ECMWF Global Data Monitoring Report

January 2023

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 29 (Dec 22) - Coverage charts for ATOVS AMSU-A updated:
METOP-C replaces Aqua-ATOVS (Figure 9.2)
METOP-B replaces METOP-ATOVS (Figure 9.3)
SATOB figures updated with METEOSAT-9, Dual-Metop,
METEOSAT-11, GOES-16, HIMAWARI-9, GOES-17 satellites

Revision 28 (Jun 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	Dec	Jan	Ident	Time	Dec	Jan
02527	(00)	16	1	42724	(00)	0	12
16113	(12)	29	16	42867	(00)	5	28
24908	(00)	31	2	42867	(12)	6	31
24908	(12)	31	2	43063	(00)	0	12
32477	(00)	28	3	43333	(00)	0	20
32477	(12)	27	2	60191	(00)	0	11
41256	(00)	15	1	64910	(00)	7	20
47741	(00)	34	14	64910	(12)	9	24
47741	(12)	31	11	68842	(00)	0	16
47778	(00)	31	13	68842	(12)	1	21
47778	(12)	32	12	72274	(00)	0	31
48615	(12)	30	0	72274	(12)	1	31
48657	(12)	30	0	78954	(00)	0	20
51431	(00)	30	19	78954	(12)	9	20
52203	(00)	31	15	82599	(00)	11	27
67197	(00)	29	13	82599	(12)	13	28
67197	(12)	28	13	82824	(00)	16	29
70414	(12)	18	7	82824	(12)	15	29
72233	(00)	31	11	83768	(12)	10	29
72233	(12)	31	11	-	-	-	-
72250	(00)	31	12	-	-	-	-
72250	(12)	31	11	-	-	-	-
78807	(00)	21	0	-	-	-	-
80028	(12)	16	0	-	-	-	-
96441	(12)	30	0	-	-	-	-
96481	(12)	31	0	-	-	-	-
98444	(12)	30	10	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1348** 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.

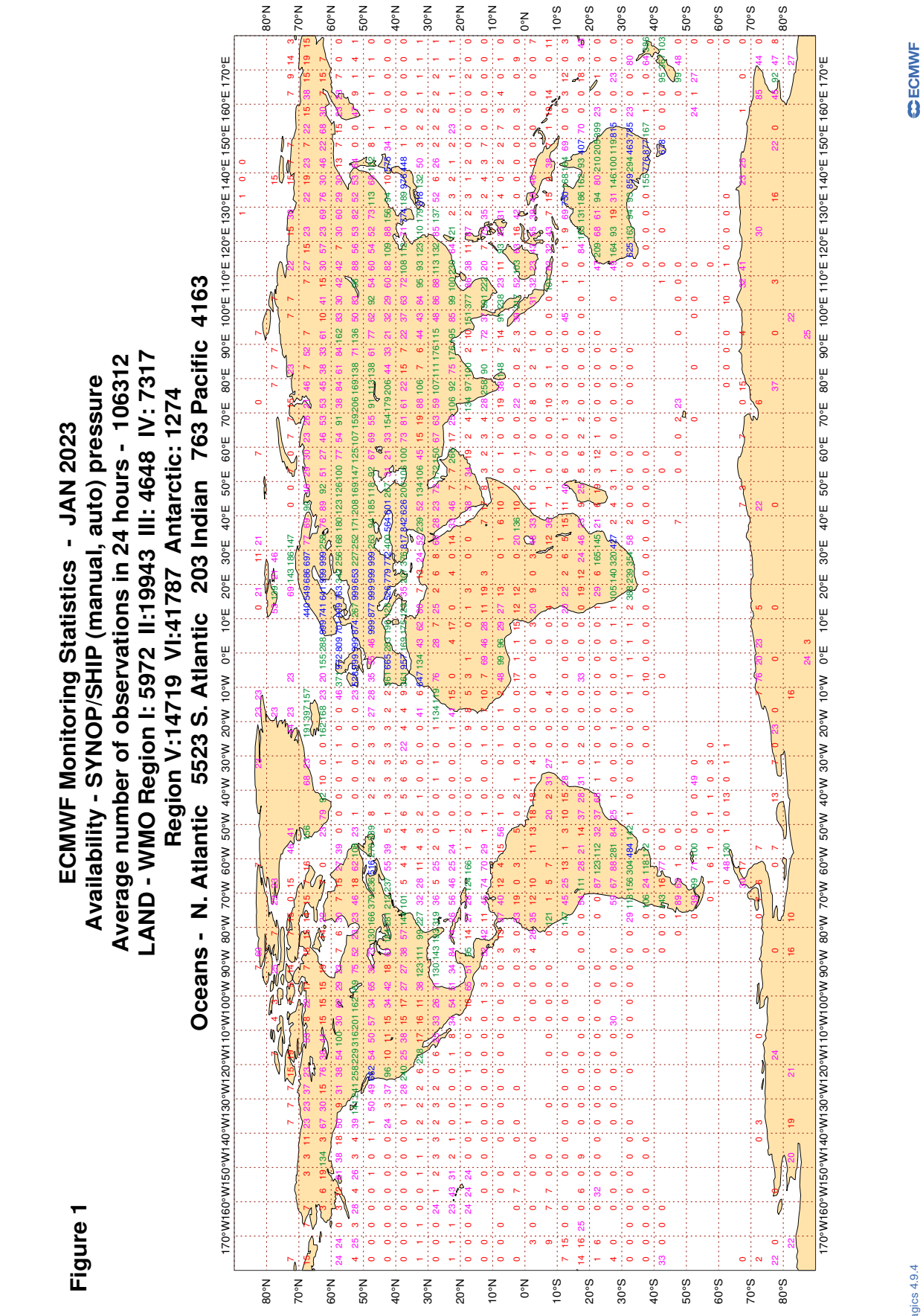
Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

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



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

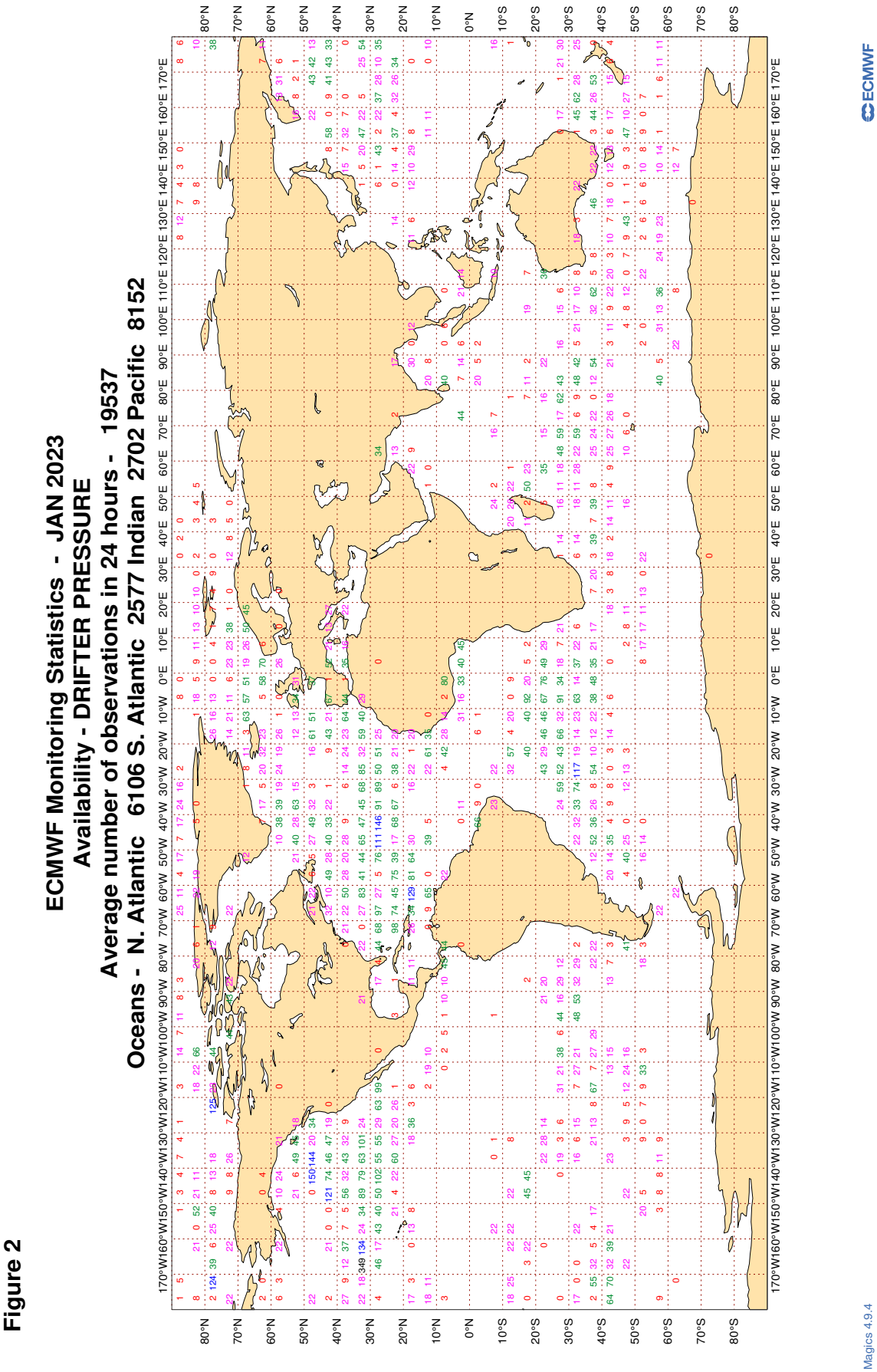


Figure 2

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

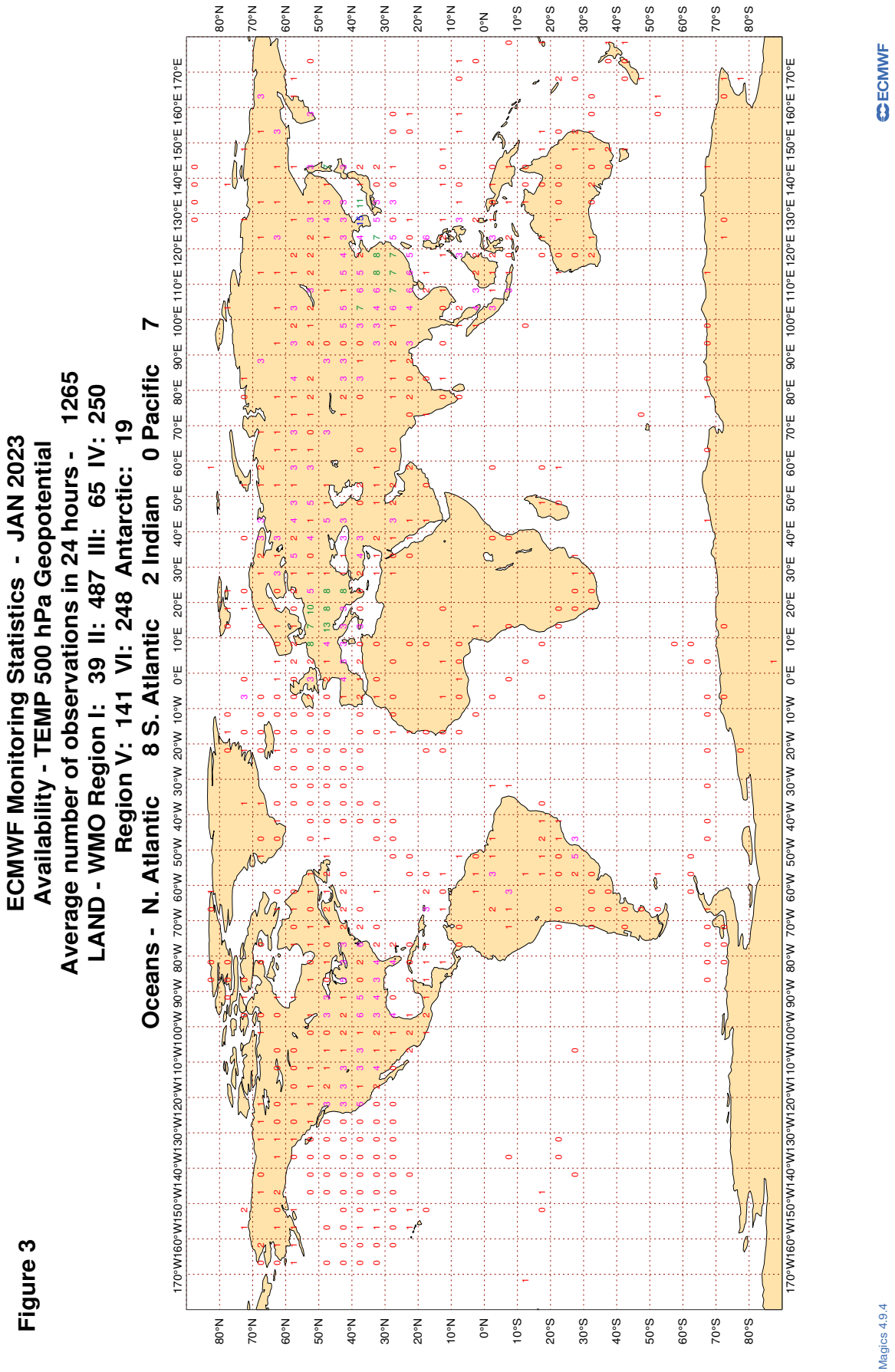
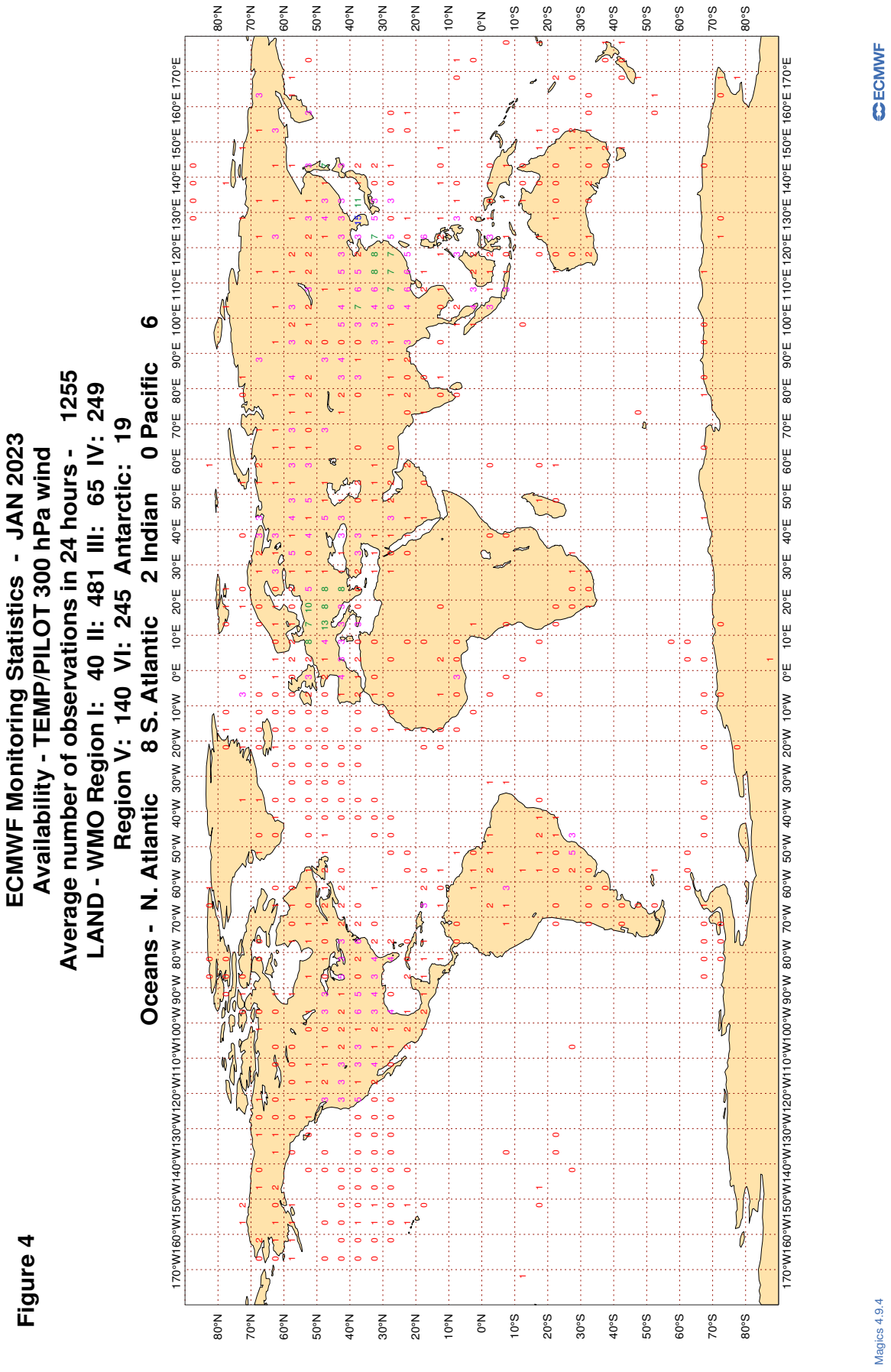


Figure 3

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



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

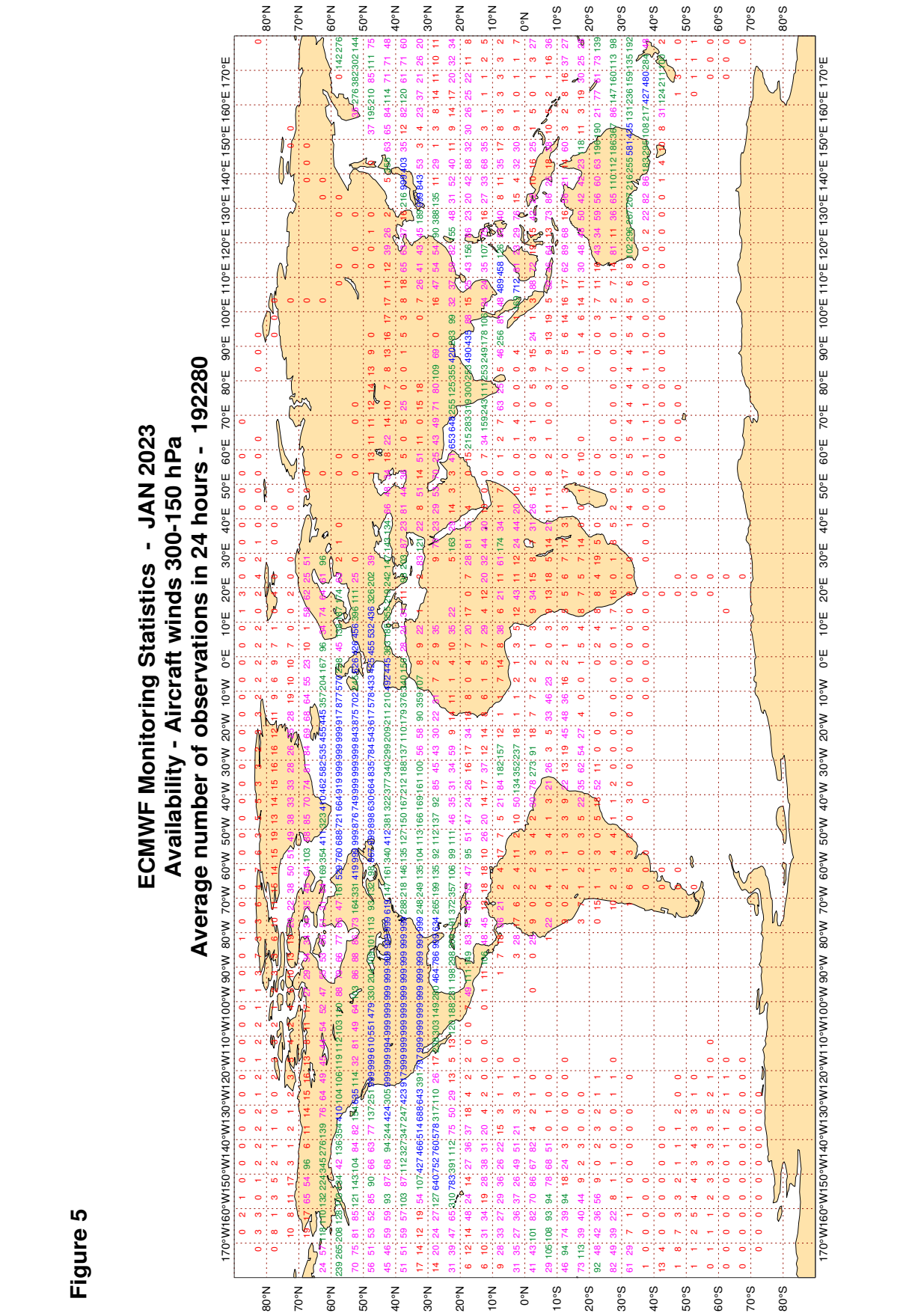
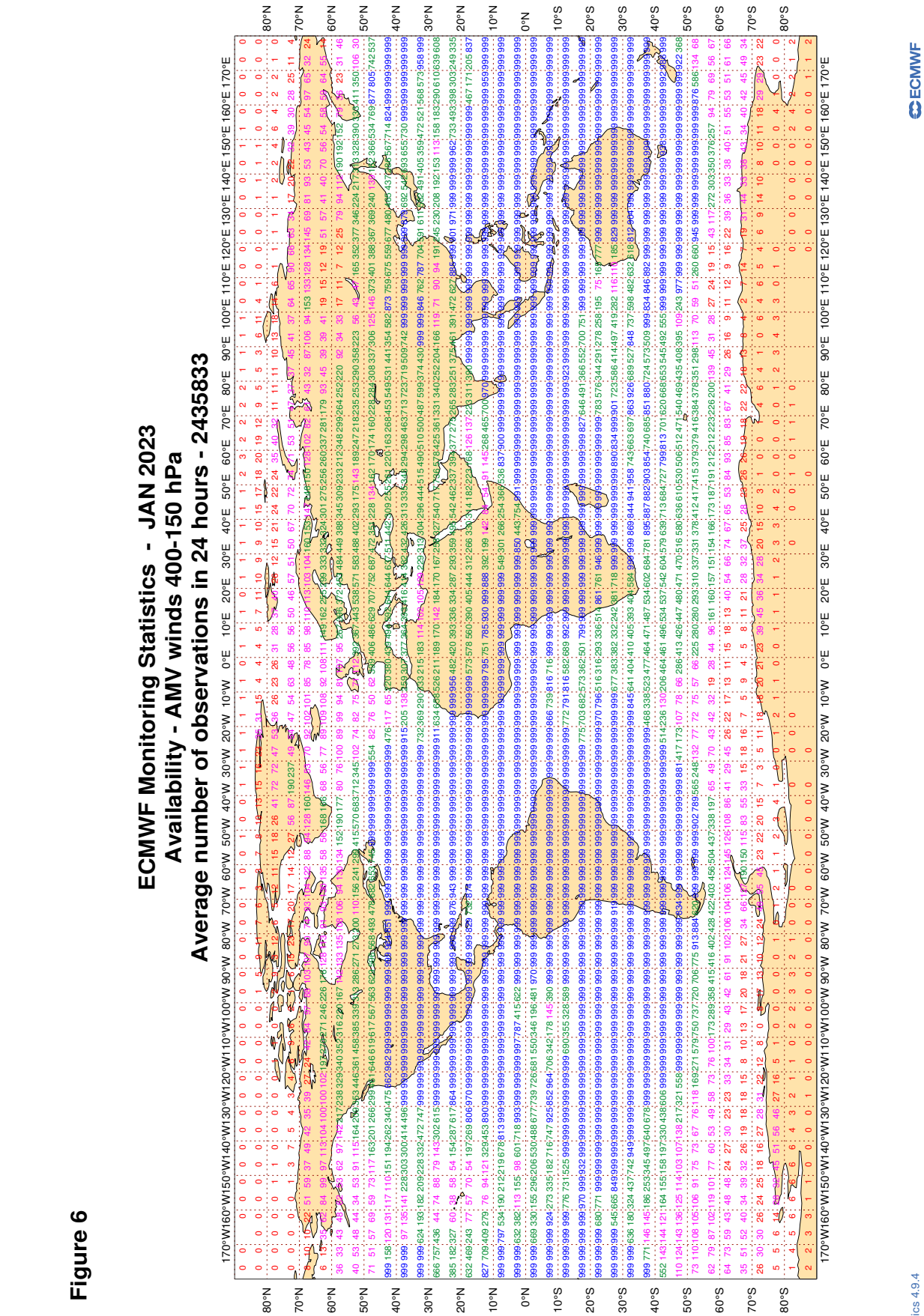


Figure 5

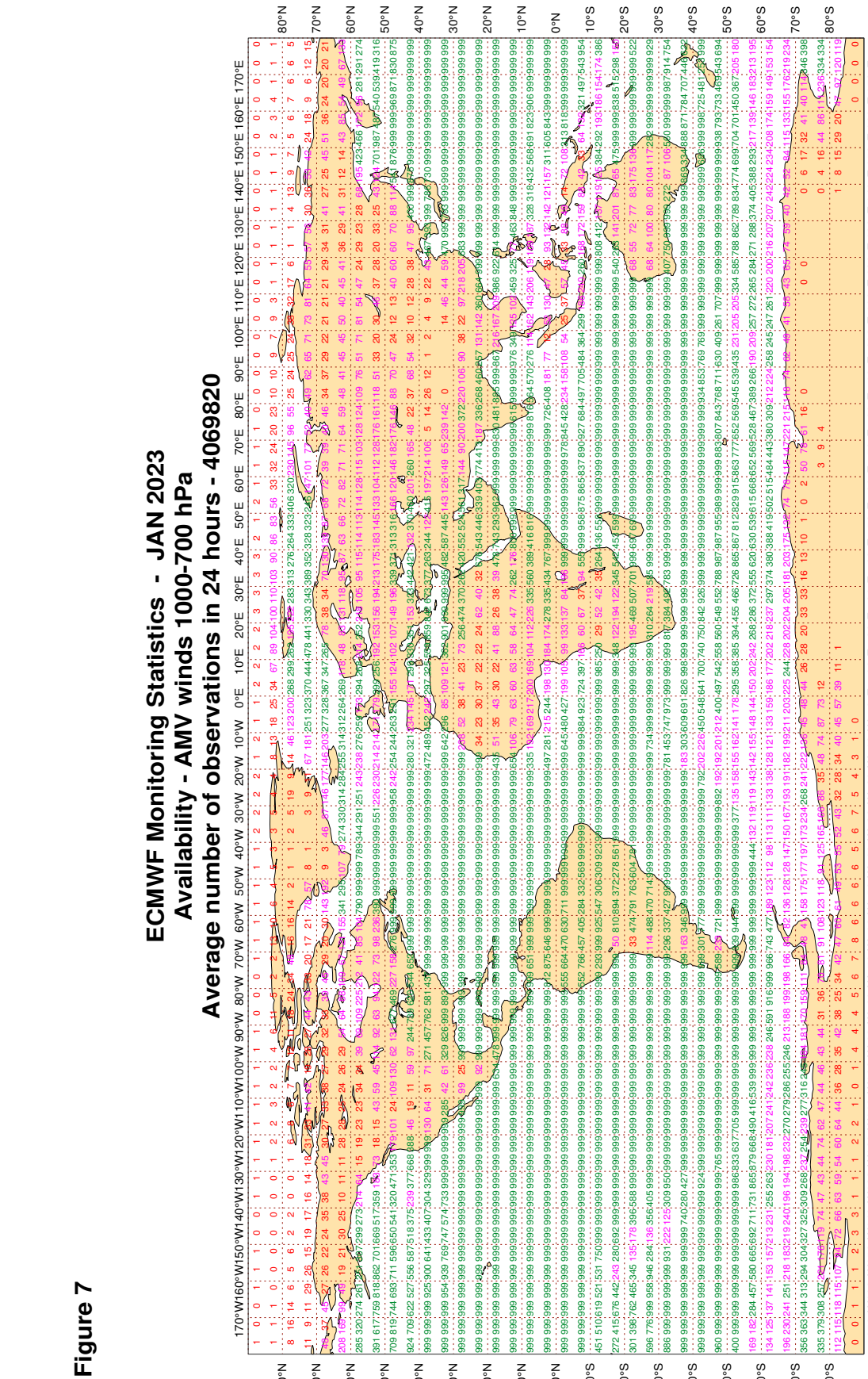
3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6



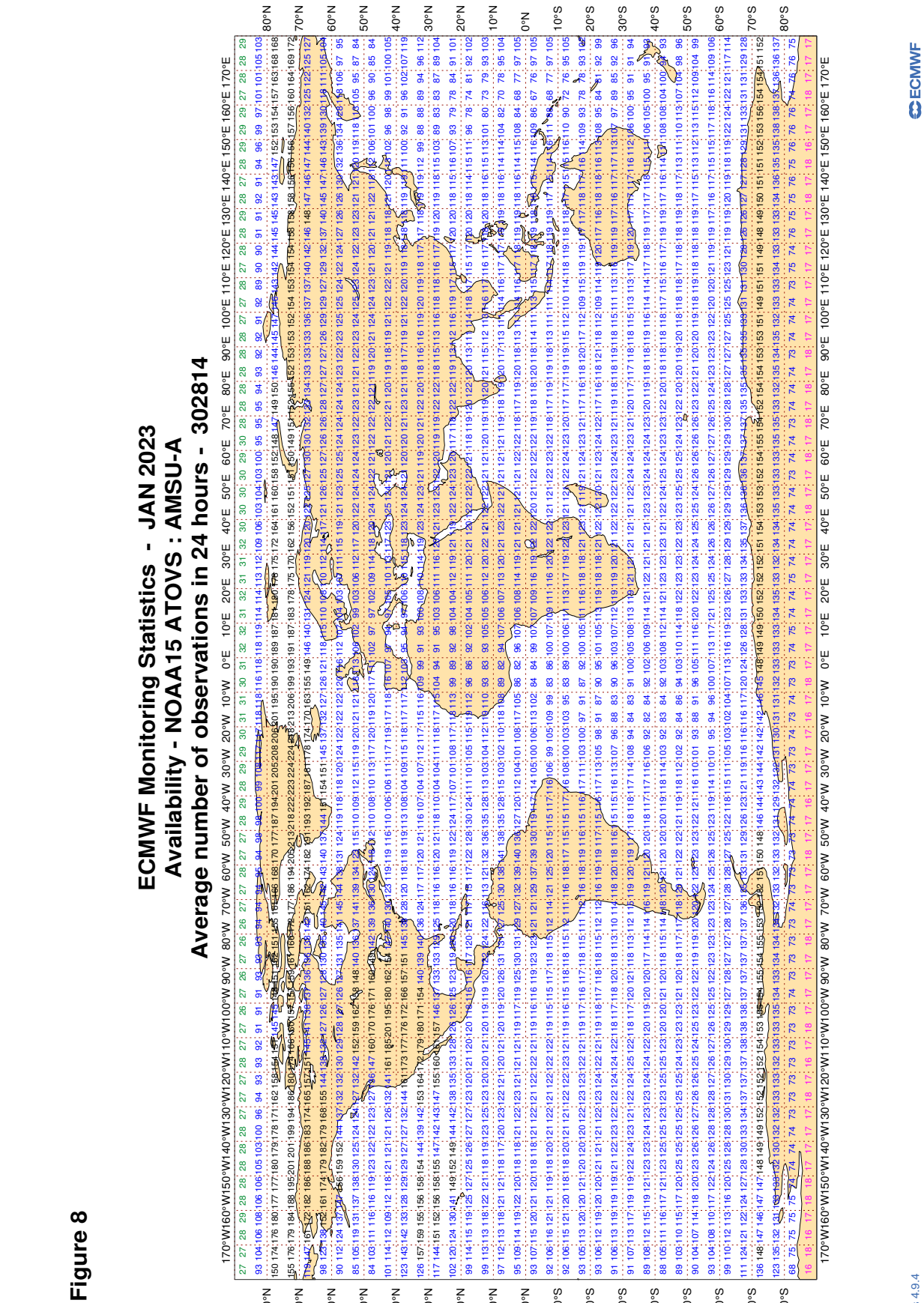
3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

Figure 7



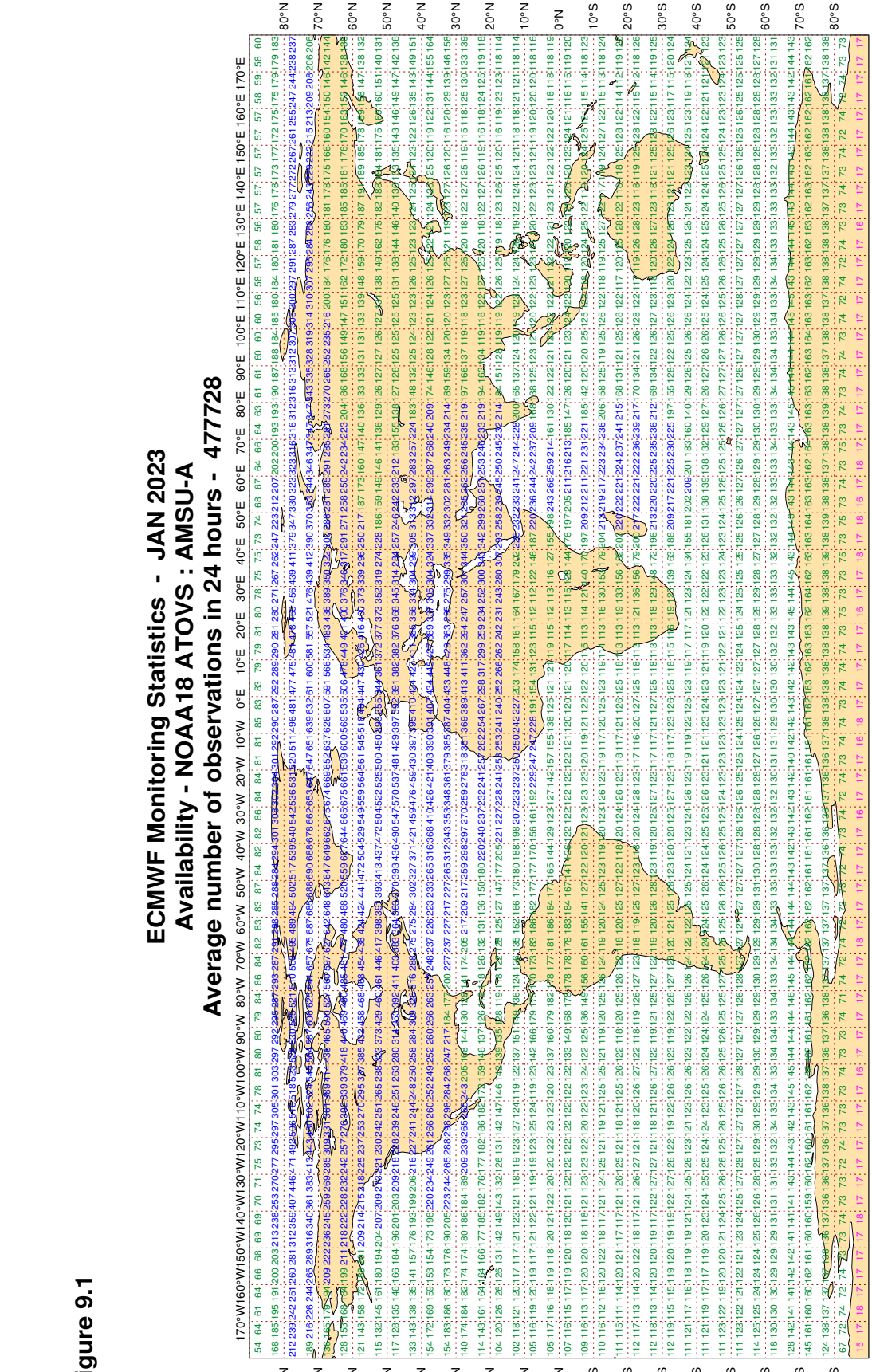
3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

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

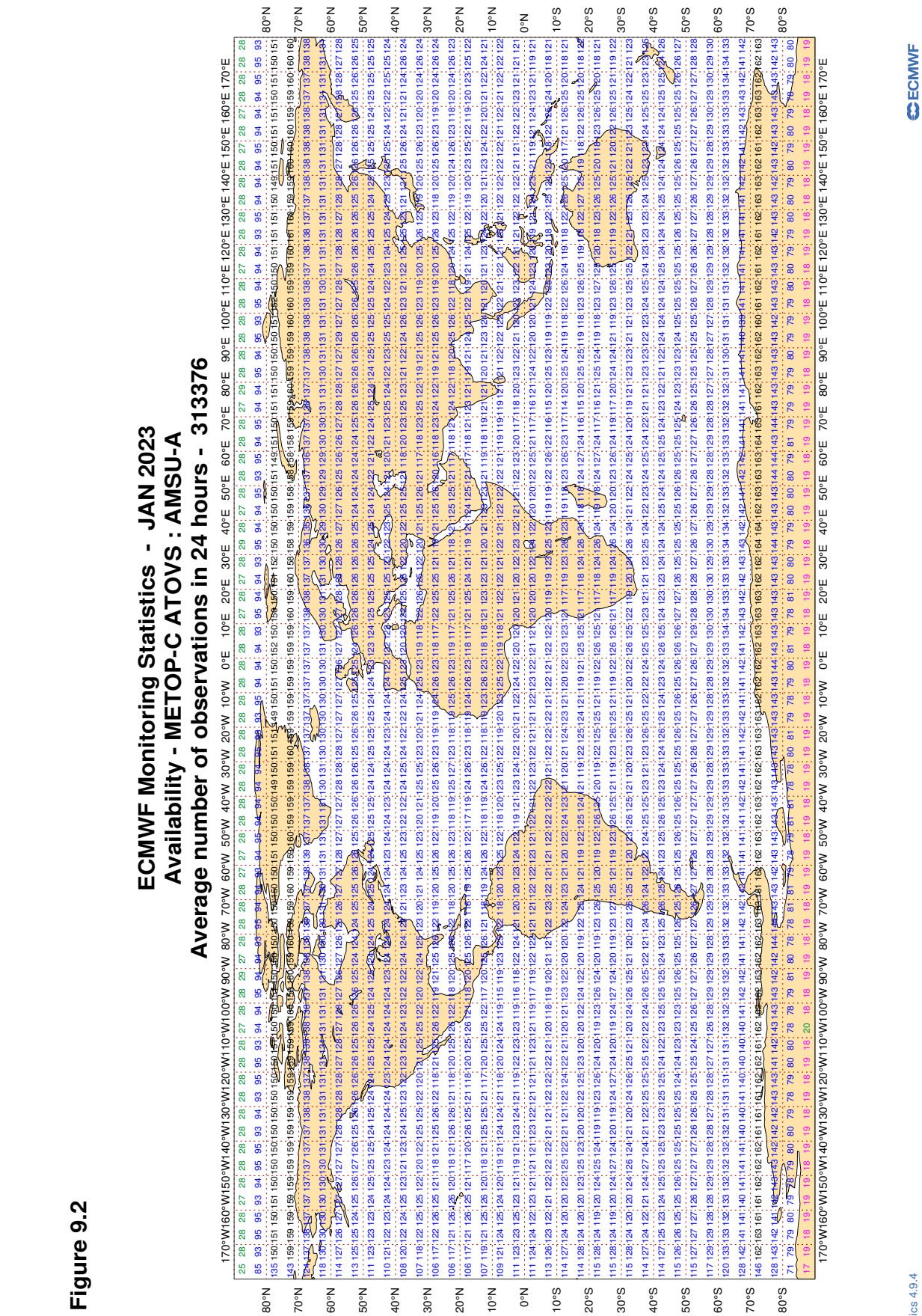


Figure 9.2

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

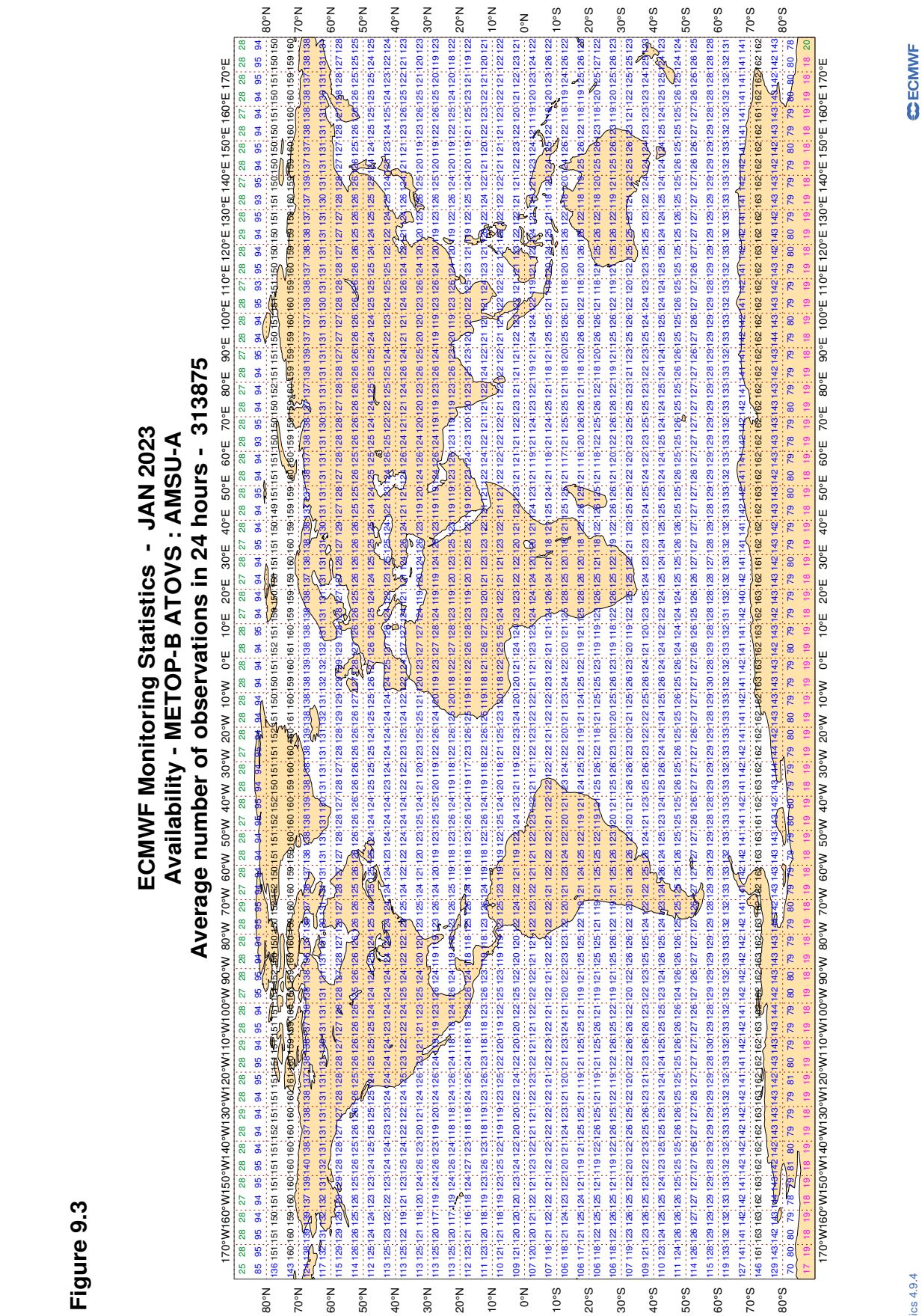


Figure 9.3

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                : JAN 2023
                    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
2EIF7	99	P	SUR	46	0	0.5	4.7	4.7
3E3566	99	P	SUR	24	0	2.2	3.1	3.8
3FJB3	99	P	SUR	63	0	0.7	3.5	3.6
44064	99	P	SUR	124	28	5.4	0.8	5.5
7JQF	99	P	SUR	27	1	0.7	-5.3	5.4
7JWH	99	P	SUR	61	0	0.7	5.4	5.5
7JXX	99	P	SUR	25	0	0.5	-3.5	3.6
9HA4612	99	P	SUR	17	0	0.6	3.5	3.5
9HA4638	99	P	SUR	60	0	1.0	5.0	5.1
9HA4991	99	P	SUR	19	0	2.5	4.2	4.9
9HJB9	99	P	SUR	20	0	0.8	3.6	3.7
9HRJ9	99	P	SUR	40	0	0.5	3.4	3.4
9V3286	99	P	SUR	110	0	2.6	3.9	4.7
9V6745	99	P	SUR	19	2	1.9	11.1	11.2
9V9365	99	P	SUR	118	0	2.0	3.2	3.8
A8FG3	99	P	SUR	15	0	1.0	-7.9	7.9
C6BX9	99	P	SUR	25	0	2.6	-3.4	4.2
C6PZ8	99	P	SUR	18	0	0.9	-4.0	4.1
C6TQ6	99	P	SUR	19	0	3.3	-6.2	7.0
CCGV	99	P	SUR	18	0	2.5	-3.6	4.3
D5DS3	99	P	SUR	32	0	0.5	3.1	3.1
GCWP	99	P	SUR	124	0	3.7	-4.4	5.8
JMJRCES	99	P	SUR	114	1	1.6	-6.3	6.5
KFMV	99	P	SUR	51	0	0.3	-4.5	4.5
LAPD7	99	P	SUR	79	0	2.6	4.0	4.8
PHET	99	P	SUR	19	0	2.7	3.1	4.1
PJWM	99	P	SUR	39	0	0.8	6.9	7.0
SJA4RSK	99	P	SUR	31	0	0.5	-5.3	5.3
UBNJ7	99	P	SUR	15	14	0.0	-12.6	12.6
V7A2668	99	P	SUR	18	0	0.9	5.3	5.4
V7DQ3	99	P	SUR	31	0	1.0	3.8	3.9
VABC	99	P	SUR	33	0	1.8	5.5	5.8

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
VRBQ6	99	P	SUR	28	0	2.6	-3.2	4.1
VRCI9	99	P	SUR	20	1	2.4	4.5	5.1
VRFS2	99	P	SUR	17	0	1.9	5.5	5.8
VRGE3	99	P	SUR	57	0	1.6	-5.3	5.5
VRGO8	99	P	SUR	31	0	2.2	3.2	3.9
VRIB2	99	P	SUR	38	0	1.1	3.7	3.8
VRIC6	99	P	SUR	32	0	0.9	-3.9	4.0
VRJZ9	99	P	SUR	15	0	1.2	3.1	3.3
VRLF8	99	P	SUR	29	0	0.9	3.0	3.2
VRLJ4	99	P	SUR	17	0	1.7	8.0	8.2
VRME7	99	P	SUR	15	0	1.7	9.2	9.3
VRNL2	99	P	SUR	19	0	4.5	3.6	5.8
VRNR6	99	P	SUR	15	2	0.7	-5.4	5.5
VROO4	99	P	SUR	21	1	1.3	10.5	10.6
VRRB6	99	P	SUR	75	0	2.5	4.2	4.9
VRSJ8	99	P	SUR	37	0	0.8	-4.5	4.6
VRSR7	99	P	SUR	18	0	0.8	3.5	3.6
VRWN4	99	P	SUR	25	0	1.9	-5.9	6.2
VWXS	99	P	SUR	78	0	1.9	-5.1	5.4
WGEB	99	P	SUR	20	0	1.1	9.8	9.9
WSQ2674	99	P	SUR	118	98	0.4	-0.2	0.4

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                : JAN 2023
                    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

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                : JAN 2023
                    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	64	0	0	11.5	31.8	33.8
46131	99	DIRN	SUR	72	0	0	42.7	-30.5	52.5

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                 : JAN 2023
                    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
1401826	99	P	SUR	6	80	610	192	2.3	-0.7	2.4
1501696	99	P	SUR	-32	-8	724	0	0.0	-5.6	5.6
1501729	99	P	SUR	-21	-23	718	0	0.3	-4.6	4.6
2101837	99	P	SUR	50	170	713	288	5.6	-1.7	5.9
2302631	99	P	SUR	0	93	488	152	6.0	0.7	6.1
2302636	99	P	SUR	0	86	642	186	3.4	3.9	5.2
3801550	99	P	SUR	88	-52	742	730	0.1	-1.0	1.0
4403556	99	P	SUR	50	-6	166	88	1.7	0.5	1.7
4602573	99	P	SUR	42	-145	703	92	6.0	1.4	6.2
4701658	99	P	SUR	72	-95	694	694	0.0	0.0	0.0
4701738	99	P	SUR	70	-67	731	731	0.0	0.0	0.0
4701744	99	P	SUR	78	-106	732	732	0.0	0.0	0.0
4701747	99	P	SUR	77	-122	739	739	0.0	0.0	0.0
4801636	99	P	SUR	79	-136	590	98	5.0	-6.4	8.1
4802592	99	P	SUR	82	-163	712	712	0.0	0.0	0.0
4802605	99	P	SUR	79	-164	422	422	0.0	0.0	0.0
4802655	99	P	SUR	79	-121	743	641	3.6	-7.9	8.7
5102809	99	P	SUR	8	-104	606	0	0.0	-11.9	11.9
5601693	99	P	SUR	-60	140	718	3	0.9	12.8	12.9
6102804	99	P	SUR	40	3	725	0	0.4	-7.3	7.3
6402587	99	P	SUR	47	-46	584	4	2.7	9.5	9.9

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                : JAN 2023
                    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
2200297	99	SPEED	SUR	34	125	78	0	0	4.0	-6.5	7.7

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

```
          LIST OF SUSPECT STATIONS         : DRIFTER
                    MONITORING CENTRE      : ECMWF
                    ELEMENT MONITORED      : WIND DIRECTION (DEGREES)
                    PERIOD                 : JAN 2023
                    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
2200186	99	DIRN	SUR	36	126	346	0	20	28.3	-49.1	56.7
2300453	99	DIRN	SUR	8	73	36	0	0	16.9	-31.9	36.1
2300454	99	DIRN	SUR	10	73	94	0	4	40.2	20.2	45.0
23453	99	DIRN	SUR	8	73	68	0	0	20.4	-27.5	34.2
23459	99	DIRN	SUR	14	87	20	0	35	9.7	81.6	82.2
23491	99	DIRN	SUR	12	93	175	0	12	39.1	50.9	64.2
4400037	99	DIRN	SUR	43	-68	409	0	0	12.0	30.9	33.1
44037	99	DIRN	SUR	44	-68	397	0	0	12.4	30.8	33.2
4600035	99	DIRN	SUR	57	-178	29	0	0	7.5	45.6	46.2
4600092	99	DIRN	SUR	37	-122	416	0	2	21.6	27.9	35.3
4600121	99	DIRN	SUR	47	-123	100	0	0	25.0	21.2	32.8
4600125	99	DIRN	SUR	48	-123	572	0	0	15.8	29.0	33.0
4600145	99	DIRN	SUR	54	-132	47	0	0	16.7	21.5	27.2
4600204	99	DIRN	SUR	51	-129	665	0	1	17.1	24.7	30.1
4600304	99	DIRN	SUR	49	-123	96	0	1	28.6	25.6	38.4
46035	99	DIRN	SUR	57	-178	30	0	0	7.7	45.1	45.7
46092	99	DIRN	SUR	37	-122	406	0	1	25.1	24.3	34.9
46125	99	DIRN	SUR	48	-123	94	0	0	20.3	25.0	32.3
46131	99	DIRN	SUR	50	-125	426	0	4	27.9	-27.3	39.1
46145	99	DIRN	SUR	54	-132	46	0	0	16.8	20.7	26.7
46204	99	DIRN	SUR	51	-129	660	0	1	18.3	24.5	30.6
6200025	99	DIRN	SUR	44	-6	492	0	0	18.9	-22.8	29.6
6200086	99	DIRN	SUR	55	6	210	0	1	14.8	24.3	28.5
6200199	99	DIRN	SUR	40	-9	289	0	0	16.6	27.8	32.3
62148	99	DIRN	SUR	54	2	1333	0	0	10.4	20.2	22.7
6301003	99	DIRN	SUR	74	24	439	0	0	13.4	26.7	29.9
6600022	99	DIRN	SUR	54	14	265	1	34	31.5	33.1	45.7

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                : JAN 2023
                    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	12	Z	1000	57	3	26	0	6.7	75.4	75.7
01400	00	Z	1000	57	3	28	0	5.5	74.9	75.1
23921	00	Z	200	61	60	31	0	128.6	81.1	152.0
23921	12	Z	200	61	60	31	3	83.2	104.4	133.5
25123	12	Z	300	69	161	30	0	34.2	-59.1	68.3
40437	12	Z	925	24	44	29	2	8.4	35.2	36.2
62378	12	Z	400	30	31	15	0	54.9	55.7	78.2
62403	12	Z	925	26	33	20	0	44.2	36.6	57.4
91680	00	Z	1000	-18	177	30	0	2.5	30.8	30.9
96315	00	Z	1000	5	115	29	0	9.7	58.3	59.1
96315	12	Z	1000	5	115	28	0	7.5	56.3	56.8
97690	00	Z	925	-3	141	31	0	5.9	88.4	88.6
98233	00	Z	1000	18	122	26	0	28.4	44.4	52.7
98558	00	Z	1000	11	126	19	0	29.4	17.7	34.3
JNKN7J	12	Z	1000	45	-59	12	0	4.9	39.1	39.4
JNKN7J	00	Z	1000	46	-55	13	0	11.8	42.5	44.1
KMPLHP	12	Z	925	57	-18	12	0	16.5	55.7	58.1
KMPLHP	00	Z	1000	56	-13	14	0	17.8	51.2	54.2

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                : JAN 2023
                    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
42667	00	V	150	23	77	15	0	-7.0	-12.8	15.2

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                : JAN 2023
                    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	9	-26.9	3.3	6.5

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

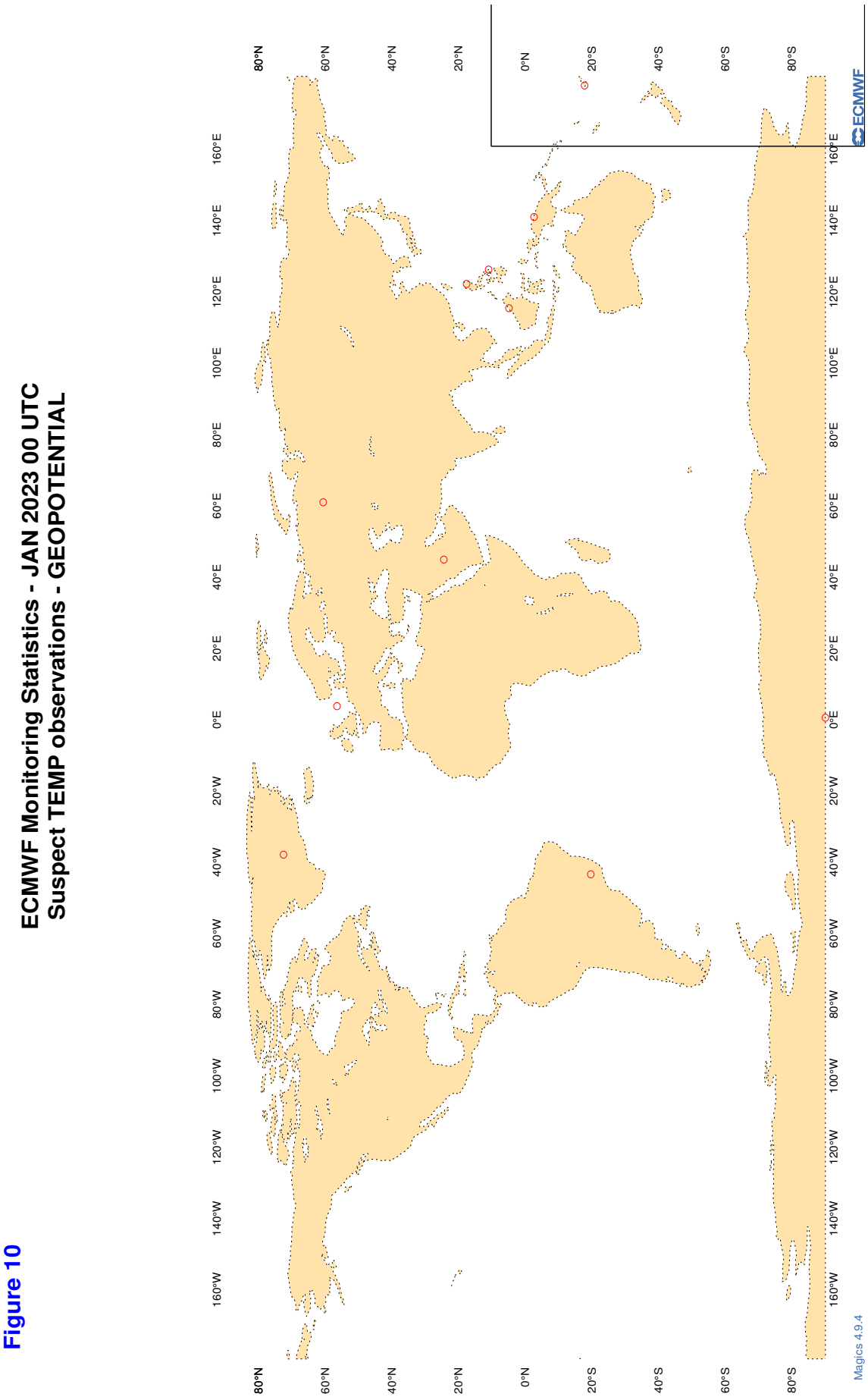


Figure 10

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

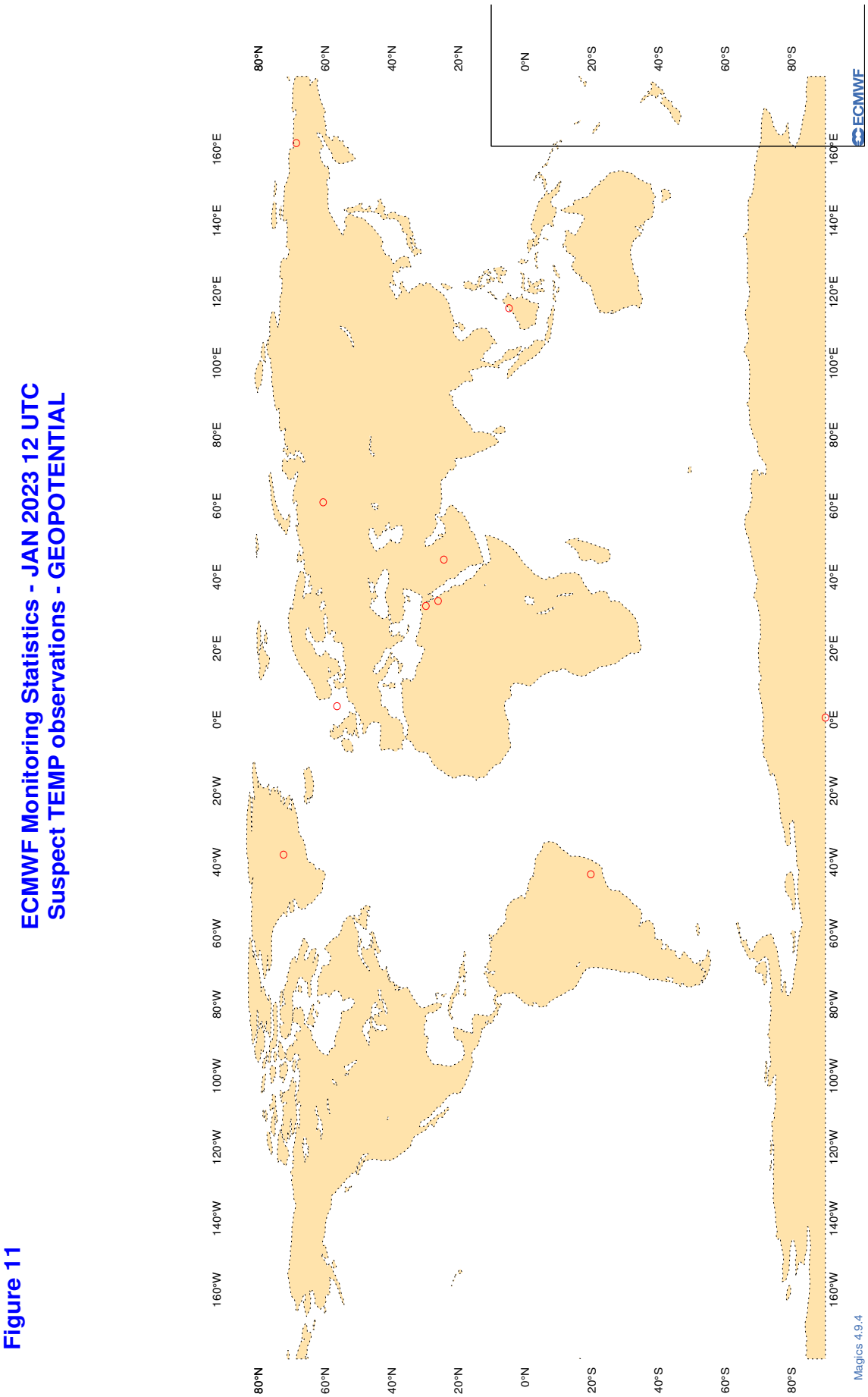
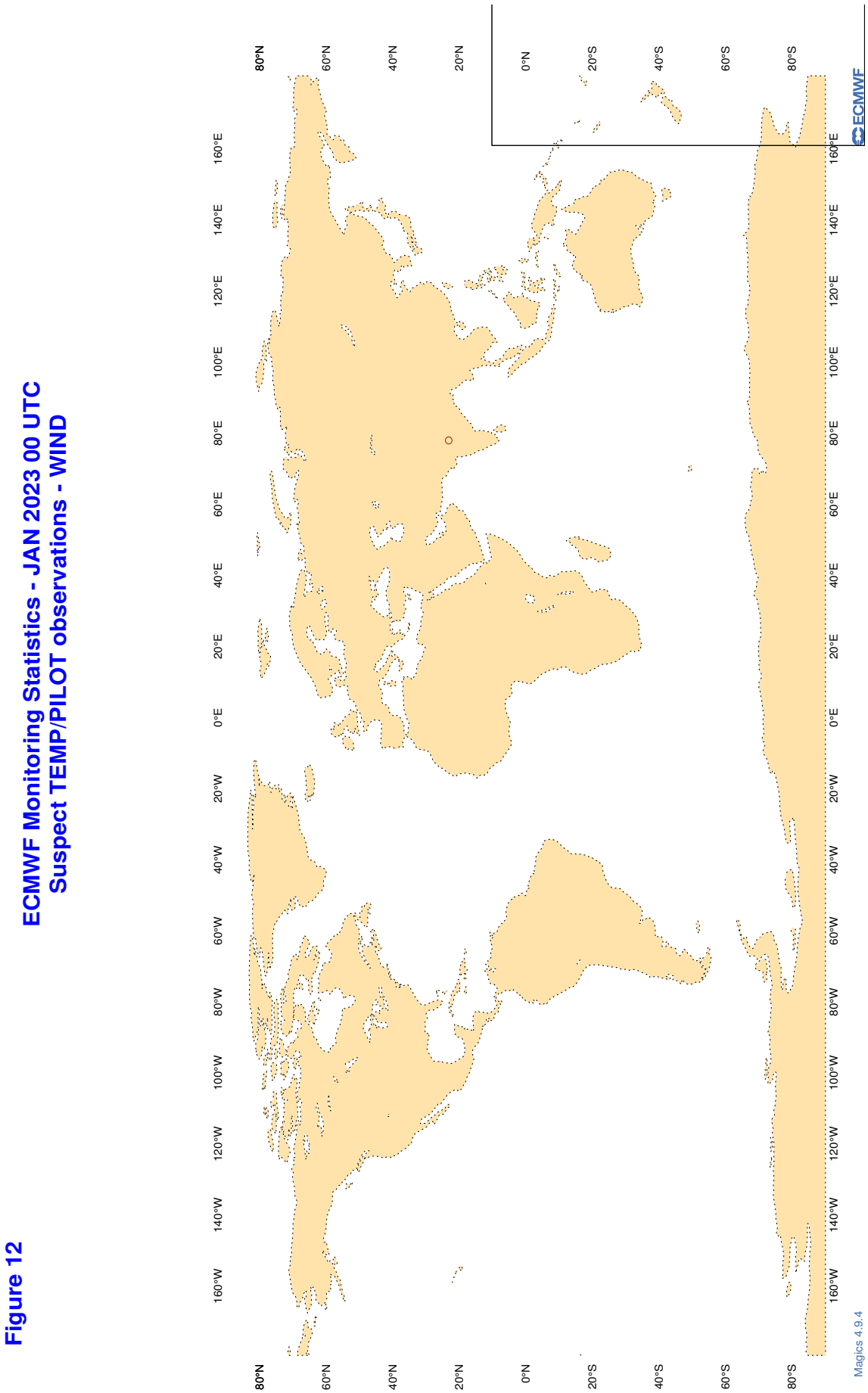
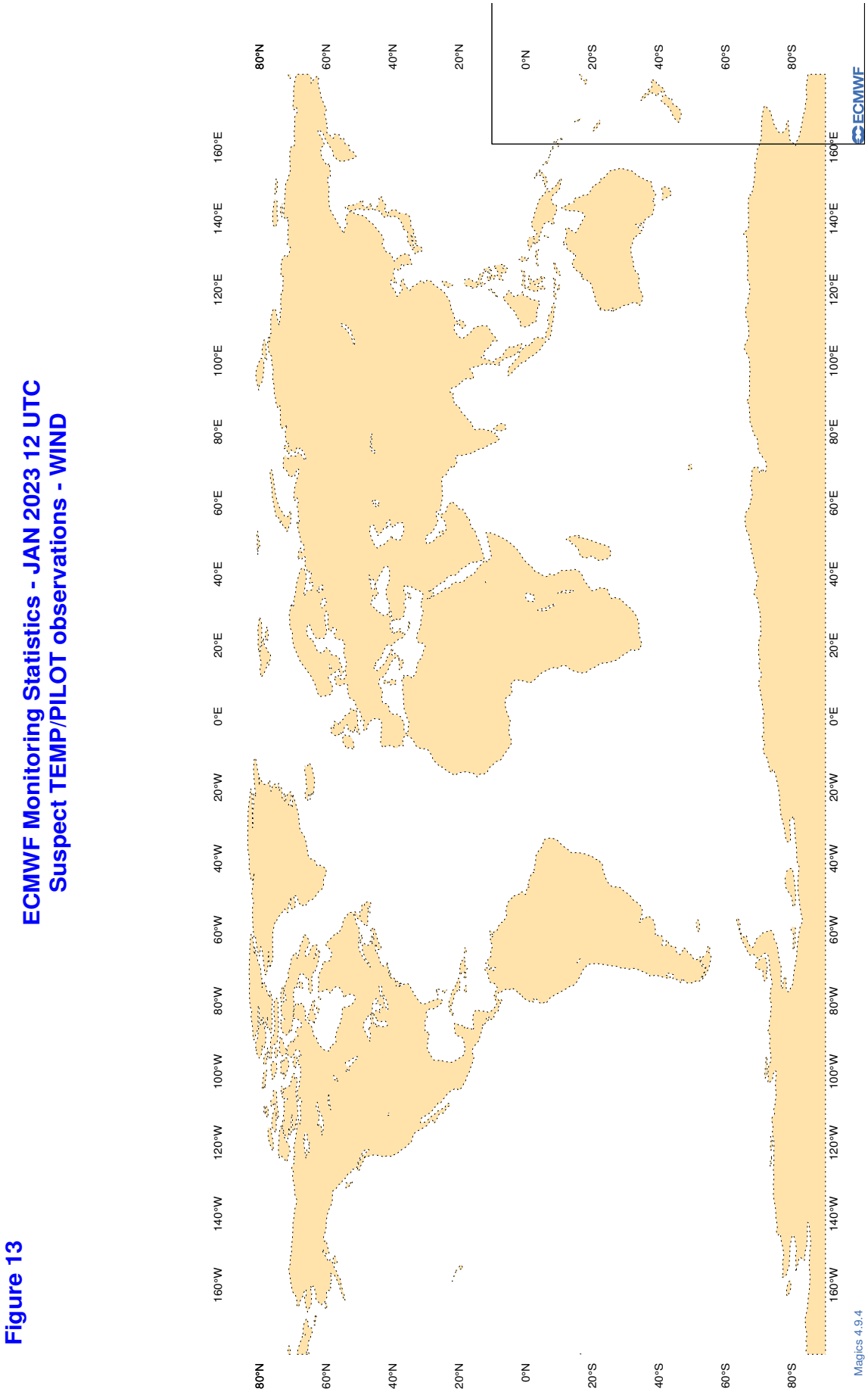


Figure 11

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	00	Z	100	3	7.6	-3.6
7JUNA4	12	Z	100	4	11.8	1.5
9ZT9MR	00	Z	100	3	13.9	-11.7
9ZT9MR	12	Z	100	4	18.3	-13.6
ASDE09	12	Z	100	2	11.7	10.5
ATGU3F	12	Z	100	1	18.4	-18.4
BPMWB2	12	Z	100	2	8.1	8.0
BPMWB2	00	Z	100	2	8.3	4.3
DBLK	12	Z	100	33	13.4	11.2
FPUW5G	12	Z	100	2	3.2	1.2
GQBZLZ	12	Z	100	2	87.0	-72.6
GQBZLZ	00	Z	100	1	109.9	-109.9
JGQH	00	Z	100	2	14.2	-0.7
JGQH	12	Z	100	3	11.2	9.2
JNKN7J	12	Z	100	12	26.0	23.1
JNKN7J	00	Z	100	13	24.0	21.4
KJJF9X	12	Z	100	5	8.5	5.5
KJJF9X	00	Z	100	6	6.0	4.7
KMPLHP	12	Z	100	9	81.0	69.0
KMPLHP	00	Z	100	13	39.7	34.5
LAGZ8	00	Z	100	2	224.4	224.4
LRYQE3	00	Z	100	10	13.6	-7.3
LRYQE3	12	Z	100	11	8.0	2.3
UBQW2	00	Z	100	31	27.2	-25.1
UBQW2	12	Z	100	31	27.6	-21.5
USBOD	12	Z	100	21	18.4	-14.5
USBOD	00	Z	100	12	20.2	-18.9
USSIO	00	Z	100	1	1.6	1.6
USSIO	12	Z	100	2	12.9	-12.8
USSOD	00	Z	100	0	0.0	0.0
USSOD	12	Z	100	1	12.9	-12.9
USYUB	12	Z	100	14	12.1	-1.5
USYUB	00	Z	100	11	18.7	-5.9
UXK5JT	00	Z	100	2	4.2	-3.4
UXK5JT	12	Z	100	3	12.0	-7.5
XKQLWQ	12	Z	100	10	39.7	34.3
XQFJRG	12	Z	100	9	21.7	-17.1
XQFJRG	00	Z	100	6	11.8	-3.4
YLV96W	12	Z	100	8	30.3	6.2

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
YLV96W	00	Z	100	10	7.4	-3.4
ZVQEQC	12	Z	100	18	13.7	11.3

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	00	V	100	3	2.8	-0.3	-1.9
7JUNA4	12	V	100	4	3.2	-0.2	0.4
9ZT9MR	00	V	100	3	2.5	-0.7	1.0
9ZT9MR	12	V	100	4	2.3	1.3	-0.5
ASDE09	12	V	100	2	2.7	-0.7	-2.0
ATGU3F	12	V	100	1	1.1	-0.7	-0.8
BPMWB2	12	V	100	2	3.9	-0.3	-1.2
BPMWB2	00	V	100	2	2.9	1.1	-1.5
DBLK	12	V	100	31	5.5	-1.3	0.7
FPUW5G	12	V	100	2	6.0	-1.5	-3.7
GQBZLZ	12	V	100	2	4.6	-3.0	2.1
GQBZLZ	00	V	100	1	2.0	-1.9	-0.7
JGQH	00	V	100	2	4.9	2.3	0.9
JGQH	12	V	100	3	4.5	-0.4	0.4
JNKN7J	12	V	100	12	4.3	0.7	1.7
JNKN7J	00	V	100	13	3.1	0.6	0.8
KJJF9X	12	V	100	5	4.2	1.2	0.4
KJJF9X	00	V	100	6	4.6	-2.0	1.9
KMPLHP	12	V	100	9	3.7	-1.2	-0.1
KMPLHP	00	V	100	13	2.1	0.0	-0.1
LAGZ8	00	V	100	2	3.2	-0.6	2.9
LRYQE3	00	V	100	10	3.2	0.2	0.2
LRYQE3	12	V	100	11	3.7	0.2	0.9
UBQW2	00	V	100	31	3.0	0.7	-0.6
UBQW2	12	V	100	31	3.1	0.5	-0.8
USBOD	12	V	100	9	5.0	0.5	-0.1
USBOD	00	V	100	7	4.3	-2.9	-0.9
USSIO	00	V	100	1	3.2	1.1	3.0
USSIO	12	V	100	1	2.6	0.0	-2.6
USSOD	00	V	100	0	0.0	0.0	0.0
USSOD	12	V	100	0	0.0	0.0	0.0
USYUB	12	V	100	7	3.8	1.1	1.3
USYUB	00	V	100	8	7.6	-1.8	-2.7
UXK5JT	00	V	100	2	2.4	1.2	-2.0
UXK5JT	12	V	100	3	2.7	0.2	-1.1
XKQLWQ	12	V	100	8	2.9	1.3	0.4
XQFJRG	12	V	100	9	3.7	-1.8	0.9
XQFJRG	00	V	100	6	3.6	0.1	0.1
YLV96W	12	V	100	8	3.0	-1.4	0.6

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
YLV96W	00	V	100	10	3.4	0.4	0.4
ZVQEQC	12	V	100	18	4.2	0.0	-0.7

3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

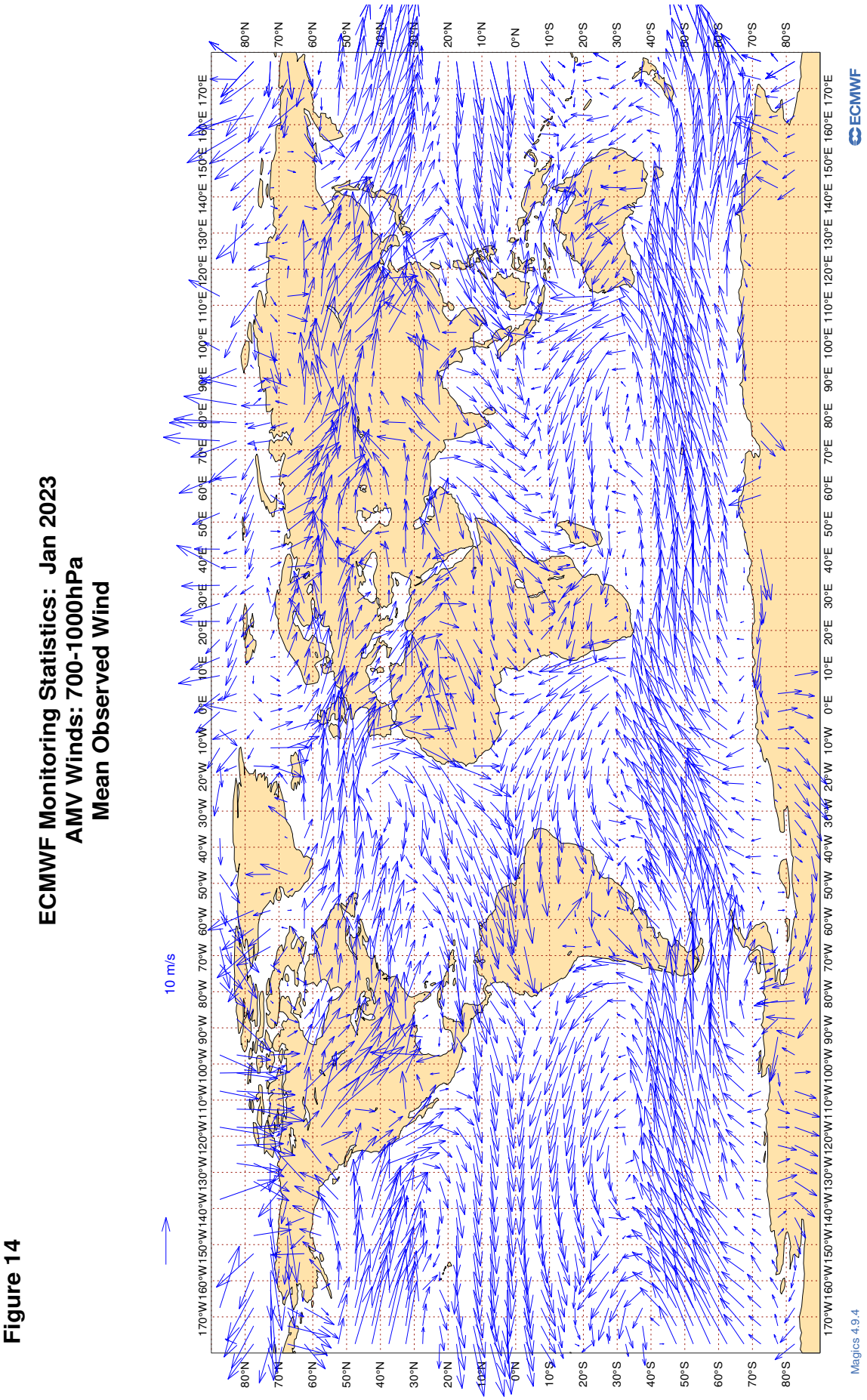


Figure 14

3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

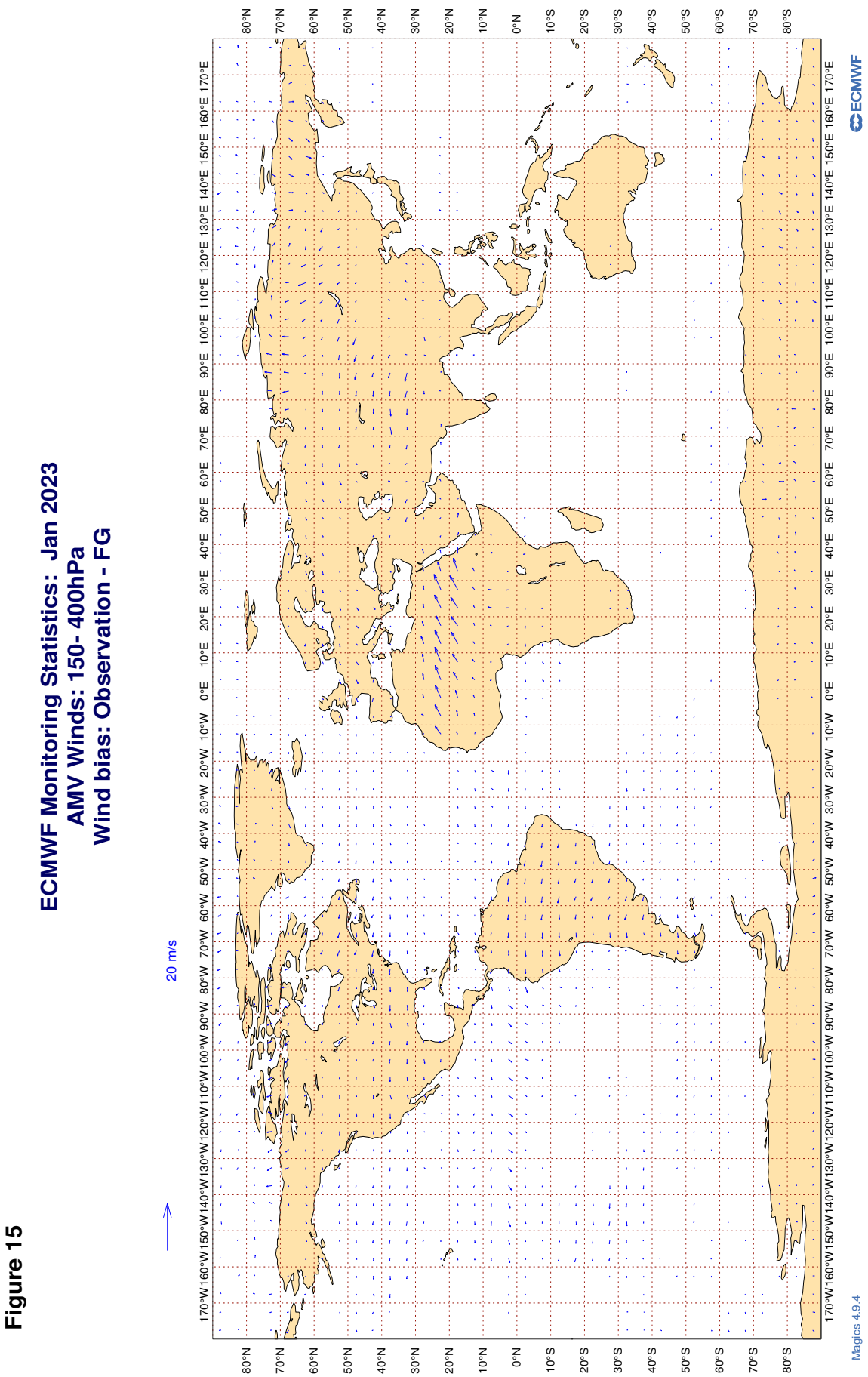


Figure 15

3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

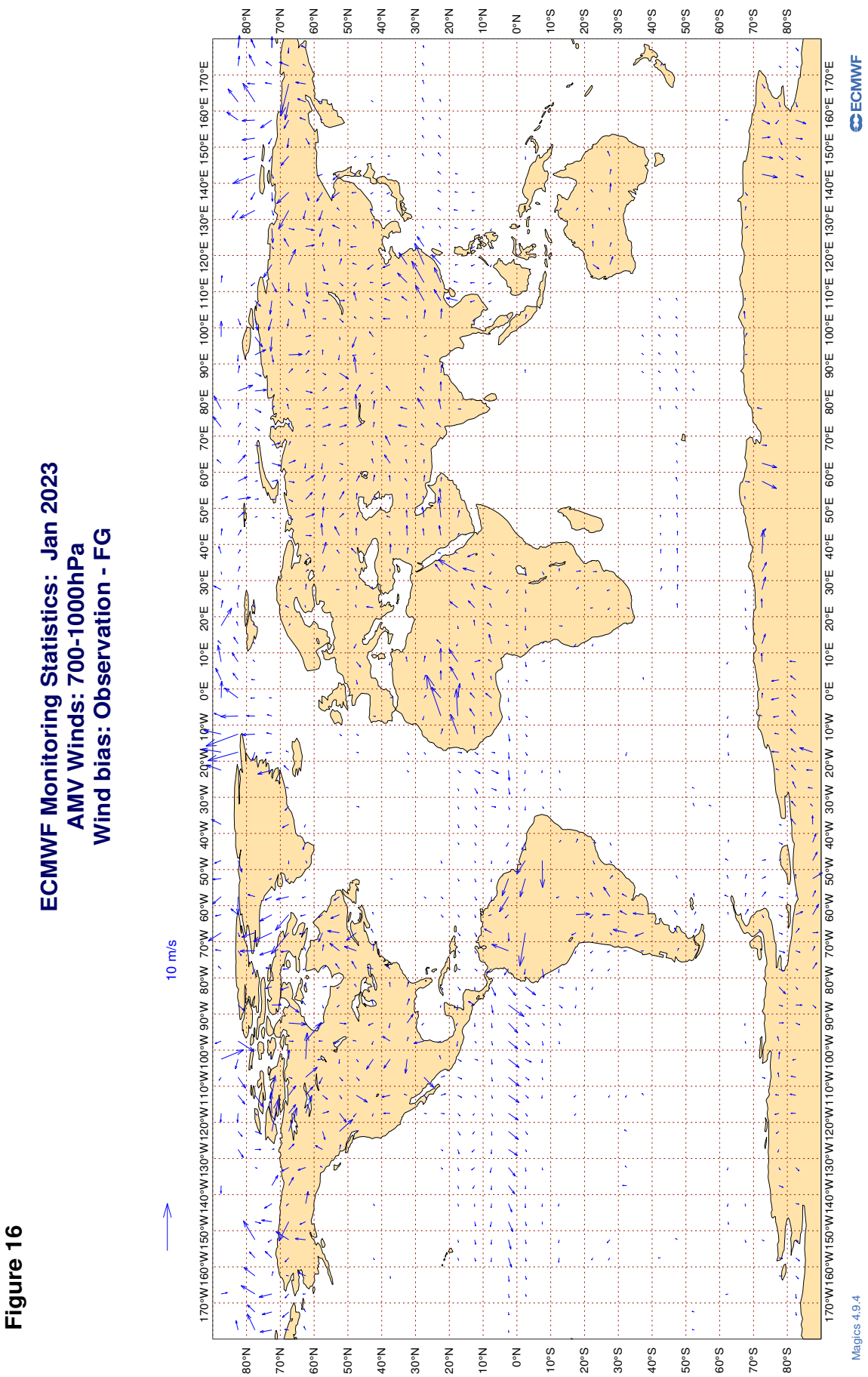


Figure 16

3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

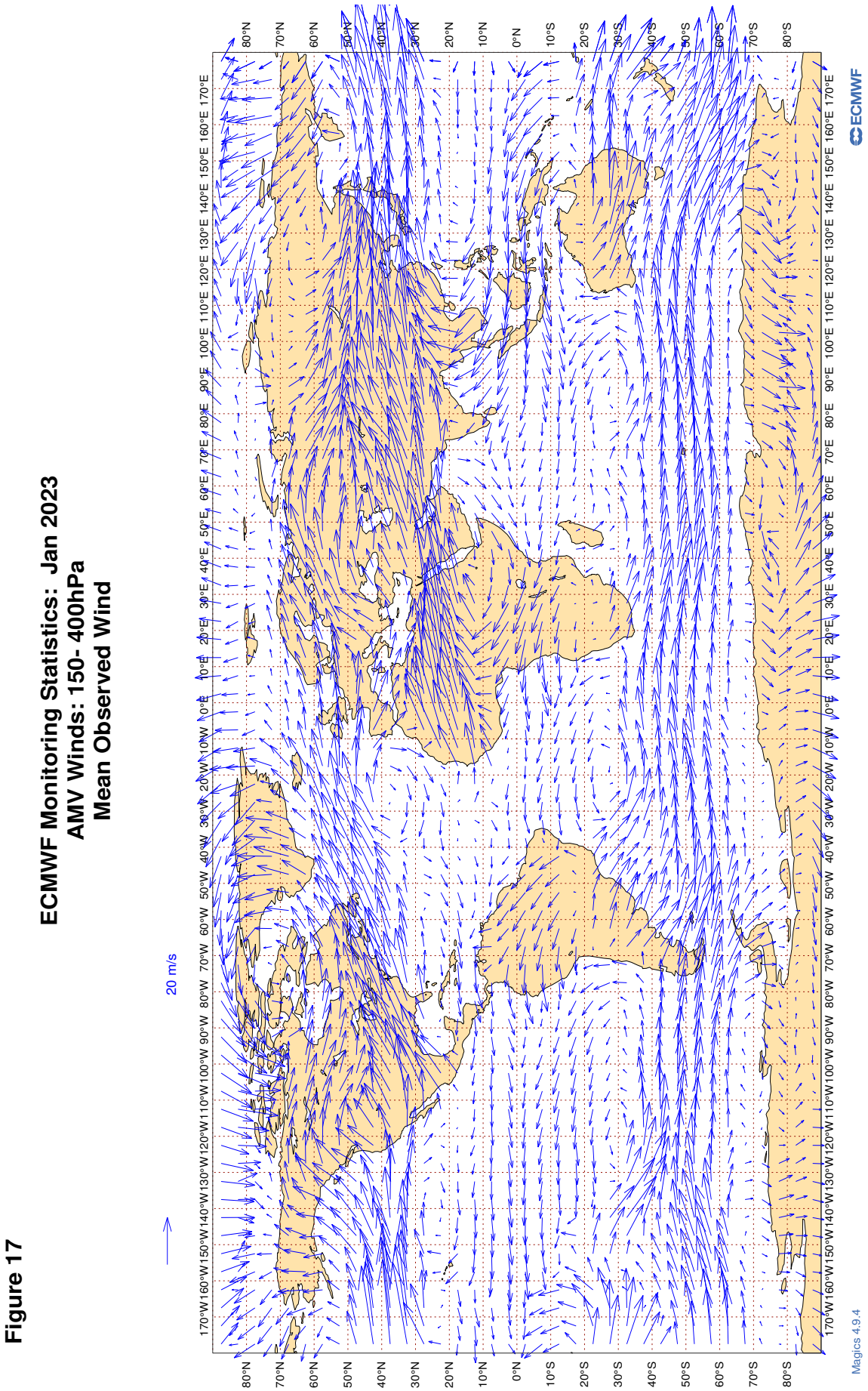


Figure 17

3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

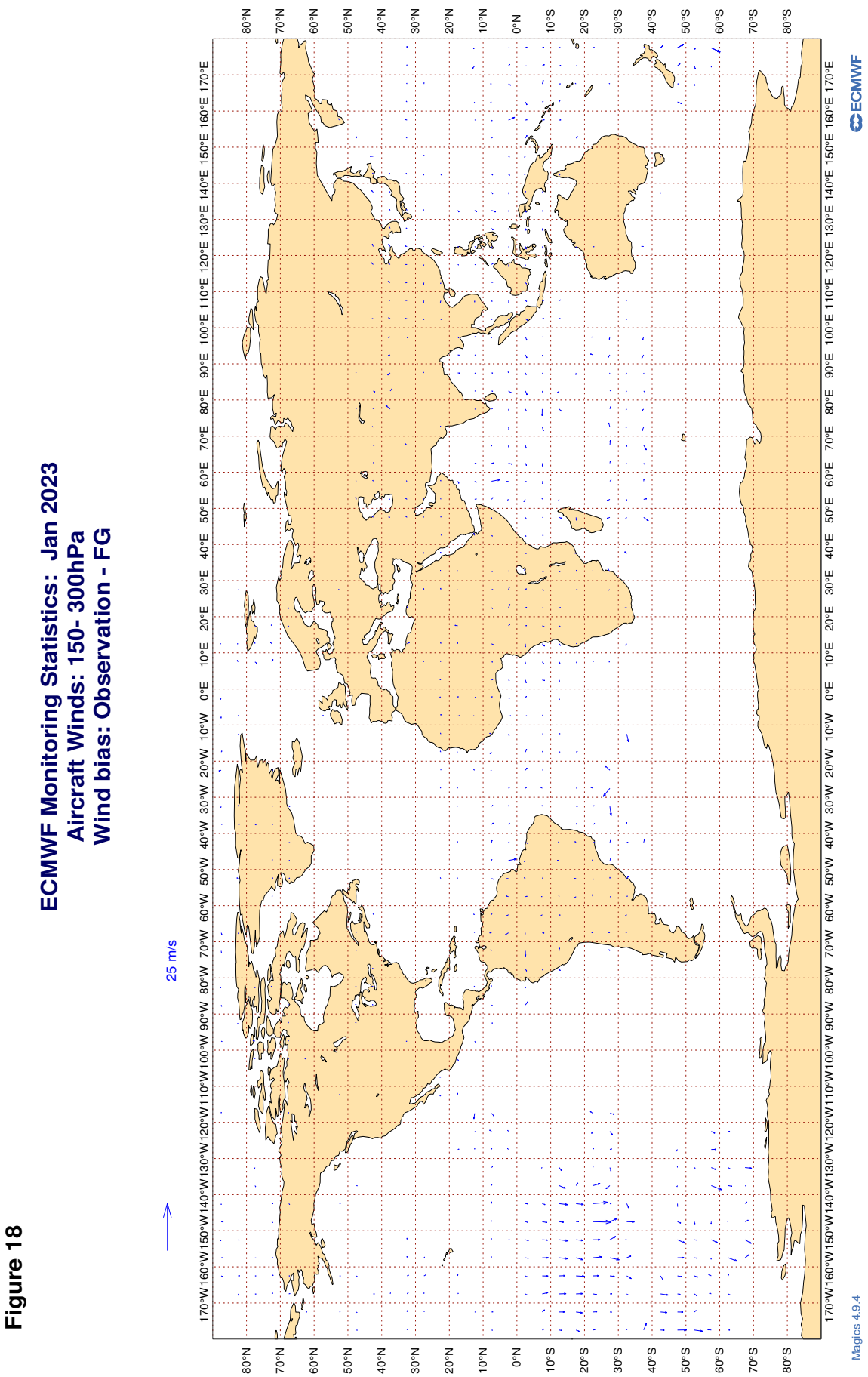


Figure 18

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                : JAN 2023
                   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
AAL	99	V	300-150	35460	4	0	5.4	0.1
AAR	99	V	300-150	236	0	0	4.6	-0.9
ABB	99	V	300-150	449	0	0	4.0	0.5
ABD	99	V	300-150	1181	0	0	4.0	-0.3
ABP	99	V	300-150	54	0	0	3.5	-0.6
ABX	99	V	300-150	224	0	0	3.8	-0.7
ACA	99	V	300-150	22721	5	0	5.0	0.0
ACI	99	V	300-150	413	0	0	3.9	0.7
ADL	99	V	300-150	33	0	0	3.5	0.6
AEA	99	V	300-150	504	10	1	7.1	0.3
AEE	99	V	300-150	33	0	0	4.0	-0.4
AFR	99	V	300-150	30915	1	0	4.0	0.2
AHO	99	V	300-150	679	0	0	3.7	0.0
AIB	99	V	300-150	22	0	0	2.7	-1.0
AIC	99	V	300-150	5333	3	0	7.5	0.2
AJT	99	V	300-150	131	0	0	3.4	0.1
AKK	99	V	300-150	20	0	0	4.0	0.7
ALK	99	V	300-150	1883	0	0	3.2	0.5
AMX	99	V	300-150	3267	11	0	5.6	-0.2
ANA	99	V	300-150	197	3	0	7.1	0.7
ANZ	99	V	300-150	22585	1	0	6.4	0.2
AOJ	99	V	300-150	192	0	0	3.0	0.0
ASA	99	V	300-150	32	6	3	5.8	1.0
ASJ	99	V	300-150	53	0	0	5.2	0.4

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	436	0	0	3.6	-0.1
ASY	99	V	300-150	86	0	1	4.3	0.4
ATC	99	V	300-150	190	2	0	9.7	0.8
ATG	99	V	300-150	136	0	0	3.2	1.3
ATN	99	V	300-150	209	0	0	4.2	0.5
AUA	99	V	300-150	3176	0	0	3.9	-0.1
AVA	99	V	300-150	419	6	0	6.4	0.0
AWC	99	V	300-150	394	0	0	3.6	0.2
AXM	99	V	300-150	123	0	1	5.6	0.6
AXY	99	V	300-150	182	0	0	3.3	-0.2
AYJ	99	V	300-150	38	0	0	3.7	0.5
AZG	99	V	300-150	628	0	0	3.6	0.2
BAH	99	V	300-150	50	0	0	3.4	0.3
BAV	99	V	300-150	195	3	0	6.7	0.6
BAW	99	V	300-150	46046	3	0	4.6	0.0
BBC	99	V	300-150	863	5	0	5.0	0.7
BCS	99	V	300-150	2078	0	0	3.5	0.2
BEL	99	V	300-150	829	0	0	3.5	0.1
BFY	99	V	300-150	27	0	4	3.7	1.8
BLX	99	V	300-150	1348	5	1	7.0	0.4
BMW	99	V	300-150	54	0	0	3.6	0.9
BOL	99	V	300-150	61	0	0	8.7	-0.6
BOX	99	V	300-150	4673	0	0	3.5	0.1
BRK	99	V	300-150	21	0	0	5.0	2.3
BTX	99	V	300-150	73	0	0	4.3	-0.1
BVR	99	V	300-150	34	0	0	4.3	-1.4
CAL	99	V	300-150	1821	0	0	3.3	0.6
CAZ	99	V	300-150	126	0	0	3.2	0.4
CBJ	99	V	300-150	44	0	0	3.5	-0.4
CCA	99	V	300-150	115	0	1	3.6	0.3
CEB	99	V	300-150	851	0	0	3.2	0.5
CES	99	V	300-150	204	0	0	3.3	0.5
CFC	99	V	300-150	214	0	0	4.0	-0.1
CFG	99	V	300-150	4893	0	0	3.8	0.1
CHG	99	V	300-150	708	0	0	4.1	0.0
CHH	99	V	300-150	34	0	0	3.6	-0.1
CJT	99	V	300-150	1363	0	0	4.0	-0.3
CKS	99	V	300-150	1167	0	0	3.8	0.4
CLF	99	V	300-150	77	0	0	3.5	0.6
CLX	99	V	300-150	4575	0	0	3.7	-0.3
CLY	99	V	300-150	66	0	0	3.2	1.0
CMA	99	V	300-150	350	0	0	3.1	0.0
CMB	99	V	300-150	1366	0	0	4.0	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CNV	99	V	300-150	95	0	0	3.6	0.3
CPA	99	V	300-150	1582	0	0	3.5	0.6
CPJ	99	V	300-150	34	0	0	3.5	0.3
CRL	99	V	300-150	953	0	1	3.4	0.5
CRV	99	V	300-150	48	0	0	4.7	-0.6
CSC	99	V	300-150	428	0	0	2.8	0.3
CSN	99	V	300-150	540	2	0	4.8	0.3
CSS	99	V	300-150	36	0	0	3.1	0.4
CTM	99	V	300-150	98	0	0	3.2	-0.3
DAH	99	V	300-150	661	0	0	3.7	-0.1
DAL	99	V	300-150	45769	0	0	3.4	0.1
DCM	99	V	300-150	20	0	0	3.5	-0.8
DEE	99	V	300-150	26	0	0	4.4	0.5
DGX	99	V	300-150	29	0	0	2.9	0.3
DHK	99	V	300-150	2113	0	0	4.0	-0.1
DHX	99	V	300-150	190	0	0	3.3	0.8
DJT	99	V	300-150	1586	0	0	3.6	0.0
DLH	99	V	300-150	21039	1	0	3.7	0.0
DSO	99	V	300-150	48	0	0	4.2	0.3
DUB	99	V	300-150	42	0	0	2.8	-0.1
EAU	99	V	300-150	60	0	0	4.4	0.5
EDC	99	V	300-150	103	0	0	4.1	0.5
EDG	99	V	300-150	91	0	0	4.0	0.4
EDW	99	V	300-150	1044	0	0	3.5	0.4
EIN	99	V	300-150	11121	0	0	3.4	0.2
EJM	99	V	300-150	617	0	0	3.7	0.3
ELY	99	V	300-150	5030	9	0	7.1	0.0
ESW	99	V	300-150	43	0	0	4.1	1.9
ETD	99	V	300-150	11546	3	0	6.3	0.2
ETH	99	V	300-150	6385	3	0	5.6	0.2
EUK	99	V	300-150	1547	0	0	3.4	0.1
EVA	99	V	300-150	1669	3	0	5.1	0.1
EXS	99	V	300-150	166	0	0	2.7	0.3
EXV	99	V	300-150	59	0	0	2.8	0.7
FAF	99	V	300-150	43	0	0	3.7	0.3
FBU	99	V	300-150	2079	0	0	3.7	0.0
FDX	99	V	300-150	7112	0	0	3.4	0.2
FFM	99	V	300-150	47	0	0	6.0	1.0
FIN	99	V	300-150	2941	0	0	3.3	0.2
FJI	99	V	300-150	2940	0	0	4.4	0.5
FJO	99	V	300-150	97	0	0	3.3	0.4
FLC	99	V	300-150	26	0	0	3.4	-0.2
FPY	99	V	300-150	1686	0	0	2.9	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FWI	99	V	300-150	1920	0	1	3.6	0.3
FYG	99	V	300-150	176	0	0	4.3	1.3
FYL	99	V	300-150	31	0	0	6.3	1.5
GAF	99	V	300-150	43	0	0	3.2	0.5
GBG	99	V	300-150	26	0	0	2.8	0.8
GCK	99	V	300-150	56	0	0	3.8	0.2
GEC	99	V	300-150	1514	0	0	3.4	0.1
GES	99	V	300-150	72	26	0	11.1	0.3
GFA	99	V	300-150	813	1	0	7.4	0.8
GIA	99	V	300-150	825	0	0	3.0	0.3
GJE	99	V	300-150	52	0	0	3.1	-0.4
GJW	99	V	300-150	49	0	0	2.8	-0.6
GKY	99	V	300-150	25	0	0	3.4	-0.5
GLH	99	V	300-150	29	0	0	2.8	-0.2
GLJ	99	V	300-150	21	0	0	2.5	0.0
GMA	99	V	300-150	23	0	0	3.4	-0.8
GRB	99	V	300-150	28	0	0	3.1	0.6
GTI	99	V	300-150	2613	0	0	4.0	-0.2
GTR	99	V	300-150	422	0	0	3.7	0.3
HAI	99	V	300-150	30	0	0	4.3	-0.3
HAL	99	V	300-150	888	0	0	4.6	0.9
HFM	99	V	300-150	95	0	0	4.2	0.2
HFY	99	V	300-150	46	0	0	3.2	0.2
HIM	99	V	300-150	132	0	0	3.0	0.8
HKC	99	V	300-150	198	0	0	3.4	0.5
HLF	99	V	300-150	101	0	0	3.2	0.1
HRT	99	V	300-150	83	0	0	4.2	0.8
HUA	99	V	300-150	70	0	0	3.8	-0.3
HVN	99	V	300-150	1293	4	1	5.3	0.7
HYP	99	V	300-150	44	0	0	4.3	1.5
HZS	99	V	300-150	20	0	0	4.0	2.1
IAM	99	V	300-150	68	0	0	4.9	-0.6
IBE	99	V	300-150	3311	0	1	3.9	0.3
ICE	99	V	300-150	4910	0	0	3.3	0.0
ICV	99	V	300-150	310	0	0	4.0	0.4
IFA	99	V	300-150	223	0	0	3.8	0.1
IJM	99	V	300-150	75	0	0	3.8	0.3
IRM	99	V	300-150	26	0	0	2.4	0.8
ITY	99	V	300-150	3742	0	0	3.8	0.2
IXR	99	V	300-150	29	0	0	3.4	-0.4
JAF	99	V	300-150	473	11	0	5.9	-0.1
JAL	99	V	300-150	260	0	1	7.8	0.2
JAS	99	V	300-150	201	0	0	3.5	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
JBU	99	V	300-150	5305	0	0	3.6	0.1
JEF	99	V	300-150	24	0	0	4.4	0.0
JJA	99	V	300-150	24	0	0	5.5	-0.3
JME	99	V	300-150	64	0	0	3.3	0.7
JNA	99	V	300-150	44	0	0	3.4	0.6
JST	99	V	300-150	62	0	0	3.5	-0.3
KAC	99	V	300-150	3155	0	0	3.0	0.5
KAF	99	V	300-150	40	0	0	4.0	0.2
KAI	99	V	300-150	121	2	0	3.9	0.8
KAL	99	V	300-150	839	0	0	3.9	0.5
KAY	99	V	300-150	175	0	0	4.0	-0.2
KFE	99	V	300-150	97	0	1	3.6	-0.3
KLM	99	V	300-150	18743	6	0	4.8	0.1
KNG	99	V	300-150	44	0	0	6.0	0.5
KQA	99	V	300-150	261	6	1	8.9	0.9
KRH	99	V	300-150	25	0	0	3.4	0.0
LAN	99	V	300-150	1443	10	0	6.6	0.2
LCO	99	V	300-150	448	0	0	4.2	-0.8
LDX	99	V	300-150	104	27	0	7.9	-0.2
LEA	99	V	300-150	25	0	0	3.3	0.9
LNI	99	V	300-150	2416	0	0	3.1	0.4
LNX	99	V	300-150	46	0	0	4.4	0.5
LOT	99	V	300-150	4692	10	0	7.1	-0.3
LRQ	99	V	300-150	59	0	0	3.4	0.2
LUC	99	V	300-150	32	0	0	3.0	0.9
LXJ	99	V	300-150	226	0	0	3.4	0.0
MAS	99	V	300-150	6556	0	0	3.6	0.7
MAU	99	V	300-150	357	0	0	4.6	1.1
MED	99	V	300-150	69	0	0	3.3	0.0
MHV	99	V	300-150	51	0	0	4.2	0.3
MJE	99	V	300-150	38	0	0	3.1	0.8
MLM	99	V	300-150	141	0	0	3.6	0.4
MMD	99	V	300-150	202	0	0	3.1	0.2
MMF	99	V	300-150	57	0	0	2.3	0.3
MNB	99	V	300-150	252	0	0	3.7	-0.1
MPH	99	V	300-150	642	0	0	3.9	0.0
MSR	99	V	300-150	2130	2	0	4.1	0.1
MVJ	99	V	300-150	21	0	0	2.8	0.1
MYM	99	V	300-150	22	0	0	5.0	0.6
NBT	99	V	300-150	2336	13	0	6.4	-0.1
NCR	99	V	300-150	386	0	0	3.8	-0.1
NEW	99	V	300-150	21	0	0	3.5	-1.0
NJE	99	V	300-150	528	0	0	3.7	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
NOJ	99	V	300-150	71	0	0	5.7	0.1
NOS	99	V	300-150	1606	7	0	5.6	0.2
NSP	99	V	300-150	47	0	0	7.9	-0.7
NVR	99	V	300-150	32	0	0	2.6	-0.5
OAE	99	V	300-150	439	0	0	4.7	-0.1
OCN	99	V	300-150	5571	0	0	3.8	0.2
OLI	99	V	300-150	53	0	0	3.3	-0.2
OMA	99	V	300-150	3023	2	1	8.2	0.7
ORF	99	V	300-150	43	0	0	3.8	0.7
PAC	99	V	300-150	506	0	0	3.6	-0.5
PAL	99	V	300-150	2165	0	0	3.1	0.3
PEG	99	V	300-150	102	0	0	3.9	-0.1
PIA	99	V	300-150	399	0	0	3.2	0.6
PLF	99	V	300-150	36	0	0	3.5	0.0
PVA	99	V	300-150	88	0	0	5.2	-0.7
QFA	99	V	300-150	7181	1	0	7.1	0.4
QID	99	V	300-150	22	0	0	3.2	-1.0
QQE	99	V	300-150	186	0	0	3.4	0.2
QTR	99	V	300-150	35303	0	0	4.5	0.4
RAM	99	V	300-150	611	9	0	5.7	-0.1
RBA	99	V	300-150	571	5	0	10.6	0.5
RCH	99	V	300-150	2633	0	0	4.4	0.2
RDN	99	V	300-150	29	0	0	3.0	0.3
REU	99	V	300-150	24	0	0	8.8	1.2
RHH	99	V	300-150	59	0	0	6.7	1.0
RJA	99	V	300-150	1926	10	0	7.4	0.0
ROJ	99	V	300-150	57	0	0	2.9	0.7
ROM	99	V	300-150	29	0	0	3.8	-0.8
RRR	99	V	300-150	231	0	0	3.6	0.0
RSF	99	V	300-150	25	20	0	3.2	-0.4
RTA	99	V	300-150	26	0	0	4.0	1.8
RUM	99	V	300-150	28	0	0	3.5	0.0
RUN	99	V	300-150	38	0	0	3.1	2.0
RYR	99	V	300-150	735	0	0	3.1	0.4
RZO	99	V	300-150	181	0	4	4.7	1.0
SAM	99	V	300-150	299	0	0	4.2	-0.4
SAS	99	V	300-150	4579	0	0	3.3	0.1
SAZ	99	V	300-150	134	0	0	3.5	1.3
SCX	99	V	300-150	63	0	0	5.6	0.3
SEY	99	V	300-150	44	0	0	3.2	0.3
SHE	99	V	300-150	56	0	0	4.6	1.5
SIA	99	V	300-150	13961	0	0	4.4	0.5
SIO	99	V	300-150	51	0	0	3.2	-0.7

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SLM	99	V	300-150	90	0	0	3.7	0.6
SON	99	V	300-150	50	0	0	6.7	0.9
SPA	99	V	300-150	154	0	0	4.3	0.5
SVA	99	V	300-150	10266	0	0	5.3	0.4
SVW	99	V	300-150	149	0	0	4.4	0.3
SWR	99	V	300-150	9844	0	0	3.7	0.1
SWW	99	V	300-150	38	0	0	3.8	0.1
SYB	99	V	300-150	39	0	0	2.8	-0.2
TAM	99	V	300-150	80	0	0	3.1	0.4
TAP	99	V	300-150	2063	0	1	4.0	0.5
TAR	99	V	300-150	273	0	0	3.1	0.0
TAY	99	V	300-150	270	0	0	4.4	0.3
TEU	99	V	300-150	28	0	0	4.2	-0.3
TFL	99	V	300-150	1721	9	0	6.1	0.1
TGW	99	V	300-150	1395	3	0	8.1	0.5
THA	99	V	300-150	6091	1	0	6.6	0.4
THT	99	V	300-150	3235	4	0	8.1	0.2
THY	99	V	300-150	18319	2	0	4.2	0.1
TMN	99	V	300-150	415	0	0	4.2	0.4
TOM	99	V	300-150	4648	10	0	6.8	0.0
TOW	99	V	300-150	78	0	0	4.0	0.7
TRK	99	V	300-150	39	0	0	3.8	0.9
TSC	99	V	300-150	4030	0	0	3.7	0.2
TWY	99	V	300-150	578	0	0	3.9	0.3
UAE	99	V	300-150	33104	0	0	3.5	0.3
UAF	99	V	300-150	27	0	0	3.5	0.5
UAL	99	V	300-150	62721	3	1	5.3	0.0
ULC	99	V	300-150	75	0	0	3.8	-0.1
UNI	99	V	300-150	62	0	0	4.4	-0.1
UPS	99	V	300-150	5975	0	0	3.7	-0.2
UZB	99	V	300-150	616	2	0	6.4	0.1
VCG	99	V	300-150	101	0	0	3.9	0.4
VCJ	99	V	300-150	34	0	0	4.0	2.2
VIR	99	V	300-150	18360	4	0	4.7	0.0
VJT	99	V	300-150	1779	0	0	3.9	0.3
VKG	99	V	300-150	436	0	0	3.1	0.3
VLZ	99	V	300-150	97	0	0	6.1	1.5
VMP	99	V	300-150	103	0	0	6.1	1.1
VSV	99	V	300-150	28	0	0	2.7	0.0
VTI	99	V	300-150	2195	0	0	2.6	0.3
VXS	99	V	300-150	75	0	0	3.3	0.8
WGN	99	V	300-150	63	0	0	2.7	-0.5
WJA	99	V	300-150	1191	5	0	6.1	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
XAX	99	V	300-150	971	0	0	3.5	0.3
XRO	99	V	300-150	64	0	0	4.1	-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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
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WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	28	10.2	-3.4
01001	00	Z	50	22	24.1	-21.7
01028	12	Z	50	23	9.5	-4.8
01028	00	Z	50	23	6.6	-1.6
01400	12	Z	50	17	76.9	76.7
01400	00	Z	50	18	80.2	79.9
01415	00	Z	50	27	11.1	0.1
01415	12	Z	50	31	12.0	-2.5
02365	12	Z	50	23	8.6	-2.2
02365	00	Z	50	19	12.4	2.0
02836	00	Z	50	19	6.1	-2.0
02836	12	Z	50	29	6.0	-2.5
02963	12	Z	50	31	9.2	1.5
02963	00	Z	50	29	8.1	-3.4
03005	12	Z	50	30	11.4	-6.8
03005	00	Z	50	28	11.5	-6.4
03238	00	Z	50	31	10.5	1.0
03808	12	Z	50	30	12.9	-2.1
03808	00	Z	50	27	8.9	1.9
03918	12	Z	50	2	15.9	-5.0
03918	00	Z	50	30	11.2	3.9
03953	00	Z	50	31	65.1	4.0
03953	12	Z	50	30	18.2	-10.1
04018	12	Z	50	20	9.1	-3.4
04018	00	Z	50	19	8.8	3.1
04220	12	Z	50	25	18.2	-15.1
04220	00	Z	50	26	17.2	-15.1
04270	12	Z	50	28	24.7	-18.9
04270	00	Z	50	29	17.4	-12.2
04320	12	Z	50	29	12.0	-6.0
04320	00	Z	50	27	11.0	-4.4
04339	12	Z	50	17	10.2	-6.8
04339	00	Z	50	16	12.8	2.7
04360	12	Z	50	16	14.3	-12.3
04360	00	Z	50	16	7.2	-3.8
06011	00	Z	50	19	12.7	1.5
06011	12	Z	50	20	7.8	-2.4
06260	12	Z	50	4	11.3	0.8
06260	00	Z	50	30	17.9	-5.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	50	30	12.4	-4.5
06610	12	Z	50	32	10.4	3.3
07110	12	Z	50	30	14.4	-0.5
07110	00	Z	50	30	12.2	-7.4
07510	00	Z	50	22	13.9	-2.6
07510	12	Z	50	28	18.7	11.6
07645	00	Z	50	29	10.5	0.2
07645	12	Z	50	30	19.7	5.1
07761	00	Z	50	31	19.3	-10.7
07761	12	Z	50	31	21.2	-6.6
08001	00	Z	50	25	16.6	3.2
08001	12	Z	50	30	12.9	6.3
08221	00	Z	50	30	9.1	4.7
08221	12	Z	50	30	11.4	5.1
08302	12	Z	50	31	8.2	-4.8
08302	00	Z	50	29	8.6	-2.9
08508	12	Z	50	30	7.0	0.0
08522	12	Z	50	31	4.9	1.8
10035	00	Z	50	28	14.1	9.3
10035	12	Z	50	29	12.0	7.7
10393	00	Z	50	31	11.5	0.3
10393	12	Z	50	31	10.5	-3.7
10410	00	Z	50	30	9.5	-2.4
10410	12	Z	50	30	10.2	-4.9
10739	12	Z	50	30	12.5	5.0
10739	00	Z	50	30	12.7	1.6
11035	12	Z	50	31	14.3	5.2
11035	00	Z	50	30	11.8	-2.4
12982	12	Z	50	31	8.4	-0.8
12982	00	Z	50	31	7.3	-0.8
16245	00	Z	50	30	9.2	2.4
16245	12	Z	50	29	8.6	3.7
16429	00	Z	50	30	8.7	4.2
16429	12	Z	50	31	7.6	1.5
16622	00	Z	50	24	14.5	11.9
16754	00	Z	50	20	8.7	0.2
17607	12	Z	50	16	8.7	-1.4
26435	12	Z	50	15	5.9	-3.6
60018	00	Z	50	31	10.9	9.0
60018	12	Z	50	31	11.3	9.5
7JUNA4	00	Z	50	2	9.1	1.9
7JUNA4	12	Z	50	5	65.8	23.6
9ZT9MR	00	Z	50	2	7.3	-5.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	50	4	15.1	-9.6
ASDE09	12	Z	50	2	13.2	7.9
ATGU3F	12	Z	50	1	11.9	-11.9
BPMWB2	12	Z	50	2	7.8	7.7
BPMWB2	00	Z	50	2	13.5	9.0
FPUW5G	12	Z	50	1	3.9	-3.9
GQBZLZ	12	Z	50	1	119.3	-119.3
GQBZLZ	00	Z	50	0	0.0	0.0
JNKN7J	12	Z	50	12	30.3	25.6
JNKN7J	00	Z	50	11	18.8	17.7
KJJF9X	12	Z	50	5	15.7	11.8
KJJF9X	00	Z	50	6	13.9	12.2
KMPLHP	12	Z	50	9	130.2	108.6
KMPLHP	00	Z	50	13	37.1	31.1
LRYQE3	00	Z	50	8	13.6	-8.3
LRYQE3	12	Z	50	10	18.7	9.9
UXK5JT	00	Z	50	1	3.6	3.6
UXK5JT	12	Z	50	3	15.3	-5.9
XKQLWQ	12	Z	50	10	45.8	43.0
XQFJRG	12	Z	50	9	19.9	-15.3
XQFJRG	00	Z	50	6	16.2	-2.5
YLV96W	12	Z	50	6	34.9	15.0
YLV96W	00	Z	50	9	8.6	-0.1
ZVQEQC	12	Z	50	18	9.5	7.3

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	23	3.3	0.2	0.0
01001	00	V	50	20	3.8	-0.5	0.8
01028	12	V	50	18	2.7	-0.3	0.2
01028	00	V	50	17	3.0	0.9	0.9
01400	12	V	50	13	3.6	1.1	0.7
01400	00	V	50	12	3.7	0.8	-0.3
01415	00	V	50	24	3.0	-0.2	-0.3
01415	12	V	50	31	3.9	1.2	0.0
02365	12	V	50	22	3.6	0.0	-1.1
02365	00	V	50	15	3.3	0.1	0.9
02836	00	V	50	15	2.8	-0.3	0.1
02836	12	V	50	25	2.5	-0.2	0.1
02963	12	V	50	31	4.0	0.1	0.2
02963	00	V	50	24	3.7	0.5	-0.5
03005	12	V	50	29	3.8	1.2	0.5
03005	00	V	50	26	3.3	-0.4	0.4
03238	00	V	50	29	4.0	0.8	-0.1
03808	12	V	50	29	4.0	-0.4	-0.5
03808	00	V	50	26	3.7	0.0	-0.3
03918	12	V	50	2	3.4	2.8	1.2
03918	00	V	50	29	3.5	0.2	-0.8
03953	00	V	50	28	3.1	0.2	-0.4
03953	12	V	50	29	4.5	-0.5	-0.2
04018	12	V	50	20	3.1	-0.6	-0.4
04018	00	V	50	19	3.6	1.0	-1.2
04220	12	V	50	25	3.3	-0.2	0.6
04220	00	V	50	23	3.1	-0.3	0.1
04270	12	V	50	28	5.8	-1.1	-0.4
04270	00	V	50	24	4.6	1.5	-0.2
04320	12	V	50	29	2.5	0.4	-0.3
04320	00	V	50	27	3.0	-0.4	-0.1
04339	12	V	50	17	2.3	0.8	0.4
04339	00	V	50	12	3.4	0.0	0.3
04360	12	V	50	16	3.6	-0.2	1.2
04360	00	V	50	16	3.0	0.0	0.9
06011	00	V	50	17	3.5	0.0	0.0
06011	12	V	50	20	2.5	0.8	-0.2
06260	12	V	50	4	3.9	-0.2	2.8
06260	00	V	50	29	2.9	0.6	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	50	30	5.1	1.1	-0.4
06610	12	V	50	31	4.4	-0.1	-1.1
07110	12	V	50	30	3.6	0.9	0.1
07110	00	V	50	30	3.1	0.2	0.0
07510	00	V	50	22	3.8	-0.3	-0.1
07510	12	V	50	28	4.0	-0.6	-0.6
07645	00	V	50	28	4.7	0.6	-0.2
07645	12	V	50	30	5.9	-0.6	-0.2
07761	00	V	50	29	3.1	0.1	-0.5
07761	12	V	50	31	4.2	0.4	-1.6
08001	00	V	50	24	3.5	-0.2	-0.1
08001	12	V	50	30	4.5	-1.0	1.0
08221	00	V	50	29	3.8	0.5	-1.0
08221	12	V	50	30	4.6	0.7	-0.1
08302	12	V	50	31	4.0	1.2	-1.1
08302	00	V	50	28	3.4	-0.1	-0.2
08508	12	V	50	30	3.4	-0.1	-0.2
08522	12	V	50	31	3.5	0.6	-1.0
10035	00	V	50	28	4.0	-0.4	0.1
10035	12	V	50	29	3.8	0.6	-0.3
10393	00	V	50	28	3.3	0.1	-0.6
10393	12	V	50	31	4.0	0.2	-0.1
10410	00	V	50	28	4.1	0.5	0.9
10410	12	V	50	28	4.1	0.5	0.6
10739	12	V	50	30	4.5	-0.6	-0.4
10739	00	V	50	30	4.3	1.1	0.1
11035	12	V	50	31	3.2	0.8	-0.3
11035	00	V	50	28	4.1	0.9	-0.9
12982	12	V	50	31	2.8	0.6	0.4
12982	00	V	50	31	4.3	0.5	-1.3
16245	00	V	50	30	4.2	0.3	0.7
16245	12	V	50	29	3.3	0.1	-0.5
16429	00	V	50	29	4.4	-0.5	0.1
16429	12	V	50	31	4.0	-0.5	-0.9
16622	00	V	50	18	2.8	0.5	0.1
16754	00	V	50	18	5.2	2.1	-0.3
17607	12	V	50	5	4.1	0.5	0.1
26435	12	V	50	15	2.9	0.4	-0.1
60018	00	V	50	31	3.8	0.4	0.4
60018	12	V	50	31	3.4	0.5	0.7
7JUNA4	00	V	50	2	7.5	5.9	2.2
7JUNA4	12	V	50	5	4.0	1.7	0.4
9ZT9MR	00	V	50	2	6.1	-2.0	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	50	4	12.3	-5.7	0.1
ASDE09	12	V	50	2	3.8	1.7	-3.4
ATGU3F	12	V	50	1	7.1	-4.9	-5.2
BPMWB2	12	V	50	2	1.4	0.3	1.0
BPMWB2	00	V	50	2	3.6	-1.8	-1.0
FPUW5G	12	V	50	1	2.1	2.1	0.4
GQBZLZ	12	V	50	1	1.5	-0.5	1.4
GQBZLZ	00	V	50	0	0.0	0.0	0.0
JNKN7J	12	V	50	12	3.8	0.2	0.5
JNKN7J	00	V	50	11	5.0	-0.7	1.8
KJJF9X	12	V	50	5	3.8	0.5	-0.8
KJJF9X	00	V	50	6	3.2	1.2	2.4
KMPLHP	12	V	50	9	3.6	1.5	1.2
KMPLHP	00	V	50	13	2.7	1.0	-0.2
LRYQE3	00	V	50	8	2.3	0.2	-0.2
LRYQE3	12	V	50	10	3.4	-0.2	-0.3
UXK5JT	00	V	50	1	1.7	-1.4	-1.0
UXK5JT	12	V	50	3	4.8	0.2	0.8
XKQLWQ	12	V	50	8	3.1	0.5	-0.5
XQFJRG	12	V	50	9	3.8	-1.0	1.1
XQFJRG	00	V	50	5	4.0	2.4	0.2
YLV96W	12	V	50	6	3.8	0.2	2.3
YLV96W	00	V	50	9	2.3	1.4	0.1
ZVQEQC	12	V	50	18	4.0	-0.6	-0.4

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	31	8.2	-3.7
01001	00	Z	100	25	22.8	-20.6
01028	12	Z	100	28	9.2	-5.9
01028	00	Z	100	31	6.5	-2.8
01400	12	Z	100	22	76.7	76.5
01400	00	Z	100	21	77.0	76.7
01415	00	Z	100	29	10.8	1.3
01415	12	Z	100	31	10.4	-2.4
02365	12	Z	100	26	8.3	-1.3
02365	00	Z	100	22	6.3	-0.3
02836	00	Z	100	28	6.3	-0.8
02836	12	Z	100	33	7.8	-2.3
02963	12	Z	100	31	6.9	-0.5
02963	00	Z	100	30	8.4	-3.7
03005	12	Z	100	31	10.2	-7.1
03005	00	Z	100	31	9.9	-7.6
03238	00	Z	100	31	8.1	-1.2
03808	12	Z	100	32	8.7	-1.4
03808	00	Z	100	30	5.8	1.1
03918	12	Z	100	2	9.8	1.6
03918	00	Z	100	30	9.4	1.5
03953	00	Z	100	31	47.2	3.4
03953	12	Z	100	31	14.8	-7.0
04018	12	Z	100	25	8.8	-4.8
04018	00	Z	100	23	6.3	-0.8
04220	12	Z	100	26	15.9	-13.3
04220	00	Z	100	27	16.2	-14.8
04270	12	Z	100	30	21.7	-18.2
04270	00	Z	100	29	15.9	-9.0
04320	12	Z	100	30	12.1	-7.0
04320	00	Z	100	27	12.9	-1.9
04339	12	Z	100	27	12.9	-11.2
04339	00	Z	100	27	7.9	-4.5
04360	12	Z	100	19	14.2	-13.6
04360	00	Z	100	20	9.4	-7.9
06011	00	Z	100	27	8.0	-2.1
06011	12	Z	100	24	8.9	-4.4
06260	12	Z	100	4	4.8	-2.1
06260	00	Z	100	31	17.4	-8.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	100	31	10.7	-6.4
06610	12	Z	100	32	5.1	0.2
07110	12	Z	100	31	11.1	-4.3
07110	00	Z	100	30	12.4	-9.4
07510	00	Z	100	25	12.5	-6.8
07510	12	Z	100	29	11.5	6.1
07645	00	Z	100	31	9.6	-4.2
07645	12	Z	100	30	15.5	-3.2
07761	00	Z	100	31	22.3	-17.6
07761	12	Z	100	31	19.1	-11.2
08001	00	Z	100	29	12.3	0.4
08001	12	Z	100	31	9.0	1.0
08221	00	Z	100	31	6.2	0.2
08221	12	Z	100	31	8.0	1.9
08302	12	Z	100	31	10.1	-8.1
08302	00	Z	100	31	10.6	-8.2
08508	12	Z	100	30	7.4	2.9
08522	12	Z	100	31	6.4	4.4
10035	00	Z	100	29	12.2	9.2
10035	12	Z	100	30	10.8	8.5
10393	00	Z	100	32	7.9	-4.1
10393	12	Z	100	31	8.6	-4.7
10410	00	Z	100	33	8.2	-4.4
10410	12	Z	100	31	8.8	-4.3
10739	12	Z	100	31	8.5	1.7
10739	00	Z	100	31	7.2	-0.1
11035	12	Z	100	32	9.9	1.6
11035	00	Z	100	31	8.2	-3.0
12982	12	Z	100	31	6.2	-0.3
12982	00	Z	100	31	7.2	-4.3
16245	00	Z	100	31	7.1	-3.6
16245	12	Z	100	29	5.7	-1.3
16429	00	Z	100	31	7.5	-0.8
16429	12	Z	100	31	6.5	-0.3
16622	00	Z	100	30	9.6	7.3
16754	00	Z	100	25	8.4	0.7
17607	12	Z	100	29	5.3	-1.6
26435	12	Z	100	15	5.9	-2.9
60018	00	Z	100	31	9.8	6.7
60018	12	Z	100	31	8.2	7.0
7JUNA4	00	Z	100	3	7.6	-3.6
7JUNA4	12	Z	100	4	11.8	1.5
9ZT9MR	00	Z	100	3	13.9	-11.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	100	4	18.3	-13.6
ASDE09	12	Z	100	2	11.7	10.5
ATGU3F	12	Z	100	1	18.4	-18.4
BPMWB2	12	Z	100	2	8.1	8.0
BPMWB2	00	Z	100	2	8.3	4.3
FPUW5G	12	Z	100	2	3.2	1.2
GQBZLZ	12	Z	100	2	87.0	-72.6
GQBZLZ	00	Z	100	1	109.9	-109.9
JNKN7J	12	Z	100	12	26.0	23.1
JNKN7J	00	Z	100	13	24.0	21.4
KJJF9X	12	Z	100	5	8.5	5.5
KJJF9X	00	Z	100	6	6.0	4.7
KMPLHP	12	Z	100	9	81.0	69.0
KMPLHP	00	Z	100	13	39.7	34.5
LRYQE3	00	Z	100	10	13.6	-7.3
LRYQE3	12	Z	100	11	8.0	2.3
UXK5JT	00	Z	100	2	4.2	-3.4
UXK5JT	12	Z	100	3	12.0	-7.5
XKQLWQ	12	Z	100	10	39.7	34.3
XQFJRG	12	Z	100	9	21.7	-17.1
XQFJRG	00	Z	100	6	11.8	-3.4
YLV96W	12	Z	100	8	30.3	6.2
YLV96W	00	Z	100	10	7.4	-3.4
ZVQEQC	12	Z	100	18	13.7	11.3

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	31	3.5	0.1	0.4
01001	00	V	100	23	2.9	0.1	-0.3
01028	12	V	100	28	2.4	0.3	-0.3
01028	00	V	100	27	2.3	0.4	-0.9
01400	12	V	100	19	3.3	0.0	0.5
01400	00	V	100	19	3.2	-0.2	-0.6
01415	00	V	100	27	2.9	-0.1	-0.1
01415	12	V	100	31	3.0	0.4	-0.4
02365	12	V	100	25	3.5	-0.4	0.2
02365	00	V	100	19	3.2	0.3	-0.7
02836	00	V	100	20	2.0	0.0	-0.4
02836	12	V	100	30	2.6	0.3	0.1
02963	12	V	100	31	2.5	0.1	0.1
02963	00	V	100	27	2.8	-0.2	0.4
03005	12	V	100	31	3.0	0.1	-0.7
03005	00	V	100	30	3.0	0.2	-0.8
03238	00	V	100	29	4.1	1.0	-0.1
03808	12	V	100	31	4.0	0.4	0.5
03808	00	V	100	29	3.3	0.4	0.0
03918	12	V	100	2	3.0	-1.3	2.4
03918	00	V	100	29	3.6	-0.2	0.5
03953	00	V	100	30	3.2	-0.9	0.0
03953	12	V	100	31	3.8	-0.1	-0.4
04018	12	V	100	23	2.8	0.7	0.9
04018	00	V	100	22	2.6	-0.1	-1.1
04220	12	V	100	26	2.3	0.0	0.1
04220	00	V	100	27	2.0	0.1	0.1
04270	12	V	100	30	7.0	-1.6	0.5
04270	00	V	100	29	3.6	-0.9	0.0
04320	12	V	100	30	2.8	0.5	-0.2
04320	00	V	100	27	2.3	0.7	0.2
04339	12	V	100	27	2.1	0.0	-0.2
04339	00	V	100	27	2.7	0.2	0.0
04360	12	V	100	19	2.7	0.2	0.9
04360	00	V	100	20	2.5	-0.1	-0.6
06011	00	V	100	27	3.2	-0.2	-0.1
06011	12	V	100	24	2.9	0.8	0.1
06260	12	V	100	4	2.1	0.6	-0.5
06260	00	V	100	31	3.3	0.9	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	100	31	3.5	0.5	0.3
06610	12	V	100	31	3.8	0.8	0.0
07110	12	V	100	31	3.6	0.1	0.7
07110	00	V	100	30	3.0	-0.4	-0.6
07510	00	V	100	25	3.8	0.4	-1.2
07510	12	V	100	29	3.0	-0.1	0.2
07645	00	V	100	30	3.8	-0.7	0.5
07645	12	V	100	30	4.5	0.2	-0.4
07761	00	V	100	30	4.4	0.9	0.1
07761	12	V	100	31	4.2	1.2	0.3
08001	00	V	100	29	4.0	0.1	0.3
08001	12	V	100	31	3.3	0.5	0.3
08221	00	V	100	30	4.2	1.0	-0.1
08221	12	V	100	31	4.7	0.1	-0.8
08302	12	V	100	31	4.4	0.7	-0.1
08302	00	V	100	31	3.6	0.3	0.3
08508	12	V	100	30	3.9	-0.8	1.1
08522	12	V	100	31	4.0	-0.3	0.3
10035	00	V	100	29	3.3	0.6	-0.8
10035	12	V	100	30	3.3	-0.5	0.3
10393	00	V	100	31	4.2	-0.7	0.1
10393	12	V	100	31	3.0	0.2	-0.2
10410	00	V	100	31	3.6	0.8	-0.7
10410	12	V	100	31	3.3	-0.3	0.0
10739	12	V	100	31	3.4	0.6	-0.6
10739	00	V	100	30	3.6	-0.2	-0.2
11035	12	V	100	31	3.6	0.4	-0.8
11035	00	V	100	29	3.4	-0.8	-0.1
12982	12	V	100	31	4.3	-1.1	0.2
12982	00	V	100	31	3.6	-0.5	0.0
16245	00	V	100	31	4.0	1.1	-0.4
16245	12	V	100	29	4.0	0.0	0.5
16429	00	V	100	31	4.0	1.1	-0.9
16429	12	V	100	31	3.2	0.5	0.1
16622	00	V	100	27	3.4	0.4	-0.4
16754	00	V	100	23	4.7	0.8	0.1
17607	12	V	100	8	2.6	0.5	-0.5
26435	12	V	100	15	2.6	-0.4	-0.3
60018	00	V	100	31	4.1	0.5	0.3
60018	12	V	100	31	3.8	0.8	0.7
7JUNA4	00	V	100	3	2.8	-0.3	-1.9
7JUNA4	12	V	100	4	3.2	-0.2	0.4
9ZT9MR	00	V	100	3	2.5	-0.7	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	100	4	2.3	1.3	-0.5
ASDE09	12	V	100	2	2.7	-0.7	-2.0
ATGU3F	12	V	100	1	1.1	-0.7	-0.8
BPMWB2	12	V	100	2	3.9	-0.3	-1.2
BPMWB2	00	V	100	2	2.9	1.1	-1.5
FPUW5G	12	V	100	2	6.0	-1.5	-3.7
GQBZLZ	12	V	100	2	4.6	-3.0	2.1
GQBZLZ	00	V	100	1	2.0	-1.9	-0.7
JNKN7J	12	V	100	12	4.3	0.7	1.7
JNKN7J	00	V	100	13	3.1	0.6	0.8
KJJF9X	12	V	100	5	4.2	1.2	0.4
KJJF9X	00	V	100	6	4.6	-2.0	1.9
KMPLHP	12	V	100	9	3.7	-1.2	-0.1
KMPLHP	00	V	100	13	2.1	0.0	-0.1
LRYQE3	00	V	100	10	3.2	0.2	0.2
LRYQE3	12	V	100	11	3.7	0.2	0.9
UXK5JT	00	V	100	2	2.4	1.2	-2.0
UXK5JT	12	V	100	3	2.7	0.2	-1.1
XKQLWQ	12	V	100	8	2.9	1.3	0.4
XQFJRG	12	V	100	9	3.7	-1.8	0.9
XQFJRG	00	V	100	6	3.6	0.1	0.1
YLV96W	12	V	100	8	3.0	-1.4	0.6
YLV96W	00	V	100	10	3.4	0.4	0.4
ZVQEQC	12	V	100	18	4.2	0.0	-0.7

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	31	6.4	-0.9
01001	00	Z	500	28	13.3	-12.0
01028	12	Z	500	31	3.3	-1.1
01028	00	Z	500	31	4.7	-0.3
01400	12	Z	500	26	77.6	77.4
01400	00	Z	500	28	77.8	77.6
01415	00	Z	500	29	5.8	4.9
01415	12	Z	500	31	5.3	2.6
02365	12	Z	500	26	7.1	4.5
02365	00	Z	500	23	7.6	6.1
02836	00	Z	500	29	3.7	0.9
02836	12	Z	500	34	3.9	1.5
02963	12	Z	500	32	5.2	2.9
02963	00	Z	500	31	4.2	2.5
03005	12	Z	500	31	4.9	-3.5
03005	00	Z	500	31	4.2	-2.0
03238	00	Z	500	31	4.5	1.1
03808	12	Z	500	32	5.4	4.2
03808	00	Z	500	30	4.4	3.1
03918	12	Z	500	2	4.2	4.1
03918	00	Z	500	30	7.6	6.7
03953	00	Z	500	31	12.6	1.2
03953	12	Z	500	31	6.9	1.1
04018	12	Z	500	26	6.0	0.1
04018	00	Z	500	25	4.3	1.4
04220	12	Z	500	31	9.0	-7.4
04220	00	Z	500	31	8.7	-7.5
04270	12	Z	500	30	9.2	-6.8
04270	00	Z	500	30	8.3	-7.2
04320	12	Z	500	30	11.9	-3.2
04320	00	Z	500	29	4.0	1.1
04339	12	Z	500	30	8.1	-5.7
04339	00	Z	500	28	7.8	-6.5
04360	12	Z	500	20	11.5	-10.8
04360	00	Z	500	24	10.4	-9.6
06011	00	Z	500	31	8.0	-1.1
06011	12	Z	500	29	6.7	-1.3
06260	12	Z	500	4	2.9	2.2
06260	00	Z	500	31	15.2	-3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	500	31	2.9	0.4
06610	12	Z	500	32	3.0	0.0
07110	12	Z	500	31	7.8	-5.5
07110	00	Z	500	31	10.9	-9.0
07510	00	Z	500	30	5.8	2.1
07510	12	Z	500	31	7.0	4.9
07645	00	Z	500	31	6.3	-5.1
07645	12	Z	500	31	7.4	-3.9
07761	00	Z	500	31	11.9	-10.2
07761	12	Z	500	31	9.3	-7.7
08001	00	Z	500	30	8.6	5.4
08001	12	Z	500	31	5.5	4.4
08221	00	Z	500	31	5.7	4.5
08221	12	Z	500	31	5.9	4.8
08302	12	Z	500	31	7.5	-5.5
08302	00	Z	500	31	7.7	-6.4
08508	12	Z	500	30	6.5	4.6
08522	12	Z	500	31	7.2	6.5
10035	00	Z	500	31	12.5	12.1
10035	12	Z	500	31	13.4	12.9
10393	00	Z	500	32	3.5	-1.1
10393	12	Z	500	31	2.6	-0.3
10410	00	Z	500	33	2.4	0.0
10410	12	Z	500	31	3.3	-1.3
10739	12	Z	500	31	4.9	3.1
10739	00	Z	500	31	5.9	4.3
11035	12	Z	500	32	4.9	-1.9
11035	00	Z	500	31	3.0	1.1
12982	12	Z	500	31	4.2	2.8
12982	00	Z	500	31	3.6	1.5
16245	00	Z	500	31	4.0	0.8
16245	12	Z	500	30	3.7	0.8
16429	00	Z	500	31	3.8	1.8
16429	12	Z	500	31	2.9	2.1
16622	00	Z	500	31	9.9	9.1
16754	00	Z	500	27	3.8	2.4
17607	12	Z	500	29	7.4	2.6
26435	12	Z	500	15	1.8	0.7
60018	00	Z	500	31	7.0	5.2
60018	12	Z	500	31	7.0	6.4
7JUNA4	00	Z	500	9	6.8	-1.7
7JUNA4	12	Z	500	11	6.5	-2.3
9ZT9MR	00	Z	500	3	10.3	-10.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	500	4	13.7	-13.0
ASDE09	12	Z	500	2	20.1	16.3
ATGU3F	12	Z	500	3	11.3	-9.6
BPMWB2	12	Z	500	4	14.1	13.2
BPMWB2	00	Z	500	4	13.5	11.0
FPUW5G	12	Z	500	6	8.4	4.0
GQBZLZ	12	Z	500	3	94.9	-82.8
GQBZLZ	00	Z	500	1	126.6	-126.6
JNKN7J	12	Z	500	13	36.4	35.9
JNKN7J	00	Z	500	13	40.7	39.0
KJJF9X	12	Z	500	5	4.1	3.5
KJJF9X	00	Z	500	6	3.9	3.3
KMPLHP	12	Z	500	11	51.1	48.4
KMPLHP	00	Z	500	13	47.2	44.5
LRYQE3	00	Z	500	11	8.0	-2.6
LRYQE3	12	Z	500	11	6.6	-2.5
UXK5JT	00	Z	500	3	4.3	-2.2
UXK5JT	12	Z	500	3	5.9	-0.7
XKQLWQ	12	Z	500	11	30.5	17.4
XQFJRG	12	Z	500	9	7.0	-4.8
XQFJRG	00	Z	500	6	4.7	-1.7
YLV96W	12	Z	500	9	33.2	6.2
YLV96W	00	Z	500	11	4.8	-2.0
ZVQEQC	12	Z	500	18	6.8	6.1

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	31	2.8	0.3	0.2
01001	00	V	500	28	2.3	0.0	-0.1
01028	12	V	500	31	2.6	-0.5	0.5
01028	00	V	500	31	2.6	-0.4	-0.4
01400	12	V	500	26	4.3	1.5	-0.3
01400	00	V	500	28	3.1	0.3	0.7
01415	00	V	500	29	2.7	-0.4	0.3
01415	12	V	500	31	3.3	0.2	0.8
02365	12	V	500	26	3.0	0.6	0.0
02365	00	V	500	23	3.1	1.2	0.5
02836	00	V	500	29	3.2	-0.1	-0.4
02836	12	V	500	30	2.6	0.5	-0.2
02963	12	V	500	31	2.8	1.0	0.0
02963	00	V	500	29	2.6	0.3	-0.2
03005	12	V	500	31	4.0	-0.3	-0.5
03005	00	V	500	31	3.3	-0.1	0.4
03238	00	V	500	31	3.8	0.5	0.7
03808	12	V	500	31	3.1	0.2	-0.1
03808	00	V	500	30	2.9	0.2	0.0
03918	12	V	500	2	4.0	3.6	-1.4
03918	00	V	500	29	3.0	0.4	0.2
03953	00	V	500	31	3.1	0.1	0.5
03953	12	V	500	31	3.0	0.0	0.1
04018	12	V	500	26	2.5	0.4	0.1
04018	00	V	500	25	2.5	0.1	0.0
04220	12	V	500	31	2.1	-0.3	-0.2
04220	00	V	500	31	2.2	-0.2	0.0
04270	12	V	500	30	2.9	0.7	0.2
04270	00	V	500	30	2.7	0.0	0.4
04320	12	V	500	30	2.2	0.1	0.1
04320	00	V	500	29	2.1	-0.2	0.2
04339	12	V	500	30	2.6	0.2	-0.5
04339	00	V	500	28	3.3	-0.8	0.6
04360	12	V	500	20	2.1	0.7	0.1
04360	00	V	500	24	3.0	-0.1	0.0
06011	00	V	500	31	3.6	-0.2	0.5
06011	12	V	500	29	2.4	-0.1	0.2
06260	12	V	500	4	2.7	-1.4	-0.2
06260	00	V	500	31	2.5	0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	500	31	3.2	0.0	0.3
06610	12	V	500	31	3.9	-0.3	-0.2
07110	12	V	500	31	2.7	-0.5	-0.1
07110	00	V	500	31	3.6	0.2	-0.8
07510	00	V	500	29	3.1	0.4	0.0
07510	12	V	500	30	3.3	0.4	-0.3
07645	00	V	500	31	3.0	0.0	-0.7
07645	12	V	500	31	2.6	-0.2	-0.4
07761	00	V	500	31	3.2	-0.2	0.6
07761	12	V	500	31	3.3	-0.7	0.5
08001	00	V	500	30	3.4	0.3	0.3
08001	12	V	500	31	2.7	0.5	0.0
08221	00	V	500	31	2.8	-0.5	-0.1
08221	12	V	500	31	3.1	-0.2	-0.5
08302	12	V	500	31	2.5	-0.5	0.0
08302	00	V	500	31	3.3	-0.7	0.2
08508	12	V	500	30	2.9	-0.2	-0.4
08522	12	V	500	31	2.3	0.9	-0.1
10035	00	V	500	29	3.0	0.0	0.7
10035	12	V	500	30	2.8	0.7	-0.3
10393	00	V	500	31	2.8	0.4	-0.3
10393	12	V	500	31	3.1	0.5	-0.8
10410	00	V	500	31	2.7	-0.1	-0.2
10410	12	V	500	31	3.0	0.7	0.5
10739	12	V	500	31	2.6	-0.3	0.6
10739	00	V	500	31	2.2	-0.1	-0.5
11035	12	V	500	31	2.8	0.3	0.1
11035	00	V	500	31	2.7	-0.1	0.2
12982	12	V	500	31	3.1	-0.1	-0.4
12982	00	V	500	31	2.7	0.3	-0.6
16245	00	V	500	31	2.8	0.7	-0.2
16245	12	V	500	30	2.9	0.7	0.0
16429	00	V	500	31	3.5	0.6	-0.3
16429	12	V	500	31	3.3	0.8	0.1
16622	00	V	500	30	3.8	-0.1	0.2
16754	00	V	500	27	3.0	0.4	0.9
17607	12	V	500	15	5.1	1.9	-1.3
26435	12	V	500	15	2.6	0.3	0.6
60018	00	V	500	31	1.9	0.0	-0.1
60018	12	V	500	31	2.4	0.6	0.3
7JUNA4	00	V	500	9	4.1	-1.0	0.8
7JUNA4	12	V	500	11	3.6	-0.3	1.3
9ZT9MR	00	V	500	3	2.8	0.6	2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	500	4	2.1	0.8	-0.2
ASDE09	12	V	500	2	1.6	-1.4	0.2
ATGU3F	12	V	500	3	4.9	-1.7	0.1
BPMWB2	12	V	500	4	3.0	0.0	-1.2
BPMWB2	00	V	500	4	2.1	1.1	-0.2
FPUW5G	12	V	500	6	3.3	-0.5	-1.1
GQBZLZ	12	V	500	3	2.4	0.7	-1.4
GQBZLZ	00	V	500	1	1.4	0.4	-1.3
JNKN7J	12	V	500	13	3.3	1.0	1.1
JNKN7J	00	V	500	13	3.0	-0.4	-0.1
KJJF9X	12	V	500	5	1.7	0.9	0.3
KJJF9X	00	V	500	6	2.3	0.9	1.3
KMPLHP	12	V	500	11	2.6	0.6	-0.1
KMPLHP	00	V	500	13	3.2	-0.3	0.5
LRYQE3	00	V	500	11	3.0	0.2	-1.1
LRYQE3	12	V	500	11	2.4	-0.2	-0.2
UXK5JT	00	V	500	3	4.7	-0.6	-2.6
UXK5JT	12	V	500	3	2.9	-1.7	0.7
XKQLWQ	12	V	500	10	1.9	0.2	0.5
XQFJRG	12	V	500	9	2.4	0.9	0.2
XQFJRG	00	V	500	6	2.6	0.2	0.7
YLV96W	12	V	500	9	2.8	-1.3	-0.2
YLV96W	00	V	500	11	2.4	-0.3	0.8
ZVQEQC	12	V	500	18	2.6	0.6	-0.6

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                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	31	4.2	-2.0
01001	00	Z	850	29	11.9	-10.9
01028	12	Z	850	31	3.9	-1.0
01028	00	Z	850	31	3.3	-0.6
01400	12	Z	850	26	76.6	76.4
01400	00	Z	850	28	75.8	75.6
01415	00	Z	850	29	4.2	3.2
01415	12	Z	850	31	4.6	3.2
02365	12	Z	850	26	6.9	6.5
02365	00	Z	850	23	8.3	8.0
02836	00	Z	850	29	2.9	0.6
02836	12	Z	850	34	3.4	2.1
02963	12	Z	850	32	4.7	2.4
02963	00	Z	850	31	3.5	2.8
03005	12	Z	850	31	4.2	-1.8
03005	00	Z	850	31	4.2	-2.5
03238	00	Z	850	31	3.0	1.7
03808	12	Z	850	32	3.5	2.7
03808	00	Z	850	30	4.3	3.2
03918	12	Z	850	2	7.8	7.8
03918	00	Z	850	31	7.1	6.7
03953	00	Z	850	31	2.7	-0.7
03953	12	Z	850	31	4.8	1.3
04018	12	Z	850	26	3.5	-0.6
04018	00	Z	850	25	3.7	-1.5
04220	12	Z	850	31	6.8	-6.2
04220	00	Z	850	30	6.9	-6.2
04270	12	Z	850	30	6.9	-5.9
04270	00	Z	850	30	8.0	-7.3
04320	12	Z	850	30	12.7	-5.0
04320	00	Z	850	29	4.4	-0.1
04339	12	Z	850	30	10.4	-9.0
04339	00	Z	850	28	11.6	-9.8
04360	12	Z	850	20	13.3	-12.7
04360	00	Z	850	24	14.3	-13.4
06011	00	Z	850	31	4.4	-2.2
06011	12	Z	850	30	3.8	-0.6
06260	12	Z	850	4	1.8	0.8
06260	00	Z	850	31	15.3	-4.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	850	31	1.8	0.4
06610	12	Z	850	32	3.1	-0.4
07110	12	Z	850	31	3.5	-2.0
07110	00	Z	850	31	4.0	-3.1
07510	00	Z	850	30	3.2	1.9
07510	12	Z	850	31	3.0	1.7
07645	00	Z	850	31	5.1	-4.2
07645	12	Z	850	31	5.5	-4.0
07761	00	Z	850	31	5.7	-5.0
07761	12	Z	850	31	6.1	-5.4
08001	00	Z	850	31	3.0	0.5
08001	12	Z	850	31	3.0	1.3
08221	00	Z	850	31	3.2	1.4
08221	12	Z	850	31	2.8	1.0
08302	12	Z	850	31	9.6	-9.3
08302	00	Z	850	31	9.2	-8.8
08508	12	Z	850	30	5.2	4.3
08522	12	Z	850	31	3.4	2.9
10035	00	Z	850	32	12.4	12.0
10035	12	Z	850	31	13.2	12.9
10393	00	Z	850	32	2.8	0.7
10393	12	Z	850	31	3.6	-0.6
10410	00	Z	850	33	2.3	-0.7
10410	12	Z	850	31	2.3	-1.0
10739	12	Z	850	32	3.6	2.5
10739	00	Z	850	31	4.2	3.1
11035	12	Z	850	31	4.1	1.6
11035	00	Z	850	31	3.5	1.4
12982	12	Z	850	31	3.2	1.4
12982	00	Z	850	31	2.6	1.1
16245	00	Z	850	31	2.1	1.2
16245	12	Z	850	30	3.0	1.1
16429	00	Z	850	31	2.1	1.2
16429	12	Z	850	31	2.7	2.0
16622	00	Z	850	31	7.8	7.3
16754	00	Z	850	27	2.7	-0.4
17607	12	Z	850	29	2.1	0.1
26435	12	Z	850	15	2.4	0.2
60018	00	Z	850	31	3.9	3.0
60018	12	Z	850	31	2.8	2.1
7JUNA4	00	Z	850	9	6.0	-3.0
7JUNA4	12	Z	850	11	6.8	-1.1
9ZT9MR	00	Z	850	3	9.6	-8.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
9ZT9MR	12	Z	850	4	11.6	-11.4
ASDE09	12	Z	850	2	21.3	16.0
ATGU3F	12	Z	850	3	10.2	-7.7
BPMWB2	12	Z	850	5	15.5	14.5
BPMWB2	00	Z	850	4	15.4	14.1
FPUW5G	12	Z	850	6	5.8	0.4
GQBZLZ	12	Z	850	3	19.3	-19.3
GQBZLZ	00	Z	850	1	33.7	33.7
JNKN7J	12	Z	850	13	37.6	37.3
JNKN7J	00	Z	850	13	43.2	41.3
KJJF9X	12	Z	850	5	3.0	1.7
KJJF9X	00	Z	850	6	1.8	0.8
KMPLHP	12	Z	850	11	51.1	50.2
KMPLHP	00	Z	850	14	52.5	49.8
LRYQE3	00	Z	850	11	4.7	-0.5
LRYQE3	12	Z	850	11	4.9	-0.8
UXK5JT	00	Z	850	3	2.8	-1.1
UXK5JT	12	Z	850	3	2.5	-1.6
XKQLWQ	12	Z	850	13	23.0	6.4
XQFJRG	12	Z	850	9	6.1	-4.4
XQFJRG	00	Z	850	7	4.7	-3.2
YLV96W	12	Z	850	9	5.9	-2.4
YLV96W	00	Z	850	11	4.8	-1.4
ZVQEQC	12	Z	850	18	2.2	1.2

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

```
RADIOSONDE MONITORING STATISTICS (EUCOS)
         MONITORING CENTRE     : ECMWF
         ELEMENT MONITORED     : WIND (M/S)
         LEVEL                 : 850 HPA
         AREA                  : 0 - 90N, 100W - 40E
         PERIOD                : JAN 2023
         STANDARD OF COMPARISON: FIRST-GUESS FIELD
```

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	31	3.6	0.2	0.2
01001	00	V	850	28	3.6	-0.1	0.0
01028	12	V	850	31	2.9	0.1	-0.1
01028	00	V	850	31	3.0	0.9	0.5
01400	12	V	850	26	2.6	-0.3	0.0
01400	00	V	850	28	2.1	-0.2	0.3
01415	00	V	850	29	2.6	0.3	0.5
01415	12	V	850	31	2.9	-0.4	0.1
02365	12	V	850	26	3.3	-0.3	0.3
02365	00	V	850	23	3.0	0.0	0.1
02836	00	V	850	29	2.7	0.3	0.6
02836	12	V	850	30	2.6	0.1	0.4
02963	12	V	850	31	2.1	-0.2	0.3
02963	00	V	850	31	3.2	-0.3	-0.7
03005	12	V	850	31	3.2	-0.1	-0.1
03005	00	V	850	31	2.9	-0.1	0.0
03238	00	V	850	31	3.0	-0.4	0.5
03808	12	V	850	31	3.1	-0.1	-0.5
03808	00	V	850	30	3.1	-0.3	-0.3
03918	12	V	850	2	2.3	0.4	1.9
03918	00	V	850	30	2.6	0.2	-0.7
03953	00	V	850	31	3.8	0.2	0.1
03953	12	V	850	31	3.2	0.2	0.5
04018	12	V	850	26	3.8	1.0	-0.1
04018	00	V	850	25	3.0	0.0	0.5
04220	12	V	850	31	2.9	-0.8	-0.2
04220	00	V	850	30	3.3	0.2	0.3
04270	12	V	850	30	3.7	0.3	0.8
04270	00	V	850	30	3.6	0.6	0.3
04320	12	V	850	30	4.2	0.4	0.9
04320	00	V	850	29	3.5	-0.5	0.8
04339	12	V	850	30	3.5	0.3	0.1
04339	00	V	850	28	3.5	0.3	0.6
04360	12	V	850	20	3.2	1.0	0.0
04360	00	V	850	24	3.5	0.0	0.3
06011	00	V	850	31	3.5	0.7	-0.5
06011	12	V	850	29	2.7	0.3	0.1
06260	12	V	850	4	1.2	-0.4	-0.1
06260	00	V	850	31	2.6	0.0	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	850	31	2.8	0.5	-0.1
06610	12	V	850	31	2.9	0.0	-0.4
07110	12	V	850	31	3.3	-0.2	-0.5
07110	00	V	850	31	2.5	0.1	-0.5
07510	00	V	850	29	3.4	0.0	-0.3
07510	12	V	850	30	2.8	0.5	0.3
07645	00	V	850	31	4.0	-0.4	0.8
07645	12	V	850	31	3.4	-0.2	0.3
07761	00	V	850	31	2.9	-0.1	-0.3
07761	12	V	850	31	3.2	0.2	0.2
08001	00	V	850	31	3.1	0.2	-0.3
08001	12	V	850	31	3.2	-0.2	-0.3
08221	00	V	850	31	3.8	0.1	0.5
08221	12	V	850	31	3.3	0.2	-0.2
08302	12	V	850	31	3.4	-0.3	0.6
08302	00	V	850	31	3.3	-0.1	0.7
08508	12	V	850	30	2.7	-0.5	0.0
08522	12	V	850	31	3.1	0.1	0.4
10035	00	V	850	29	3.7	-0.4	-0.5
10035	12	V	850	30	2.5	-0.5	0.2
10393	00	V	850	31	2.6	0.0	-1.1
10393	12	V	850	31	2.8	0.7	-0.4
10410	00	V	850	31	2.8	0.0	0.0
10410	12	V	850	31	2.5	0.0	-0.3
10739	12	V	850	31	3.8	-0.2	-0.3
10739	00	V	850	31	3.4	0.2	-0.1
11035	12	V	850	31	3.6	0.5	-0.6
11035	00	V	850	31	3.5	0.4	-0.2
12982	12	V	850	31	3.0	-0.1	0.4
12982	00	V	850	31	3.9	0.1	0.2
16245	00	V	850	31	3.2	0.8	0.1
16245	12	V	850	30	3.5	-0.1	-0.7
16429	00	V	850	31	2.8	0.1	0.1
16429	12	V	850	31	3.1	-0.5	0.0
16622	00	V	850	31	2.9	0.1	0.7
16754	00	V	850	27	3.7	-0.9	-1.3
17607	12	V	850	28	3.0	0.4	0.7
26435	12	V	850	15	1.7	0.2	0.2
60018	00	V	850	31	3.0	0.0	-0.6
60018	12	V	850	31	4.1	1.4	-0.9
7JUNA4	00	V	850	9	3.3	-0.1	-0.9
7JUNA4	12	V	850	11	7.1	0.4	-2.9
9ZT9MR	00	V	850	3	5.4	0.9	-1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
9ZT9MR	12	V	850	4	1.6	-0.3	0.7
ASDE09	12	V	850	2	2.2	-0.7	-1.4
ATGU3F	12	V	850	3	3.7	0.1	3.5
BPMWB2	12	V	850	5	3.2	1.1	0.5
BPMWB2	00	V	850	4	2.4	-0.9	1.3
FPUW5G	12	V	850	6	3.0	0.0	-0.8
GQBZLZ	12	V	850	3	6.4	3.1	2.2
GQBZLZ	00	V	850	1	7.9	7.8	1.2
JNKN7J	12	V	850	13	2.6	0.5	0.6
JNKN7J	00	V	850	13	2.8	0.7	1.4
KJJF9X	12	V	850	5	2.4	1.5	0.0
KJJF9X	00	V	850	6	2.6	-1.6	0.4
KMPLHP	12	V	850	11	2.3	-0.2	0.4
KMPLHP	00	V	850	14	2.5	-0.1	-0.1
LRYQE3	00	V	850	11	2.6	0.0	0.4
LRYQE3	12	V	850	11	2.9	0.0	0.0
UXK5JT	00	V	850	3	2.1	-0.5	0.3
UXK5JT	12	V	850	3	2.1	-0.7	1.1
XKQLWQ	12	V	850	12	2.2	0.5	0.1
XQFJRG	12	V	850	9	2.7	-0.4	-0.1
XQFJRG	00	V	850	6	3.8	2.0	0.1
YLV96W	12	V	850	9	3.8	-0.7	0.4
YLV96W	00	V	850	11	2.7	-1.1	-1.0
ZVQEQC	12	V	850	18	3.1	-0.6	-0.8

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                 : JAN 2023
         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	1488	0	0.4	-0.5	0.6
1300001	99	P	SUR	11	-23	620	0	0.3	0.3	0.5
1300008	99	P	SUR	15	-38	620	0	0.3	0.1	0.3
1300130	99	P	SUR	28	-16	731	0	0.3	0.2	0.4
1300131	99	P	SUR	28	-17	731	0	0.4	0.1	0.4
1301603	99	P	SUR	31	-52	744	0	0.5	0.2	0.5
1301608	99	P	SUR	29	-50	744	0	1.2	0.2	1.2
1301610	99	P	SUR	53	-10	573	0	0.8	-0.1	0.8
1301612	99	P	SUR	26	-61	741	0	0.3	-1.0	1.1
1301619	99	P	SUR	36	-61	743	8	1.6	-0.1	1.6
1301629	99	P	SUR	19	-31	744	0	0.3	0.1	0.3
1301699	99	P	SUR	28	-31	717	0	0.3	-0.5	0.6
1301700	99	P	SUR	19	-62	706	0	0.3	-0.3	0.4
1301706	99	P	SUR	23	-53	713	0	0.2	-0.1	0.2
1301708	99	P	SUR	14	-17	507	0	0.3	-0.5	0.6
1301710	99	P	SUR	11	-24	720	0	0.3	0.2	0.4
1301712	99	P	SUR	26	-50	724	0	0.3	0.0	0.3
1301713	99	P	SUR	16	-48	718	0	0.2	0.0	0.2
1301714	99	P	SUR	26	-50	718	0	0.3	0.1	0.3
1301718	99	P	SUR	26	-37	721	0	0.3	0.0	0.3
1301719	99	P	SUR	23	-42	722	0	0.3	0.4	0.5
1301720	99	P	SUR	26	-27	724	0	0.3	0.3	0.4
1301721	99	P	SUR	29	-19	533	0	0.2	-0.2	0.3
1301722	99	P	SUR	25	-44	723	0	0.3	-0.1	0.3
1301723	99	P	SUR	35	-8	716	0	0.3	0.8	0.8
1301724	99	P	SUR	34	-7	719	0	0.3	0.0	0.3
1301725	99	P	SUR	23	-22	718	0	0.2	0.1	0.3
1301726	99	P	SUR	24	-30	712	0	0.3	0.0	0.3
1301728	99	P	SUR	13	-26	717	0	0.3	0.3	0.4
1301731	99	P	SUR	23	-27	733	0	0.3	0.2	0.4
1301735	99	P	SUR	27	-41	717	0	0.3	-0.5	0.5
1301736	99	P	SUR	26	-43	715	0	0.3	0.2	0.3
1301737	99	P	SUR	27	-54	714	0	0.3	-0.1	0.3
1301756	99	P	SUR	11	-64	715	0	0.3	-0.7	0.8
1301763	99	P	SUR	13	-28	5	5	0.0	0.0	0.0
1301765	99	P	SUR	20	-21	176	0	0.2	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
1301766	99	P	SUR	19	-26	718	0	0.3	0.0	0.3
1301768	99	P	SUR	24	-20	79	0	0.2	0.3	0.3
1501770	99	P	SUR	10	-21	714	0	0.3	-0.2	0.4
1501772	99	P	SUR	11	-44	715	0	0.3	0.0	0.3
3801550	99	P	SUR	88	-52	742	730	0.1	-1.0	1.0
3801561	99	P	SUR	43	-68	741	0	0.6	0.0	0.6
4100043	99	P	SUR	21	-65	4445	0	0.3	-1.7	1.7
4100044	99	P	SUR	22	-59	4453	0	0.3	0.3	0.4
4100046	99	P	SUR	24	-68	4454	0	0.3	0.4	0.5
4100048	99	P	SUR	32	-70	4453	0	0.4	0.3	0.5
4100049	99	P	SUR	27	-63	4449	0	0.3	-1.6	1.6
4100053	99	P	SUR	18	-66	4251	0	0.3	-0.9	1.0
4100056	99	P	SUR	18	-65	3076	0	0.3	-1.1	1.1
4100139	99	P	SUR	20	-38	744	0	0.3	0.0	0.3
4100300	99	P	SUR	16	-57	715	0	0.2	0.0	0.2
4101613	99	P	SUR	29	-56	744	0	0.3	0.3	0.4
4101616	99	P	SUR	30	-42	744	0	0.3	0.0	0.3
4101618	99	P	SUR	27	-50	744	0	0.3	0.2	0.4
4101656	99	P	SUR	51	-49	631	0	1.5	0.2	1.5
4101663	99	P	SUR	28	-34	744	0	0.3	0.0	0.3
4101665	99	P	SUR	69	5	707	0	0.6	-0.1	0.6
4101696	99	P	SUR	30	-35	744	0	0.3	0.0	0.3
4101702	99	P	SUR	31	-24	218	0	0.5	1.1	1.2
4101717	99	P	SUR	16	-50	744	0	0.2	0.0	0.2
4101719	99	P	SUR	38	-14	695	19	2.6	-0.5	2.7
4101723	99	P	SUR	23	-68	743	0	0.3	0.1	0.3
4101725	99	P	SUR	18	-63	744	0	0.3	-0.1	0.3
4101727	99	P	SUR	34	-17	743	0	0.3	0.1	0.3
4101728	99	P	SUR	29	-38	744	0	0.4	0.5	0.6
4101729	99	P	SUR	32	-47	743	0	0.3	0.1	0.4
4101731	99	P	SUR	12	-49	744	0	0.2	0.2	0.3
4101743	99	P	SUR	31	-43	744	0	1.5	0.3	1.5
4101753	99	P	SUR	32	-57	744	0	0.4	0.4	0.6
4101755	99	P	SUR	31	-65	744	0	0.5	0.1	0.5
4101756	99	P	SUR	12	-62	672	0	0.3	-0.7	0.7
4101842	99	P	SUR	69	16	708	0	0.6	-0.6	0.9
4101843	99	P	SUR	70	1	717	0	0.6	-0.1	0.6
4101844	99	P	SUR	18	-63	493	0	0.9	0.4	1.0
4101845	99	P	SUR	67	-1	710	0	0.4	0.2	0.5
4101848	99	P	SUR	25	-65	714	0	0.3	0.2	0.4
4101850	99	P	SUR	43	-9	699	0	1.5	-0.6	1.7
4101851	99	P	SUR	24	-55	702	0	0.3	-0.1	0.3
4102547	99	P	SUR	26	-58	703	0	0.3	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
4102549	99	P	SUR	22	-67	708	0	0.4	0.2	0.4
4102551	99	P	SUR	22	-61	21	0	0.3	-0.1	0.3
4102558	99	P	SUR	13	-61	721	0	0.3	-0.4	0.5
4102559	99	P	SUR	16	-67	716	0	0.3	0.0	0.3
4102560	99	P	SUR	15	-61	729	0	0.3	-0.7	0.8
4102632	99	P	SUR	38	-64	691	0	0.5	-1.1	1.2
41043	99	P	SUR	21	-65	743	0	0.4	-1.7	1.8
41044	99	P	SUR	22	-59	743	0	0.4	0.3	0.5
41046	99	P	SUR	24	-68	744	0	0.4	0.4	0.5
41048	99	P	SUR	32	-70	742	0	0.5	0.2	0.5
41049	99	P	SUR	28	-63	744	0	0.4	-1.6	1.6
41053	99	P	SUR	19	-66	723	0	0.4	-0.9	1.0
41056	99	P	SUR	18	-66	536	0	0.4	-1.1	1.2
4200059	99	P	SUR	15	-67	4448	0	0.3	0.0	0.3
4200060	99	P	SUR	16	-63	4454	0	0.3	0.1	0.3
4200085	99	P	SUR	18	-67	3229	0	0.3	-0.8	0.9
4201703	99	P	SUR	42	-22	693	0	0.4	0.1	0.4
42059	99	P	SUR	15	-68	742	0	0.4	0.0	0.4
42060	99	P	SUR	16	-63	728	0	0.4	0.1	0.4
42085	99	P	SUR	18	-67	707	0	0.3	-0.9	0.9
4400005	99	P	SUR	43	-69	743	0	0.6	-0.4	0.8
4400008	99	P	SUR	40	-69	4448	0	0.5	-1.3	1.4
4400011	99	P	SUR	41	-67	4456	0	0.6	0.1	0.6
4400027	99	P	SUR	44	-67	4404	0	0.7	-0.3	0.8
4400032	99	P	SUR	44	-69	675	0	0.5	-0.9	1.1
4400150	99	P	SUR	43	-64	736	0	0.6	-0.5	0.8
4400488	99	P	SUR	45	-61	156	0	0.6	-0.2	0.7
4400489	99	P	SUR	45	-61	142	0	0.6	-0.3	0.7
44005	99	P	SUR	43	-69	744	0	0.6	-0.4	0.7
4400777	99	P	SUR	31	-28	744	0	0.4	0.2	0.4
44008	99	P	SUR	41	-69	742	0	0.7	-1.3	1.4
44011	99	P	SUR	41	-67	744	0	0.7	0.1	0.7
4401563	99	P	SUR	19	-69	305	0	0.3	-1.5	1.5
4401576	99	P	SUR	28	-69	744	0	0.3	-0.5	0.6
4401581	99	P	SUR	29	-68	744	0	0.4	-0.2	0.5
4401582	99	P	SUR	31	-27	743	0	0.4	0.4	0.6
4401584	99	P	SUR	29	-37	744	0	0.3	0.8	0.8
4401585	99	P	SUR	24	-37	744	0	0.3	0.3	0.5
4401587	99	P	SUR	74	9	744	0	0.5	0.4	0.7
4401588	99	P	SUR	67	-16	744	0	0.4	0.0	0.4
4401859	99	P	SUR	17	-64	367	0	0.3	-0.1	0.3
4401863	99	P	SUR	16	-57	702	0	0.2	-1.0	1.1
4401864	99	P	SUR	21	-57	701	0	0.2	-0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401867	99	P	SUR	35	-55	744	0	0.4	0.0	0.4
4401872	99	P	SUR	30	-65	744	0	0.4	-0.2	0.4
4401874	99	P	SUR	25	-68	744	0	0.3	-0.3	0.4
4402603	99	P	SUR	64	-3	706	0	0.5	0.1	0.5
4402604	99	P	SUR	43	-20	671	0	0.4	-0.1	0.4
4402606	99	P	SUR	61	-25	707	0	0.5	-0.1	0.5
4402607	99	P	SUR	46	-16	692	0	0.4	-0.3	0.5
4402609	99	P	SUR	63	-29	714	0	0.5	-0.2	0.6
4402611	99	P	SUR	49	-16	694	0	0.4	-0.2	0.4
4402613	99	P	SUR	40	-17	702	0	0.3	-0.2	0.4
4402618	99	P	SUR	31	-62	706	0	0.4	0.0	0.4
4402656	99	P	SUR	34	-31	692	0	0.5	0.7	0.9
4402660	99	P	SUR	28	-21	727	0	0.2	0.3	0.4
4402663	99	P	SUR	42	-9	725	0	0.4	-0.2	0.4
4402670	99	P	SUR	23	-41	706	0	0.3	-0.2	0.4
4402671	99	P	SUR	18	-63	704	0	2.9	-4.0	4.9
4402672	99	P	SUR	19	-47	708	0	0.2	-0.1	0.2
4402673	99	P	SUR	17	-51	715	0	0.2	0.2	0.3
4402674	99	P	SUR	16	-57	705	0	0.2	0.2	0.3
4402675	99	P	SUR	27	-33	700	0	0.3	0.0	0.3
4402676	99	P	SUR	27	-36	704	0	0.3	0.3	0.5
44027	99	P	SUR	44	-67	733	0	0.8	-0.4	0.9
4402721	99	P	SUR	47	-19	723	0	0.4	0.0	0.4
4402726	99	P	SUR	52	-37	721	0	0.5	-0.2	0.5
4402727	99	P	SUR	54	-20	722	0	0.5	-0.3	0.6
4402732	99	P	SUR	42	-51	717	0	0.5	0.2	0.5
4402733	99	P	SUR	51	-52	712	18	1.9	0.4	2.0
4402735	99	P	SUR	48	-49	718	0	0.6	0.0	0.6
4402736	99	P	SUR	43	-49	732	0	0.5	0.2	0.6
4402742	99	P	SUR	50	-39	693	0	0.6	-0.2	0.6
4402743	99	P	SUR	45	-52	712	0	0.5	-0.5	0.8
4402744	99	P	SUR	45	-55	717	0	0.5	0.1	0.5
4402746	99	P	SUR	43	-45	734	0	0.8	0.3	0.8
4402747	99	P	SUR	48	-53	5	0	0.4	-0.7	0.8
4402749	99	P	SUR	54	-44	717	0	0.5	-0.3	0.6
4402750	99	P	SUR	54	-40	718	0	0.5	-0.6	0.8
4402878	99	P	SUR	38	-67	702	0	0.5	0.3	0.6
4402880	99	P	SUR	43	-59	689	0	0.6	0.3	0.7
44032	99	P	SUR	44	-69	675	0	0.6	-0.9	1.1
4403556	99	P	SUR	50	-6	166	88	1.7	0.5	1.7
4403557	99	P	SUR	59	-7	724	0	0.5	0.6	0.8
4403558	99	P	SUR	49	-19	741	0	0.7	0.2	0.7
4403568	99	P	SUR	45	-57	741	0	0.5	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4403569	99	P	SUR	44	-44	744	0	0.7	0.3	0.7
44078	99	P	SUR	60	-40	332	0	0.7	-1.1	1.3
44150	99	P	SUR	43	-64	735	0	0.6	-0.5	0.8
44258	99	P	SUR	45	-63	733	0	0.6	-0.3	0.7
44488	99	P	SUR	45	-61	741	0	0.5	-0.2	0.6
44489	99	P	SUR	46	-61	673	0	0.5	-0.2	0.5
4601782	99	P	SUR	39	-26	695	0	0.6	0.8	1.0
4601812	99	P	SUR	87	-30	717	0	0.5	0.5	0.7
4601813	99	P	SUR	80	18	219	0	1.8	0.6	1.9
4601817	99	P	SUR	83	7	95	0	0.3	-0.1	0.3
4701518	99	P	SUR	75	-19	285	0	0.7	0.0	0.7
4701738	99	P	SUR	70	-67	731	731	0.0	0.0	0.0
4801658	99	P	SUR	83	-64	714	0	0.5	0.4	0.7
4801668	99	P	SUR	70	-18	230	0	0.7	0.1	0.7
4801723	99	P	SUR	75	31	734	0	1.5	0.1	1.5
4801760	99	P	SUR	85	-63	742	0	0.4	-0.7	0.8
4801761	99	P	SUR	71	-13	742	91	4.4	-1.5	4.7
4801763	99	P	SUR	85	-44	738	0	0.4	-0.2	0.5
4801765	99	P	SUR	85	-40	739	0	0.5	0.0	0.5
4801767	99	P	SUR	74	-14	744	41	1.6	-0.5	1.6
4801770	99	P	SUR	82	-8	744	0	0.7	-0.1	0.7
4802506	99	P	SUR	79	-8	744	0	0.7	0.4	0.8
4802602	99	P	SUR	85	-5	710	0	0.7	0.5	0.8
4802663	99	P	SUR	83	-57	730	0	0.4	0.5	0.7
4803978	99	P	SUR	86	-46	743	0	0.5	-0.2	0.5
5801965	99	P	SUR	45	-67	738	0	1.1	-0.8	1.3
6100001	99	P	SUR	43	8	743	0	0.6	-0.3	0.7
6100002	99	P	SUR	42	5	742	0	0.5	-0.3	0.6
6100196	99	P	SUR	42	4	731	0	2.2	0.7	2.3
6100197	99	P	SUR	40	4	732	0	0.4	0.4	0.5
6100198	99	P	SUR	37	-2	732	0	0.5	0.3	0.6
6100280	99	P	SUR	41	1	732	0	0.5	0.1	0.5
6100281	99	P	SUR	40	0	732	0	0.6	0.2	0.6
6100417	99	P	SUR	38	0	731	0	0.5	0.3	0.6
6100430	99	P	SUR	40	2	732	0	0.4	0.1	0.4
6101007	99	P	SUR	36	25	142	0	0.5	-0.7	0.8
6101008	99	P	SUR	37	22	96	0	0.6	-0.3	0.6
6101009	99	P	SUR	35	25	151	0	0.5	-0.6	0.8
6102731	99	P	SUR	42	19	148	0	0.6	-0.3	0.7
6102732	99	P	SUR	38	18	724	0	0.5	0.0	0.5
6102733	99	P	SUR	40	19	732	0	0.5	-0.7	0.8
6102804	99	P	SUR	40	3	725	0	0.4	-7.3	7.3
6102805	99	P	SUR	41	9	197	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
6102806	99	P	SUR	41	8	188	0	0.3	0.0	0.3
6102807	99	P	SUR	41	4	393	0	0.3	0.2	0.4
6102809	99	P	SUR	37	1	718	0	0.4	-0.8	0.9
6102810	99	P	SUR	39	2	691	0	0.6	-0.2	0.6
6102811	99	P	SUR	40	3	735	0	0.4	0.1	0.4
6200001	99	P	SUR	45	-5	735	0	0.4	0.2	0.4
6200024	99	P	SUR	44	-3	732	0	0.6	0.2	0.7
6200025	99	P	SUR	44	-6	711	0	0.7	0.0	0.7
6200082	99	P	SUR	44	-8	553	11	1.8	0.3	1.9
6200083	99	P	SUR	43	-9	732	0	1.3	1.5	2.0
6200084	99	P	SUR	42	-9	732	0	0.5	-0.1	0.5
6200085	99	P	SUR	36	-7	330	0	0.4	0.2	0.4
6200086	99	P	SUR	55	6	229	0	0.4	-0.2	0.5
6200087	99	P	SUR	55	7	454	0	0.5	-0.4	0.6
6200091	99	P	SUR	53	-5	742	0	0.4	-0.2	0.5
6200092	99	P	SUR	51	-11	742	0	0.5	-0.3	0.6
6200093	99	P	SUR	55	-10	742	0	0.5	-0.4	0.7
6200094	99	P	SUR	52	-7	740	0	0.4	-0.1	0.5
6200095	99	P	SUR	53	-16	742	0	0.6	-0.5	0.8
6200191	99	P	SUR	41	-10	150	0	0.5	0.0	0.5
6200192	99	P	SUR	40	-10	730	0	0.3	0.4	0.6
6200199	99	P	SUR	40	-9	598	0	0.3	0.2	0.4
6200200	99	P	SUR	36	-8	606	0	0.4	0.0	0.4
6201065	99	P	SUR	54	7	703	0	0.3	0.8	0.9
6201081	99	P	SUR	38	-9	707	0	0.4	-0.3	0.5
6202613	99	P	SUR	40	-54	744	0	0.5	0.0	0.5
6202627	99	P	SUR	63	-3	717	0	0.4	0.0	0.4
6202630	99	P	SUR	47	-5	205	0	1.0	0.2	1.0
6202632	99	P	SUR	67	-53	743	0	2.1	-0.2	2.1
6202637	99	P	SUR	68	-10	744	0	0.5	0.0	0.5
6202639	99	P	SUR	29	-42	744	0	0.3	-0.1	0.3
6202640	99	P	SUR	32	-35	744	0	0.3	0.0	0.3
6202643	99	P	SUR	22	-70	744	0	0.3	-0.2	0.3
6202644	99	P	SUR	35	-48	744	0	0.4	-0.3	0.5
62029	99	P	SUR	49	-12	1474	0	0.5	-0.4	0.6
6203516	99	P	SUR	42	-39	691	0	0.7	0.1	0.7
6203607	99	P	SUR	31	-26	715	35	1.9	0.1	1.9
6203612	99	P	SUR	33	-55	742	0	0.4	0.3	0.5
6203613	99	P	SUR	42	-55	744	0	1.1	0.2	1.2
6203614	99	P	SUR	32	-65	62	0	0.4	0.2	0.4
6203615	99	P	SUR	22	-68	743	0	0.3	-0.2	0.4
6203616	99	P	SUR	23	-56	744	0	0.3	0.2	0.3
6203617	99	P	SUR	17	-64	710	0	0.2	0.1	0.2

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203621	99	P	SUR	31	-24	742	0	0.3	0.1	0.3
6203624	99	P	SUR	36	-67	744	0	0.7	-0.5	0.9
6203625	99	P	SUR	28	-31	744	0	0.3	-0.1	0.3
6203632	99	P	SUR	24	-42	744	0	0.3	0.2	0.3
6203633	99	P	SUR	68	15	742	6	0.7	0.1	0.7
6203634	99	P	SUR	27	-34	744	0	0.3	0.2	0.4
6203639	99	P	SUR	29	-26	744	0	0.3	0.0	0.3
6203640	99	P	SUR	25	-47	742	0	0.3	-0.2	0.3
6203642	99	P	SUR	15	-58	743	0	0.7	-0.1	0.7
6203643	99	P	SUR	21	-64	743	0	0.3	-0.2	0.3
6203651	99	P	SUR	44	-31	744	0	0.6	0.6	0.8
6203730	99	P	SUR	26	-66	705	0	0.3	0.2	0.3
6203737	99	P	SUR	26	-44	719	0	0.3	0.3	0.4
6203741	99	P	SUR	63	-21	708	0	0.4	-0.1	0.5
6203744	99	P	SUR	63	3	703	0	0.5	0.2	0.5
6203745	99	P	SUR	63	-18	520	0	0.4	0.1	0.4
6203753	99	P	SUR	60	-28	706	0	0.6	-0.3	0.7
6203755	99	P	SUR	40	-11	699	0	0.3	-0.8	0.9
6203765	99	P	SUR	25	-48	703	0	0.2	0.3	0.4
6203767	99	P	SUR	18	-59	705	0	0.2	-0.9	0.9
6203768	99	P	SUR	33	-13	716	0	0.3	0.2	0.3
6203771	99	P	SUR	23	-38	713	0	0.4	-0.1	0.4
6203772	99	P	SUR	34	-65	708	0	0.5	-0.2	0.5
6203773	99	P	SUR	30	-47	717	0	0.3	-0.3	0.5
6203776	99	P	SUR	30	-25	716	0	0.3	0.0	0.3
6203825	99	P	SUR	70	-10	717	0	0.8	0.7	1.1
6203827	99	P	SUR	61	-3	734	1	0.4	0.1	0.5
6203838	99	P	SUR	18	-59	714	0	0.2	0.2	0.3
6203839	99	P	SUR	25	-48	718	0	0.2	-0.1	0.2
6203840	99	P	SUR	26	-40	720	0	0.3	0.1	0.4
6203841	99	P	SUR	29	-16	717	0	0.3	-1.3	1.3
6203842	99	P	SUR	35	-33	718	0	0.3	0.2	0.3
6203844	99	P	SUR	46	-11	719	0	0.4	0.2	0.5
6203845	99	P	SUR	47	-23	717	0	0.5	-0.2	0.5
6203846	99	P	SUR	28	-21	713	0	0.2	0.0	0.2
6203848	99	P	SUR	39	-52	716	0	0.5	0.1	0.5
6203849	99	P	SUR	32	-17	714	0	0.4	0.2	0.5
6203850	99	P	SUR	35	-15	714	0	0.3	0.2	0.4
6203853	99	P	SUR	63	2	718	0	0.5	0.2	0.5
6203854	99	P	SUR	57	-31	708	0	0.5	0.1	0.5
6203855	99	P	SUR	68	2	716	0	0.8	0.1	0.8
6203856	99	P	SUR	59	0	719	21	2.0	-0.3	2.0
6203857	99	P	SUR	59	3	733	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
6203858	99	P	SUR	17	-25	48	0	2.1	-0.8	2.3
6203859	99	P	SUR	15	-17	643	0	0.4	-0.4	0.5
6203860	99	P	SUR	12	-18	638	0	0.3	0.6	0.7
6203861	99	P	SUR	22	-17	589	0	0.3	0.4	0.5
6203863	99	P	SUR	66	-29	200	9	3.7	-2.5	4.5
6203864	99	P	SUR	68	-11	713	1	1.1	0.2	1.1
6203865	99	P	SUR	61	-41	714	0	0.5	-0.2	0.5
6203866	99	P	SUR	65	6	718	0	0.4	0.3	0.5
6203867	99	P	SUR	50	-7	735	0	0.4	0.3	0.5
62081	99	P	SUR	51	-13	1486	0	0.5	-0.3	0.5
62091	99	P	SUR	53	-5	742	0	0.4	-0.2	0.5
62092	99	P	SUR	51	-11	742	0	0.5	-0.3	0.6
62093	99	P	SUR	55	-10	742	0	0.5	-0.4	0.7
62094	99	P	SUR	52	-7	740	0	0.4	-0.1	0.5
62095	99	P	SUR	53	-16	742	0	0.6	-0.5	0.8
62102	99	P	SUR	58	2	1488	0	0.5	0.0	0.5
62103	99	P	SUR	50	-3	1482	0	0.4	-0.4	0.6
62104	99	P	SUR	57	1	1488	0	0.4	-0.3	0.5
62105	99	P	SUR	55	-13	1488	0	0.7	-0.5	0.8
62107	99	P	SUR	50	-6	560	0	0.3	-0.2	0.4
62112	99	P	SUR	58	0	1488	0	0.4	0.0	0.5
62113	99	P	SUR	58	0	1488	0	0.6	0.1	0.6
62114	99	P	SUR	58	0	1402	0	0.6	-0.1	0.6
62115	99	P	SUR	58	-3	1482	0	0.4	-0.2	0.5
62116	99	P	SUR	58	1	1482	0	0.6	-0.1	0.7
62118	99	P	SUR	58	1	1488	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	1484	0	0.5	0.3	0.5
62120	99	P	SUR	56	2	1488	0	0.5	-0.3	0.6
62121	99	P	SUR	54	3	1488	0	0.6	0.4	0.7
62122	99	P	SUR	57	2	1488	0	0.5	0.1	0.5
62124	99	P	SUR	54	-4	1468	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	1488	0	0.4	0.3	0.5
62129	99	P	SUR	58	0	1488	0	0.6	0.2	0.6
62130	99	P	SUR	59	1	1486	0	0.5	-0.4	0.6
62131	99	P	SUR	54	1	1268	0	0.4	0.3	0.5
62132	99	P	SUR	56	2	1488	0	0.6	0.3	0.7
62133	99	P	SUR	57	1	1484	0	0.6	-0.1	0.7
62134	99	P	SUR	58	1	1488	0	0.4	0.5	0.6
62138	99	P	SUR	54	0	1472	0	0.6	0.6	0.8
62140	99	P	SUR	57	1	1488	0	0.5	-0.1	0.5
62141	99	P	SUR	58	0	1476	0	0.6	-0.4	0.7
62143	99	P	SUR	58	2	1488	0	0.6	0.6	0.9
62144	99	P	SUR	53	2	1488	0	0.5	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62145	99	P	SUR	53	3	1488	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	1484	0	0.6	0.0	0.6
62148	99	P	SUR	54	2	1488	0	0.4	0.8	0.9
62149	99	P	SUR	54	1	1488	0	0.3	0.5	0.6
62151	99	P	SUR	57	2	998	0	0.4	0.0	0.4
62152	99	P	SUR	57	2	1488	0	0.5	0.5	0.7
62153	99	P	SUR	57	2	1488	0	0.4	0.1	0.5
62154	99	P	SUR	56	2	1488	0	0.4	0.0	0.4
62155	99	P	SUR	58	1	1488	0	0.4	0.5	0.6
62157	99	P	SUR	58	0	1486	0	0.5	-0.2	0.5
62160	99	P	SUR	57	2	1482	0	0.5	0.2	0.5
62161	99	P	SUR	58	1	1486	0	0.7	0.1	0.7
62162	99	P	SUR	57	1	1448	0	0.5	-0.3	0.5
62163	99	P	SUR	48	-9	1487	0	0.4	-0.2	0.4
62164	99	P	SUR	57	1	1486	0	0.4	0.3	0.5
62165	99	P	SUR	54	1	1484	0	0.6	0.1	0.6
62168	99	P	SUR	58	1	1482	0	0.4	-0.1	0.4
62170	99	P	SUR	51	2	1484	0	0.4	-0.1	0.4
62296	99	P	SUR	53	2	1368	0	0.4	-0.2	0.5
62297	99	P	SUR	59	2	1486	0	0.5	-0.1	0.5
62302	99	P	SUR	61	-2	1488	0	0.6	-0.2	0.7
62304	99	P	SUR	51	2	1488	0	0.5	0.0	0.5
62305	99	P	SUR	50	0	1488	0	0.4	-0.1	0.4
62442	99	P	SUR	49	-16	1488	0	0.4	-0.3	0.6
6301001	99	P	SUR	64	5	739	0	0.7	0.2	0.7
6301003	99	P	SUR	74	24	494	0	0.4	-0.2	0.5
6301572	99	P	SUR	53	-41	744	0	0.6	-0.1	0.6
6301575	99	P	SUR	57	-48	744	0	0.8	-0.2	0.8
6301576	99	P	SUR	59	-22	744	0	0.6	-0.1	0.6
6301577	99	P	SUR	68	-4	744	0	0.5	0.0	0.5
63055	99	P	SUR	61	2	1486	0	0.6	0.0	0.6
63056	99	P	SUR	60	2	1488	0	0.7	0.4	0.8
63057	99	P	SUR	59	2	1488	0	0.5	-0.2	0.5
63058	99	P	SUR	53	2	2290	0	0.5	0.2	0.5
63059	99	P	SUR	58	-1	1196	48	1.4	0.3	1.5
63101	99	P	SUR	61	1	1488	0	0.8	0.1	0.8
63102	99	P	SUR	61	1	1460	0	0.6	0.0	0.6
63103	99	P	SUR	61	1	1488	0	1.0	0.4	1.1
63108	99	P	SUR	61	2	1488	0	0.7	0.0	0.7
63109	99	P	SUR	60	2	1488	0	0.5	-0.6	0.8
63110	99	P	SUR	60	2	1488	0	0.6	-0.3	0.7
63111	99	P	SUR	61	2	1486	0	0.7	-0.6	0.9
63112	99	P	SUR	61	1	1488	0	0.6	-0.5	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63115	99	P	SUR	62	1	1306	0	0.6	-0.2	0.6
63117	99	P	SUR	61	1	1488	0	0.8	0.5	1.0
63118	99	P	SUR	60	2	1480	0	0.6	-0.5	0.8
6401582	99	P	SUR	82	22	743	0	0.5	0.3	0.5
6401583	99	P	SUR	59	-42	744	0	0.5	-0.1	0.5
6401584	99	P	SUR	82	10	744	0	0.6	0.4	0.7
6401587	99	P	SUR	75	-19	743	0	0.8	0.1	0.8
6401590	99	P	SUR	75	-9	206	1	2.9	0.3	2.9
6401592	99	P	SUR	71	13	742	0	0.5	0.2	0.5
6401759	99	P	SUR	55	-40	744	0	0.6	0.3	0.7
6401762	99	P	SUR	66	-6	743	0	0.4	0.4	0.6
6401763	99	P	SUR	66	12	743	0	0.5	-0.2	0.5
6402539	99	P	SUR	73	13	680	0	0.5	0.1	0.5
6402551	99	P	SUR	48	-45	677	0	0.5	0.3	0.6
6402563	99	P	SUR	70	34	695	0	0.5	0.5	0.7
6402587	99	P	SUR	47	-46	584	4	2.7	9.5	9.9
6402594	99	P	SUR	54	-50	685	0	0.7	0.0	0.7
6402596	99	P	SUR	63	-36	675	0	0.8	0.1	0.8
6402597	99	P	SUR	47	-39	678	0	0.5	-0.1	0.5
6402599	99	P	SUR	51	-20	684	0	0.5	0.1	0.5
6402615	99	P	SUR	17	-51	713	0	0.2	0.2	0.3
6402616	99	P	SUR	29	-44	702	0	0.3	-0.2	0.3
6402617	99	P	SUR	25	-45	711	0	0.3	0.4	0.5
6402618	99	P	SUR	23	-36	710	0	0.3	0.0	0.3
6402619	99	P	SUR	39	-10	713	0	0.3	-0.1	0.3
6402620	99	P	SUR	47	-5	709	0	0.4	0.5	0.6
6402621	99	P	SUR	43	-11	714	0	0.4	0.2	0.4
6402622	99	P	SUR	37	-19	714	0	0.3	0.2	0.4
64041	99	P	SUR	61	-3	1488	0	0.6	-0.3	0.7
64045	99	P	SUR	59	-12	1486	0	0.5	-0.4	0.7
64046	99	P	SUR	61	-4	1488	0	0.5	-0.4	0.6
6600021	99	P	SUR	55	14	255	0	0.4	-0.8	1.0
6600022	99	P	SUR	54	14	294	0	0.5	-0.5	0.7
7801563	99	P	SUR	45	-65	744	0	0.7	0.3	0.8
902	99	P	SUR	39	3	1	0	0.0	3.6	3.6

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                : JAN 2023
                   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	620	0	0	0.8	0.5	1.0
1300002	99	SPEED	SUR	20	-23	619	0	0	0.8	0.3	0.8
1300008	99	SPEED	SUR	15	-38	620	0	0	0.8	-0.2	0.8
1300130	99	SPEED	SUR	28	-16	727	0	0	1.1	-0.2	1.1
1300131	99	SPEED	SUR	28	-17	729	0	0	1.8	1.7	2.5
4100026	99	SPEED	SUR	12	-38	245	0	0	0.8	-0.3	0.9
4100043	99	SPEED	SUR	21	-65	4447	0	0	1.1	0.1	1.1
4100046	99	SPEED	SUR	24	-68	4452	0	0	1.0	-0.1	1.0
4100049	99	SPEED	SUR	27	-63	4450	0	0	1.1	-0.1	1.1
4100052	99	SPEED	SUR	18	-65	4321	0	0	1.1	-0.7	1.3
4100053	99	SPEED	SUR	18	-66	4251	0	0	1.5	1.0	1.8
4100056	99	SPEED	SUR	18	-65	3076	0	0	1.0	-0.7	1.2
4100139	99	SPEED	SUR	20	-38	744	0	0	1.1	-0.1	1.2
4100300	99	SPEED	SUR	16	-57	712	0	0	0.9	-0.9	1.3
41043	99	SPEED	SUR	21	-65	744	0	0	1.1	0.0	1.1
41046	99	SPEED	SUR	24	-68	744	0	0	1.1	-0.2	1.1
41049	99	SPEED	SUR	28	-63	744	0	0	1.1	-0.1	1.1
41052	99	SPEED	SUR	18	-65	723	0	0	1.1	-0.5	1.3
41053	99	SPEED	SUR	19	-66	723	0	0	1.5	0.3	1.5
41056	99	SPEED	SUR	18	-66	536	0	0	1.0	-0.5	1.1
4200059	99	SPEED	SUR	15	-67	4450	0	0	0.9	0.0	0.9
4200085	99	SPEED	SUR	18	-67	3278	0	0	1.3	-0.7	1.5
42059	99	SPEED	SUR	15	-68	744	0	0	0.9	-0.1	0.9
42085	99	SPEED	SUR	18	-67	713	0	0	1.4	-0.4	1.4
4400005	99	SPEED	SUR	43	-69	743	0	0	1.3	0.3	1.3
4400008	99	SPEED	SUR	40	-69	4448	0	0	1.6	-0.3	1.6
4400027	99	SPEED	SUR	44	-67	4450	0	0	1.3	0.3	1.3
4400032	99	SPEED	SUR	44	-69	674	0	0	1.3	0.1	1.3
4400034	99	SPEED	SUR	44	-68	672	0	0	1.4	0.1	1.5
4400037	99	SPEED	SUR	43	-68	435	0	0	1.3	-0.7	1.5
4400150	99	SPEED	SUR	43	-64	736	0	0	1.8	-0.1	1.8
4400488	99	SPEED	SUR	45	-61	156	0	0	1.4	0.4	1.5
4400489	99	SPEED	SUR	45	-61	142	0	0	1.3	1.6	2.1
44005	99	SPEED	SUR	43	-69	744	0	0	1.3	0.4	1.3

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
44008	99	SPEED	SUR	41	-69	744	0	0	1.7	-0.4	1.7
44027	99	SPEED	SUR	44	-67	740	0	0	1.3	0.3	1.4
44032	99	SPEED	SUR	44	-69	674	0	0	1.3	0.2	1.3
44034	99	SPEED	SUR	44	-68	672	0	0	1.5	0.1	1.5
44037	99	SPEED	SUR	44	-68	434	0	0	1.4	-0.6	1.5
44078	99	SPEED	SUR	60	-40	328	0	0	1.9	-2.0	2.8
44150	99	SPEED	SUR	43	-64	735	0	0	1.8	0.0	1.8
44258	99	SPEED	SUR	45	-63	733	0	0	1.6	0.5	1.7
44488	99	SPEED	SUR	45	-61	740	0	0	1.7	0.4	1.7
44489	99	SPEED	SUR	46	-61	672	0	0	1.5	1.2	1.9
6100001	99	SPEED	SUR	43	8	739	0	0	1.9	-1.0	2.2
6100002	99	SPEED	SUR	42	5	739	0	0	1.6	-0.6	1.7
6100196	99	SPEED	SUR	42	4	517	0	0	2.5	0.2	2.5
6100197	99	SPEED	SUR	40	4	732	0	0	1.4	-0.2	1.4
6100198	99	SPEED	SUR	37	-2	720	0	0	1.6	-0.3	1.6
6100280	99	SPEED	SUR	41	1	725	0	0	1.8	-0.8	2.0
6100281	99	SPEED	SUR	40	0	721	0	0	2.3	1.2	2.5
6100417	99	SPEED	SUR	38	0	40	0	0	1.1	-0.2	1.1
6100430	99	SPEED	SUR	40	2	714	0	0	1.7	-1.0	2.0
6101007	99	SPEED	SUR	36	25	142	0	0	2.1	-0.1	2.1
6101008	99	SPEED	SUR	37	22	96	0	0	2.3	-0.3	2.3
6101009	99	SPEED	SUR	35	25	151	0	0	2.0	0.8	2.1
6200001	99	SPEED	SUR	45	-5	732	0	0	1.4	-1.2	1.9
6200024	99	SPEED	SUR	44	-3	729	0	0	1.9	-0.1	1.9
6200025	99	SPEED	SUR	44	-6	701	0	0	1.8	-1.0	2.1
6200082	99	SPEED	SUR	44	-8	731	0	0	1.3	-1.1	1.7
6200083	99	SPEED	SUR	43	-9	732	0	0	1.3	-1.0	1.6
6200084	99	SPEED	SUR	42	-9	730	0	0	1.3	-0.5	1.4
6200085	99	SPEED	SUR	36	-7	329	0	0	1.1	-0.4	1.1
6200086	99	SPEED	SUR	55	6	229	0	0	1.9	1.4	2.4
6200087	99	SPEED	SUR	55	7	454	0	0	1.6	1.6	2.3
6200091	99	SPEED	SUR	53	-5	742	0	0	1.3	1.0	1.6
6200092	99	SPEED	SUR	51	-11	742	0	0	1.6	-0.9	1.8
6200093	99	SPEED	SUR	55	-10	742	0	0	1.3	0.4	1.4
6200094	99	SPEED	SUR	52	-7	740	0	0	1.6	-1.0	1.9
6200095	99	SPEED	SUR	53	-16	742	0	0	1.2	0.3	1.2
6200192	99	SPEED	SUR	40	-10	730	0	0	1.2	0.0	1.2
6200199	99	SPEED	SUR	40	-9	348	0	0	1.7	-0.1	1.7
6201065	99	SPEED	SUR	54	7	30	0	0	2.2	-0.7	2.3
6201081	99	SPEED	SUR	38	-9	707	0	0	1.2	0.0	1.2
62029	99	SPEED	SUR	49	-12	1474	0	0	1.2	0.9	1.5

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
62081	99	SPEED	SUR	51	-13	1486	0	0	1.3	0.9	1.5
62091	99	SPEED	SUR	53	-5	742	0	0	1.3	1.0	1.6
62092	99	SPEED	SUR	51	-11	742	0	0	1.5	-0.6	1.6
62093	99	SPEED	SUR	55	-10	742	0	0	1.4	0.8	1.6
62094	99	SPEED	SUR	52	-7	740	0	0	1.5	-0.7	1.7
62095	99	SPEED	SUR	53	-16	742	0	0	1.2	0.6	1.3
62102	99	SPEED	SUR	58	2	1488	0	0	1.5	-0.3	1.5
62103	99	SPEED	SUR	50	-3	822	0	0	1.7	-0.8	1.9
62104	99	SPEED	SUR	57	1	1488	0	0	1.4	-0.5	1.5
62105	99	SPEED	SUR	55	-13	1488	0	0	1.5	1.0	1.8
62107	99	SPEED	SUR	50	-6	414	0	0	1.3	0.3	1.3
62112	99	SPEED	SUR	58	0	1488	0	0	1.7	-0.4	1.7
62113	99	SPEED	SUR	58	0	1488	0	0	1.9	-0.1	1.9
62114	99	SPEED	SUR	58	0	1402	0	0	1.8	0.6	1.9
62118	99	SPEED	SUR	58	1	1488	0	0	1.6	0.5	1.7
62119	99	SPEED	SUR	57	2	1484	0	0	1.7	-0.4	1.8
62120	99	SPEED	SUR	56	2	1488	0	0	1.5	-0.1	1.5
62121	99	SPEED	SUR	54	3	1488	0	0	1.3	-0.4	1.4
62122	99	SPEED	SUR	57	2	1488	0	0	1.4	-0.4	1.4
62129	99	SPEED	SUR	58	0	1486	0	0	1.8	0.1	1.8
62131	99	SPEED	SUR	54	1	1268	0	0	1.5	0.3	1.6
62132	99	SPEED	SUR	56	2	1488	0	0	2.8	-2.2	3.5
62133	99	SPEED	SUR	57	1	1478	0	0	1.6	-0.5	1.6
62134	99	SPEED	SUR	58	1	1488	0	0	1.5	-0.2	1.5
62140	99	SPEED	SUR	57	1	1488	0	0	1.6	0.0	1.6
62143	99	SPEED	SUR	58	2	1488	0	0	2.3	-1.1	2.5
62144	99	SPEED	SUR	53	2	1488	0	0	1.7	-0.4	1.8
62145	99	SPEED	SUR	53	3	1488	0	0	1.6	0.6	1.8
62146	99	SPEED	SUR	57	2	1482	0	0	1.6	-0.1	1.6
62148	99	SPEED	SUR	54	2	1488	0	0	2.1	-0.6	2.2
62149	99	SPEED	SUR	54	1	1488	0	0	1.3	0.2	1.3
62152	99	SPEED	SUR	57	2	1488	0	0	1.7	-1.4	2.1
62153	99	SPEED	SUR	57	2	1488	0	0	3.4	-3.0	4.5
62154	99	SPEED	SUR	56	2	1488	0	0	1.4	-0.2	1.4
62155	99	SPEED	SUR	58	1	878	0	0	1.8	0.0	1.8
62163	99	SPEED	SUR	48	-9	1475	4	0	1.3	0.2	1.3
62164	99	SPEED	SUR	57	1	1486	0	0	1.6	-1.4	2.1
62165	99	SPEED	SUR	54	1	1484	0	0	1.9	-0.8	2.0
62170	99	SPEED	SUR	51	2	1480	0	0	1.4	1.0	1.8
62304	99	SPEED	SUR	51	2	1464	0	0	1.7	1.2	2.1
62442	99	SPEED	SUR	49	-16	1488	0	0	1.2	0.6	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
6301001	99	SPEED	SUR	64	5	739	0	0	1.7	-0.1	1.7
6301003	99	SPEED	SUR	74	24	494	0	0	1.8	-1.9	2.6
63055	99	SPEED	SUR	61	2	1486	0	0	1.4	-0.9	1.7
63056	99	SPEED	SUR	60	2	1488	0	0	1.7	0.5	1.7
63057	99	SPEED	SUR	59	2	1488	0	0	2.7	-1.1	2.9
63058	99	SPEED	SUR	53	2	808	0	0	1.4	0.3	1.4
63101	99	SPEED	SUR	61	1	1482	0	0	1.7	-0.7	1.8
63103	99	SPEED	SUR	61	1	1488	0	0	2.1	-0.2	2.1
63106	99	SPEED	SUR	61	2	1480	0	0	2.2	-1.0	2.5
63108	99	SPEED	SUR	61	2	1488	0	0	1.7	0.0	1.7
63109	99	SPEED	SUR	60	2	1462	0	0	1.8	0.4	1.8
63110	99	SPEED	SUR	60	2	1488	0	0	1.8	-0.7	1.9
63112	99	SPEED	SUR	61	1	1488	0	0	1.6	-0.6	1.7
63115	99	SPEED	SUR	62	1	1306	0	0	1.5	-0.7	1.7
63117	99	SPEED	SUR	61	1	1482	0	0	1.7	-0.5	1.7
64041	99	SPEED	SUR	61	-3	1488	0	0	1.5	-0.3	1.6
64045	99	SPEED	SUR	59	-12	1475	4	0	1.4	1.1	1.8
64046	99	SPEED	SUR	61	-4	1476	2	0	1.5	1.2	1.9
6600021	99	SPEED	SUR	55	14	255	0	0	1.3	0.8	1.5
6600022	99	SPEED	SUR	54	14	294	1	0	1.6	-0.4	1.6
902	99	SPEED	SUR	39	3	1	0	0	0.0	4.4	4.4

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                : JAN 2023
                   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
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WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	592	0	0	10.2	0.6	10.2
1300002	99	DIRN	SUR	20	-23	617	0	0	6.3	-2.8	6.9
1300008	99	DIRN	SUR	15	-38	577	0	0	9.0	3.5	9.7
1300130	99	DIRN	SUR	28	-16	681	0	0	10.9	0.3	10.9
1300131	99	DIRN	SUR	28	-17	656	0	0	15.2	7.1	16.8
4100001	99	DIRN	SUR	35	-72	3871	0	0	15.5	5.6	16.5
4100002	99	DIRN	SUR	32	-75	3696	0	0	13.6	6.1	14.9
4100004	99	DIRN	SUR	33	-79	3759	0	0	16.8	-0.4	16.8
4100008	99	DIRN	SUR	31	-81	487	0	1	16.3	-1.5	16.4
4100009	99	DIRN	SUR	29	-80	3503	0	0	13.1	3.4	13.5
4100010	99	DIRN	SUR	29	-78	3649	0	0	12.2	6.8	13.9
4100013	99	DIRN	SUR	33	-78	3504	0	1	15.5	2.4	15.7
4100024	99	DIRN	SUR	34	-78	424	0	0	17.5	8.9	19.6
4100025	99	DIRN	SUR	35	-75	3723	0	1	16.1	0.4	16.1
4100026	99	DIRN	SUR	12	-38	230	0	0	9.3	-6.0	11.1
4100033	99	DIRN	SUR	32	-80	478	0	1	17.3	11.4	20.7
4100037	99	DIRN	SUR	34	-77	570	0	0	16.1	5.4	17.0
4100038	99	DIRN	SUR	34	-78	436	0	1	18.3	8.7	20.2
4100043	99	DIRN	SUR	21	-65	4138	0	0	16.0	1.7	16.1
4100046	99	DIRN	SUR	24	-68	3973	0	0	12.5	8.6	15.2
4100047	99	DIRN	SUR	27	-71	3169	0	0	14.6	7.6	16.5
4100049	99	DIRN	SUR	27	-63	3630	0	0	14.8	5.5	15.8
4100052	99	DIRN	SUR	18	-65	4155	0	0	13.2	5.2	14.2
4100053	99	DIRN	SUR	18	-66	2748	0	1	18.1	9.2	20.3
4100056	99	DIRN	SUR	18	-65	2897	0	0	15.3	3.7	15.7
4100064	99	DIRN	SUR	34	-77	548	0	1	17.7	-0.4	17.7
4100066	99	DIRN	SUR	33	-80	546	0	1	17.6	12.9	21.8
41001	99	DIRN	SUR	35	-72	629	0	0	16.8	3.5	17.1
4100139	99	DIRN	SUR	20	-38	665	0	0	12.0	3.6	12.5
41002	99	DIRN	SUR	32	-75	609	0	0	14.3	3.8	14.8
4100300	99	DIRN	SUR	16	-57	688	0	0	8.9	-10.6	13.8
41004	99	DIRN	SUR	33	-79	616	0	0	17.1	-2.0	17.2

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
41008	99	DIRN	SUR	31	-81	477	0	1	16.0	-2.5	16.2
41009	99	DIRN	SUR	29	-80	575	0	0	14.0	1.9	14.2
41010	99	DIRN	SUR	29	-79	596	0	0	12.6	5.4	13.7
41013	99	DIRN	SUR	33	-78	578	0	1	16.0	0.9	16.0
41024	99	DIRN	SUR	34	-79	236	0	0	17.8	6.4	18.9
41025	99	DIRN	SUR	35	-76	608	0	1	15.6	-0.8	15.7
41033	99	DIRN	SUR	32	-80	461	0	1	17.5	11.2	20.8
41037	99	DIRN	SUR	34	-77	552	0	1	15.8	4.9	16.5
41038	99	DIRN	SUR	34	-78	429	0	1	18.9	9.0	20.9
41043	99	DIRN	SUR	21	-65	684	0	0	16.1	1.6	16.2
41046	99	DIRN	SUR	24	-68	653	0	0	13.1	7.9	15.3
41047	99	DIRN	SUR	28	-72	521	0	0	15.7	5.9	16.8
41049	99	DIRN	SUR	28	-63	600	0	0	15.1	3.6	15.5
41052	99	DIRN	SUR	18	-65	688	0	0	13.5	5.0	14.4
41053	99	DIRN	SUR	19	-66	502	0	1	19.4	7.8	20.9
41056	99	DIRN	SUR	18	-66	503	0	0	14.8	3.5	15.2
41064	99	DIRN	SUR	34	-77	534	0	0	18.2	0.5	18.2
41066	99	DIRN	SUR	33	-80	547	0	1	19.9	12.1	23.3
4200013	99	DIRN	SUR	27	-83	1050	0	1	14.2	-1.9	14.3
4200022	99	DIRN	SUR	28	-84	1115	0	0	16.0	-1.3	16.0
4200023	99	DIRN	SUR	26	-83	366	0	0	17.4	-3.0	17.6
4200026	99	DIRN	SUR	25	-83	183	0	0	13.6	-2.7	13.9
4200036	99	DIRN	SUR	29	-85	3681	0	0	16.6	3.3	17.0
4200056	99	DIRN	SUR	20	-85	169	0	0	6.0	3.5	6.9
4200059	99	DIRN	SUR	15	-67	4387	0	0	10.9	-0.1	10.9
4200085	99	DIRN	SUR	18	-67	2909	0	0	18.8	11.9	22.2
42013	99	DIRN	SUR	27	-83	514	0	1	14.0	-2.4	14.2
42022	99	DIRN	SUR	28	-84	545	0	0	15.3	-1.8	15.4
42023	99	DIRN	SUR	26	-83	175	0	0	17.4	-3.2	17.7
42026	99	DIRN	SUR	25	-84	95	0	1	15.1	0.2	15.1
42036	99	DIRN	SUR	29	-85	606	0	0	16.7	1.4	16.8
42056	99	DIRN	SUR	20	-85	31	0	0	7.8	3.4	8.5
42059	99	DIRN	SUR	15	-68	730	0	0	11.6	-0.6	11.6
42085	99	DIRN	SUR	18	-67	616	0	0	17.5	9.8	20.1
4400005	99	DIRN	SUR	43	-69	694	0	0	14.7	0.2	14.7
4400007	99	DIRN	SUR	44	-70	3508	0	2	17.2	5.4	18.0
4400008	99	DIRN	SUR	40	-69	3637	0	0	14.4	7.4	16.2
4400009	99	DIRN	SUR	38	-75	3803	0	0	15.8	6.9	17.2
4400017	99	DIRN	SUR	41	-72	2742	0	0	12.8	5.2	13.9
4400018	99	DIRN	SUR	42	-70	3960	0	0	14.1	8.8	16.7
4400020	99	DIRN	SUR	41	-70	3740	0	0	16.3	9.4	18.8

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
4400022	99	DIRN	SUR	41	-74	502	0	0	14.5	6.1	15.7
4400027	99	DIRN	SUR	44	-67	4098	0	0	13.3	5.4	14.3
4400029	99	DIRN	SUR	43	-71	595	0	0	14.1	6.3	15.4
4400030	99	DIRN	SUR	43	-70	591	0	1	16.6	2.3	16.8
4400032	99	DIRN	SUR	44	-69	573	0	1	15.3	-2.0	15.4
4400034	99	DIRN	SUR	44	-68	597	0	1	14.6	-5.0	15.4
4400037	99	DIRN	SUR	43	-68	409	0	0	12.0	30.9	33.1
4400039	99	DIRN	SUR	41	-73	410	0	3	37.4	4.6	37.7
4400040	99	DIRN	SUR	41	-74	705	0	0	18.3	4.0	18.7
4400041	99	DIRN	SUR	37	-77	1520	0	0	18.2	2.9	18.5
4400042	99	DIRN	SUR	38	-76	4502	0	0	21.3	5.0	21.9
4400058	99	DIRN	SUR	38	-76	4896	0	1	21.3	5.3	21.9
4400062	99	DIRN	SUR	39	-76	3326	0	3	23.4	3.3	23.7
4400063	99	DIRN	SUR	39	-76	4158	0	1	19.0	-0.4	19.0
4400064	99	DIRN	SUR	37	-76	4844	0	1	21.2	5.6	21.9
4400065	99	DIRN	SUR	40	-74	3772	0	0	15.5	15.6	22.0
4400066	99	DIRN	SUR	40	-73	3953	0	0	13.2	6.2	14.6
4400072	99	DIRN	SUR	37	-76	754	0	1	18.0	9.5	20.4
4400150	99	DIRN	SUR	43	-64	669	0	0	17.2	10.8	20.3
4400488	99	DIRN	SUR	45	-61	146	0	0	17.1	14.1	22.1
4400489	99	DIRN	SUR	45	-61	131	0	0	16.1	2.6	16.3
44005	99	DIRN	SUR	43	-69	687	0	0	14.7	0.1	14.8
44007	99	DIRN	SUR	44	-70	586	0	2	18.8	5.0	19.5
44008	99	DIRN	SUR	41	-69	606	0	0	14.8	5.8	15.9
44009	99	DIRN	SUR	39	-75	625	0	0	15.7	5.3	16.6
44017	99	DIRN	SUR	41	-72	450	0	0	13.9	4.0	14.5
44018	99	DIRN	SUR	42	-70	657	0	0	14.7	7.8	16.6
44020	99	DIRN	SUR	42	-70	610	0	0	16.2	8.4	18.2
44022	99	DIRN	SUR	41	-74	272	0	0	16.4	6.3	17.6
44027	99	DIRN	SUR	44	-67	674	0	1	13.4	4.9	14.2
44029	99	DIRN	SUR	43	-71	583	0	0	14.3	5.8	15.4
44030	99	DIRN	SUR	43	-70	582	0	1	16.3	2.5	16.5
44032	99	DIRN	SUR	44	-69	568	0	1	15.0	-2.1	15.1
44034	99	DIRN	SUR	44	-68	588	0	1	14.5	-4.8	15.2
44037	99	DIRN	SUR	44	-68	397	0	0	12.4	30.8	33.2
44039	99	DIRN	SUR	41	-73	411	0	3	36.9	3.5	37.0
44040	99	DIRN	SUR	41	-74	314	0	0	17.3	4.8	18.0
44041	99	DIRN	SUR	37	-77	166	0	0	20.5	2.5	20.7
44042	99	DIRN	SUR	38	-76	461	0	0	21.0	3.9	21.3
44058	99	DIRN	SUR	38	-76	458	0	2	21.6	4.1	22.0
44062	99	DIRN	SUR	39	-76	349	0	3	22.5	2.6	22.6

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
44063	99	DIRN	SUR	39	-76	443	0	0	20.5	-0.4	20.5
44064	99	DIRN	SUR	37	-76	551	0	1	22.2	4.4	22.6
44065	99	DIRN	SUR	40	-74	617	0	0	15.4	14.4	21.1
44066	99	DIRN	SUR	40	-73	657	0	0	13.4	5.0	14.3
44072	99	DIRN	SUR	37	-76	105	0	1	18.3	9.5	20.6
44078	99	DIRN	SUR	60	-40	316	0	0	13.8	-18.3	22.9
44150	99	DIRN	SUR	43	-64	654	0	0	17.4	10.0	20.0
44258	99	DIRN	SUR	45	-63	636	0	0	16.4	-10.5	19.5
44488	99	DIRN	SUR	45	-61	675	0	0	19.3	6.1	20.3
44489	99	DIRN	SUR	46	-61	584	0	1	17.4	-2.1	17.5
6100198	99	DIRN	SUR	37	-2	497	0	0	16.9	8.0	18.7
6100281	99	DIRN	SUR	40	0	374	0	0	24.1	-7.8	25.3
6200001	99	DIRN	SUR	45	-5	674	0	0	13.2	0.2	13.2
6200024	99	DIRN	SUR	44	-3	575	0	1	21.0	9.1	22.9
6200025	99	DIRN	SUR	44	-6	492	0	0	18.9	-22.8	29.6
6200082	99	DIRN	SUR	44	-8	691	0	0	13.6	1.7	13.7
6200083	99	DIRN	SUR	43	-9	715	0	0	12.4	2.0	12.6
6200084	99	DIRN	SUR	42	-9	648	0	0	14.0	5.3	15.0
6200085	99	DIRN	SUR	36	-7	295	0	0	14.8	4.1	15.4
6200091	99	DIRN	SUR	53	-5	724	0	0	10.8	3.0	11.2
6200092	99	DIRN	SUR	51	-11	647	0	0	15.7	0.5	15.7
6200093	99	DIRN	SUR	55	-10	703	0	0	15.6	5.4	16.5
6200094	99	DIRN	SUR	52	-7	702	0	0	12.1	5.3	13.2
6200095	99	DIRN	SUR	53	-16	711	0	0	11.3	4.2	12.0
6200192	99	DIRN	SUR	40	-10	627	0	0	14.0	-5.0	14.8
6200199	99	DIRN	SUR	40	-9	289	0	0	16.6	27.8	32.3
6201081	99	DIRN	SUR	38	-9	603	0	0	12.8	-0.8	12.8
62029	99	DIRN	SUR	49	-12	1269	0	0	17.6	-4.1	18.1
62081	99	DIRN	SUR	51	-13	1343	0	0	13.2	-7.5	15.1
62091	99	DIRN	SUR	53	-5	724	0	0	11.0	2.3	11.2
62092	99	DIRN	SUR	51	-11	639	0	0	15.7	-0.2	15.7
62093	99	DIRN	SUR	55	-10	701	0	0	15.7	5.1	16.5
62094	99	DIRN	SUR	52	-7	697	0	0	12.6	4.9	13.5
62095	99	DIRN	SUR	53	-16	705	0	0	11.5	3.7	12.0
62103	99	DIRN	SUR	50	-3	817	0	0	10.9	0.8	10.9
62105	99	DIRN	SUR	55	-13	1397	0	0	12.7	-5.6	13.9
62107	99	DIRN	SUR	50	-6	358	0	0	14.8	1.3	14.9
62112	99	DIRN	SUR	58	0	1440	0	0	13.0	-2.3	13.2
62114	99	DIRN	SUR	58	0	1365	0	0	13.0	0.1	13.0
62163	99	DIRN	SUR	48	-9	1387	4	1	18.7	1.1	18.7
62442	99	DIRN	SUR	49	-16	1312	0	0	12.1	2.7	12.3

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
64041	99	DIRN	SUR	61	-3	1368	0	0	13.2	9.7	16.3
64045	99	DIRN	SUR	59	-12	1423	4	0	16.0	-8.2	18.0
64046	99	DIRN	SUR	61	-4	1393	2	0	13.2	1.9	13.3

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

_076b71a		ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	GQBZLZL	JGQH
JNKN7JF	KJJF9XN	KMPLHPW	LAGZ8	LRYQE3U	USBOD	USSIO	USSOD	USYUB
UXK5JTU	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	9ZT9MRK	01001	01004
01010	01028	01241	01400	01415	01492	02365	02527	02836
02963	03005	03238	03354	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	17196	17220	17240	17351	17607	20674
22008	22820	23205	23472	23884	23921	24641	24908	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	47194	47230	47401
47412	47582	47600	47646	47678	47741	47778	47807	47827
47909	47918	47945	47971	47991	48601	48615	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	68842	70026	70133	70200	70219	70231	70261	70273
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	72233	72240	72248	72250	72251
72261	72265	72293	72305	72317	72318	72327	72340	72357
72363	72364	72365	72376	72388	72402	72413	72426	72440
72456	72476	72489	72493	72501	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	78954
81405	85442	85586	85799	85934	87155	87344	87418	87582
87623	87715	87860	88889	89002	89062	89564	89571	89592
89611	89625	89642	89662	91165	91212	91285	91334	91348
91376	91408	91413	91592	91925	91938	91948	91958	93112
93417	93817	93844	94001	94120	94150	94170	94203	94299
94302	94312	94326	94332	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	96996				

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

_076b71a		ASDE09	ATGU3FT	BPMWB2N	DBLK	FPUW5GN	GQBZLZL	JNKN7JF
KJJF9XN	KMPLHPW	LAGZ8	LRYQE3U	USSOD	UXK5JTU	XKQLWQB	XQFJRGX	YLV96WM
ZVQEQCM	7JUNA4N	9ZT9MRK	01010	01028	01415	02365	02527	02836
02963	06610	07110	07145	07510	07645	07761	08001	08023
08190	08221	08302	08383	08430	08508	08522	08536	11010
11035	11120	11240	12575	17607	40186	47194	47230	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	65344	72413	76743
76903	89642	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.