.3	-13.3	18.1
44076	99	DIRN	SUR	40	-71	159	0	0	13.3	-9.9	16.6
44077	99	DIRN	SUR	40	-71	110	0	0	14.5	-11.8	18.8
44078	99	DIRN	SUR	60	-40	430	0	0	12.0	-16.9	20.7
44150	99	DIRN	SUR	43	-64	661	0	0	17.9	9.3	20.2
44258	99	DIRN	SUR	45	-63	596	0	0	14.5	-1.0	14.6
44488	99	DIRN	SUR	45	-61	648	0	0	19.2	5.9	20.0
44489	99	DIRN	SUR	46	-61	609	0	0	17.7	-2.6	17.9
4500003	99	DIRN	SUR	45	-83	3760	0	0	21.2	13.4	25.1
4500005	99	DIRN	SUR	42	-82	3546	0	0	14.5	9.0	17.1
4500008	99	DIRN	SUR	44	-82	3881	0	0	13.0	5.3	14.0
4500012	99	DIRN	SUR	44	-77	3642	0	0	16.9	7.2	18.3
4500132	99	DIRN	SUR	42	-81	11	0	0	56.9	-75.4	94.5
4500135	99	DIRN	SUR	44	-77	56	0	0	16.6	1.0	16.7
4500137	99	DIRN	SUR	46	-81	26	0	0	19.1	-1.0	19.1
4500139	99	DIRN	SUR	43	-80	20	0	0	14.4	-10.0	17.5
4500142	99	DIRN	SUR	43	-79	181	0	0	20.1	-8.0	21.7
4500165	99	DIRN	SUR	42	-83	42	0	0	12.3	7.9	14.6
4500175	99	DIRN	SUR	46	-85	1547	0	0	35.3	1.8	35.4
4500203	99	DIRN	SUR	41	-83	2736	0	0	55.2	-24.9	60.6
45003	99	DIRN	SUR	45	-83	623	0	0	18.6	12.8	22.6
45005	99	DIRN	SUR	42	-82	577	0	0	15.4	7.8	17.2
45008	99	DIRN	SUR	44	-82	637	0	0	13.5	4.4	14.2
45012	99	DIRN	SUR	44	-77	599	0	0	18.9	4.5	19.5
45132	99	DIRN	SUR	43	-81	373	0	0	20.5	-5.5	21.2

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND DIRECTION (DEGREES)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45135	99	DIRN	SUR	44	-77	468	0	0	16.8	1.1	16.8
45137	99	DIRN	SUR	46	-81	469	0	0	15.3	-3.8	15.8
45139	99	DIRN	SUR	43	-80	366	0	0	19.2	6.5	20.3
45142	99	DIRN	SUR	43	-79	568	0	0	19.7	-9.2	21.8
45143	99	DIRN	SUR	45	-81	347	0	0	23.9	-91.3	94.4
45147	99	DIRN	SUR	42	-83	570	0	0	16.4	1.0	16.4
45149	99	DIRN	SUR	44	-82	569	0	0	14.3	8.8	16.8
45151	99	DIRN	SUR	45	-79	424	0	0	13.9	-2.6	14.2
45152	99	DIRN	SUR	46	-80	129	0	0	14.4	0.4	14.4
45154	99	DIRN	SUR	46	-83	237	0	0	19.4	-1.8	19.5
45159	99	DIRN	SUR	44	-79	202	0	0	16.8	4.2	17.4
45165	99	DIRN	SUR	42	-83	6	0	0	11.2	7.0	13.2
45175	99	DIRN	SUR	46	-85	128	0	0	35.9	-1.7	35.9
45203	99	DIRN	SUR	41	-83	508	0	0	54.3	-25.3	59.9
6100198	99	DIRN	SUR	37	-2	395	0	0	18.5	8.1	20.2
6100281	99	DIRN	SUR	40	0	510	0	0	54.8	-1.1	54.8
6100417	99	DIRN	SUR	38	0	455	0	0	16.5	1.0	16.5
6200001	99	DIRN	SUR	45	-5	677	0	0	13.0	1.7	13.1
6200024	99	DIRN	SUR	44	-3	51	0	0	22.3	-4.1	22.7
6200025	99	DIRN	SUR	44	-6	497	0	0	16.8	7.1	18.3
6200082	99	DIRN	SUR	44	-8	627	0	0	12.4	-6.6	14.0
6200083	99	DIRN	SUR	43	-9	187	0	0	11.9	2.5	12.2
6200084	99	DIRN	SUR	42	-9	76	0	0	12.3	11.8	17.0
6200085	99	DIRN	SUR	36	-7	476	0	0	15.8	8.9	18.2
6200091	99	DIRN	SUR	53	-5	689	0	0	13.7	2.0	13.8
6200092	99	DIRN	SUR	51	-11	698	0	0	11.4	1.2	11.5
6200093	99	DIRN	SUR	55	-10	693	0	0	13.5	4.7	14.3
6200094	99	DIRN	SUR	52	-7	683	0	0	12.3	5.7	13.5
6200095	99	DIRN	SUR	53	-16	715	0	0	13.2	4.3	13.9
6200192	99	DIRN	SUR	40	-10	34	0	0	16.7	-8.0	18.5
6200199	99	DIRN	SUR	40	-9	25	0	0	20.4	16.0	26.0
6201081	99	DIRN	SUR	38	-9	37	0	0	8.4	-10.3	13.3
62029	99	DIRN	SUR	49	-12	1420	2	0	10.6	-8.4	13.5
62050	99	DIRN	SUR	50	-4	1372	4	0	15.3	3.4	15.7
62081	99	DIRN	SUR	51	-13	1431	4	0	10.3	-6.9	12.4
62091	99	DIRN	SUR	53	-5	677	0	0	12.5	1.0	12.5
62092	99	DIRN	SUR	51	-11	687	0	0	11.5	0.5	11.5
62093	99	DIRN	SUR	55	-10	684	0	0	13.6	4.0	14.2
62094	99	DIRN	SUR	52	-7	677	0	0	12.2	5.3	13.3
62095	99	DIRN	SUR	53	-16	707	0	0	13.4	3.9	14.0
62103	99	DIRN	SUR	50	-3	1414	4	0	13.6	3.0	13.9

DRIFTER MONITORING STATISTICS (EUCOS)
MONITORING CENTRE : ECMWF
ELEMENT MONITORED : WIND DIRECTION (DEGREES)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62105	99	DIRN	SUR	55	-13	1382	4	0	15.7	-5.5	16.7
62107	99	DIRN	SUR	50	-6	675	0	0	13.9	1.7	14.0
62112	99	DIRN	SUR	58	0	1386	0	0	9.3	-3.3	9.9
62114	99	DIRN	SUR	58	0	1380	0	0	8.4	1.5	8.5
62163	99	DIRN	SUR	48	-8	1411	2	0	17.4	7.4	18.9
62305	99	DIRN	SUR	50	0	1412	0	0	14.9	-0.6	14.9
62442	99	DIRN	SUR	49	-16	1374	0	0	9.8	3.8	10.5
64041	99	DIRN	SUR	61	-3	1398	0	0	10.5	8.6	13.6
64045	99	DIRN	SUR	59	-12	1393	0	0	16.8	-9.7	19.4
64046	99	DIRN	SUR	61	-4	1333	2	0	13.2	0.1	13.2

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

_076b71a		ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	JNKN7JF	JPBN
KJJF9XN	KMPLHPW	LAGZ8	LRYQE3U	USBOD	USSIO	USSOD	USYES	USYUB
UXK5JTU	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	9ZT9MRK	01001
01004	01010	01028	01241	01400	01415	01492	02365	02527
02836	02963	03005	03238	03354	03502	03743	03808	03882
03918	03953	04018	04089	04220	04270	04320	04339	04360
04417	06011	06260	06458	06610	07110	07145	07510	07645
07761	08001	08023	08190	08221	08302	08383	08430	08508
08522	08536	10035	10113	10184	10238	10304	10393	10410
10548	10618	10739	10771	10868	10954	10962	11010	11035
11120	11240	11520	11747	11952	12120	12374	12425	12575
12843	12982	13275	13388	14015	14240	14430	15420	15614
16045	16064	16113	16144	16245	16332	16429	16546	16622
16716	16754	17030	17064	17095	17130	17196	17220	17240
17351	17607	20674	22008	23205	23472	23884	23921	24641
26038	26435	26629	26708	26850	27459	27707	27713	27962
28225	28661	29612	29698	30557	30673	31770	34172	34731
35121	40179	40186	42369	42667	42867	42971	43150	43371
45004	47102	47104	47138	47155	47169	47186	47230	47401
47412	47582	47600	47646	47678	47741	47778	47807	47827
47909	47918	47945	47971	47991	48601	48615	48650	48657
48698	50527	50557	50774	50953	51076	51243	51431	51463
51644	51656	51709	51777	51828	51839	52203	52267	52323
52418	52533	52652	52681	52818	52836	52866	52983	53068
53463	53513	53543	53614	53772	53845	53915	54102	54135
54161	54218	54292	54374	54511	54662	54727	54857	55299
55591	56029	56046	56080	56137	56146	56187	56492	56571
56651	56691	56739	56778	56964	56985	57083	57127	57131
57178	57245	57461	57494	57516	57541	57687	57749	57816
57957	57972	57993	58027	58150	58203	58238	58362	58424
58457	58606	58633	58665	58725	58847	59023	59134	59211
59265	59280	59293	59316	59431	59758	59981	60018	60155
60390	60571	60630	60656	60680	60715	60760	61901	61980
61998	63894	63985	65344	66160	67083	68263	68424	68442
68512	68816	70026	70133	70200	70219	70231	70261	70273
70308	70316	70326	70350	70361	70398	71043	71081	71082
71109	71119	71603	71722	71802	71811	71815	71816	71823
71836	71845	71867	71906	71907	71908	71909	71913	71917
71924	71925	71926	71934	71945	71957	71964	72201	72202
72206	72208	72210	72215	72230	72235	72240	72248	72249
72250	72251	72261	72265	72293	72305	72317	72318	72327
72340	72357	72363	72364	72365	72376	72388	72402	72403
72413	72426	72440	72451	72456	72476	72489	72493	72501
72518	72520	72528	72558	72562	72572	72582	72597	72632
72634	72645	72649	72659	72662	72672	72681	72694	72712
72747	72764	72768	72776	72786	72797	73033	73110	74389
74455	74560	76225	76256	76394	76405	76458	76526	76595
76612	76644	76654	76679	76692	76743	76805	76903	78384
78397	78583	78866	78897	81405	82965	83768	85442	85586
85799	85934	87155	87344	87418	87582	87623	87715	87860
88889	89002	89022	89062	89564	89571	89592	89611	89625
89642	89662	89859	91165	91212	91285	91348	91376	91408
91592	91925	91938	91948	91958	93112	93417	93817	93844
94001	94120	94150	94170	94203	94299	94302	94312	94326
94332	94374	94403	94430	94461	94510	94578	94610	94637
94638	94653	94659	94672	94711	94767	94776	94802	94821
94866	94910	94975	94995	94996	94998	95282	95527	96413
96441	96471	96481	96996					

4.13 Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart

_076b71a		ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	JNKN7JF	KJJF9XN
KMPLHPW	LAGZ8	LRYQE3U	USSOD	USYES	UXK5JTU	WDK38HS	XKQLWQB	XQFJRGX
YLV96WM	ZVQEQCM	7JUNA4N	9ZT9MRK	01010	01028	01415	01492	02365
02527	02836	02963	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08383	08430	08536	11010
11035	11120	11240	12575	17607	40186	47230	50557	50774
50953	51076	51243	51644	51656	51709	51828	51839	52203
52267	52323	52652	52681	52818	52836	52866	52983	53068
53513	53543	53614	53845	53915	54135	54218	54292	54374
54727	54857	55299	55591	56029	56046	56080	56137	56146
56187	56492	56571	56651	56691	56778	56964	56985	57127
57131	57178	57245	57461	57516	57541	57687	57749	57816
57957	57993	58027	58150	58203	58362	58424	58457	58665
58725	58847	59023	59134	59211	59265	59280	59293	59316
59431	59758	59981	63894	65344	72413	76743	76903	89642
89859	91925	91938	91948	91958	93817	94001	94653	94767

5 Annex - Explanations of figures and tables

5.1 General

All information presented in this report is based on data received at ECMWF before the appropriate analysis. Approximate cut-off times (UTC) are shown below:

Analysis	Obs Time	Cut-off
0000	2101-0300	1530 (16 hours)
1200	0901-1500	1900 (7 hours)

5.2 Data Availability

For each observation type/parameter the average number of reports received per day is displayed in boxes of 5 degrees square. The numbers plotted are the nearest integer values - e.g. if 40 reports were received during the month then the average daily value plotted will be 1. If the average number is greater than 1000 then 999 will be plotted. If the average number is less than 0.5 then the digit 0 will be plotted. If no observations were received then the box will be left blank.

5.3 Data Quality

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. The ability of a modern data assimilation system to provide the diagnostic facilities to monitor the performance of the observational network is demonstrated by A. Hollingsworth et. al., Monthly Weather Review, Vol 114, No. 5, May 1986.

It should be noted that:

(i) all results are based on software that may undergo further development;

(ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;

(iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

Tables 1-9 contain lists of SHIPs (including fixed marine platforms), DRIFTERs, TEMPs and TEMPs/PILOTs believed to have supplied suspect reports of surface pressure, geopotential height or wind during the month. The format of the tables is according to Recommendation 3 CBS-Ext(85) and the criteria for stations or data platforms to be classified as suspect are given at the top of each table. For tables 7 and 8 data for the worst

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and ms^{-1} in tables 2, 5 and 8. In tables 7 and 8 the station position is indicated; in the case of TEMPSHIPs and PILOTSHIPs this position is obtained from the first report of the month. The gross error limits for first-guess deviations of geopotential in table 7 are as follows:

Level	Geop
1000	100m
925	100m
850	100m
700	100m
500	150m
400	175m
300	200m
250	225m
200	250m
150	275m
100	300m
70	375m
50	400m
30	450m

The corresponding limits for wind (table 8) are:

Level	Wind
1000	$35ms^{-1}$
925	$35ms^{-1}$
850	$35ms^{-1}$
700	$40ms^{-1}$
500	$45ms^{-1}$
400	$50ms^{-1}$
300	$60ms^{-1}$
250	$60ms^{-1}$
200	$50ms^{-1}$
150	$50ms^{-1}$
100	$45ms^{-1}$

In table 7 the weighted RMS values at standard levels are calculated using the following weights:

Level	Weight
1000	3.70
925	3.55
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

Tables 10 and 11 provide geopotential and wind quality statistics (100 hPa level) for TEMPSHIPs and PILOTSHIPs received during the month. Units and display format are identical to those in tables 7 and 8 respectively. Tables 13, 14 (50 hPa), 15 and 16 (100 hPa), 17 and 18 (500hPa), 19 and 20 (850hPa) provide similar radiosonde statistics for the EUCOS area.

Tables 21-23 are similar to tables 4-6 with data coverage restricted to the EUCOS area.

Figures 14-18 show global charts of SATOB and aircraft wind quality, where the statistics have been averaged over latitude/longitude boxes of 5 degrees square, and the mean observed minus first-guess (or 'bias') wind vectors have been plotted. All observations in the specified layers have been used. For comparison the mean observed wind (from the SATOB reports only) for each layer is shown in figures 14 and 15. A reference value of wind speed is plotted in the top right corner of each figure. An arrow is only plotted if 10 or more observations have been received in that 5 degree square.

Table 12 provides quality statistics of aircraft wind observations in the layer 300-150 hPa stratified by airline carrier. The format and specifications of the table have been defined by NMC Washington, the lead centre for the monitoring of aircraft and satellite data.

Table 24 shows list of Assimilated BUFR Encoded Radiosonde Stations monitored within the month.

Table 25 shows list of BUFR Encoded Radiosonde Stations with no TAC Counterpart monitored within the month.