



ECMWF Global Data Monitoring Report

November 2018

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

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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	Oct	Nov	Ident	Time	Oct	Nov
06060	(00)	15	0	17095	(00)	1	26
17516	(00)	27	5	17095	(12)	0	29
22113	(00)	31	0	40375	(00)	17	28
22113	(12)	30	0	40800	(00)	0	15
24125	(00)	31	0	40848	(00)	3	16
24125	(12)	27	0	42492	(12)	5	28
24944	(00)	31	0	43185	(12)	3	30
24944	(12)	30	0	43371	(12)	15	28
25400	(00)	30	0	61980	(00)	0	24
25400	(12)	29	0	67197	(12)	14	29
26063	(00)	31	0	82532	(00)	6	30
26063	(12)	30	0	82532	(12)	7	30
27612	(00)	27	0	87344	(00)	0	29
27612	(12)	24	0	87418	(00)	0	29
28698	(00)	30	0	89002	(00)	2	14
28698	(12)	28	0	89009	(12)	16	29
29862	(00)	26	13	89592	(12)	0	16
29862	(12)	26	14	89625	(00)	1	15
30554	(00)	31	0	89642	(12)	0	15
30554	(12)	30	0	89662	(00)	6	28
41923	(00)	23	5	89662	(12)	5	30
41923	(12)	17	3	-	-	-	-
42701	(12)	24	0	-	-	-	-
42874	(00)	31	2	-	-	-	-
48407	(00)	20	0	-	-	-	-
48565	(00)	25	13	-	-	-	-
48568	(00)	16	0	-	-	-	-
61052	(00)	29	0	-	-	-	-
61052	(12)	29	0	-	-	-	-
64458	(00)	12	0	-	-	-	-
64458	(12)	13	0	-	-	-	-
71815	(00)	29	17	-	-	-	-
71815	(12)	28	17	-	-	-	-
71917	(00)	31	18	-	-	-	-
71917	(12)	31	18	-	-	-	-
71957	(00)	31	12	-	-	-	-
71957	(12)	31	10	-	-	-	-
74005	(12)	25	8	-	-	-	-
76405	(12)	21	0	-	-	-	-
76526	(12)	31	2	-	-	-	-
78073	(00)	19	0	-	-	-	-
78073	(12)	19	0	-	-	-	-
78486	(00)	15	2	-	-	-	-
78486	(12)	21	4	-	-	-	-
82099	(00)	30	8	-	-	-	-
82099	(12)	31	9	-	-	-	-
82400	(12)	26	12	-	-	-	-
82983	(12)	21	0	-	-	-	-
83229	(12)	25	0	-	-	-	-
83554	(00)	19	0	-	-	-	-
83554	(12)	18	0	-	-	-	-
93997	(00)	14	3	-	-	-	-
96315	(00)	15	0	-	-	-	-
98618	(00)	31	17	-	-	-	-
98618	(12)	31	17	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1185** 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

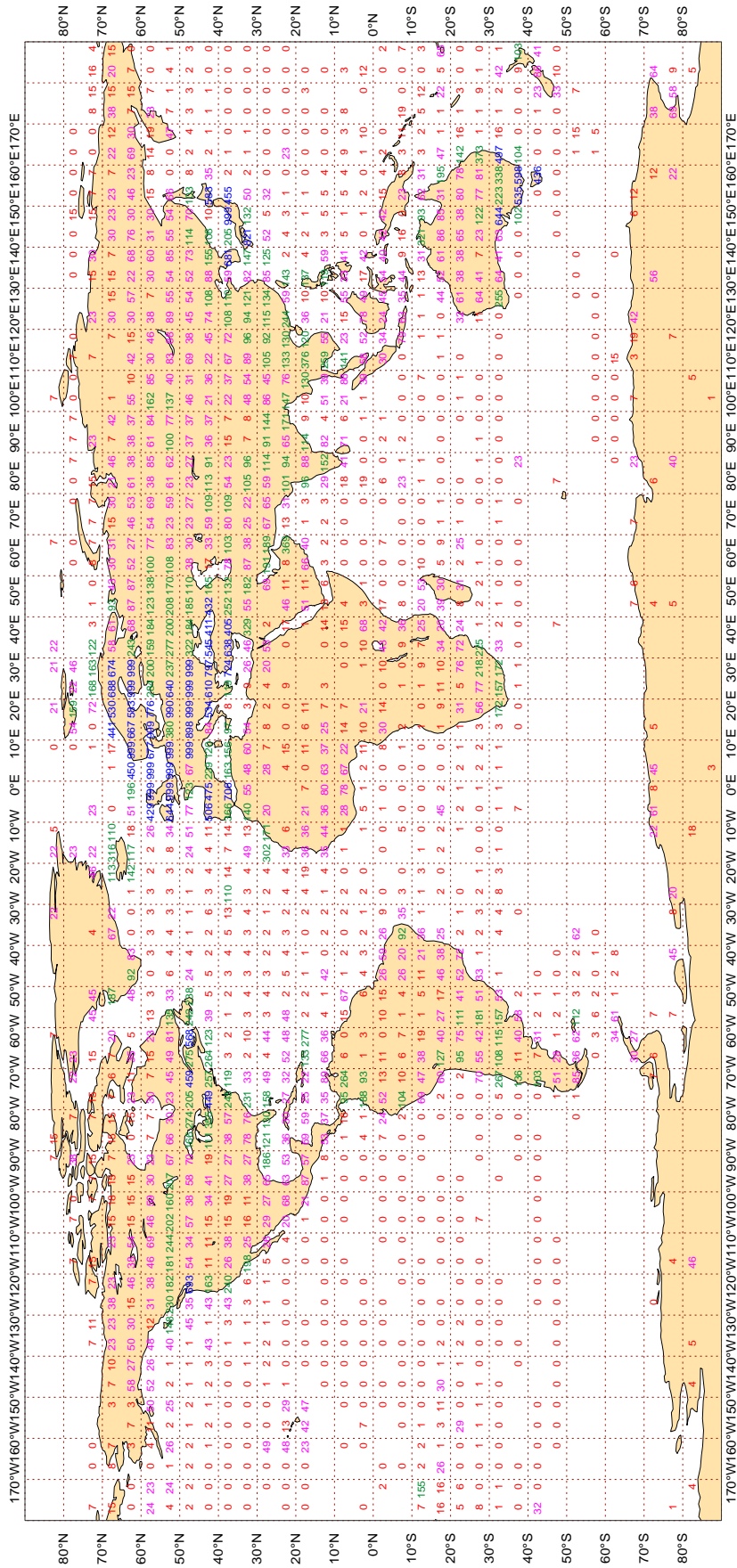
Figures 14-18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

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.

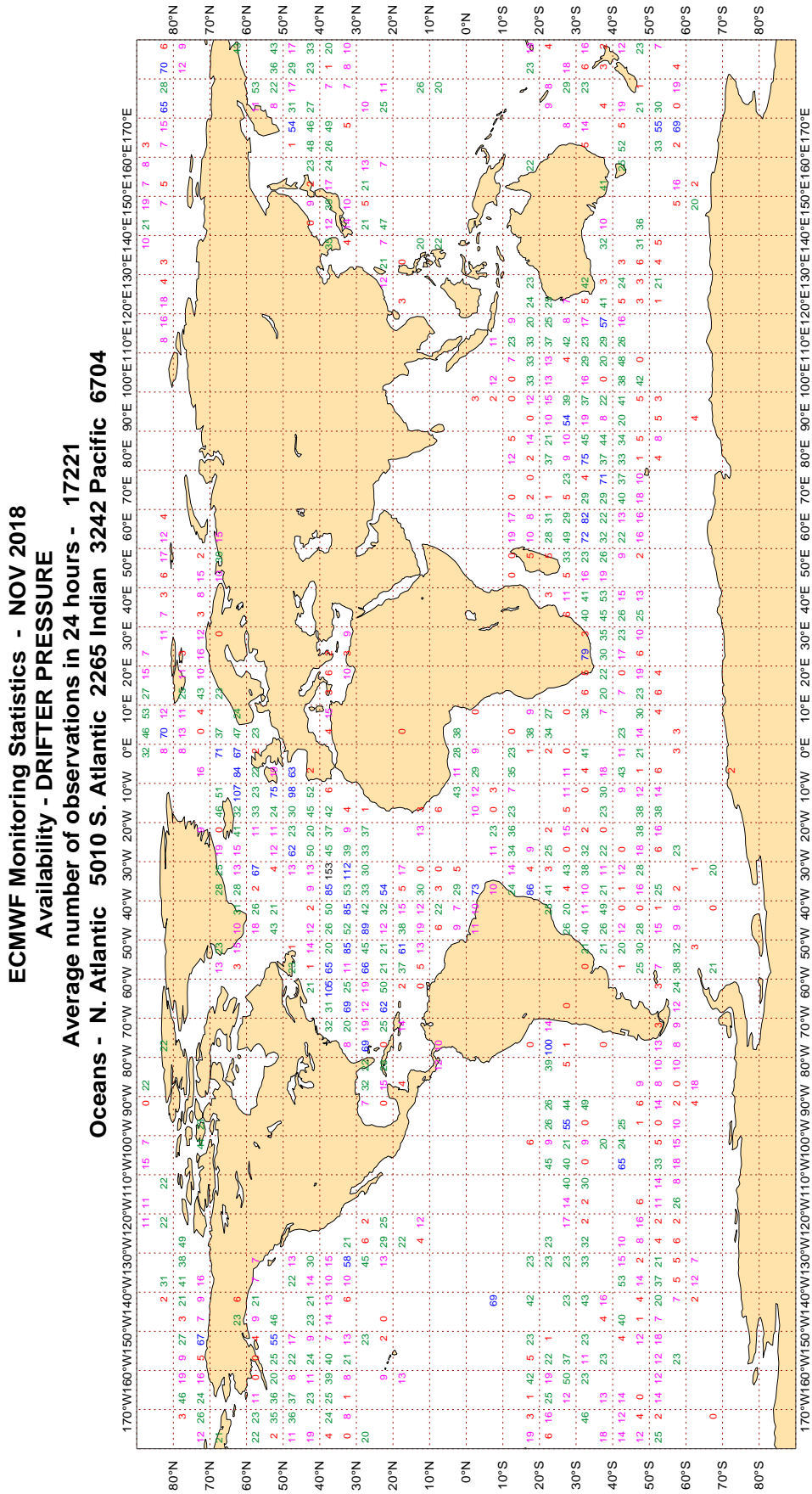
3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1
 ECMWF Monitoring Statistics - NOV 2018
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 97217
 LAND - WMO Region I: 4309 II:18418 III: 4342 IV: 7126
 Region V: 8603 VI:40078 Antarctic: 1024
 Oceans - N. Atlantic 8153 S. Atlantic 293 Indian 485 Pacific 4385



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

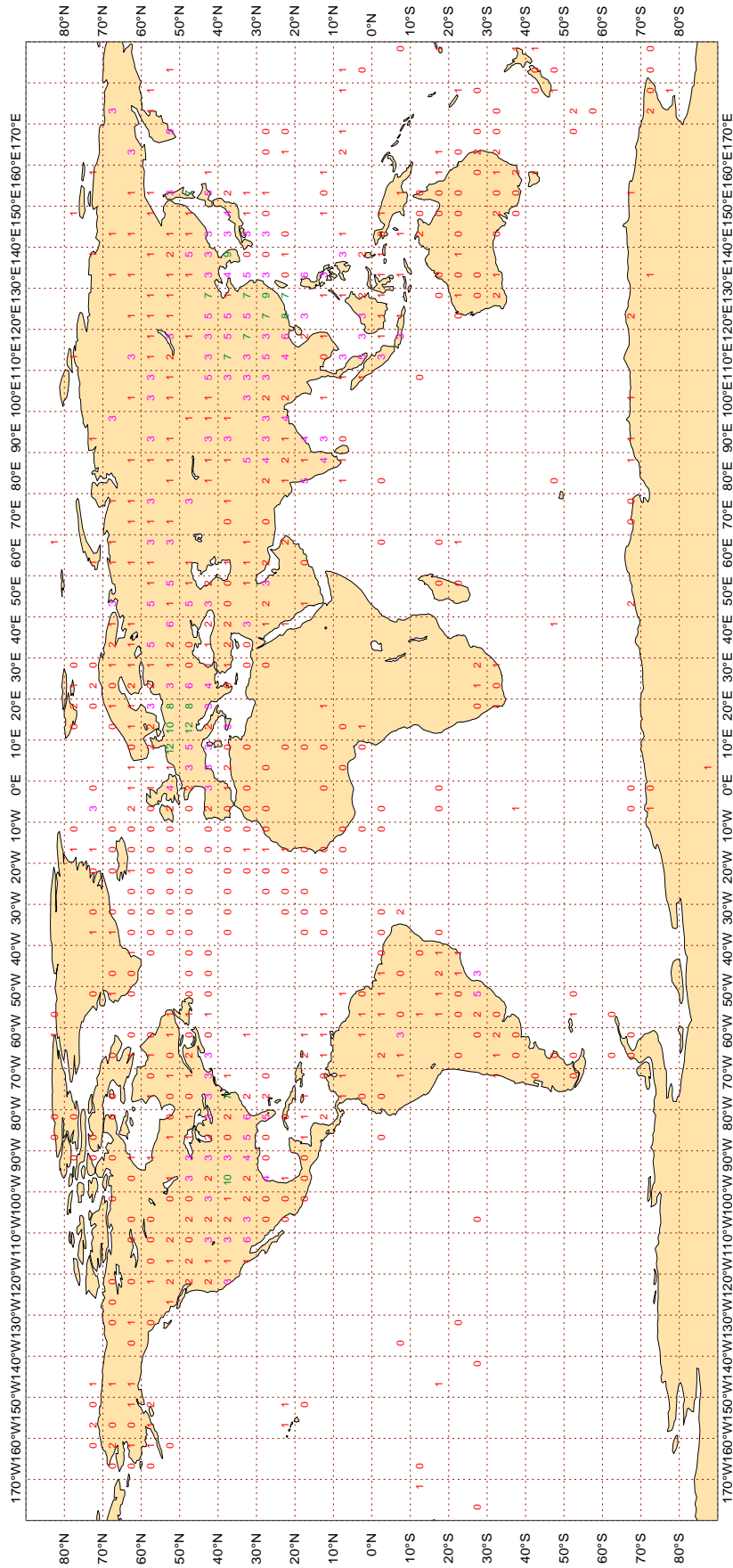
Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

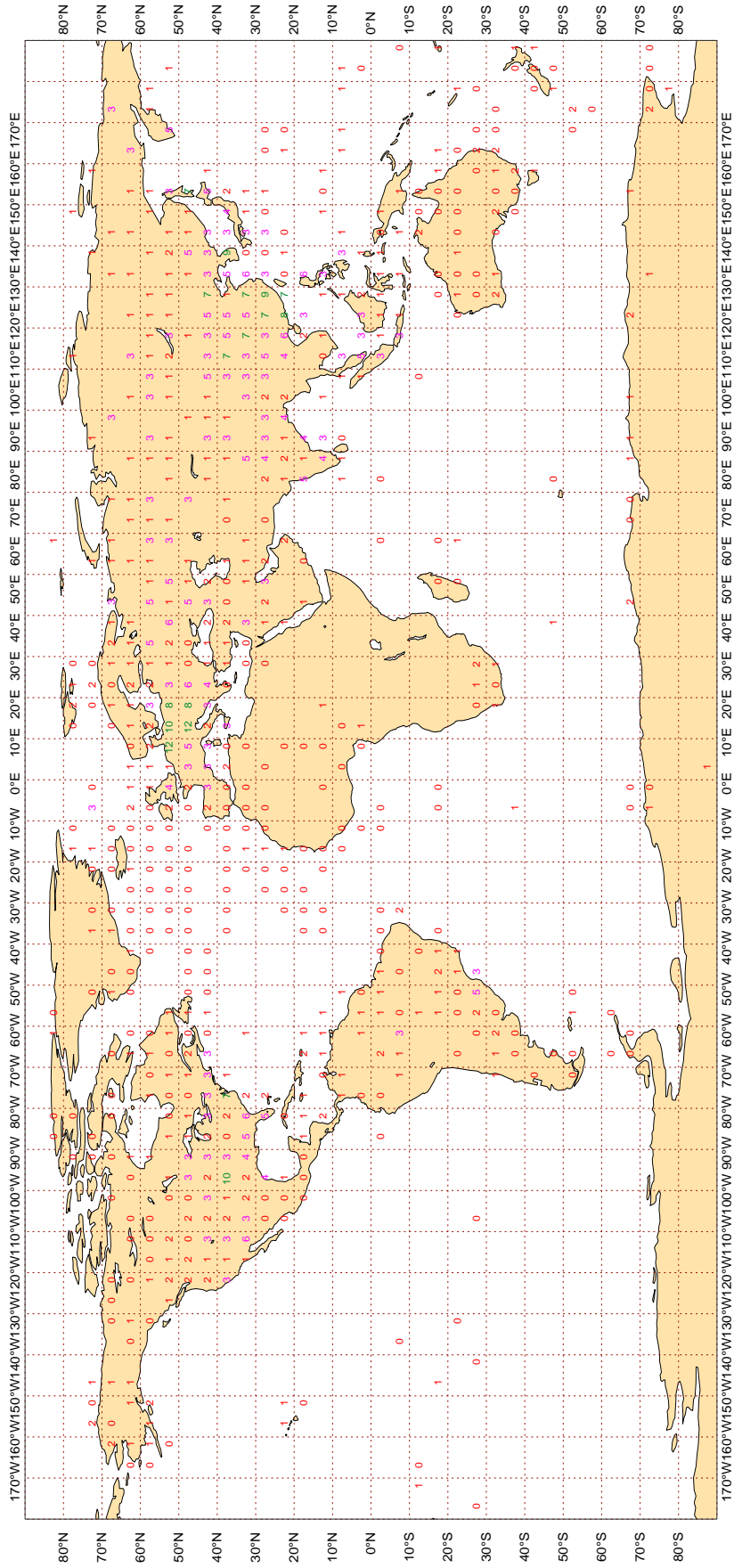
ECMWF Monitoring Statistics - NOV 2018
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1266
 LAND - WMO Region I: 36 II: 494 III: 75 IV: 244
 Region V: 138 VI: 247 Antarctic: 24
 Oceans - N. Atlantic 8 S. Atlantic 0 Indian 0 Pacific 0



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

Figure 4

ECMWF Monitoring Statistics - NOV 2018
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1253
 LAND - WMO Region I: 36 II: 490 III: 75 IV: 241
 Region V: 135 VI: 244 Antarctic: 24
 Oceans - N. Atlantic 8 S. Atlantic 0 Indian 0 Pacific 0



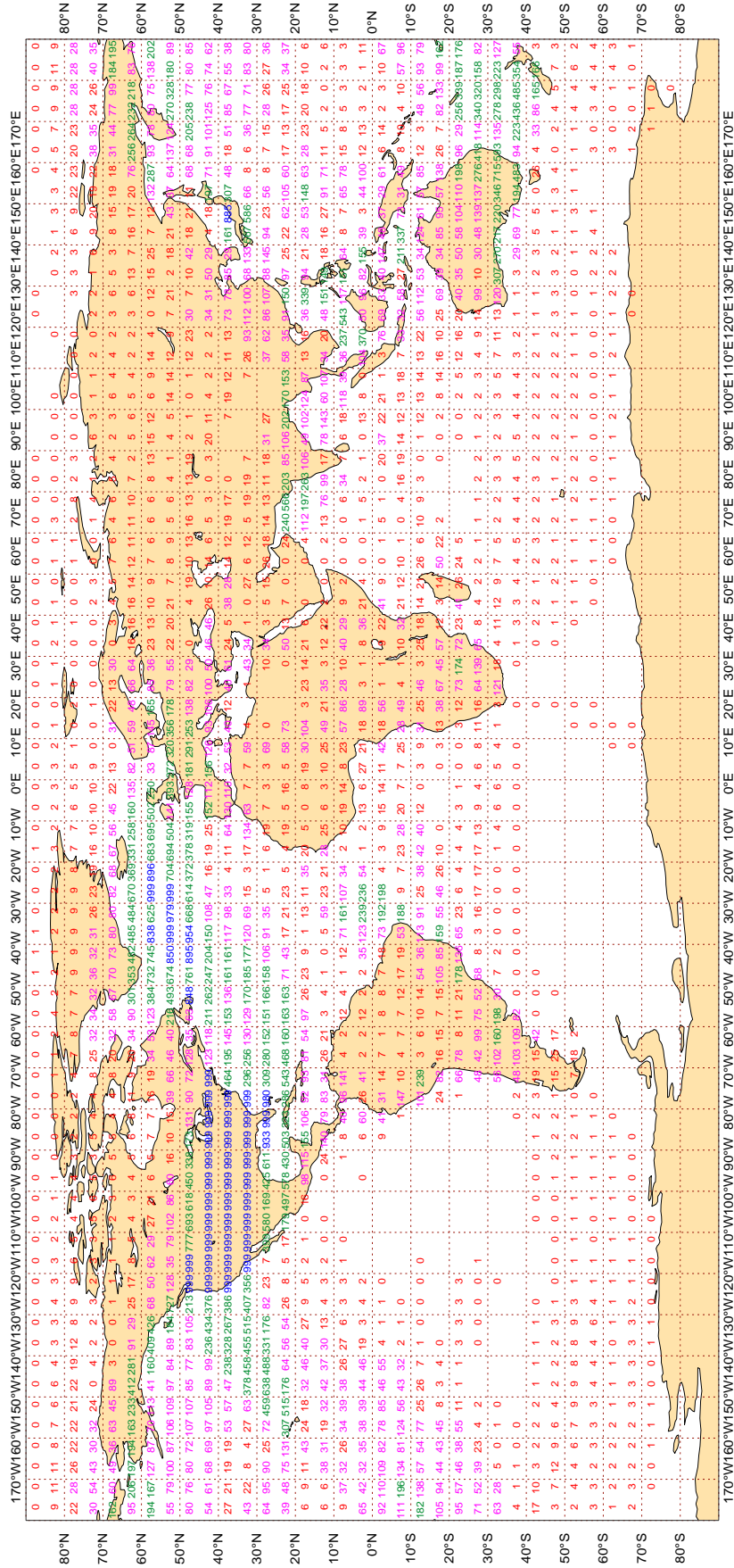
Magics 3.0.4 (64 bit)



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

Figure 5

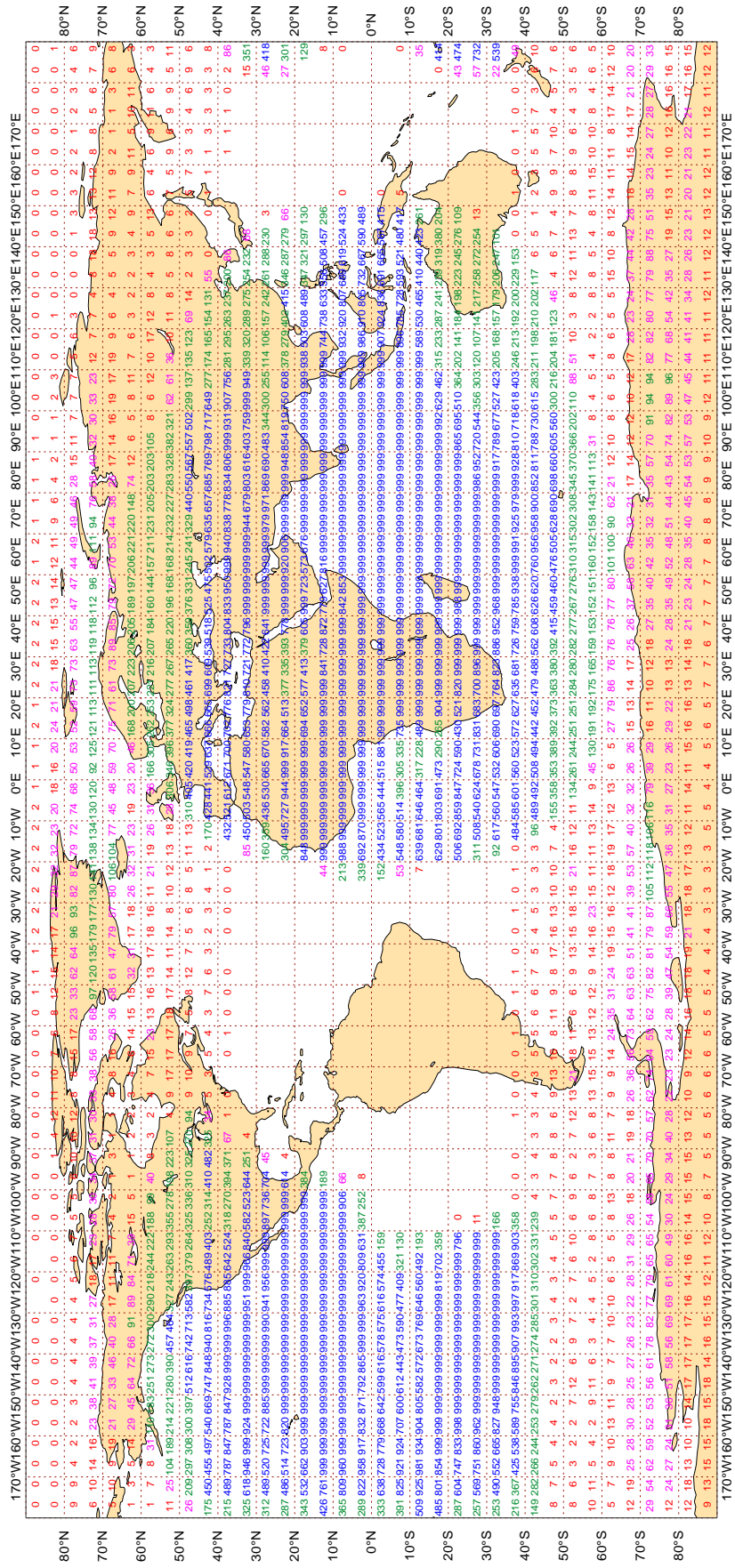
ECMWF Monitoring Statistics - NOV 2018
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 221702



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

Figure 6

ECMWF Monitoring Statistics - NOV 2018
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 821342



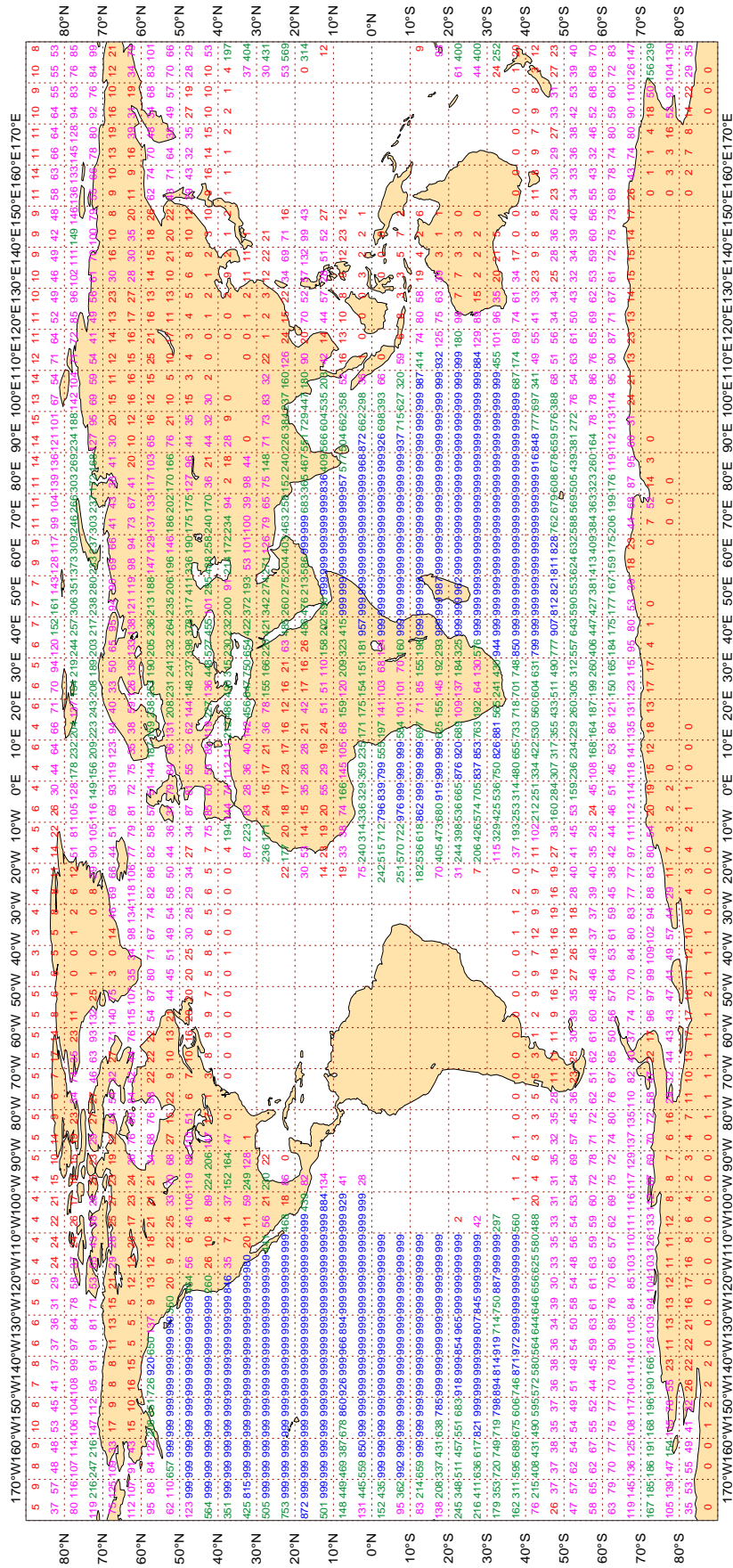
Magics 3.0.4 (64 bit)



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

Figure 7

ECMWF Monitoring Statistics - NOV 2018
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 964292



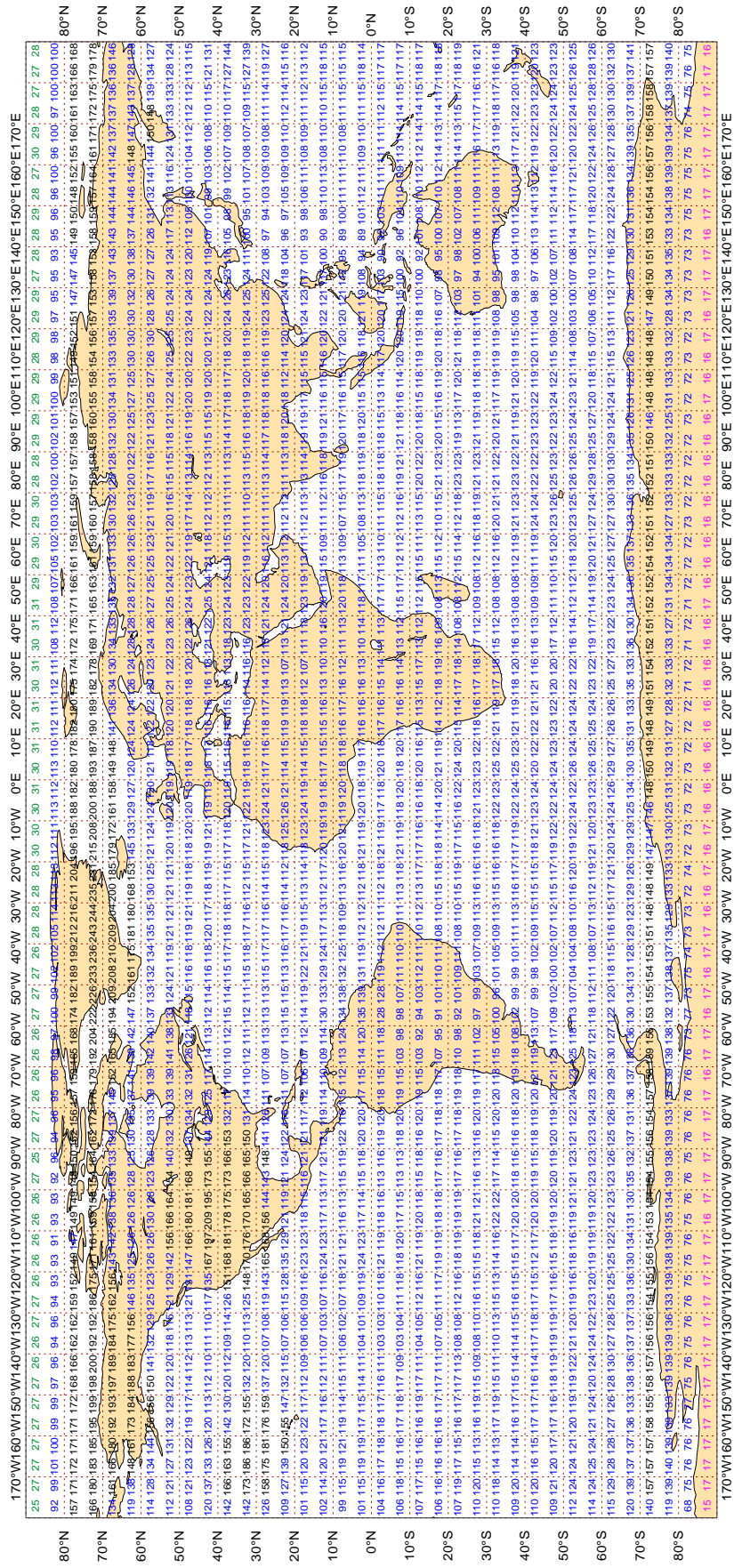
Magics 3.0.4 (64 bit)



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

Figure 8

ECMWF Monitoring Statistics - NOV 2018
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 306808



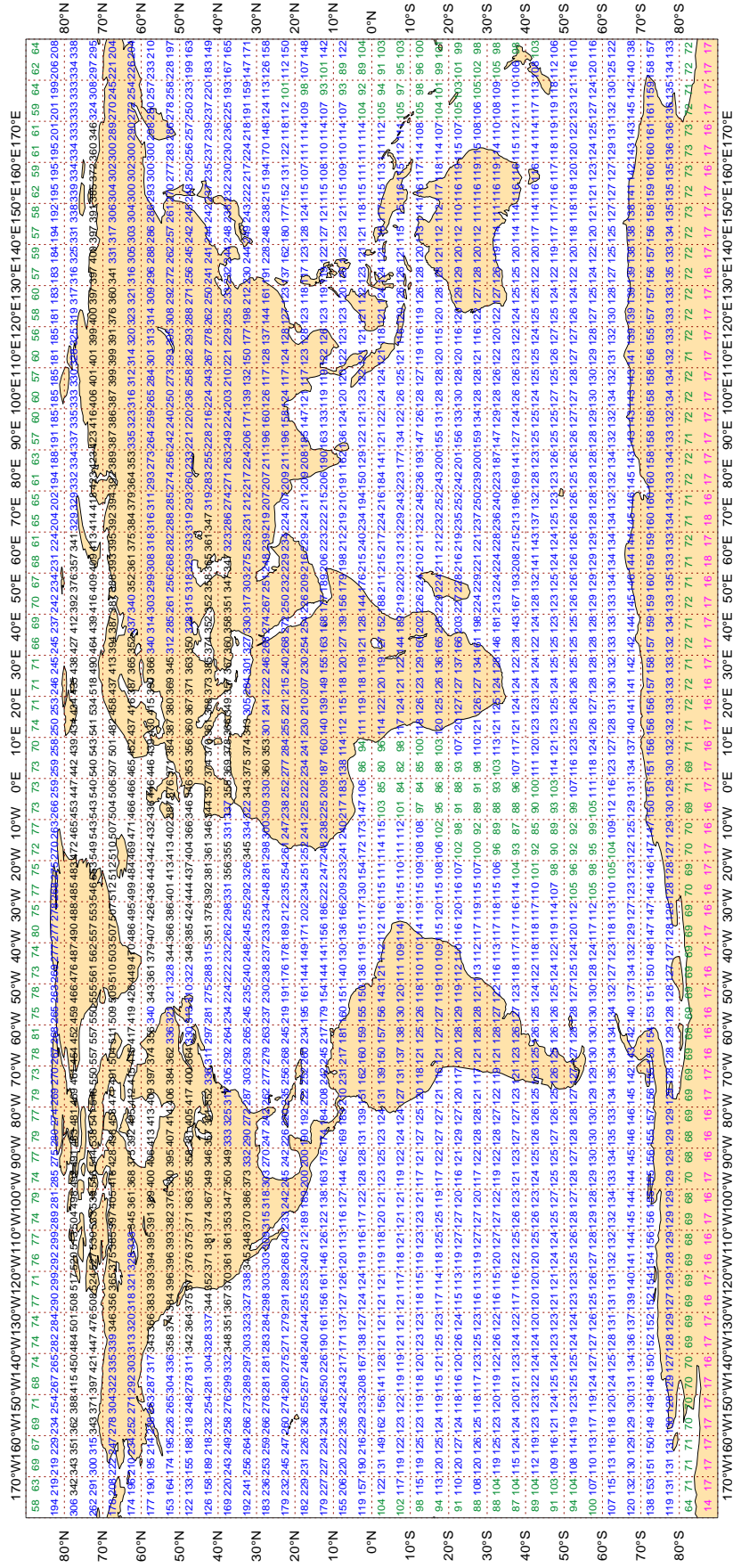
Magics 3.0.4 (64 bit)



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

Figure 9.1

ECMWF Monitoring Statistics - NOV 2018
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 505717



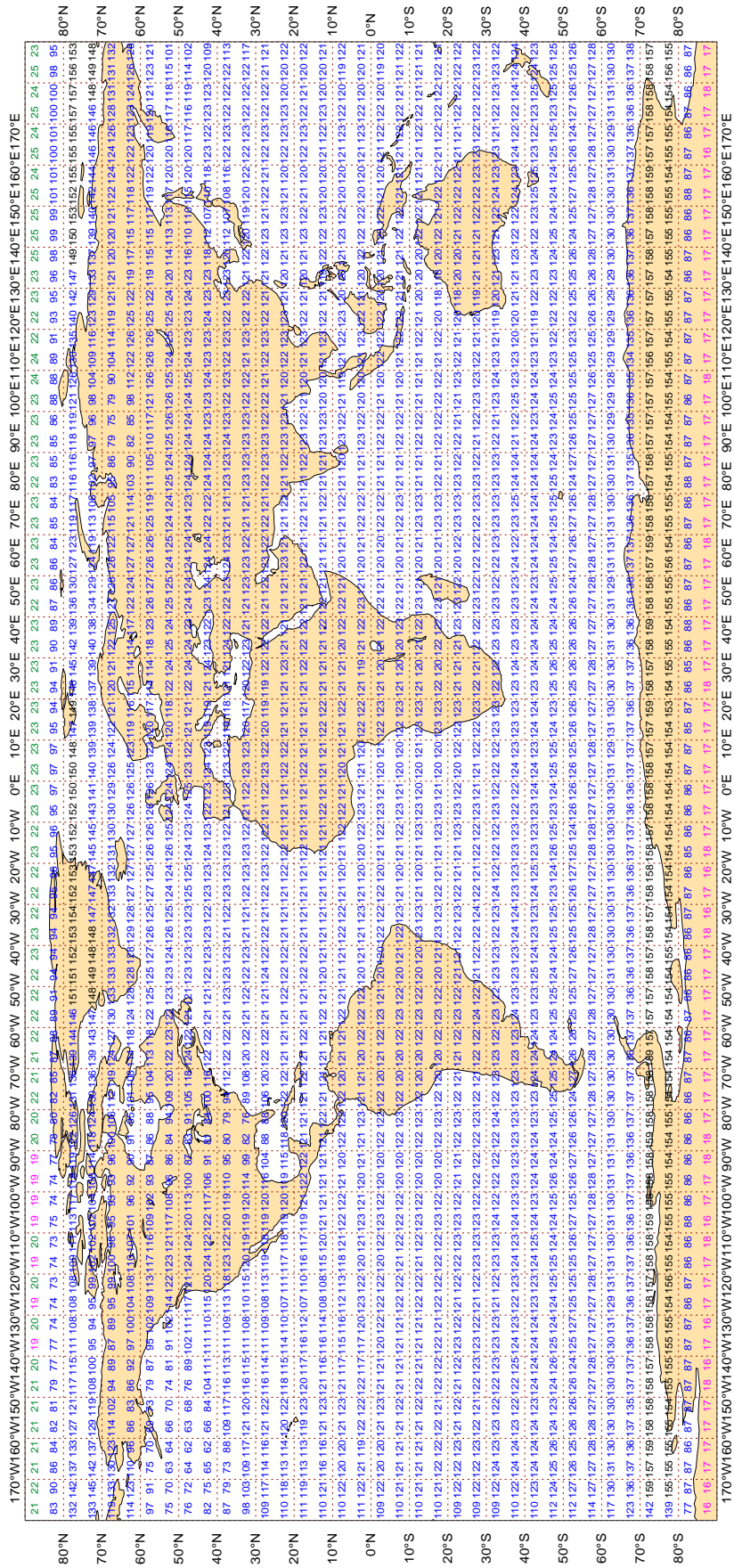
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - NOV 2018
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 301559



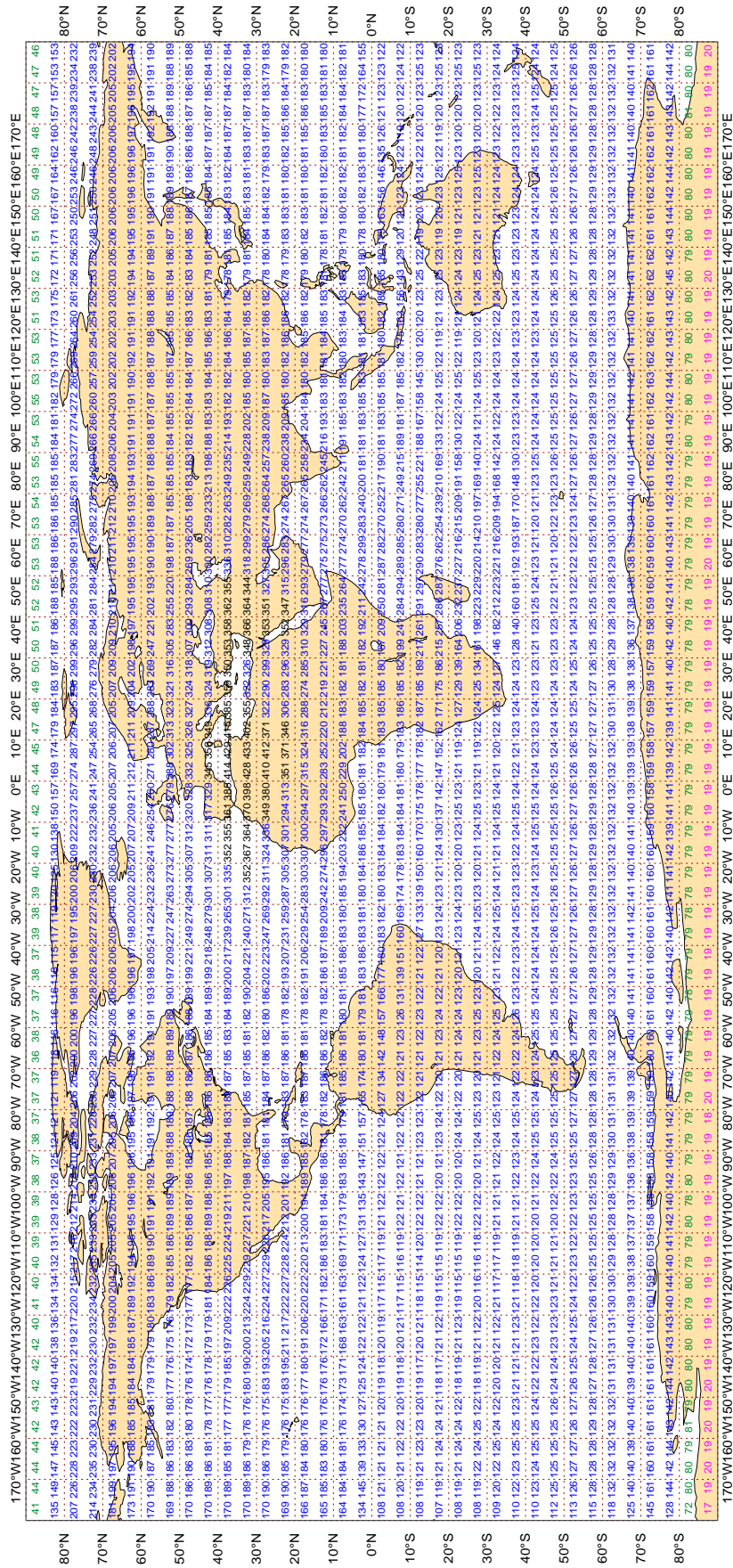
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - NOV 2018
 Availability - METOP ATOVS : AMSU-A
 Average number of observations in 24 hours - 432898



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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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
3ENU5	99	P	SUR	18	1	4.0	3.8	5.5
3FAD8	99	P	SUR	34	0	0.9	-3.1	3.2
45164	99	P	SUR	25	5	6.3	0.1	6.3
5BZE2	99	P	SUR	27	0	1.0	5.6	5.7
9HJD9	99	P	SUR	30	0	0.6	5.8	5.9
9V5392	99	P	SUR	23	0	0.6	-3.6	3.6
9V9040	99	P	SUR	114	2	3.1	-7.5	8.1
9V9290	99	P	SUR	22	0	2.1	3.1	3.8
9VKQ2	99	P	SUR	23	0	0.7	3.7	3.7
A8KX2	99	P	SUR	16	0	0.7	3.2	3.2
A8PQ7	99	P	SUR	91	0	2.2	3.4	4.0
AUCE	99	P	SUR	114	100	4.3	-8.7	9.7
AUYP	99	P	SUR	16	0	2.2	8.2	8.4
AVBC	99	P	SUR	25	0	3.2	-3.8	5.0
C6AV5	99	P	SUR	30	0	2.3	-3.3	4.1
C6FN5	99	P	SUR	16	0	0.4	4.0	4.1
C6FV8	99	P	SUR	50	0	0.5	-4.8	4.8
C6UC3	99	P	SUR	19	0	0.8	9.8	9.8
C6YM6	99	P	SUR	54	0	1.1	3.0	3.2
KOGE	99	P	SUR	21	0	0.8	-3.0	3.1
OZWA2	99	P	SUR	43	0	0.9	5.1	5.2
S6LT3	99	P	SUR	46	0	1.7	-4.4	4.8
S6LT4	99	P	SUR	17	0	1.3	-3.0	3.3
UAEV	99	P	SUR	41	0	1.2	3.1	3.3
UBMO9	99	P	SUR	44	0	0.9	3.7	3.8
UBSH5	99	P	SUR	22	0	1.0	-4.8	4.9
UFLT	99	P	SUR	35	0	1.1	-3.1	3.3
V7DI8	99	P	SUR	30	1	1.0	7.2	7.3
V7QJ6	99	P	SUR	35	0	1.7	4.2	4.5
VRCR9	99	P	SUR	15	0	5.2	1.0	5.3
VRDN3	99	P	SUR	21	0	1.3	-5.7	5.8
VRFI7	99	P	SUR	64	0	1.7	3.0	3.5

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
VRFT7	99	P	SUR	73	1	0.5	-4.4	4.4
VRFX8	99	P	SUR	18	0	0.6	-4.0	4.1
VRID2	99	P	SUR	82	0	1.3	5.6	5.8
VRJA4	99	P	SUR	26	0	5.1	0.5	5.1
VRJS2	99	P	SUR	27	0	2.1	-4.6	5.0
VRKC8	99	P	SUR	21	0	3.9	6.3	7.4
VRKQ7	99	P	SUR	25	0	2.4	4.8	5.4
VROX2	99	P	SUR	20	0	2.2	4.2	4.7
VRRD7	99	P	SUR	61	1	6.2	0.6	6.2
VWTI	99	P	SUR	18	2	1.4	13.2	13.3
WDG8555	99	P	SUR	47	0	0.9	6.6	6.6
WDI3177	99	P	SUR	44	0	1.9	3.1	3.6
WDJ2573	99	P	SUR	18	0	0.7	-3.2	3.2
WROT	99	P	SUR	23	0	2.0	-3.0	3.6

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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
41033	99	SPEED	SUR	110	0	0	2.7	-6.2	6.8
41063	99	SPEED	SUR	85	0	0	4.3	-4.4	6.2

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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
45154	99	DIRN	SUR	126	0	0	23.3	32.5	40.0
45176	99	DIRN	SUR	64	0	0	74.5	-6.5	74.8
46092	99	DIRN	SUR	59	0	0	32.8	33.8	47.1
46118	99	DIRN	SUR	41	1	0	62.5	-70.6	94.3
46120	99	DIRN	SUR	28	0	0	75.3	92.8	119.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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
0022959	99	P	SUR	36	125	420	1	1.8	5.9	6.2
1601515	99	P	SUR	-21	94	24	24	0.0	0.0	0.0
1701543	99	P	SUR	-39	12	626	3	2.6	4.4	5.1
3101542	99	P	SUR	-23	-43	43	5	7.4	1.9	7.6
4301559	99	P	SUR	32	-135	655	0	4.7	-5.4	7.2
4601612	99	P	SUR	54	-167	510	210	5.2	-2.0	5.5
4701658	99	P	SUR	71	-97	714	128	4.0	-8.2	9.1
4701668	99	P	SUR	39	-74	374	333	8.7	1.6	8.8
4800282	99	P	SUR	71	-156	663	663	0.0	0.0	0.0
4800769	99	P	SUR	70	-101	667	318	7.9	0.3	7.9
4800770	99	P	SUR	72	-23	279	259	2.4	12.2	12.5
4801617	99	P	SUR	76	-155	323	51	6.3	0.4	6.3
4801625	99	P	SUR	78	171	694	145	4.4	-7.6	8.8
4801628	99	P	SUR	78	-155	690	180	3.5	-1.2	3.7
4801652	99	P	SUR	79	-170	391	358	2.7	-9.5	9.8
4802000	99	P	SUR	79	-122	646	142	6.9	-1.5	7.1
48282	99	P	SUR	71	-156	669	669	0.0	0.0	0.0
48769	99	P	SUR	70	-101	672	319	7.9	0.2	7.9
48770	99	P	SUR	72	-23	282	262	2.4	12.2	12.5
6301670	99	P	SUR	82	39	671	381	4.6	-2.0	5.0
6400476	99	P	SUR	45	-64	82	0	0.5	-5.0	5.0
64476	99	P	SUR	45	-64	82	0	0.5	-5.0	5.0
7101507	99	P	SUR	-60	-1	195	63	9.1	1.8	9.3
7101509	99	P	SUR	-67	-41	39	0	4.6	8.7	9.9
7101553	99	P	SUR	-71	-8	86	0	0.5	-5.3	5.3
7101558	99	P	SUR	-66	-33	669	293	2.8	1.0	3.0
7401503	99	P	SUR	-37	-12	716	0	0.6	-5.4	5.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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
1501540	99	SPEED	SUR	-22	-12	321	0	0	0.9	6.1	6.2
1501543	99	SPEED	SUR	-29	-38	321	2	0	2.1	6.6	7.0
1501544	99	SPEED	SUR	-23	-21	321	0	0	1.2	5.6	5.8
1501546	99	SPEED	SUR	-27	-29	321	0	0	1.5	6.1	6.3
1501550	99	SPEED	SUR	-23	-19	321	0	0	1.2	5.5	5.6
1501551	99	SPEED	SUR	-26	-20	319	0	0	1.3	5.4	5.5
1501552	99	SPEED	SUR	-25	-16	321	0	0	1.1	5.4	5.5
1501554	99	SPEED	SUR	-22	-19	321	0	0	1.3	5.6	5.7
1501556	99	SPEED	SUR	-20	-16	321	0	0	0.7	6.1	6.2
1501557	99	SPEED	SUR	-27	-9	321	0	0	1.6	5.2	5.4
1501559	99	SPEED	SUR	-26	-28	321	0	0	2.2	6.2	6.6
1501560	99	SPEED	SUR	-17	-33	321	0	0	1.2	6.2	6.3
1501564	99	SPEED	SUR	-21	-23	321	0	0	1.0	5.9	6.0
1501575	99	SPEED	SUR	-23	-18	321	0	0	1.4	6.0	6.1
3100231	99	SPEED	SUR	-27	-47	201	76	15	8.2	6.9	10.7
3101601	99	SPEED	SUR	-36	-42	160	5	0	2.4	10.6	10.9
31231	99	SPEED	SUR	-27	-47	201	79	15	8.2	6.8	10.6
3301606	99	SPEED	SUR	-38	-46	160	3	0	3.9	8.4	9.3
3301607	99	SPEED	SUR	-37	-45	159	5	0	3.3	8.5	9.1
41033	99	SPEED	SUR	32	-80	653	0	0	2.7	-6.2	6.8
4401601	99	SPEED	SUR	55	-12	157	0	0	2.1	7.5	7.8
4401605	99	SPEED	SUR	60	-5	159	0	0	1.8	5.6	5.9
4401611	99	SPEED	SUR	46	-57	159	0	0	4.1	8.8	9.7
4401613	99	SPEED	SUR	40	-14	156	0	0	2.8	8.0	8.5
4401616	99	SPEED	SUR	36	-38	160	0	0	3.1	8.8	9.3
4401619	99	SPEED	SUR	53	-10	158	0	0	2.7	13.0	13.2
4401633	99	SPEED	SUR	38	-18	160	0	0	2.0	6.7	7.0
4401802	99	SPEED	SUR	40	-28	160	0	0	1.6	7.9	8.1
4401904	99	SPEED	SUR	44	-31	159	0	0	2.4	9.7	10.0
4401905	99	SPEED	SUR	52	-18	160	0	0	2.6	6.1	6.7
4700539	99	SPEED	SUR	29	-64	154	0	0	4.4	7.2	8.5
4700546	99	SPEED	SUR	28	-47	154	0	0	3.9	5.4	6.7
4700552	99	SPEED	SUR	62	-63	157	17	4	4.3	8.8	9.8
4700560	99	SPEED	SUR	70	38	152	13	0	3.8	10.1	10.8

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBSSD	UM BIAS	RMS			
4701669	99	SPEED	SUR	44	-54	158	0	0	3.7	9.5	10.2
4800633	99	SPEED	SUR	71	-154	158	0	0	2.1	6.0	6.3
4800642	99	SPEED	SUR	71	-153	157	0	0	1.9	5.5	5.9
4800726	99	SPEED	SUR	68	-177	144	2	0	2.9	7.6	8.2
5300555	99	SPEED	SUR	-17	93	145	0	0	1.2	6.3	6.5
5301641	99	SPEED	SUR	-20	98	145	0	0	1.4	5.6	5.8
5301642	99	SPEED	SUR	-24	112	145	0	0	1.3	7.5	7.6
5301643	99	SPEED	SUR	-17	112	144	0	0	1.1	5.6	5.7
5500048	99	SPEED	SUR	-47	160	144	0	0	2.8	8.6	9.0
5500086	99	SPEED	SUR	-34	172	155	0	0	2.3	7.5	7.8
5601601	99	SPEED	SUR	-52	-133	161	0	0	2.4	9.8	10.1
5601603	99	SPEED	SUR	-43	-139	159	2	0	3.6	5.7	6.7
5601605	99	SPEED	SUR	-55	-125	160	0	0	3.1	12.1	12.5
5601614	99	SPEED	SUR	-39	127	144	0	0	3.1	5.1	6.0
5601627	99	SPEED	SUR	-52	-162	145	0	0	2.2	8.6	8.8
5601628	99	SPEED	SUR	-59	138	144	0	0	2.3	6.6	7.0
5601631	99	SPEED	SUR	-54	115	160	2	0	2.8	9.9	10.3
6301671	99	SPEED	SUR	82	25	145	5	0	2.2	6.4	6.7
7101553	99	SPEED	SUR	-71	-8	86	0	0	2.3	10.7	10.9
7300501	99	SPEED	SUR	-62	82	38	0	0	2.7	6.0	6.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : NOV 2018
 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
1300130	99	DIRN	SUR	28	-16	341	0	0	108.7	59.1	123.8
2200107	99	DIRN	SUR	33	126	575	0	0	34.0	20.0	39.4
2200108	99	DIRN	SUR	36	126	468	1	0	64.4	-31.5	71.8
2300001	99	DIRN	SUR	0	81	145	0	0	14.2	20.8	25.2
2300015	99	DIRN	SUR	0	67	189	0	0	16.3	22.0	27.4
23001	99	DIRN	SUR	0	81	116	0	0	13.5	21.1	25.0
23015	99	DIRN	SUR	0	67	126	0	0	17.1	21.7	27.7
23095	99	DIRN	SUR	10	94	137	0	0	21.3	22.4	30.9
23456	99	DIRN	SUR	18	67	158	0	0	169.7	25.8	171.6
23460	99	DIRN	SUR	7	88	76	0	0	51.9	31.2	60.5
23492	99	DIRN	SUR	11	72	99	0	0	43.7	-53.4	69.0
3100053	99	DIRN	SUR	-32	-50	186	0	0	22.8	-26.1	34.6
3100231	99	DIRN	SUR	-27	-47	189	76	0	108.0	85.1	137.5
31053	99	DIRN	SUR	-32	-50	185	0	0	23.3	-26.4	35.2
31231	99	DIRN	SUR	-27	-47	186	79	0	109.6	81.4	136.5
31374	99	DIRN	SUR	-23	-43	27	0	0	49.5	-28.4	57.1
44058	99	DIRN	SUR	38	-76	949	0	0	20.8	-27.3	34.4
45014	99	DIRN	SUR	45	-88	22	0	0	38.0	-26.1	46.1
45154	99	DIRN	SUR	46	-83	748	0	0	23.2	32.1	39.6
45169	99	DIRN	SUR	42	-82	298	0	0	35.5	-22.3	41.9
45176	99	DIRN	SUR	42	-82	393	3	0	79.6	-10.2	80.2
46060	99	DIRN	SUR	61	-147	417	0	0	25.7	21.3	33.4
46083	99	DIRN	SUR	58	-138	633	0	0	23.9	23.7	33.7
46092	99	DIRN	SUR	37	-122	510	0	0	29.4	29.6	41.7
46118	99	DIRN	SUR	49	-123	244	1	0	67.8	-50.2	84.3
46120	99	DIRN	SUR	48	-122	146	0	0	54.6	109.5	122.4
4700560	99	DIRN	SUR	70	38	138	13	0	67.9	-6.8	68.3
5100006	99	DIRN	SUR	9	-140	219	0	0	60.3	42.4	73.7
5100020	99	DIRN	SUR	5	-155	598	0	0	38.1	-22.4	44.2
51003	99	DIRN	SUR	19	-161	109	0	0	33.9	22.5	40.7
51006	99	DIRN	SUR	9	-140	217	0	0	63.1	39.4	74.4

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
51020	99	DIRN	SUR	5	-155	593	0	0	38.1	-22.4	44.1
5200004	99	DIRN	SUR	-5	165	438	0	0	34.9	-30.6	46.4
52004	99	DIRN	SUR	-5	165	417	0	0	35.5	-31.5	47.4
5300040	99	DIRN	SUR	-8	95	651	0	0	164.6	28.0	167.0
5300056	99	DIRN	SUR	-5	95	413	0	0	152.3	43.2	158.3
53040	99	DIRN	SUR	-8	95	653	0	0	163.2	35.2	167.0
53056	99	DIRN	SUR	-5	95	414	0	0	150.3	50.4	158.5
6101003	99	DIRN	SUR	40	25	205	0	0	32.3	44.1	54.6
6200200	99	DIRN	SUR	36	-8	530	2	0	159.8	-55.6	169.2

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 AREA : GLOBAL
 PERIOD : NOV 2018
 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	22	0	0.0	72.7	72.7
01400	00	Z	1000	57	3	23	0	3.8	72.6	72.7
04360	00	Z	850	66	-38	30	0	20.0	35.2	40.5
04360	12	Z	1000	66	-38	13	0	23.7	28.7	37.2
17351	00	Z	70	37	35	14	3	125.1	61.2	139.3
24343	00	Z	250	67	123	29	0	54.6	54.4	77.1
29263	12	Z	300	58	92	29	0	50.7	-51.3	72.1
32389	00	Z	100	56	161	27	0	100.6	-39.0	107.9
37011	12	Z	30	44	39	28	0	72.9	166.0	181.3
40437	12	Z	925	25	47	28	0	15.9	29.6	33.6
98223	00	Z	30	18	121	20	0	61.5	226.6	234.8

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 : NOV 2018
 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
30635	00	V	500	53	109	27	1	-2.9	5.5	16.0
30635	12	V	150	53	109	28	1	-2.2	5.4	15.8
42182	12	V	100	29	77	30	0	-14.5	0.3	15.9
42182	00	V	150	29	77	23	0	-17.6	-0.4	20.4

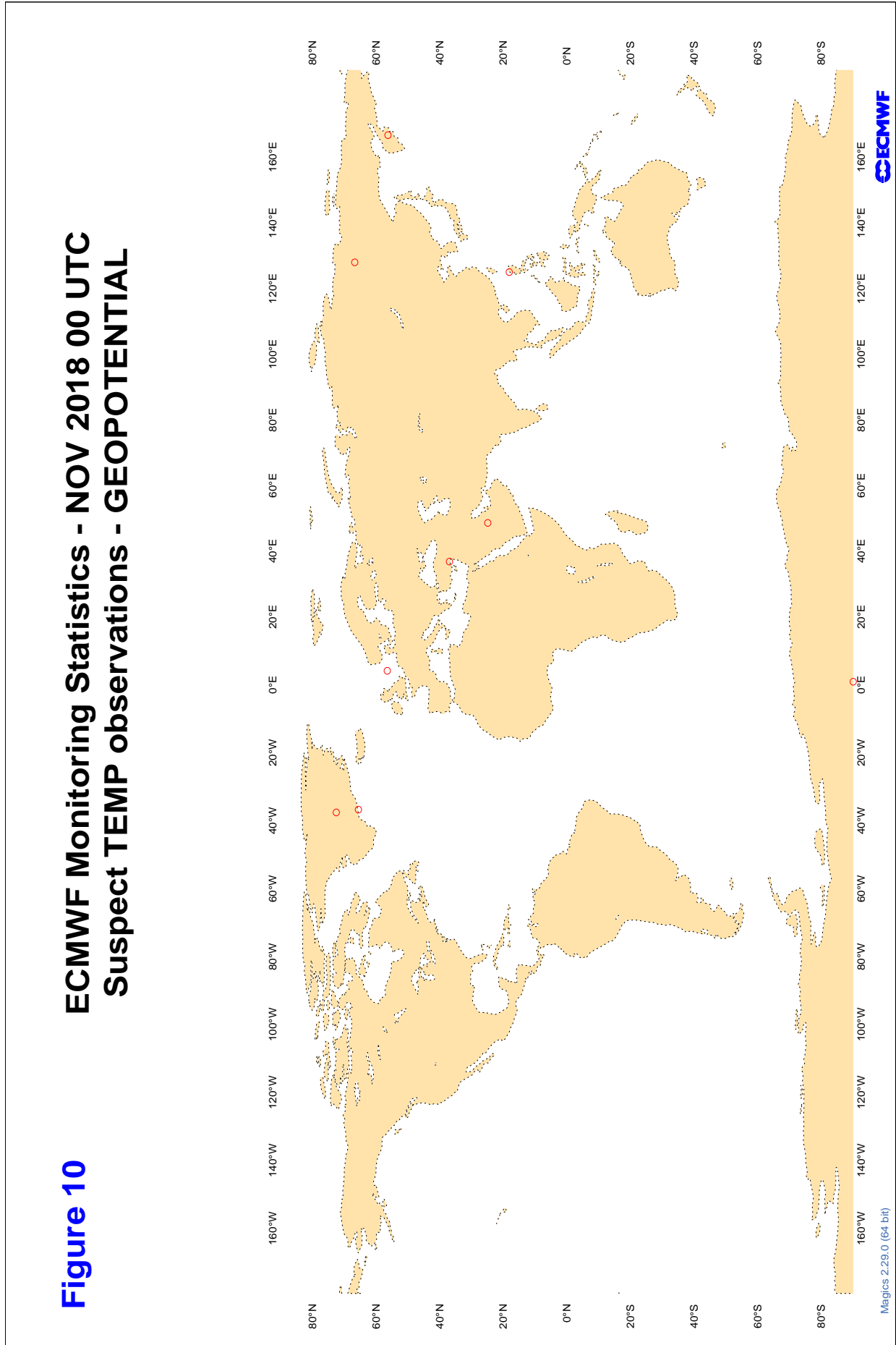
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

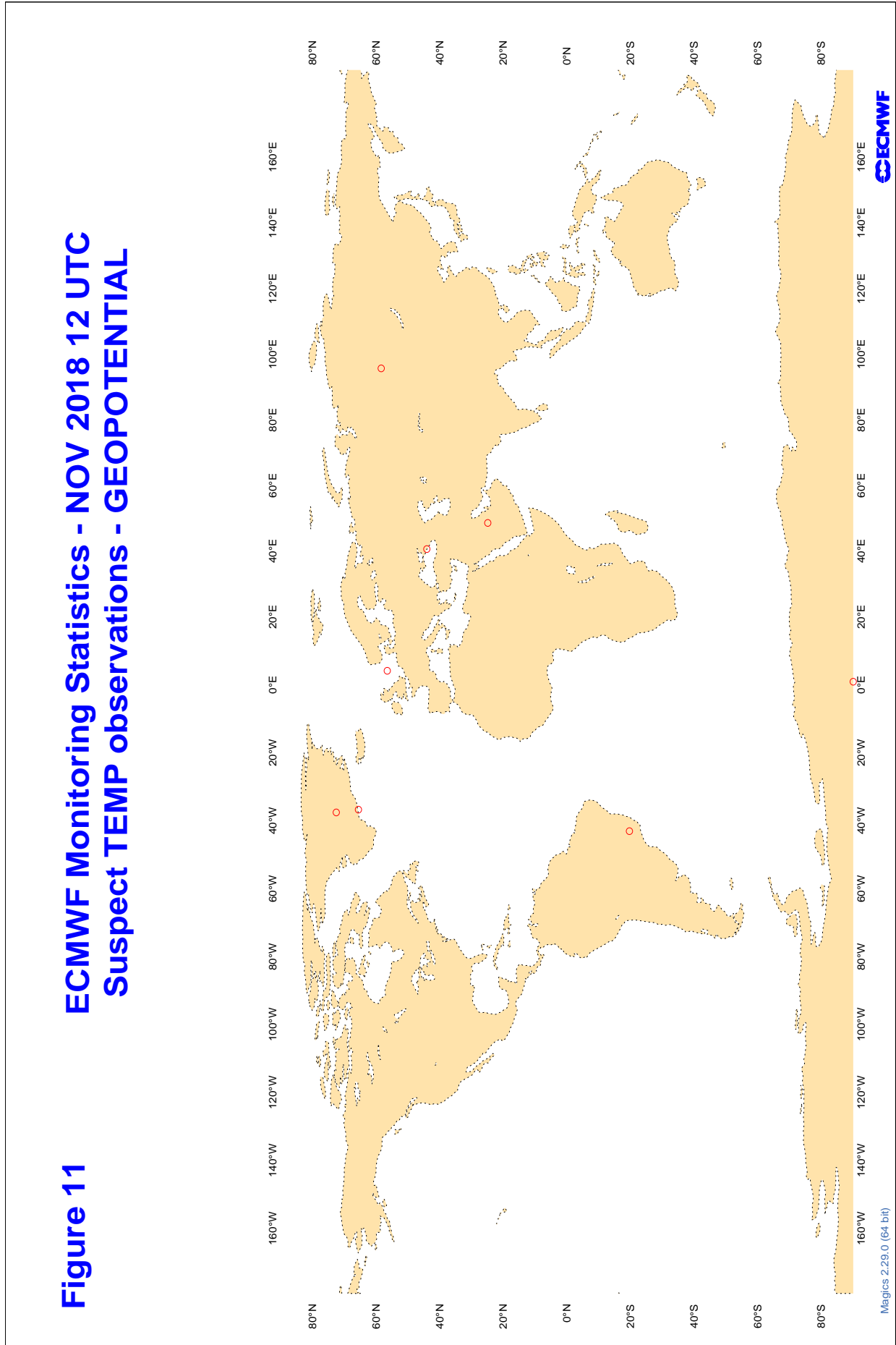
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
48565	00	DD	8	98	11	15.1	9.2	16.3
56146	00	DD	32	100	30	12.3	4.5	7.3
56146	12	DD	32	100	30	12.9	1.7	16.5

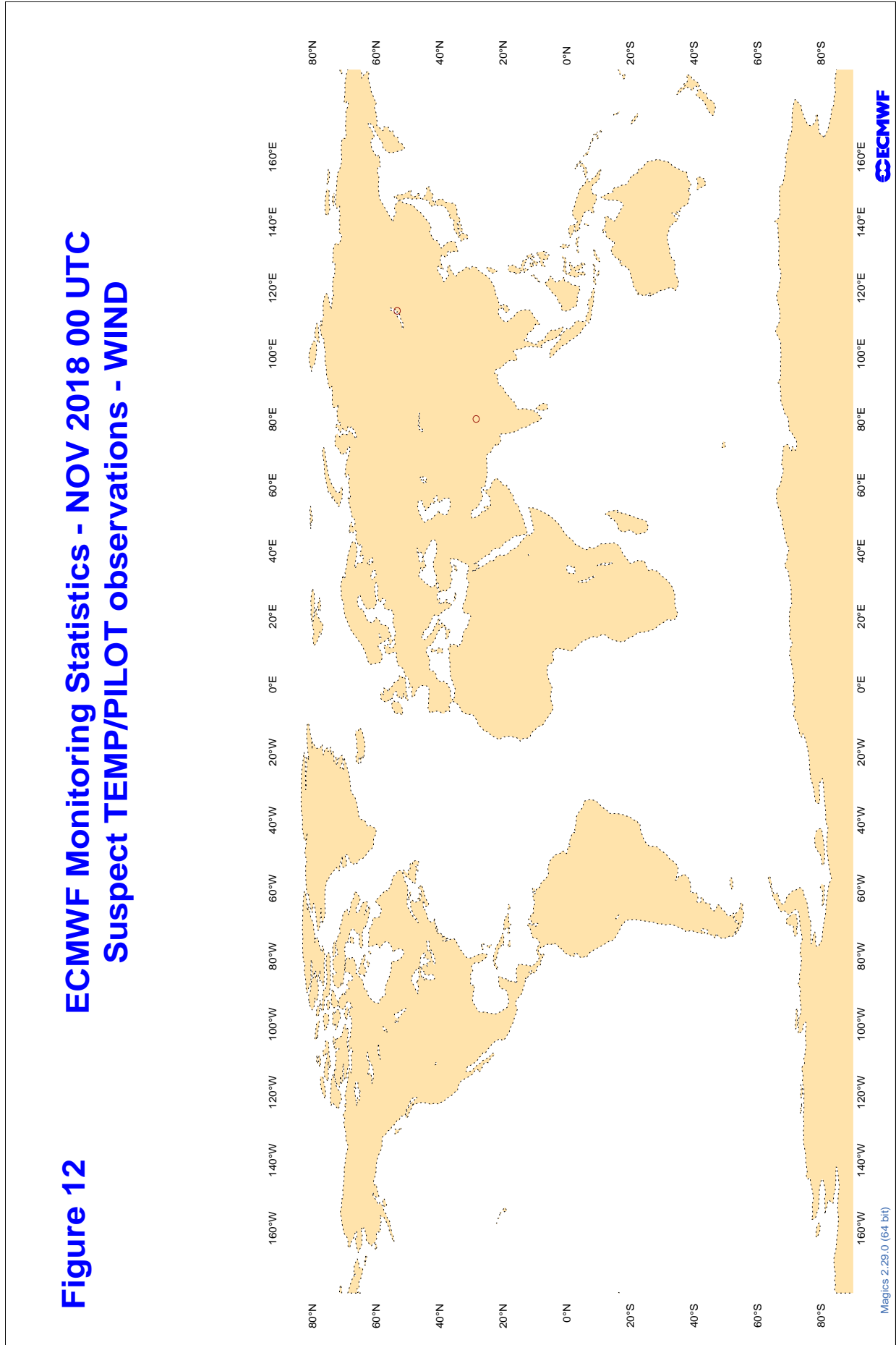
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



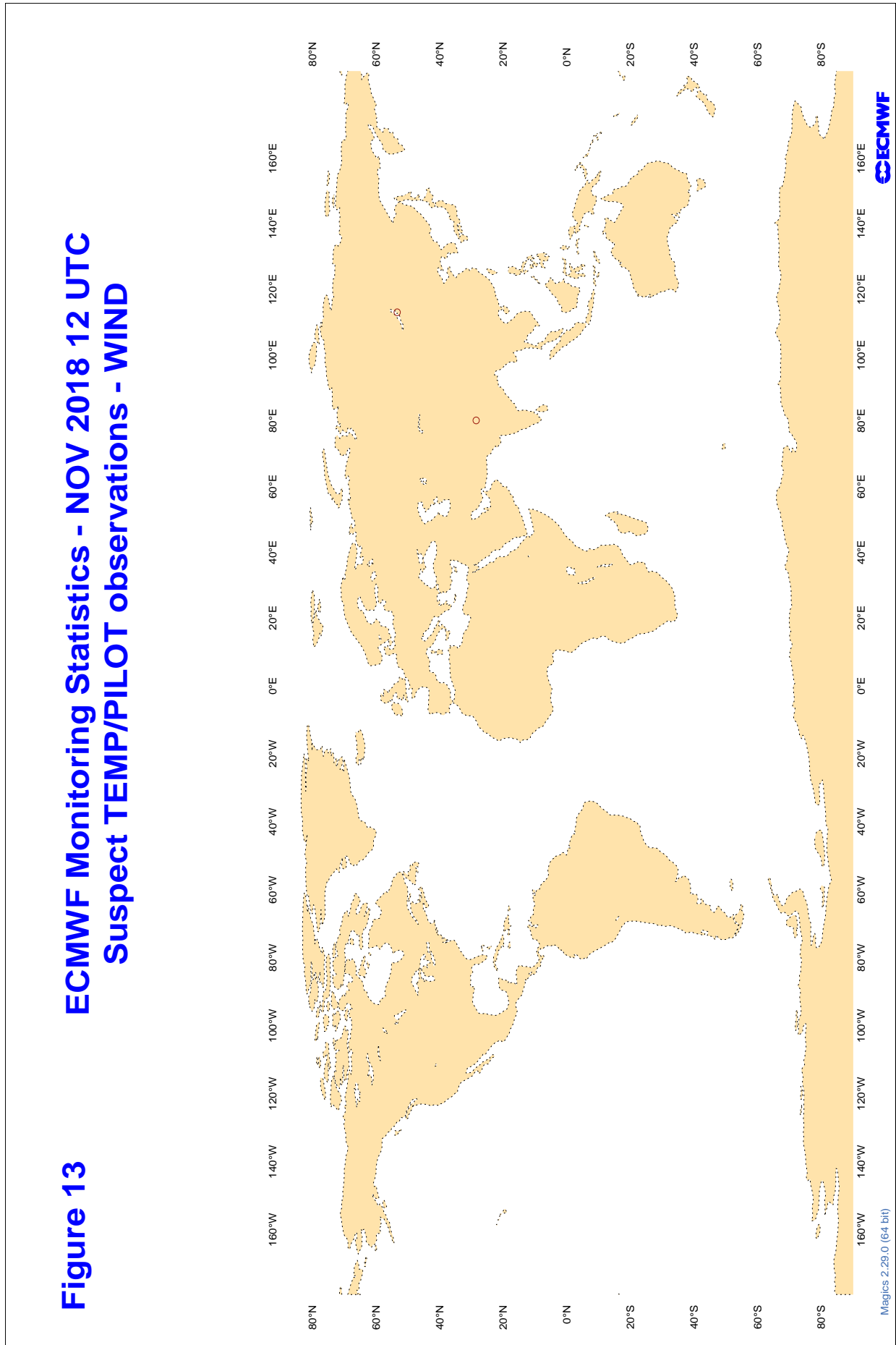
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	11	22.3	20.4
5QPW8X	00	Z	100	14	22.6	18.9
7HCPVT	12	Z	100	9	33.5	31.5
7HCPVT	00	Z	100	10	31.5	29.8
7JUNA4	00	Z	100	4	19.0	7.5
7JUNA4	12	Z	100	4	25.4	22.4
ASDE09	12	Z	100	2	37.1	24.3
DBLK	12	Z	100	8	12.2	10.3
FHM5UJ	00	Z	100	10	15.0	12.3
FHM5UJ	12	Z	100	8	12.7	9.8
FPUW5G	12	Z	100	25	11.0	6.3
HTXUH4	00	Z	100	9	7.1	2.7
HTXUH4	12	Z	100	4	2.9	0.9
JGQH	12	Z	100	1	17.5	17.5
JGQH	00	Z	100	0	0.0	0.0
JNSR	12	Z	100	2	0.0	0.0
JNSR	00	Z	100	7	0.0	0.0
QCY3TG	00	Z	100	8	29.5	28.9
QCY3TG	12	Z	100	12	25.0	23.5
XQFJRG	12	Z	100	7	28.4	11.9
XQFJRG	00	Z	100	3	7.0	-4.2
XWHDEA	00	Z	100	8	12.1	7.4
XWHDEA	12	Z	100	7	13.8	10.6
YLV96W	12	Z	100	5	16.7	12.0
YLV96W	00	Z	100	6	112.0	70.8
ZVQEQC	00	Z	100	1	14.8	14.8
ZVQEQC	12	Z	100	1	3.6	3.6

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

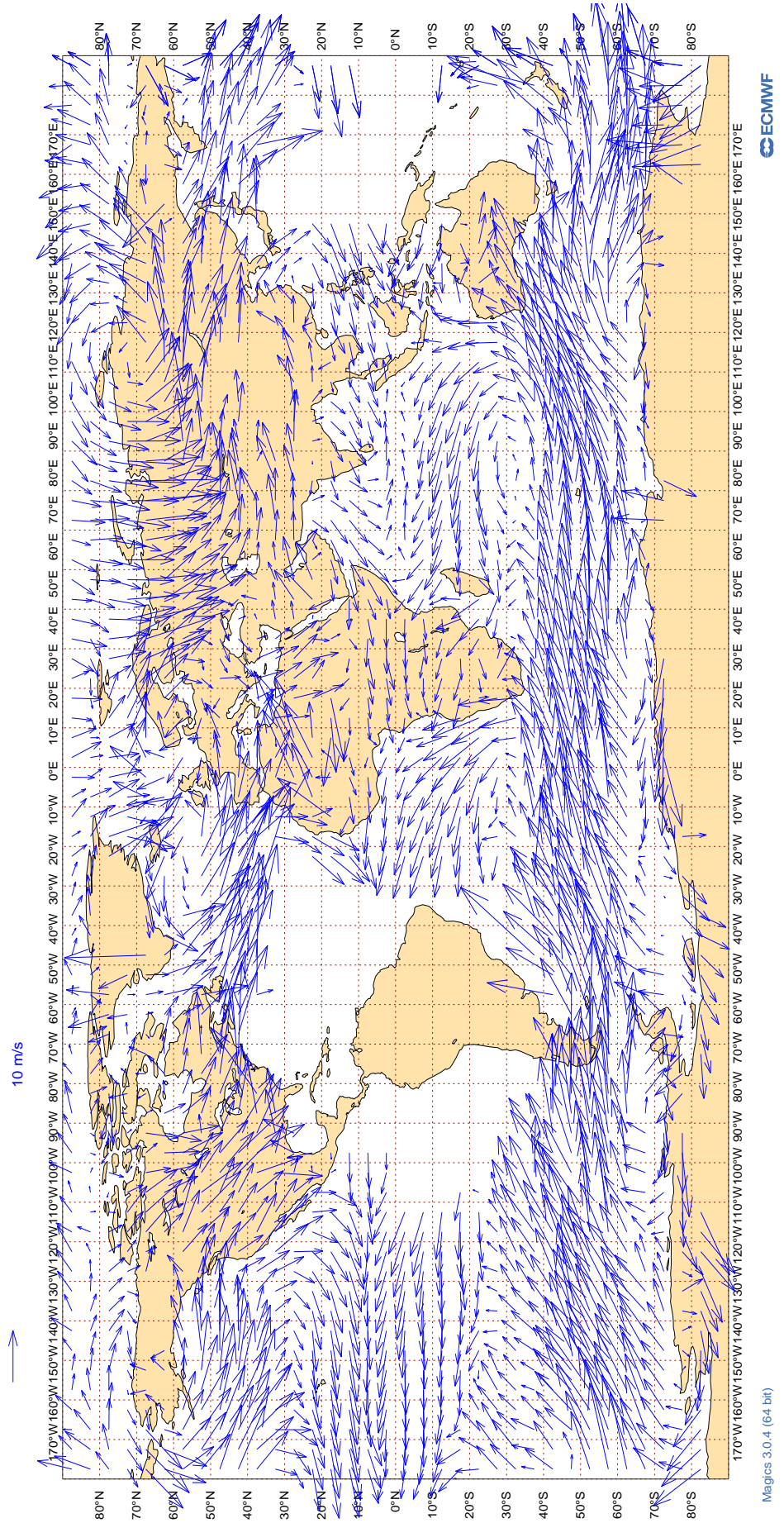
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	11	3.8	-0.9	1.2
5QPW8X	00	V	100	14	2.9	0.4	-0.6
7HCPVT	12	V	100	9	4.3	0.8	2.4
7HCPVT	00	V	100	10	4.0	0.1	0.0
7JUNA4	00	V	100	4	6.5	1.2	4.3
7JUNA4	12	V	100	4	4.9	0.6	1.6
ASDE09	12	V	100	2	2.8	0.3	-1.4
DBLK	12	V	100	8	5.1	2.2	-2.5
FHM5UJ	00	V	100	10	3.3	1.5	-0.2
FHM5UJ	12	V	100	8	2.2	1.0	0.1
FPUW5G	12	V	100	25	5.5	0.8	0.2
HTXUH4	00	V	100	9	3.2	1.0	0.0
HTXUH4	12	V	100	4	1.2	0.4	-0.4
JGQH	12	V	100	1	4.8	4.2	2.3
JGQH	00	V	100	0	0.0	0.0	0.0
JNSR	12	V	100	1	3.3	-1.1	-3.1
JNSR	00	V	100	4	2.3	0.7	-0.6
QCY3TG	00	V	100	8	2.2	0.0	0.0
QCY3TG	12	V	100	12	3.7	0.1	0.7
XQFJRG	12	V	100	7	3.6	-1.1	0.0
XQFJRG	00	V	100	3	3.1	0.6	-2.7
XWHDEA	00	V	100	8	2.9	0.4	0.3
XWHDEA	12	V	100	7	3.6	1.2	-1.5
YLV96W	12	V	100	5	2.6	1.3	-0.1
YLV96W	00	V	100	6	3.6	-0.3	-0.3
ZVQEQC	00	V	100	1	2.2	2.0	0.9
ZVQEQC	12	V	100	1	4.6	2.1	4.1

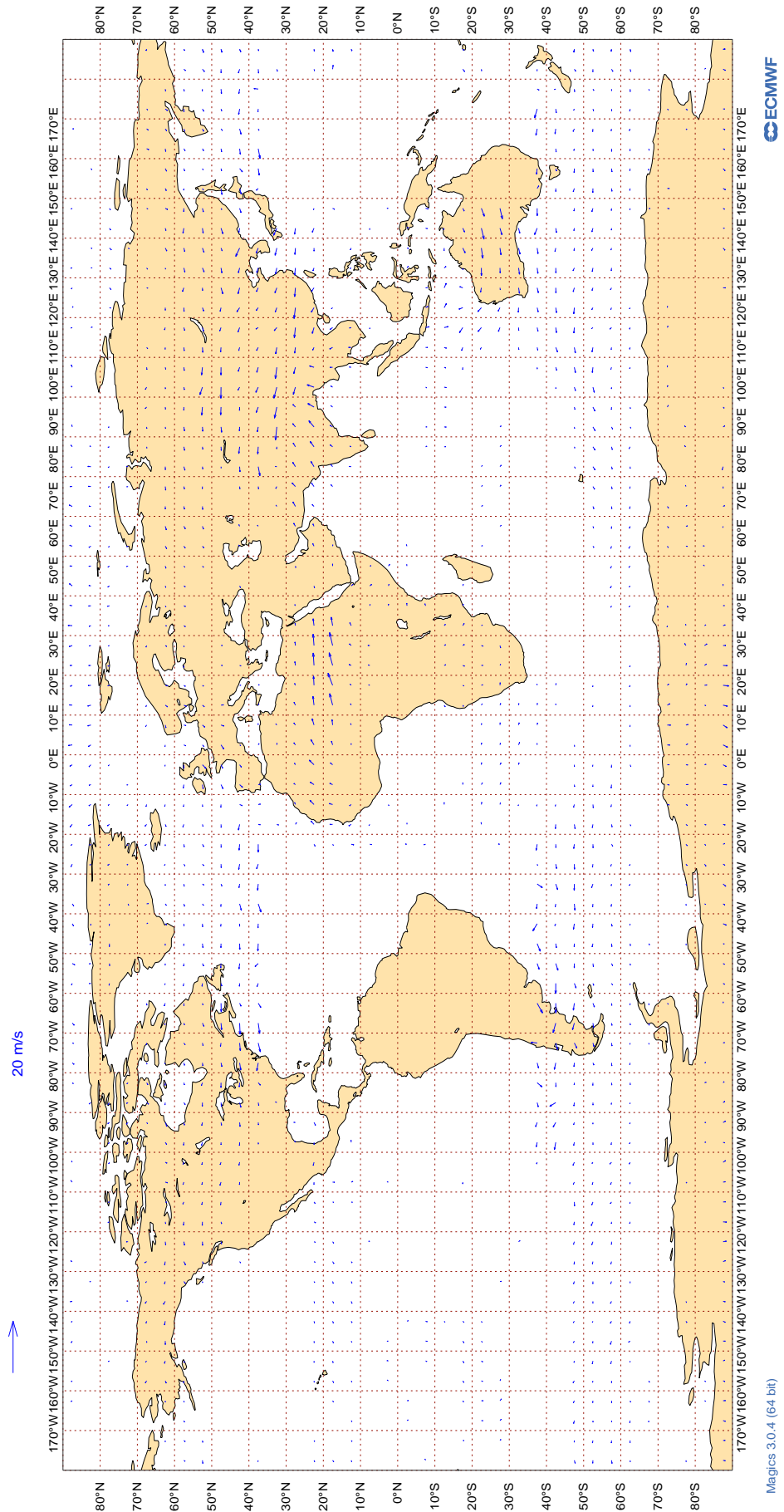
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Nov 2018
AMV Winds: 700-1000hPa
Mean Observed Wind



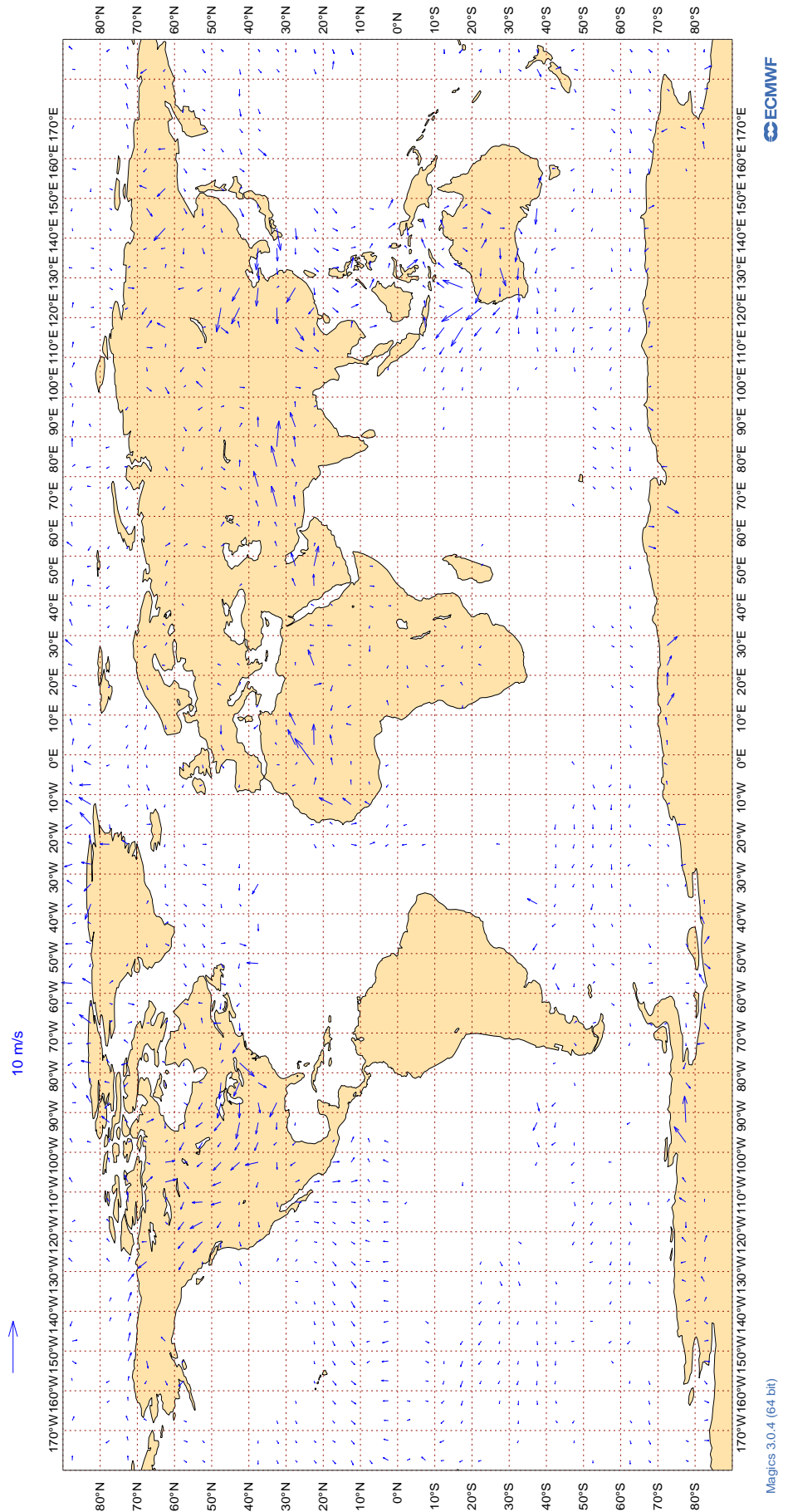
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Nov 2018
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



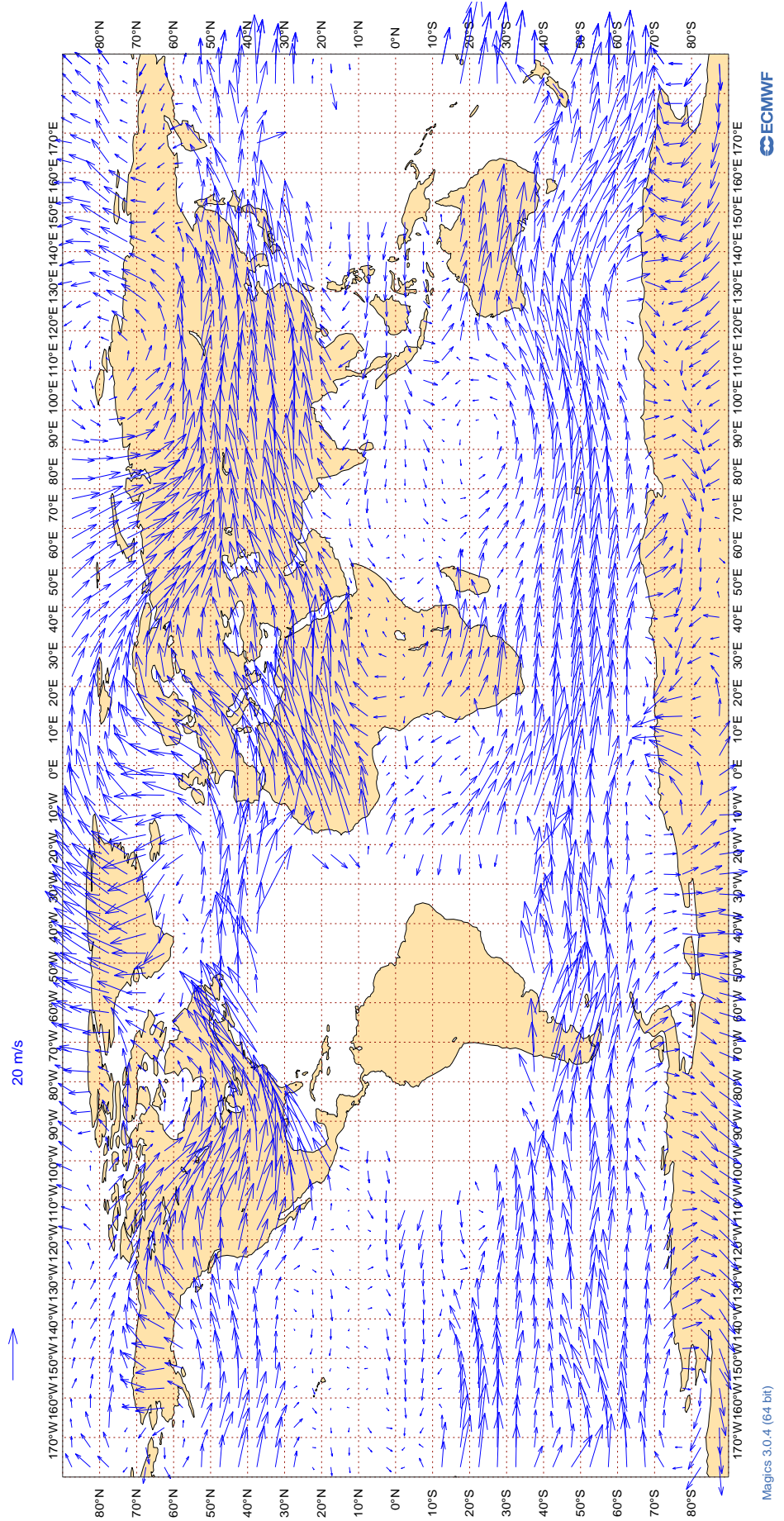
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Nov 2018
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



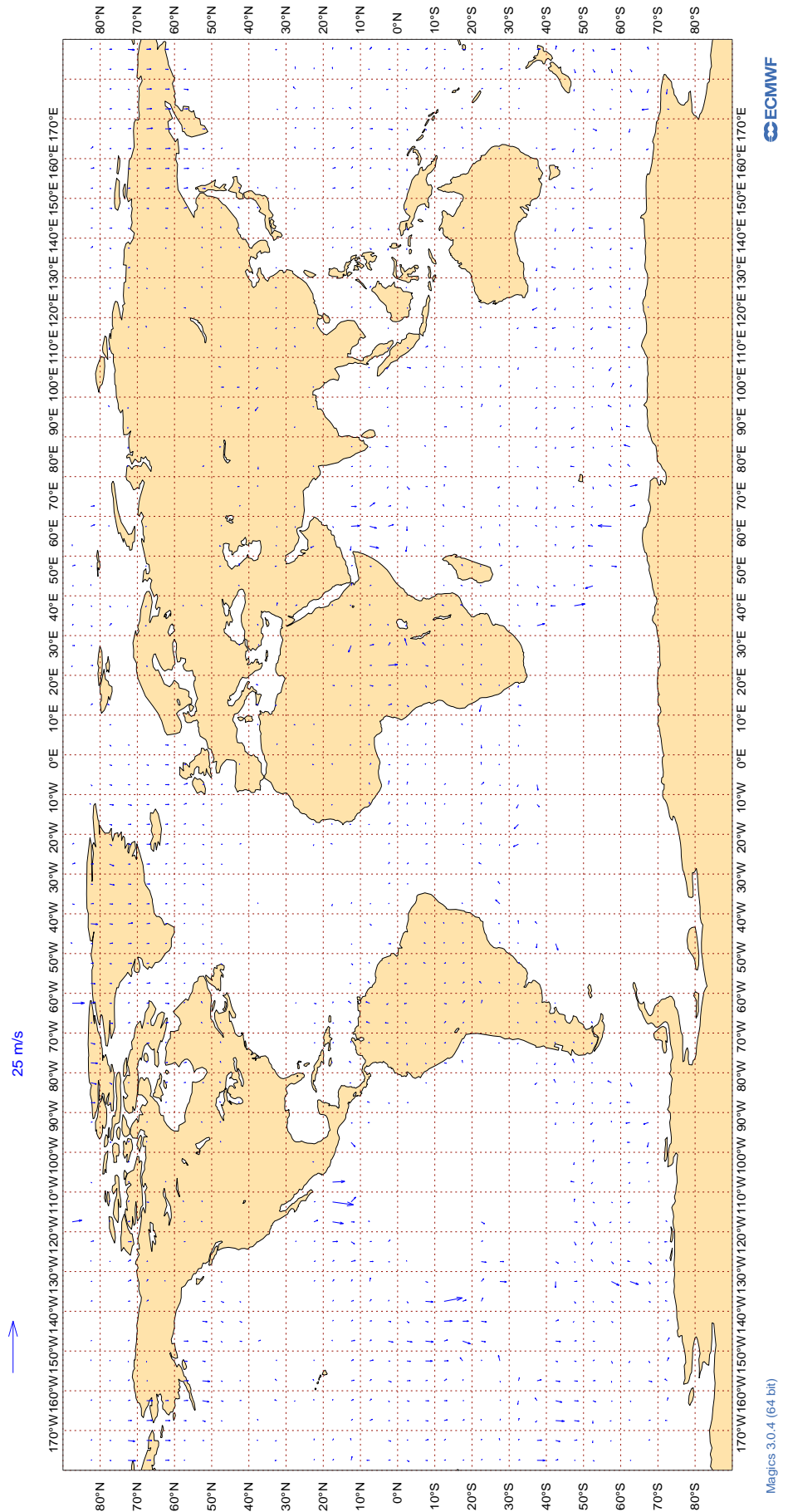
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Nov 2018
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Nov 2018
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 : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	104	0	0	3.8	-0.3
AAL	99	V	300-150	39730	3	0	6.4	0.2
AAR	99	V	300-150	305	0	0	3.8	-1.1
ABD	99	V	300-150	978	0	0	4.7	-0.7
ABP	99	V	300-150	24	0	0	4.9	-0.8
ABW	99	V	300-150	820	0	0	3.8	-0.6
ACA	99	V	300-150	25146	6	0	8.0	0.1
ACI	99	V	300-150	2343	0	0	4.1	0.4
AEA	99	V	300-150	962	4	2	6.0	-0.3
AFL	99	V	300-150	1965	0	0	3.3	0.4
AFR	99	V	300-150	24751	1	0	4.4	0.2
AHY	99	V	300-150	201	13	0	13.4	0.0
AIC	99	V	300-150	1941	2	0	7.0	0.4
AIZ	99	V	300-150	60	0	0	6.4	-0.4
ALK	99	V	300-150	862	0	0	3.4	0.6
AMX	99	V	300-150	3158	17	0	11.1	-0.1
ANZ	99	V	300-150	23151	3	0	5.9	0.7
AOJ	99	V	300-150	28	0	0	3.1	1.0
ASA	99	V	300-150	71	3	0	7.0	0.1
ASL	99	V	300-150	299	0	0	3.7	0.5
ASY	99	V	300-150	454	0	0	5.5	0.6
ATN	99	V	300-150	155	1	0	6.1	1.3
AUA	99	V	300-150	4273	0	0	4.3	-0.3
AUI	99	V	300-150	517	0	0	3.9	0.4
AVA	99	V	300-150	535	9	3	9.9	0.1
AXB	99	V	300-150	39	0	0	4.1	1.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AXM	99	V	300-150	172	0	0	4.6	1.2
AXY	99	V	300-150	26	0	0	3.2	-0.8
AZA	99	V	300-150	5952	0	0	4.0	0.4
AZG	99	V	300-150	189	0	0	3.5	0.1
BAW	99	V	300-150	51266	3	0	6.2	-0.1
BBC	99	V	300-150	220	1	0	4.1	1.3
BEL	99	V	300-150	1603	0	0	3.7	0.2
BLU	99	V	300-150	58	0	0	4.2	0.5
BMW	99	V	300-150	82	0	0	3.0	0.4
BOB	99	V	300-150	90	0	0	3.7	0.5
BOS	99	V	300-150	859	0	0	4.0	0.3
BOX	99	V	300-150	2161	0	0	4.0	-0.0
BOX	99	V	300-150	77	0	0	3.0	0.6
BPA	99	V	300-150	22	5	0	10.2	0.4
BVR	99	V	300-150	180	13	0	4.9	0.3
CAL	99	V	300-150	400	0	0	4.1	0.5
CAT	99	V	300-150	20	0	0	6.7	3.5
CAZ	99	V	300-150	121	0	0	3.6	-0.5
CCA	99	V	300-150	1307	10	0	7.7	0.6
CEB	99	V	300-150	72	0	0	2.7	0.5
CES	99	V	300-150	1726	0	0	3.6	0.5
CFC	99	V	300-150	437	0	0	4.3	-0.1
CFG	99	V	300-150	4285	0	0	4.1	0.1
CHH	99	V	300-150	260	6	1	6.6	0.5
CJT	99	V	300-150	375	0	0	4.7	-0.6
CKS	99	V	300-150	1676	0	0	4.2	-0.4
CLU	99	V	300-150	987	0	0	3.9	-0.4
CLX	99	V	300-150	3804	0	0	4.4	-0.6
CMB	99	V	300-150	885	0	0	4.3	0.2
CNV	99	V	300-150	95	0	0	3.1	0.3
CPA	99	V	300-150	797	0	0	3.8	0.1
CRK	99	V	300-150	662	0	0	4.1	0.4
CRL	99	V	300-150	497	0	1	4.3	0.4
CSC	99	V	300-150	191	0	0	4.1	0.3
CSN	99	V	300-150	1119	13	0	8.6	0.5
CTM	99	V	300-150	31	0	6	6.0	2.6
CWG	99	V	300-150	23	0	0	7.3	-0.6
DAH	99	V	300-150	452	0	0	3.9	0.3
DAL	99	V	300-150	47834	0	0	3.8	-0.0
DCS	99	V	300-150	69	0	0	3.3	0.7
DGX	99	V	300-150	195	0	0	3.8	0.1
DHK	99	V	300-150	1639	0	0	4.8	-1.0
DJT	99	V	300-150	1751	0	0	4.5	-0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DLH	99	V	300-150	29702	0	0	3.8	-0.0
DSO	99	V	300-150	21	0	0	3.7	1.3
EAU	99	V	300-150	23	0	0	2.6	0.1
EDC	99	V	300-150	72	0	0	5.0	0.5
EDG	99	V	300-150	88	10	0	9.5	0.0
EDW	99	V	300-150	1613	0	0	3.9	0.3
EIN	99	V	300-150	15547	0	0	4.0	0.0
EJM	99	V	300-150	622	2	0	6.5	0.2
ELY	99	V	300-150	3162	11	0	7.9	-0.1
ETD	99	V	300-150	5922	3	0	5.7	0.3
ETH	99	V	300-150	3752	9	0	9.7	0.1
EVE	99	V	300-150	43	0	0	4.1	-0.6
EWG	99	V	300-150	4166	0	0	4.0	0.4
FBU	99	V	300-150	586	0	0	4.4	0.1
FDX	99	V	300-150	6403	0	0	3.9	0.2
FIN	99	V	300-150	995	0	1	3.3	0.2
FJI	99	V	300-150	5508	0	0	4.3	0.5
FPG	99	V	300-150	29	0	0	3.2	-0.3
FWI	99	V	300-150	1444	0	1	3.8	0.5
FYG	99	V	300-150	39	0	0	3.7	1.1
GAF	99	V	300-150	71	0	0	3.8	0.4
GAJ	99	V	300-150	24	0	0	2.8	-0.5
GCK	99	V	300-150	26	0	0	4.3	0.8
GCR	99	V	300-150	136	0	0	3.6	0.6
GCT	99	V	300-150	39	0	0	3.3	0.5
GEC	99	V	300-150	2849	0	0	3.9	0.0
GES	99	V	300-150	107	5	0	12.0	0.3
GFA	99	V	300-150	595	0	0	2.9	0.4
GHO	99	V	300-150	32	0	0	6.0	2.2
GIA	99	V	300-150	428	0	0	3.5	0.6
GLJ	99	V	300-150	25	0	0	3.8	1.9
GLO	99	V	300-150	33	6	0	12.7	2.3
GMA	99	V	300-150	52	0	0	3.4	0.3
GTH	99	V	300-150	119	0	0	4.5	-0.2
GTI	99	V	300-150	2552	0	0	4.4	-0.3
HAL	99	V	300-150	4263	0	0	4.4	0.7
HRT	99	V	300-150	61	16	0	12.9	1.6
HUG	99	V	300-150	26	0	0	2.6	-0.3
HWA	99	V	300-150	85	0	0	3.5	-0.3
IAM	99	V	300-150	37	0	0	8.3	-1.7
IBE	99	V	300-150	2682	0	2	4.0	0.2
IBK	99	V	300-150	4692	0	0	4.1	0.3
ICE	99	V	300-150	1268	0	1	3.6	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ICL	99	V	300-150	1165	0	0	5.0	-0.9
ICV	99	V	300-150	370	0	0	4.1	-0.3
IFA	99	V	300-150	57	30	2	22.6	0.2
IJM	99	V	300-150	58	0	0	3.7	0.6
ISS	99	V	300-150	1201	0	0	4.0	0.3
IXR	99	V	300-150	64	0	0	3.4	0.9
JAF	99	V	300-150	1151	11	0	10.2	0.2
JAI	99	V	300-150	1342	0	0	3.6	0.0
JAS	99	V	300-150	131	0	0	3.8	-0.2
JET	99	V	300-150	45	0	0	3.3	-1.7
JJA	99	V	300-150	36	0	3	4.0	0.1
JME	99	V	300-150	194	0	0	4.2	0.1
JST	99	V	300-150	1525	2	0	8.3	0.5
KAC	99	V	300-150	1429	0	0	3.7	0.4
KAI	99	V	300-150	85	0	0	5.5	0.1
KAL	99	V	300-150	1702	0	0	4.0	0.6
KAY	99	V	300-150	116	0	0	3.9	1.0
KFE	99	V	300-150	23	0	0	3.6	-0.0
KIW	99	V	300-150	65	0	0	4.6	0.5
KLM	99	V	300-150	17071	5	0	6.5	-0.1
KQA	99	V	300-150	234	6	0	11.9	-0.1
KTK	99	V	300-150	73	0	1	3.5	-0.0
KUG	99	V	300-150	25	0	0	3.1	0.7
LAN	99	V	300-150	2320	10	0	8.3	0.3
LEA	99	V	300-150	114	0	2	4.2	-0.1
LGT	99	V	300-150	35	0	0	5.3	-1.2
LNI	99	V	300-150	209	0	0	3.2	0.4
LOT	99	V	300-150	2883	14	0	10.8	-0.3
LUC	99	V	300-150	172	0	0	3.9	0.2
LXJ	99	V	300-150	48	0	0	3.1	0.3
MAS	99	V	300-150	790	0	0	3.4	0.6
MAU	99	V	300-150	216	0	0	4.7	1.8
MDT	99	V	300-150	21	0	0	2.1	0.2
MED	99	V	300-150	109	0	0	4.1	0.7
MJF	99	V	300-150	25	0	0	3.5	0.2
MLM	99	V	300-150	28	0	0	4.4	-0.7
MMD	99	V	300-150	381	0	0	4.0	-0.1
MNB	99	V	300-150	96	0	0	4.0	-0.3
MPH	99	V	300-150	693	0	0	4.2	-0.4
MSR	99	V	300-150	1449	0	0	3.7	0.1
NAF	99	V	300-150	23	0	0	4.3	-1.7
NAX	99	V	300-150	11083	15	0	11.2	-0.1
NJE	99	V	300-150	374	0	0	4.0	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
NOS	99	V	300-150	383	7	0	7.4	0.2
NRS	99	V	300-150	8194	13	0	9.9	-0.0
NSH	99	V	300-150	40	0	0	3.8	1.1
NWS	99	V	300-150	781	0	0	3.8	0.4
OAE	99	V	300-150	1400	0	0	4.2	-0.0
OMA	99	V	300-150	793	3	0	6.0	0.5
OSY	99	V	300-150	32	0	0	4.8	-0.5
PAC	99	V	300-150	184	0	1	4.5	0.3
PAL	99	V	300-150	985	0	0	3.4	0.3
PAT	99	V	300-150	40	0	0	3.1	-0.5
PIA	99	V	300-150	162	0	0	3.0	-0.2
PLF	99	V	300-150	35	0	0	3.4	1.2
PLM	99	V	300-150	29	0	0	4.2	-0.9
PRD	99	V	300-150	36	0	11	3.5	0.6
QAF	99	V	300-150	127	0	0	3.9	0.5
QFA	99	V	300-150	18614	0	0	5.1	0.6
QQE	99	V	300-150	49	0	2	6.5	1.3
QTR	99	V	300-150	15804	0	0	4.5	0.2
RAM	99	V	300-150	514	11	0	6.9	0.9
RBA	99	V	300-150	72	6	0	8.0	0.3
RCH	99	V	300-150	3820	0	0	4.2	0.2
RDN	99	V	300-150	58	0	0	5.8	-1.6
REN	99	V	300-150	39	0	0	5.0	-0.7
RJA	99	V	300-150	1208	14	0	12.4	-0.2
ROJ	99	V	300-150	58	0	0	4.2	0.6
ROU	99	V	300-150	1114	0	0	4.4	0.0
RRR	99	V	300-150	83	0	0	3.3	-0.4
RZO	99	V	300-150	153	0	4	3.8	-0.1
SAM	99	V	300-150	147	0	1	3.2	0.3
SAS	99	V	300-150	4253	0	0	3.4	0.2
SCX	99	V	300-150	81	0	0	5.8	1.2
SDM	99	V	300-150	145	0	0	3.7	0.6
SHE	99	V	300-150	96	0	0	3.5	0.5
SIA	99	V	300-150	4394	0	0	4.1	-0.0
SIO	99	V	300-150	72	0	0	3.2	-0.0
SJT	99	V	300-150	38	0	0	3.5	-0.1
SLM	99	V	300-150	82	0	0	3.9	0.9
SOO	99	V	300-150	762	0	0	3.9	-0.2
SPA	99	V	300-150	173	0	0	3.9	0.1
SUI	99	V	300-150	40	0	0	5.8	-2.2
SVA	99	V	300-150	4396	1	0	4.7	0.3
SVW	99	V	300-150	219	0	0	3.8	0.1
SWR	99	V	300-150	10263	0	1	4.0	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SXN	99	V	300-150	47	0	0	3.9	0.1
TAM	99	V	300-150	28	0	11	10.5	1.9
TAP	99	V	300-150	1153	0	2	4.6	-0.2
TAR	99	V	300-150	219	0	0	3.5	0.2
TAY	99	V	300-150	468	0	0	4.4	0.0
TBJ	99	V	300-150	22	0	0	3.2	0.2
TCX	99	V	300-150	3366	0	0	3.7	0.3
TFF	99	V	300-150	40	0	0	4.9	1.3
TFL	99	V	300-150	1712	11	0	9.7	-0.1
TGW	99	V	300-150	79	4	0	5.2	0.8
THA	99	V	300-150	442	10	0	7.4	0.6
THT	99	V	300-150	3105	2	0	5.7	0.7
THY	99	V	300-150	8156	0	0	4.0	0.1
TMN	99	V	300-150	264	0	0	4.6	1.0
TOM	99	V	300-150	4808	14	0	10.1	0.2
TOW	99	V	300-150	71	0	0	3.8	1.3
TPA	99	V	300-150	148	0	0	4.5	1.3
TRE	99	V	300-150	26	0	0	5.2	1.8
TRK	99	V	300-150	37	0	0	3.1	-0.7
TSC	99	V	300-150	3426	0	0	4.0	-0.0
TVP	99	V	300-150	169	0	0	4.3	0.2
TWB	99	V	300-150	23	0	13	5.7	0.7
TWY	99	V	300-150	372	5	0	3.9	0.1
UAE	99	V	300-150	16865	0	0	3.7	0.3
UAL	99	V	300-150	69334	1	2	5.8	0.0
ULC	99	V	300-150	39	0	0	4.2	0.7
UPS	99	V	300-150	5688	0	0	4.4	0.0
UZB	99	V	300-150	106	14	0	11.5	-0.1
VAJ	99	V	300-150	26	0	0	5.4	0.9
VCN	99	V	300-150	36	0	0	4.2	1.0
VIR	99	V	300-150	20759	4	0	6.4	-0.1
VJT	99	V	300-150	742	26	0	13.6	0.5
VKG	99	V	300-150	402	0	0	3.3	0.1
VMP	99	V	300-150	51	0	0	3.5	-0.5
VOZ	99	V	300-150	5967	0	0	4.1	0.5
VXS	99	V	300-150	23	0	0	3.6	0.1
WGT	99	V	300-150	99	0	0	3.7	-0.7
WJA	99	V	300-150	3095	1	0	5.8	-0.0
WOW	99	V	300-150	3973	0	0	3.3	0.3
WWI	99	V	300-150	26	0	0	3.1	-0.0
XAX	99	V	300-150	514	0	0	3.8	0.4
XLF	99	V	300-150	1040	0	0	3.7	0.1

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 : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	29	16.2	13.6
01001	12	Z	50	29	19.2	10.6
01028	00	Z	50	30	15.8	14.3
01028	12	Z	50	30	13.6	11.7
01400	12	Z	50	21	85.9	85.7
01400	00	Z	50	19	87.5	87.0
01415	00	Z	50	30	20.7	19.1
01415	12	Z	50	30	17.5	16.6
02365	00	Z	50	26	15.8	15.0
02365	12	Z	50	24	15.0	13.5
02591	12	Z	50	24	21.4	20.6
02591	00	Z	50	29	23.6	22.6
02836	12	Z	50	28	16.5	12.5
02836	00	Z	50	29	17.5	15.2
02963	00	Z	50	24	17.5	15.2
02963	12	Z	50	25	16.5	15.8
03005	00	Z	50	28	14.5	13.4
03005	12	Z	50	29	16.0	14.3
03238	12	Z	50	5	17.4	15.9
03238	00	Z	50	29	17.3	15.0
03808	12	Z	50	25	15.5	13.5
03808	00	Z	50	25	19.6	18.3
03918	12	Z	50	7	23.8	19.6
03918	00	Z	50	28	23.5	22.1
03953	00	Z	50	30	34.1	31.7
03953	12	Z	50	31	32.0	29.0
04018	12	Z	50	29	11.1	8.9
04018	00	Z	50	28	15.8	12.2
04220	00	Z	50	28	15.1	14.2
04220	12	Z	50	30	14.1	12.6
04270	12	Z	50	27	13.4	10.6
04270	00	Z	50	28	20.3	12.7
04320	00	Z	50	26	16.1	12.3
04320	12	Z	50	28	13.2	8.6
04339	12	Z	50	29	14.1	11.5
04339	00	Z	50	28	16.0	13.6
04360	12	Z	50	28	54.8	52.4
04360	00	Z	50	27	54.8	51.0
06011	12	Z	50	30	12.7	7.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	28	17.8	16.0
06260	12	Z	50	5	23.7	23.6
06260	00	Z	50	30	21.0	19.1
06610	12	Z	50	30	18.4	17.1
06610	00	Z	50	30	18.7	17.3
07110	00	Z	50	26	16.3	13.9
07110	12	Z	50	28	25.6	21.9
07510	00	Z	50	25	30.7	29.0
07510	12	Z	50	28	37.8	36.7
07645	00	Z	50	26	66.2	30.8
07645	12	Z	50	28	20.4	18.2
07761	12	Z	50	27	27.9	26.3
07761	00	Z	50	27	26.5	24.2
08001	00	Z	50	27	26.2	23.4
08001	12	Z	50	28	37.1	34.1
08221	12	Z	50	29	26.3	25.4
08221	00	Z	50	27	22.7	21.6
08302	00	Z	50	29	20.8	18.3
08302	12	Z	50	29	16.7	14.8
08508	12	Z	50	24	14.3	11.4
08522	00	Z	50	0	0.0	0.0
08522	12	Z	50	28	24.4	23.0
08579	12	Z	50	28	38.5	34.3
10035	12	Z	50	30	16.7	15.6
10393	00	Z	50	30	18.5	17.1
10393	12	Z	50	30	15.1	13.7
10410	00	Z	50	29	15.5	13.5
10410	12	Z	50	29	11.8	11.0
10739	12	Z	50	30	18.8	17.8
10739	00	Z	50	30	20.5	19.5
11035	00	Z	50	30	22.9	22.1
11035	12	Z	50	29	33.6	29.6
12982	12	Z	50	21	42.8	42.1
12982	00	Z	50	20	21.2	19.0
16080	00	Z	50	29	16.5	11.7
16080	12	Z	50	29	19.8	17.9
16245	00	Z	50	29	24.4	18.4
16245	12	Z	50	27	17.5	15.4
16320	12	Z	50	26	22.6	20.4
16320	00	Z	50	26	23.0	20.7
16429	00	Z	50	30	26.6	23.9
16429	12	Z	50	30	28.1	26.0
16622	00	Z	50	23	33.6	31.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	26	28.8	27.1
17607	12	Z	50	26	19.2	16.6
26435	12	Z	50	14	32.5	5.1
5QPW8X	12	Z	50	9	32.7	30.8
5QPW8X	00	Z	50	10	36.1	34.0
60018	00	Z	50	28	24.8	23.8
60018	12	Z	50	30	16.9	15.5
7HCPVT	12	Z	50	9	47.6	46.1
7HCPVT	00	Z	50	10	47.5	46.5
7JUNA4	00	Z	50	2	30.5	29.7
7JUNA4	12	Z	50	4	50.6	50.0
ASDE09	12	Z	50	1	5.5	5.5
DBLK	12	Z	50	8	18.8	17.4
FHM5UJ	00	Z	50	8	26.0	24.0
FHM5UJ	12	Z	50	5	22.3	17.3
FPUW5G	12	Z	50	25	15.0	12.2
HTXUH4	00	Z	50	7	16.3	15.4
HTXUH4	12	Z	50	4	10.6	10.4
QCY3TG	00	Z	50	7	50.5	49.8
QCY3TG	12	Z	50	11	37.8	35.4
XQFJRG	12	Z	50	7	46.5	32.6
XQFJRG	00	Z	50	3	15.8	10.3
XWHDEA	00	Z	50	6	25.4	20.1
XWHDEA	12	Z	50	7	31.3	28.5
YLV96W	12	Z	50	4	38.2	36.6
YLV96W	00	Z	50	4	221.8	160.2
ZVQEQC	00	Z	50	1	30.1	30.1
ZVQEQC	12	Z	50	1	10.1	10.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	29	3.6	0.1	-0.5
01001	12	V	50	28	4.3	0.1	-1.2
01028	00	V	50	30	4.3	-0.7	-0.2
01028	12	V	50	30	3.6	0.4	-0.7
01400	12	V	50	21	3.7	-0.6	0.4
01400	00	V	50	19	3.8	0.5	-1.2
01415	00	V	50	30	3.2	0.2	-0.6
01415	12	V	50	30	3.5	0.4	-0.7
02365	00	V	50	22	2.7	0.2	-0.4
02365	12	V	50	24	3.8	0.5	-0.2
02591	12	V	50	24	3.1	-0.6	-0.9
02591	00	V	50	28	2.8	-0.2	-0.1
02836	12	V	50	28	4.3	0.6	0.2
02836	00	V	50	27	3.7	0.0	-0.5
02963	00	V	50	19	3.0	-0.3	-0.1
02963	12	V	50	24	3.4	-0.7	0.2
03005	00	V	50	28	3.2	0.6	0.1
03005	12	V	50	29	3.6	0.1	0.0
03238	12	V	50	5	2.3	-0.1	-0.1
03238	00	V	50	27	3.5	0.2	-0.4
03808	12	V	50	25	3.2	0.9	-0.2
03808	00	V	50	22	3.4	-0.3	-0.5
03918	12	V	50	7	3.1	-1.3	-1.0
03918	00	V	50	27	3.8	0.5	0.2
03953	00	V	50	30	3.8	1.1	-0.7
03953	12	V	50	30	3.0	0.0	-0.2
04018	12	V	50	29	4.0	-0.2	0.4
04018	00	V	50	28	3.4	-0.7	1.2
04220	00	V	50	23	3.7	0.4	-0.5
04220	12	V	50	28	3.0	0.6	-0.1
04270	12	V	50	27	3.7	0.0	0.0
04270	00	V	50	27	3.4	0.4	0.0
04320	00	V	50	25	4.8	0.3	-0.1
04320	12	V	50	28	4.2	1.0	0.0
04339	12	V	50	29	4.0	0.5	-0.5
04339	00	V	50	27	3.9	0.2	-0.7
04360	12	V	50	28	3.0	0.0	0.1
04360	00	V	50	26	3.2	0.7	0.8
06011	12	V	50	30	2.8	0.0	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	28	3.6	1.3	0.4
06260	12	V	50	5	3.1	0.0	1.8
06260	00	V	50	29	3.4	0.5	0.4
06610	12	V	50	30	3.9	1.4	-1.0
06610	00	V	50	29	3.5	-0.7	0.0
07110	00	V	50	26	3.0	0.5	-0.3
07110	12	V	50	28	3.1	0.7	-0.2
07510	00	V	50	24	3.4	0.0	-0.5
07510	12	V	50	28	2.9	0.1	-0.3
07645	00	V	50	23	3.5	-0.5	0.4
07645	12	V	50	28	3.7	1.3	-0.4
07761	12	V	50	27	2.9	0.7	-0.5
07761	00	V	50	27	3.4	0.1	0.3
08001	00	V	50	25	3.2	0.5	0.4
08001	12	V	50	24	3.5	-0.4	-0.1
08221	12	V	50	29	3.7	0.3	-0.1
08221	00	V	50	26	3.6	1.6	0.1
08302	00	V	50	28	3.7	0.7	0.6
08302	12	V	50	29	3.7	0.4	-0.8
08508	12	V	50	24	3.3	0.3	0.9
08522	00	V	50	0	0.0	0.0	0.0
08522	12	V	50	28	3.5	0.3	-0.3
08579	12	V	50	26	3.5	0.5	0.1
10035	12	V	50	30	3.4	0.3	0.5
10393	00	V	50	29	3.0	0.5	0.2
10393	12	V	50	30	3.2	0.0	-0.2
10410	00	V	50	28	3.1	0.2	0.8
10410	12	V	50	29	3.0	0.0	0.1
10739	12	V	50	30	3.1	-0.7	-0.4
10739	00	V	50	28	2.8	0.0	0.5
11035	00	V	50	29	2.9	-0.1	0.2
11035	12	V	50	29	3.2	0.6	0.1
12982	12	V	50	21	3.2	0.8	0.4
12982	00	V	50	20	3.1	0.4	0.6
16080	00	V	50	29	3.5	-0.6	-0.2
16080	12	V	50	29	3.0	0.2	-0.4
16245	00	V	50	27	4.0	0.3	0.3
16245	12	V	50	27	3.6	0.6	-0.2
16320	12	V	50	25	3.5	0.7	-0.7
16320	00	V	50	24	3.8	0.5	-0.6
16429	00	V	50	27	3.6	0.2	-0.3
16429	12	V	50	30	3.8	0.0	0.3
16622	00	V	50	19	3.3	0.5	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	18	3.0	0.0	-0.4
17607	12	V	50	5	3.8	1.4	1.7
26435	12	V	50	14	3.7	0.1	0.1
5QPW8X	12	V	50	8	5.2	-0.4	0.4
5QPW8X	00	V	50	6	3.1	-0.2	0.4
60018	00	V	50	27	3.7	0.6	-0.6
60018	12	V	50	30	3.7	-0.1	1.3
7HCPVT	12	V	50	9	3.0	0.5	-1.4
7HCPVT	00	V	50	10	3.4	0.1	1.0
7JUNA4	00	V	50	2	10.8	-8.0	-1.9
7JUNA4	12	V	50	4	5.1	3.0	0.1
ASDE09	12	V	50	0	0.0	0.0	0.0
DBLK	12	V	50	7	6.0	-3.2	4.1
FHM5UJ	00	V	50	8	2.0	0.7	-0.4
FHM5UJ	12	V	50	5	4.2	0.8	1.8
FPUW5G	12	V	50	25	4.3	0.5	0.3
HTXUH4	00	V	50	7	3.0	-0.4	1.2
HTXUH4	12	V	50	4	3.7	0.4	-1.2
QCY3TG	00	V	50	7	3.3	0.8	-0.5
QCY3TG	12	V	50	11	4.1	-0.8	-0.7
XQFJRG	12	V	50	6	3.4	-1.7	-0.1
XQFJRG	00	V	50	3	2.5	0.7	0.1
XWHDEA	00	V	50	6	2.6	0.2	1.3
XWHDEA	12	V	50	7	3.3	0.5	-0.2
YLV96W	12	V	50	4	2.2	0.4	-0.3
YLV96W	00	V	50	4	3.1	-0.3	1.6
ZVQEQC	00	V	50	1	1.2	-1.1	0.5
ZVQEQC	12	V	50	1	3.6	-2.3	-2.8

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	29	8.6	1.7
01001	12	Z	100	29	15.7	-1.4
01028	00	Z	100	30	8.5	1.8
01028	12	Z	100	30	4.9	0.0
01400	12	Z	100	22	76.1	75.8
01400	00	Z	100	22	73.2	72.9
01415	00	Z	100	30	7.9	4.5
01415	12	Z	100	30	6.9	4.9
02365	00	Z	100	29	6.0	2.7
02365	12	Z	100	27	5.4	2.0
02591	12	Z	100	29	10.7	9.3
02591	00	Z	100	30	10.9	9.9
02836	12	Z	100	30	7.0	1.0
02836	00	Z	100	30	7.7	1.8
02963	00	Z	100	29	7.7	3.6
02963	12	Z	100	26	5.0	2.9
03005	00	Z	100	30	4.2	1.0
03005	12	Z	100	30	6.4	1.2
03238	12	Z	100	5	8.6	6.5
03238	00	Z	100	30	6.8	2.1
03808	12	Z	100	29	7.0	1.8
03808	00	Z	100	30	9.3	6.7
03918	12	Z	100	7	10.8	6.1
03918	00	Z	100	30	11.1	8.2
03953	00	Z	100	30	18.3	14.7
03953	12	Z	100	31	16.8	13.2
04018	12	Z	100	30	7.1	-2.7
04018	00	Z	100	28	7.1	1.1
04220	00	Z	100	30	6.5	4.4
04220	12	Z	100	30	5.2	3.7
04270	12	Z	100	28	8.9	-0.2
04270	00	Z	100	29	15.4	1.9
04320	00	Z	100	27	8.9	1.6
04320	12	Z	100	30	9.9	-0.6
04339	12	Z	100	29	8.0	0.1
04339	00	Z	100	28	5.1	2.7
04360	12	Z	100	28	41.7	38.2
04360	00	Z	100	28	43.8	39.5
06011	12	Z	100	32	7.0	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	30	6.8	3.4
06260	12	Z	100	5	10.7	10.6
06260	00	Z	100	30	8.8	5.1
06610	12	Z	100	30	7.9	5.0
06610	00	Z	100	30	6.7	4.2
07110	00	Z	100	26	6.5	0.8
07110	12	Z	100	28	11.7	5.6
07510	00	Z	100	26	13.6	11.7
07510	12	Z	100	29	18.9	17.0
07645	00	Z	100	28	75.1	9.2
07645	12	Z	100	28	9.1	5.6
07761	12	Z	100	27	14.5	12.9
07761	00	Z	100	27	13.1	9.5
08001	00	Z	100	29	14.1	10.2
08001	12	Z	100	30	18.9	15.4
08221	12	Z	100	29	13.1	11.7
08221	00	Z	100	29	10.2	8.7
08302	00	Z	100	30	8.6	4.7
08302	12	Z	100	30	7.2	4.4
08508	12	Z	100	26	9.4	4.6
08522	00	Z	100	1	45.0	45.0
08522	12	Z	100	28	12.8	10.1
08579	12	Z	100	28	19.7	14.9
10035	12	Z	100	30	8.4	6.2
10393	00	Z	100	30	7.2	4.1
10393	12	Z	100	30	5.0	2.7
10410	00	Z	100	29	7.3	2.2
10410	12	Z	100	30	4.1	0.9
10739	12	Z	100	30	9.2	7.0
10739	00	Z	100	31	9.4	7.8
11035	00	Z	100	30	11.6	10.6
11035	12	Z	100	29	21.8	16.9
12982	12	Z	100	21	21.1	20.0
12982	00	Z	100	21	10.3	8.1
16080	00	Z	100	30	8.1	0.5
16080	12	Z	100	29	7.5	3.8
16245	00	Z	100	30	7.6	3.1
16245	12	Z	100	29	7.4	1.7
16320	12	Z	100	28	12.9	9.6
16320	00	Z	100	27	12.9	9.8
16429	00	Z	100	30	14.6	10.8
16429	12	Z	100	30	15.1	13.1
16622	00	Z	100	30	20.1	18.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	29	13.9	12.0
17607	12	Z	100	29	8.2	5.0
26435	12	Z	100	15	33.9	-6.9
5QPW8X	12	Z	100	11	22.3	20.4
5QPW8X	00	Z	100	14	22.6	18.9
60018	00	Z	100	29	17.4	16.2
60018	12	Z	100	30	13.1	11.2
7HCPVT	12	Z	100	9	33.5	31.5
7HCPVT	00	Z	100	10	31.5	29.8
7JUNA4	00	Z	100	4	19.0	7.5
7JUNA4	12	Z	100	4	25.4	22.4
ASDE09	12	Z	100	2	37.1	24.3
DBLK	12	Z	100	8	12.2	10.3
FHM5UJ	00	Z	100	10	15.0	12.3
FHM5UJ	12	Z	100	8	12.7	9.8
FPUW5G	12	Z	100	25	11.0	6.3
HTXUH4	00	Z	100	9	7.1	2.7
HTXUH4	12	Z	100	4	2.9	0.9
QCY3TG	00	Z	100	8	29.5	28.9
QCY3TG	12	Z	100	12	25.0	23.5
XQFJRG	12	Z	100	7	28.4	11.9
XQFJRG	00	Z	100	3	7.0	-4.2
XWHDEA	00	Z	100	8	12.1	7.4
XWHDEA	12	Z	100	7	13.8	10.6
YLV96W	12	Z	100	5	16.7	12.0
YLV96W	00	Z	100	6	112.0	70.8
ZVQEQC	00	Z	100	1	14.8	14.8
ZVQEQC	12	Z	100	1	3.6	3.6

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	29	3.3	0.7	-0.6
01001	12	V	100	29	3.5	-0.8	-0.4
01028	00	V	100	30	2.9	0.4	-0.2
01028	12	V	100	30	3.0	0.4	-0.2
01400	12	V	100	22	3.2	0.5	0.7
01400	00	V	100	22	3.2	0.0	-0.8
01415	00	V	100	30	3.5	0.2	-0.3
01415	12	V	100	30	2.9	0.1	0.6
02365	00	V	100	27	2.9	-0.1	0.1
02365	12	V	100	26	4.2	0.9	-0.1
02591	12	V	100	29	3.1	-0.5	-0.3
02591	00	V	100	30	4.2	0.1	0.2
02836	12	V	100	30	4.0	-0.3	-0.2
02836	00	V	100	28	3.1	-0.2	-0.6
02963	00	V	100	26	3.5	-0.6	0.8
02963	12	V	100	26	2.9	0.0	0.7
03005	00	V	100	30	3.1	0.3	0.0
03005	12	V	100	30	3.9	0.6	-0.1
03238	12	V	100	5	6.1	2.1	-1.1
03238	00	V	100	28	3.5	0.7	0.8
03808	12	V	100	28	3.3	-0.2	-0.3
03808	00	V	100	26	3.3	0.1	0.1
03918	12	V	100	7	3.3	0.8	1.5
03918	00	V	100	29	3.5	-0.6	0.3
03953	00	V	100	30	3.8	1.4	-0.4
03953	12	V	100	30	3.3	0.4	0.2
04018	12	V	100	30	4.0	0.7	0.5
04018	00	V	100	28	2.9	0.9	-0.2
04220	00	V	100	28	3.0	0.8	0.0
04220	12	V	100	30	2.8	0.6	0.4
04270	12	V	100	28	3.1	0.6	0.6
04270	00	V	100	28	4.0	0.3	-0.5
04320	00	V	100	27	2.9	0.4	-0.3
04320	12	V	100	29	3.6	0.8	0.8
04339	12	V	100	29	3.4	0.4	-0.3
04339	00	V	100	28	3.7	0.6	0.2
04360	12	V	100	28	3.0	0.2	-0.4
04360	00	V	100	28	3.5	0.1	0.3
06011	12	V	100	30	2.4	0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	30	3.3	0.2	0.3
06260	12	V	100	5	4.4	0.9	-1.2
06260	00	V	100	29	3.6	0.9	-0.1
06610	12	V	100	30	3.8	0.3	0.8
06610	00	V	100	30	3.3	0.0	0.2
07110	00	V	100	26	3.2	-0.1	-0.1
07110	12	V	100	28	3.7	0.2	-0.5
07510	00	V	100	25	3.5	-0.1	0.2
07510	12	V	100	29	3.4	-0.3	0.1
07645	00	V	100	25	3.5	0.6	-0.1
07645	12	V	100	28	4.0	0.3	-1.4
07761	12	V	100	27	2.8	-0.3	-0.3
07761	00	V	100	27	3.7	0.5	0.4
08001	00	V	100	28	3.9	-0.3	-0.7
08001	12	V	100	29	4.7	0.8	0.2
08221	12	V	100	29	4.4	1.2	0.6
08221	00	V	100	28	4.2	-0.6	-0.6
08302	00	V	100	29	4.0	1.2	-0.5
08302	12	V	100	30	3.7	0.9	-0.4
08508	12	V	100	26	4.2	-1.4	-0.3
08522	00	V	100	1	8.1	3.9	-7.1
08522	12	V	100	27	3.5	0.4	0.4
08579	12	V	100	26	3.7	-0.4	0.0
10035	12	V	100	30	2.9	0.0	-0.4
10393	00	V	100	30	2.9	0.5	0.6
10393	12	V	100	30	3.5	0.0	-0.1
10410	00	V	100	29	3.8	0.6	-0.1
10410	12	V	100	30	3.5	0.5	0.6
10739	12	V	100	30	3.9	0.4	0.1
10739	00	V	100	30	4.2	0.4	0.0
11035	00	V	100	29	3.4	-0.8	-0.3
11035	12	V	100	29	3.4	0.4	-0.1
12982	12	V	100	21	3.0	0.9	-0.6
12982	00	V	100	21	3.1	0.4	-0.3
16080	00	V	100	30	3.7	0.9	-0.1
16080	12	V	100	29	3.9	-0.7	-0.3
16245	00	V	100	28	3.6	0.8	0.2
16245	12	V	100	28	4.0	0.7	-0.1
16320	12	V	100	28	3.7	0.3	0.2
16320	00	V	100	27	3.9	1.0	0.4
16429	00	V	100	29	5.1	0.5	-0.2
16429	12	V	100	30	4.2	0.5	0.7
16622	00	V	100	29	3.6	0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	25	3.8	-0.1	0.3
17607	12	V	100	6	4.0	1.0	0.7
26435	12	V	100	15	2.8	0.4	0.2
5QPW8X	12	V	100	11	3.8	-0.9	1.2
5QPW8X	00	V	100	14	2.9	0.4	-0.6
60018	00	V	100	28	3.7	-0.2	-0.3
60018	12	V	100	30	3.5	0.2	0.1
7HCPVT	12	V	100	9	4.3	0.8	2.4
7HCPVT	00	V	100	10	4.0	0.1	0.0
7JUNA4	00	V	100	4	6.5	1.2	4.3
7JUNA4	12	V	100	4	4.9	0.6	1.6
ASDE09	12	V	100	2	2.8	0.3	-1.4
DBLK	12	V	100	8	5.1	2.2	-2.5
FHM5UJ	00	V	100	10	3.3	1.5	-0.2
FHM5UJ	12	V	100	8	2.2	1.0	0.1
FPUW5G	12	V	100	25	5.5	0.8	0.2
HTXUH4	00	V	100	9	3.2	1.0	0.0
HTXUH4	12	V	100	4	1.2	0.4	-0.4
QCY3TG	00	V	100	8	2.2	0.0	0.0
QCY3TG	12	V	100	12	3.7	0.1	0.7
XQFJRG	12	V	100	7	3.6	-1.1	0.0
XQFJRG	00	V	100	3	3.1	0.6	-2.7
XWHDEA	00	V	100	8	2.9	0.4	0.3
XWHDEA	12	V	100	7	3.6	1.2	-1.5
YLV96W	12	V	100	5	2.6	1.3	-0.1
YLV96W	00	V	100	6	3.6	-0.3	-0.3
ZVQEQC	00	V	100	1	2.2	2.0	0.9
ZVQEQC	12	V	100	1	4.6	2.1	4.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	29	5.5	0.6
01001	12	Z	500	30	15.3	-2.7
01028	00	Z	500	30	4.1	0.2
01028	12	Z	500	30	2.9	0.4
01400	12	Z	500	22	73.2	73.0
01400	00	Z	500	22	72.3	72.1
01415	00	Z	500	30	5.2	3.7
01415	12	Z	500	30	5.3	3.6
02365	00	Z	500	30	4.7	3.4
02365	12	Z	500	29	4.7	3.2
02591	12	Z	500	29	8.6	8.2
02591	00	Z	500	30	9.2	8.6
02836	12	Z	500	30	3.7	2.0
02836	00	Z	500	30	4.4	2.3
02963	00	Z	500	29	4.9	2.8
02963	12	Z	500	26	4.2	3.4
03005	00	Z	500	30	2.8	0.5
03005	12	Z	500	30	3.7	-0.1
03238	12	Z	500	5	5.5	5.2
03238	00	Z	500	30	5.1	2.8
03808	12	Z	500	30	3.8	1.8
03808	00	Z	500	30	4.4	3.1
03918	12	Z	500	7	8.1	6.9
03918	00	Z	500	30	7.8	7.1
03953	00	Z	500	30	7.4	4.6
03953	12	Z	500	31	8.9	6.2
04018	12	Z	500	30	4.9	-0.9
04018	00	Z	500	28	3.8	0.9
04220	00	Z	500	30	4.3	3.0
04220	12	Z	500	30	4.5	2.5
04270	12	Z	500	29	7.0	-2.1
04270	00	Z	500	30	13.8	1.5
04320	00	Z	500	29	4.3	0.6
04320	12	Z	500	30	5.6	0.3
04339	12	Z	500	29	4.9	0.1
04339	00	Z	500	30	4.9	1.0
04360	12	Z	500	28	39.4	35.1
04360	00	Z	500	30	39.7	34.6
06011	12	Z	500	30	7.6	5.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	30	7.8	5.6
06260	12	Z	500	5	3.5	0.7
06260	00	Z	500	30	3.1	1.0
06610	12	Z	500	30	3.8	0.2
06610	00	Z	500	30	3.4	1.5
07110	00	Z	500	26	4.3	-1.7
07110	12	Z	500	28	4.9	3.6
07510	00	Z	500	29	6.0	4.2
07510	12	Z	500	30	6.8	5.7
07645	00	Z	500	27	5.5	-1.0
07645	12	Z	500	28	3.7	0.2
07761	12	Z	500	28	7.7	6.3
07761	00	Z	500	27	8.1	3.8
08001	00	Z	500	30	5.4	4.0
08001	12	Z	500	30	7.2	5.7
08221	12	Z	500	30	6.9	6.1
08221	00	Z	500	29	6.4	5.6
08302	00	Z	500	30	3.8	1.1
08302	12	Z	500	30	3.7	1.2
08508	12	Z	500	27	7.5	4.4
08522	00	Z	500	1	21.9	-21.9
08522	12	Z	500	28	6.9	5.9
08579	12	Z	500	28	8.7	5.9
10035	12	Z	500	30	5.6	3.7
10393	00	Z	500	30	4.0	1.1
10393	12	Z	500	30	3.1	0.3
10410	00	Z	500	29	3.4	-0.5
10410	12	Z	500	30	4.0	-2.2
10739	12	Z	500	30	5.2	3.6
10739	00	Z	500	31	5.0	4.6
11035	00	Z	500	30	9.2	8.4
11035	12	Z	500	29	18.4	12.1
12982	12	Z	500	22	8.1	5.5
12982	00	Z	500	24	6.9	4.3
16080	00	Z	500	30	4.0	-0.6
16080	12	Z	500	30	4.2	-2.9
16245	00	Z	500	30	3.7	-1.8
16245	12	Z	500	30	6.6	-1.9
16320	12	Z	500	28	10.6	5.2
16320	00	Z	500	27	8.8	5.8
16429	00	Z	500	30	7.4	4.5
16429	12	Z	500	30	8.1	6.1
16622	00	Z	500	30	10.7	9.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	30	5.6	3.6
17607	12	Z	500	29	5.1	3.9
26435	12	Z	500	15	36.1	-8.3
5QPW8X	12	Z	500	11	23.1	22.2
5QPW8X	00	Z	500	15	25.4	24.1
60018	00	Z	500	30	6.3	5.4
60018	12	Z	500	30	6.3	5.6
7HCPVT	12	Z	500	10	17.2	16.4
7HCPVT	00	Z	500	10	12.7	12.2
7JUNA4	00	Z	500	4	5.0	3.8
7JUNA4	12	Z	500	5	6.7	-3.9
ASDE09	12	Z	500	2	35.3	24.2
DBLK	12	Z	500	8	8.0	4.7
FHM5UJ	00	Z	500	10	16.9	12.1
FHM5UJ	12	Z	500	9	14.2	10.7
FPUW5G	12	Z	500	25	3.4	1.0
HTXUH4	00	Z	500	9	6.2	3.6
HTXUH4	12	Z	500	4	1.0	0.0
QCY3TG	00	Z	500	9	9.1	8.0
QCY3TG	12	Z	500	12	12.0	10.8
XQFJRG	12	Z	500	8	14.2	-4.5
XQFJRG	00	Z	500	4	13.8	-12.7
XWHDEA	00	Z	500	10	8.7	-6.1
XWHDEA	12	Z	500	11	4.7	2.1
YLV96W	12	Z	500	5	42.6	17.0
YLV96W	00	Z	500	6	21.4	8.4
ZVQEQC	00	Z	500	1	9.8	9.8
ZVQEQC	12	Z	500	1	4.4	4.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	29	2.4	0.3	0.0
01001	12	V	500	30	3.6	-0.1	-0.7
01028	00	V	500	30	2.8	0.2	0.0
01028	12	V	500	30	2.7	-0.5	-0.5
01400	12	V	500	22	3.5	0.2	0.1
01400	00	V	500	22	2.8	-0.9	-0.8
01415	00	V	500	30	3.0	-0.5	0.1
01415	12	V	500	30	2.8	-0.3	0.6
02365	00	V	500	30	2.1	-0.2	-0.5
02365	12	V	500	29	2.5	0.2	0.6
02591	12	V	500	29	2.1	0.0	0.3
02591	00	V	500	30	2.2	0.2	-0.5
02836	12	V	500	30	3.0	0.6	-0.3
02836	00	V	500	30	2.7	-0.1	-0.3
02963	00	V	500	29	2.2	0.2	0.4
02963	12	V	500	26	2.6	0.1	-0.1
03005	00	V	500	30	2.9	0.4	0.0
03005	12	V	500	30	2.9	0.1	-0.3
03238	12	V	500	5	2.1	0.1	0.0
03238	00	V	500	30	2.7	-0.8	-0.1
03808	12	V	500	30	2.6	0.2	0.4
03808	00	V	500	29	4.3	-0.2	0.6
03918	12	V	500	7	2.4	-0.1	0.7
03918	00	V	500	30	2.9	0.7	0.1
03953	00	V	500	30	3.6	-0.1	0.7
03953	12	V	500	30	3.0	-0.2	0.5
04018	12	V	500	30	3.4	0.7	0.7
04018	00	V	500	28	3.3	0.3	0.5
04220	00	V	500	30	2.8	0.1	-0.5
04220	12	V	500	30	3.4	-0.4	-0.8
04270	12	V	500	29	4.4	0.1	0.0
04270	00	V	500	30	4.1	-0.6	0.5
04320	00	V	500	29	2.5	-0.3	0.7
04320	12	V	500	30	3.0	0.3	0.9
04339	12	V	500	29	3.1	0.6	0.6
04339	00	V	500	30	3.1	-0.7	0.6
04360	12	V	500	28	2.8	-0.1	-0.1
04360	00	V	500	30	3.1	0.6	0.1
06011	12	V	500	30	3.1	0.7	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	30	3.2	0.0	-0.6
06260	12	V	500	5	2.3	1.3	-0.5
06260	00	V	500	30	2.4	-0.2	-0.3
06610	12	V	500	30	3.8	0.7	1.0
06610	00	V	500	30	3.2	0.6	0.3
07110	00	V	500	26	4.2	0.7	0.0
07110	12	V	500	28	3.3	0.7	-0.2
07510	00	V	500	29	3.8	0.6	0.4
07510	12	V	500	30	3.3	0.3	-0.8
07645	00	V	500	25	3.3	0.7	0.4
07645	12	V	500	28	3.1	0.5	0.6
07761	12	V	500	28	3.6	-0.6	-0.7
07761	00	V	500	27	3.1	-0.3	0.2
08001	00	V	500	30	2.6	-0.4	0.4
08001	12	V	500	30	2.7	-0.1	0.3
08221	12	V	500	30	3.2	0.7	0.6
08221	00	V	500	29	3.5	0.0	0.3
08302	00	V	500	30	2.8	-0.3	0.5
08302	12	V	500	30	2.5	0.8	0.2
08508	12	V	500	27	3.7	0.1	-0.1
08522	00	V	500	1	6.6	-4.6	4.8
08522	12	V	500	28	2.9	-0.1	-0.6
08579	12	V	500	28	3.4	0.3	0.1
10035	12	V	500	30	2.2	-0.3	0.2
10393	00	V	500	30	3.5	1.0	0.5
10393	12	V	500	30	2.7	-0.1	0.2
10410	00	V	500	29	2.7	0.1	-0.5
10410	12	V	500	30	2.5	0.4	-0.1
10739	12	V	500	30	3.2	0.7	0.3
10739	00	V	500	31	2.7	0.5	0.0
11035	00	V	500	30	3.0	0.6	0.4
11035	12	V	500	29	2.8	0.0	0.5
12982	12	V	500	22	2.8	-0.1	-0.8
12982	00	V	500	24	2.6	-0.2	1.0
16080	00	V	500	30	2.5	-0.1	-0.1
16080	12	V	500	30	3.4	-0.1	0.6
16245	00	V	500	30	3.7	-0.1	0.4
16245	12	V	500	30	3.7	-0.1	0.4
16320	12	V	500	28	3.7	0.4	-0.4
16320	00	V	500	27	3.1	0.7	-0.1
16429	00	V	500	30	4.4	0.7	0.2
16429	12	V	500	30	3.6	-0.3	0.5
16622	00	V	500	30	3.5	-0.1	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	27	2.6	0.5	0.1
17607	12	V	500	13	2.0	0.0	-0.1
26435	12	V	500	15	1.8	0.2	-0.4
5QPW8X	12	V	500	11	2.2	0.4	0.3
5QPW8X	00	V	500	15	2.3	0.4	-0.5
60018	00	V	500	30	3.0	-0.3	-0.8
60018	12	V	500	30	3.1	0.4	0.4
7HCPVT	12	V	500	10	2.5	-1.3	0.0
7HCPVT	00	V	500	10	2.3	-0.2	0.1
7JUNA4	00	V	500	4	3.3	-0.9	-1.9
7JUNA4	12	V	500	5	3.3	0.3	1.1
ASDE09	12	V	500	2	1.5	-0.1	-0.9
DBLK	12	V	500	8	3.7	1.0	2.2
FHM5UJ	00	V	500	10	2.2	-0.9	0.1
FHM5UJ	12	V	500	9	2.3	0.1	1.0
FPUW5G	12	V	500	25	2.8	0.6	-0.4
HTXUH4	00	V	500	9	2.3	0.7	0.9
HTXUH4	12	V	500	4	2.6	-1.0	1.0
QCY3TG	00	V	500	9	3.9	0.6	-1.1
QCY3TG	12	V	500	12	2.2	0.1	0.1
XQFJRG	12	V	500	8	3.4	-0.3	-1.6
XQFJRG	00	V	500	4	2.9	1.1	-1.5
XWHDEA	00	V	500	10	3.7	1.6	0.2
XWHDEA	12	V	500	11	3.1	0.6	0.2
YLV96W	12	V	500	5	2.5	-0.1	0.4
YLV96W	00	V	500	6	3.6	1.1	1.9
ZVQEQC	00	V	500	1	2.3	2.2	-0.5
ZVQEQC	12	V	500	1	2.2	2.1	-0.5

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	4.8	-0.5
01001	12	Z	850	30	14.1	-2.2
01028	00	Z	850	30	4.5	1.4
01028	12	Z	850	30	3.0	0.5
01400	12	Z	850	22	72.9	72.8
01400	00	Z	850	23	72.4	72.2
01415	00	Z	850	30	4.3	3.1
01415	12	Z	850	30	3.7	3.3
02365	00	Z	850	30	5.4	4.5
02365	12	Z	850	29	4.7	4.0
02591	12	Z	850	29	7.8	7.5
02591	00	Z	850	30	8.3	8.0
02836	12	Z	850	30	2.8	1.6
02836	00	Z	850	30	2.9	2.2
02963	00	Z	850	29	3.8	3.3
02963	12	Z	850	26	4.0	3.3
03005	00	Z	850	30	2.5	-0.8
03005	12	Z	850	30	2.6	-0.3
03238	12	Z	850	5	3.7	1.4
03238	00	Z	850	30	4.2	3.0
03808	12	Z	850	30	3.6	1.5
03808	00	Z	850	30	3.2	1.7
03918	12	Z	850	7	6.5	6.2
03918	00	Z	850	30	7.2	6.7
03953	00	Z	850	30	4.6	3.3
03953	12	Z	850	31	7.5	2.5
04018	12	Z	850	30	3.9	-0.8
04018	00	Z	850	28	2.9	0.4
04220	00	Z	850	30	4.1	1.7
04220	12	Z	850	30	3.3	1.2
04270	12	Z	850	29	3.9	-0.9
04270	00	Z	850	30	15.9	2.1
04320	00	Z	850	29	4.7	-1.6
04320	12	Z	850	30	5.1	-1.0
04339	12	Z	850	29	3.4	0.3
04339	00	Z	850	30	4.4	1.0
04360	12	Z	850	28	39.0	34.5
04360	00	Z	850	30	40.5	35.2
06011	12	Z	850	30	13.2	-0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	30	8.0	1.0
06260	12	Z	850	5	2.6	-1.1
06260	00	Z	850	30	2.1	-0.1
06610	12	Z	850	30	2.8	-0.6
06610	00	Z	850	30	3.2	1.6
07110	00	Z	850	26	2.3	-0.2
07110	12	Z	850	28	2.8	1.2
07510	00	Z	850	29	2.4	1.0
07510	12	Z	850	30	3.6	2.3
07645	00	Z	850	27	3.8	-0.7
07645	12	Z	850	28	3.5	-1.3
07761	12	Z	850	30	4.3	2.6
07761	00	Z	850	27	4.0	2.5
08001	00	Z	850	30	3.0	1.6
08001	12	Z	850	30	3.6	2.3
08221	12	Z	850	30	4.3	3.7
08221	00	Z	850	29	5.5	5.0
08302	00	Z	850	30	2.3	-1.3
08302	12	Z	850	30	4.5	-3.5
08508	12	Z	850	27	4.7	2.8
08522	00	Z	850	1	13.0	13.0
08522	12	Z	850	28	4.9	4.3
08579	12	Z	850	28	3.9	3.0
10035	12	Z	850	30	4.6	4.0
10393	00	Z	850	30	2.0	-0.1
10393	12	Z	850	30	3.0	-0.8
10410	00	Z	850	29	2.8	-1.3
10410	12	Z	850	30	3.3	-1.7
10739	12	Z	850	30	3.4	2.3
10739	00	Z	850	31	3.7	3.0
11035	00	Z	850	30	6.7	5.9
11035	12	Z	850	29	18.3	10.3
12982	12	Z	850	22	4.1	3.4
12982	00	Z	850	24	3.7	2.8
16080	00	Z	850	30	3.5	-1.4
16080	12	Z	850	30	3.4	-2.6
16245	00	Z	850	30	3.5	-1.7
16245	12	Z	850	30	5.3	-3.1
16320	12	Z	850	28	10.6	5.6
16320	00	Z	850	27	9.1	5.0
16429	00	Z	850	30	7.4	4.2
16429	12	Z	850	30	6.7	4.3
16622	00	Z	850	30	9.5	8.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	30	3.9	1.9
17607	12	Z	850	30	3.5	2.6
26435	12	Z	850	15	3.1	2.3
5QPW8X	12	Z	850	11	24.7	23.8
5QPW8X	00	Z	850	15	25.5	24.2
60018	00	Z	850	30	2.5	0.9
60018	12	Z	850	30	2.5	1.3
7HCPVT	12	Z	850	10	11.6	11.2
7HCPVT	00	Z	850	10	9.0	8.7
7JUNA4	00	Z	850	4	3.5	-0.6
7JUNA4	12	Z	850	5	6.7	-2.6
ASDE09	12	Z	850	2	30.9	19.2
DBLK	12	Z	850	8	7.4	-0.3
FHM5UJ	00	Z	850	10	16.4	12.8
FHM5UJ	12	Z	850	9	13.6	10.7
FPUW5G	12	Z	850	25	4.9	-3.4
HTXUH4	00	Z	850	9	6.3	3.1
HTXUH4	12	Z	850	4	3.0	1.6
QCY3TG	00	Z	850	9	4.0	3.0
QCY3TG	12	Z	850	12	4.8	3.8
XQFJRG	12	Z	850	9	12.6	-7.9
XQFJRG	00	Z	850	4	19.1	-17.9
XWHDEA	00	Z	850	10	8.5	-7.9
XWHDEA	12	Z	850	11	4.9	-4.4
YLV96W	12	Z	850	5	8.9	-2.3
YLV96W	00	Z	850	6	5.3	1.3
ZVQEQC	00	Z	850	1	4.8	4.8
ZVQEQC	12	Z	850	1	1.7	-1.7

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 : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.5	0.6	0.5
01001	12	V	850	30	5.0	0.7	0.4
01028	00	V	850	30	3.0	0.5	-0.5
01028	12	V	850	30	3.1	0.3	-0.3
01400	12	V	850	22	2.3	0.2	-0.4
01400	00	V	850	23	2.0	0.3	-0.7
01415	00	V	850	30	3.3	0.8	0.2
01415	12	V	850	30	3.0	-0.1	0.6
02365	00	V	850	30	2.7	-0.2	0.3
02365	12	V	850	29	2.7	0.2	0.2
02591	12	V	850	29	2.3	-0.1	-0.6
02591	00	V	850	30	2.1	0.0	-0.4
02836	12	V	850	30	3.0	-0.7	-0.3
02836	00	V	850	30	3.1	-0.2	-0.1
02963	00	V	850	29	2.3	0.0	-0.4
02963	12	V	850	26	2.1	-0.4	0.2
03005	00	V	850	30	2.7	0.3	0.1
03005	12	V	850	30	3.1	0.2	-0.1
03238	12	V	850	5	1.6	0.3	-0.6
03238	00	V	850	30	2.8	0.2	-0.7
03808	12	V	850	30	2.5	0.4	-0.2
03808	00	V	850	29	3.1	0.2	0.1
03918	12	V	850	7	2.7	0.5	-0.4
03918	00	V	850	30	2.6	0.3	0.3
03953	00	V	850	30	2.6	-0.3	0.8
03953	12	V	850	30	4.0	0.2	0.4
04018	12	V	850	30	4.0	0.5	0.6
04018	00	V	850	28	4.0	0.5	0.9
04220	00	V	850	30	2.4	0.1	-0.1
04220	12	V	850	30	3.3	0.8	-0.3
04270	12	V	850	29	3.8	1.3	-0.1
04270	00	V	850	30	4.8	0.2	-0.4
04320	00	V	850	29	4.6	0.6	0.5
04320	12	V	850	30	3.8	1.1	1.0
04339	12	V	850	29	4.7	0.7	1.0
04339	00	V	850	30	4.7	1.9	0.8
04360	12	V	850	28	6.2	2.2	1.2
04360	00	V	850	30	6.5	2.9	0.4
06011	12	V	850	30	4.0	-0.3	-1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	30	4.2	0.0	-0.3
06260	12	V	850	5	2.4	0.2	0.6
06260	00	V	850	30	2.5	-0.1	-0.3
06610	12	V	850	30	3.9	1.4	0.6
06610	00	V	850	30	3.0	0.3	0.0
07110	00	V	850	26	2.9	-0.8	-0.4
07110	12	V	850	28	2.9	-0.4	-0.5
07510	00	V	850	29	3.1	0.8	-0.5
07510	12	V	850	30	3.6	0.2	0.0
07645	00	V	850	25	3.6	0.6	0.4
07645	12	V	850	28	3.5	0.4	-0.2
07761	12	V	850	29	2.8	-0.2	-0.2
07761	00	V	850	27	3.4	1.3	-0.8
08001	00	V	850	30	2.7	0.3	-0.3
08001	12	V	850	30	2.2	0.5	0.0
08221	12	V	850	30	3.3	-0.2	0.5
08221	00	V	850	29	2.3	-0.2	0.3
08302	00	V	850	30	2.7	-0.2	0.1
08302	12	V	850	30	2.7	0.2	0.1
08508	12	V	850	27	3.9	0.0	-1.2
08522	00	V	850	1	5.1	-2.5	-4.4
08522	12	V	850	28	3.9	0.0	1.0
08579	12	V	850	28	2.4	-0.1	-0.3
10035	12	V	850	30	2.8	0.2	0.4
10393	00	V	850	30	2.4	0.3	0.0
10393	12	V	850	30	2.4	0.3	-0.1
10410	00	V	850	29	2.5	-0.1	-0.2
10410	12	V	850	30	2.9	0.5	-0.2
10739	12	V	850	30	2.8	-0.1	0.7
10739	00	V	850	31	2.6	0.1	-0.5
11035	00	V	850	30	2.6	0.1	0.6
11035	12	V	850	29	2.8	-0.1	0.2
12982	12	V	850	22	2.3	-0.6	0.2
12982	00	V	850	24	2.5	0.4	-0.2
16080	00	V	850	30	3.4	0.4	-0.2
16080	12	V	850	30	3.1	1.0	-0.2
16245	00	V	850	30	3.5	-0.3	-0.4
16245	12	V	850	30	3.5	0.2	0.4
16320	12	V	850	28	2.7	0.5	-0.6
16320	00	V	850	27	3.3	0.6	-0.7
16429	00	V	850	30	3.0	-0.1	-0.4
16429	12	V	850	30	4.3	0.4	-0.5
16622	00	V	850	30	3.3	-0.5	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	27	3.3	0.7	-0.3
17607	12	V	850	24	3.6	1.6	0.9
26435	12	V	850	15	2.1	0.6	-0.1
5QPW8X	12	V	850	11	3.8	1.3	-0.8
5QPW8X	00	V	850	15	3.0	-0.7	-0.7
60018	00	V	850	30	3.8	-1.3	0.8
60018	12	V	850	30	3.3	-0.3	-0.2
7HCPVT	12	V	850	10	2.5	0.6	-0.3
7HCPVT	00	V	850	10	2.3	0.2	-0.5
7JUNA4	00	V	850	4	2.9	1.2	1.6
7JUNA4	12	V	850	5	3.1	0.5	1.7
ASDE09	12	V	850	2	1.8	1.5	1.0
DBLK	12	V	850	8	2.3	-1.4	-0.5
FHM5UJ	00	V	850	10	3.3	-0.4	0.3
FHM5UJ	12	V	850	9	2.6	1.3	1.2
FPUW5G	12	V	850	25	2.6	0.3	0.2
HTXUH4	00	V	850	9	3.2	-1.2	0.4
HTXUH4	12	V	850	4	2.8	0.7	0.7
QCY3TG	00	V	850	9	1.7	0.3	0.2
QCY3TG	12	V	850	12	1.8	0.4	-0.6
XQFJRG	12	V	850	9	1.9	-0.7	-0.3
XQFJRG	00	V	850	4	3.5	-1.2	1.1
XWHDEA	00	V	850	10	3.1	-1.6	-0.2
XWHDEA	12	V	850	11	2.6	0.7	-0.5
YLV96W	12	V	850	5	2.0	0.0	0.7
YLV96W	00	V	850	6	2.1	0.0	0.0
ZVQEQC	00	V	850	1	0.4	-0.1	-0.4
ZVQEQC	12	V	850	1	3.9	-3.5	1.8

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : NOV 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	734	0	0.3	-0.2	0.4
070	99	P	SUR	76	16	1	0	0.0	-6.7	6.7
080	99	P	SUR	76	16	1	0	0.0	-6.0	6.0
1300001	99	P	SUR	11	-23	680	0	0.3	-0.1	0.3
1300008	99	P	SUR	15	-38	360	0	0.3	-0.2	0.3
1300130	99	P	SUR	28	-16	720	0	0.3	0.1	0.3
1300131	99	P	SUR	28	-17	716	0	0.4	-0.3	0.5
1300871	99	P	SUR	31	-64	398	1	2.6	0.3	2.6
1300872	99	P	SUR	38	-36	720	0	0.7	0.1	0.7
1301603	99	P	SUR	23	-51	720	0	0.3	0.0	0.3
1301605	99	P	SUR	26	-47	720	0	0.3	0.1	0.3
1301607	99	P	SUR	20	-37	720	0	0.2	0.4	0.5
1301608	99	P	SUR	27	-43	720	0	0.3	0.5	0.5
1301609	99	P	SUR	20	-40	719	0	0.3	0.4	0.5
1301610	99	P	SUR	22	-36	720	0	0.2	0.2	0.3
1301611	99	P	SUR	30	-42	720	0	0.3	0.2	0.3
1301612	99	P	SUR	27	-29	719	0	0.2	0.1	0.2
13871	99	P	SUR	31	-64	398	1	2.6	0.3	2.6
13872	99	P	SUR	38	-36	720	0	0.7	0.1	0.7
1501529	99	P	SUR	27	-30	715	0	0.2	0.3	0.4
1501531	99	P	SUR	17	-54	716	0	0.3	-0.2	0.4
1501534	99	P	SUR	26	-58	715	0	0.3	-1.0	1.1
1501581	99	P	SUR	11	-36	714	0	0.4	0.4	0.6
2601620	99	P	SUR	84	3	722	0	0.5	-0.8	1.0
2601621	99	P	SUR	88	1	720	0	0.4	-0.6	0.8
3100735	99	P	SUR	33	-67	719	13	2.7	-0.1	2.7
31735	99	P	SUR	33	-67	719	13	2.7	-0.1	2.7
4100139	99	P	SUR	20	-38	686	0	0.2	-0.3	0.4
4100300	99	P	SUR	16	-57	720	0	0.3	-0.0	0.3
4100597	99	P	SUR	30	-45	552	0	1.2	-0.1	1.2
4100729	99	P	SUR	33	-44	720	0	0.4	0.0	0.4
4100730	99	P	SUR	38	-36	360	50	3.4	-1.0	3.5
4101528	99	P	SUR	34	-38	683	0	0.3	0.6	0.7
4101530	99	P	SUR	34	-30	654	0	0.4	0.5	0.6
4101531	99	P	SUR	43	-28	554	0	0.5	0.4	0.6
4101532	99	P	SUR	35	-45	667	0	0.5	-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
4101533	99	P	SUR	52	-41	673	0	0.6	0.6	0.8
4101534	99	P	SUR	50	-33	627	0	0.7	0.3	0.7
4101535	99	P	SUR	41	-64	666	0	0.5	-0.0	0.5
4101536	99	P	SUR	46	-30	682	0	0.6	-0.0	0.6
4101537	99	P	SUR	41	-26	670	0	0.4	0.3	0.5
4101538	99	P	SUR	26	-64	514	0	0.4	0.3	0.5
4101539	99	P	SUR	35	-64	719	0	0.4	0.0	0.5
4101554	99	P	SUR	27	-60	706	0	0.4	0.3	0.5
4101556	99	P	SUR	39	-42	719	0	0.4	0.4	0.5
4101557	99	P	SUR	36	-37	718	0	0.3	0.1	0.3
4101558	99	P	SUR	29	-20	719	0	0.2	0.6	0.6
4101560	99	P	SUR	34	-47	708	0	0.4	0.5	0.7
4101562	99	P	SUR	35	-55	691	0	0.5	0.3	0.6
4101564	99	P	SUR	33	-44	708	0	0.4	-0.2	0.4
4101565	99	P	SUR	33	-40	648	0	0.3	0.3	0.5
4101566	99	P	SUR	29	-56	587	0	0.4	0.2	0.4
4101567	99	P	SUR	36	-54	692	0	0.5	0.4	0.6
4101570	99	P	SUR	30	-52	697	0	0.4	0.4	0.6
4101571	99	P	SUR	44	-29	376	0	0.5	0.3	0.6
4101572	99	P	SUR	48	-30	671	0	0.6	0.1	0.6
4101573	99	P	SUR	38	-63	654	0	0.6	0.2	0.6
4101576	99	P	SUR	20	-62	718	0	0.3	0.4	0.5
4101579	99	P	SUR	21	-55	717	0	0.9	-0.6	1.1
4101594	99	P	SUR	14	-55	719	0	0.3	-0.6	0.7
4101595	99	P	SUR	16	-51	718	0	0.3	0.6	0.7
4101596	99	P	SUR	54	-21	719	0	0.7	0.5	0.9
4101598	99	P	SUR	18	-48	718	0	0.3	0.4	0.5
4101599	99	P	SUR	50	-12	717	0	0.5	0.1	0.5
4101601	99	P	SUR	13	-47	719	0	0.3	0.3	0.5
4101602	99	P	SUR	15	-54	451	0	0.4	0.3	0.5
4101603	99	P	SUR	12	-52	663	0	0.8	0.5	0.9
4101605	99	P	SUR	69	-17	719	0	0.5	0.4	0.6
4101606	99	P	SUR	45	-10	719	1	0.4	0.3	0.5
4101607	99	P	SUR	43	-14	719	0	0.5	0.2	0.5
4101608	99	P	SUR	69	-12	719	0	0.6	0.3	0.7
4101609	99	P	SUR	41	-21	719	0	0.4	0.0	0.5
4101610	99	P	SUR	68	-12	719	0	0.6	0.4	0.7
4101611	99	P	SUR	46	-7	719	0	0.4	0.4	0.6
4101612	99	P	SUR	46	-7	719	0	0.4	0.5	0.7
4101619	99	P	SUR	50	-22	719	0	0.6	-0.1	0.6
4101620	99	P	SUR	51	-12	719	0	0.5	0.2	0.5
4101622	99	P	SUR	71	-9	719	0	0.7	0.0	0.7
4101623	99	P	SUR	59	-45	719	0	0.6	0.0	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101624	99	P	SUR	62	-36	719	0	0.7	0.5	0.9
4101625	99	P	SUR	63	-29	719	0	0.4	0.3	0.5
4101626	99	P	SUR	58	-34	719	0	0.5	0.1	0.5
4101627	99	P	SUR	56	-31	719	0	0.5	-0.0	0.5
4101629	99	P	SUR	66	-28	719	0	0.6	-0.2	0.7
4101700	99	P	SUR	27	-48	720	0	0.3	0.1	0.3
4101702	99	P	SUR	32	-58	720	0	0.7	-0.1	0.7
4101705	99	P	SUR	31	-34	718	0	0.3	-0.0	0.3
4101706	99	P	SUR	35	-36	719	0	0.3	-0.8	0.8
4101707	99	P	SUR	34	-30	720	0	0.3	-0.2	0.4
4101708	99	P	SUR	27	-34	720	0	0.2	-0.4	0.5
4101709	99	P	SUR	18	-45	720	0	0.6	1.0	1.1
4101712	99	P	SUR	34	-32	707	0	0.3	0.0	0.3
4101713	99	P	SUR	37	-64	719	0	0.4	-0.2	0.5
4101714	99	P	SUR	35	-35	720	0	0.3	-0.1	0.3
4101715	99	P	SUR	29	-53	718	0	0.6	0.3	0.7
4101716	99	P	SUR	27	-50	720	0	0.3	-0.8	0.9
4101717	99	P	SUR	23	-63	719	0	0.3	-0.1	0.3
4101742	99	P	SUR	37	-65	336	63	1.9	-0.5	2.0
4101743	99	P	SUR	25	-59	720	0	0.4	0.7	0.8
41041	99	P	SUR	14	-46	1257	0	0.4	0.5	0.7
41043	99	P	SUR	21	-65	1356	0	0.4	0.3	0.5
41044	99	P	SUR	22	-59	1389	0	0.4	0.5	0.7
41046	99	P	SUR	24	-68	1206	0	0.4	0.7	0.9
41049	99	P	SUR	28	-63	1260	0	0.4	0.3	0.5
41052	99	P	SUR	18	-65	1154	0	0.5	-1.3	1.4
41053	99	P	SUR	19	-66	1665	0	0.4	-0.7	0.8
41056	99	P	SUR	18	-66	1666	0	0.4	-0.9	1.0
41300	99	P	SUR	16	-57	720	0	0.3	-0.0	0.3
41597	99	P	SUR	30	-45	552	0	1.2	-0.1	1.2
41729	99	P	SUR	33	-44	720	0	0.4	0.0	0.4
41730	99	P	SUR	38	-36	360	50	3.4	-1.0	3.5
42060	99	P	SUR	16	-63	1945	0	0.4	0.0	0.4
42085	99	P	SUR	18	-67	701	0	0.4	-0.9	0.9
44005	99	P	SUR	43	-69	551	0	0.8	-0.4	0.8
4400513	99	P	SUR	54	-10	612	0	0.4	-0.4	0.5
4400517	99	P	SUR	21	-64	720	0	0.4	0.2	0.4
4400521	99	P	SUR	36	-36	678	0	0.4	-1.0	1.1
4400746	99	P	SUR	33	-53	720	17	1.6	0.1	1.6
4400777	99	P	SUR	30	-46	720	0	0.3	0.2	0.4
4400778	99	P	SUR	24	-43	720	0	0.3	0.2	0.4
4400857	99	P	SUR	30	-51	720	0	0.4	0.1	0.4
4400874	99	P	SUR	35	-37	720	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400887	99	P	SUR	42	-43	710	0	0.4	-0.4	0.6
4401503	99	P	SUR	37	-59	720	0	0.5	-0.2	0.5
4401527	99	P	SUR	36	-61	688	4	2.4	0.7	2.4
4401531	99	P	SUR	35	-61	719	0	0.5	0.1	0.5
4401536	99	P	SUR	38	-18	705	0	0.4	0.6	0.8
4401537	99	P	SUR	33	-42	677	0	0.5	-0.5	0.7
4401539	99	P	SUR	38	-36	719	0	0.6	-0.5	0.8
4401540	99	P	SUR	33	-61	720	0	0.5	-0.0	0.5
4401541	99	P	SUR	37	-30	720	0	0.3	-0.2	0.4
4401542	99	P	SUR	31	-69	720	0	0.4	0.2	0.5
4401543	99	P	SUR	21	-69	720	0	0.3	-0.1	0.3
4401544	99	P	SUR	36	-63	719	0	0.5	-1.0	1.2
4401549	99	P	SUR	57	-12	666	0	0.4	0.0	0.4
4401551	99	P	SUR	39	-35	715	0	0.5	0.1	0.5
4401552	99	P	SUR	18	-31	679	0	0.2	0.2	0.3
4401553	99	P	SUR	64	1	720	0	0.5	0.5	0.7
4401555	99	P	SUR	59	0	660	0	0.4	-0.1	0.4
4401556	99	P	SUR	34	-33	720	0	0.3	0.0	0.3
4401557	99	P	SUR	34	-30	719	0	0.3	0.2	0.3
4401558	99	P	SUR	60	0	720	0	0.6	0.5	0.7
4401559	99	P	SUR	45	-15	719	0	0.5	0.2	0.5
4401560	99	P	SUR	41	-20	720	0	0.4	-0.1	0.4
4401561	99	P	SUR	27	-35	720	0	0.2	-0.1	0.3
4401562	99	P	SUR	35	-22	640	0	2.1	0.1	2.1
4401563	99	P	SUR	26	-39	720	0	0.3	-0.4	0.5
4401564	99	P	SUR	39	-38	720	0	0.6	-0.0	0.6
4401565	99	P	SUR	58	-20	719	0	0.5	0.2	0.6
4401566	99	P	SUR	48	-13	720	0	0.4	0.2	0.5
4401567	99	P	SUR	56	-46	633	0	0.5	0.4	0.6
4401568	99	P	SUR	52	-49	614	0	0.6	0.3	0.7
4401569	99	P	SUR	54	-49	623	0	0.4	0.1	0.4
4401570	99	P	SUR	48	-28	720	0	0.6	-0.0	0.6
4401571	99	P	SUR	50	-27	719	0	0.6	-0.0	0.6
4401572	99	P	SUR	49	-51	56	0	1.1	1.2	1.7
4401573	99	P	SUR	50	-49	8	0	0.3	0.3	0.4
4401601	99	P	SUR	55	-12	714	0	0.4	-0.0	0.4
4401605	99	P	SUR	60	-5	713	0	0.4	0.1	0.4
4401611	99	P	SUR	46	-57	714	0	0.5	0.6	0.8
4401613	99	P	SUR	40	-14	716	0	0.4	0.4	0.6
4401616	99	P	SUR	36	-38	714	0	0.4	-0.2	0.5
4401633	99	P	SUR	38	-18	713	0	0.6	0.2	0.6
4401750	99	P	SUR	59	-8	701	0	0.4	-1.3	1.4
4401751	99	P	SUR	62	-12	700	0	0.4	0.4	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401753	99	P	SUR	62	-13	628	0	0.5	0.6	0.7
4401755	99	P	SUR	73	19	593	0	0.4	0.5	0.6
4401799	99	P	SUR	20	-40	675	0	0.3	0.3	0.4
4401802	99	P	SUR	40	-28	714	0	0.8	-0.1	0.8
4401803	99	P	SUR	49	-25	719	0	0.7	0.0	0.7
4401804	99	P	SUR	62	-11	27	0	0.2	0.3	0.4
4401807	99	P	SUR	63	-9	691	2	2.9	2.4	3.8
44027	99	P	SUR	44	-67	732	0	0.7	-0.9	1.2
44032	99	P	SUR	44	-69	578	0	0.6	-1.2	1.3
44033	99	P	SUR	44	-69	598	0	0.6	-0.8	1.0
44034	99	P	SUR	44	-68	615	0	0.6	-0.6	0.8
44037	99	P	SUR	44	-68	606	0	0.5	-1.2	1.3
44137	99	P	SUR	42	-62	712	0	0.7	-0.4	0.8
44139	99	P	SUR	44	-57	693	0	0.7	-0.1	0.7
44150	99	P	SUR	43	-64	691	0	0.6	-0.1	0.6
44258	99	P	SUR	45	-63	711	1	0.7	-0.3	0.8
44513	99	P	SUR	54	-10	612	0	0.4	-0.4	0.5
44517	99	P	SUR	21	-64	720	0	0.4	0.2	0.4
44521	99	P	SUR	36	-36	675	0	0.4	-1.0	1.1
44746	99	P	SUR	33	-53	720	17	1.6	0.1	1.6
44777	99	P	SUR	30	-46	720	0	0.3	0.2	0.4
44778	99	P	SUR	24	-43	720	0	0.3	0.2	0.4
44857	99	P	SUR	30	-51	720	0	0.4	0.1	0.4
44874	99	P	SUR	35	-36	720	0	0.4	0.3	0.5
44887	99	P	SUR	42	-43	710	0	0.4	-0.4	0.6
45138	99	P	SUR	50	-66	698	0	0.5	-0.0	0.5
4700546	99	P	SUR	28	-47	714	7	4.5	-0.3	4.5
4700560	99	P	SUR	70	38	691	12	2.1	-0.2	2.1
4701669	99	P	SUR	44	-54	713	0	0.7	0.6	0.9
47546	99	P	SUR	28	-47	710	8	4.5	-0.3	4.5
47560	99	P	SUR	70	38	699	12	2.1	-0.2	2.1
4800770	99	P	SUR	72	-23	279	259	2.4	12.2	12.5
4802004	99	P	SUR	66	-15	711	0	0.9	-0.2	0.9
48770	99	P	SUR	72	-23	282	262	2.4	12.2	12.5
6100001	99	P	SUR	43	8	141	0	0.5	-0.2	0.5
6100002	99	P	SUR	42	5	636	0	0.4	0.1	0.4
61001	99	P	SUR	43	8	141	0	0.5	-0.2	0.5
6100197	99	P	SUR	40	4	720	0	0.5	-0.1	0.5
6100198	99	P	SUR	37	-2	720	0	0.5	0.0	0.5
61002	99	P	SUR	42	5	620	0	0.4	0.1	0.4
6100280	99	P	SUR	41	1	719	0	0.5	0.0	0.5
6100281	99	P	SUR	40	0	720	0	0.5	-0.0	0.5
6100417	99	P	SUR	38	0	716	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6100430	99	P	SUR	40	2	720	0	0.5	-0.2	0.5
6101003	99	P	SUR	40	25	226	0	0.6	0.5	0.8
6101007	99	P	SUR	36	25	210	0	0.5	-0.2	0.6
6101008	99	P	SUR	37	22	42	0	0.5	0.1	0.5
6102501	99	P	SUR	34	19	719	0	0.4	0.1	0.4
6102502	99	P	SUR	32	25	280	0	0.8	-1.7	1.8
6102623	99	P	SUR	39	4	718	0	0.6	0.3	0.6
6200024	99	P	SUR	44	-3	660	0	0.5	-0.2	0.6
6200025	99	P	SUR	44	-6	683	0	0.5	-0.1	0.5
6200082	99	P	SUR	44	-8	709	0	0.6	-0.2	0.6
6200083	99	P	SUR	43	-9	716	23	1.9	0.1	1.9
6200084	99	P	SUR	42	-9	720	0	0.6	-0.2	0.6
6200085	99	P	SUR	36	-7	720	0	0.4	0.1	0.5
6200091	99	P	SUR	53	-5	720	0	0.6	-0.3	0.7
6200092	99	P	SUR	51	-11	719	0	0.5	-0.1	0.5
6200093	99	P	SUR	55	-10	446	0	0.5	-0.4	0.7
6200094	99	P	SUR	52	-7	719	0	0.6	-0.1	0.6
62001	99	P	SUR	45	-5	716	0	0.4	-0.1	0.4
6200199	99	P	SUR	40	-9	635	0	0.4	-0.0	0.4
6200200	99	P	SUR	36	-8	638	0	0.4	0.1	0.4
6200940	99	P	SUR	37	-48	711	0	0.3	-0.4	0.5
6200941	99	P	SUR	28	-61	309	0	0.4	-0.5	0.6
6201030	99	P	SUR	44	-4	181	0	0.5	0.8	0.9
62023	99	P	SUR	51	-8	14	0	0.3	-5.5	5.5
62029	99	P	SUR	49	-12	1429	0	0.5	-0.2	0.5
62030	99	P	SUR	50	-4	1353	0	0.4	-0.2	0.5
6203503	99	P	SUR	43	-34	720	0	0.6	-0.5	0.7
6203504	99	P	SUR	32	-70	720	0	0.5	-0.1	0.5
6203510	99	P	SUR	21	-67	715	0	0.3	0.0	0.3
6203523	99	P	SUR	68	-3	681	0	0.4	-0.3	0.5
6203525	99	P	SUR	68	-2	692	0	0.4	-0.6	0.7
6203526	99	P	SUR	76	8	658	0	0.6	0.2	0.6
6203527	99	P	SUR	60	-13	688	0	0.4	-2.3	2.4
6203528	99	P	SUR	30	-23	707	0	0.3	0.0	0.3
6203600	99	P	SUR	45	-14	720	0	0.5	0.2	0.5
6203601	99	P	SUR	47	-11	720	0	0.5	0.2	0.5
6203602	99	P	SUR	67	-57	408	9	2.2	1.2	2.5
6203603	99	P	SUR	58	-24	718	0	0.6	0.0	0.6
6203604	99	P	SUR	35	-25	280	67	1.8	-0.7	2.0
6203607	99	P	SUR	37	-30	719	0	0.4	0.1	0.4
6203608	99	P	SUR	51	-13	719	0	0.5	0.3	0.5
6203609	99	P	SUR	47	-17	719	0	0.5	-0.1	0.5
6203610	99	P	SUR	49	-12	685	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62050	99	P	SUR	50	-4	729	0	0.4	0.1	0.4
62081	99	P	SUR	51	-13	735	0	0.5	-0.2	0.5
62087	99	P	SUR	54	9	629	0	0.6	-2.0	2.1
62091	99	P	SUR	53	-5	720	0	0.6	-0.3	0.7
62092	99	P	SUR	51	-11	719	0	0.5	-0.1	0.5
62093	99	P	SUR	55	-10	446	0	0.5	-0.5	0.7
62094	99	P	SUR	52	-7	719	0	0.6	-0.1	0.6
62095	99	P	SUR	54	-12	162	0	0.5	-0.4	0.7
62102	99	P	SUR	58	2	730	0	0.8	0.7	1.1
62103	99	P	SUR	50	-3	735	0	0.5	0.3	0.5
62104	99	P	SUR	57	1	733	0	0.3	0.0	0.3
62107	99	P	SUR	50	-6	1431	0	0.5	0.2	0.5
62112	99	P	SUR	58	0	734	0	0.4	0.4	0.5
62113	99	P	SUR	58	0	734	0	0.7	0.1	0.7
62114	99	P	SUR	58	0	1431	0	0.4	0.2	0.5
62115	99	P	SUR	58	-3	569	0	0.5	0.5	0.7
62116	99	P	SUR	58	1	734	0	0.7	0.5	0.8
62118	99	P	SUR	58	1	734	0	0.3	0.4	0.5
62119	99	P	SUR	57	2	734	0	0.4	-0.1	0.4
62120	99	P	SUR	56	2	709	0	0.5	-0.1	0.5
62121	99	P	SUR	54	3	734	0	0.7	0.6	0.9
62122	99	P	SUR	57	2	1431	0	0.4	0.0	0.4
62124	99	P	SUR	54	-4	724	0	0.4	0.2	0.5
62127	99	P	SUR	54	1	734	0	0.3	0.5	0.6
62129	99	P	SUR	58	0	734	0	0.7	0.2	0.7
62130	99	P	SUR	59	1	732	0	0.4	-0.0	0.4
62131	99	P	SUR	54	1	731	0	0.4	0.8	0.9
62132	99	P	SUR	56	2	728	0	0.4	0.2	0.4
62133	99	P	SUR	57	1	732	0	0.7	0.8	1.0
62134	99	P	SUR	58	1	734	0	0.4	0.6	0.7
62135	99	P	SUR	54	2	722	0	0.3	0.4	0.5
62136	99	P	SUR	54	3	734	0	0.6	1.0	1.1
62138	99	P	SUR	54	0	1429	0	0.5	0.8	0.9
62139	99	P	SUR	53	2	1395	0	0.3	0.3	0.4
62140	99	P	SUR	57	1	1431	0	0.3	0.3	0.5
62141	99	P	SUR	58	-4	723	0	0.4	-2.2	2.2
62143	99	P	SUR	58	2	734	0	0.4	0.6	0.7
62144	99	P	SUR	53	2	734	0	0.3	0.2	0.4
62145	99	P	SUR	53	3	1431	0	0.3	0.3	0.4
62146	99	P	SUR	57	2	733	0	0.4	-0.2	0.4
62148	99	P	SUR	54	2	734	0	0.4	0.5	0.7
62149	99	P	SUR	54	1	733	0	0.3	0.7	0.8
62150	99	P	SUR	54	1	734	0	0.3	1.2	1.2

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62151	99	P	SUR	57	2	1429	0	0.3	0.5	0.6
62152	99	P	SUR	57	2	734	0	0.4	0.3	0.5
62153	99	P	SUR	57	2	1405	0	0.3	0.3	0.5
62154	99	P	SUR	56	2	654	0	0.4	0.1	0.4
62155	99	P	SUR	58	1	594	0	0.4	0.3	0.6
62157	99	P	SUR	58	0	733	0	0.5	0.1	0.5
62160	99	P	SUR	57	2	1430	0	0.4	0.5	0.6
62161	99	P	SUR	58	1	724	0	0.8	0.2	0.8
62162	99	P	SUR	57	1	732	0	0.4	0.1	0.4
62163	99	P	SUR	48	-8	699	0	0.5	0.1	0.5
62164	99	P	SUR	57	1	475	0	0.5	0.3	0.6
62165	99	P	SUR	54	1	722	0	0.4	0.4	0.5
62168	99	P	SUR	58	1	734	0	0.4	0.1	0.4
62170	99	P	SUR	51	2	735	0	0.6	0.1	0.6
62296	99	P	SUR	53	2	734	0	0.3	0.2	0.3
62297	99	P	SUR	59	2	1429	0	0.4	0.1	0.5
62302	99	P	SUR	61	-2	734	0	0.6	0.1	0.6
62304	99	P	SUR	51	2	737	0	0.4	0.0	0.4
62305	99	P	SUR	50	0	729	0	0.4	0.1	0.4
62442	99	P	SUR	49	-16	699	0	0.6	-0.2	0.6
62940	99	P	SUR	37	-48	711	0	0.3	-0.4	0.5
62941	99	P	SUR	28	-61	309	0	0.4	-0.5	0.6
6301555	99	P	SUR	74	20	719	0	0.8	-0.7	1.1
6301558	99	P	SUR	87	6	719	0	0.5	1.0	1.1
6301560	99	P	SUR	80	-2	607	0	1.7	0.0	1.7
6301561	99	P	SUR	82	36	699	11	1.6	0.2	1.7
6301562	99	P	SUR	83	5	720	0	0.6	0.0	0.6
6301563	99	P	SUR	87	22	719	0	0.5	0.8	0.9
6301564	99	P	SUR	82	6	720	0	1.4	0.3	1.4
6301592	99	P	SUR	88	16	712	0	0.4	-0.0	0.4
6301596	99	P	SUR	84	4	1407	0	0.5	0.2	0.6
6301598	99	P	SUR	88	10	712	0	0.4	0.3	0.5
6301600	99	P	SUR	88	-1	712	0	0.4	0.2	0.4
6301670	99	P	SUR	82	39	671	381	4.6	-2.0	5.0
6301671	99	P	SUR	82	25	600	21	4.3	0.3	4.3
63055	99	P	SUR	61	2	732	0	0.5	-0.2	0.5
63056	99	P	SUR	60	2	729	0	0.6	0.6	0.9
63057	99	P	SUR	59	2	734	0	0.4	0.0	0.4
63058	99	P	SUR	53	2	2006	0	0.4	0.5	0.6
63059	99	P	SUR	58	-1	733	0	0.4	0.3	0.5
63101	99	P	SUR	61	1	734	0	0.7	0.6	0.9
63102	99	P	SUR	61	1	731	0	0.4	-0.1	0.4
63103	99	P	SUR	61	1	734	0	0.4	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
63104	99	P	SUR	61	2	734	0	0.4	0.0	0.5
63105	99	P	SUR	61	2	734	0	0.4	-0.1	0.4
63108	99	P	SUR	61	2	734	0	0.5	-0.1	0.5
63109	99	P	SUR	60	2	734	0	0.5	-0.4	0.6
63110	99	P	SUR	60	2	734	0	0.6	0.2	0.7
63111	99	P	SUR	61	2	1414	0	0.4	-0.3	0.5
63112	99	P	SUR	61	1	734	0	0.4	-0.2	0.5
63115	99	P	SUR	62	1	734	0	0.4	-0.1	0.4
63117	99	P	SUR	61	1	1431	0	0.9	1.0	1.3
63118	99	P	SUR	58	1	734	0	0.4	-0.1	0.4
63120	99	P	SUR	54	2	734	0	0.4	0.4	0.5
6400476	99	P	SUR	45	-64	82	0	0.5	-5.0	5.0
6400562	99	P	SUR	72	10	719	0	0.5	0.1	0.5
6401502	99	P	SUR	63	0	689	0	0.3	0.5	0.6
6401503	99	P	SUR	59	-1	683	0	0.4	0.6	0.7
6401504	99	P	SUR	60	-9	687	0	0.4	0.3	0.5
6401505	99	P	SUR	63	-24	673	0	0.4	0.3	0.5
6401506	99	P	SUR	61	-14	677	0	0.4	0.4	0.6
6401531	99	P	SUR	59	-43	715	0	0.4	0.2	0.5
6401536	99	P	SUR	67	-32	715	0	0.8	0.5	1.0
6401537	99	P	SUR	66	-34	716	1	1.9	-0.2	1.9
6401539	99	P	SUR	65	-39	715	0	0.5	0.6	0.8
6401541	99	P	SUR	68	-28	403	0	0.8	0.2	0.8
6401544	99	P	SUR	66	-33	715	1	1.7	1.7	2.5
6401550	99	P	SUR	68	12	720	0	0.7	0.3	0.8
6401555	99	P	SUR	75	13	719	0	0.4	0.3	0.6
6401556	99	P	SUR	72	10	720	0	0.6	0.5	0.8
6401561	99	P	SUR	64	-13	720	0	0.5	0.3	0.6
6401562	99	P	SUR	69	0	440	0	0.8	-0.1	0.8
6401563	99	P	SUR	59	-35	720	0	1.3	0.3	1.3
6401565	99	P	SUR	72	24	348	32	4.0	1.3	4.2
6401566	99	P	SUR	63	8	720	0	1.1	0.5	1.2
6401568	99	P	SUR	61	-8	720	0	0.4	0.6	0.7
6401569	99	P	SUR	61	-17	720	0	0.5	0.3	0.5
6401570	99	P	SUR	67	0	718	0	0.4	0.3	0.5
6401571	99	P	SUR	62	-10	720	0	0.5	0.4	0.6
6401572	99	P	SUR	63	-16	248	0	0.5	0.3	0.6
6401654	99	P	SUR	87	6	712	0	0.4	-0.3	0.5
64041	99	P	SUR	61	-3	734	0	0.5	-0.0	0.5
64045	99	P	SUR	59	-12	723	2	0.4	-0.2	0.5
64046	99	P	SUR	61	-4	718	0	0.4	-0.0	0.4
64476	99	P	SUR	45	-64	82	0	0.5	-5.0	5.0
64562	99	P	SUR	72	10	719	0	0.5	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6500596	99	P	SUR	69	-17	720	0	0.5	0.6	0.8
6501555	99	P	SUR	65	-52	720	0	0.5	-0.6	0.8
6501556	99	P	SUR	64	-2	720	0	0.6	0.7	0.9
65596	99	P	SUR	69	-17	720	0	0.5	0.6	0.8
66023	99	P	SUR	55	11	731	0	0.4	-0.1	0.4

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 : NOV 2018
 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
070	99	SPEED	SUR	76	16	1	0	0	0.0	2.8	2.8
080	99	SPEED	SUR	76	16	1	1	0	0.0	1.7	1.7
1300001	99	SPEED	SUR	11	-23	680	0	0	0.7	0.9	1.1
1300002	99	SPEED	SUR	20	-23	678	0	0	0.9	0.5	1.0
1300008	99	SPEED	SUR	15	-38	360	0	0	0.9	0.1	0.9
1300130	99	SPEED	SUR	28	-16	385	0	0	1.3	-0.4	1.4
1300131	99	SPEED	SUR	28	-17	104	0	0	1.5	1.5	2.1
4100026	99	SPEED	SUR	12	-38	146	0	0	0.7	0.1	0.7
4100139	99	SPEED	SUR	20	-38	685	0	0	0.9	0.1	0.9
4100300	99	SPEED	SUR	16	-57	720	0	0	1.0	-0.5	1.2
41026	99	SPEED	SUR	12	-38	116	0	0	0.8	0.1	0.8
41041	99	SPEED	SUR	14	-46	1255	0	0	1.0	-0.3	1.1
41043	99	SPEED	SUR	21	-65	1379	0	0	1.2	-0.2	1.2
41044	99	SPEED	SUR	22	-59	1389	0	0	1.3	-0.3	1.3
41046	99	SPEED	SUR	24	-68	1206	0	0	1.2	-0.2	1.3
41049	99	SPEED	SUR	28	-63	1261	0	0	1.2	-0.1	1.2
41052	99	SPEED	SUR	18	-65	1154	0	0	1.2	-0.3	1.3
41053	99	SPEED	SUR	19	-66	1665	0	0	1.5	0.5	1.6
41056	99	SPEED	SUR	18	-66	1666	0	0	1.2	-0.7	1.3
41300	99	SPEED	SUR	16	-57	720	0	0	1.1	-0.5	1.2
42060	99	SPEED	SUR	16	-63	1955	0	0	1.2	-0.3	1.2
42085	99	SPEED	SUR	18	-67	688	0	0	1.4	-0.3	1.4
4401601	99	SPEED	SUR	55	-12	157	0	0	2.1	7.5	7.8
4401605	99	SPEED	SUR	60	-5	159	0	0	1.8	5.6	5.9
4401611	99	SPEED	SUR	46	-57	159	0	0	4.1	8.8	9.7
4401613	99	SPEED	SUR	40	-14	156	0	0	2.8	8.0	8.5
4401616	99	SPEED	SUR	36	-38	160	0	0	3.1	8.8	9.3
4401619	99	SPEED	SUR	53	-10	158	0	0	2.7	13.0	13.2
4401633	99	SPEED	SUR	38	-18	160	0	0	2.0	6.7	7.0
4401802	99	SPEED	SUR	40	-28	160	0	0	1.6	7.9	8.1
4401904	99	SPEED	SUR	44	-31	159	0	0	2.4	9.7	10.0
4401905	99	SPEED	SUR	52	-18	160	0	0	2.6	6.1	6.7
44027	99	SPEED	SUR	44	-67	733	0	0	1.6	0.4	1.7
44032	99	SPEED	SUR	44	-69	580	0	0	1.7	-0.0	1.8

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
44033	99	SPEED	SUR	44	-69	599	0	0	1.7	0.2	1.7
44034	99	SPEED	SUR	44	-68	617	0	0	1.8	-0.0	1.8
44037	99	SPEED	SUR	44	-68	606	0	0	1.4	0.2	1.5
44137	99	SPEED	SUR	42	-62	727	4	0	2.3	-0.6	2.4
44139	99	SPEED	SUR	44	-57	706	0	0	1.5	-0.2	1.5
44150	99	SPEED	SUR	43	-64	703	0	0	1.5	-0.3	1.6
44258	99	SPEED	SUR	45	-63	713	0	0	1.6	0.3	1.7
45138	99	SPEED	SUR	50	-66	707	0	0	1.5	0.2	1.5
4700539	99	SPEED	SUR	29	-64	154	0	0	4.4	7.2	8.5
4700540	99	SPEED	SUR	68	-15	157	0	0	2.3	2.2	3.2
4700546	99	SPEED	SUR	28	-47	154	0	0	3.9	5.4	6.7
4700552	99	SPEED	SUR	62	-63	157	17	4	4.3	8.8	9.8
4700560	99	SPEED	SUR	70	38	152	13	0	3.8	10.1	10.8
4700584	99	SPEED	SUR	19	-57	156	0	0	1.9	4.8	5.1
4701669	99	SPEED	SUR	44	-54	158	0	0	3.7	9.5	10.2
4800770	99	SPEED	SUR	72	-23	42	0	0	3.3	2.0	3.9
4802004	99	SPEED	SUR	66	-15	157	0	0	1.4	1.5	2.0
6100001	99	SPEED	SUR	43	8	141	0	0	1.9	-0.2	1.9
6100002	99	SPEED	SUR	42	5	636	0	0	1.3	0.1	1.3
61001	99	SPEED	SUR	43	8	141	0	0	2.1	-0.8	2.2
6100196	99	SPEED	SUR	42	4	321	0	0	1.6	-0.1	1.6
6100198	99	SPEED	SUR	37	-2	712	0	0	1.6	-0.2	1.6
61002	99	SPEED	SUR	42	5	620	0	0	1.3	-0.5	1.4
6100280	99	SPEED	SUR	41	1	719	0	0	1.7	-0.2	1.7
6100281	99	SPEED	SUR	40	0	710	0	0	2.3	0.9	2.4
6100417	99	SPEED	SUR	38	0	716	0	0	1.5	0.0	1.5
6100430	99	SPEED	SUR	40	2	718	0	0	1.4	-0.6	1.5
6101003	99	SPEED	SUR	40	25	230	0	0	1.7	-1.2	2.1
6101007	99	SPEED	SUR	36	25	210	0	0	1.9	-0.4	1.9
6101008	99	SPEED	SUR	37	22	62	0	0	4.3	-2.7	5.0
6200024	99	SPEED	SUR	44	-3	658	0	0	2.1	0.4	2.1
6200025	99	SPEED	SUR	44	-6	179	0	0	1.8	0.0	1.8
6200082	99	SPEED	SUR	44	-8	707	0	0	1.6	-0.6	1.7
6200083	99	SPEED	SUR	43	-9	713	0	0	1.5	-0.5	1.5
6200084	99	SPEED	SUR	42	-9	712	0	0	1.4	-0.8	1.6
6200085	99	SPEED	SUR	36	-7	720	0	0	1.4	-0.1	1.4
6200091	99	SPEED	SUR	53	-5	720	0	0	1.5	0.2	1.5
6200092	99	SPEED	SUR	51	-11	719	0	0	1.3	-0.4	1.3
6200094	99	SPEED	SUR	52	-7	719	0	0	1.2	0.1	1.2
62001	99	SPEED	SUR	45	-5	716	0	0	1.4	0.9	1.7
6200199	99	SPEED	SUR	40	-9	634	0	0	1.4	0.1	1.4

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200200	99	SPEED	SUR	36	-8	638	2	0	1.2	0.0	1.2
6201030	99	SPEED	SUR	44	-4	430	0	0	2.2	-0.1	2.2
62023	99	SPEED	SUR	51	-8	14	0	0	0.6	-0.2	0.6
62029	99	SPEED	SUR	49	-12	1429	0	0	1.1	0.3	1.2
62050	99	SPEED	SUR	50	-4	729	0	0	1.2	0.6	1.3
62081	99	SPEED	SUR	51	-13	735	0	0	1.3	-0.1	1.3
62087	99	SPEED	SUR	54	9	629	0	0	2.8	1.2	3.0
62091	99	SPEED	SUR	53	-5	720	0	0	1.5	0.3	1.6
62092	99	SPEED	SUR	51	-11	719	0	0	1.3	-0.3	1.3
62094	99	SPEED	SUR	52	-7	719	0	0	1.3	0.2	1.3
62095	99	SPEED	SUR	54	-12	162	0	0	1.5	0.0	1.5
62102	99	SPEED	SUR	58	2	730	0	0	1.4	0.0	1.4
62103	99	SPEED	SUR	50	-3	730	0	0	1.6	1.6	2.3
62104	99	SPEED	SUR	57	1	733	0	0	1.1	-0.8	1.4
62107	99	SPEED	SUR	50	-6	1431	0	0	1.8	1.0	2.1
62112	99	SPEED	SUR	58	0	734	0	0	2.1	-1.0	2.3
62113	99	SPEED	SUR	58	0	734	0	0	1.6	0.6	1.7
62114	99	SPEED	SUR	58	0	1431	0	0	1.4	0.7	1.6
62118	99	SPEED	SUR	58	1	734	0	0	1.3	0.6	1.4
62119	99	SPEED	SUR	57	2	734	0	0	1.6	-1.3	2.1
62120	99	SPEED	SUR	56	2	734	0	0	1.1	-0.2	1.1
62121	99	SPEED	SUR	54	3	734	0	0	1.5	-0.6	1.7
62122	99	SPEED	SUR	57	2	1431	0	0	1.1	-0.2	1.1
62129	99	SPEED	SUR	58	0	734	0	0	1.2	-0.2	1.2
62131	99	SPEED	SUR	54	1	731	0	0	3.0	-1.3	3.3
62132	99	SPEED	SUR	56	2	726	0	0	3.1	-2.9	4.2
62133	99	SPEED	SUR	57	1	732	0	0	1.3	0.2	1.3
62134	99	SPEED	SUR	58	1	734	0	0	1.3	0.1	1.3
62140	99	SPEED	SUR	57	1	1431	0	0	1.0	-0.5	1.1
62143	99	SPEED	SUR	58	2	734	0	0	1.7	-0.7	1.8
62144	99	SPEED	SUR	53	2	734	0	0	2.9	-1.8	3.4
62145	99	SPEED	SUR	53	3	1431	0	0	1.3	0.1	1.3
62146	99	SPEED	SUR	57	2	713	0	0	1.4	-0.8	1.7
62149	99	SPEED	SUR	54	1	733	0	0	1.9	-0.0	1.9
62150	99	SPEED	SUR	54	1	734	0	0	1.6	-0.9	1.8
62152	99	SPEED	SUR	57	2	734	0	0	1.7	-1.4	2.2
62153	99	SPEED	SUR	57	2	1405	0	0	1.5	-0.8	1.7
62154	99	SPEED	SUR	56	2	650	0	0	1.7	-0.4	1.8
62155	99	SPEED	SUR	58	1	310	0	0	1.5	0.4	1.5
62163	99	SPEED	SUR	48	-8	699	0	0	1.7	0.0	1.7
62164	99	SPEED	SUR	57	1	475	0	0	1.4	-1.9	2.4

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62165	99	SPEED	SUR	54	1	723	0	0	1.2	-0.7	1.4
62170	99	SPEED	SUR	51	2	735	0	0	1.8	1.3	2.2
62304	99	SPEED	SUR	51	2	736	0	0	1.8	1.6	2.4
62305	99	SPEED	SUR	50	0	729	0	0	1.6	1.5	2.2
62442	99	SPEED	SUR	49	-16	699	0	0	1.5	-0.3	1.5
6301592	99	SPEED	SUR	88	16	158	0	0	1.2	1.8	2.1
6301596	99	SPEED	SUR	84	4	158	0	0	1.2	1.8	2.1
6301598	99	SPEED	SUR	88	10	158	0	0	1.2	1.8	2.2
6301600	99	SPEED	SUR	88	-1	158	0	0	1.3	1.7	2.2
6301670	99	SPEED	SUR	82	39	145	2	0	1.7	4.5	4.8
6301671	99	SPEED	SUR	82	25	145	5	0	2.2	6.4	6.7
63055	99	SPEED	SUR	61	2	732	0	0	1.2	-0.6	1.3
63056	99	SPEED	SUR	60	2	729	0	0	1.5	-0.0	1.5
63057	99	SPEED	SUR	59	2	734	0	0	2.0	0.3	2.1
63058	99	SPEED	SUR	53	2	997	0	0	1.1	-0.5	1.2
63101	99	SPEED	SUR	61	1	734	0	0	1.2	-0.2	1.2
63103	99	SPEED	SUR	61	1	734	0	0	1.6	0.2	1.6
63104	99	SPEED	SUR	61	2	734	0	0	1.2	0.0	1.2
63105	99	SPEED	SUR	61	2	734	0	0	1.7	-0.1	1.7
63106	99	SPEED	SUR	61	2	657	0	0	1.4	-0.2	1.4
63108	99	SPEED	SUR	61	2	734	0	0	1.6	0.2	1.6
63109	99	SPEED	SUR	60	2	733	0	0	1.7	0.2	1.7
63110	99	SPEED	SUR	60	2	734	0	0	1.6	-0.2	1.6
63112	99	SPEED	SUR	61	1	734	0	0	1.2	-0.6	1.3
63113	99	SPEED	SUR	61	2	734	0	0	1.3	-0.4	1.3
63115	99	SPEED	SUR	62	1	734	0	0	1.1	-0.7	1.3
63117	99	SPEED	SUR	61	1	1431	0	0	1.3	0.1	1.3
6401654	99	SPEED	SUR	87	6	158	0	0	1.2	1.8	2.2
64041	99	SPEED	SUR	61	-3	734	0	0	1.4	-0.1	1.4
64045	99	SPEED	SUR	59	-12	721	0	0	1.1	0.1	1.1
64046	99	SPEED	SUR	61	-4	718	0	0	1.2	0.3	1.2
6504405	99	SPEED	SUR	77	-69	18	0	0	1.6	6.4	6.6
66021	99	SPEED	SUR	55	14	720	0	0	1.2	0.8	1.4
66022	99	SPEED	SUR	54	14	1002	4	0	2.0	-0.2	2.0
66024	99	SPEED	SUR	55	13	721	0	0	1.4	0.9	1.6

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 : NOV 2018
 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
1300001	99	DIRN	SUR	11	-23	678	0	0	9.5	2.6	9.8
1300002	99	DIRN	SUR	20	-23	626	0	0	10.5	-0.6	10.5
1300008	99	DIRN	SUR	15	-38	358	0	0	10.2	5.9	11.7
1300130	99	DIRN	SUR	28	-16	341	0	0	108.7	59.1	123.8
1300131	99	DIRN	SUR	28	-17	63	0	0	15.2	-0.2	15.2
4100026	99	DIRN	SUR	12	-38	146	0	0	8.3	-1.4	8.4
4100139	99	DIRN	SUR	20	-38	685	0	0	9.6	2.7	9.9
4100300	99	DIRN	SUR	16	-57	720	0	0	12.7	5.4	13.8
41004	99	DIRN	SUR	33	-79	811	0	0	20.7	6.3	21.6
41008	99	DIRN	SUR	31	-81	584	0	0	27.5	5.7	28.1
41009	99	DIRN	SUR	29	-80	1029	0	0	18.5	2.8	18.7
41010	99	DIRN	SUR	29	-79	1099	0	0	22.6	8.9	24.3
41013	99	DIRN	SUR	33	-78	1184	0	0	20.8	12.6	24.3
41024	99	DIRN	SUR	34	-79	545	0	0	23.2	-1.8	23.3
41025	99	DIRN	SUR	35	-75	1210	0	0	20.6	8.9	22.5
41026	99	DIRN	SUR	12	-38	116	0	0	9.1	-2.1	9.3
41029	99	DIRN	SUR	33	-80	880	0	0	26.8	2.2	26.9
41033	99	DIRN	SUR	32	-80	3	0	0	10.8	-17.0	20.1
41037	99	DIRN	SUR	34	-77	609	0	0	22.0	-8.8	23.7
41038	99	DIRN	SUR	34	-78	580	0	0	24.7	-10.4	26.8
41041	99	DIRN	SUR	14	-46	1254	0	0	10.2	-8.5	13.3
41043	99	DIRN	SUR	21	-65	1132	0	0	13.3	-9.5	16.4
41044	99	DIRN	SUR	22	-59	1166	0	0	14.4	6.7	15.9
41046	99	DIRN	SUR	24	-68	997	0	0	17.0	2.7	17.2
41047	99	DIRN	SUR	28	-72	1059	0	0	16.3	-5.8	17.3
41049	99	DIRN	SUR	28	-63	1170	0	0	13.7	3.8	14.2
41052	99	DIRN	SUR	18	-65	1150	0	0	16.6	5.4	17.4
41053	99	DIRN	SUR	19	-66	1015	0	0	16.5	1.7	16.6
41056	99	DIRN	SUR	18	-66	1445	0	0	15.0	7.0	16.6
41063	99	DIRN	SUR	35	-76	294	0	0	24.8	-19.0	31.2
41064	99	DIRN	SUR	34	-77	619	0	0	23.9	-18.2	30.0
41300	99	DIRN	SUR	16	-57	719	0	0	12.7	5.4	13.8

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
42013	99	DIRN	SUR	27	-83	784	0	0	20.5	-0.7	20.5
42022	99	DIRN	SUR	28	-84	1099	0	0	19.6	0.5	19.6
42023	99	DIRN	SUR	26	-83	834	0	0	16.9	3.5	17.3
42057	99	DIRN	SUR	17	-81	1346	0	0	12.4	2.3	12.6
42060	99	DIRN	SUR	16	-63	1887	0	0	14.2	2.3	14.4
42085	99	DIRN	SUR	18	-67	599	0	0	16.9	14.8	22.5
44007	99	DIRN	SUR	44	-70	629	0	0	32.3	5.0	32.7
44013	99	DIRN	SUR	42	-71	660	0	0	24.6	11.2	27.0
44014	99	DIRN	SUR	37	-75	658	0	0	12.4	3.5	12.9
4401601	99	DIRN	SUR	55	-12	157	0	0	5.5	-0.2	5.5
4401605	99	DIRN	SUR	60	-5	147	0	0	30.8	-2.5	30.9
4401611	99	DIRN	SUR	46	-57	155	0	0	25.6	-1.5	25.6
4401613	99	DIRN	SUR	40	-14	153	0	0	26.7	-0.1	26.7
4401616	99	DIRN	SUR	36	-38	160	0	0	9.2	3.3	9.8
4401619	99	DIRN	SUR	53	-10	151	0	0	10.2	-12.5	16.1
4401633	99	DIRN	SUR	38	-18	159	0	0	22.4	1.0	22.5
44017	99	DIRN	SUR	41	-72	652	0	0	20.0	9.6	22.2
44018	99	DIRN	SUR	42	-70	670	0	0	20.9	8.7	22.6
4401802	99	DIRN	SUR	40	-28	160	0	0	10.7	2.8	11.0
4401904	99	DIRN	SUR	44	-31	159	0	0	13.6	1.3	13.6
4401905	99	DIRN	SUR	52	-18	123	0	0	48.3	-1.3	48.3
44020	99	DIRN	SUR	42	-70	1195	0	0	14.5	5.7	15.6
44022	99	DIRN	SUR	41	-74	434	0	0	17.2	9.5	19.7
44025	99	DIRN	SUR	40	-73	648	1	0	19.3	1.1	19.3
44027	99	DIRN	SUR	44	-67	665	0	0	16.3	8.6	18.4
44029	99	DIRN	SUR	43	-71	972	0	0	23.5	-4.2	23.9
44030	99	DIRN	SUR	43	-70	534	0	0	32.8	0.6	32.8
44032	99	DIRN	SUR	44	-69	514	0	0	22.3	8.9	24.0
44033	99	DIRN	SUR	44	-69	502	0	0	24.0	-2.4	24.1
44034	99	DIRN	SUR	44	-68	551	0	0	20.1	4.3	20.6
44037	99	DIRN	SUR	44	-68	569	0	0	15.6	4.0	16.1
44039	99	DIRN	SUR	41	-73	559	0	0	24.3	3.3	24.5
44040	99	DIRN	SUR	41	-74	468	0	0	18.4	0.9	18.4
44042	99	DIRN	SUR	38	-76	979	0	0	22.1	-8.2	23.6
44058	99	DIRN	SUR	38	-76	949	0	0	20.8	-27.3	34.4
44063	99	DIRN	SUR	39	-76	582	0	0	25.6	-12.4	28.4
44064	99	DIRN	SUR	37	-76	920	0	0	18.3	-17.2	25.1
44065	99	DIRN	SUR	40	-74	1138	0	0	17.7	6.4	18.8
44066	99	DIRN	SUR	40	-73	638	0	0	15.4	1.2	15.4
44069	99	DIRN	SUR	41	-73	611	0	0	20.5	5.1	21.1
44072	99	DIRN	SUR	37	-76	719	0	0	20.7	-9.8	22.9

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44137	99	DIRN	SUR	42	-62	664	4	0	20.9	7.2	22.1
44139	99	DIRN	SUR	44	-57	671	0	0	14.3	16.0	21.5
44150	99	DIRN	SUR	43	-64	649	0	0	15.1	8.7	17.4
44258	99	DIRN	SUR	45	-63	637	0	0	18.9	4.4	19.4
45003	99	DIRN	SUR	45	-83	327	0	0	24.9	0.6	24.9
45005	99	DIRN	SUR	42	-82	958	0	0	15.4	10.1	18.4
45008	99	DIRN	SUR	44	-82	542	0	0	12.5	3.3	13.0
45012	99	DIRN	SUR	44	-77	383	0	0	16.9	5.1	17.7
45132	99	DIRN	SUR	43	-81	621	0	0	14.9	-1.4	15.0
45135	99	DIRN	SUR	44	-77	487	0	0	18.7	-15.5	24.2
45137	99	DIRN	SUR	46	-81	470	0	0	19.0	-7.0	20.2
45138	99	DIRN	SUR	50	-66	599	0	0	14.4	0.8	14.5
45139	99	DIRN	SUR	43	-80	217	0	0	18.6	2.8	18.8
45142	99	DIRN	SUR	43	-79	614	0	0	17.1	-4.3	17.6
45143	99	DIRN	SUR	45	-81	569	0	0	18.9	2.8	19.2
45147	99	DIRN	SUR	42	-83	133	0	0	18.0	3.0	18.2
45149	99	DIRN	SUR	44	-82	409	0	0	22.9	-12.1	25.9
45151	99	DIRN	SUR	45	-79	4	0	0	2.8	-6.1	6.7
45154	99	DIRN	SUR	46	-83	748	0	0	23.2	32.1	39.6
45159	99	DIRN	SUR	44	-79	339	0	0	19.5	12.5	23.1
45164	99	DIRN	SUR	42	-82	153	0	0	43.5	-11.0	44.9
45169	99	DIRN	SUR	42	-82	298	0	0	35.5	-22.3	41.9
45176	99	DIRN	SUR	42	-82	393	3	0	79.6	-10.2	80.2
4700539	99	DIRN	SUR	29	-64	139	0	0	32.8	0.3	32.8
4700540	99	DIRN	SUR	68	-15	17	0	0	20.1	-36.8	41.9
4700546	99	DIRN	SUR	28	-47	123	0	0	30.7	4.8	31.1
4700552	99	DIRN	SUR	62	-63	150	17	0	47.8	-5.2	48.0
4700584	99	DIRN	SUR	19	-57	145	0	0	10.7	3.8	11.3
4701668	99	DIRN	SUR	39	-74	14	0	0	6.8	-1.6	7.0
4701669	99	DIRN	SUR	44	-54	150	0	0	30.5	-1.5	30.6
4800770	99	DIRN	SUR	72	-23	26	0	0	13.5	2.7	13.8
4802004	99	DIRN	SUR	66	-15	19	0	0	15.3	-24.2	28.7
6100198	99	DIRN	SUR	37	-2	513	0	0	19.1	-2.3	19.2
6100281	99	DIRN	SUR	40	0	504	0	0	21.1	-7.0	22.2
6100417	99	DIRN	SUR	38	0	578	0	0	22.9	5.5	23.5
6200024	99	DIRN	SUR	44	-3	487	0	0	23.5	7.8	24.7
6200025	99	DIRN	SUR	44	-6	123	0	0	23.5	4.7	24.0
6200082	99	DIRN	SUR	44	-8	623	0	0	15.0	2.2	15.2
6200083	99	DIRN	SUR	43	-9	557	0	0	14.6	7.3	16.3
6200084	99	DIRN	SUR	42	-9	500	0	0	13.0	9.6	16.1
6200085	99	DIRN	SUR	36	-7	597	0	0	20.6	7.2	21.8

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
6200091	99	DIRN	SUR	53	-5	713	0	0	11.4	2.6	11.7
6200092	99	DIRN	SUR	51	-11	684	0	0	11.1	4.5	12.0
6200094	99	DIRN	SUR	52	-7	700	0	0	11.3	-1.1	11.4
62001	99	DIRN	SUR	45	-5	641	0	0	17.8	6.8	19.1
6200199	99	DIRN	SUR	40	-9	477	0	0	20.1	3.3	20.3
6200200	99	DIRN	SUR	36	-8	530	2	0	159.8	-55.6	169.2
6201030	99	DIRN	SUR	44	-4	310	0	0	25.1	-0.7	25.1
62023	99	DIRN	SUR	51	-8	14	0	0	7.0	13.5	15.2
62029	99	DIRN	SUR	49	-12	1304	0	0	11.5	9.9	15.2
62050	99	DIRN	SUR	50	-4	694	0	0	14.3	4.5	14.9
62081	99	DIRN	SUR	51	-13	690	0	0	16.5	11.8	20.2
62091	99	DIRN	SUR	53	-5	707	0	0	11.0	1.8	11.2
62092	99	DIRN	SUR	51	-11	680	0	0	11.5	4.1	12.2
62094	99	DIRN	SUR	52	-7	697	0	0	10.8	-1.5	10.9
62095	99	DIRN	SUR	54	-12	154	0	0	14.2	8.9	16.8
62103	99	DIRN	SUR	50	-3	689	0	0	13.9	5.3	14.9
62107	99	DIRN	SUR	50	-6	1419	0	0	15.7	5.8	16.8
62112	99	DIRN	SUR	58	0	675	0	0	10.0	3.5	10.6
62114	99	DIRN	SUR	58	0	1365	0	0	10.2	1.0	10.2
62163	99	DIRN	SUR	48	-8	629	0	0	17.4	-0.6	17.4
62305	99	DIRN	SUR	50	0	709	0	0	14.7	7.8	16.6
62442	99	DIRN	SUR	49	-16	629	0	0	14.8	-6.6	16.2
64041	99	DIRN	SUR	61	-3	724	0	0	10.1	9.7	14.0
64045	99	DIRN	SUR	59	-12	713	0	0	10.1	7.5	12.6
64046	99	DIRN	SUR	61	-4	705	0	0	10.5	-1.5	10.6
6504405	99	DIRN	SUR	77	-69	2	0	0	13.0	-67.4	68.6

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	JNSR	QCY3TGN	XQFJRGX	XWHDEAD
YLV96WM	ZVQEQCM	5QPW8XG	7HCPVTB	7JUNA4N	01001	01004	01010	01028
01241	01400	01415	02185	02365	02527	02591	02836	02963
03005	03023	03238	03354	03502	03743	03808	03882	03918
03953	04018	04089	04099	04220	04270	04320	04339	04360
04417	06011	06260	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08430	08508	08522	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	17130	17220	17240	17281	17607	33008	40179	40186
43599	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	61901
61904	61980	61998	67083	68263	68424	68442	68512	68816
68842	70026	70133	70200	70219	70231	70261	70308	70316
70326	70350	70361	70398	71043	71081	71082	71109	71119
71600	71603	71722	71802	71811	71815	71816	71823	71836
71845	71867	71906	71907	71908	71909	71913	71917	71924
71925	71926	71934	71945	71957	71964	72201	72206	72208
72210	72214	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
72681	72694	72712	72747	72764	72768	72776	72786	72797
73033	74389	74494	74560	76612	76679	76743	76903	78897
78954	81405	85442	85469	85586	85799	85934	87155	87344
87623	88889	89002	89062	89564	89571	89611	89642	89859
91212	91285	91592	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

ASDE09	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	QCY3TGN	XQFJRGX	XWHDEAD	YLV96WM
ZVQEQCM	5QPW8XG	7HCPVTB	7JUNA4N	01001	01004	01010	01028	01241
01400	01415	02185	02365	02527	02591	02836	02963	03005
03238	03354	03502	03743	03808	03882	03918	03953	04018
04089	04099	04220	04270	04320	04339	04360	04417	06260
06610	07110	07145	07510	07645	07761	08001	08190	08221
08302	08430	10035	10113	10184	10238	10304	10393	10548
10618	10739	10771	10868	10962	11010	11120	11240	11520
11952	12374	12425	12843	13275	14015	14240	15614	16080
16113	16144	16245	16429	16546	16622	16716	16754	17607
33008	40179	40186	45004	47138	47155	47169	47401	47412
47418	47582	47600	47646	47678	47778	47807	47827	47909
47918	47945	47971	47991	60018	61904	61980	61998	67083
68263	68842	70026	70133	70231	70326	70350	71043	71082
71109	71600	71823	71845	71867	71906	71907	71908	71913
71926	71945	71964	72201	72206	72208	72210	72215	72230
72233	72235	72240	72248	72249	72250	72251	72261	72265
72274	72293	72317	72327	72340	72363	72365	72376	72388
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72632	72634	72645	72649	72659
72662	72672	72681	72694	72712	72747	72764	72776	72786
72797	73033	74389	74560	76743	76903	78897	78954	81405
85442	85586	85799	85934	88889	89002	89062	89564	89571
89611	89642	91212	91285	91592	91765	91925	91938	91948
91958	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

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.