



ECMWF Global Data Monitoring Report

December 2019

*This paper has not been published
and has only a very limited circulation.*

*Permission to quote from it should be
obtained from the ECMWF.*

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

Contents

1	Introduction	3
2	Data summary - History of events	4
2.1	Radiosondes	4
2.2	Drifting Buoys	6
3	Global monitoring statistics	6
3.1	Data Availability	6
3.2	Data Quality	6
3.2.1	Figure 1 - Availability - SYNOP PRESSURE	8
3.2.2	Figure 2 - Availability - DRIFTER PRESSURE	9
3.2.3	Figure 3 - Availability - TEMP 500 hPa geopotential	10
3.2.4	Figure 4 - Availability - TEMP/PILOT 300 hPa wind	11
3.2.5	Figure 5 - Availability - AIRCRAFT winds 300-150 hPa	12
3.2.6	Figure 6 - Availability - SATOB winds 400-150 hPa	13
3.2.7	Figure 7 - Availability - SATOB winds 1000-700 hPa	14
3.2.8	Figure 8 - Availability - NOAA15 ATOVS : AMSU-A	15
3.2.9	Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A	16
3.2.10	Figure 9.2 - Availability - AQUA ATOVS : AMSU-A	17
3.2.11	Figure 9.3 - Availability - METOP ATOVS : AMSU-A	18
3.2.12	Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa)	19
3.2.13	Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)	21
3.2.14	Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES)	22
3.2.15	Table 4 - Suspect drifters: Surface pressure (HPA)	23
3.2.16	Table 5 - Suspect drifters: Wind speed (m/s)	25
3.2.17	Table 6 - Suspect drifters: Wind direction (degrees)	26
3.2.18	Table 7 - Suspect radiosondes: Geopotential height (metres)	28
3.2.19	Table 8 - Suspect radiosondes: Wind (m/s)	29
3.2.20	Table 9 - Suspect radiosondes: Wind direction (degrees)	30
3.2.21	Figure 10 - Suspect TEMP observations - geopotential : 00 UTC	31
3.2.22	Figure 11 - Suspect TEMP observations - geopotential : 12 UTC	32
3.2.23	Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC	33
3.2.24	Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC	34
3.2.25	Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres)	35
3.2.26	Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s)	36
3.2.27	Figure 14 - SATOB Winds: 700-1000hPa	37
3.2.28	Figure 15 - SATOB Winds: 150- 400hPa	38
3.2.29	Figure 16 - SATOB Winds: 700-1000hPa	39
3.2.30	Figure 17 - SATOB Winds: 150- 400hPa	40
3.2.31	Figure 18 - AIRCRAFT Winds: 150- 300hPa	41
3.2.32	Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)	42
4	EUCOS Area Monitoring Statistics	48
4.1	Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)	49
4.2	Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s)	52
4.3	Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres)	55
4.4	Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s)	58
4.5	Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres)	61
4.6	Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s)	64
4.7	Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres)	67
4.8	Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s)	70
4.9	Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa)	73
4.10	Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s)	83
4.11	Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction	87
4.12	Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations	92
4.13	Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart	93

5 Annex - Explanations of figures and tables	94
5.1 General	94
5.2 Data Availability	94
5.3 Data Quality	94

Summary of Revisions (in reverse order)

- Revision 28 (June 15) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A) TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).
- Revision 21 (May 99) - Monitoring statistics ceased for Noaa_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage 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 coordinate 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	Nov	Dec	Ident	Time	Nov	Dec
01400	(00)	28	15	17030	(00)	16	30
02185	(00)	13	0	26477	(00)	0	16
03743	(12)	27	11	26477	(12)	0	17
16144	(00)	30	14	43369	(00)	13	28
29698	(00)	30	6	60760	(00)	4	24
29698	(12)	30	6	61980	(00)	0	27
34858	(00)	30	16	61980	(12)	0	29
34858	(12)	30	18	67083	(12)	8	31
42410	(12)	30	11	74006	(00)	21	36
42809	(12)	30	11	83362	(12)	5	31
42867	(12)	30	11	89022	(12)	0	27
43003	(12)	31	11	91643	(00)	18	30
43150	(12)	30	19	94302	(12)	0	26
43279	(12)	30	10	-	-	-	-
43311	(00)	27	4	-	-	-	-
61442	(12)	25	11	-	-	-	-
63612	(00)	19	0	-	-	-	-
63741	(12)	28	0	-	-	-	-
76394	(00)	24	1	-	-	-	-
78397	(12)	26	8	-	-	-	-
78897	(00)	30	2	-	-	-	-
82599	(00)	30	14	-	-	-	-
82599	(12)	30	14	-	-	-	-
82983	(12)	30	4	-	-	-	-
94776	(00)	30	18	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from 1927 drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

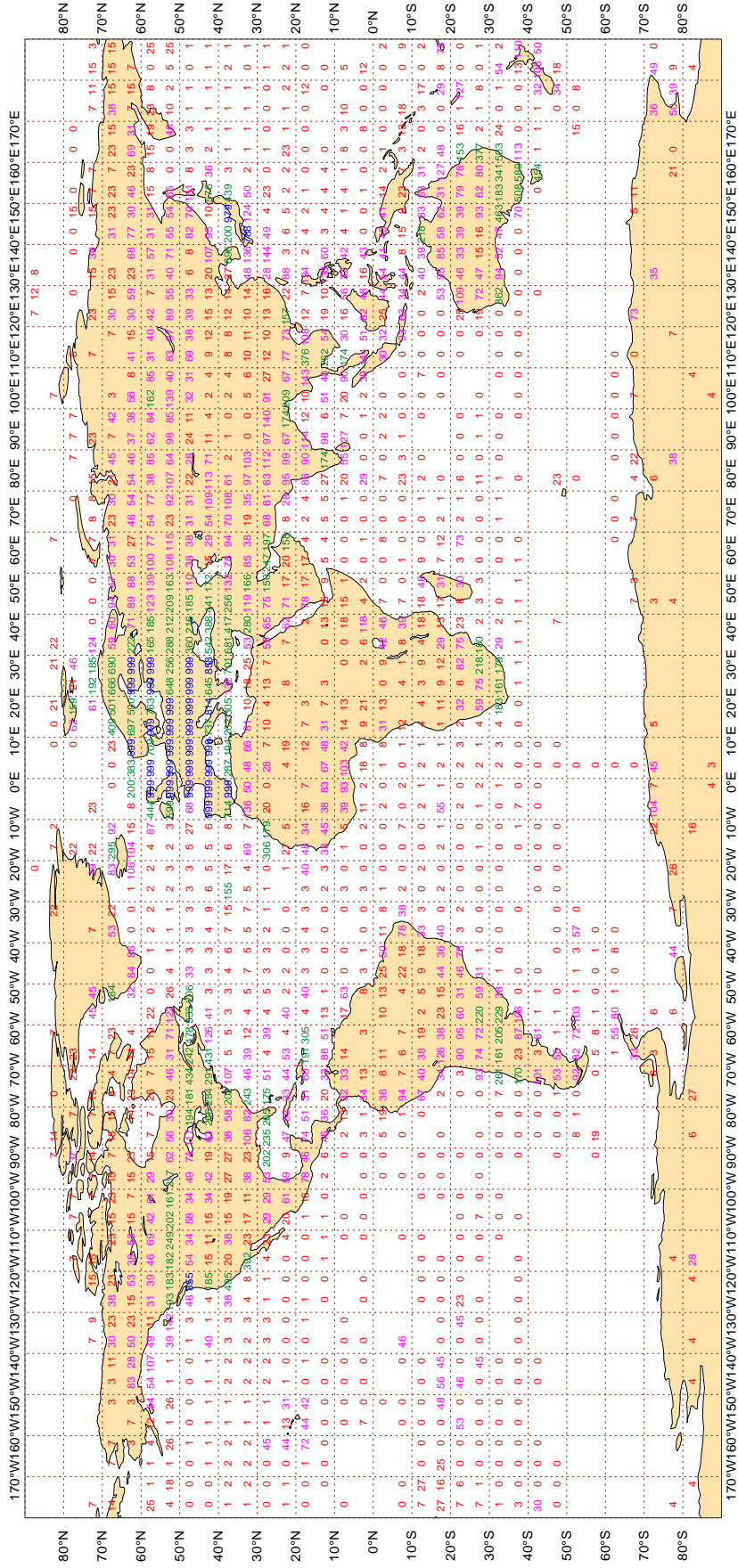
Figures 14-18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

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

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

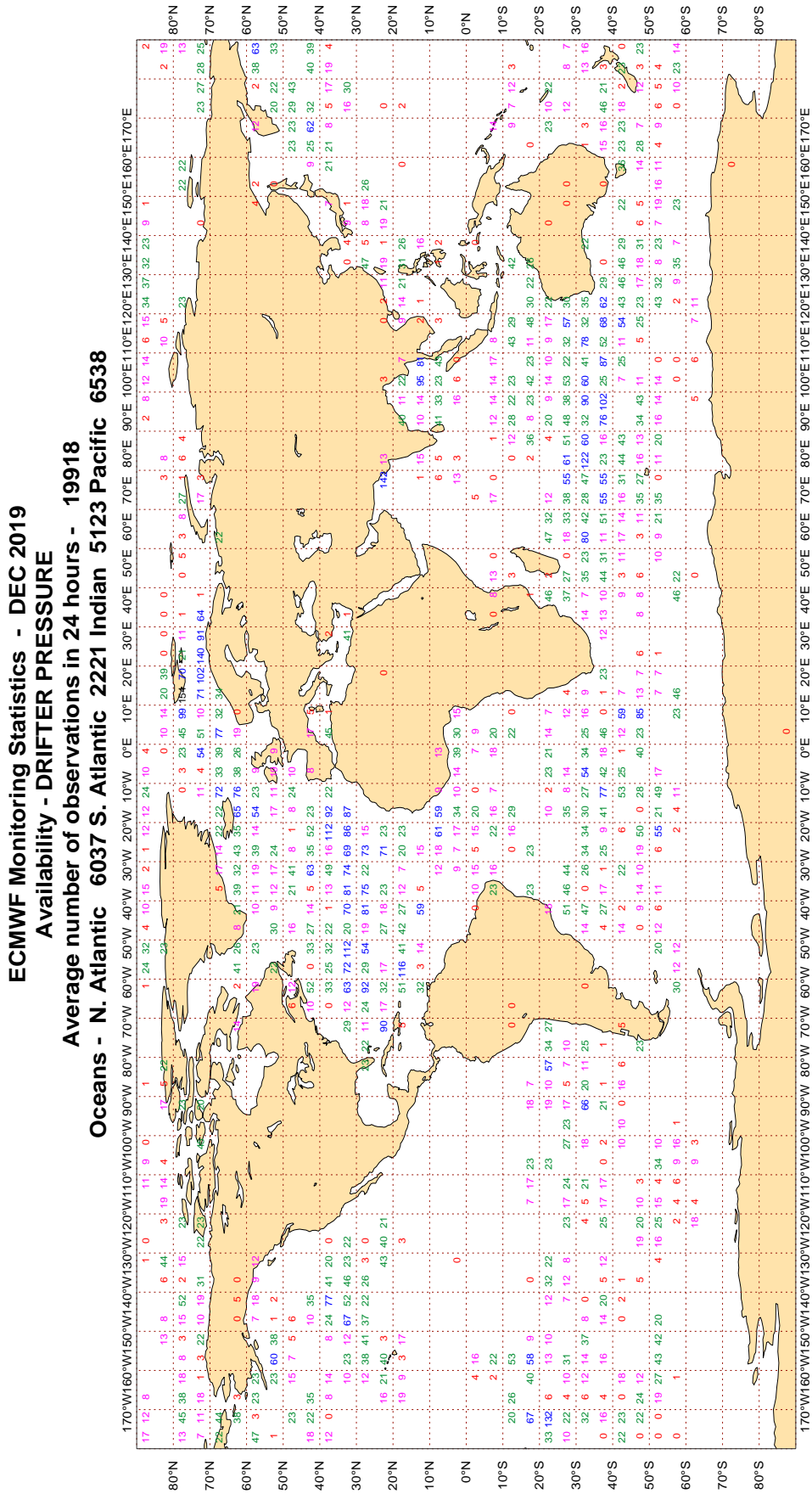
3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1
 ECMWF Monitoring Statistics - DEC 2019
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 120823
 LAND - WMO Region I: 4605 II:16327 III: 4106 IV: 7146
 Region V: 9002 VI:64617 Antarctic: 999
 Oceans - N. Atlantic 7839 S. Atlantic 330 Indian 627 Pacific 5228



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

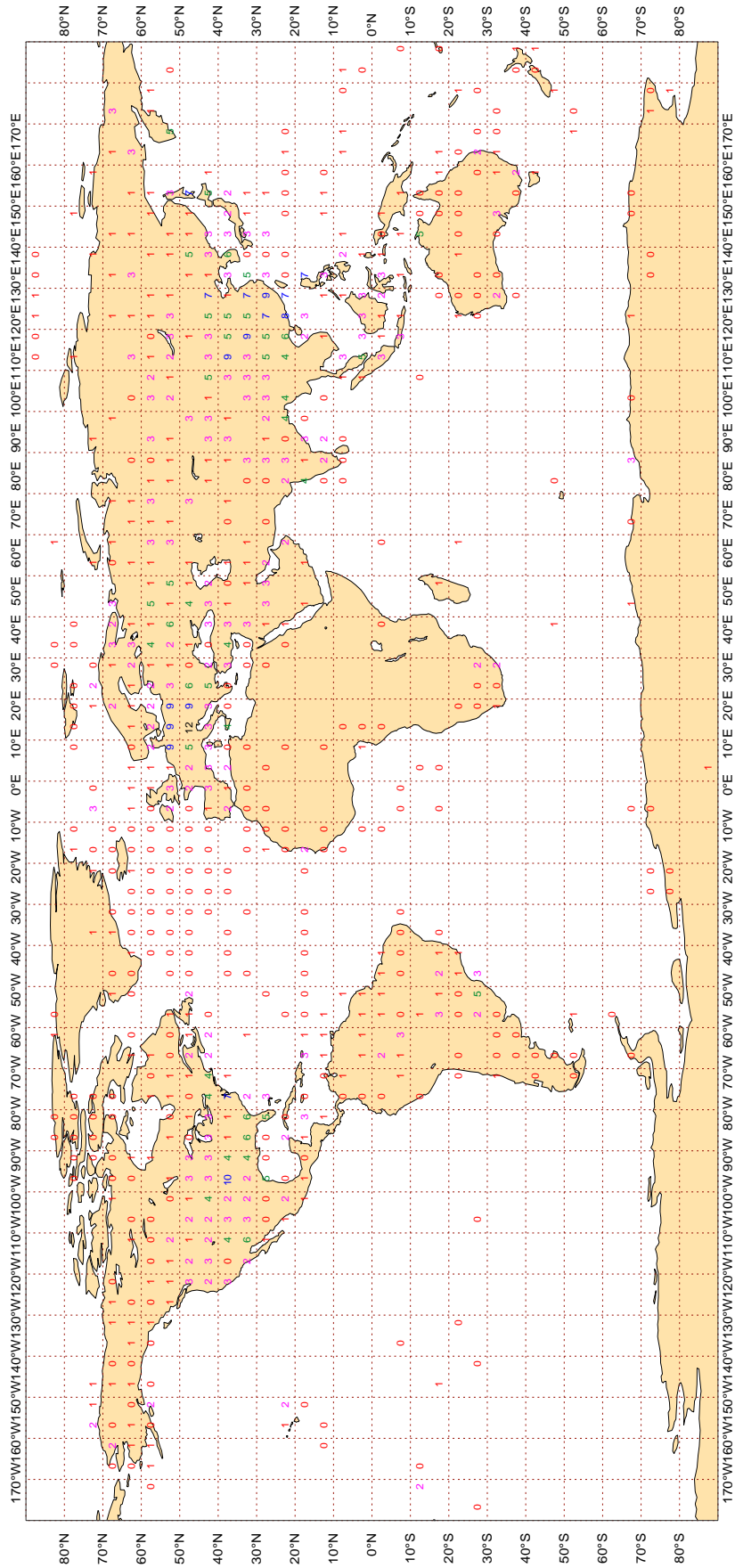


Magics 3.0.4 (64 bit)

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - DEC 2019
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1296
 LAND - WMO Region I: 34 II: 479 III: 79 IV: 272
 Region V: 143 VI: 254 Antarctic: 20
 Oceans - N. Atlantic 9 S. Atlantic 0 Indian 4 Pacific 4



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

Figure 4

ECMWF Monitoring Statistics - DEC 2019

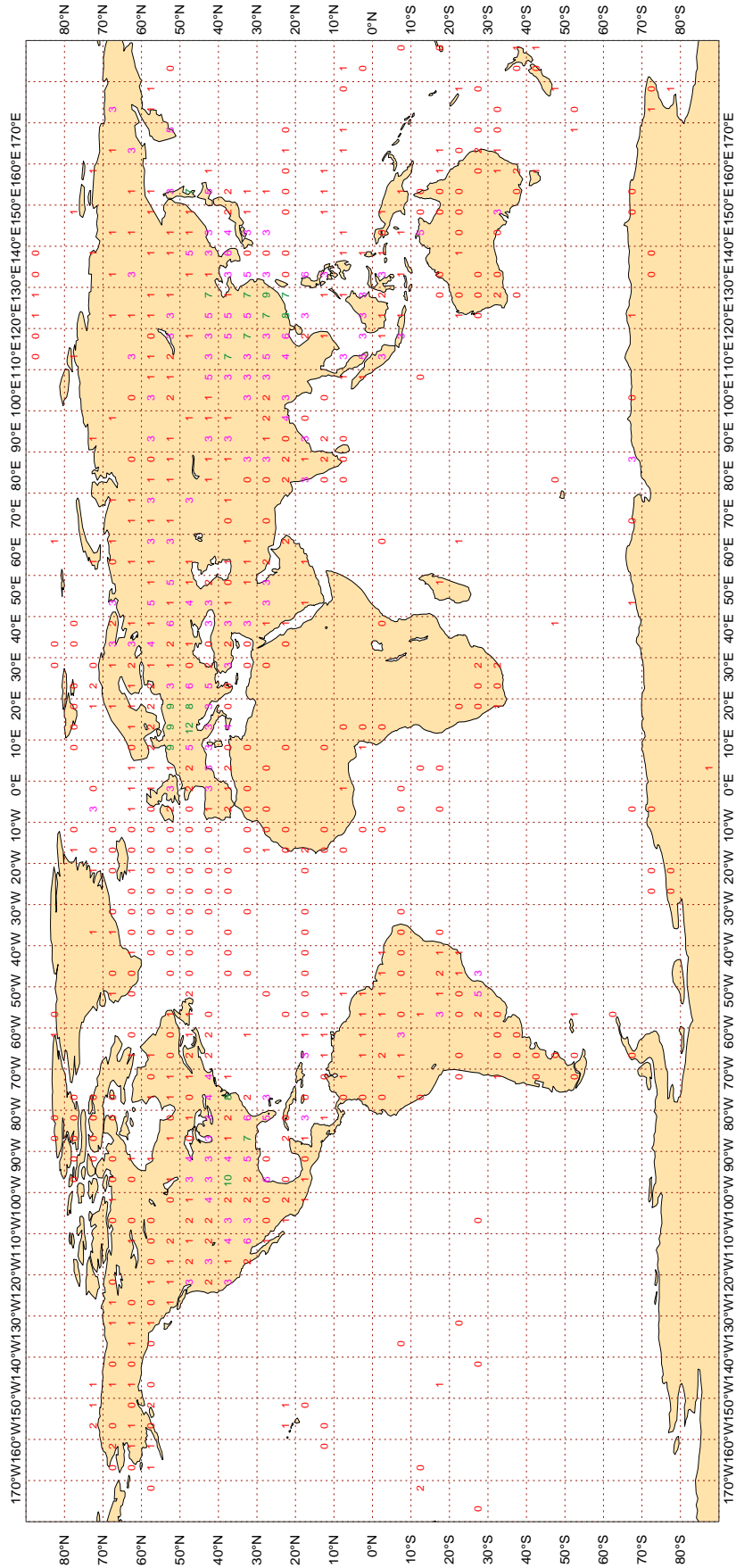
Availability - TEMP/PILOT 300 hPa wind

Average number of observations in 24 hours - 1289

LAND - WMO Region I: 35 II: 467 III: 78 IV: 281

Region V: 141 VI: 251 Antarctic: 20

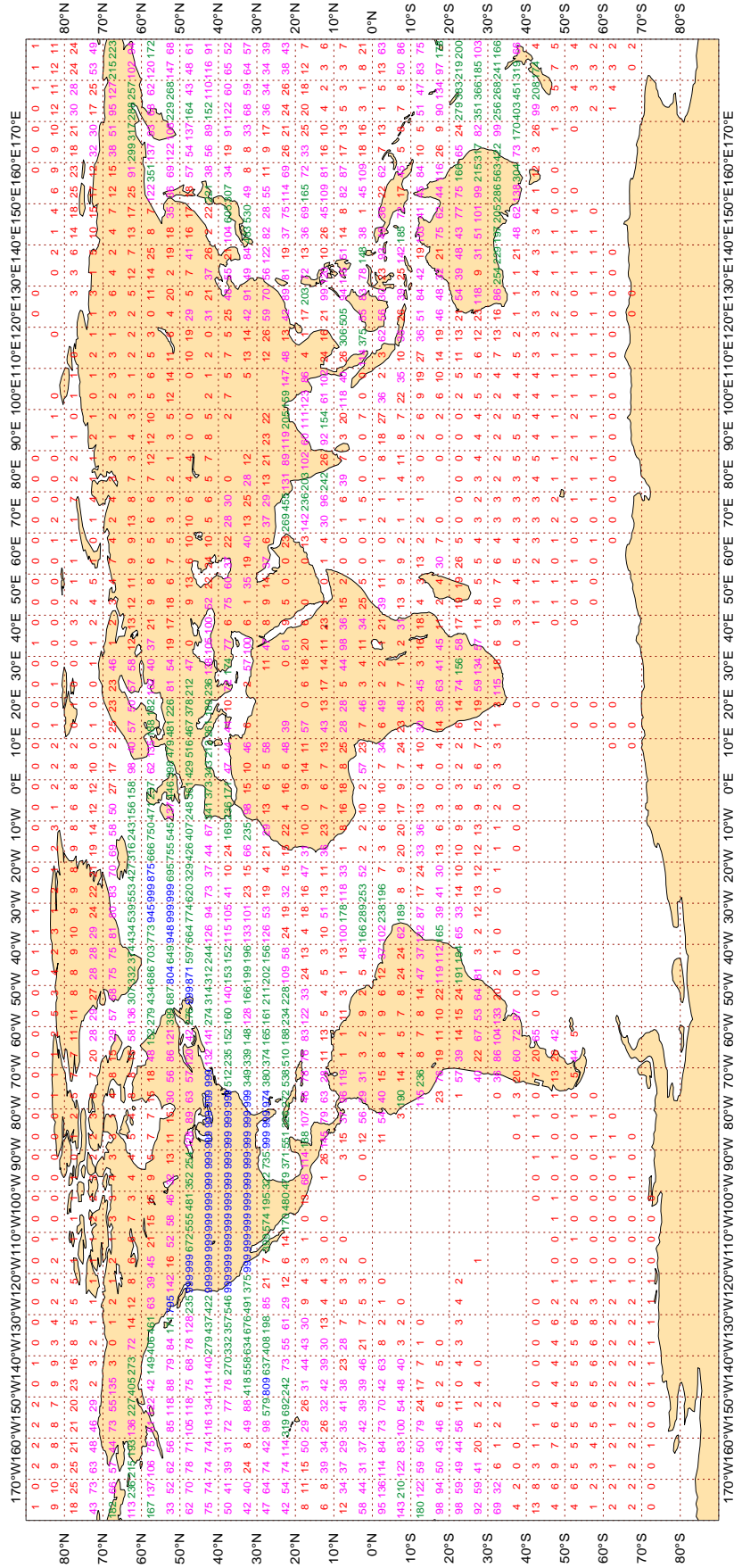
Oceans - N. Atlantic 8 S. Atlantic 0 Indian 4 Pacific 4



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

Figure 5

ECMWF Monitoring Statistics - DEC 2019
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 226872



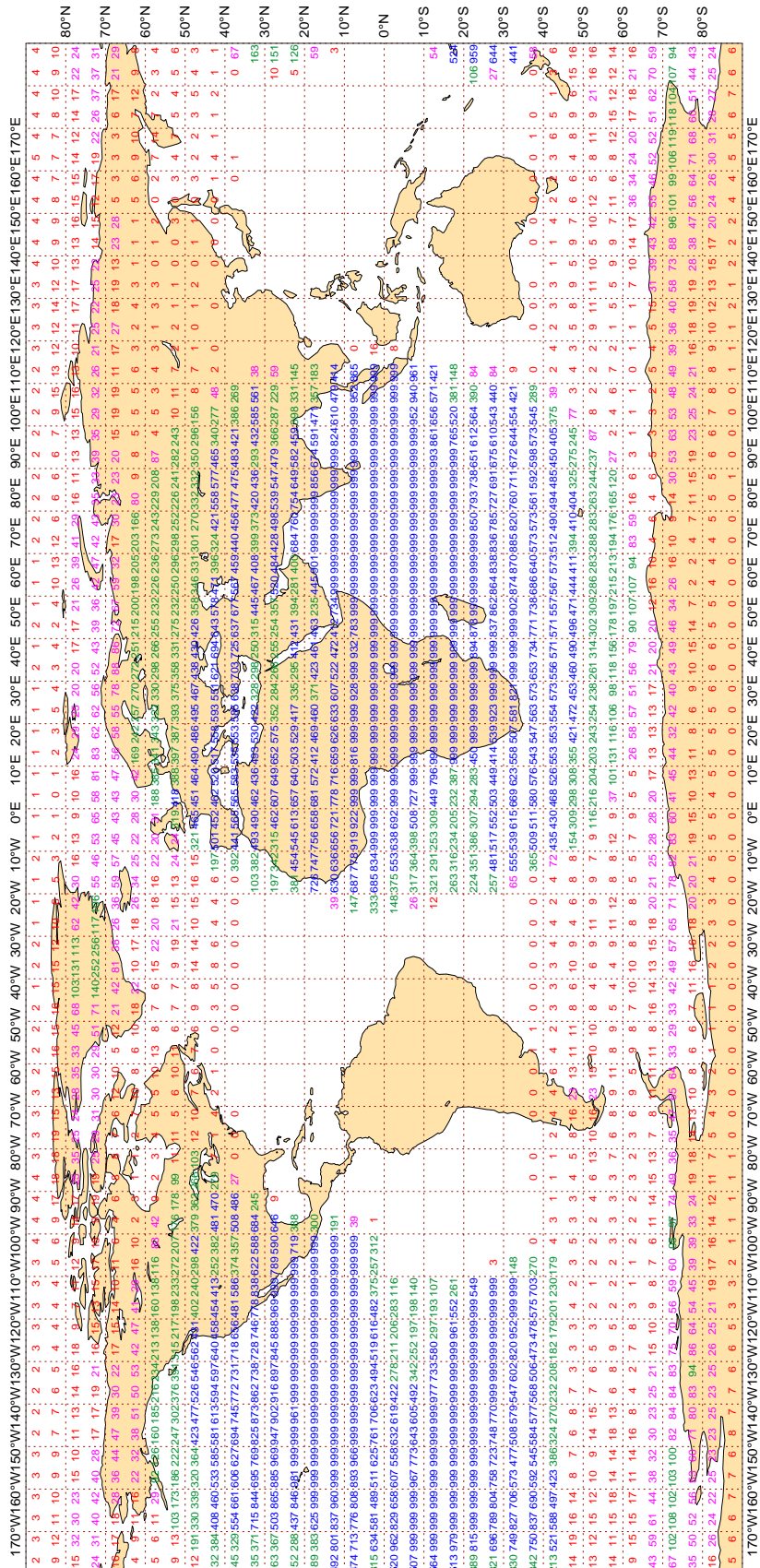
Magics 3.0.4 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - DEC 2019
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 669945



Magics 3.0.4 (64 bit)



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

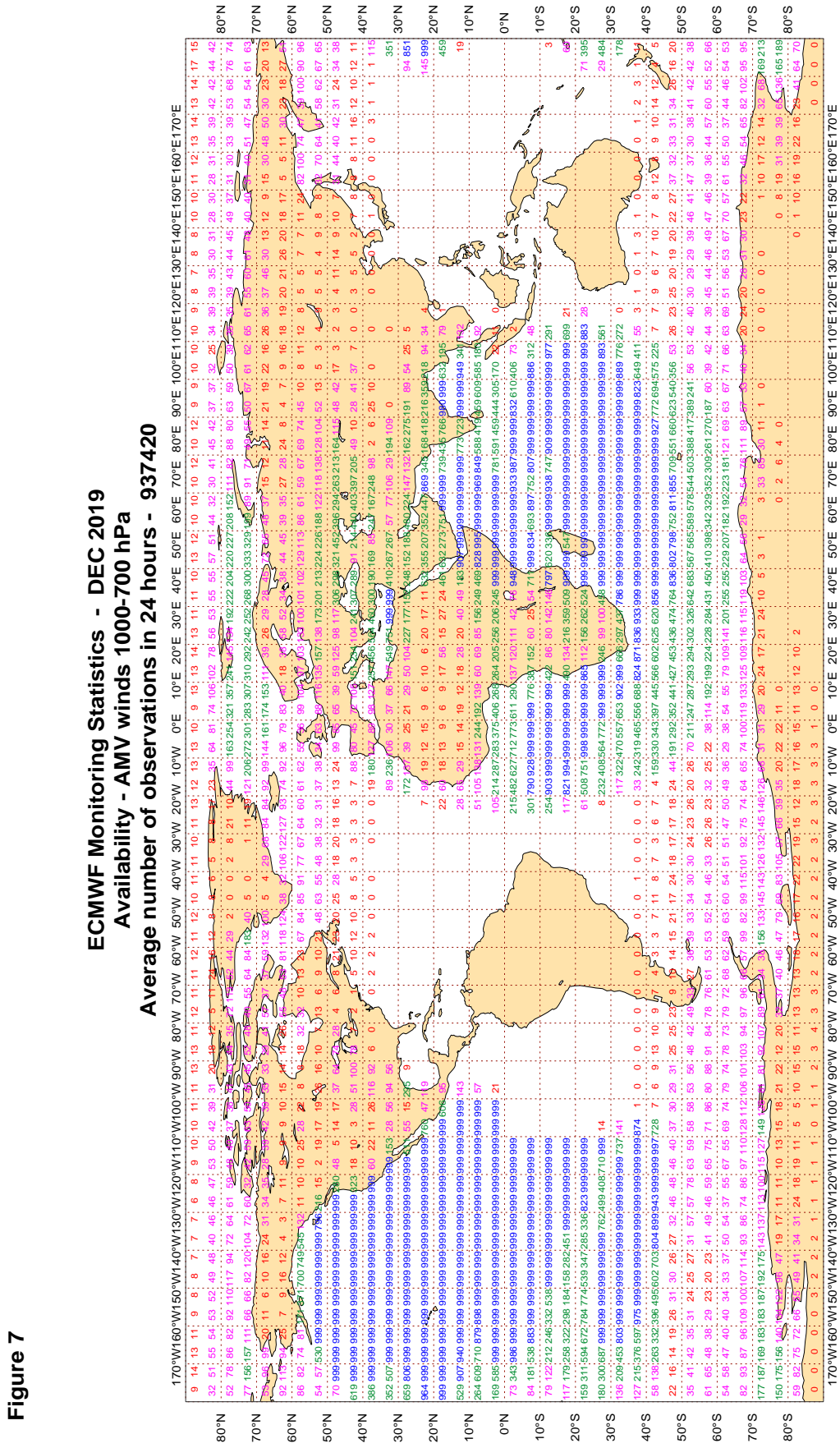


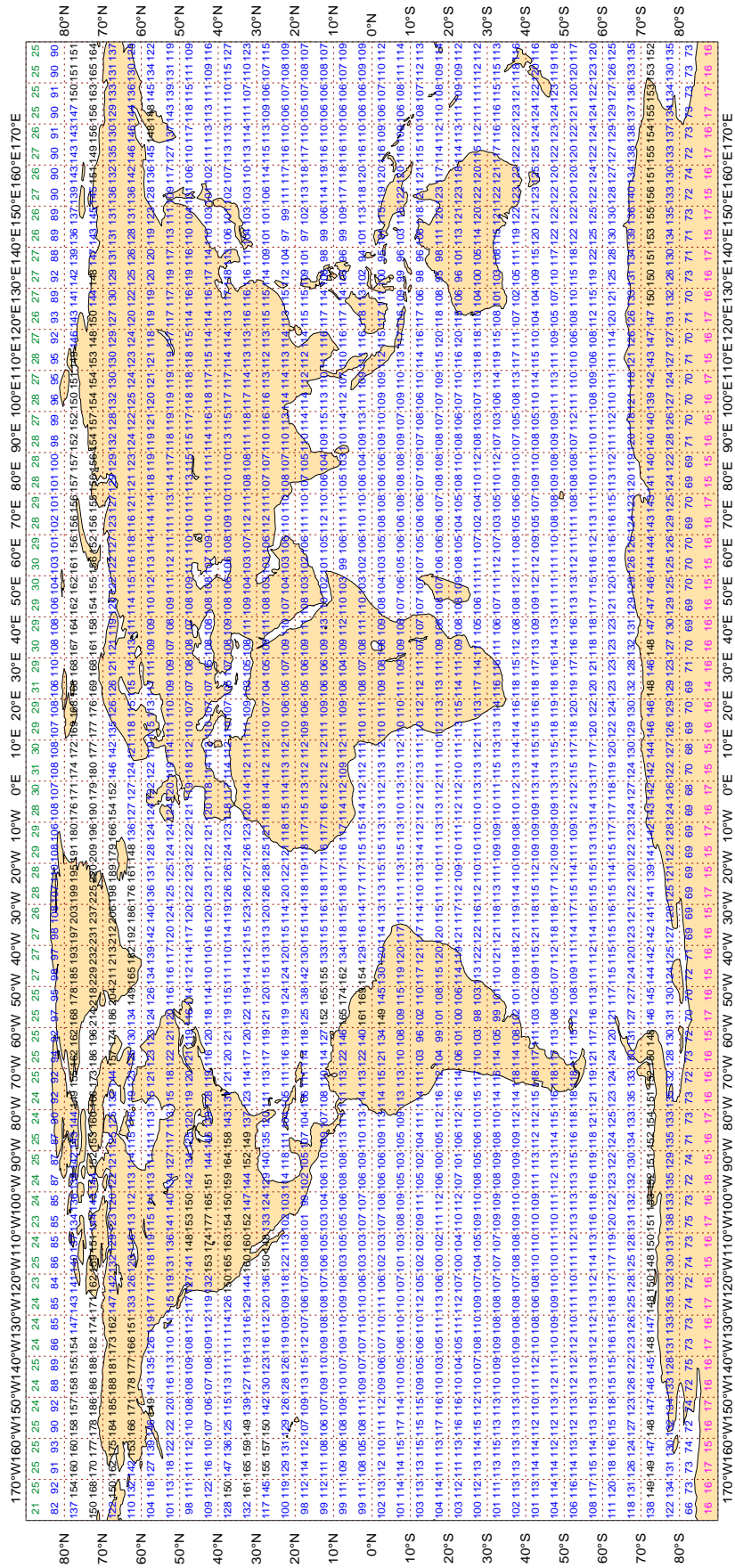
Figure 7



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

Figure 8

ECMWF Monitoring Statistics - DEC 2019
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 295251



Magics 3.0.4 (64 bit)

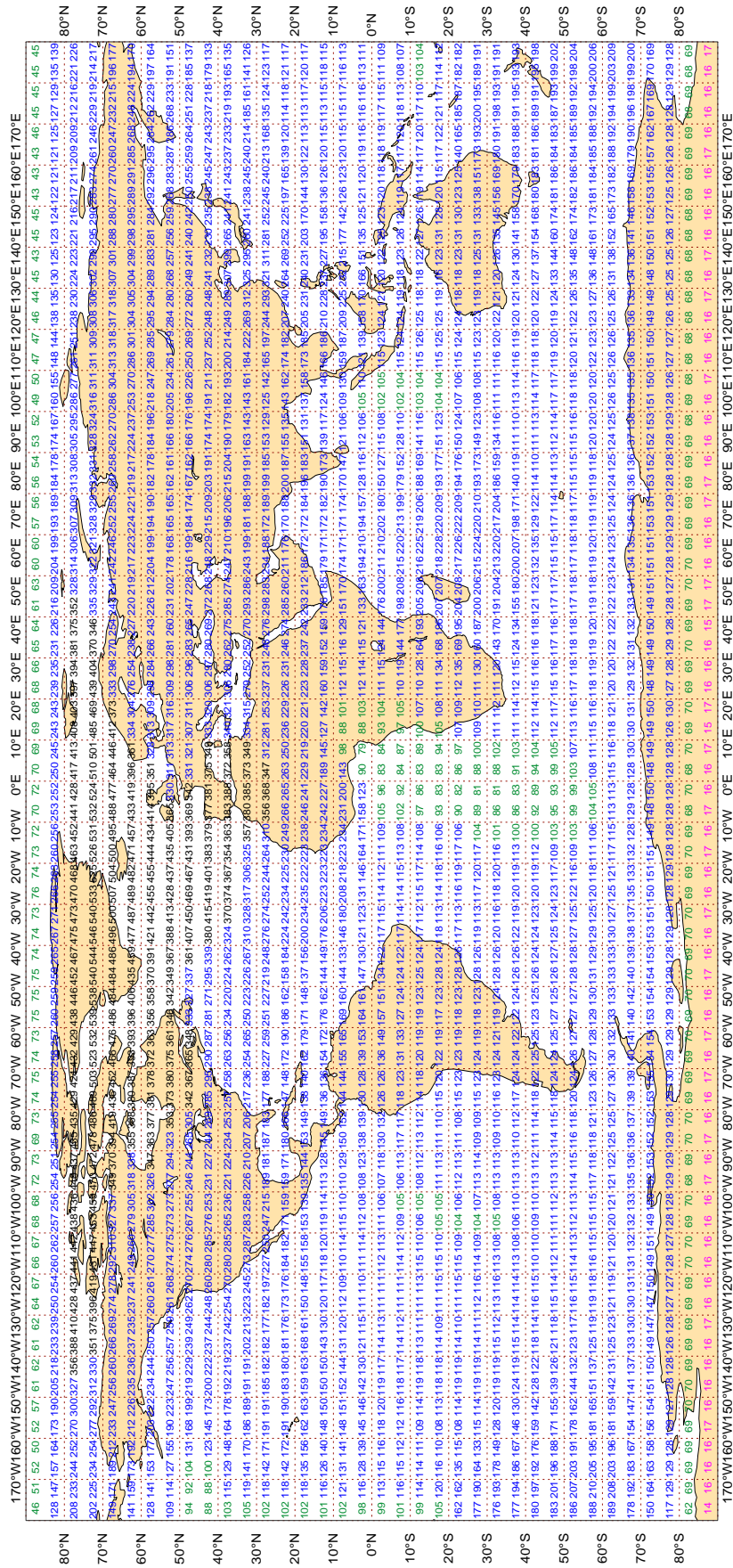


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - DEC 2019
Availability - NOAA18 ATOVS : AMSU-A

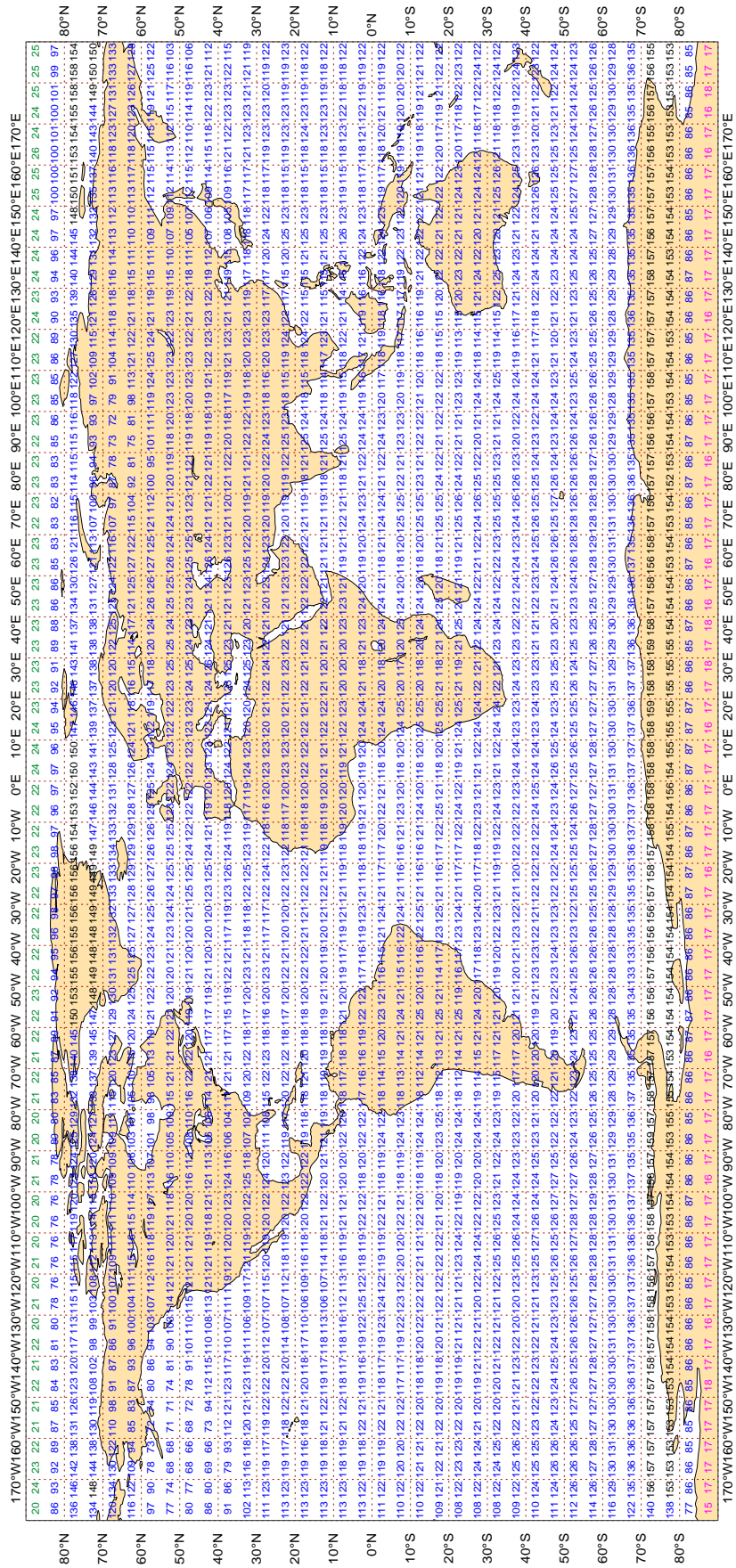
Average number of observations in 24 hours - 465040



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

Figure 9.2

ECMWF Monitoring Statistics - DEC 2019
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 300958



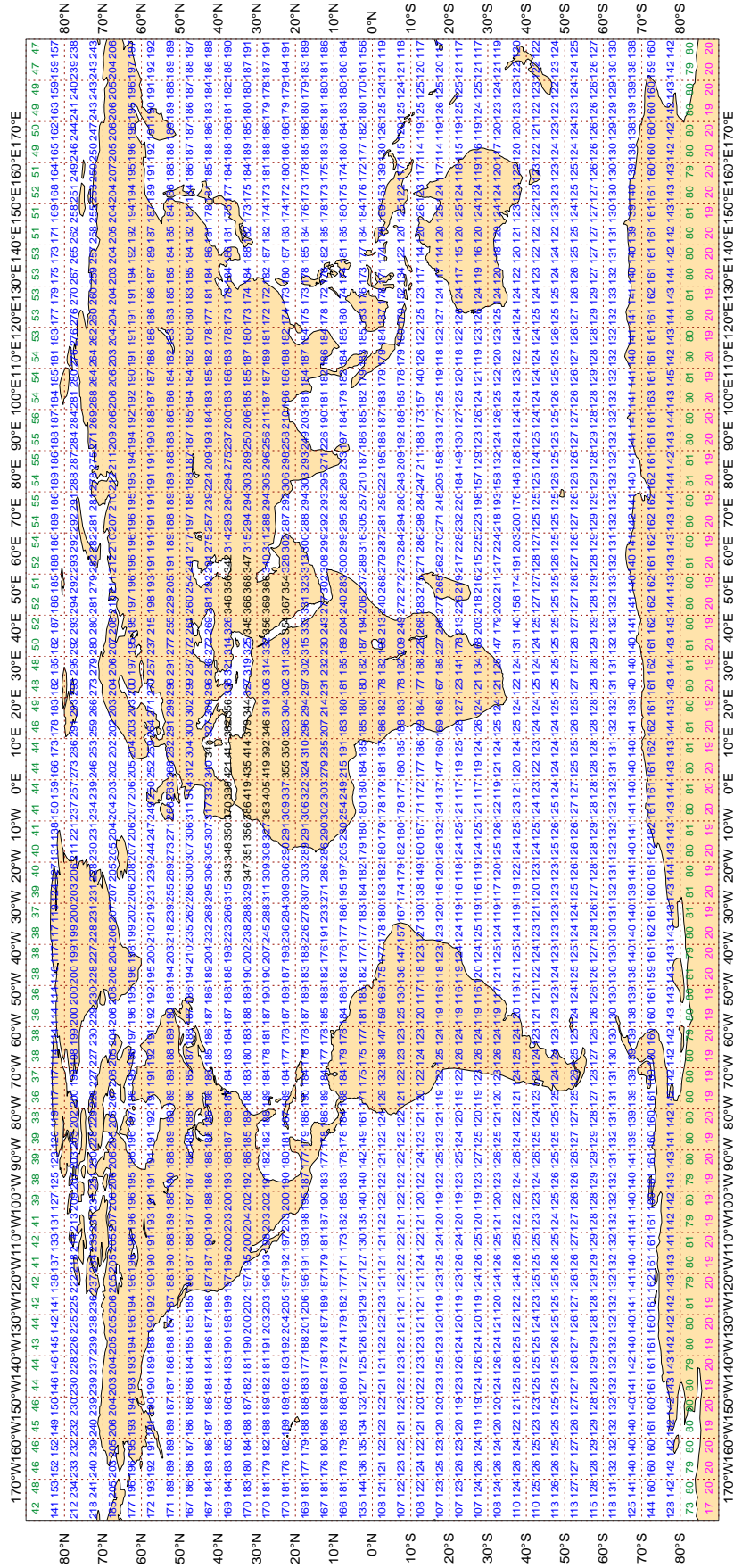
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - DEC 2019
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 433775



Magics 3.0.4 (64 bit)



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 : DEC 2019
 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
3EBL5	99	P	SUR	23	0	1.1	3.4	3.6
3FFA5	99	P	SUR	19	0	1.2	4.9	5.0
44058	99	P	SUR	118	0	0.6	3.3	3.3
9HA3047	99	P	SUR	26	0	2.2	-5.4	5.8
9HA4683	99	P	SUR	24	0	0.6	-4.0	4.0
9HA4883	99	P	SUR	19	0	0.5	-3.8	3.8
9HJB9	99	P	SUR	33	0	1.2	3.5	3.7
9V2779	99	P	SUR	67	2	5.1	6.3	8.2
9V5247	99	P	SUR	47	0	2.6	4.1	4.8
9V9450	99	P	SUR	15	0	1.3	3.7	3.9
9V9793	99	P	SUR	22	0	2.9	4.9	5.7
A8OR8	99	P	SUR	64	1	2.8	4.6	5.4
BKIC	99	P	SUR	18	0	2.1	3.2	3.8
BNPC	99	P	SUR	57	6	7.1	1.9	7.4
BQHZ	99	P	SUR	49	10	7.4	1.2	7.5
C6DP8	99	P	SUR	57	0	1.0	3.4	3.5
C6DP9	99	P	SUR	27	0	1.4	-5.7	5.9
C6FV8	99	P	SUR	77	0	1.0	-4.9	5.0
C6LG6	99	P	SUR	41	0	0.9	-3.3	3.4
C6SE5	99	P	SUR	31	0	1.0	4.8	4.9
C6SY3	99	P	SUR	15	0	3.1	3.7	4.8
C6WW4	99	P	SUR	23	0	1.3	4.3	4.5
C6YM7	99	P	SUR	40	0	1.3	3.4	3.7
C6YZ5	99	P	SUR	29	0	1.1	-3.9	4.0
D5HF2	99	P	SUR	22	0	2.7	-3.7	4.6
FAPN	99	P	SUR	21	0	3.4	9.2	9.8
H3VU	99	P	SUR	38	0	1.6	4.0	4.3
LAIG7	99	P	SUR	38	0	1.4	-6.0	6.2
LAPE7	99	P	SUR	46	0	1.1	4.4	4.6
LAQL7	99	P	SUR	26	0	1.4	3.5	3.7
OYCY2	99	P	SUR	22	0	2.7	6.7	7.2
S6LT3	99	P	SUR	33	0	2.1	-4.3	4.8

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
UBSH5	99	P	SUR	53	0	1.9	-3.1	3.6
UBXS	99	P	SUR	71	0	5.1	-3.1	5.9
VRCU7	99	P	SUR	26	0	1.3	-4.4	4.6
VRDJ3	99	P	SUR	195	0	2.3	-3.1	3.9
VRFN3	99	P	SUR	54	0	2.5	4.8	5.5
VRGO2	99	P	SUR	18	1	3.0	5.2	6.0
VRLA2	99	P	SUR	20	0	3.9	3.0	5.0
VRLJ2	99	P	SUR	31	0	1.3	-6.0	6.1
VRMO4	99	P	SUR	15	0	0.5	-4.6	4.6
VROO5	99	P	SUR	97	0	3.9	3.7	5.4
VRRB5	99	P	SUR	28	0	1.5	3.3	3.6
VRRB6	99	P	SUR	114	0	1.4	3.6	3.8
VRYP3	99	P	SUR	77	0	1.5	3.6	3.9
VTWS	99	P	SUR	122	38	7.7	-1.9	8.0
WDG8555	99	P	SUR	19	0	1.7	4.8	5.1
WDJ3199	99	P	SUR	39	0	0.7	-3.5	3.5
WHRN	99	P	SUR	26	0	1.2	3.4	3.6
WLPI	99	P	SUR	32	0	0.8	-4.2	4.3
WPKW	99	P	SUR	62	0	2.8	-3.8	4.8
YJUP4	99	P	SUR	99	0	4.1	3.3	5.2

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : DEC 2019
 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 : DEC 2019
 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
44072	99	DIRN	SUR	119	0	0	21.8	-77.2	80.2
46185	99	DIRN	SUR	68	6	0	82.0	-74.3	110.7

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 : DEC 2019
 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
1601527	99	P	SUR	-19	113	744	374	0.8	-0.7	1.1
1601577	99	P	SUR	-51	91	119	0	2.3	5.4	5.8
1701565	99	P	SUR	-57	6	744	0	4.0	9.2	10.1
2101630	99	P	SUR	57	176	670	0	1.9	4.1	4.6
2101633	99	P	SUR	43	160	77	0	2.5	9.4	9.7
2101634	99	P	SUR	42	156	715	0	2.1	4.6	5.0
2201558	99	P	SUR	20	125	57	0	1.8	7.8	8.0
2301502	99	P	SUR	-42	-74	187	68	7.2	-0.8	7.3
2501539	99	P	SUR	73	163	744	32	5.1	4.8	7.0
2501540	99	P	SUR	74	177	745	0	3.1	-7.6	8.2
2501541	99	P	SUR	72	171	689	542	6.8	1.9	7.1
2501662	99	P	SUR	72	-170	744	1	5.3	4.9	7.2
2501663	99	P	SUR	78	67	744	744	0.0	0.0	0.0
2501665	99	P	SUR	73	66	695	199	8.0	0.5	8.0
2501667	99	P	SUR	77	113	744	406	6.6	-6.5	9.3
2501668	99	P	SUR	77	145	733	450	5.5	-8.3	9.9
2501669	99	P	SUR	79	143	735	335	9.9	5.0	11.1
2601625	99	P	SUR	77	17	744	498	7.0	2.6	7.5
2601627	99	P	SUR	77	61	745	105	6.6	-1.8	6.8
4401821	99	P	SUR	63	-72	198	16	4.4	9.2	10.2
4601633	99	P	SUR	47	164	120	0	1.9	6.0	6.3
4701658	99	P	SUR	72	-95	667	536	3.4	-9.3	9.9
4701660	99	P	SUR	70	-102	736	736	0.0	0.0	0.0
4800770	99	P	SUR	57	-30	731	731	0.0	0.0	0.0
4801649	99	P	SUR	73	-167	282	10	2.7	6.5	7.0
4801652	99	P	SUR	84	-152	707	83	5.9	-5.4	8.0
4801654	99	P	SUR	73	172	696	696	0.0	0.0	0.0
4801667	99	P	SUR	78	-171	702	574	2.5	-10.6	10.9
4801668	99	P	SUR	75	-169	345	332	0.7	-13.5	13.6
4802514	99	P	SUR	76	-168	736	627	1.3	-12.6	12.6
6200191	99	P	SUR	41	-10	251	73	6.2	1.6	6.4
6301503	99	P	SUR	82	36	37	29	2.5	11.6	11.9

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	ME LAT	N LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	
6301540	99	P	SUR	78	1	688	477	5.6	10.0	11.5
7401502	99	P	SUR	-41	52	119	78	4.0	8.7	9.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : DEC 2019
 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
45137	99	SPEED	SUR	46	-81	26	0	0	1.1	-9.4	9.4

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : DEC 2019
 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
0062087	99	DIRN	SUR	55	7	392	0	0	9.8	-58.4	59.2
1300130	99	DIRN	SUR	28	-16	303	0	0	9.6	60.6	61.3
1400047	99	DIRN	SUR	-4	57	151	0	0	159.7	-31.0	162.7
1500001	99	DIRN	SUR	-10	-10	703	0	0	106.6	-30.4	110.9
2300001	99	DIRN	SUR	0	80	108	0	0	34.5	-27.3	44.0
23091	99	DIRN	SUR	18	89	152	0	0	11.8	-25.7	28.2
23093	99	DIRN	SUR	16	88	95	0	0	48.3	133.2	141.7
23094	99	DIRN	SUR	14	84	504	0	0	11.1	-29.0	31.0
23451	99	DIRN	SUR	15	69	180	0	0	13.9	-22.8	26.7
23452	99	DIRN	SUR	12	69	157	0	0	62.9	-11.2	63.9
23454	99	DIRN	SUR	10	73	68	0	0	69.5	18.0	71.8
23456	99	DIRN	SUR	19	67	170	0	0	172.7	-18.6	173.7
23459	99	DIRN	SUR	14	87	188	0	0	20.8	21.3	29.8
23492	99	DIRN	SUR	11	72	101	0	0	27.0	-21.5	34.5
23497	99	DIRN	SUR	11	72	88	0	0	53.2	27.0	59.7
3100003	99	DIRN	SUR	-8	-31	249	0	0	11.9	26.6	29.1
3100005	99	DIRN	SUR	-19	-35	225	0	0	23.4	-22.3	32.3
4200085	99	DIRN	SUR	18	-67	4011	0	0	17.6	20.9	27.3
4400029	99	DIRN	SUR	43	-71	682	0	0	13.2	-20.1	24.1
4400072	99	DIRN	SUR	37	-76	2807	0	0	29.9	-72.0	78.0
44029	99	DIRN	SUR	43	-71	807	0	0	13.2	-20.2	24.1
44062	99	DIRN	SUR	39	-76	556	0	0	31.2	-20.2	37.2
44072	99	DIRN	SUR	37	-76	642	0	0	32.8	-74.0	80.9
44139	99	DIRN	SUR	44	-57	702	1	0	15.9	-22.9	27.9
4600120	99	DIRN	SUR	48	-122	553	0	0	23.5	-28.4	36.9
46120	99	DIRN	SUR	48	-122	160	0	0	24.7	-31.5	40.0
46185	99	DIRN	SUR	52	-130	404	32	0	82.9	-70.8	109.0
5300040	99	DIRN	SUR	-8	95	592	0	0	143.4	86.2	167.3
5300056	99	DIRN	SUR	-5	95	412	0	0	136.7	88.5	162.9
53040	99	DIRN	SUR	-8	95	593	0	0	140.7	89.5	166.8
53056	99	DIRN	SUR	-5	95	404	0	0	133.6	92.6	162.5

LIST OF SUSPECT STATIONS : DRIFTER
 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
6200199	99	DIRN	SUR	40	-9	170	14	0	78.0	3.3	78.1

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 : DEC 2019
 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	20	0	5.7	80.4	80.6
01400	00	Z	1000	57	3	15	0	5.6	79.7	79.9
28695	12	Z	200	55	73	30	0	45.5	78.1	90.4
28695	00	Z	200	55	73	27	0	52.1	80.3	95.7
33791	12	Z	200	48	33	26	0	72.7	-62.5	95.9
33837	00	Z	200	46	31	13	0	66.9	77.8	102.6
42299	00	Z	500	27	89	30	9	68.8	-15.1	70.4
42634	00	Z	850	23	70	28	0	5.3	46.7	47.0
42724	00	Z	250	24	91	30	0	27.0	65.0	70.4
47138	00	Z	30	36	129	22	0	91.2	283.6	297.9
JNKN7J	12	Z	1000	45	-56	11	0	4.8	38.7	39.0
JNKN7J	00	Z	1000	45	-60	10	0	2.7	37.7	37.8

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 : DEC 2019
 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
--------------	-------------	-----	-----	-----	------	------------	--------------	-------	-------	-----

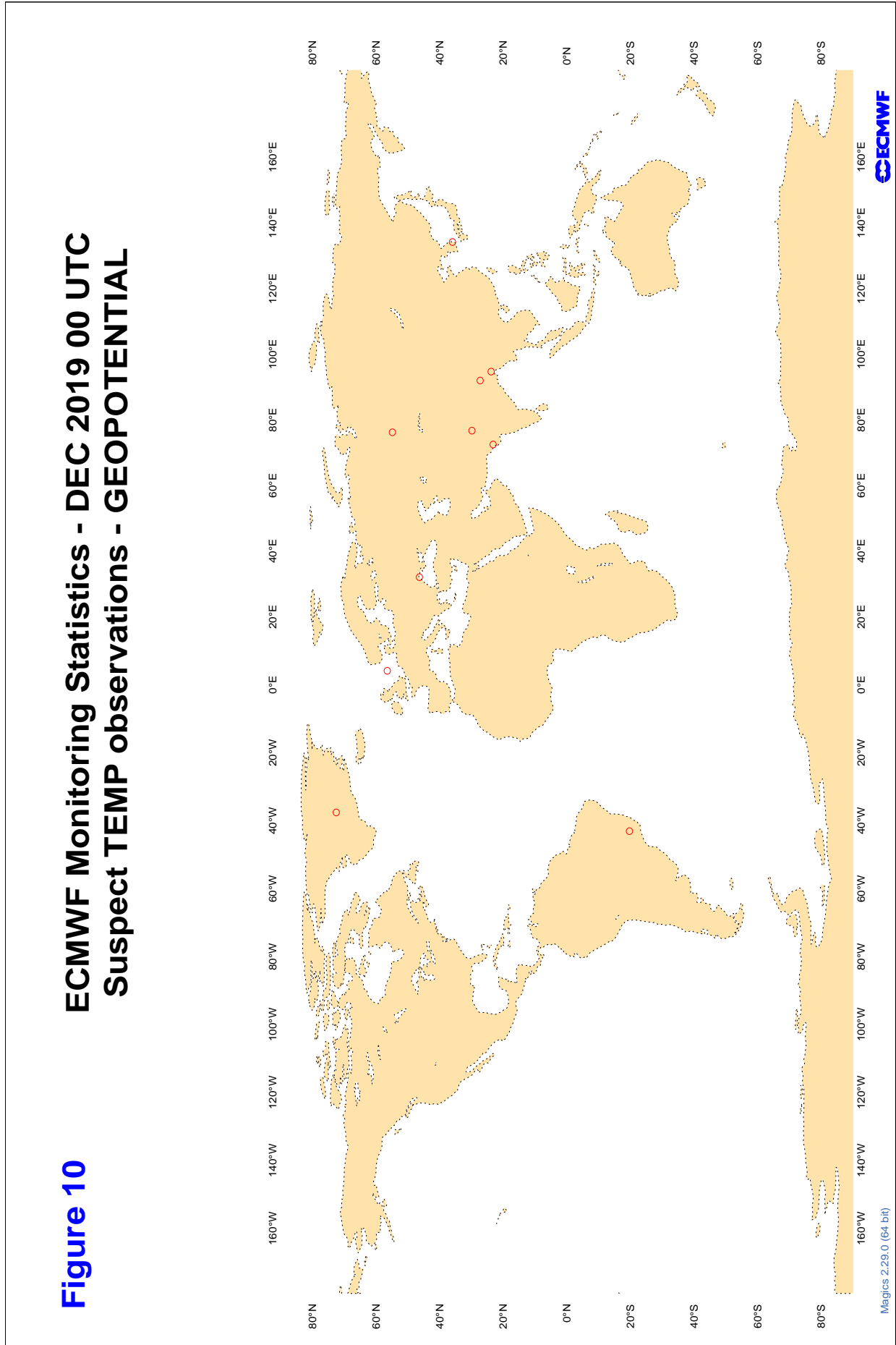
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

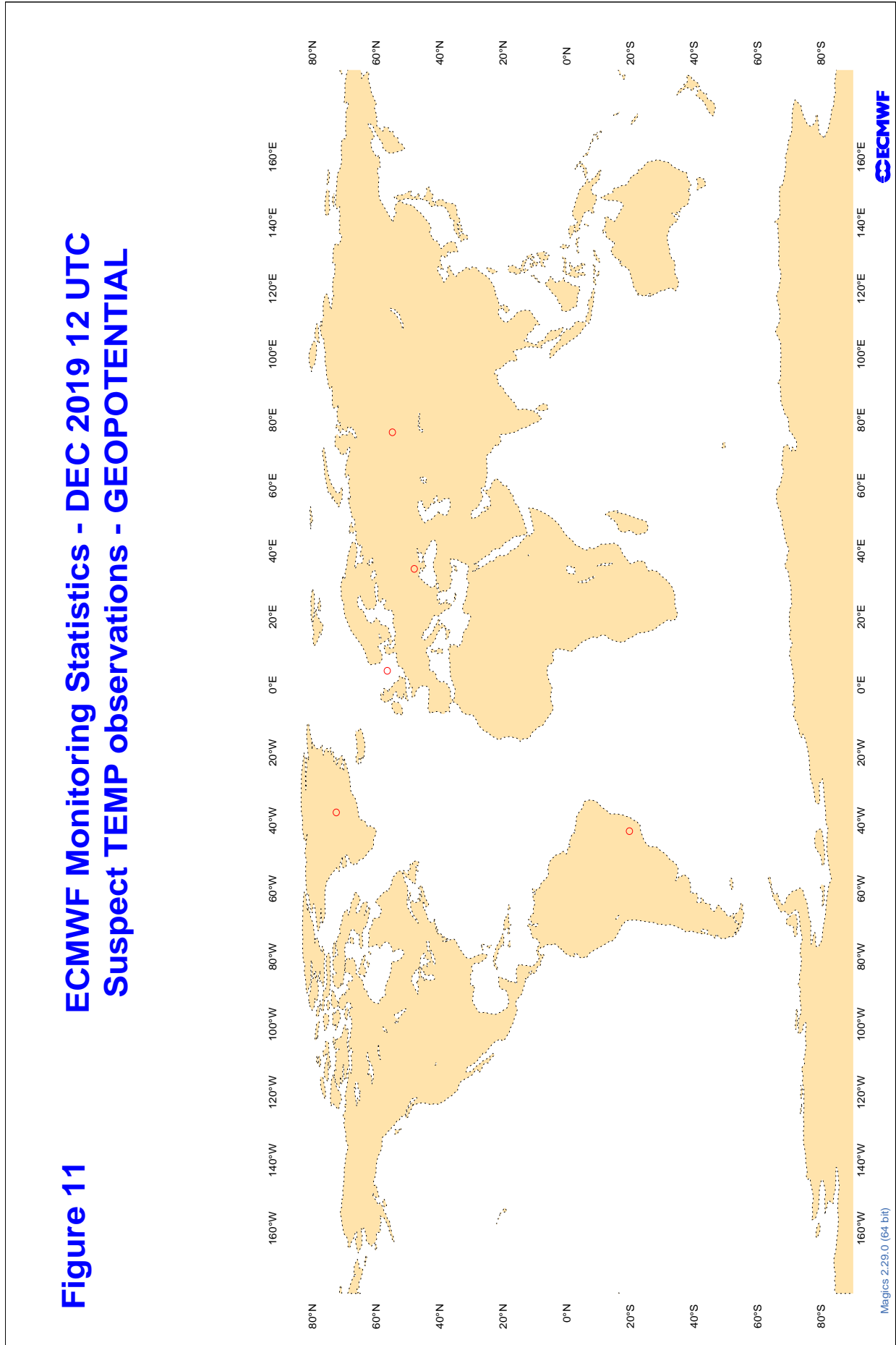
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48	33	25	10.3	4.4	15.2

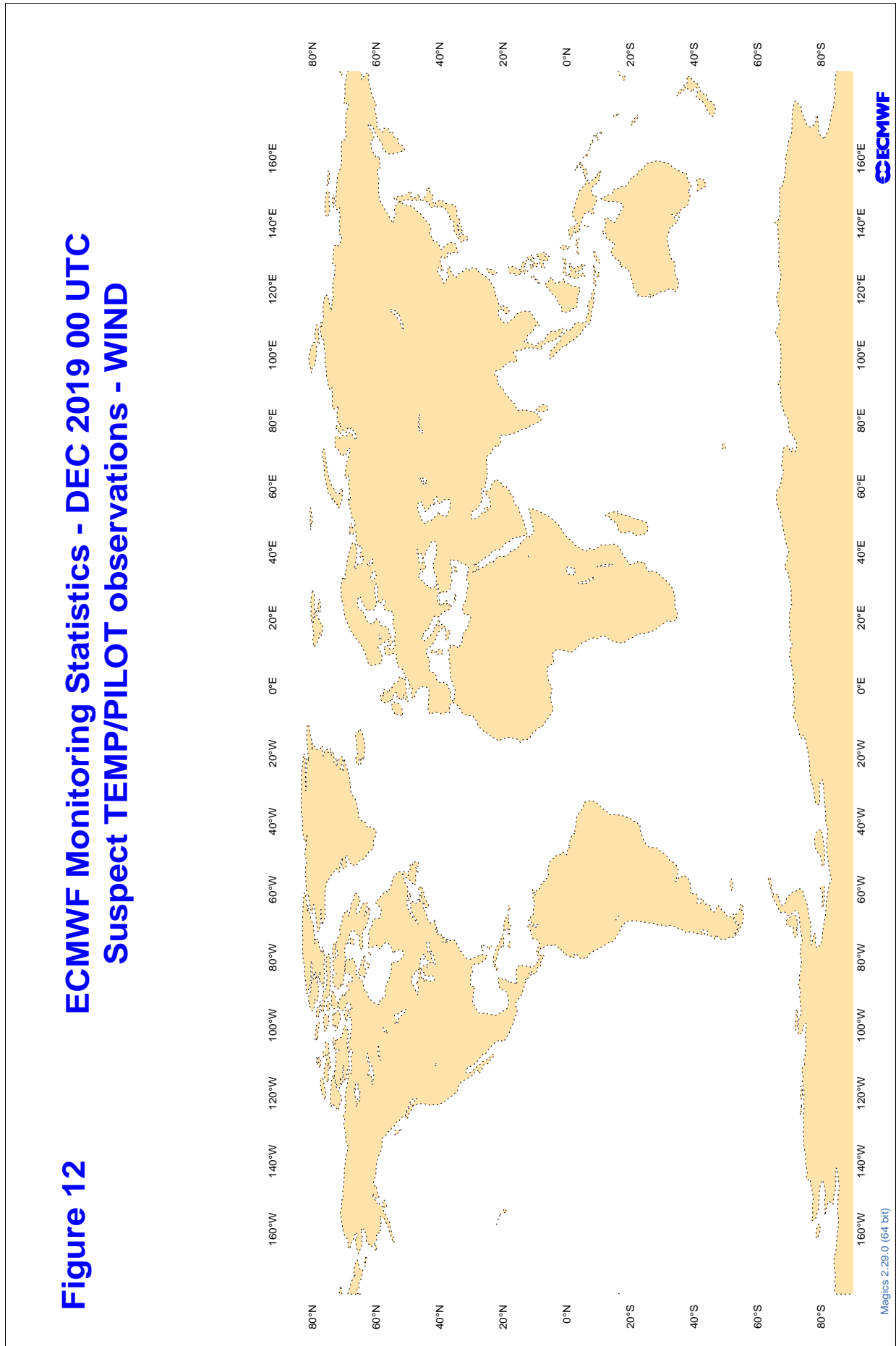
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



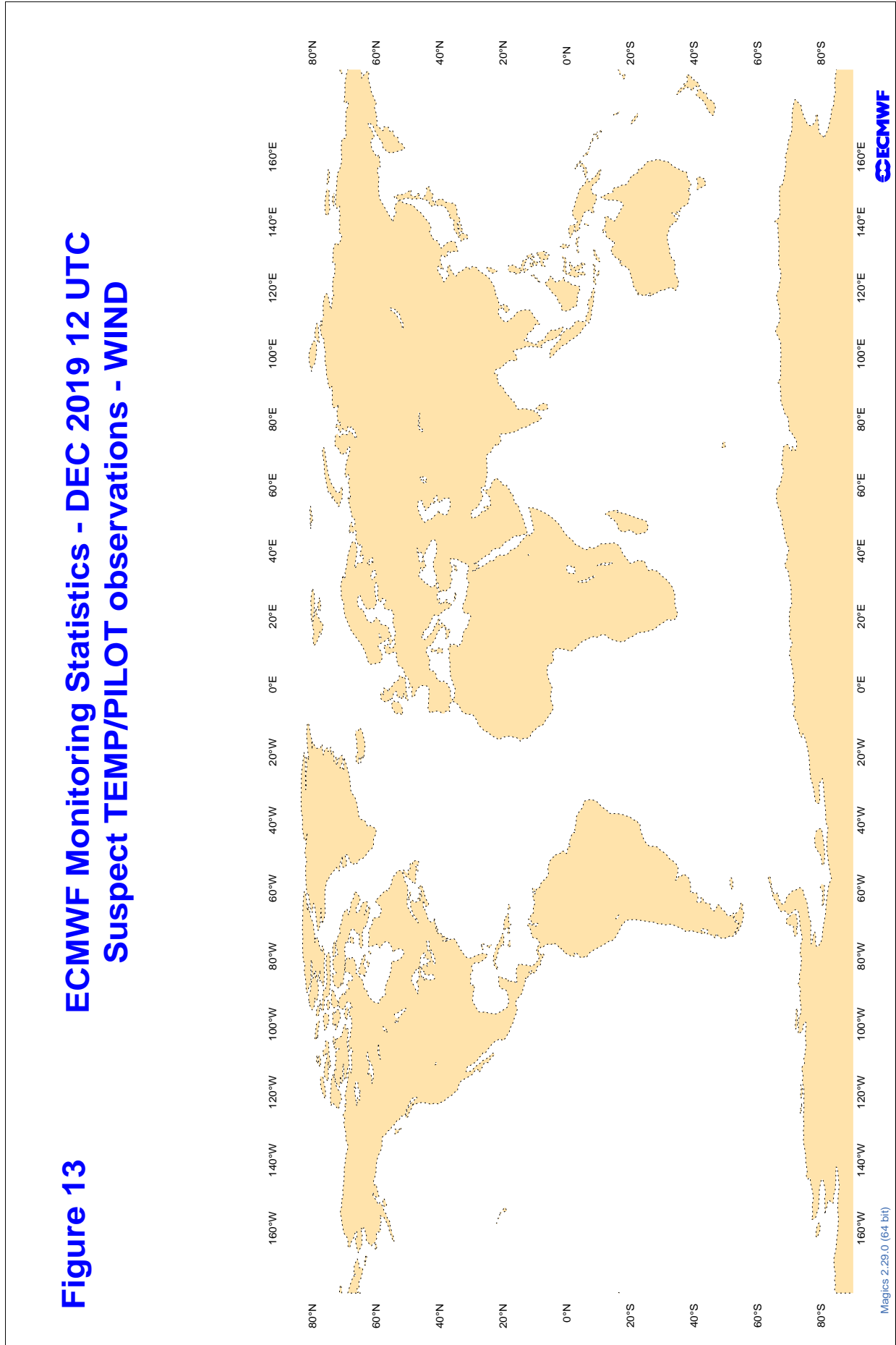
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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



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



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

RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	00	Z	100	14	23.2	21.1
5QPW8X	12	Z	100	7	15.1	13.0
7JUNA4	12	Z	100	3	13.1	7.0
7JUNA4	00	Z	100	5	9.0	0.8
BPMWB2	12	Z	100	5	20.4	17.8
BPMWB2	00	Z	100	5	21.2	18.8
DBLK	12	Z	100	30	5.0	1.1
DBLK	00	Z	100	30	3.8	-0.4
FHM5UJ	12	Z	100	5	11.2	8.3
FHM5UJ	00	Z	100	4	9.4	7.3
FPUW5G	12	Z	100	17	19.1	18.8
FPUW5G	00	Z	100	1	24.2	24.2
HTXUH4	00	Z	100	13	16.7	15.2
HTXUH4	12	Z	100	10	11.7	7.9
JGQH	00	Z	100	2	5.8	2.1
JMLVCM	12	Z	100	39	24.1	22.8
JMLVCM	00	Z	100	39	21.7	20.4
JNKN7J	00	Z	100	8	25.2	21.7
JNKN7J	12	Z	100	10	51.1	47.6
KJFF9X	00	Z	100	5	19.8	15.3
KJFF9X	12	Z	100	7	15.6	12.5
KMPLHP	00	Z	100	4	150.5	115.9
KMPLHP	12	Z	100	5	263.6	263.6
LRYPE3	00	Z	100	7	12.4	4.3
LRYPE3	12	Z	100	8	15.9	8.3
VKB4L5	00	Z	100	2	38.9	38.4
VKB4L5	12	Z	100	1	32.1	32.1
WDK38H	12	Z	100	5	3.8	0.7
XQFJRG	00	Z	100	4	19.6	-14.9
XQFJRG	12	Z	100	4	9.0	-1.1
YLV96W	00	Z	100	3	65.8	65.8
YLV96W	12	Z	100	3	55.2	49.7
ZVQEQC	00	Z	100	16	23.7	23.3

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

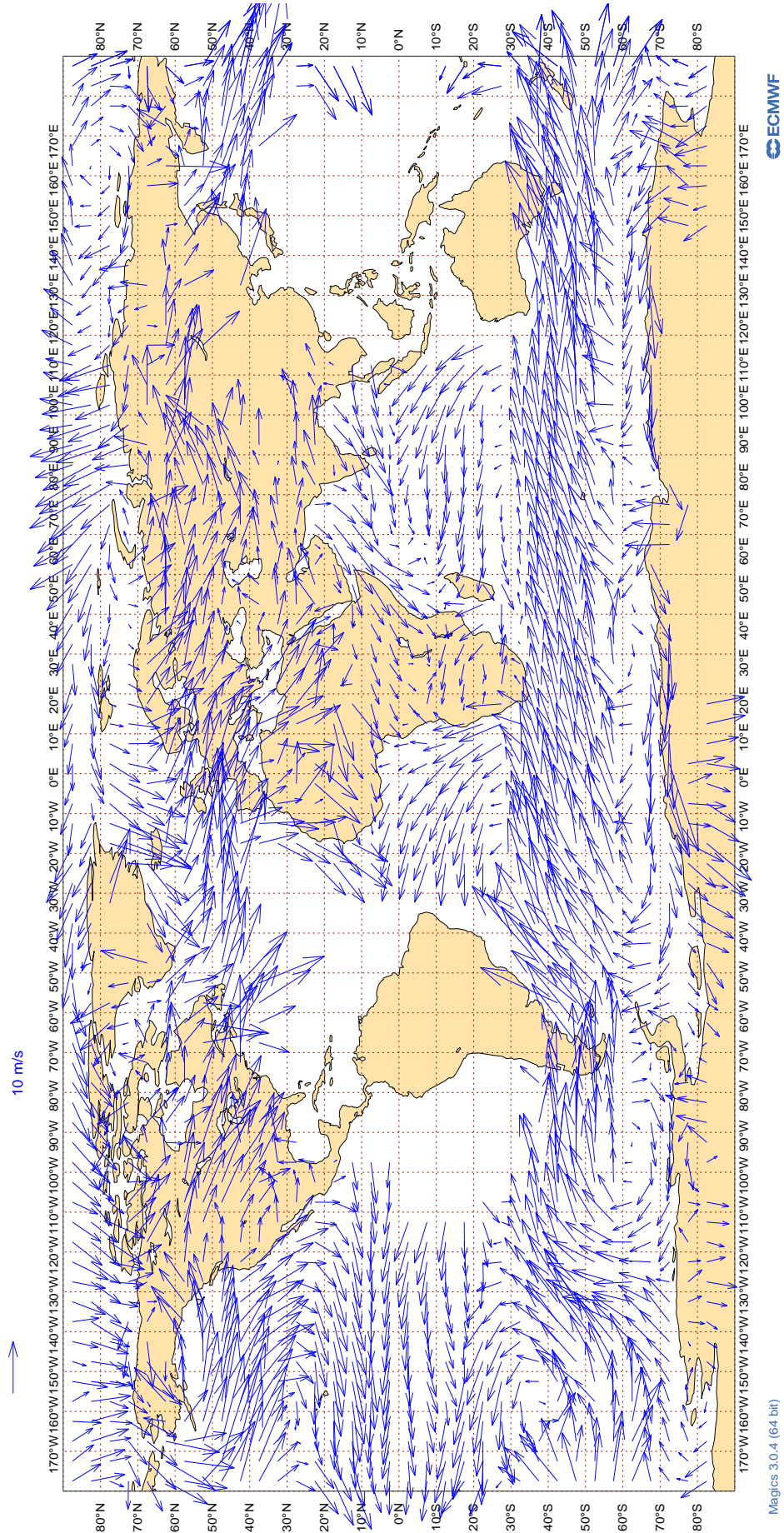
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	00	V	100	12	3.6	0.6	0.1
5QPW8X	12	V	100	7	3.5	0.9	-0.6
7JUNA4	12	V	100	3	2.8	0.0	0.8
7JUNA4	00	V	100	5	3.4	-1.6	0.9
BPMWB2	12	V	100	5	3.9	-0.3	1.1
BPMWB2	00	V	100	5	3.4	-0.4	0.5
DBLK	12	V	100	30	2.1	0.1	0.2
DBLK	00	V	100	29	1.8	-0.2	0.4
FHM5UJ	12	V	100	5	2.8	1.3	0.0
FHM5UJ	00	V	100	4	3.4	1.6	-1.3
FPUW5G	12	V	100	17	3.1	1.6	0.4
FPUW5G	00	V	100	1	4.7	-3.6	-3.0
HTXUH4	00	V	100	13	4.3	0.3	0.7
HTXUH4	12	V	100	10	3.7	-0.6	-0.6
JGQH	00	V	100	2	3.1	2.7	-0.9
JMLVCM	12	V	100	15	6.2	1.3	-1.6
JMLVCM	00	V	100	16	5.3	0.9	-0.4
JNKN7J	00	V	100	8	3.4	-0.3	0.3
JNKN7J	12	V	100	9	3.1	0.2	0.7
KJJF9X	00	V	100	5	5.4	-3.6	-0.3
KJJF9X	12	V	100	7	3.8	0.0	-1.1
KMPLHP	00	V	100	4	3.3	2.1	1.8
KMPLHP	12	V	100	5	4.7	0.7	2.7
LRYQE3	00	V	100	7	2.4	1.0	0.5
LRYQE3	12	V	100	8	3.3	0.2	1.5
VKB4L5	00	V	100	2	3.6	-0.9	3.2
VKB4L5	12	V	100	1	4.2	4.1	-1.1
WDK38H	12	V	100	5	2.5	1.8	0.4
XQFJRG	00	V	100	4	4.0	0.6	-1.3
XQFJRG	12	V	100	4	3.0	-0.1	0.4
YL96W	00	V	100	3	3.1	-0.5	1.0
YL96W	12	V	100	2	1.4	1.2	0.1
ZVQEQC	00	V	100	16	4.3	0.1	1.0

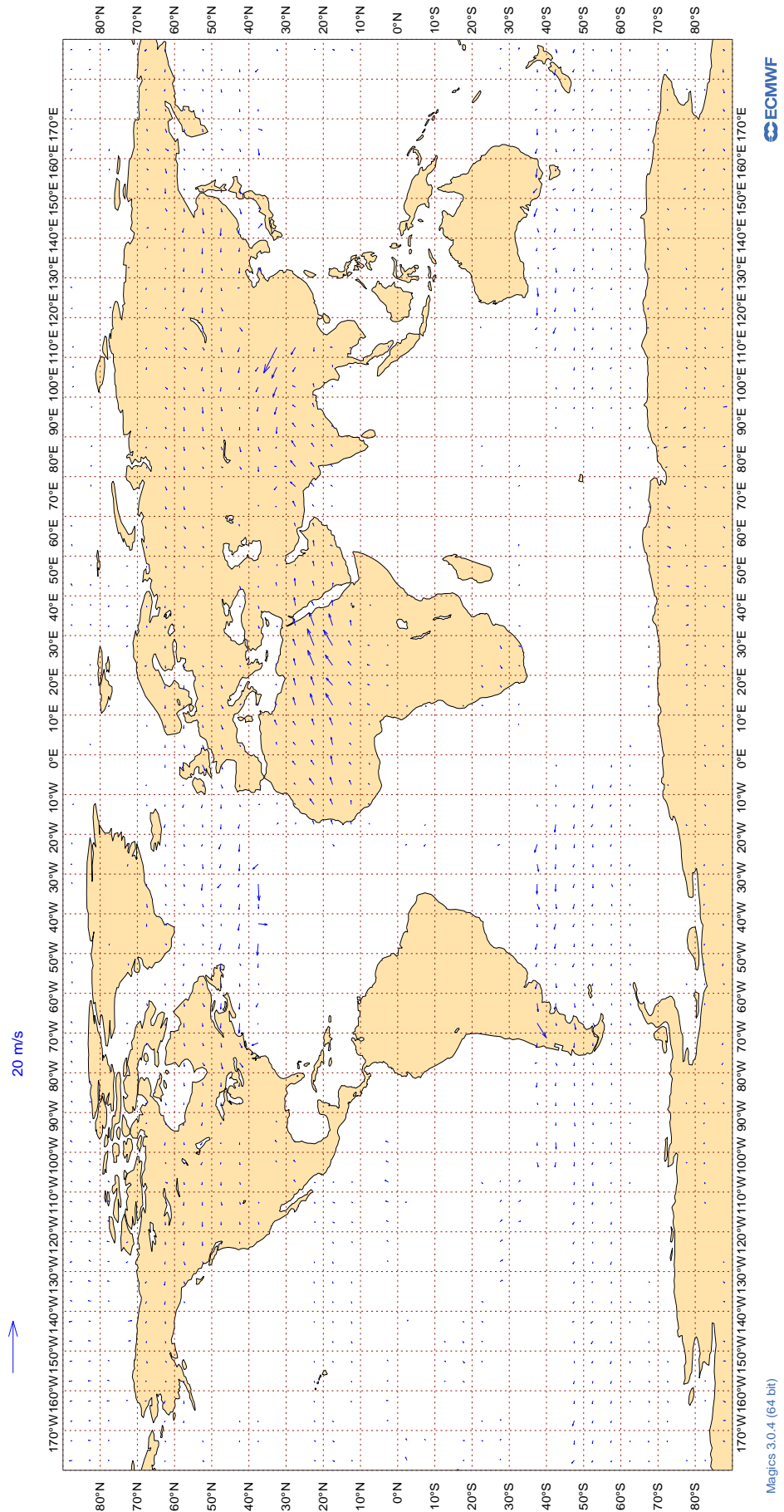
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Dec 2019
AMV Winds: 700-1000hPa
Mean Observed Wind



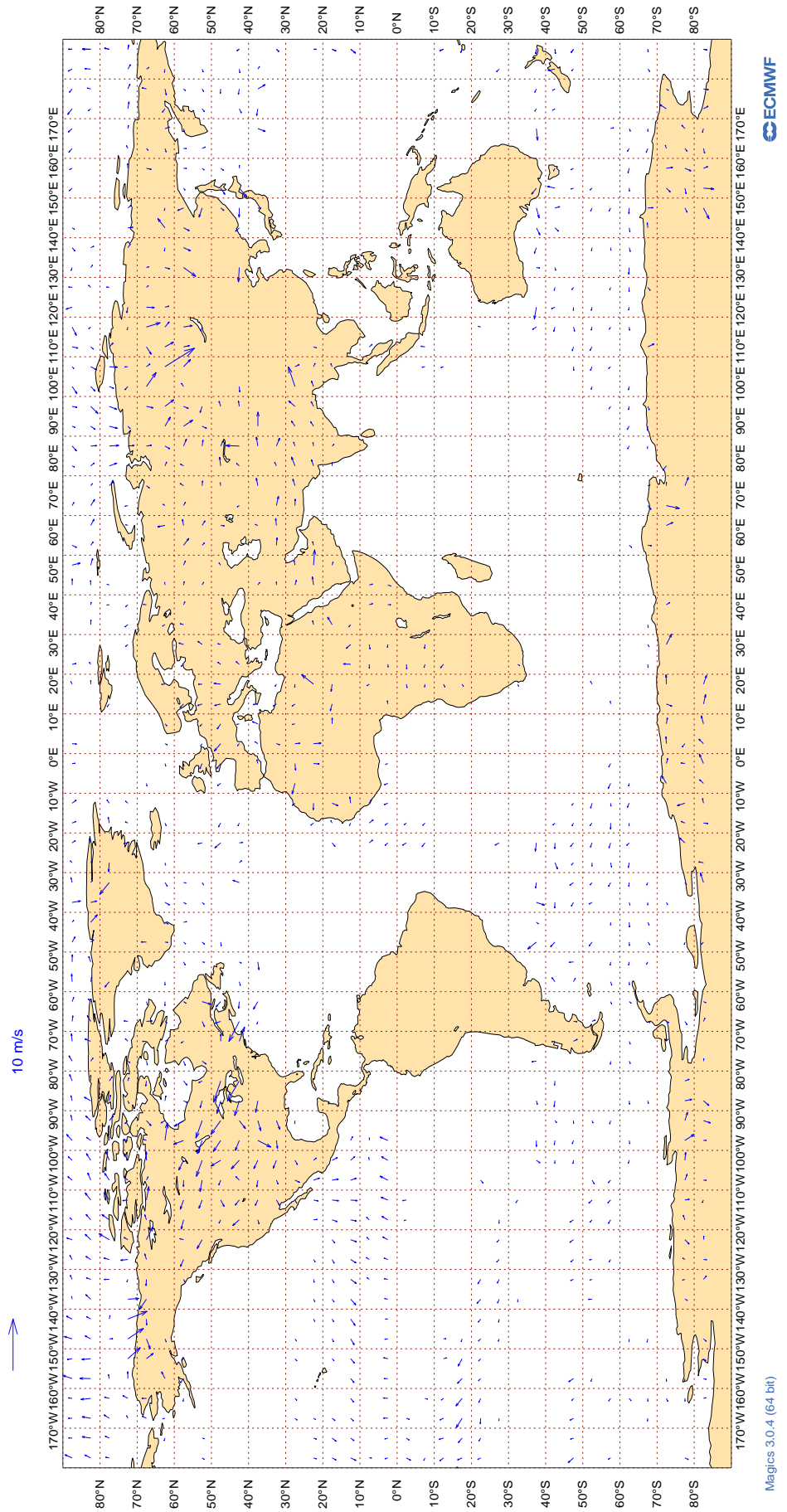
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Dec 2019
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



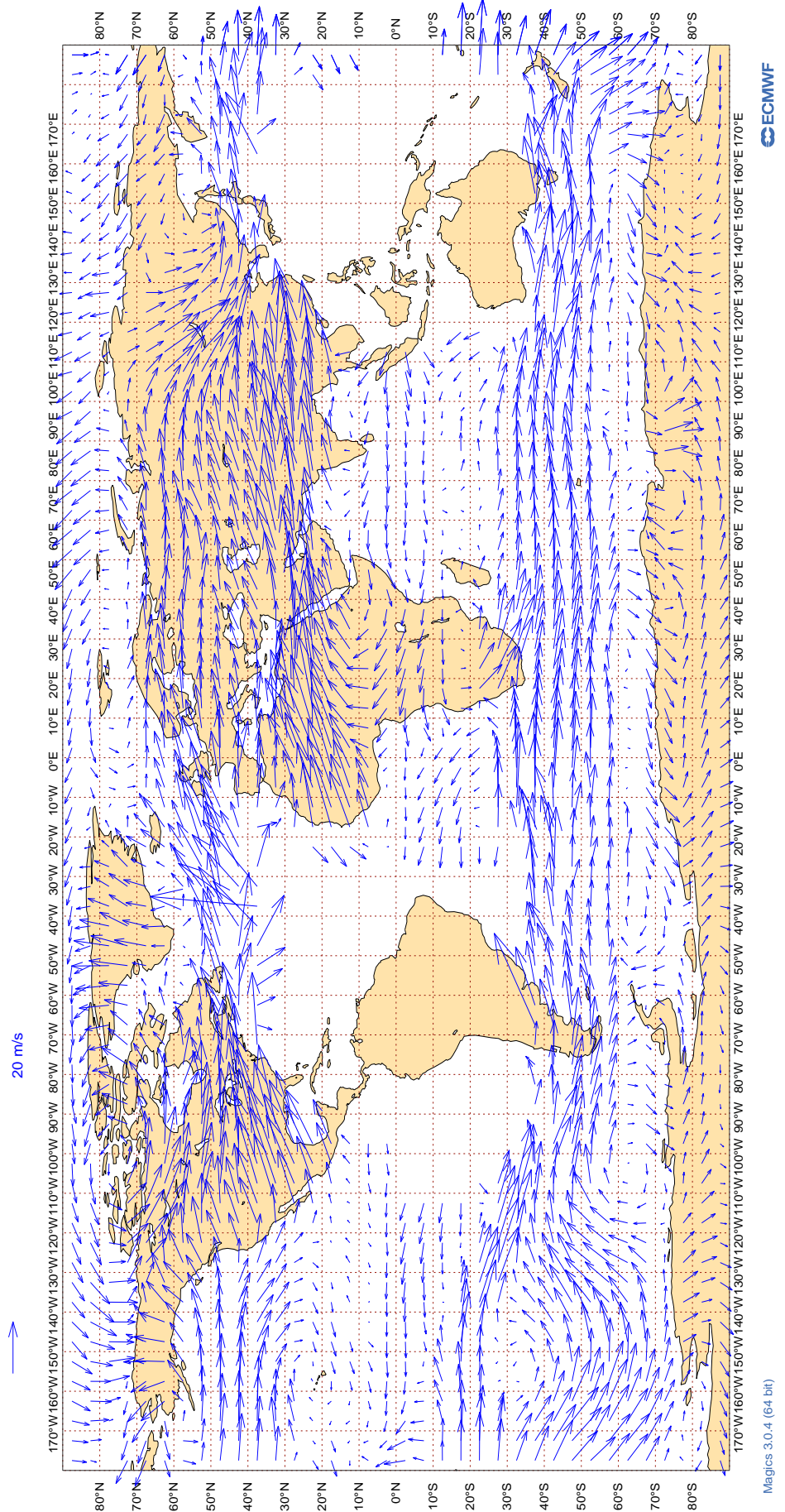
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Dec 2019
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



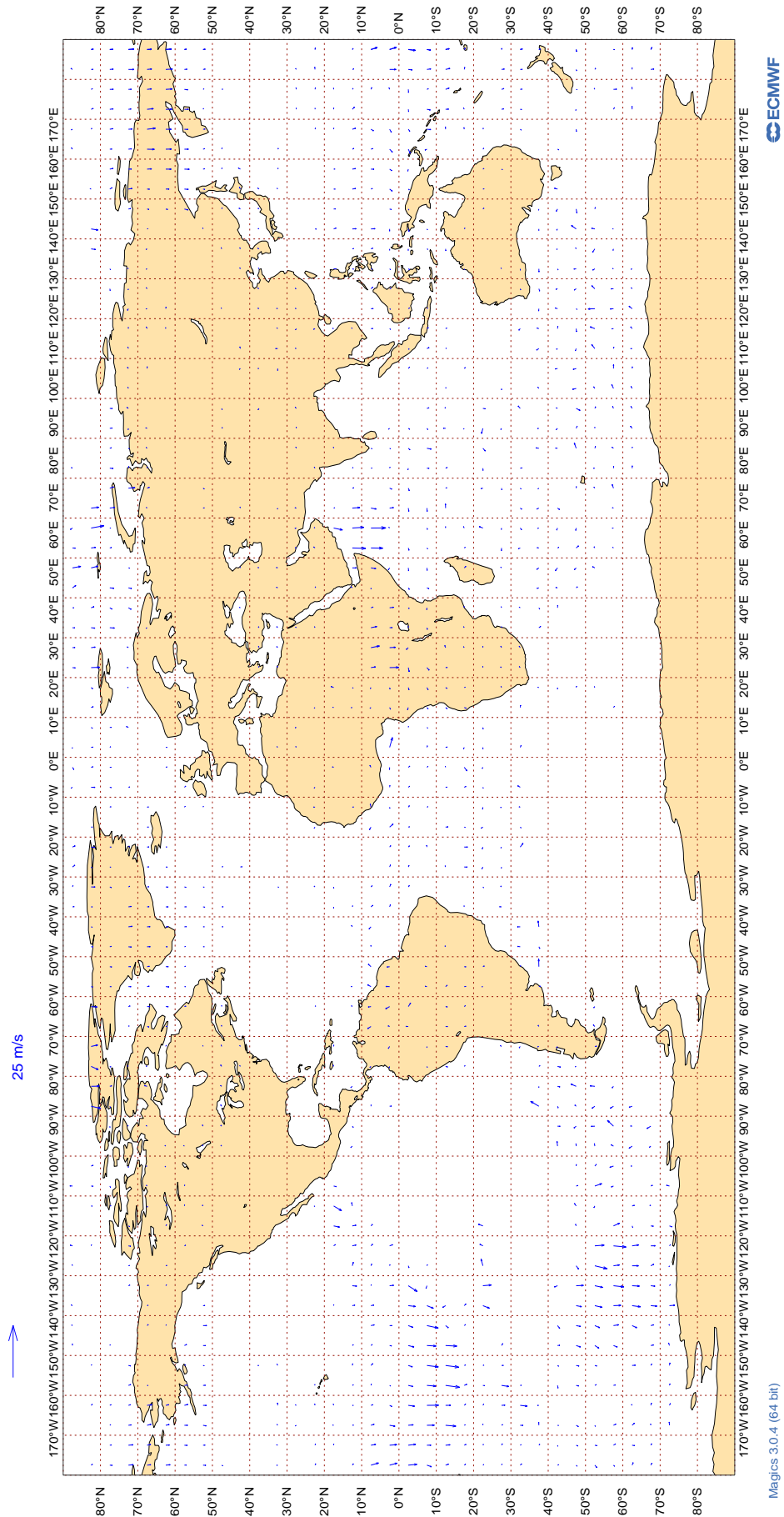
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Dec 2019
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Dec 2019
Aircraft Winds: 150- 300hPa
Wind bias: Observation - FG



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 : DEC 2019
 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	45139	3	0	6.2	0.3
AAR	99	V	300-150	227	0	0	4.3	-1.9
ABB	99	V	300-150	85	0	0	4.0	0.7
ABD	99	V	300-150	449	0	1	4.6	-0.3
ABG	99	V	300-150	320	0	0	3.1	0.3
ABP	99	V	300-150	28	0	0	3.1	0.7
ABW	99	V	300-150	512	0	0	3.9	-0.6
ACA	99	V	300-150	26768	7	0	7.9	0.2
ACI	99	V	300-150	3334	0	0	3.8	0.5
AEA	99	V	300-150	856	8	2	4.3	0.3
AFL	99	V	300-150	1925	0	0	3.4	0.3
AFR	99	V	300-150	28932	1	0	4.2	0.3
AHO	99	V	300-150	49	0	0	4.0	0.7
AHY	99	V	300-150	178	12	1	12.3	-0.4
AIC	99	V	300-150	1858	1	0	6.0	0.2
AIZ	99	V	300-150	68	0	0	4.2	0.9
ALK	99	V	300-150	1183	0	0	3.5	0.5
AMX	99	V	300-150	3680	19	0	11.3	0.0
ANG	99	V	300-150	32	0	0	3.0	0.9
ANZ	99	V	300-150	33941	2	0	6.0	0.4
AOJ	99	V	300-150	113	0	0	3.9	0.9
ASA	99	V	300-150	57	2	2	6.8	-0.5
ASL	99	V	300-150	367	0	0	3.5	0.6
ASY	99	V	300-150	194	0	0	4.6	0.8
ATC	99	V	300-150	89	0	0	14.2	0.6
ATN	99	V	300-150	136	1	1	5.7	-0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AUA	99	V	300-150	4207	0	0	4.2	-0.1
AUH	99	V	300-150	124	1	0	3.2	-0.0
AUI	99	V	300-150	663	0	0	3.6	0.3
AVA	99	V	300-150	552	17	1	7.7	0.1
AWC	99	V	300-150	95	0	0	3.7	0.0
AXB	99	V	300-150	30	0	0	4.0	1.6
AXM	99	V	300-150	169	0	1	4.5	1.0
AXY	99	V	300-150	21	0	0	4.0	-0.8
AYY	99	V	300-150	36	0	0	4.5	0.8
AZA	99	V	300-150	5850	0	0	3.9	0.3
AZG	99	V	300-150	250	0	0	3.4	-0.0
BAW	99	V	300-150	49504	4	0	5.5	0.1
BBA	99	V	300-150	65	0	0	3.2	0.1
BBC	99	V	300-150	283	2	0	3.7	1.2
BCS	99	V	300-150	893	0	0	3.7	0.3
BEL	99	V	300-150	1523	0	0	3.8	0.3
BFD	99	V	300-150	37	0	0	4.3	-0.1
BLX	99	V	300-150	606	19	0	11.5	0.2
BMW	99	V	300-150	84	0	0	3.4	0.3
BOS	99	V	300-150	1868	0	0	4.1	0.4
BOX	99	V	300-150	2564	0	0	3.7	0.0
BOX	99	V	300-150	107	0	0	3.7	-0.2
BVR	99	V	300-150	35	0	0	3.4	-1.1
CAL	99	V	300-150	387	0	0	3.8	0.2
CAZ	99	V	300-150	146	0	0	4.3	0.6
CCA	99	V	300-150	1592	6	0	7.7	0.6
CEB	99	V	300-150	42	0	0	3.0	0.4
CES	99	V	300-150	2115	4	0	6.7	0.5
CFC	99	V	300-150	379	0	0	4.8	0.1
CFG	99	V	300-150	5225	0	0	4.3	0.1
CHH	99	V	300-150	368	4	0	7.2	0.2
CJT	99	V	300-150	259	0	0	3.8	0.3
CKS	99	V	300-150	1412	0	0	3.8	-0.4
CLF	99	V	300-150	40	0	0	4.3	-0.7
CLU	99	V	300-150	397	0	0	3.4	-0.3
CLX	99	V	300-150	3379	0	0	4.1	-0.4
CMB	99	V	300-150	388	0	0	3.7	-0.0
CNK	99	V	300-150	68	0	0	3.6	0.6
CNV	99	V	300-150	106	0	1	2.9	0.5
CPA	99	V	300-150	1957	0	0	3.6	0.2
CRL	99	V	300-150	1689	0	0	3.9	0.0
CSC	99	V	300-150	207	0	0	3.5	0.2
CSN	99	V	300-150	1171	13	0	9.6	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CTM	99	V	300-150	108	0	0	3.8	1.1
CXA	99	V	300-150	26	23	0	12.5	-0.0
CXB	99	V	300-150	142	0	0	4.1	0.7
DAH	99	V	300-150	413	0	0	3.7	0.3
DAL	99	V	300-150	49594	0	0	3.8	0.1
DCS	99	V	300-150	24	0	0	3.4	1.2
DHK	99	V	300-150	1729	0	0	5.1	-0.5
DJT	99	V	300-150	1720	0	0	4.1	0.3
DLH	99	V	300-150	27624	0	0	3.6	0.0
DSO	99	V	300-150	29	0	0	3.9	0.2
DUB	99	V	300-150	20	0	0	4.1	0.3
EDC	99	V	300-150	154	19	0	8.6	0.0
EDG	99	V	300-150	36	0	3	5.2	1.4
EDW	99	V	300-150	1410	0	0	4.0	0.3
EIN	99	V	300-150	15644	0	0	3.7	0.2
EJM	99	V	300-150	455	0	0	4.2	0.3
ELY	99	V	300-150	3960	18	0	10.3	0.1
EMM	99	V	300-150	34	0	0	3.9	1.2
ETD	99	V	300-150	6014	3	0	6.3	0.4
ETH	99	V	300-150	3909	2	0	6.0	0.5
EVE	99	V	300-150	86	0	3	3.7	-0.1
EWG	99	V	300-150	3420	0	0	3.8	0.1
EXS	99	V	300-150	295	0	0	3.7	0.0
EZY	99	V	300-150	25	0	0	2.4	-0.1
FAH	99	V	300-150	21	0	0	3.4	1.0
FBU	99	V	300-150	738	0	0	4.9	0.0
FDX	99	V	300-150	6504	0	0	3.8	0.1
FEX	99	V	300-150	36	0	0	4.9	-1.0
FIN	99	V	300-150	1373	0	0	3.2	0.2
FJI	99	V	300-150	9278	0	0	4.4	0.8
FRH	99	V	300-150	303	0	0	4.3	-0.3
FWI	99	V	300-150	2130	0	1	4.1	0.2
FYG	99	V	300-150	63	0	2	4.0	0.7
GAF	99	V	300-150	49	0	0	4.1	0.2
GAF	99	V	300-150	35	0	0	5.8	-0.6
GCK	99	V	300-150	69	0	0	3.7	0.3
GCT	99	V	300-150	26	0	0	2.9	-0.1
GEC	99	V	300-150	1653	0	0	3.8	0.1
GES	99	V	300-150	46	0	0	3.7	0.5
GFA	99	V	300-150	325	0	0	2.8	0.8
GIA	99	V	300-150	486	0	0	4.0	0.4
GLO	99	V	300-150	31	6	0	9.6	1.2
GOL	99	V	300-150	25	0	0	3.3	-0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
GTI	99	V	300-150	2150	0	0	4.0	-0.3
HAL	99	V	300-150	4611	0	0	4.6	0.9
HRT	99	V	300-150	52	0	0	3.2	0.1
HUA	99	V	300-150	26	0	0	3.5	-1.2
IAE	99	V	300-150	21	0	0	3.5	0.2
IBE	99	V	300-150	3908	0	1	3.8	0.2
ICL	99	V	300-150	634	0	0	4.2	0.1
ICV	99	V	300-150	254	0	0	3.5	0.0
IFA	99	V	300-150	91	0	0	3.7	0.3
IJM	99	V	300-150	92	0	0	5.9	0.3
ISS	99	V	300-150	1888	0	0	3.7	0.3
JAF	99	V	300-150	967	19	0	10.4	0.1
JAS	99	V	300-150	125	0	0	4.8	-0.0
JBU	99	V	300-150	26	0	85	3.3	-1.1
JCT	99	V	300-150	35	0	0	3.5	-0.1
JET	99	V	300-150	70	0	0	3.9	0.7
JJA	99	V	300-150	69	3	1	7.2	1.7
JME	99	V	300-150	161	0	0	3.3	0.5
JML	99	V	300-150	72	0	0	3.5	1.4
JST	99	V	300-150	1646	2	0	9.3	0.7
KAC	99	V	300-150	1322	0	0	3.7	0.4
KAI	99	V	300-150	105	1	1	4.7	1.0
KAL	99	V	300-150	1730	0	0	3.3	0.4
KCE	99	V	300-150	32	0	3	3.6	-0.1
KFE	99	V	300-150	100	0	0	3.8	0.8
KIW	99	V	300-150	58	0	0	4.7	-0.2
KLM	99	V	300-150	18284	6	0	6.8	0.1
KQA	99	V	300-150	302	24	1	10.5	0.6
KTK	99	V	300-150	663	0	0	3.5	0.1
LAN	99	V	300-150	2176	13	0	10.0	0.4
LCO	99	V	300-150	43	0	2	4.2	-1.2
LNI	99	V	300-150	384	0	0	3.5	0.6
LNK	99	V	300-150	34	0	0	2.7	-1.1
LOT	99	V	300-150	3845	10	0	8.5	0.1
LXA	99	V	300-150	35	0	0	3.2	-0.0
LXG	99	V	300-150	83	0	0	4.1	0.6
LXJ	99	V	300-150	181	0	1	4.7	0.1
MAS	99	V	300-150	1012	0	0	4.1	0.4
MAU	99	V	300-150	343	0	0	4.5	1.4
MED	99	V	300-150	104	0	0	4.5	0.3
MHV	99	V	300-150	83	0	0	4.1	-0.7
MLM	99	V	300-150	44	0	0	3.5	0.6
MMD	99	V	300-150	501	0	0	4.1	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MOZ	99	V	300-150	28	0	0	4.4	-0.1
MPH	99	V	300-150	618	0	0	4.4	-0.8
MSR	99	V	300-150	1762	12	0	8.3	0.1
NAX	99	V	300-150	7400	20	0	10.8	0.2
NCA	99	V	300-150	174	0	0	3.7	-0.8
NJE	99	V	300-150	265	0	0	3.6	0.0
NOS	99	V	300-150	547	16	0	12.0	0.5
NRS	99	V	300-150	7799	20	0	10.7	0.1
NVR	99	V	300-150	22	0	0	3.0	-1.3
NWS	99	V	300-150	988	0	0	3.3	0.4
OAE	99	V	300-150	759	0	0	4.3	0.0
OMA	99	V	300-150	565	3	0	3.8	0.4
PAC	99	V	300-150	381	0	0	4.7	-0.4
PAL	99	V	300-150	558	0	0	3.8	0.5
PAT	99	V	300-150	70	0	0	3.5	0.8
PIA	99	V	300-150	240	0	0	2.9	0.2
PNC	99	V	300-150	27	0	0	5.5	1.4
QFA	99	V	300-150	22393	1	0	7.2	0.6
QQE	99	V	300-150	136	0	0	3.6	0.3
QTR	99	V	300-150	16294	0	0	4.2	0.2
RAC	99	V	300-150	38	0	0	4.8	0.3
RAM	99	V	300-150	771	22	1	8.7	1.0
RBA	99	V	300-150	60	2	0	9.2	0.1
RCH	99	V	300-150	3809	0	0	4.5	0.4
RDN	99	V	300-150	31	0	0	3.2	0.6
RJA	99	V	300-150	1368	16	0	12.0	0.0
RKK	99	V	300-150	20	0	0	6.0	0.5
ROJ	99	V	300-150	96	0	0	4.1	0.4
ROU	99	V	300-150	1364	0	0	4.8	0.3
RRR	99	V	300-150	104	0	0	3.8	0.2
RSY	99	V	300-150	42	0	0	3.8	0.8
RWD	99	V	300-150	36	0	0	3.4	0.3
RZO	99	V	300-150	164	0	5	4.5	0.5
SAM	99	V	300-150	293	0	0	4.4	0.7
SAS	99	V	300-150	4127	0	0	3.3	0.2
SCX	99	V	300-150	128	1	0	7.7	-0.2
SEY	99	V	300-150	63	0	0	4.9	1.2
SIA	99	V	300-150	4175	0	0	3.9	0.0
SIO	99	V	300-150	28	0	0	3.9	-1.1
SJE	99	V	300-150	34	0	0	4.3	0.8
SLM	99	V	300-150	184	0	0	3.8	0.7
SOO	99	V	300-150	401	0	0	3.5	-0.1
SPA	99	V	300-150	159	0	0	4.5	0.8

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SSG	99	V	300-150	37	0	0	4.6	0.9
SVA	99	V	300-150	5131	0	0	5.1	0.4
SVW	99	V	300-150	215	0	0	3.7	0.4
SWA	99	V	300-150	57	0	2	6.1	1.1
SWR	99	V	300-150	10839	0	0	3.9	0.2
SYB	99	V	300-150	94	0	0	3.8	-0.3
TAM	99	V	300-150	58	0	5	4.8	-0.5
TAP	99	V	300-150	2113	0	2	4.1	0.4
TAR	99	V	300-150	328	0	0	3.2	0.5
TAY	99	V	300-150	182	0	0	3.7	0.1
TCV	99	V	300-150	128	2	3	7.1	0.8
TEU	99	V	300-150	71	0	0	3.1	0.6
TFF	99	V	300-150	29	0	10	4.6	1.8
TFL	99	V	300-150	1642	21	0	9.5	0.2
TGW	99	V	300-150	52	0	0	2.9	0.8
THA	99	V	300-150	410	12	0	9.4	-0.2
THT	99	V	300-150	3342	5	0	12.1	0.6
THY	99	V	300-150	9171	4	0	5.6	0.1
TMN	99	V	300-150	270	0	0	4.3	0.5
TOM	99	V	300-150	4288	20	0	11.0	0.2
TOW	99	V	300-150	64	0	0	3.7	-0.1
TPA	99	V	300-150	205	0	0	3.8	0.6
TSC	99	V	300-150	4222	0	0	3.9	0.1
TWB	99	V	300-150	33	0	3	3.5	0.3
TWY	99	V	300-150	304	0	0	4.5	-0.2
UAE	99	V	300-150	16445	0	0	3.8	0.3
UAL	99	V	300-150	72770	3	2	6.9	0.2
ULC	99	V	300-150	82	0	0	3.2	0.2
UPS	99	V	300-150	4185	0	0	4.2	0.1
UZB	99	V	300-150	124	15	0	13.7	0.0
VBA	99	V	300-150	33	0	0	3.6	0.6
VCG	99	V	300-150	71	0	0	3.1	0.1
VIR	99	V	300-150	21149	4	0	5.8	0.1
VJT	99	V	300-150	830	0	0	3.8	0.4
VKG	99	V	300-150	412	0	0	3.5	0.4
VMP	99	V	300-150	61	0	0	6.4	1.8
VOE	99	V	300-150	20	0	0	3.4	0.2
VOZ	99	V	300-150	7117	0	0	4.2	0.5
WGT	99	V	300-150	80	0	0	3.3	0.2
WJA	99	V	300-150	3219	8	0	7.9	0.2
XAX	99	V	300-150	97	0	0	3.3	0.4

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°N - 90°N, 70°W - 40°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°N - 90°N, 70°W - 40°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)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	26	20.5	15.0
01001	00	Z	50	26	22.4	19.3
01028	12	Z	50	45	13.0	11.5
01028	00	Z	50	43	11.4	10.2
01400	00	Z	50	15	93.5	93.2
01400	12	Z	50	18	91.9	91.6
01415	12	Z	50	31	18.5	14.7
01415	00	Z	50	29	22.3	17.9
02365	12	Z	50	23	17.1	14.2
02365	00	Z	50	27	17.2	14.9
02591	00	Z	50	24	22.3	20.2
02591	12	Z	50	23	18.9	17.1
02836	12	Z	50	30	10.2	7.8
02836	00	Z	50	30	12.4	9.8
02963	12	Z	50	28	12.6	10.1
02963	00	Z	50	30	12.1	10.5
03005	00	Z	50	27	15.1	11.5
03005	12	Z	50	31	12.3	8.1
03238	00	Z	50	27	18.8	14.7
03238	12	Z	50	2	6.2	-0.5
03808	00	Z	50	28	16.1	13.0
03808	12	Z	50	30	19.7	14.9
03918	12	Z	50	2	25.4	23.9
03918	00	Z	50	31	21.0	17.2
03953	00	Z	50	30	28.1	23.2
03953	12	Z	50	29	31.0	25.2
04018	00	Z	50	31	18.9	14.7
04018	12	Z	50	31	11.1	9.2
04220	00	Z	50	28	13.7	12.8
04220	12	Z	50	26	15.9	12.9
04270	00	Z	50	29	15.9	13.9
04270	12	Z	50	30	13.4	9.1
04320	00	Z	50	31	13.9	10.8
04320	12	Z	50	29	11.9	9.9
04339	12	Z	50	27	14.4	12.3
04339	00	Z	50	30	20.4	15.0
04360	00	Z	50	29	17.3	6.2
04360	12	Z	50	31	13.1	4.4
06011	12	Z	50	30	15.7	12.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	24	19.3	15.2
06260	12	Z	50	5	19.3	18.2
06260	00	Z	50	31	14.6	11.8
06610	00	Z	50	27	24.1	19.0
06610	12	Z	50	31	19.7	16.4
07110	12	Z	50	30	21.0	14.3
07110	00	Z	50	28	17.7	13.5
07510	00	Z	50	33	30.3	28.6
07510	12	Z	50	27	38.5	36.8
07645	00	Z	50	29	28.6	24.1
07645	12	Z	50	28	26.7	24.1
07761	00	Z	50	27	29.7	25.4
07761	12	Z	50	28	50.4	42.1
08001	12	Z	50	28	19.3	17.7
08001	00	Z	50	28	20.5	18.3
08221	00	Z	50	28	22.4	20.5
08221	12	Z	50	29	26.5	25.4
08302	00	Z	50	26	13.6	11.0
08302	12	Z	50	31	15.4	13.4
08508	12	Z	50	26	18.9	17.8
08522	12	Z	50	30	18.2	16.0
08579	12	Z	50	26	34.9	28.4
10035	00	Z	50	25	25.9	24.7
10035	12	Z	50	26	23.6	22.1
10393	00	Z	50	30	19.7	17.8
10393	12	Z	50	30	26.1	19.5
10410	12	Z	50	30	14.6	11.3
10410	00	Z	50	28	14.7	13.1
10739	00	Z	50	31	20.6	16.9
10739	12	Z	50	30	19.0	16.8
11035	00	Z	50	29	25.6	23.0
11035	12	Z	50	31	39.5	37.0
12982	12	Z	50	30	81.7	49.5
12982	00	Z	50	29	32.0	23.8
16080	00	Z	50	31	20.7	17.7
16080	12	Z	50	31	16.2	14.1
16245	12	Z	50	30	14.5	12.5
16245	00	Z	50	27	15.3	12.7
16320	00	Z	50	31	23.5	18.3
16320	12	Z	50	31	23.7	18.8
16429	12	Z	50	27	16.3	15.0
16429	00	Z	50	30	20.1	17.6
16622	00	Z	50	26	38.0	34.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	27	20.0	16.3
17607	12	Z	50	30	24.1	21.3
26435	12	Z	50	15	10.3	6.8
5QPW8X	00	Z	50	11	34.4	32.9
5QPW8X	12	Z	50	6	22.0	20.2
60018	12	Z	50	26	20.6	19.4
60018	00	Z	50	28	23.1	22.2
7JUNA4	12	Z	50	2	37.7	34.1
7JUNA4	00	Z	50	3	16.9	4.9
BPMWB2	12	Z	50	5	33.5	31.1
BPMWB2	00	Z	50	5	40.8	39.5
FHM5UJ	12	Z	50	5	20.2	19.7
FHM5UJ	00	Z	50	3	14.0	12.1
FPUW5G	12	Z	50	14	23.8	22.9
FPUW5G	00	Z	50	1	26.0	26.0
HTXUH4	00	Z	50	13	31.4	29.8
HTXUH4	12	Z	50	9	20.1	16.0
JNKN7J	00	Z	50	6	32.6	26.4
JNKN7J	12	Z	50	9	107.6	92.8
KJFF9X	00	Z	50	5	30.5	27.3
KJFF9X	12	Z	50	7	25.0	22.8
KMPLHP	00	Z	50	3	263.7	258.6
KMPLHP	12	Z	50	4	0.0	0.0
LRYQE3	00	Z	50	5	21.3	16.6
LRYQE3	12	Z	50	8	28.6	24.5
VKB4L5	00	Z	50	2	52.6	51.7
VKB4L5	12	Z	50	1	41.6	41.6
WDK38H	12	Z	50	4	10.4	9.6
XQFJRG	00	Z	50	4	12.1	-10.3
XQFJRG	12	Z	50	4	31.5	25.2
YL96W	00	Z	50	1	79.3	79.3
YL96W	12	Z	50	1	98.0	98.0
ZVQEQC	00	Z	50	16	31.0	30.3

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	26	2.8	-0.2	-0.4
01001	00	V	50	22	3.1	-0.2	0.2
01028	12	V	50	29	3.1	0.9	0.4
01028	00	V	50	25	3.0	0.1	0.1
01400	00	V	50	13	3.3	-0.5	0.7
01400	12	V	50	17	2.9	0.9	-0.2
01415	12	V	50	31	3.3	0.5	0.2
01415	00	V	50	19	4.5	-1.4	0.0
02365	12	V	50	20	3.7	0.0	-0.9
02365	00	V	50	21	4.0	0.0	0.3
02591	00	V	50	17	2.9	0.1	-0.5
02591	12	V	50	23	3.9	1.3	0.0
02836	12	V	50	30	3.1	0.2	-0.5
02836	00	V	50	26	3.7	0.6	0.2
02963	12	V	50	28	3.3	0.7	-0.7
02963	00	V	50	22	3.0	0.1	-0.9
03005	00	V	50	18	3.1	0.7	0.5
03005	12	V	50	31	3.1	0.8	0.0
03238	00	V	50	17	5.2	-1.8	-0.4
03238	12	V	50	2	3.5	3.0	1.2
03808	00	V	50	23	3.8	0.0	0.4
03808	12	V	50	30	3.5	0.6	0.0
03918	12	V	50	2	4.7	0.3	1.3
03918	00	V	50	24	3.4	0.3	0.1
03953	00	V	50	22	3.3	0.5	0.4
03953	12	V	50	29	4.0	-0.1	-0.8
04018	00	V	50	24	3.6	-0.1	0.0
04018	12	V	50	31	3.1	0.2	0.1
04220	00	V	50	24	3.5	0.2	0.5
04220	12	V	50	26	3.0	0.3	0.3
04270	00	V	50	22	3.0	0.0	0.5
04270	12	V	50	30	3.8	0.4	0.3
04320	00	V	50	22	3.4	-0.2	-0.3
04320	12	V	50	29	2.9	0.1	-0.4
04339	12	V	50	26	3.5	0.7	-0.4
04339	00	V	50	24	4.0	0.2	-0.4
04360	00	V	50	23	3.0	-0.9	0.2
04360	12	V	50	31	3.3	-1.0	-0.2
06011	12	V	50	30	3.2	0.1	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	20	3.3	0.5	-1.3
06260	12	V	50	5	3.6	-1.6	2.1
06260	00	V	50	24	3.9	0.3	-0.3
06610	00	V	50	24	5.4	0.8	0.1
06610	12	V	50	30	4.2	0.4	0.3
07110	12	V	50	30	3.3	0.5	0.1
07110	00	V	50	21	4.2	0.0	-0.3
07510	00	V	50	20	3.7	0.9	-0.2
07510	12	V	50	27	3.6	0.3	0.0
07645	00	V	50	22	4.1	0.2	0.3
07645	12	V	50	28	4.0	0.9	-0.1
07761	00	V	50	20	3.8	1.0	1.0
07761	12	V	50	28	3.0	0.3	0.1
08001	12	V	50	28	3.5	0.5	0.6
08001	00	V	50	20	4.1	0.7	-0.3
08221	00	V	50	21	3.7	0.5	-0.1
08221	12	V	50	29	3.8	0.2	-0.4
08302	00	V	50	21	2.9	0.7	-0.1
08302	12	V	50	31	4.0	0.0	0.5
08508	12	V	50	26	3.2	-0.1	0.0
08522	12	V	50	30	3.4	0.3	0.7
08579	12	V	50	26	3.7	-0.2	0.8
10035	00	V	50	24	3.8	0.4	-0.7
10035	12	V	50	26	3.8	0.4	-0.4
10393	00	V	50	27	4.5	-0.4	0.7
10393	12	V	50	30	3.8	-0.5	-0.2
10410	12	V	50	30	4.1	-0.2	-1.1
10410	00	V	50	25	3.8	0.1	0.5
10739	00	V	50	30	3.8	-0.3	-1.2
10739	12	V	50	30	3.5	0.4	-0.4
11035	00	V	50	23	3.9	-0.1	-0.4
11035	12	V	50	31	3.8	0.5	-0.6
12982	12	V	50	30	3.2	0.2	-0.2
12982	00	V	50	24	4.3	0.4	-0.4
16080	00	V	50	23	3.7	0.1	-0.9
16080	12	V	50	31	3.9	0.0	-0.4
16245	12	V	50	30	4.0	0.5	-1.0
16245	00	V	50	21	3.9	1.7	0.2
16320	00	V	50	24	4.4	1.4	-1.1
16320	12	V	50	31	3.6	0.2	-0.1
16429	12	V	50	26	4.0	1.1	-0.4
16429	00	V	50	23	3.3	0.2	0.7
16622	00	V	50	20	3.6	0.4	1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	22	4.3	0.9	-0.2
17607	12	V	50	1	3.1	3.1	0.1
26435	12	V	50	15	3.2	0.8	-0.1
5QPW8X	00	V	50	11	3.6	0.3	1.3
5QPW8X	12	V	50	6	4.0	0.7	-1.0
60018	12	V	50	25	3.4	0.8	-0.5
60018	00	V	50	18	2.9	0.6	-0.1
7JUNA4	12	V	50	2	3.6	-0.8	-3.0
7JUNA4	00	V	50	3	5.3	1.6	0.8
BPMWB2	12	V	50	5	2.1	0.2	-0.4
BPMWB2	00	V	50	5	2.1	0.0	0.5
FHM5UJ	12	V	50	3	3.7	2.0	0.9
FHM5UJ	00	V	50	3	3.0	1.3	-1.7
FPUW5G	12	V	50	14	4.4	1.2	0.3
FPUW5G	00	V	50	1	2.9	0.2	-2.9
HTXUH4	00	V	50	13	3.6	0.4	-1.8
HTXUH4	12	V	50	9	3.3	0.4	1.2
JNKN7J	00	V	50	6	3.0	-0.9	-0.3
JNKN7J	12	V	50	9	3.6	0.6	0.2
KJF9X	00	V	50	5	2.1	-1.1	-0.1
KJF9X	12	V	50	7	2.0	-1.3	-0.2
KMPLHP	00	V	50	3	1.7	0.3	-0.3
KMPLHP	12	V	50	4	5.5	-1.4	1.3
LRYQE3	00	V	50	5	3.1	-0.4	1.0
LRYQE3	12	V	50	8	4.1	1.5	1.6
VKB4L5	00	V	50	2	3.2	0.5	-2.4
VKB4L5	12	V	50	1	1.0	0.2	1.0
WDK38H	12	V	50	2	3.1	2.3	-1.5
XQFJRG	00	V	50	4	5.3	3.3	-1.3
XQFJRG	12	V	50	4	4.8	1.7	-0.6
YL96W	00	V	50	1	0.4	0.3	0.2
YL96W	12	V	50	1	0.2	0.2	0.0
ZVQEQC	00	V	50	15	3.6	1.5	-1.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	28	11.2	-1.1
01001	00	Z	100	29	8.2	4.2
01028	12	Z	100	46	5.8	1.9
01028	00	Z	100	43	4.1	1.3
01400	00	Z	100	15	81.7	81.4
01400	12	Z	100	19	82.4	82.2
01415	12	Z	100	31	9.7	3.5
01415	00	Z	100	30	8.2	3.6
02365	12	Z	100	28	11.1	7.8
02365	00	Z	100	31	9.6	4.5
02591	00	Z	100	25	11.6	9.7
02591	12	Z	100	26	12.0	9.4
02836	12	Z	100	30	4.9	-0.1
02836	00	Z	100	30	5.2	1.5
02963	12	Z	100	28	6.2	1.6
02963	00	Z	100	30	6.8	3.3
03005	00	Z	100	30	10.3	3.9
03005	12	Z	100	32	7.5	0.1
03238	00	Z	100	30	7.4	4.1
03238	12	Z	100	2	4.9	-4.8
03808	00	Z	100	31	8.7	6.2
03808	12	Z	100	30	11.6	6.3
03918	12	Z	100	2	13.2	12.6
03918	00	Z	100	31	12.3	9.0
03953	00	Z	100	31	14.4	8.3
03953	12	Z	100	29	18.8	9.8
04018	00	Z	100	31	8.8	3.0
04018	12	Z	100	31	6.1	0.5
04220	00	Z	100	28	7.3	5.7
04220	12	Z	100	26	10.5	5.0
04270	00	Z	100	29	6.8	3.9
04270	12	Z	100	30	7.7	0.9
04320	00	Z	100	31	7.1	2.3
04320	12	Z	100	31	5.0	1.6
04339	12	Z	100	29	8.4	5.0
04339	00	Z	100	30	14.3	6.1
04360	00	Z	100	29	11.0	-5.8
04360	12	Z	100	31	11.8	-7.7
06011	12	Z	100	30	10.2	4.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	28	11.5	7.0
06260	12	Z	100	5	11.5	10.5
06260	00	Z	100	31	7.5	0.8
06610	00	Z	100	32	12.9	6.6
06610	12	Z	100	31	10.7	8.6
07110	12	Z	100	31	13.8	3.7
07110	00	Z	100	31	10.4	1.3
07510	00	Z	100	34	16.4	14.6
07510	12	Z	100	28	22.8	21.5
07645	00	Z	100	31	17.8	5.3
07645	12	Z	100	31	15.6	10.9
07761	00	Z	100	28	16.5	10.1
07761	12	Z	100	28	28.6	20.1
08001	12	Z	100	29	11.4	8.6
08001	00	Z	100	28	11.3	9.2
08221	00	Z	100	29	12.7	10.4
08221	12	Z	100	29	18.3	17.4
08302	00	Z	100	31	6.3	0.4
08302	12	Z	100	32	9.0	3.5
08508	12	Z	100	27	12.5	10.3
08522	12	Z	100	30	13.5	11.3
08579	12	Z	100	26	29.6	19.7
10035	00	Z	100	28	16.3	14.7
10035	12	Z	100	27	16.4	15.4
10393	00	Z	100	31	9.3	5.8
10393	12	Z	100	31	19.2	9.6
10410	12	Z	100	31	7.9	3.2
10410	00	Z	100	31	5.2	2.5
10739	00	Z	100	33	13.0	7.4
10739	12	Z	100	32	10.1	7.3
11035	00	Z	100	30	14.4	9.9
11035	12	Z	100	31	24.4	20.7
12982	12	Z	100	31	25.8	20.9
12982	00	Z	100	30	16.1	8.5
16080	00	Z	100	31	8.5	4.8
16080	12	Z	100	31	7.1	3.8
16245	12	Z	100	30	5.8	2.2
16245	00	Z	100	30	7.6	-0.3
16320	00	Z	100	31	17.6	8.7
16320	12	Z	100	31	17.7	10.0
16429	12	Z	100	29	10.0	5.7
16429	00	Z	100	32	11.7	5.2
16622	00	Z	100	28	26.9	23.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	27	11.2	5.0
17607	12	Z	100	31	12.5	8.5
26435	12	Z	100	15	5.7	2.0
5QPW8X	00	Z	100	14	23.2	21.1
5QPW8X	12	Z	100	7	15.1	13.0
60018	12	Z	100	28	15.4	14.1
60018	00	Z	100	29	13.8	13.0
7JUNA4	12	Z	100	3	13.1	7.0
7JUNA4	00	Z	100	5	9.0	0.8
BPMWB2	12	Z	100	5	20.4	17.8
BPMWB2	00	Z	100	5	21.2	18.8
FHM5UJ	12	Z	100	5	11.2	8.3
FHM5UJ	00	Z	100	4	9.4	7.3
FPUW5G	12	Z	100	17	19.1	18.8
FPUW5G	00	Z	100	1	24.2	24.2
HTXUH4	00	Z	100	13	16.7	15.2
HTXUH4	12	Z	100	10	11.7	7.9
JNKN7J	00	Z	100	8	25.2	21.7
JNKN7J	12	Z	100	10	51.1	47.6
KJJF9X	00	Z	100	5	19.8	15.3
KJJF9X	12	Z	100	7	15.6	12.5
KMPLHP	00	Z	100	4	150.5	115.9
KMPLHP	12	Z	100	5	263.6	263.6
LRYQE3	00	Z	100	7	12.4	4.3
LRYQE3	12	Z	100	8	15.9	8.3
VKB4L5	00	Z	100	2	38.9	38.4
VKB4L5	12	Z	100	1	32.1	32.1
WDK38H	12	Z	100	5	3.8	0.7
XQFJRG	00	Z	100	4	19.6	-14.9
XQFJRG	12	Z	100	4	9.0	-1.1
YL96W	00	Z	100	3	65.8	65.8
YL96W	12	Z	100	3	55.2	49.7
ZVQEQC	00	Z	100	16	23.7	23.3

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	28	2.3	0.4	-0.5
01001	00	V	100	22	2.1	0.1	-0.2
01028	12	V	100	30	2.3	0.2	-0.2
01028	00	V	100	25	2.0	0.0	0.0
01400	00	V	100	12	2.6	1.4	-0.1
01400	12	V	100	19	3.8	0.5	0.9
01415	12	V	100	31	4.0	-0.2	0.4
01415	00	V	100	28	3.7	1.1	-0.3
02365	12	V	100	28	3.3	-0.2	-0.5
02365	00	V	100	22	3.5	0.9	-0.5
02591	00	V	100	19	3.1	0.6	-0.9
02591	12	V	100	25	2.8	0.4	0.0
02836	12	V	100	30	2.5	0.5	-0.5
02836	00	V	100	27	3.0	0.4	-0.2
02963	12	V	100	28	2.9	-0.3	-0.2
02963	00	V	100	22	3.0	-0.2	-0.3
03005	00	V	100	21	3.0	0.5	-1.0
03005	12	V	100	31	3.3	0.1	0.1
03238	00	V	100	23	3.3	0.4	-0.1
03238	12	V	100	2	3.6	1.0	1.0
03808	00	V	100	25	4.0	0.0	-0.7
03808	12	V	100	30	3.8	0.7	-0.8
03918	12	V	100	2	2.4	-0.4	0.5
03918	00	V	100	24	3.6	-0.5	0.1
03953	00	V	100	22	3.5	0.3	-0.2
03953	12	V	100	29	3.8	0.5	0.5
04018	00	V	100	29	3.8	0.5	0.1
04018	12	V	100	31	2.7	0.5	0.4
04220	00	V	100	26	2.4	-0.1	-0.4
04220	12	V	100	26	2.5	0.0	0.3
04270	00	V	100	28	2.6	-0.2	0.3
04270	12	V	100	30	2.8	0.3	-0.6
04320	00	V	100	28	2.3	0.0	-0.3
04320	12	V	100	31	2.3	0.7	-0.3
04339	12	V	100	29	2.4	0.2	-0.3
04339	00	V	100	28	2.3	0.3	-0.3
04360	00	V	100	28	2.3	0.5	0.1
04360	12	V	100	31	2.3	-0.1	0.2
06011	12	V	100	30	2.6	0.4	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	24	3.2	0.4	0.6
06260	12	V	100	5	2.1	1.2	-0.7
06260	00	V	100	24	3.8	1.1	-0.7
06610	00	V	100	29	4.5	0.0	-0.2
06610	12	V	100	31	4.1	0.0	0.0
07110	12	V	100	31	3.8	0.2	0.0
07110	00	V	100	23	3.0	0.3	-0.2
07510	00	V	100	20	4.1	-0.2	0.0
07510	12	V	100	28	4.4	0.0	0.3
07645	00	V	100	23	5.4	-0.3	0.3
07645	12	V	100	31	5.6	2.2	-0.4
07761	00	V	100	20	5.2	1.3	0.2
07761	12	V	100	28	3.7	0.5	-0.5
08001	12	V	100	28	4.7	0.4	-0.5
08001	00	V	100	22	4.3	-0.7	-0.4
08221	00	V	100	21	4.9	-0.3	-0.2
08221	12	V	100	29	3.9	-0.3	1.1
08302	00	V	100	25	4.2	-0.2	-0.6
08302	12	V	100	31	4.3	0.1	0.5
08508	12	V	100	27	3.8	-1.0	0.3
08522	12	V	100	30	3.2	0.1	-0.1
08579	12	V	100	26	4.3	1.2	1.4
10035	00	V	100	27	4.1	-0.1	-1.2
10035	12	V	100	27	3.7	-0.1	-0.1
10393	00	V	100	30	3.3	0.0	0.4
10393	12	V	100	31	3.7	-0.2	1.4
10410	12	V	100	31	3.9	-0.4	-0.4
10410	00	V	100	30	3.4	1.3	-0.7
10739	00	V	100	30	4.2	0.7	0.0
10739	12	V	100	31	3.7	0.4	-0.3
11035	00	V	100	21	3.9	0.3	-1.1
11035	12	V	100	31	4.5	-0.6	-1.0
12982	12	V	100	31	4.0	0.0	0.6
12982	00	V	100	24	3.7	0.3	-0.1
16080	00	V	100	27	5.0	0.0	0.5
16080	12	V	100	31	4.5	0.4	1.0
16245	12	V	100	30	3.8	0.0	-0.3
16245	00	V	100	25	4.7	0.5	0.4
16320	00	V	100	27	4.4	1.5	0.8
16320	12	V	100	31	4.3	-0.8	-0.3
16429	12	V	100	29	4.2	-0.1	0.0
16429	00	V	100	27	4.7	-0.1	0.1
16622	00	V	100	21	3.7	-0.1	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	22	5.0	1.0	-0.2
17607	12	V	100	3	5.2	-0.3	1.5
26435	12	V	100	15	3.1	-0.6	0.3
5QPW8X	00	V	100	12	3.6	0.6	0.1
5QPW8X	12	V	100	7	3.5	0.9	-0.6
60018	12	V	100	27	5.8	1.5	0.6
60018	00	V	100	20	4.9	0.3	0.4
7JUNA4	12	V	100	3	2.8	0.0	0.8
7JUNA4	00	V	100	5	3.4	-1.6	0.9
BPMWB2	12	V	100	5	3.9	-0.3	1.1
BPMWB2	00	V	100	5	3.4	-0.4	0.5
FHM5UJ	12	V	100	5	2.8	1.3	0.0
FHM5UJ	00	V	100	4	3.4	1.6	-1.3
FPUW5G	12	V	100	17	3.1	1.6	0.4
FPUW5G	00	V	100	1	4.7	-3.6	-3.0
HTXUH4	00	V	100	13	4.3	0.3	0.7
HTXUH4	12	V	100	10	3.7	-0.6	-0.6
JNKN7J	00	V	100	8	3.4	-0.3	0.3
JNKN7J	12	V	100	9	3.1	0.2	0.7
KJJF9X	00	V	100	5	5.4	-3.6	-0.3
KJJF9X	12	V	100	7	3.8	0.0	-1.1
KMPLHP	00	V	100	4	3.3	2.1	1.8
KMPLHP	12	V	100	5	4.7	0.7	2.7
LRYQE3	00	V	100	7	2.4	1.0	0.5
LRYQE3	12	V	100	8	3.3	0.2	1.5
VKB4L5	00	V	100	2	3.6	-0.9	3.2
VKB4L5	12	V	100	1	4.2	4.1	-1.1
WDK38H	12	V	100	5	2.5	1.8	0.4
XQFJRG	00	V	100	4	4.0	0.6	-1.3
XQFJRG	12	V	100	4	3.0	-0.1	0.4
YLW96W	00	V	100	3	3.1	-0.5	1.0
YLW96W	12	V	100	2	1.4	1.2	0.1
ZVQEQC	00	V	100	16	4.3	0.1	1.0

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	31	13.0	-9.6
01001	00	Z	500	31	7.2	-5.3
01028	12	Z	500	40	4.6	-0.7
01028	00	Z	500	39	6.7	-2.0
01400	00	Z	500	15	80.6	80.3
01400	12	Z	500	20	80.5	80.3
01415	12	Z	500	31	6.3	4.4
01415	00	Z	500	30	6.1	4.4
02365	12	Z	500	31	6.5	5.3
02365	00	Z	500	31	6.6	5.0
02591	00	Z	500	25	9.1	8.3
02591	12	Z	500	26	10.9	10.2
02836	12	Z	500	30	2.9	0.3
02836	00	Z	500	31	3.8	0.7
02963	12	Z	500	29	3.8	2.0
02963	00	Z	500	30	4.2	2.8
03005	00	Z	500	30	6.5	0.6
03005	12	Z	500	32	5.6	-2.8
03238	00	Z	500	30	4.1	1.3
03238	12	Z	500	2	6.1	5.0
03808	00	Z	500	31	5.2	4.0
03808	12	Z	500	30	6.9	4.9
03918	12	Z	500	2	10.9	10.6
03918	00	Z	500	31	8.1	7.3
03953	00	Z	500	31	6.5	1.1
03953	12	Z	500	31	9.5	5.0
04018	00	Z	500	31	3.0	0.7
04018	12	Z	500	31	3.2	1.1
04220	00	Z	500	28	4.6	2.4
04220	12	Z	500	26	10.1	3.8
04270	00	Z	500	31	7.6	-1.7
04270	12	Z	500	31	8.9	-2.4
04320	00	Z	500	31	5.6	3.1
04320	12	Z	500	31	3.9	2.1
04339	12	Z	500	30	6.9	2.7
04339	00	Z	500	31	14.7	4.1
04360	00	Z	500	32	11.9	-10.9
04360	12	Z	500	31	11.5	-10.7
06011	12	Z	500	30	8.0	5.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	31	7.6	5.7
06260	12	Z	500	5	5.6	4.6
06260	00	Z	500	31	4.7	0.5
06610	00	Z	500	33	4.9	2.4
06610	12	Z	500	33	4.0	3.0
07110	12	Z	500	31	8.4	-1.0
07110	00	Z	500	30	6.1	-1.5
07510	00	Z	500	34	8.1	5.8
07510	12	Z	500	28	9.6	7.8
07645	00	Z	500	31	6.0	-0.2
07645	12	Z	500	31	7.3	2.6
07761	00	Z	500	28	4.8	1.3
07761	12	Z	500	28	9.0	6.0
08001	12	Z	500	29	8.7	7.8
08001	00	Z	500	29	6.2	5.5
08221	00	Z	500	29	9.0	8.0
08221	12	Z	500	30	9.3	8.1
08302	00	Z	500	31	4.7	-2.7
08302	12	Z	500	32	4.9	-0.5
08508	12	Z	500	27	8.3	5.4
08522	12	Z	500	30	7.9	7.2
08579	12	Z	500	26	25.3	15.8
10035	00	Z	500	28	11.8	11.6
10035	12	Z	500	28	12.3	11.8
10393	00	Z	500	31	2.9	1.4
10393	12	Z	500	31	16.3	4.5
10410	12	Z	500	31	3.4	0.3
10410	00	Z	500	31	3.2	-0.5
10739	00	Z	500	34	6.2	5.4
10739	12	Z	500	32	6.6	5.4
11035	00	Z	500	30	8.2	7.3
11035	12	Z	500	32	14.9	12.6
12982	12	Z	500	31	19.6	8.6
12982	00	Z	500	31	14.9	5.0
16080	00	Z	500	31	3.4	-1.3
16080	12	Z	500	31	3.3	0.3
16245	12	Z	500	31	4.6	-1.4
16245	00	Z	500	31	4.9	-2.7
16320	00	Z	500	31	16.7	2.6
16320	12	Z	500	31	14.0	4.2
16429	12	Z	500	30	6.0	3.6
16429	00	Z	500	32	4.5	1.2
16622	00	Z	500	30	21.5	16.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	29	7.3	2.7
17607	12	Z	500	31	6.4	5.5
26435	12	Z	500	15	3.4	1.1
5QPW8X	00	Z	500	15	22.6	22.0
5QPW8X	12	Z	500	11	23.8	22.8
60018	12	Z	500	28	8.2	7.6
60018	00	Z	500	30	7.8	6.9
7JUNA4	12	Z	500	7	5.3	4.6
7JUNA4	00	Z	500	6	8.9	1.6
BPMWB2	12	Z	500	6	6.0	3.6
BPMWB2	00	Z	500	5	7.1	4.4
FHM5UJ	12	Z	500	6	16.5	13.6
FHM5UJ	00	Z	500	5	13.9	9.8
FPUW5G	12	Z	500	17	13.0	12.5
FPUW5G	00	Z	500	1	10.4	10.4
HTXUH4	00	Z	500	13	12.1	10.9
HTXUH4	12	Z	500	10	8.6	6.0
JNKN7J	00	Z	500	10	32.1	31.6
JNKN7J	12	Z	500	11	35.3	34.8
KJFF9X	00	Z	500	6	19.1	-5.4
KJFF9X	12	Z	500	7	6.7	0.8
KMPLHP	00	Z	500	4	69.7	51.4
KMPLHP	12	Z	500	5	93.2	85.5
LRVQE3	00	Z	500	7	7.1	0.9
LRVQE3	12	Z	500	9	12.4	-6.5
VKB4L5	00	Z	500	2	31.2	31.1
VKB4L5	12	Z	500	1	33.2	33.2
WDK38H	12	Z	500	13	5.9	-5.2
XQFJRG	00	Z	500	5	14.2	-10.9
XQFJRG	12	Z	500	6	14.0	-13.6
YL96W	00	Z	500	3	70.8	70.7
YL96W	12	Z	500	3	53.0	35.1
ZVQEQC	00	Z	500	16	10.8	9.3

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	31	2.3	0.4	-0.1
01001	00	V	500	30	2.4	0.2	-0.4
01028	12	V	500	31	2.7	1.0	-0.1
01028	00	V	500	29	2.1	0.0	-0.5
01400	00	V	500	13	5.0	0.9	-1.4
01400	12	V	500	19	3.5	0.3	-0.3
01415	12	V	500	31	4.2	0.8	1.1
01415	00	V	500	29	3.0	-0.3	0.8
02365	12	V	500	31	3.3	-0.3	0.7
02365	00	V	500	30	3.6	0.7	0.1
02591	00	V	500	24	2.4	0.4	-0.4
02591	12	V	500	26	3.5	0.2	-0.4
02836	12	V	500	30	2.8	-0.4	-0.7
02836	00	V	500	30	3.2	-0.3	-0.2
02963	12	V	500	29	3.4	0.3	-0.1
02963	00	V	500	29	2.4	0.1	0.5
03005	00	V	500	29	2.7	0.0	0.4
03005	12	V	500	31	3.6	-0.4	-0.2
03238	00	V	500	29	2.9	0.1	-0.5
03238	12	V	500	2	4.1	1.6	-0.1
03808	00	V	500	30	3.4	0.3	0.0
03808	12	V	500	30	4.0	1.0	-0.4
03918	12	V	500	2	2.6	-0.8	-0.2
03918	00	V	500	30	2.8	1.0	-0.2
03953	00	V	500	30	3.3	0.6	0.6
03953	12	V	500	30	3.4	0.4	0.0
04018	00	V	500	30	3.5	0.2	-0.4
04018	12	V	500	31	2.7	0.1	-0.1
04220	00	V	500	28	2.4	0.1	-0.1
04220	12	V	500	26	2.4	-0.1	-0.7
04270	00	V	500	30	3.7	-0.1	0.2
04270	12	V	500	31	4.2	0.6	-1.0
04320	00	V	500	30	2.4	0.2	-0.1
04320	12	V	500	31	2.5	-0.1	0.4
04339	12	V	500	30	2.6	-0.3	0.0
04339	00	V	500	30	3.0	-0.1	0.0
04360	00	V	500	30	2.5	0.1	0.3
04360	12	V	500	31	2.3	-0.3	0.0
06011	12	V	500	30	2.9	0.0	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	30	3.8	0.5	0.0
06260	12	V	500	5	2.1	0.2	0.4
06260	00	V	500	30	2.8	0.6	0.6
06610	00	V	500	30	3.1	0.5	0.3
06610	12	V	500	31	2.9	-0.2	-0.2
07110	12	V	500	31	3.3	0.0	-0.3
07110	00	V	500	29	3.7	0.3	-0.7
07510	00	V	500	27	2.6	0.4	0.1
07510	12	V	500	28	2.8	-0.4	-0.3
07645	00	V	500	30	2.8	0.0	0.0
07645	12	V	500	31	2.9	-0.4	-0.1
07761	00	V	500	27	3.0	-0.8	0.1
07761	12	V	500	28	3.3	0.6	0.1
08001	12	V	500	29	3.9	0.6	-0.5
08001	00	V	500	28	4.4	0.3	0.0
08221	00	V	500	28	3.1	0.3	0.2
08221	12	V	500	29	3.7	-0.4	-0.3
08302	00	V	500	30	3.3	0.3	-0.5
08302	12	V	500	31	3.5	1.0	-1.3
08508	12	V	500	27	3.4	0.6	0.8
08522	12	V	500	30	2.8	-0.1	0.0
08579	12	V	500	26	3.9	0.5	0.0
10035	00	V	500	27	3.9	0.7	0.0
10035	12	V	500	27	3.0	0.6	-0.2
10393	00	V	500	30	3.0	0.3	-0.8
10393	12	V	500	31	2.6	0.1	-0.4
10410	12	V	500	31	3.3	0.2	-0.2
10410	00	V	500	30	3.4	0.5	-0.3
10739	00	V	500	30	3.4	0.4	0.5
10739	12	V	500	31	4.2	0.4	-1.0
11035	00	V	500	28	3.0	0.1	0.0
11035	12	V	500	31	3.0	0.3	0.1
12982	12	V	500	31	3.1	-0.1	-0.4
12982	00	V	500	29	4.9	1.0	-0.6
16080	00	V	500	30	2.8	-0.4	-0.7
16080	12	V	500	31	3.3	-0.2	0.3
16245	12	V	500	31	3.5	1.0	-0.5
16245	00	V	500	30	3.8	0.9	-0.4
16320	00	V	500	30	2.7	0.5	-0.7
16320	12	V	500	31	3.8	0.6	0.8
16429	12	V	500	29	3.7	0.5	-0.1
16429	00	V	500	30	3.3	0.0	-0.2
16622	00	V	500	29	3.4	0.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	24	3.1	1.1	-0.2
17607	12	V	500	10	2.6	-0.3	-0.7
26435	12	V	500	15	3.0	-0.1	0.9
5QPW8X	00	V	500	15	3.3	-0.3	0.5
5QPW8X	12	V	500	11	2.1	-0.2	-0.6
60018	12	V	500	27	2.5	0.6	0.9
60018	00	V	500	28	2.1	0.1	-0.6
7JUNA4	12	V	500	7	3.6	0.7	-0.2
7JUNA4	00	V	500	6	3.9	-2.6	1.8
BPMWB2	12	V	500	6	7.4	2.2	-1.5
BPMWB2	00	V	500	5	1.8	-0.3	0.7
FHM5UJ	12	V	500	6	2.5	-0.6	-0.2
FHM5UJ	00	V	500	5	3.0	0.4	0.0
FPUW5G	12	V	500	17	3.0	0.2	-0.1
FPUW5G	00	V	500	1	2.6	1.0	-2.4
HTXUH4	00	V	500	13	2.6	0.2	0.0
HTXUH4	12	V	500	10	3.7	-1.3	-1.2
JNKN7J	00	V	500	10	2.1	0.2	1.0
JNKN7J	12	V	500	11	2.5	0.2	0.0
KJFF9X	00	V	500	6	3.8	0.8	-0.9
KJFF9X	12	V	500	7	3.0	0.9	0.8
KMPLHP	00	V	500	4	3.3	-1.8	0.5
KMPLHP	12	V	500	5	5.6	3.1	-0.7
LRYQE3	00	V	500	7	3.6	-1.2	-0.5
LRYQE3	12	V	500	9	4.0	0.9	-1.6
VKB4L5	00	V	500	2	1.7	-1.3	0.6
VKB4L5	12	V	500	1	3.2	0.7	3.1
WDK38H	12	V	500	13	2.2	0.5	0.0
XQFJRG	00	V	500	5	4.6	1.8	0.4
XQFJRG	12	V	500	6	5.0	0.4	-0.5
YL96W	00	V	500	3	3.2	-2.5	1.2
YL96W	12	V	500	3	5.1	2.8	2.8
ZVQEQC	00	V	500	16	2.9	0.3	1.0

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	31	9.8	-8.2
01001	00	Z	850	30	8.5	-7.0
01028	12	Z	850	40	5.4	-0.7
01028	00	Z	850	40	6.8	-2.2
01400	00	Z	850	15	79.7	79.6
01400	12	Z	850	20	80.8	80.7
01415	12	Z	850	31	5.7	4.6
01415	00	Z	850	30	4.1	3.5
02365	12	Z	850	31	6.4	5.8
02365	00	Z	850	31	6.4	5.7
02591	00	Z	850	25	9.0	8.5
02591	12	Z	850	26	9.2	8.9
02836	12	Z	850	30	2.6	0.7
02836	00	Z	850	31	2.7	1.3
02963	12	Z	850	29	3.9	3.3
02963	00	Z	850	30	3.0	2.5
03005	00	Z	850	30	5.2	-0.4
03005	12	Z	850	33	5.2	-2.5
03238	00	Z	850	30	4.1	3.4
03238	12	Z	850	2	3.1	3.0
03808	00	Z	850	31	4.3	3.1
03808	12	Z	850	30	4.7	3.7
03918	12	Z	850	2	10.0	9.9
03918	00	Z	850	31	9.1	8.1
03953	00	Z	850	31	6.0	3.9
03953	12	Z	850	31	8.5	4.7
04018	00	Z	850	31	3.8	0.2
04018	12	Z	850	31	3.1	0.4
04220	00	Z	850	28	3.2	1.3
04220	12	Z	850	26	10.4	4.1
04270	00	Z	850	31	4.1	-0.3
04270	12	Z	850	31	2.6	0.0
04320	00	Z	850	31	4.3	0.1
04320	12	Z	850	31	3.8	-0.4
04339	12	Z	850	30	5.6	1.3
04339	00	Z	850	31	13.1	2.9
04360	00	Z	850	32	14.9	-12.1
04360	12	Z	850	31	11.6	-11.0
06011	12	Z	850	30	5.2	4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	32	5.1	4.7
06260	12	Z	850	5	1.7	0.8
06260	00	Z	850	31	4.0	0.4
06610	00	Z	850	33	3.4	2.3
06610	12	Z	850	33	3.5	2.2
07110	12	Z	850	31	3.6	-0.9
07110	00	Z	850	31	4.9	-2.4
07510	00	Z	850	34	5.4	4.8
07510	12	Z	850	28	4.7	3.6
07645	00	Z	850	31	3.4	-0.1
07645	12	Z	850	31	3.7	1.7
07761	00	Z	850	29	3.0	0.2
07761	12	Z	850	28	4.3	1.3
08001	12	Z	850	29	3.3	1.8
08001	00	Z	850	29	3.0	2.2
08221	00	Z	850	29	7.4	6.7
08221	12	Z	850	30	4.7	3.9
08302	00	Z	850	31	5.2	-3.9
08302	12	Z	850	32	6.3	-5.4
08508	12	Z	850	27	5.2	4.1
08522	12	Z	850	30	5.2	4.6
08579	12	Z	850	26	8.4	8.1
10035	00	Z	850	28	11.2	10.6
10035	12	Z	850	28	11.4	11.0
10393	00	Z	850	31	2.4	0.7
10393	12	Z	850	31	15.4	3.7
10410	12	Z	850	31	2.7	-0.3
10410	00	Z	850	31	2.8	0.4
10739	00	Z	850	34	5.9	5.3
10739	12	Z	850	32	5.5	4.2
11035	00	Z	850	30	7.8	7.1
11035	12	Z	850	31	14.4	12.4
12982	12	Z	850	31	21.6	8.8
12982	00	Z	850	31	15.1	4.4
16080	00	Z	850	31	4.2	-1.6
16080	12	Z	850	31	3.7	-1.2
16245	12	Z	850	31	3.5	-1.3
16245	00	Z	850	31	3.0	-1.8
16320	00	Z	850	31	17.0	3.0
16320	12	Z	850	31	13.7	4.4
16429	12	Z	850	31	4.8	2.3
16429	00	Z	850	32	3.8	0.7
16622	00	Z	850	31	19.0	14.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	30	4.3	0.2
17607	12	Z	850	31	4.2	3.6
26435	12	Z	850	15	2.2	0.8
5QPW8X	00	Z	850	15	23.8	23.0
5QPW8X	12	Z	850	11	22.3	21.6
60018	12	Z	850	29	3.7	2.0
60018	00	Z	850	30	4.2	3.7
7JUNA4	12	Z	850	7	6.2	2.0
7JUNA4	00	Z	850	6	6.3	-0.2
BPMWB2	12	Z	850	7	2.1	0.0
BPMWB2	00	Z	850	5	1.0	0.1
FHM5UJ	12	Z	850	6	18.7	15.3
FHM5UJ	00	Z	850	5	17.4	12.2
FPUW5G	12	Z	850	17	7.9	7.5
FPUW5G	00	Z	850	1	4.5	4.5
HTXUH4	00	Z	850	13	10.2	7.0
HTXUH4	12	Z	850	10	7.0	2.5
JNKN7J	00	Z	850	10	36.1	36.0
JNKN7J	12	Z	850	11	37.9	37.4
KJF9X	00	Z	850	6	4.0	0.2
KJF9X	12	Z	850	7	5.5	-2.7
KMPLHP	00	Z	850	2	25.7	25.1
KMPLHP	12	Z	850	4	22.4	21.3
LRQE3	00	Z	850	7	6.4	1.5
LRQE3	12	Z	850	9	18.2	6.4
VKB4L5	00	Z	850	2	26.4	26.4
VKB4L5	12	Z	850	1	32.0	32.0
WDK38H	12	Z	850	13	6.8	-5.6
XQFJRG	00	Z	850	5	12.3	-10.1
XQFJRG	12	Z	850	6	16.0	-15.2
YL96W	00	Z	850	3	88.5	88.3
YL96W	12	Z	850	3	60.5	48.1
ZVQEQC	00	Z	850	16	6.7	5.2

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 : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	31	4.8	1.2	0.4
01001	00	V	850	29	3.9	0.3	0.5
01028	12	V	850	31	2.8	0.6	0.2
01028	00	V	850	29	2.9	0.4	-0.8
01400	00	V	850	13	2.1	0.2	0.6
01400	12	V	850	20	2.0	-0.3	-0.1
01415	12	V	850	31	2.5	0.5	0.2
01415	00	V	850	29	3.1	0.5	0.0
02365	12	V	850	31	3.1	0.8	-0.3
02365	00	V	850	30	2.9	-0.2	-0.1
02591	00	V	850	24	2.1	0.3	-0.1
02591	12	V	850	26	2.8	-0.6	-0.4
02836	12	V	850	30	2.8	-0.1	-0.1
02836	00	V	850	30	2.5	0.2	0.4
02963	12	V	850	29	2.7	0.0	-0.2
02963	00	V	850	29	2.7	-0.2	-0.1
03005	00	V	850	29	3.1	0.5	0.7
03005	12	V	850	31	3.0	0.2	0.4
03238	00	V	850	29	2.7	0.3	-0.3
03238	12	V	850	2	3.4	2.1	0.3
03808	00	V	850	30	2.5	-0.3	-0.2
03808	12	V	850	30	3.3	-0.5	-0.1
03918	12	V	850	2	2.2	0.1	1.7
03918	00	V	850	30	3.0	0.8	-0.1
03953	00	V	850	30	3.0	0.0	0.9
03953	12	V	850	30	3.1	0.1	-0.3
04018	00	V	850	30	3.5	0.5	-0.5
04018	12	V	850	31	3.6	0.7	0.2
04220	00	V	850	28	3.5	1.4	0.2
04220	12	V	850	26	3.4	0.1	0.6
04270	00	V	850	30	4.5	-0.3	0.9
04270	12	V	850	31	4.8	0.9	0.5
04320	00	V	850	30	4.4	0.1	1.7
04320	12	V	850	31	3.5	0.1	1.5
04339	12	V	850	30	6.1	0.8	1.0
04339	00	V	850	30	5.0	1.3	1.4
04360	00	V	850	30	5.2	1.0	0.8
04360	12	V	850	31	5.2	2.0	0.1
06011	12	V	850	30	2.7	0.4	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	30	2.6	-0.1	-0.9
06260	12	V	850	5	2.3	0.5	1.2
06260	00	V	850	30	2.5	-0.3	-1.0
06610	00	V	850	30	2.8	0.5	-0.2
06610	12	V	850	31	3.3	0.2	0.6
07110	12	V	850	31	2.6	-0.3	-0.3
07110	00	V	850	30	3.3	-0.4	0.2
07510	00	V	850	27	2.6	0.0	-0.2
07510	12	V	850	28	2.8	-0.2	0.0
07645	00	V	850	30	3.0	-0.3	0.4
07645	12	V	850	31	4.8	-1.2	0.5
07761	00	V	850	28	4.4	0.0	0.0
07761	12	V	850	28	4.5	-0.7	0.5
08001	12	V	850	29	2.5	-0.1	0.2
08001	00	V	850	28	2.7	0.7	0.3
08221	00	V	850	28	4.6	1.2	-0.7
08221	12	V	850	29	3.3	-0.2	0.1
08302	00	V	850	30	2.8	0.5	0.2
08302	12	V	850	31	3.7	0.2	0.2
08508	12	V	850	27	5.6	-0.2	-1.1
08522	12	V	850	30	3.3	0.0	0.1
08579	12	V	850	26	2.2	0.5	-0.7
10035	00	V	850	27	2.8	-0.1	-0.3
10035	12	V	850	27	2.5	0.4	0.4
10393	00	V	850	30	2.5	0.0	0.1
10393	12	V	850	31	3.1	-0.8	-0.5
10410	12	V	850	31	3.0	0.5	-0.8
10410	00	V	850	30	2.3	0.0	-0.2
10739	00	V	850	30	3.6	1.0	-0.5
10739	12	V	850	31	3.7	-0.9	-0.3
11035	00	V	850	28	3.2	0.1	-0.1
11035	12	V	850	30	3.6	0.3	-0.5
12982	12	V	850	31	3.0	0.1	-0.1
12982	00	V	850	29	3.3	0.5	-0.4
16080	00	V	850	30	4.0	1.0	-0.4
16080	12	V	850	31	3.5	0.3	0.9
16245	12	V	850	31	3.0	0.9	0.1
16245	00	V	850	30	4.1	1.1	0.4
16320	00	V	850	30	2.8	-0.1	-1.0
16320	12	V	850	31	3.4	1.4	-1.0
16429	12	V	850	30	3.4	0.1	0.9
16429	00	V	850	30	3.5	-0.3	0.5
16622	00	V	850	30	2.7	0.8	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	25	3.3	-0.2	0.4
17607	12	V	850	31	2.9	0.4	-0.3
26435	12	V	850	15	3.1	0.4	0.2
5QPW8X	00	V	850	15	2.5	-0.4	-0.1
5QPW8X	12	V	850	11	3.2	-1.0	1.3
60018	12	V	850	28	5.0	0.3	0.7
60018	00	V	850	28	4.4	-0.6	1.3
7JUNA4	12	V	850	7	2.1	-0.8	-0.9
7JUNA4	00	V	850	6	2.2	0.2	-0.2
BPMWB2	12	V	850	7	2.0	0.2	-1.3
BPMWB2	00	V	850	5	2.8	-0.7	0.5
FHM5UJ	12	V	850	6	3.7	-1.3	1.3
FHM5UJ	00	V	850	5	2.6	1.0	1.8
FPUW5G	12	V	850	17	2.8	1.0	0.2
FPUW5G	00	V	850	1	2.7	-2.7	-0.1
HTXUH4	00	V	850	13	2.0	0.4	-0.5
HTXUH4	12	V	850	10	3.7	0.9	-1.4
JNKN7J	00	V	850	10	2.1	0.4	-0.2
JNKN7J	12	V	850	11	4.4	-0.8	0.3
KJJF9X	00	V	850	6	2.1	1.0	0.4
KJJF9X	12	V	850	7	1.8	0.6	0.1
KMPLHP	00	V	850	2	0.7	0.0	-0.3
KMPLHP	12	V	850	4	2.7	-0.4	0.3
LRYQE3	00	V	850	7	5.2	-0.9	-1.2
LRYQE3	12	V	850	9	4.3	1.5	-0.4
VKB4L5	00	V	850	2	3.7	1.7	-3.2
VKB4L5	12	V	850	1	2.1	1.6	1.3
WDK38H	12	V	850	13	2.3	0.4	-0.5
XQFJRG	00	V	850	5	2.3	-1.4	0.2
XQFJRG	12	V	850	6	4.1	1.0	1.2
YL96W	00	V	850	3	5.9	1.1	2.3
YL96W	12	V	850	3	3.2	0.8	-1.5
ZVQEQC	00	V	850	16	2.3	0.0	0.1

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 : DEC 2019
 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
0062087	99	P	SUR	55	7	397	0	0.5	-0.3	0.6
0066023	99	P	SUR	55	11	396	0	0.4	0.1	0.4
0066024	99	P	SUR	55	13	55	0	0.5	-0.2	0.6
03380	99	P	SUR	54	0	784	0	0.4	-0.2	0.4
0640046	99	P	SUR	60	-4	733	0	0.5	-0.3	0.6
1300001	99	P	SUR	11	-23	702	0	0.3	0.2	0.4
1300008	99	P	SUR	15	-38	694	0	0.3	0.1	0.3
1300130	99	P	SUR	28	-16	374	0	0.3	0.5	0.6
1300131	99	P	SUR	28	-17	744	0	0.5	0.3	0.6
1301569	99	P	SUR	23	-39	744	0	0.3	-0.3	0.4
1301603	99	P	SUR	32	-58	744	0	1.0	0.0	1.0
1301605	99	P	SUR	30	-62	743	0	0.4	0.1	0.4
1301608	99	P	SUR	27	-44	744	0	0.3	1.0	1.0
1301609	99	P	SUR	23	-68	744	0	0.8	0.5	1.0
1301610	99	P	SUR	20	-58	743	0	0.3	0.1	0.3
1301612	99	P	SUR	28	-46	744	0	0.3	0.0	0.3
1301618	99	P	SUR	18	-38	742	0	0.7	0.0	0.8
1301619	99	P	SUR	29	-36	743	0	1.1	0.2	1.1
1301620	99	P	SUR	12	-41	744	0	0.3	0.4	0.5
1501531	99	P	SUR	31	-57	744	0	0.4	-0.5	0.7
2501641	99	P	SUR	86	-3	598	0	0.8	-0.2	0.8
2501643	99	P	SUR	87	-25	732	0	0.4	0.0	0.4
2501644	99	P	SUR	87	-6	733	0	0.5	-0.2	0.5
2501645	99	P	SUR	88	-38	732	0	0.4	0.2	0.5
2501647	99	P	SUR	88	-39	738	0	0.4	0.3	0.5
2501651	99	P	SUR	88	-36	738	0	0.4	-0.3	0.5
2501653	99	P	SUR	87	-3	733	0	0.5	0.4	0.6
2501661	99	P	SUR	82	9	744	0	0.5	-0.1	0.5
2601623	99	P	SUR	76	25	743	1	1.8	-0.6	1.8
2601625	99	P	SUR	77	17	744	498	7.0	2.6	7.5
4100040	99	P	SUR	15	-53	4460	0	0.3	-0.3	0.4
4100044	99	P	SUR	22	-59	4454	0	0.3	0.6	0.7
4100046	99	P	SUR	24	-68	4382	0	0.3	-0.2	0.3
4100048	99	P	SUR	32	-70	4096	0	0.5	-0.3	0.5
4100049	99	P	SUR	27	-63	4449	0	0.4	0.7	0.8
4100052	99	P	SUR	18	-65	4243	0	0.3	-1.1	1.2

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100053	99	P	SUR	18	-66	4458	0	0.4	-0.9	1.0
4100056	99	P	SUR	18	-65	4454	0	0.3	-1.0	1.0
4100139	99	P	SUR	20	-38	708	0	0.3	0.0	0.3
4100300	99	P	SUR	16	-57	740	0	0.3	0.2	0.3
4100597	99	P	SUR	32	-22	744	0	0.3	0.3	0.5
4100729	99	P	SUR	32	-37	539	14	2.9	0.0	2.9
4101529	99	P	SUR	33	-60	742	0	0.4	-1.3	1.4
4101530	99	P	SUR	35	-26	599	0	0.4	0.4	0.6
4101531	99	P	SUR	32	-17	744	0	0.3	0.7	0.8
4101536	99	P	SUR	43	-24	648	0	0.5	0.3	0.6
4101537	99	P	SUR	35	-17	737	0	0.3	-0.2	0.4
4101539	99	P	SUR	38	-19	742	0	0.4	0.4	0.5
4101554	99	P	SUR	30	-63	703	0	0.5	0.9	1.0
4101557	99	P	SUR	32	-23	744	0	0.2	0.3	0.4
4101558	99	P	SUR	27	-60	744	0	0.5	0.3	0.6
4101560	99	P	SUR	39	-24	744	0	0.5	0.6	0.7
4101562	99	P	SUR	31	-54	692	0	0.4	0.5	0.7
4101564	99	P	SUR	28	-42	724	0	0.4	-0.0	0.4
4101565	99	P	SUR	27	-36	743	0	0.3	0.3	0.4
4101567	99	P	SUR	33	-46	744	0	0.5	0.4	0.6
4101568	99	P	SUR	33	-58	228	0	0.4	0.2	0.5
4101570	99	P	SUR	27	-61	744	0	0.4	0.2	0.4
4101572	99	P	SUR	49	-12	743	0	0.6	0.3	0.7
4101573	99	P	SUR	33	-35	743	0	0.4	0.2	0.4
4101574	99	P	SUR	37	-58	744	0	0.5	0.1	0.5
4101598	99	P	SUR	16	-61	111	0	0.3	-0.7	0.7
4101603	99	P	SUR	15	-61	741	0	0.3	-0.2	0.3
4101604	99	P	SUR	10	-62	288	24	2.2	-0.6	2.2
4101606	99	P	SUR	43	-9	238	0	0.3	0.1	0.3
4101607	99	P	SUR	39	-14	731	0	0.4	0.4	0.5
4101609	99	P	SUR	36	-22	744	0	0.5	0.2	0.5
4101610	99	P	SUR	65	-9	744	0	0.5	0.4	0.6
4101613	99	P	SUR	31	-17	744	0	0.3	0.7	0.7
4101614	99	P	SUR	33	-18	744	0	0.3	0.1	0.3
4101615	99	P	SUR	15	-58	744	0	0.5	0.2	0.5
4101616	99	P	SUR	37	-22	742	0	0.4	0.1	0.4
4101617	99	P	SUR	30	-27	726	0	0.3	0.4	0.5
4101618	99	P	SUR	32	-26	744	0	0.3	0.2	0.4
4101620	99	P	SUR	52	-6	679	0	0.5	0.5	0.7
4101621	99	P	SUR	38	-32	744	0	0.4	0.2	0.5
4101622	99	P	SUR	69	-19	744	0	0.5	0.1	0.5
4101623	99	P	SUR	57	-52	744	0	0.6	0.1	0.6
4101627	99	P	SUR	62	-56	744	0	0.4	-0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101630	99	P	SUR	15	-55	744	0	0.3	0.1	0.3
4101658	99	P	SUR	62	-18	369	0	0.5	0.2	0.5
4101659	99	P	SUR	60	-12	369	0	0.3	0.1	0.3
4101662	99	P	SUR	63	-8	744	0	0.4	0.2	0.4
4101663	99	P	SUR	63	-39	744	0	0.5	-0.2	0.5
4101664	99	P	SUR	62	-27	744	0	0.5	0.1	0.5
4101669	99	P	SUR	12	-40	744	0	0.3	0.2	0.3
4101690	99	P	SUR	41	-35	721	0	0.6	0.1	0.6
4101702	99	P	SUR	31	-64	744	24	3.1	-0.2	3.1
4101705	99	P	SUR	29	-36	743	0	0.8	-0.1	0.8
4101706	99	P	SUR	37	-25	742	0	0.7	-0.6	0.9
4101707	99	P	SUR	37	-31	743	1	1.1	-0.1	1.1
4101708	99	P	SUR	32	-56	538	70	1.5	-0.7	1.6
4101712	99	P	SUR	40	-30	743	1	2.2	-0.2	2.2
4101714	99	P	SUR	29	-33	744	0	0.3	-0.2	0.3
4101715	99	P	SUR	29	-57	744	0	0.5	-0.4	0.6
4101716	99	P	SUR	25	-62	743	0	0.4	-0.8	1.0
4101717	99	P	SUR	27	-63	545	0	1.3	-0.5	1.4
4101718	99	P	SUR	30	-28	744	0	0.3	0.1	0.3
4101719	99	P	SUR	32	-54	744	0	0.4	-0.0	0.4
4101720	99	P	SUR	42	-54	744	0	1.0	0.7	1.2
4101721	99	P	SUR	31	-40	742	0	0.4	0.7	0.8
4101742	99	P	SUR	34	-36	743	0	1.3	0.3	1.4
4101752	99	P	SUR	12	-61	744	0	0.4	-0.0	0.4
4101753	99	P	SUR	23	-28	744	0	0.3	0.3	0.4
4101754	99	P	SUR	13	-55	744	0	0.3	0.1	0.3
4101755	99	P	SUR	21	-28	744	0	0.3	0.3	0.4
41040	99	P	SUR	15	-53	1172	0	0.4	-0.3	0.5
41044	99	P	SUR	22	-59	1198	0	0.4	0.6	0.7
41046	99	P	SUR	24	-68	1154	0	0.4	-0.2	0.4
41048	99	P	SUR	32	-70	1145	0	0.5	-0.2	0.6
41049	99	P	SUR	28	-63	1142	0	0.4	0.7	0.8
41052	99	P	SUR	18	-65	1623	0	0.4	-1.1	1.2
41053	99	P	SUR	19	-66	1599	0	0.4	-0.9	1.0
41056	99	P	SUR	18	-66	1608	0	0.4	-1.0	1.1
4200059	99	P	SUR	15	-67	4242	0	0.3	0.5	0.6
4200085	99	P	SUR	18	-67	4402	0	0.3	-0.8	0.9
42059	99	P	SUR	15	-68	1185	0	0.4	0.5	0.7
42085	99	P	SUR	18	-67	1615	0	0.4	-0.9	0.9
4400005	99	P	SUR	43	-69	443	0	0.7	-0.2	0.8
4400008	99	P	SUR	41	-69	4459	0	0.5	0.5	0.7
4400011	99	P	SUR	41	-67	4437	0	0.5	0.3	0.6
4400027	99	P	SUR	44	-67	744	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
4400032	99	P	SUR	44	-69	743	0	0.6	-1.7	1.8
4400033	99	P	SUR	44	-69	732	0	0.7	-1.2	1.4
4400034	99	P	SUR	44	-68	736	0	0.7	-0.5	0.9
4400037	99	P	SUR	43	-68	730	0	0.5	-0.2	0.6
44005	99	P	SUR	43	-69	472	0	0.7	-0.2	0.8
4400513	99	P	SUR	54	-10	162	0	0.4	-0.4	0.5
4400517	99	P	SUR	31	-70	744	0	0.5	0.1	0.5
4400777	99	P	SUR	31	-58	744	13	2.4	-0.4	2.4
44008	99	P	SUR	41	-69	2829	0	0.6	0.5	0.8
4400857	99	P	SUR	34	-36	744	13	1.8	-0.1	1.8
4400874	99	P	SUR	32	-22	744	0	0.9	-0.7	1.1
44011	99	P	SUR	41	-67	2535	0	0.6	0.3	0.7
4401531	99	P	SUR	37	-26	744	0	0.5	0.3	0.6
4401536	99	P	SUR	34	-19	735	0	0.3	0.5	0.6
4401537	99	P	SUR	33	-47	411	0	0.4	-1.1	1.2
4401539	99	P	SUR	30	-25	744	0	0.6	-0.8	1.0
4401540	99	P	SUR	34	-38	744	0	0.5	0.1	0.5
4401541	99	P	SUR	32	-42	605	0	0.5	-0.3	0.6
4401542	99	P	SUR	36	-65	744	0	0.5	0.1	0.5
4401551	99	P	SUR	31	-33	719	0	0.3	0.1	0.4
4401556	99	P	SUR	26	-52	744	0	0.3	-0.2	0.4
4401557	99	P	SUR	34	-46	544	52	4.1	-1.3	4.3
4401558	99	P	SUR	66	12	742	0	0.5	-0.6	0.8
4401561	99	P	SUR	31	-52	742	0	0.5	-0.2	0.5
4401562	99	P	SUR	28	-40	744	0	0.3	-0.5	0.6
4401563	99	P	SUR	35	-52	743	0	1.2	-0.5	1.3
4401564	99	P	SUR	36	-22	743	0	1.0	1.0	1.4
4401565	99	P	SUR	65	-30	741	0	1.3	0.2	1.3
4401567	99	P	SUR	54	-16	744	0	0.5	0.3	0.5
4401568	99	P	SUR	53	-20	744	0	0.7	-0.0	0.7
4401569	99	P	SUR	54	-29	744	0	0.6	0.0	0.6
4401570	99	P	SUR	41	-9	32	0	0.3	-0.3	0.5
4401572	99	P	SUR	44	-26	744	0	0.5	0.3	0.6
4401573	99	P	SUR	55	-12	486	2	1.6	0.1	1.6
4401574	99	P	SUR	61	-35	744	0	0.6	-0.1	0.6
4401576	99	P	SUR	40	-19	744	0	0.5	0.5	0.7
4401577	99	P	SUR	42	-36	744	0	0.8	0.3	0.9
4401578	99	P	SUR	41	-26	742	0	0.6	0.1	0.6
4401579	99	P	SUR	41	-35	744	0	0.6	0.2	0.7
4401580	99	P	SUR	50	-35	744	0	0.6	0.1	0.6
4401581	99	P	SUR	41	-44	743	0	0.8	0.5	1.0
4401582	99	P	SUR	46	-36	743	0	0.8	0.2	0.8
4401611	99	P	SUR	49	-37	738	0	0.7	0.2	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401613	99	P	SUR	29	-25	737	0	0.2	0.5	0.5
4401750	99	P	SUR	67	3	690	0	0.4	-1.3	1.3
4401751	99	P	SUR	65	-2	733	0	0.4	0.1	0.5
4401753	99	P	SUR	66	5	269	0	0.4	0.6	0.8
4401799	99	P	SUR	23	-63	649	0	0.4	0.2	0.4
4401822	99	P	SUR	60	-63	721	0	0.8	0.6	1.0
4401826	99	P	SUR	74	-62	362	0	1.3	-0.3	1.3
4401827	99	P	SUR	44	-64	188	0	0.4	0.2	0.5
4401828	99	P	SUR	50	-48	495	0	0.5	0.4	0.7
4401829	99	P	SUR	50	-48	473	0	0.5	0.4	0.6
4401830	99	P	SUR	49	-50	428	0	0.5	0.2	0.6
4401856	99	P	SUR	15	-61	325	0	0.3	-1.0	1.0
4401870	99	P	SUR	20	-22	744	0	0.3	0.5	0.5
4401872	99	P	SUR	22	-27	744	0	0.3	0.1	0.3
4401873	99	P	SUR	17	-21	744	0	0.3	0.5	0.6
4401894	99	P	SUR	44	-51	712	0	0.6	0.5	0.8
4402687	99	P	SUR	44	-61	738	0	0.5	0.4	0.6
4402688	99	P	SUR	44	-63	738	0	0.5	0.1	0.5
4402689	99	P	SUR	44	-63	738	0	0.6	0.1	0.6
44027	99	P	SUR	44	-67	795	0	0.6	-0.5	0.8
4402705	99	P	SUR	45	-66	219	0	0.7	0.7	1.0
44032	99	P	SUR	44	-69	746	0	0.7	-1.7	1.8
44033	99	P	SUR	44	-69	736	0	0.7	-1.2	1.4
44034	99	P	SUR	44	-68	739	0	0.7	-0.5	0.9
44037	99	P	SUR	44	-68	730	0	0.6	-0.2	0.6
44137	99	P	SUR	42	-62	734	0	0.5	-0.4	0.7
44139	99	P	SUR	44	-57	737	0	0.6	-0.2	0.6
44150	99	P	SUR	43	-64	731	0	0.6	-0.2	0.6
44258	99	P	SUR	45	-63	739	0	0.5	-0.3	0.6
45138	99	P	SUR	50	-66	109	0	0.4	-0.3	0.5
4700546	99	P	SUR	33	-54	738	1	2.1	-0.2	2.1
4701669	99	P	SUR	46	-16	738	0	0.5	-0.1	0.5
4800770	99	P	SUR	57	-30	731	731	0.0	0.0	0.0
4802505	99	P	SUR	83	-53	737	0	0.6	0.9	1.0
6100001	99	P	SUR	43	8	738	0	0.7	0.2	0.7
6100002	99	P	SUR	42	5	714	0	0.5	0.0	0.5
6100196	99	P	SUR	42	4	743	0	0.6	0.4	0.7
6100197	99	P	SUR	40	4	743	0	0.5	0.5	0.7
6100198	99	P	SUR	37	-2	743	0	2.7	-0.7	2.8
6100280	99	P	SUR	41	1	743	0	0.6	0.6	0.8
6100281	99	P	SUR	40	0	743	0	0.6	0.4	0.7
6100417	99	P	SUR	38	0	743	0	0.5	0.5	0.7
6100430	99	P	SUR	40	2	743	0	0.5	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6101005	99	P	SUR	38	26	232	0	0.8	0.8	1.1
6101007	99	P	SUR	36	25	209	0	0.5	-0.1	0.5
6101009	99	P	SUR	35	25	104	0	0.5	-0.8	1.0
6102507	99	P	SUR	33	29	744	0	0.4	0.1	0.4
6102508	99	P	SUR	34	26	744	0	0.4	-0.3	0.5
6200024	99	P	SUR	44	-3	99	0	0.4	0.4	0.6
6200025	99	P	SUR	44	-6	374	0	0.5	0.5	0.7
6200082	99	P	SUR	44	-8	744	0	0.6	0.2	0.6
6200083	99	P	SUR	43	-9	744	0	0.8	0.1	0.8
6200084	99	P	SUR	42	-9	744	0	0.5	0.2	0.6
6200085	99	P	SUR	36	-7	744	0	0.3	0.8	0.8
6200091	99	P	SUR	53	-5	744	0	0.5	-0.3	0.6
6200092	99	P	SUR	51	-11	251	18	3.4	-1.4	3.6
6200093	99	P	SUR	55	-10	744	0	0.6	-0.5	0.7
6200094	99	P	SUR	52	-7	744	1	0.6	-0.1	0.6
6200095	99	P	SUR	53	-15	744	0	0.6	-0.4	0.7
62001	99	P	SUR	45	-5	782	0	0.5	0.0	0.5
6200191	99	P	SUR	41	-10	251	73	6.2	1.6	6.4
6200199	99	P	SUR	40	-9	590	0	0.5	1.6	1.7
6200200	99	P	SUR	36	-8	657	0	0.4	0.1	0.4
6201030	99	P	SUR	44	-4	481	78	3.7	1.9	4.2
62023	99	P	SUR	51	-8	627	0	0.6	-0.3	0.7
6202613	99	P	SUR	18	-28	744	0	0.3	0.2	0.4
6202638	99	P	SUR	15	-47	744	0	0.3	0.0	0.3
6202639	99	P	SUR	27	-40	744	0	0.3	0.1	0.3
6202640	99	P	SUR	23	-45	744	0	0.3	0.0	0.3
6202641	99	P	SUR	18	-58	744	0	0.3	0.2	0.4
6202642	99	P	SUR	18	-57	744	0	0.3	-0.2	0.4
6202643	99	P	SUR	18	-55	744	0	0.4	-0.3	0.5
6202644	99	P	SUR	24	-45	744	1	0.3	0.1	0.3
6202645	99	P	SUR	14	-51	744	0	0.3	0.0	0.3
6202646	99	P	SUR	15	-50	744	0	0.4	0.1	0.4
6202647	99	P	SUR	16	-53	744	0	0.3	-0.1	0.3
6202670	99	P	SUR	57	-18	529	9	3.5	1.8	4.0
6202671	99	P	SUR	58	-18	536	8	3.0	1.5	3.3
6202672	99	P	SUR	62	-15	488	9	3.9	3.0	4.9
6202673	99	P	SUR	59	-29	349	2	3.0	1.9	3.6
6202675	99	P	SUR	58	-18	695	0	0.5	0.1	0.5
6202676	99	P	SUR	63	-21	697	0	0.5	0.3	0.6
6202677	99	P	SUR	62	-16	726	0	0.5	0.2	0.5
6202678	99	P	SUR	57	-34	640	0	0.5	0.3	0.5
6202679	99	P	SUR	62	-53	676	0	0.5	0.3	0.6
6202680	99	P	SUR	62	-13	702	0	0.5	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202681	99	P	SUR	63	-21	730	0	0.5	0.2	0.6
6202682	99	P	SUR	63	-19	549	0	0.6	-0.2	0.6
6202683	99	P	SUR	60	-13	667	0	0.5	0.4	0.6
6202684	99	P	SUR	67	-22	700	0	0.5	0.5	0.7
6202685	99	P	SUR	39	1	744	0	0.5	0.6	0.7
6202686	99	P	SUR	39	1	742	0	0.4	0.5	0.7
6202687	99	P	SUR	39	1	737	0	0.4	0.6	0.8
62029	99	P	SUR	49	-12	928	0	0.6	-0.1	0.6
6203523	99	P	SUR	71	-1	697	0	0.4	-0.8	0.9
6203528	99	P	SUR	26	-29	693	0	0.3	-0.4	0.5
6203529	99	P	SUR	38	-66	743	0	0.5	-0.9	1.0
6203574	99	P	SUR	62	-59	738	0	0.5	0.3	0.6
6203576	99	P	SUR	52	-56	734	0	0.6	0.5	0.7
6203580	99	P	SUR	67	-12	617	0	0.5	0.4	0.7
6203581	99	P	SUR	64	1	680	0	0.3	0.1	0.4
6203582	99	P	SUR	65	-33	698	0	0.5	0.3	0.6
6203583	99	P	SUR	58	-29	628	0	0.6	0.0	0.6
6203585	99	P	SUR	67	-15	723	0	0.6	0.4	0.7
6203586	99	P	SUR	68	-11	730	0	0.5	0.5	0.7
6203587	99	P	SUR	63	-10	631	0	0.4	-0.1	0.4
6203588	99	P	SUR	65	-29	690	0	0.6	0.7	0.9
6203601	99	P	SUR	28	-24	744	0	0.3	0.6	0.7
6203607	99	P	SUR	34	-20	743	0	0.4	0.5	0.6
6203609	99	P	SUR	40	-16	744	0	0.4	-0.0	0.4
62050	99	P	SUR	50	-4	328	0	0.5	0.2	0.5
62091	99	P	SUR	53	-5	744	0	0.5	-0.3	0.6
62092	99	P	SUR	51	-11	251	18	3.4	-1.3	3.6
62093	99	P	SUR	55	-10	742	0	0.6	-0.5	0.7
62094	99	P	SUR	52	-7	742	1	0.6	-0.1	0.6
62095	99	P	SUR	53	-15	742	0	0.6	-0.4	0.7
62102	99	P	SUR	58	2	784	0	0.6	0.3	0.7
62103	99	P	SUR	50	-3	763	0	0.6	0.3	0.7
62104	99	P	SUR	57	1	784	0	0.4	-0.0	0.4
62105	99	P	SUR	55	-13	1426	0	0.5	-0.3	0.5
62107	99	P	SUR	50	-6	1392	0	0.7	0.3	0.8
62112	99	P	SUR	58	0	784	0	0.4	0.2	0.5
62113	99	P	SUR	58	0	784	0	0.6	0.3	0.7
62114	99	P	SUR	58	0	1391	0	0.5	0.1	0.5
62115	99	P	SUR	58	-3	784	0	0.5	0.0	0.5
62116	99	P	SUR	58	1	765	0	0.6	0.1	0.7
62118	99	P	SUR	58	1	784	0	0.4	0.4	0.5
62119	99	P	SUR	57	2	784	0	0.4	0.2	0.5
62120	99	P	SUR	56	2	778	0	0.5	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62121	99	P	SUR	54	3	721	0	0.6	0.6	0.8
62122	99	P	SUR	57	2	1392	0	0.4	0.2	0.5
62124	99	P	SUR	54	-4	784	0	0.4	0.1	0.5
62127	99	P	SUR	54	1	757	0	0.4	0.5	0.7
62129	99	P	SUR	58	0	764	0	0.7	0.4	0.8
62130	99	P	SUR	59	1	784	0	0.5	-0.2	0.5
62131	99	P	SUR	54	1	784	0	0.4	0.5	0.7
62132	99	P	SUR	56	2	781	0	0.4	0.5	0.7
62133	99	P	SUR	57	1	784	0	0.6	0.2	0.7
62134	99	P	SUR	58	1	784	0	0.4	0.7	0.8
62135	99	P	SUR	54	2	784	0	0.4	0.3	0.5
62136	99	P	SUR	54	3	421	0	0.6	0.6	0.9
62138	99	P	SUR	54	0	1044	0	0.6	1.0	1.2
62140	99	P	SUR	57	1	1392	0	0.4	0.2	0.4
62141	99	P	SUR	58	-4	606	0	0.5	-2.3	2.4
62143	99	P	SUR	58	2	784	0	0.5	0.8	0.9
62144	99	P	SUR	53	2	780	0	0.5	0.4	0.6
62145	99	P	SUR	53	3	1392	0	0.5	0.4	0.6
62146	99	P	SUR	57	2	784	0	0.5	0.1	0.5
62148	99	P	SUR	54	2	781	0	0.5	0.8	0.9
62149	99	P	SUR	54	1	784	0	0.4	0.7	0.8
62151	99	P	SUR	57	2	1391	0	0.4	0.3	0.5
62152	99	P	SUR	57	2	784	0	0.4	0.7	0.8
62153	99	P	SUR	57	2	1392	0	0.3	0.3	0.4
62154	99	P	SUR	56	2	784	0	0.4	0.2	0.4
62155	99	P	SUR	58	1	783	0	0.4	0.6	0.8
62157	99	P	SUR	58	0	784	0	0.4	0.0	0.4
62160	99	P	SUR	57	2	1391	0	0.4	0.3	0.5
62161	99	P	SUR	58	1	784	0	0.8	0.3	0.8
62162	99	P	SUR	57	1	783	0	0.4	-0.0	0.4
62163	99	P	SUR	48	-8	748	0	0.5	0.2	0.5
62164	99	P	SUR	57	1	556	0	0.4	0.5	0.6
62165	99	P	SUR	54	1	759	0	0.5	0.5	0.7
62168	99	P	SUR	58	1	767	0	0.4	0.1	0.4
62296	99	P	SUR	53	2	784	0	0.4	0.1	0.4
62297	99	P	SUR	59	2	1389	0	0.4	0.1	0.4
62302	99	P	SUR	61	-2	784	0	0.6	0.0	0.7
62304	99	P	SUR	51	2	578	0	0.7	0.5	0.9
62305	99	P	SUR	50	0	776	0	0.5	0.3	0.5
6301503	99	P	SUR	82	36	37	29	2.5	11.6	11.9
6301508	99	P	SUR	72	21	738	0	0.4	0.1	0.5
6301509	99	P	SUR	71	22	137	0	0.6	-0.2	0.6
6301535	99	P	SUR	72	23	732	0	0.4	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
6301536	99	P	SUR	71	30	719	0	0.4	0.3	0.5
6301537	99	P	SUR	72	29	689	0	0.4	0.2	0.4
6301538	99	P	SUR	77	7	737	0	0.5	0.0	0.5
6301540	99	P	SUR	78	1	688	477	5.6	10.0	11.5
6301542	99	P	SUR	78	3	737	40	2.3	0.9	2.5
6301543	99	P	SUR	74	17	723	0	0.5	0.4	0.6
6301544	99	P	SUR	73	19	698	0	0.4	0.3	0.5
6301545	99	P	SUR	73	22	732	0	0.4	0.2	0.5
6301546	99	P	SUR	71	28	700	0	0.4	0.2	0.4
6301548	99	P	SUR	81	17	760	1	1.1	0.1	1.1
6301558	99	P	SUR	66	-15	241	0	0.7	-0.2	0.7
6301562	99	P	SUR	55	-45	744	0	0.6	0.0	0.7
6301563	99	P	SUR	51	-39	744	0	0.9	0.7	1.1
6301564	99	P	SUR	64	-27	744	0	0.5	0.4	0.6
6301683	99	P	SUR	77	7	724	0	0.6	-0.1	0.6
6301684	99	P	SUR	81	18	674	27	3.5	-1.2	3.7
6301685	99	P	SUR	78	0	122	0	0.6	-0.0	0.6
6301688	99	P	SUR	74	18	697	0	0.4	0.3	0.5
63055	99	P	SUR	61	2	784	0	0.6	0.0	0.6
63056	99	P	SUR	60	2	784	0	0.5	0.5	0.7
63057	99	P	SUR	59	2	784	0	0.5	-0.1	0.5
63058	99	P	SUR	53	2	2262	0	0.4	0.3	0.5
63059	99	P	SUR	58	-1	784	0	0.4	0.4	0.5
63101	99	P	SUR	61	1	784	0	0.7	0.1	0.7
63102	99	P	SUR	61	1	784	0	0.6	0.1	0.6
63103	99	P	SUR	61	1	784	0	0.5	0.2	0.6
63104	99	P	SUR	61	2	784	0	0.6	-0.2	0.6
63108	99	P	SUR	61	2	784	0	0.7	0.1	0.7
63109	99	P	SUR	60	2	784	0	0.4	-0.4	0.6
63110	99	P	SUR	60	2	784	0	0.7	-0.2	0.7
63112	99	P	SUR	61	1	784	0	0.5	-0.5	0.7
63115	99	P	SUR	62	1	784	0	0.6	-0.1	0.6
63117	99	P	SUR	61	1	1392	0	0.8	0.6	1.0
63118	99	P	SUR	60	6	33	0	0.3	0.3	0.4
6401502	99	P	SUR	71	11	710	0	0.4	0.3	0.5
6401503	99	P	SUR	66	3	376	0	0.4	0.7	0.8
6401506	99	P	SUR	70	1	640	0	0.4	0.3	0.5
6401531	99	P	SUR	61	-30	744	0	0.5	0.1	0.5
6401539	99	P	SUR	51	-46	726	0	0.6	0.6	0.8
6401556	99	P	SUR	71	24	744	0	0.5	0.0	0.5
6401561	99	P	SUR	64	-8	743	0	0.4	0.0	0.4
6401568	99	P	SUR	63	3	744	0	0.3	0.4	0.6
6401569	99	P	SUR	68	0	744	0	0.9	0.5	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401570	99	P	SUR	67	7	743	0	1.2	-0.1	1.2
6401784	99	P	SUR	76	16	2935	0	0.5	0.1	0.5
6401785	99	P	SUR	78	4	725	0	0.5	0.1	0.5
6401786	99	P	SUR	78	12	699	14	2.0	0.9	2.2
6401787	99	P	SUR	76	14	714	0	0.5	0.1	0.5
6401788	99	P	SUR	80	10	736	0	0.6	0.0	0.6
6401789	99	P	SUR	75	16	685	0	0.5	0.1	0.5
6401795	99	P	SUR	75	16	714	0	0.4	0.3	0.5
6401796	99	P	SUR	74	17	719	0	0.4	0.3	0.5
6401797	99	P	SUR	73	23	722	0	0.5	0.2	0.5
6401799	99	P	SUR	79	11	122	0	1.3	-0.3	1.3
6401800	99	P	SUR	78	11	671	31	2.9	-0.7	3.0
6401803	99	P	SUR	77	6	736	0	0.6	0.3	0.6
6401804	99	P	SUR	74	22	696	0	0.4	0.2	0.5
6401806	99	P	SUR	74	18	711	0	0.4	0.2	0.4
6401807	99	P	SUR	74	16	732	0	0.4	0.2	0.5
6401808	99	P	SUR	74	19	642	0	0.4	0.2	0.5
64041	99	P	SUR	61	-3	784	0	0.6	-0.2	0.7
64045	99	P	SUR	59	-12	1203	0	0.5	-0.3	0.6
64046	99	P	SUR	61	-4	781	0	0.5	-0.1	0.6
6501556	99	P	SUR	71	13	744	0	0.4	0.3	0.5
66023	99	P	SUR	55	11	791	0	0.5	0.1	0.5
93867	99	P	SUR	20	38	1	0	0.0	2.0	2.0
97989	99	P	SUR	21	38	1	0	0.0	1.3	1.3

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0062087	99	SPEED	SUR	55	7	398	0	0	1.4	1.4	2.0
0066023	99	SPEED	SUR	55	11	398	0	0	1.6	2.2	2.7
0066024	99	SPEED	SUR	55	13	55	0	0	1.1	1.0	1.5
0640046	99	SPEED	SUR	60	-4	733	0	0	1.6	-0.9	1.8
1300001	99	SPEED	SUR	11	-23	702	0	0	0.7	0.4	0.8
1300002	99	SPEED	SUR	20	-23	704	0	0	0.8	0.2	0.8
1300008	99	SPEED	SUR	15	-38	694	0	0	0.8	0.2	0.8
1300130	99	SPEED	SUR	28	-16	370	0	0	1.8	-0.7	1.9
1300131	99	SPEED	SUR	28	-17	738	0	0	1.9	1.2	2.3
4100026	99	SPEED	SUR	12	-38	256	0	0	0.8	0.0	0.8
4100040	99	SPEED	SUR	15	-53	4459	0	0	0.9	0.2	0.9
4100043	99	SPEED	SUR	21	-65	4461	0	0	1.2	-0.0	1.2
4100044	99	SPEED	SUR	22	-59	4458	0	0	1.1	0.2	1.1
4100046	99	SPEED	SUR	24	-68	4349	0	0	1.0	0.0	1.0
4100048	99	SPEED	SUR	32	-70	4095	0	0	1.3	0.0	1.3
4100049	99	SPEED	SUR	27	-63	4445	0	0	1.1	-0.2	1.2
4100052	99	SPEED	SUR	18	-65	4243	0	0	1.0	-0.3	1.0
4100053	99	SPEED	SUR	18	-66	4458	0	0	1.5	1.2	2.0
4100056	99	SPEED	SUR	18	-65	4454	0	0	1.2	-0.7	1.4
4100139	99	SPEED	SUR	20	-38	708	0	0	1.0	0.1	1.0
4100300	99	SPEED	SUR	16	-57	740	0	0	0.9	-0.4	1.0
41040	99	SPEED	SUR	15	-53	1171	0	0	0.9	-0.1	0.9
41043	99	SPEED	SUR	21	-65	1132	0	0	1.2	-0.3	1.3
41044	99	SPEED	SUR	22	-59	1198	0	0	1.1	-0.2	1.1
41046	99	SPEED	SUR	24	-68	1139	0	0	1.0	-0.1	1.0
41048	99	SPEED	SUR	32	-70	1144	0	0	1.4	-0.1	1.4
41049	99	SPEED	SUR	28	-63	1140	0	0	1.1	-0.3	1.2
41052	99	SPEED	SUR	18	-65	1623	0	0	1.0	-0.2	1.0
41053	99	SPEED	SUR	19	-66	1599	0	0	1.5	0.5	1.6
41056	99	SPEED	SUR	18	-66	1608	0	0	1.3	-0.5	1.4
4200059	99	SPEED	SUR	15	-67	4253	0	0	0.8	0.5	1.0
4200085	99	SPEED	SUR	18	-67	4417	0	0	1.3	-0.5	1.4
42059	99	SPEED	SUR	15	-68	1187	0	0	0.9	0.2	0.9
42085	99	SPEED	SUR	18	-67	1619	0	0	1.3	-0.1	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
4400005	99	SPEED	SUR	43	-69	443	0	0	1.3	0.2	1.3
4400008	99	SPEED	SUR	41	-69	4460	0	0	1.6	0.5	1.6
4400027	99	SPEED	SUR	44	-67	744	0	0	1.3	0.7	1.5
4400032	99	SPEED	SUR	44	-69	743	0	0	1.3	0.1	1.3
4400033	99	SPEED	SUR	44	-69	732	0	0	1.5	-0.3	1.5
4400034	99	SPEED	SUR	44	-68	742	0	0	1.3	0.0	1.3
4400037	99	SPEED	SUR	43	-68	736	0	0	1.2	0.2	1.2
44005	99	SPEED	SUR	43	-69	472	0	0	1.3	0.2	1.3
44008	99	SPEED	SUR	41	-69	2837	0	0	1.5	-0.2	1.5
44027	99	SPEED	SUR	44	-67	795	0	0	1.3	0.8	1.5
44032	99	SPEED	SUR	44	-69	746	0	0	1.4	0.2	1.4
44033	99	SPEED	SUR	44	-69	736	0	0	1.5	0.1	1.5
44034	99	SPEED	SUR	44	-68	745	0	0	1.3	0.0	1.3
44037	99	SPEED	SUR	44	-68	736	0	0	1.2	0.2	1.2
44139	99	SPEED	SUR	44	-57	737	1	0	1.5	0.0	1.5
44150	99	SPEED	SUR	43	-64	727	0	0	1.3	0.4	1.4
44258	99	SPEED	SUR	45	-63	740	0	0	1.5	0.8	1.7
45138	99	SPEED	SUR	50	-66	109	0	0	1.2	0.5	1.3
6100001	99	SPEED	SUR	43	8	738	0	0	1.7	-0.1	1.7
6100002	99	SPEED	SUR	42	5	220	0	0	1.2	0.1	1.2
6100196	99	SPEED	SUR	42	4	669	0	0	2.2	-0.7	2.3
6100197	99	SPEED	SUR	40	4	727	0	0	1.4	-0.9	1.6
6100198	99	SPEED	SUR	37	-2	603	0	0	2.1	-0.6	2.2
6100280	99	SPEED	SUR	41	1	729	0	0	2.1	-1.0	2.3
6100281	99	SPEED	SUR	40	0	711	0	0	2.1	0.4	2.1
6100417	99	SPEED	SUR	38	0	742	0	0	1.6	-0.5	1.7
6100430	99	SPEED	SUR	40	2	730	0	0	1.6	-0.3	1.6
6101005	99	SPEED	SUR	38	26	232	0	0	1.7	-0.4	1.7
6101007	99	SPEED	SUR	36	25	209	0	0	1.9	-0.4	2.0
6101009	99	SPEED	SUR	35	25	105	0	0	1.7	1.4	2.2
6200025	99	SPEED	SUR	44	-6	373	0	0	1.5	-1.0	1.8
6200083	99	SPEED	SUR	43	-9	740	0	0	1.4	-0.4	1.5
6200084	99	SPEED	SUR	42	-9	737	0	0	1.4	-0.7	1.6
6200085	99	SPEED	SUR	36	-7	743	0	0	1.2	-0.2	1.2
6200091	99	SPEED	SUR	53	-5	744	0	0	1.4	0.5	1.5
6200092	99	SPEED	SUR	51	-11	742	0	0	1.5	-0.5	1.6
6200093	99	SPEED	SUR	55	-10	744	0	0	1.3	-0.3	1.4
6200094	99	SPEED	SUR	52	-7	744	0	0	1.3	0.0	1.3
6200095	99	SPEED	SUR	53	-15	744	0	0	1.6	-0.9	1.8
62001	99	SPEED	SUR	45	-5	782	0	0	1.5	0.6	1.6
6200199	99	SPEED	SUR	40	-9	382	14	0	4.6	0.0	4.6

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
6200200	99	SPEED	SUR	36	-8	657	0	0	1.3	0.0	1.3
6201030	99	SPEED	SUR	44	-4	477	0	0	2.4	-1.0	2.6
62023	99	SPEED	SUR	51	-8	627	0	0	1.9	1.0	2.1
6202670	99	SPEED	SUR	57	-18	529	0	0	1.6	4.4	4.7
6202671	99	SPEED	SUR	58	-18	536	0	0	1.6	4.3	4.6
6202672	99	SPEED	SUR	62	-15	488	0	0	1.5	4.1	4.4
6202673	99	SPEED	SUR	59	-29	349	0	0	1.7	4.5	4.8
62029	99	SPEED	SUR	49	-12	928	0	0	1.3	0.2	1.3
62050	99	SPEED	SUR	50	-4	328	0	0	1.1	0.3	1.1
62091	99	SPEED	SUR	53	-5	744	0	0	1.4	0.5	1.5
62092	99	SPEED	SUR	51	-11	742	0	0	1.5	-0.5	1.6
62093	99	SPEED	SUR	55	-10	742	0	0	1.4	-0.3	1.4
62094	99	SPEED	SUR	52	-7	742	0	0	1.3	0.0	1.3
62095	99	SPEED	SUR	53	-15	742	0	0	1.6	-1.0	1.9
62102	99	SPEED	SUR	58	2	784	0	0	1.5	-1.2	2.0
62103	99	SPEED	SUR	50	-3	763	0	0	1.7	1.5	2.2
62104	99	SPEED	SUR	57	1	784	0	0	1.3	-0.5	1.3
62105	99	SPEED	SUR	55	-13	1426	0	0	1.2	0.3	1.2
62107	99	SPEED	SUR	50	-6	1390	0	0	1.8	1.1	2.1
62112	99	SPEED	SUR	58	0	784	0	0	1.6	-0.3	1.6
62113	99	SPEED	SUR	58	0	784	0	0	1.8	0.5	1.8
62114	99	SPEED	SUR	58	0	1391	0	0	1.7	0.8	1.8
62118	99	SPEED	SUR	58	1	784	0	0	1.5	0.7	1.7
62119	99	SPEED	SUR	57	2	784	0	0	1.7	-0.1	1.7
62120	99	SPEED	SUR	56	2	778	0	0	1.4	-0.1	1.4
62121	99	SPEED	SUR	54	3	721	0	0	1.4	-0.6	1.5
62122	99	SPEED	SUR	57	2	1392	0	0	1.1	-0.3	1.2
62129	99	SPEED	SUR	58	0	764	0	0	1.3	0.2	1.3
62131	99	SPEED	SUR	54	1	784	0	0	1.9	-0.5	1.9
62132	99	SPEED	SUR	56	2	761	0	0	2.3	-2.4	3.3
62133	99	SPEED	SUR	57	1	784	0	0	1.3	-0.1	1.3
62134	99	SPEED	SUR	58	1	784	0	0	1.4	0.2	1.4
62140	99	SPEED	SUR	57	1	1347	0	0	1.3	-0.1	1.3
62143	99	SPEED	SUR	58	2	784	0	0	2.5	-1.2	2.8
62144	99	SPEED	SUR	53	2	780	0	0	2.3	-0.7	2.4
62145	99	SPEED	SUR	53	3	1392	0	0	1.5	0.5	1.6
62146	99	SPEED	SUR	57	2	782	0	0	1.2	-0.1	1.2
62148	99	SPEED	SUR	54	2	781	0	0	1.8	-0.3	1.9
62149	99	SPEED	SUR	54	1	784	0	0	1.3	0.5	1.5
62152	99	SPEED	SUR	57	2	367	0	0	1.3	-0.7	1.5
62153	99	SPEED	SUR	57	2	1392	0	0	2.4	-0.9	2.6

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
62154	99	SPEED	SUR	56	2	741	0	0	1.4	-0.6	1.5
62155	99	SPEED	SUR	58	1	783	0	0	1.3	-0.2	1.3
62163	99	SPEED	SUR	48	-8	749	0	0	1.3	-0.2	1.3
62164	99	SPEED	SUR	57	1	554	0	0	1.6	-1.3	2.1
62165	99	SPEED	SUR	54	1	759	0	0	1.7	-0.6	1.8
62304	99	SPEED	SUR	51	2	339	0	0	1.6	1.5	2.2
62305	99	SPEED	SUR	50	0	776	0	0	1.8	1.5	2.3
63055	99	SPEED	SUR	61	2	784	0	0	1.2	-0.8	1.5
63056	99	SPEED	SUR	60	2	784	0	0	1.7	0.3	1.8
63057	99	SPEED	SUR	59	2	784	0	0	2.1	0.6	2.2
63058	99	SPEED	SUR	53	2	1467	0	0	1.2	0.2	1.2
63101	99	SPEED	SUR	61	1	784	0	0	1.4	-0.5	1.5
63103	99	SPEED	SUR	61	1	784	0	0	1.9	-0.1	1.9
63104	99	SPEED	SUR	61	2	784	0	0	1.5	-0.3	1.5
63106	99	SPEED	SUR	61	2	761	0	0	1.8	-0.9	2.0
63108	99	SPEED	SUR	61	2	784	0	0	1.7	0.2	1.7
63109	99	SPEED	SUR	60	2	784	0	0	1.8	0.2	1.8
63110	99	SPEED	SUR	60	2	784	0	0	1.7	-0.3	1.8
63112	99	SPEED	SUR	61	1	784	0	0	1.5	-0.6	1.6
63115	99	SPEED	SUR	62	1	784	0	0	1.7	-0.6	1.8
63117	99	SPEED	SUR	61	1	1392	0	0	1.5	-0.3	1.5
64041	99	SPEED	SUR	61	-3	784	0	0	1.5	-0.1	1.5
64045	99	SPEED	SUR	59	-12	1203	0	0	1.3	0.5	1.4
64046	99	SPEED	SUR	61	-4	781	0	0	1.3	0.5	1.4
66023	99	SPEED	SUR	55	11	791	0	0	1.6	1.2	2.0
66024	99	SPEED	SUR	55	13	744	0	0	1.3	1.1	1.7
93867	99	SPEED	SUR	20	38	1	0	0	0.0	-4.8	4.8
97989	99	SPEED	SUR	21	38	1	0	0	0.0	3.8	3.8

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : DEC 2019
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0640046	99	DIRN	SUR	60	-4	607	0	0	16.7	1.2	16.8
1300001	99	DIRN	SUR	11	-23	701	0	0	7.3	-0.0	7.3
1300002	99	DIRN	SUR	20	-23	693	0	0	7.7	-0.1	7.7
1300008	99	DIRN	SUR	15	-38	683	0	0	8.0	5.0	9.4
1300130	99	DIRN	SUR	28	-16	303	0	0	9.6	60.6	61.3
1300131	99	DIRN	SUR	28	-17	398	0	0	28.7	-0.3	28.7
4100002	99	DIRN	SUR	32	-75	4355	0	0	14.3	6.1	15.6
4100004	99	DIRN	SUR	33	-79	440	0	0	20.8	-3.7	21.2
4100008	99	DIRN	SUR	31	-81	629	0	0	24.5	2.0	24.6
4100009	99	DIRN	SUR	29	-80	3904	0	0	15.3	6.5	16.6
4100010	99	DIRN	SUR	29	-78	3645	0	0	15.0	10.1	18.1
4100013	99	DIRN	SUR	33	-78	3522	0	0	23.5	3.2	23.8
4100024	99	DIRN	SUR	34	-78	522	0	0	18.3	-0.5	18.3
4100025	99	DIRN	SUR	35	-75	3855	0	0	20.7	5.2	21.3
4100026	99	DIRN	SUR	12	-38	256	0	0	9.2	6.7	11.3
4100029	99	DIRN	SUR	33	-80	509	0	0	23.7	-14.8	28.0
4100033	99	DIRN	SUR	32	-80	607	0	0	23.2	-8.3	24.7
4100037	99	DIRN	SUR	34	-77	650	0	0	17.6	-10.1	20.3
4100038	99	DIRN	SUR	34	-78	590	0	0	27.6	-4.8	28.0
4100040	99	DIRN	SUR	15	-53	4413	0	0	7.7	3.2	8.3
4100043	99	DIRN	SUR	21	-65	4141	0	0	14.4	3.6	14.8
4100044	99	DIRN	SUR	22	-59	4079	0	0	15.8	4.8	16.6
4100046	99	DIRN	SUR	24	-68	4123	0	0	13.1	6.9	14.8
4100047	99	DIRN	SUR	28	-71	3895	0	0	11.6	-4.5	12.4
4100048	99	DIRN	SUR	32	-70	3602	0	0	15.0	10.6	18.4
4100049	99	DIRN	SUR	27	-63	3883	0	0	15.5	7.1	17.0
4100052	99	DIRN	SUR	18	-65	4046	0	0	13.8	5.9	15.0
4100053	99	DIRN	SUR	18	-66	2772	0	0	18.4	-0.3	18.4
4100056	99	DIRN	SUR	18	-65	4189	0	0	16.0	2.6	16.2
4100064	99	DIRN	SUR	34	-77	628	0	0	18.2	-14.1	23.0
4100139	99	DIRN	SUR	20	-38	672	0	0	10.8	4.1	11.5
41002	99	DIRN	SUR	32	-75	1279	0	0	14.0	7.1	15.7

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
4100300	99	DIRN	SUR	16	-57	720	0	0	11.6	2.6	11.9
41004	99	DIRN	SUR	33	-79	99	0	0	19.3	-1.5	19.3
41008	99	DIRN	SUR	31	-81	657	0	0	22.0	1.8	22.1
41009	99	DIRN	SUR	29	-80	1183	0	0	17.0	4.6	17.6
41010	99	DIRN	SUR	29	-79	853	0	0	17.5	9.9	20.1
41013	99	DIRN	SUR	33	-78	1097	0	0	24.4	3.4	24.6
41024	99	DIRN	SUR	34	-79	515	0	0	19.3	0.8	19.3
41025	99	DIRN	SUR	35	-75	1113	0	0	20.1	6.7	21.2
41029	99	DIRN	SUR	33	-80	588	0	0	24.4	-14.8	28.5
41033	99	DIRN	SUR	32	-80	582	0	0	22.2	-9.2	24.0
41037	99	DIRN	SUR	34	-77	643	0	0	17.8	-11.2	21.1
41038	99	DIRN	SUR	34	-78	581	0	0	29.4	-4.0	29.7
41040	99	DIRN	SUR	15	-53	1155	0	0	8.8	6.1	10.7
41043	99	DIRN	SUR	21	-65	1038	0	0	14.4	2.2	14.5
41044	99	DIRN	SUR	22	-59	1083	0	0	15.0	3.2	15.4
41046	99	DIRN	SUR	24	-68	1069	0	0	12.9	6.6	14.5
41047	99	DIRN	SUR	28	-72	1124	0	0	10.6	-6.2	12.3
41048	99	DIRN	SUR	32	-70	1004	0	0	14.8	9.8	17.8
41049	99	DIRN	SUR	28	-63	986	0	0	14.9	6.4	16.3
41052	99	DIRN	SUR	18	-65	1519	0	0	14.7	4.7	15.5
41053	99	DIRN	SUR	19	-66	1093	0	0	19.2	-1.7	19.3
41056	99	DIRN	SUR	18	-66	1479	0	0	16.5	2.4	16.6
41064	99	DIRN	SUR	34	-77	633	0	0	17.7	-14.8	23.0
4200013	99	DIRN	SUR	27	-83	353	0	0	23.2	-6.5	24.1
4200022	99	DIRN	SUR	28	-84	1339	0	0	15.8	3.0	16.1
4200023	99	DIRN	SUR	26	-83	1295	0	0	16.4	-5.7	17.3
4200026	99	DIRN	SUR	25	-83	1131	0	0	17.1	5.5	17.9
4200036	99	DIRN	SUR	29	-85	3929	0	0	18.4	13.2	22.6
4200056	99	DIRN	SUR	20	-85	3287	0	0	12.6	5.1	13.6
4200057	99	DIRN	SUR	17	-81	4056	0	0	11.3	2.5	11.6
4200058	99	DIRN	SUR	15	-75	4166	0	0	6.7	2.7	7.2
4200059	99	DIRN	SUR	15	-67	4250	0	0	8.8	-7.1	11.3
4200085	99	DIRN	SUR	18	-67	4011	0	0	17.6	20.9	27.3
42013	99	DIRN	SUR	27	-83	346	0	0	21.9	-7.1	23.0
42022	99	DIRN	SUR	28	-84	1301	0	0	16.7	2.1	16.8
42023	99	DIRN	SUR	26	-83	1127	0	0	16.7	-5.9	17.7
42026	99	DIRN	SUR	25	-84	1090	0	0	17.6	5.5	18.4
42036	99	DIRN	SUR	29	-85	2645	0	0	16.5	12.2	20.5
42056	99	DIRN	SUR	20	-85	817	0	0	13.5	3.7	14.0
42057	99	DIRN	SUR	17	-81	1058	0	0	11.8	4.9	12.8
42058	99	DIRN	SUR	15	-75	1246	0	0	7.2	2.9	7.8

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
42059	99	DIRN	SUR	15	-68	1187	0	0	8.9	-9.3	12.9
42085	99	DIRN	SUR	18	-67	1428	0	0	16.9	19.5	25.8
4400005	99	DIRN	SUR	43	-69	422	0	0	10.7	6.9	12.7
4400007	99	DIRN	SUR	44	-70	626	0	0	15.9	2.9	16.2
4400008	99	DIRN	SUR	41	-69	4054	0	0	13.2	6.5	14.8
4400009	99	DIRN	SUR	38	-75	606	0	0	16.6	13.1	21.1
4400013	99	DIRN	SUR	42	-71	682	0	0	16.0	7.6	17.7
4400014	99	DIRN	SUR	37	-75	638	0	0	15.0	4.5	15.6
4400018	99	DIRN	SUR	42	-70	672	0	0	10.9	9.9	14.7
4400022	99	DIRN	SUR	41	-74	1215	0	0	12.0	8.3	14.6
4400025	99	DIRN	SUR	40	-73	663	0	0	16.8	5.1	17.6
4400027	99	DIRN	SUR	44	-67	708	0	0	11.4	3.5	11.9
4400029	99	DIRN	SUR	43	-71	682	0	0	13.2	-20.1	24.1
4400030	99	DIRN	SUR	43	-70	661	0	0	14.2	7.4	16.0
4400032	99	DIRN	SUR	44	-69	657	0	0	13.5	2.9	13.8
4400033	99	DIRN	SUR	44	-69	614	0	0	19.1	-4.9	19.7
4400034	99	DIRN	SUR	44	-68	694	0	0	14.8	2.8	15.0
4400037	99	DIRN	SUR	43	-68	697	0	0	12.7	2.9	13.0
4400040	99	DIRN	SUR	41	-74	970	0	0	15.1	0.7	15.1
4400042	99	DIRN	SUR	38	-76	2191	0	0	32.5	18.0	37.1
4400058	99	DIRN	SUR	38	-76	903	0	0	35.3	-1.8	35.3
4400062	99	DIRN	SUR	39	-76	1669	0	0	30.6	-19.1	36.1
4400063	99	DIRN	SUR	39	-76	2456	0	0	22.3	-14.4	26.5
4400064	99	DIRN	SUR	37	-76	2811	0	0	23.1	-15.1	27.6
4400065	99	DIRN	SUR	40	-74	3942	0	0	14.6	8.4	16.8
4400066	99	DIRN	SUR	40	-73	4033	0	0	15.9	5.6	16.9
4400072	99	DIRN	SUR	37	-76	2807	0	0	29.9	-72.0	78.0
4400073	99	DIRN	SUR	43	-71	198	0	0	13.9	6.8	15.5
44005	99	DIRN	SUR	43	-69	447	0	0	11.0	6.5	12.8
44007	99	DIRN	SUR	44	-70	689	0	0	16.4	3.6	16.8
44008	99	DIRN	SUR	41	-69	2581	0	0	13.8	4.0	14.3
44009	99	DIRN	SUR	39	-75	613	0	0	16.4	12.5	20.7
44013	99	DIRN	SUR	42	-71	717	0	0	16.7	6.0	17.8
44014	99	DIRN	SUR	37	-75	651	0	0	15.0	4.4	15.7
44018	99	DIRN	SUR	42	-70	707	0	0	11.1	9.7	14.8
44022	99	DIRN	SUR	41	-74	444	0	0	12.3	8.9	15.2
44025	99	DIRN	SUR	40	-73	700	0	0	15.9	4.0	16.3
44027	99	DIRN	SUR	44	-67	752	0	0	11.2	2.8	11.5
44029	99	DIRN	SUR	43	-71	807	0	0	13.2	-20.2	24.1
44030	99	DIRN	SUR	43	-70	659	0	0	14.7	7.7	16.6
44032	99	DIRN	SUR	44	-69	656	0	0	13.2	2.7	13.5

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
44033	99	DIRN	SUR	44	-69	614	0	0	20.4	-5.3	21.1
44034	99	DIRN	SUR	44	-68	693	0	0	16.3	2.9	16.5
44037	99	DIRN	SUR	44	-68	694	0	0	13.1	2.3	13.2
44040	99	DIRN	SUR	41	-74	507	0	0	14.2	0.4	14.2
44042	99	DIRN	SUR	38	-76	329	0	0	28.8	16.0	32.9
44058	99	DIRN	SUR	38	-76	323	0	0	31.6	-2.1	31.7
44062	99	DIRN	SUR	39	-76	556	0	0	31.2	-20.2	37.2
44063	99	DIRN	SUR	39	-76	365	0	0	21.7	-14.6	26.2
44064	99	DIRN	SUR	37	-76	706	0	0	24.7	-16.9	29.9
44065	99	DIRN	SUR	40	-74	1080	0	0	13.9	6.5	15.3
44066	99	DIRN	SUR	40	-73	2592	0	0	16.4	3.0	16.7
44069	99	DIRN	SUR	41	-73	455	0	0	20.3	7.6	21.7
44072	99	DIRN	SUR	37	-76	642	0	0	32.8	-74.0	80.9
44073	99	DIRN	SUR	43	-71	198	0	0	13.3	7.2	15.2
44139	99	DIRN	SUR	44	-57	702	1	0	15.9	-22.9	27.9
44150	99	DIRN	SUR	43	-64	687	0	0	10.4	-3.3	10.9
44258	99	DIRN	SUR	45	-63	685	0	0	11.1	-7.6	13.4
45137	99	DIRN	SUR	46	-81	2	0	0	0.1	-75.8	75.8
45138	99	DIRN	SUR	50	-66	90	0	0	15.9	1.7	16.0
6100198	99	DIRN	SUR	37	-2	417	0	0	18.8	2.1	19.0
6100281	99	DIRN	SUR	40	0	394	0	0	25.9	2.7	26.0
6100417	99	DIRN	SUR	38	0	503	0	0	20.9	4.9	21.4
6200025	99	DIRN	SUR	44	-6	267	0	0	17.3	-3.3	17.6
6200083	99	DIRN	SUR	43	-9	595	0	0	14.8	4.7	15.5
6200084	99	DIRN	SUR	42	-9	528	0	0	14.0	3.1	14.3
6200085	99	DIRN	SUR	36	-7	622	0	0	12.6	5.8	13.9
6200091	99	DIRN	SUR	53	-5	707	0	0	12.4	1.8	12.5
6200092	99	DIRN	SUR	51	-11	684	0	0	12.1	4.5	12.9
6200093	99	DIRN	SUR	55	-10	708	0	0	14.3	3.5	14.7
6200094	99	DIRN	SUR	52	-7	706	0	0	12.0	-1.7	12.2
6200095	99	DIRN	SUR	53	-15	670	0	0	12.1	-1.1	12.2
62001	99	DIRN	SUR	45	-5	729	0	0	15.3	6.7	16.7
6200199	99	DIRN	SUR	40	-9	170	14	0	78.0	3.3	78.1
6200200	99	DIRN	SUR	36	-8	560	0	0	11.0	3.2	11.5
6201030	99	DIRN	SUR	44	-4	360	0	0	32.1	3.3	32.3
62023	99	DIRN	SUR	51	-8	596	0	0	14.3	5.7	15.4
6202670	99	DIRN	SUR	57	-18	482	0	0	22.6	-12.0	25.6
6202671	99	DIRN	SUR	58	-18	485	0	0	24.8	-4.4	25.2
6202672	99	DIRN	SUR	62	-15	467	0	0	17.3	-4.3	17.8
6202673	99	DIRN	SUR	59	-29	323	0	0	28.9	-19.4	34.8
62029	99	DIRN	SUR	49	-12	878	0	0	14.1	6.7	15.6

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62050	99	DIRN	SUR	50	-4	294	0	0	9.2	1.3	9.3
62091	99	DIRN	SUR	53	-5	705	0	0	12.8	1.6	12.9
62092	99	DIRN	SUR	51	-11	677	0	0	12.6	4.2	13.3
62093	99	DIRN	SUR	55	-10	703	0	0	14.7	2.9	15.0
62094	99	DIRN	SUR	52	-7	697	0	0	12.3	-2.1	12.5
62095	99	DIRN	SUR	53	-15	669	0	0	12.4	-1.7	12.5
62103	99	DIRN	SUR	50	-3	686	0	0	22.5	4.2	22.9
62105	99	DIRN	SUR	55	-13	1279	0	0	11.4	6.2	13.0
62107	99	DIRN	SUR	50	-6	1294	0	0	15.6	-1.0	15.6
62112	99	DIRN	SUR	58	0	722	0	0	12.5	-2.3	12.7
62114	99	DIRN	SUR	58	0	1282	0	0	10.6	0.9	10.7
62163	99	DIRN	SUR	48	-8	711	0	0	10.5	0.3	10.5
62305	99	DIRN	SUR	50	0	715	0	0	17.0	3.3	17.3
64041	99	DIRN	SUR	61	-3	647	0	0	12.3	8.0	14.7
64045	99	DIRN	SUR	59	-12	1050	0	0	10.9	3.2	11.3
64046	99	DIRN	SUR	61	-4	647	0	0	16.7	-2.2	16.9

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

BPMWB2N	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
VKB4L5Q	VLMJ_YMC		WDK38HS	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N
01001	01004	01010	01028	01241	01400	01415	01492	02365
02527	02591	02836	02963	03005	03238	03354	03502	03743
03808	03882	03918	03953	04018	04089	04220	04270	04320
04339	04360	06011	06060	06260	06458	06610	07110	07145
07510	07645	07761	08001	08023	08190	08221	08302	08383
08430	08508	08522	08536	08579	10035	10113	10184	10238
10304	10393	10410	10548	10618	10739	10771	10868	10954
10962	11010	11035	11120	11240	11520	11747	11952	12120
12374	12425	12843	12982	13275	13388	14015	14240	14430
15420	15614	16045	16080	16113	16144	16245	16320	16429
16546	16622	16716	16754	17030	17064	17095	17130	17220
17240	17281	17516	17607	22008	23205	23472	23884	26038
26435	26850	27707	27713	29612	33008	33041	37789	40179
40186	45004	47102	47104	47138	47155	47169	47186	47401
47412	47418	47582	47600	47646	47678	47741	47778	47807
47827	47909	47918	47945	47971	47991	48698	60018	60096
60155	60571	60630	60656	60680	61901	61980	61998	63741
67083	68263	68424	68442	68512	68538	68816	68842	70026
70133	70200	70219	70231	70261	70308	70316	70326	70350
70361	70398	71043	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71836	71845	71867	71906
71907	71908	71909	71917	71924	71925	71926	71934	71945
71957	71964	72201	72206	72208	72210	72215	72230	72233
72235	72240	72248	72249	72250	72251	72261	72265	72274
72293	72317	72327	72340	72363	72364	72365	72376	72388
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72582	72597	72632	72634	72645
72649	72659	72662	72672	72694	72712	72747	72764	72768
72776	72786	72797	73033	73110	74389	74494	74560	76225
76405	76458	76526	76612	76644	76679	76692	76743	76805
76903	78897	78954	81405	82765	82900	82983	83525	83649
84384	85442	85469	85586	85799	85934	87155	87344	87418
87576	87623	87715	87860	88889	89002	89022	89062	89564
89571	89573	89592	89611	89625	89642	89662	91212	91285
91592	91610	91765	91925	91938	91948	91958	93112	93417
93817	93844	93997	94120	94150	94170	94203	94294	94299
94302	94312	94326	94332	94374	94403	94430	94461	94510
94578	94610	94637	94638	94653	94659	94672	94711	94767
94776	94802	94821	94866	94910	94975	94995	94996	94998
95527	96996							

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

	BPMWB2N	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW
LRYQE3U	VKB4L5Q	VLMJ_YMC		WDK38HS	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG
7JUNA4N	01001	01010	01028	01241	01400	01415	01492	02836
02963	06610	07110	07145	07510	07645	07761	08536	11010
11035	11120	11240	17607	40186	47155	61980	61998	73033
73110	76743	76903	78897	81405	84384	89573	89642	91592
91938	93817	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.