



ECMWF Global Data Monitoring Report

November 2020

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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 co-ordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

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

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

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

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	Oct	Nov	Ident	Time	Oct	Nov
02527	(00)	27	7	42379	(00)	14	30
03918	(00)	26	6	43192	(00)	2	14
06458	(00)	30	0	43285	(00)	0	15
21946	(00)	30	14	48097	(12)	18	29
21946	(12)	31	15	62414	(12)	8	22
31736	(00)	30	18	64910	(00)	13	29
31736	(12)	31	17	64910	(12)	19	36
42027	(00)	27	0	68906	(00)	5	28
43371	(00)	25	5	68906	(12)	8	28
48453	(00)	28	15	78807	(00)	8	27
59981	(00)	31	0	78807	(12)	8	23
59981	(12)	31	0	78866	(00)	0	15
60096	(12)	27	13	78866	(12)	0	14
61052	(12)	28	10	80398	(12)	2	28
74006	(00)	40	6	83899	(12)	0	25
76743	(00)	15	1	83971	(00)	9	30
76743	(12)	12	0	83971	(12)	10	30
82193	(12)	31	20	85469	(00)	10	29
83649	(12)	30	11	89662	(00)	0	18
83937	(12)	28	16	89662	(12)	0	18
96645	(00)	28	12	96035	(12)	16	28
98444	(00)	31	9	96163	(12)	17	29
98444	(12)	29	8	96237	(12)	16	30
98618	(00)	21	7	96253	(12)	16	28
98646	(00)	31	9	96581	(12)	17	28
98646	(12)	31	8	96685	(12)	17	29
-	-	-	-	96749	(12)	16	28
-	-	-	-	96805	(12)	15	26
-	-	-	-	96935	(12)	15	29
-	-	-	-	97014	(12)	17	30
-	-	-	-	97072	(12)	7	27
-	-	-	-	97180	(12)	17	29
-	-	-	-	97372	(12)	16	30
-	-	-	-	97560	(12)	17	29
-	-	-	-	97724	(12)	17	30
-	-	-	-	97900	(12)	17	29
-	-	-	-	97980	(12)	17	30

2.2 Drifting Buoys

Surface pressure observations from 1944 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.

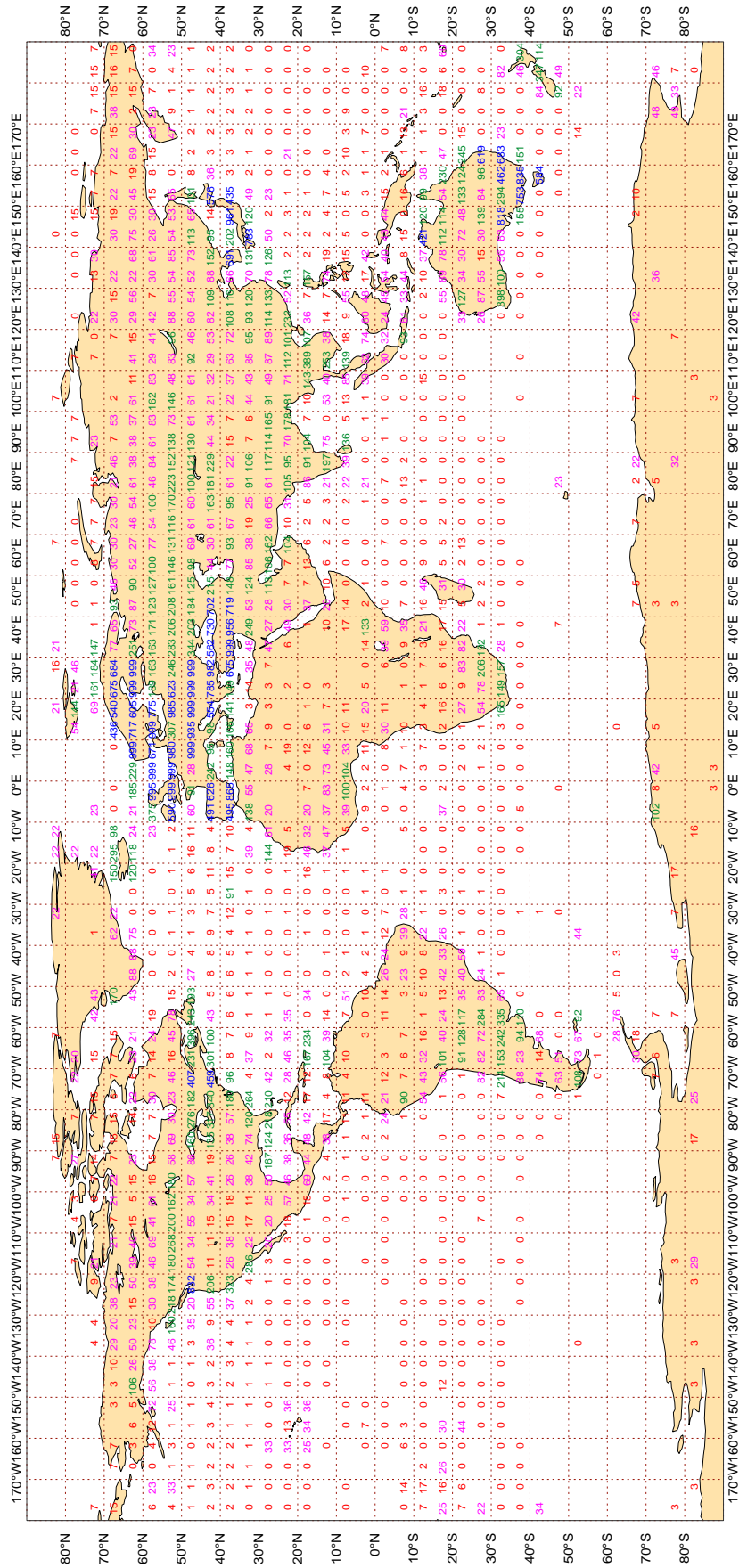
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

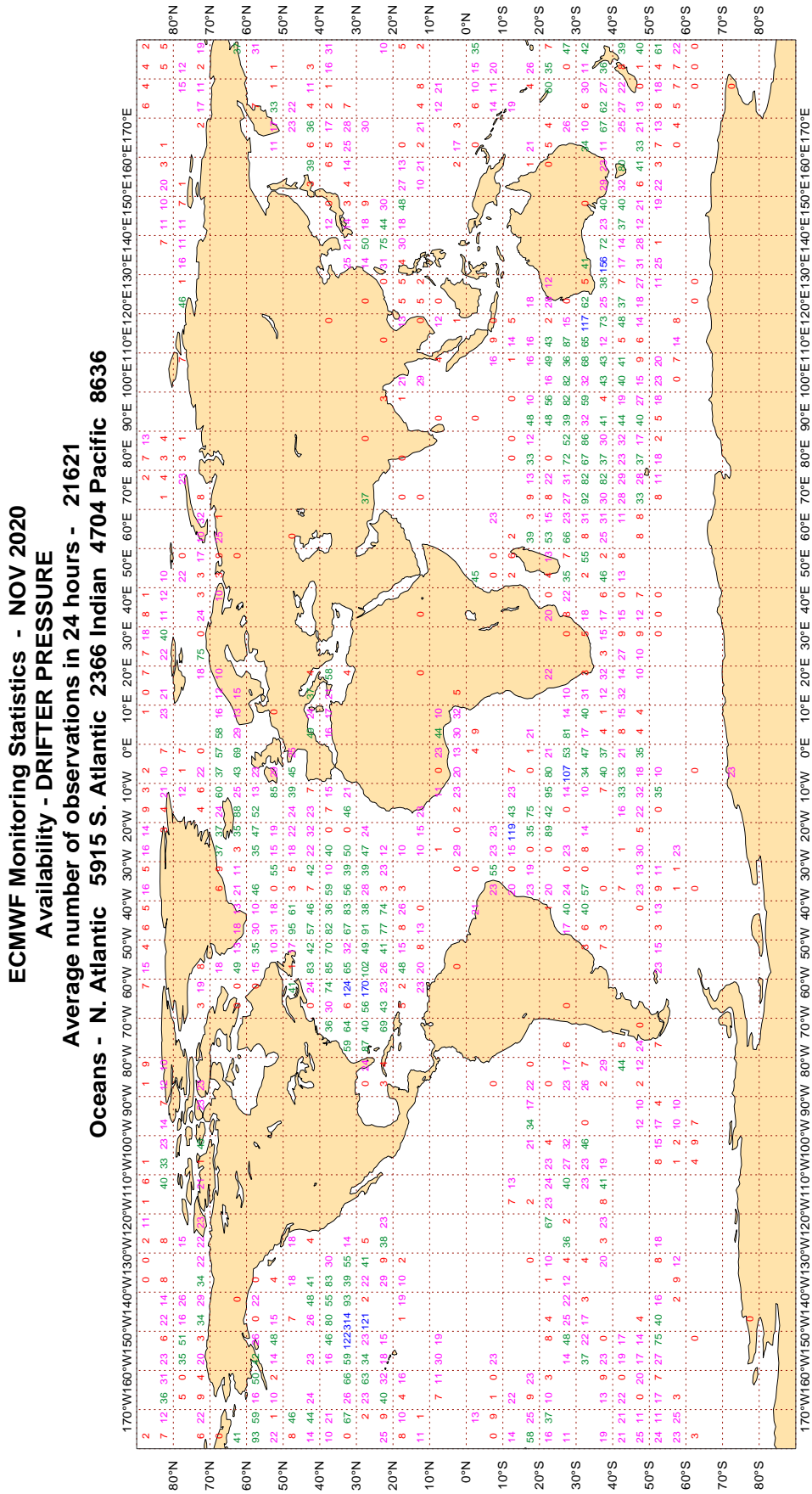
Figure 1

ECMWF Monitoring Statistics - NOV 2020
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 102098
 LAND - WMO Region I: 4071 II:19246 III: 4068 IV: 6875
 Region V:1726 VI:43068 Antarctic: 910
 Oceans - N. Atlantic 6711 S. Atlantic 164 Indian 569 Pacific 4690



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

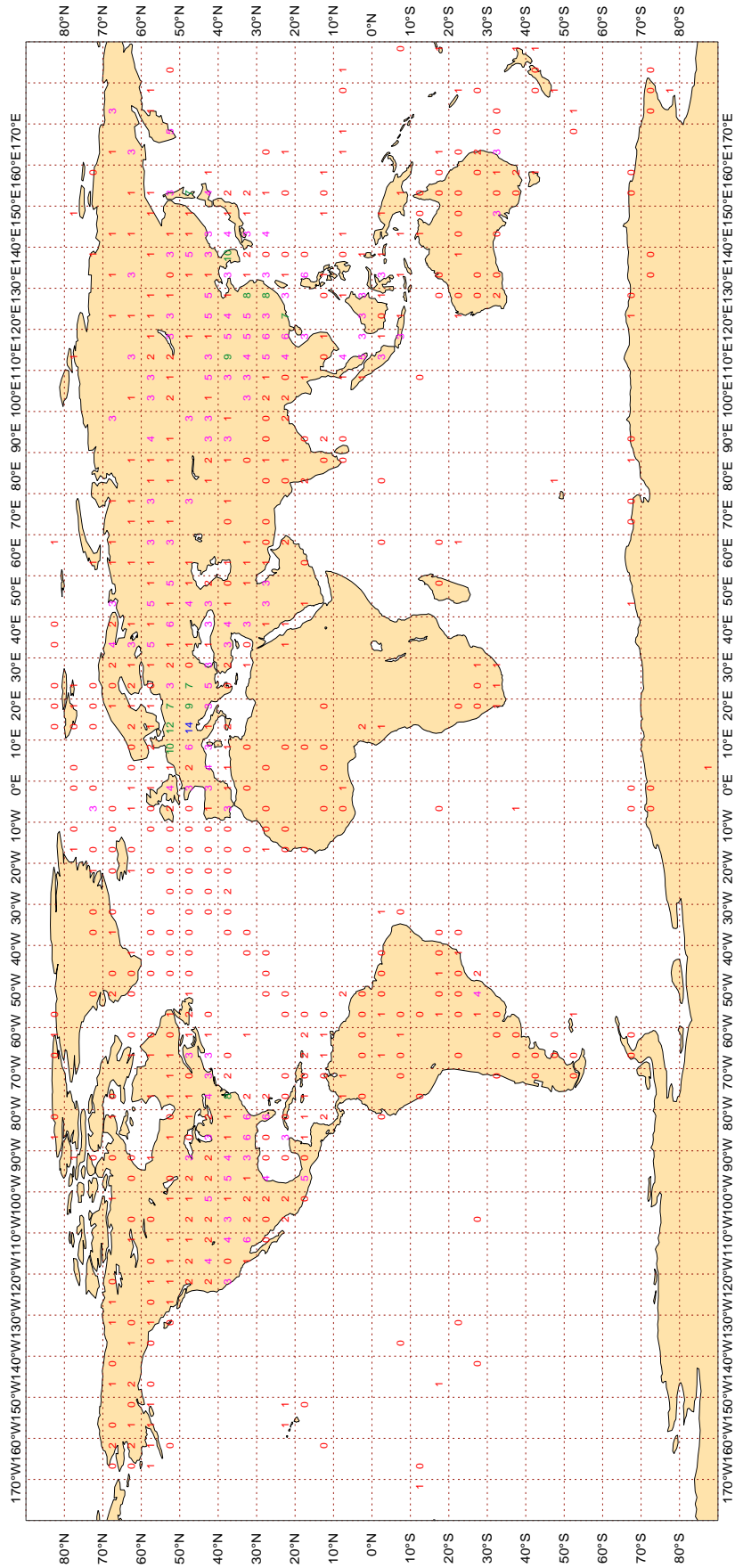


Magics 3.0.4 (64 bit)

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

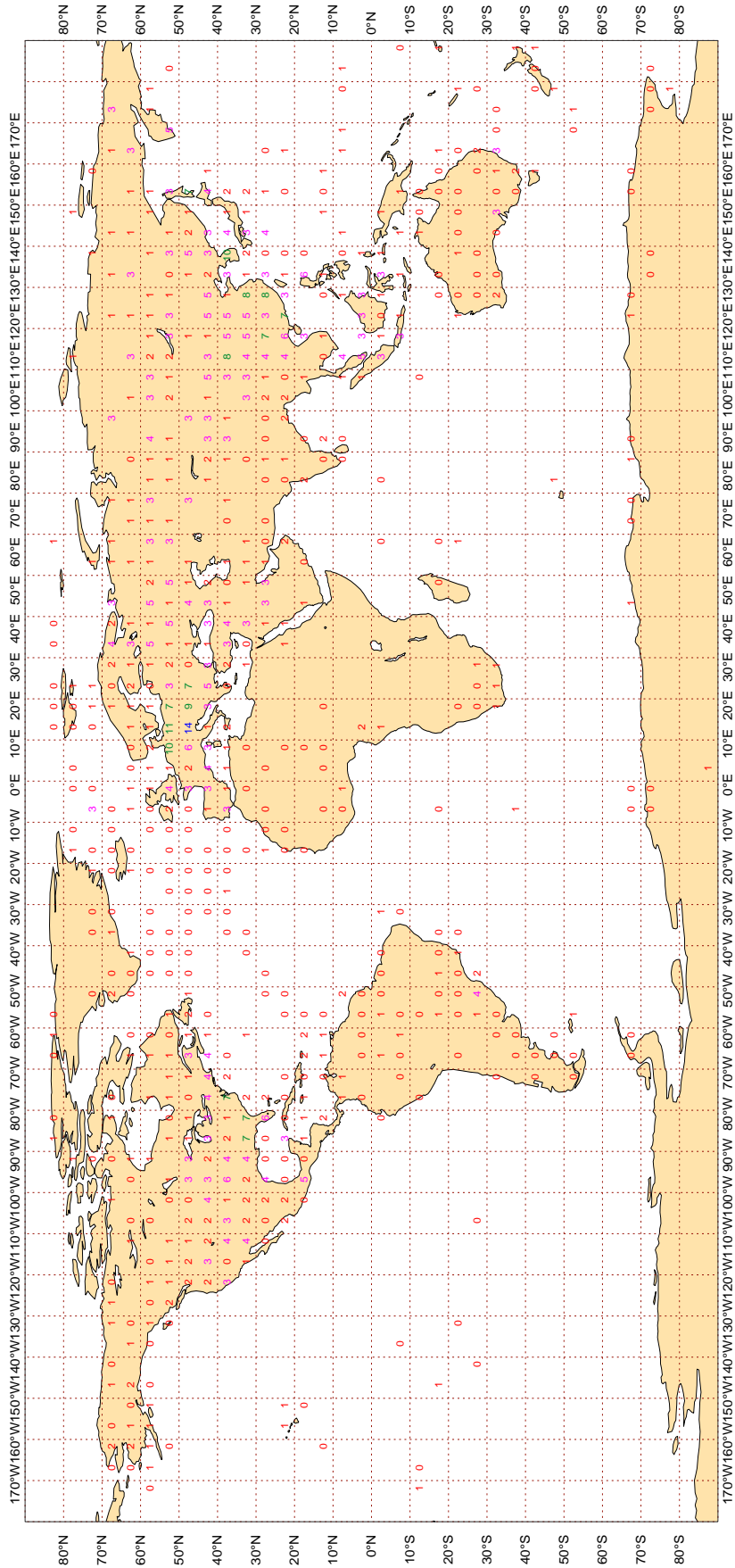
ECMWF Monitoring Statistics - NOV 2020
Availability - TEMP 500 hPa Geopotential
Average number of observations in 24 hours - 1205
LAND - WMO Region I: 31 II: 448 III: 56 IV: 255
Region V: 133 VI: 258 Antarctic: 15
Oceans - N. Atlantic 8 S. Atlantic 0 Indian 0 Pacific 0



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

Figure 4

ECMWF Monitoring Statistics - NOV 2020
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1203
 LAND - WMO Region I: 31 II: 443 III: 56 IV: 263
 Region V: 131 VI: 257 Antarctic: 15
 Oceans - N. Atlantic 8 S. Atlantic 0 Indian 0 Pacific 0



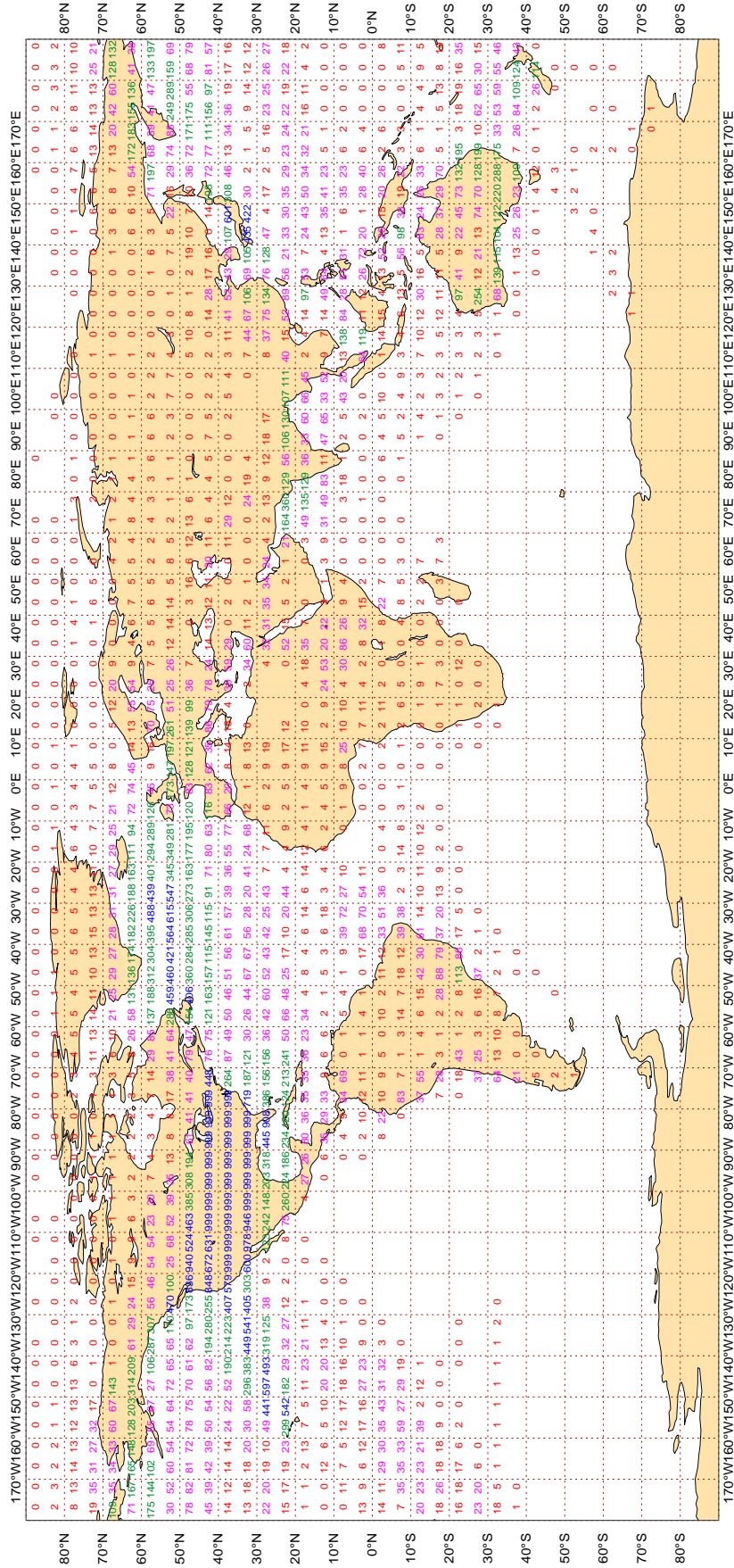
Magics 3.0.4 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - NOV 2020
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 110209



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

ECMWF Monitoring Statistics - NOV 2020
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 418036

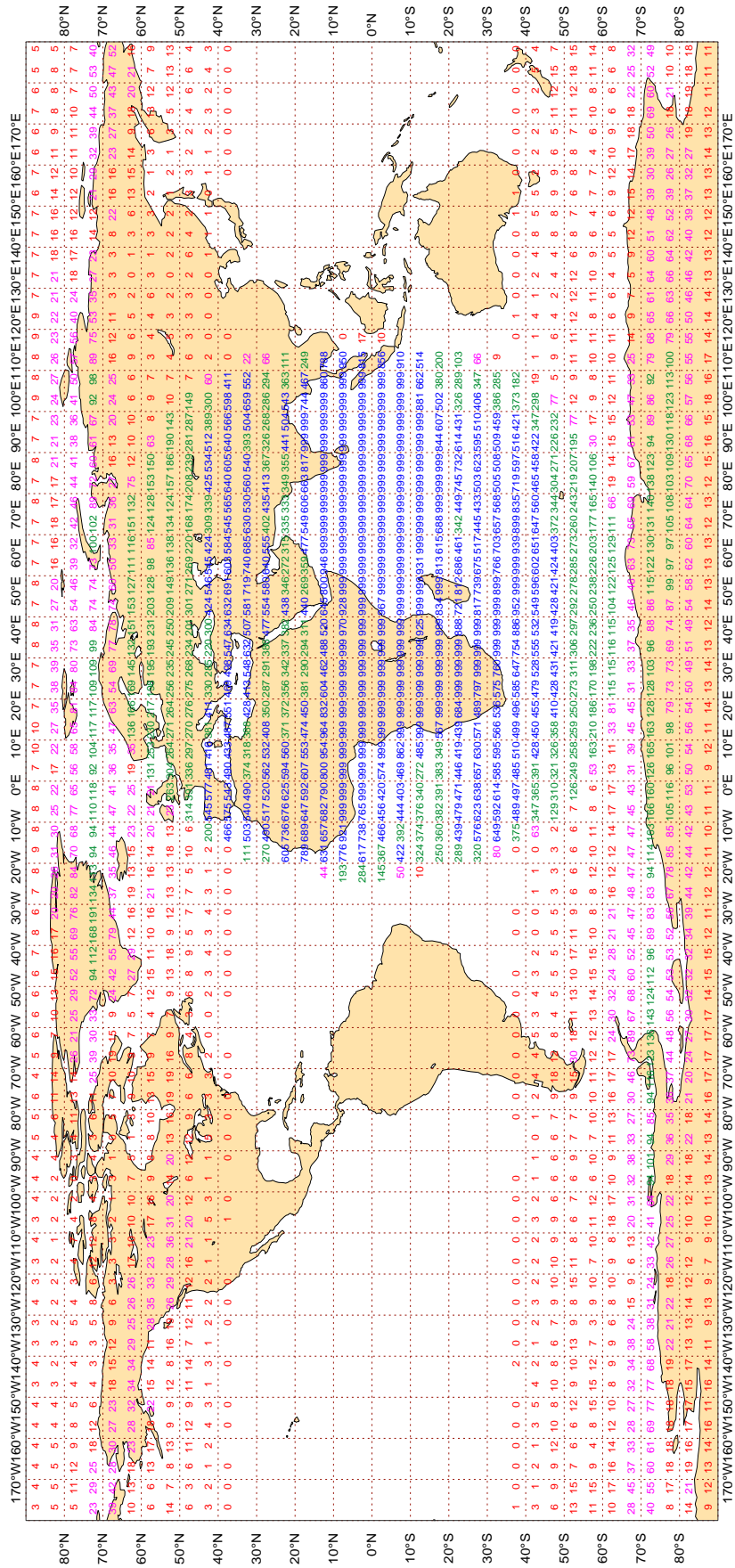


Figure 6

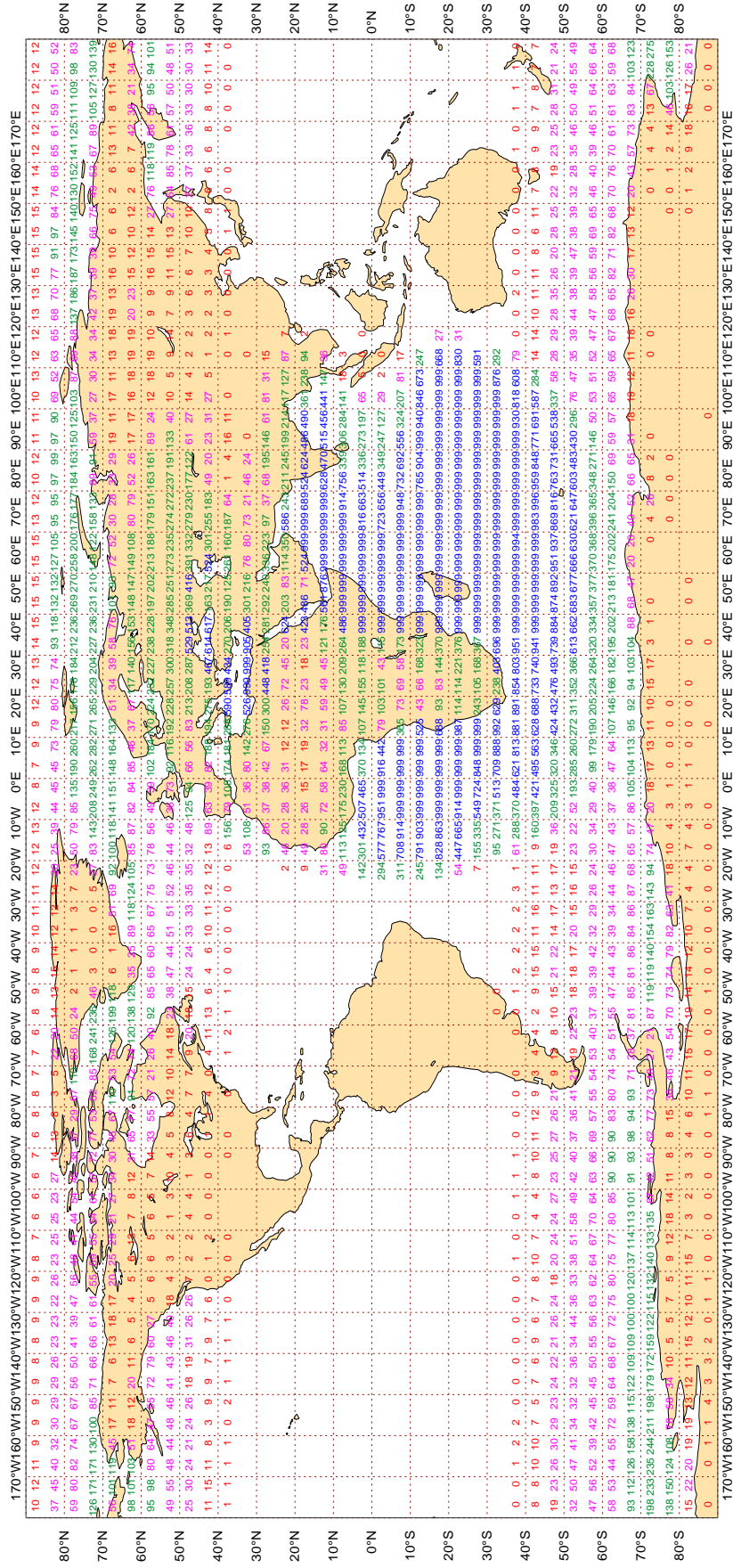
Magics 3.0.4 (64 bit)



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

Figure 7

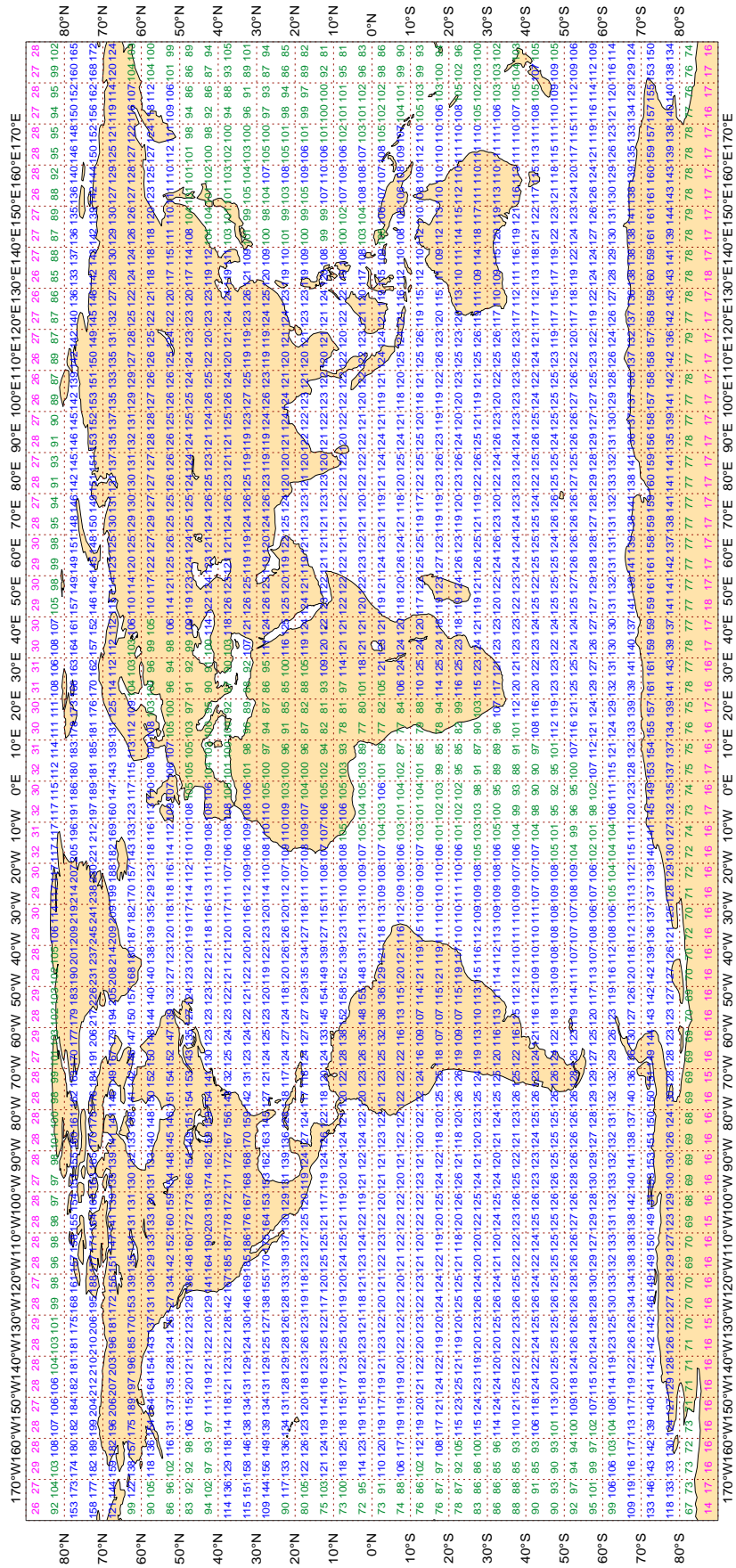
ECMWF Monitoring Statistics - NOV 2020
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 389412



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

Figure 8

ECMWF Monitoring Statistics - NOV 2020
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 303603



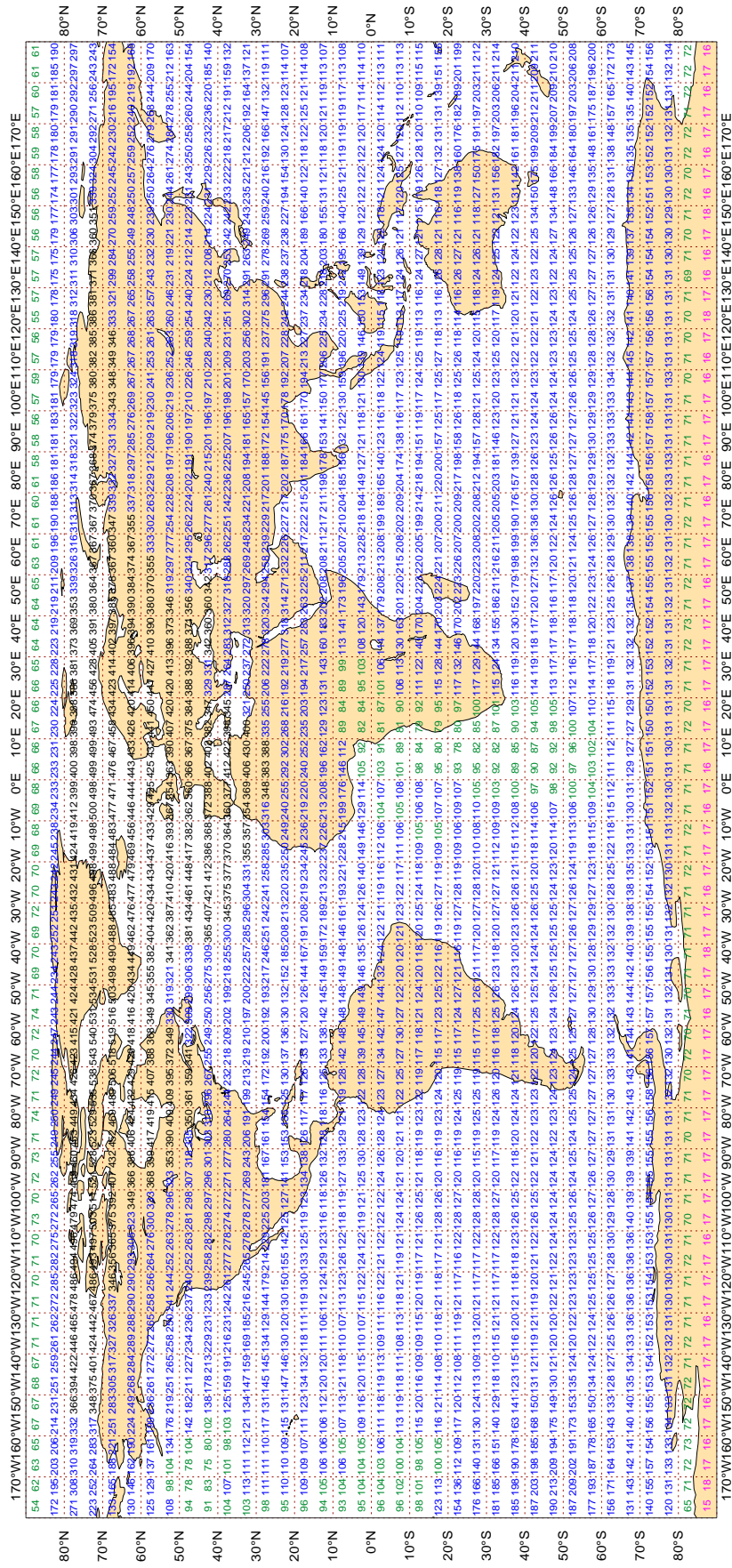
Magics 3.0.4 (64 bit)



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

Figure 9.1

ECMWF Monitoring Statistics - NOV 2020
 Availability - NOAA18 ATOVS : AMSU-A
 Average number of observations in 24 hours - 479555



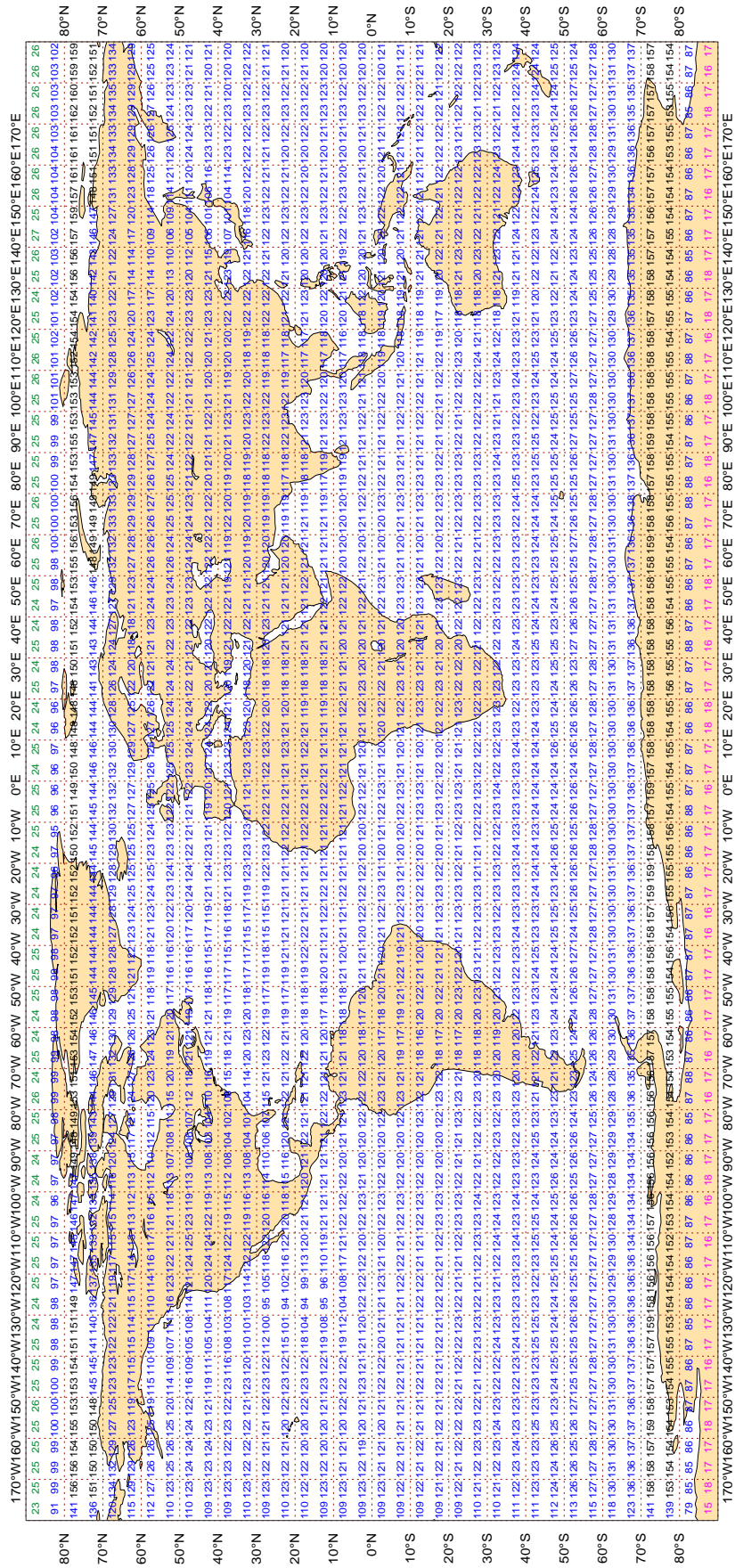
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - NOV 2020
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 308111



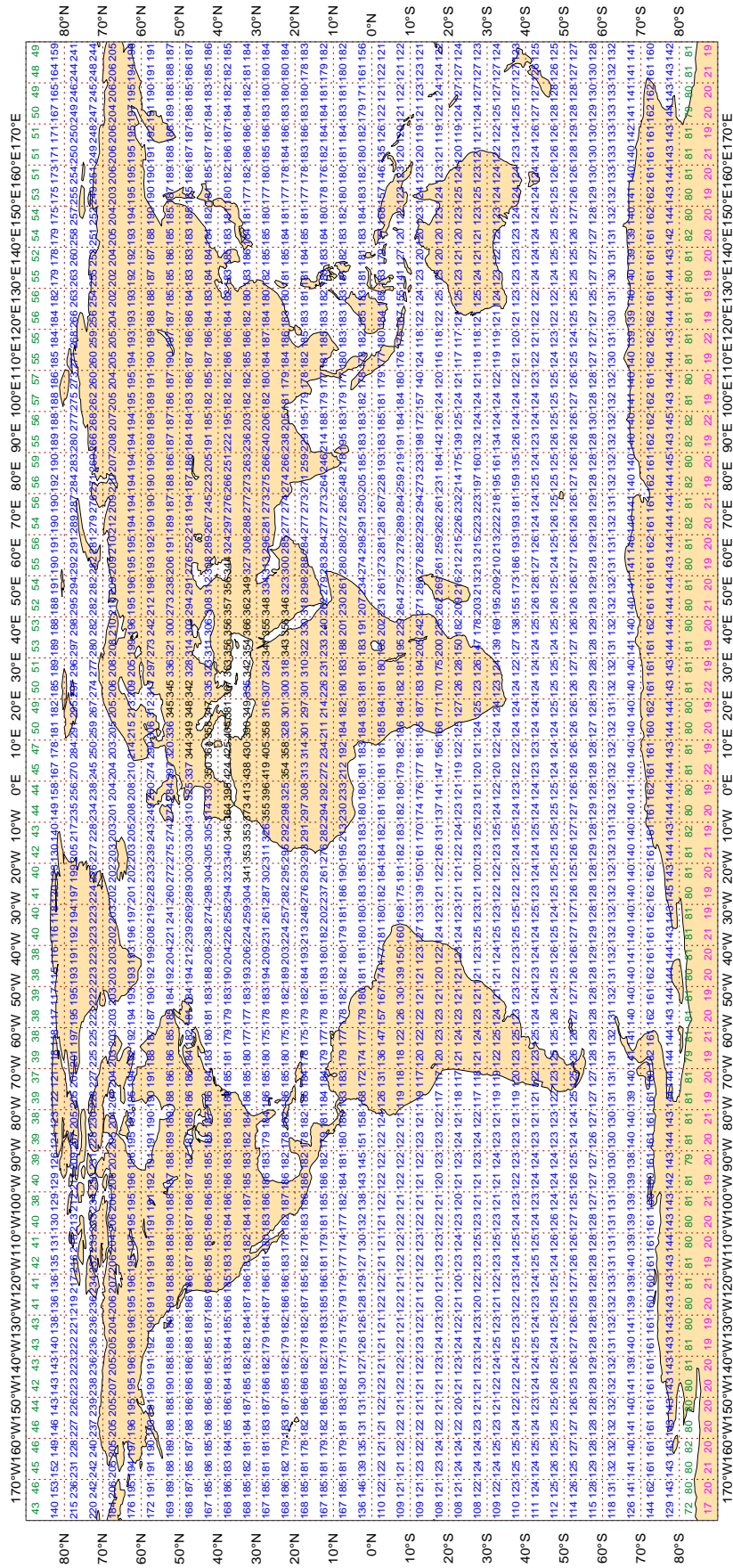
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - NOV 2020
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 433601



Magics 3.0.4 (64 bit)



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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : NOV 2020
 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
2GNG3	99	P	SUR	27	0	1.6	-4.1	4.4
3FJB3	99	P	SUR	27	0	2.8	4.7	5.5
46145	99	P	SUR	112	0	0.9	3.9	4.0
8PSH	99	P	SUR	119	0	0.5	4.8	4.8
9V2676	99	P	SUR	59	0	2.8	7.4	7.9
9V2792	99	P	SUR	23	0	2.2	6.1	6.5
9V5904	99	P	SUR	18	0	1.0	-3.8	4.0
9V7639	99	P	SUR	20	0	2.2	4.3	4.8
9V9290	99	P	SUR	21	1	2.3	8.3	8.6
9V9373	99	P	SUR	55	0	2.1	3.7	4.2
ATVK	99	P	SUR	117	0	0.4	3.3	3.3
C6DP9	99	P	SUR	23	0	2.6	3.4	4.3
C6LG6	99	P	SUR	118	0	1.0	-4.1	4.3
C6WK2	99	P	SUR	15	3	2.0	5.5	5.8
D5CN5	99	P	SUR	83	0	2.7	-3.5	4.4
D5JQ6	99	P	SUR	16	0	1.0	10.2	10.2
D5LW3	99	P	SUR	19	0	1.1	4.1	4.3
LAQM7	99	P	SUR	18	0	0.7	4.6	4.6
LAQQ7	99	P	SUR	41	0	1.2	4.5	4.7
LAZV5	99	P	SUR	110	0	0.6	3.4	3.4
MKKZ7	99	P	SUR	26	0	1.3	5.5	5.7
OZ2049	99	P	SUR	29	0	3.8	-7.2	8.1
UBNY	99	P	SUR	40	0	0.9	3.3	3.5
UFJN	99	P	SUR	33	0	1.0	-3.6	3.8
V7A2557	99	P	SUR	20	0	3.5	4.3	5.5
V7GI7	99	P	SUR	27	0	3.2	3.3	4.5
VRBQ6	99	P	SUR	16	0	2.1	-3.4	4.0
VRDU6	99	P	SUR	22	0	1.1	8.2	8.3
VRGO3	99	P	SUR	40	0	2.3	3.0	3.8
VRGO6	99	P	SUR	20	0	1.6	4.7	5.0
VRHY7	99	P	SUR	33	0	1.3	-3.4	3.6
VRJS2	99	P	SUR	38	0	0.8	-5.8	5.9

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
VRLZ3	99	P	SUR	27	0	1.7	-3.1	3.5
VTFG	99	P	SUR	123	0	0.8	-4.2	4.2
WDB7888	99	P	SUR	26	1	2.2	4.1	4.6
WDB9918	99	P	SUR	18	0	1.5	-3.3	3.6
WDC6698	99	P	SUR	121	59	3.5	-1.4	3.8
WDDI	99	P	SUR	38	0	0.7	3.4	3.5
WHRN	99	P	SUR	16	0	3.1	-3.8	4.9

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 2020
 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
42043	99	SPEED	SUR	38	0	0	1.6	-4.9	5.2

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44072	99	DIRN	SUR	81	0	0	27.6	-59.8	65.9
44150	99	DIRN	SUR	107	0	0	13.4	-33.4	36.0
45023	99	DIRN	SUR	32	0	0	31.7	-30.1	43.7
45169	99	DIRN	SUR	17	0	0	30.4	-56.5	64.2
45175	99	DIRN	SUR	89	0	0	70.8	-49.8	86.6
46118	99	DIRN	SUR	37	0	0	53.5	-36.6	64.8
46185	99	DIRN	SUR	74	0	0	18.9	30.4	35.8
66022	99	DIRN	SUR	172	2	0	133.9	-1.1	133.9

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 2020
 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
0022949	99	P	SUR	32	123	705	690	1.1	11.3	11.3
0022960	99	P	SUR	30	124	168	168	0.0	0.0	0.0
1401764	99	P	SUR	-31	79	719	0	0.5	-7.1	7.2
1601531	99	P	SUR	-28	70	710	310	7.5	2.3	7.9
1701577	99	P	SUR	-44	13	718	1	2.3	5.7	6.1
2501540	99	P	SUR	75	165	625	624	0.0	7.5	7.5
2501668	99	P	SUR	86	163	655	618	5.6	3.7	6.7
2601501	99	P	SUR	78	98	217	34	4.6	6.9	8.3
2601502	99	P	SUR	75	121	526	276	4.9	-6.2	7.9
2601503	99	P	SUR	76	126	720	199	8.1	-2.1	8.3
4701658	99	P	SUR	72	-95	713	173	7.8	-0.0	7.8
4801628	99	P	SUR	77	-158	652	270	7.9	-1.7	8.1
4801652	99	P	SUR	83	-114	523	136	5.9	5.7	8.2
4801670	99	P	SUR	81	-165	690	498	6.5	7.0	9.6
4801679	99	P	SUR	78	-161	89	45	7.4	-5.7	9.4
4801725	99	P	SUR	81	143	351	114	2.8	-0.3	2.8
4801727	99	P	SUR	81	126	614	374	4.7	-1.2	4.9
4801729	99	P	SUR	76	-158	720	720	0.0	0.0	0.0
4802542	99	P	SUR	78	-159	720	720	0.0	0.0	0.0
4802544	99	P	SUR	75	-168	595	210	4.3	-5.5	7.0
4802546	99	P	SUR	75	-166	719	258	1.8	0.2	1.8
5102719	99	P	SUR	34	-157	718	0	0.4	-6.2	6.2
5401554	99	P	SUR	-49	69	69	33	7.0	-5.6	9.0
6301005	99	P	SUR	73	35	556	0	6.6	-0.8	6.7
6401784	99	P	SUR	81	20	1585	148	2.6	7.5	7.9

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : NOV 2020
 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
4200043	99	SPEED	SUR	29	-95	223	0	0	1.8	-5.2	5.5
42043	99	SPEED	SUR	29	-95	361	0	0	1.8	-5.2	5.5
5300041	99	SPEED	SUR	-8	100	4215	0	0	5.0	6.2	8.0

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 2020
 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
23091	99	DIRN	SUR	18	89	143	0	0	18.2	-29.0	34.2
23099	99	DIRN	SUR	13	80	148	0	0	127.3	-22.7	129.3
23451	99	DIRN	SUR	15	69	176	0	0	10.5	-20.7	23.2
23497	99	DIRN	SUR	11	72	45	0	0	81.0	-31.9	87.1
4101783	99	DIRN	SUR	28	-61	1129	0	0	19.5	-23.1	30.2
4400072	99	DIRN	SUR	37	-76	1408	0	0	18.7	-56.7	59.7
44072	99	DIRN	SUR	37	-76	961	0	0	19.8	-57.8	61.1
44078	99	DIRN	SUR	60	-40	3429	0	0	14.8	-20.5	25.3
44137	99	DIRN	SUR	42	-62	1150	0	0	12.7	-29.0	31.7
44139	99	DIRN	SUR	44	-57	1197	0	0	13.7	-29.3	32.3
44150	99	DIRN	SUR	43	-64	1156	0	0	13.5	-33.8	36.4
4500006	99	DIRN	SUR	47	-90	591	0	0	14.9	20.4	25.2
4500023	99	DIRN	SUR	47	-89	677	0	0	29.9	-22.4	37.4
4500028	99	DIRN	SUR	47	-92	1016	0	0	55.9	26.1	61.7
4500169	99	DIRN	SUR	42	-82	154	0	0	38.5	-41.7	56.8
4500175	99	DIRN	SUR	46	-85	2336	7	0	81.3	-30.8	86.9
45006	99	DIRN	SUR	47	-90	355	0	0	11.7	21.9	24.8
45023	99	DIRN	SUR	47	-89	317	0	0	31.0	-23.7	39.0
45028	99	DIRN	SUR	47	-92	655	0	0	52.2	21.0	56.3
45149	99	DIRN	SUR	44	-82	612	0	0	20.1	23.0	30.6
45169	99	DIRN	SUR	42	-82	144	0	0	35.9	-42.9	55.9
45175	99	DIRN	SUR	46	-85	1097	3	0	79.2	-34.1	86.2
4600083	99	DIRN	SUR	58	-138	570	10	0	60.6	-3.7	60.8
4600118	99	DIRN	SUR	49	-123	376	0	0	54.6	-28.7	61.7
46083	99	DIRN	SUR	58	-138	1507	28	0	61.3	-2.5	61.3
46118	99	DIRN	SUR	49	-123	549	0	0	55.3	-27.3	61.7
46185	99	DIRN	SUR	52	-130	789	0	0	19.4	27.8	33.9
46207	99	DIRN	SUR	51	-130	919	10	0	21.9	23.6	32.2
5100006	99	DIRN	SUR	9	-140	519	0	0	45.2	40.8	60.9
51006	99	DIRN	SUR	9	-140	509	0	0	45.0	40.2	60.3
5200311	99	DIRN	SUR	0	-180	654	0	0	10.1	-21.5	23.7

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
52311	99	DIRN	SUR	0	-180	649	0	0	10.2	-21.4	23.7
5300040	99	DIRN	SUR	-8	95	608	0	0	134.8	97.8	166.6
5300041	99	DIRN	SUR	-8	100	3759	0	0	63.9	18.4	66.5
5300056	99	DIRN	SUR	-5	95	460	1	0	150.4	23.3	152.2
53040	99	DIRN	SUR	-8	95	604	0	0	133.2	99.1	166.0
53056	99	DIRN	SUR	-5	95	446	1	0	148.8	31.4	152.1
6101007	99	DIRN	SUR	36	25	122	0	0	45.3	-35.9	57.8
6200083	99	DIRN	SUR	43	-9	510	0	0	40.3	40.1	56.8
6200199	99	DIRN	SUR	40	-9	456	8	0	166.1	-20.8	167.4
6301004	99	DIRN	SUR	72	20	470	0	0	24.3	34.4	42.1
66022	99	DIRN	SUR	54	14	1691	26	0	133.0	6.3	133.1

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 AREA : GLOBAL
 PERIOD : NOV 2020
 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	24	0	3.9	77.1	77.2
01400	00	Z	1000	57	3	23	0	3.9	77.0	77.1
17281	12	Z	50	38	40	26	3	111.6	85.9	140.8
85586	12	Z	1000	-34	-72	29	0	28.7	18.4	34.1
97014	12	Z	1000	2	125	30	0	36.4	17.8	40.5
97014	00	Z	1000	2	125	29	0	36.4	16.1	39.8
98233	12	Z	1000	18	122	25	1	30.4	30.4	43.0
ASDE09	12	Z	1000	54	10	11	0	2.6	34.6	34.7
JNKN7J	00	Z	1000	56	-9	10	0	4.5	33.6	33.9
JNKN7J	12	Z	1000	58	-14	13	0	6.1	36.7	37.2
LRYQE3	12	Z	1000	49	-44	11	0	4.9	40.5	40.8
LRYQE3	00	Z	1000	48	-49	12	0	4.7	36.8	37.1

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 AREA : GLOBAL
 PERIOD : NOV 2020
 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
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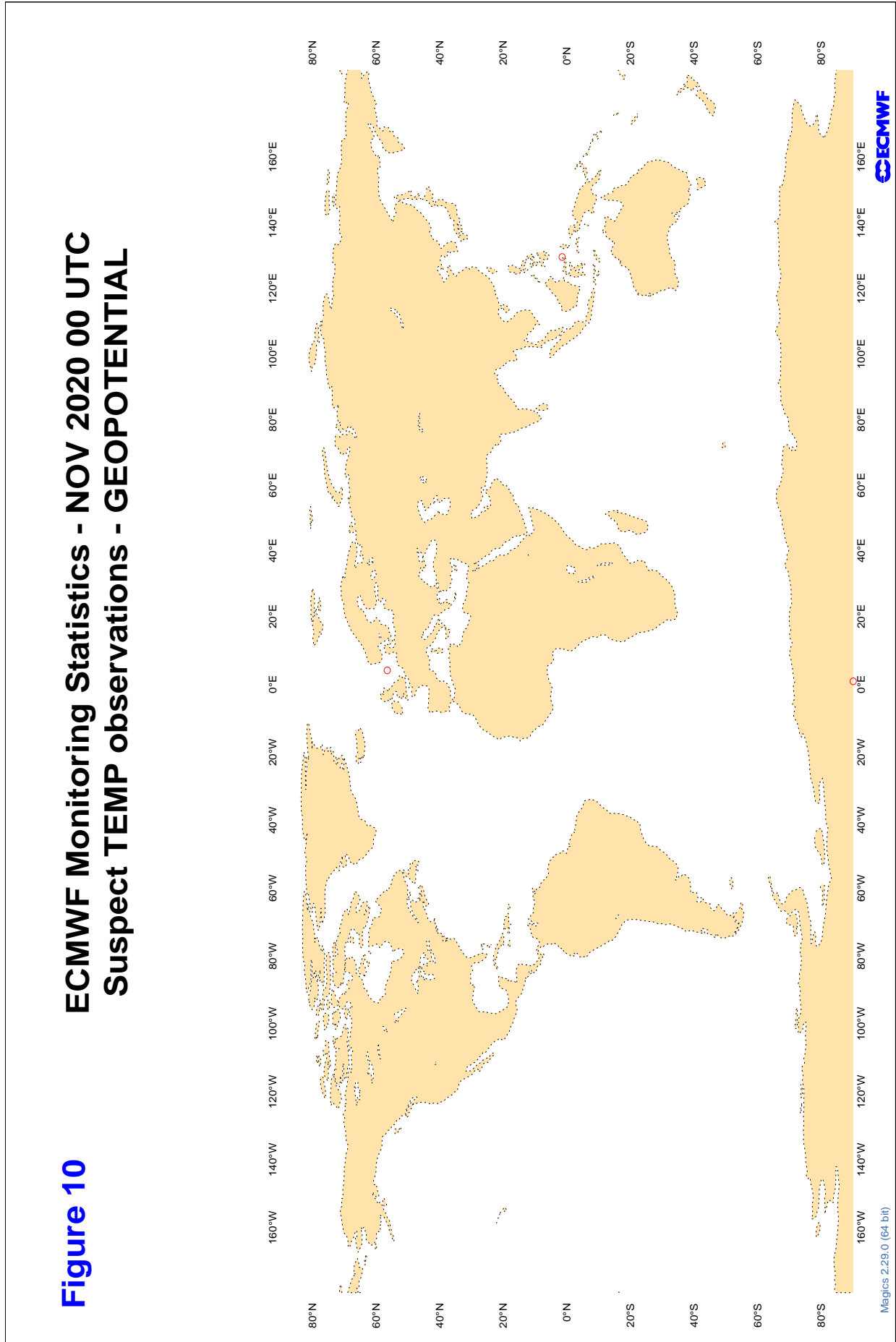
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : NOV 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

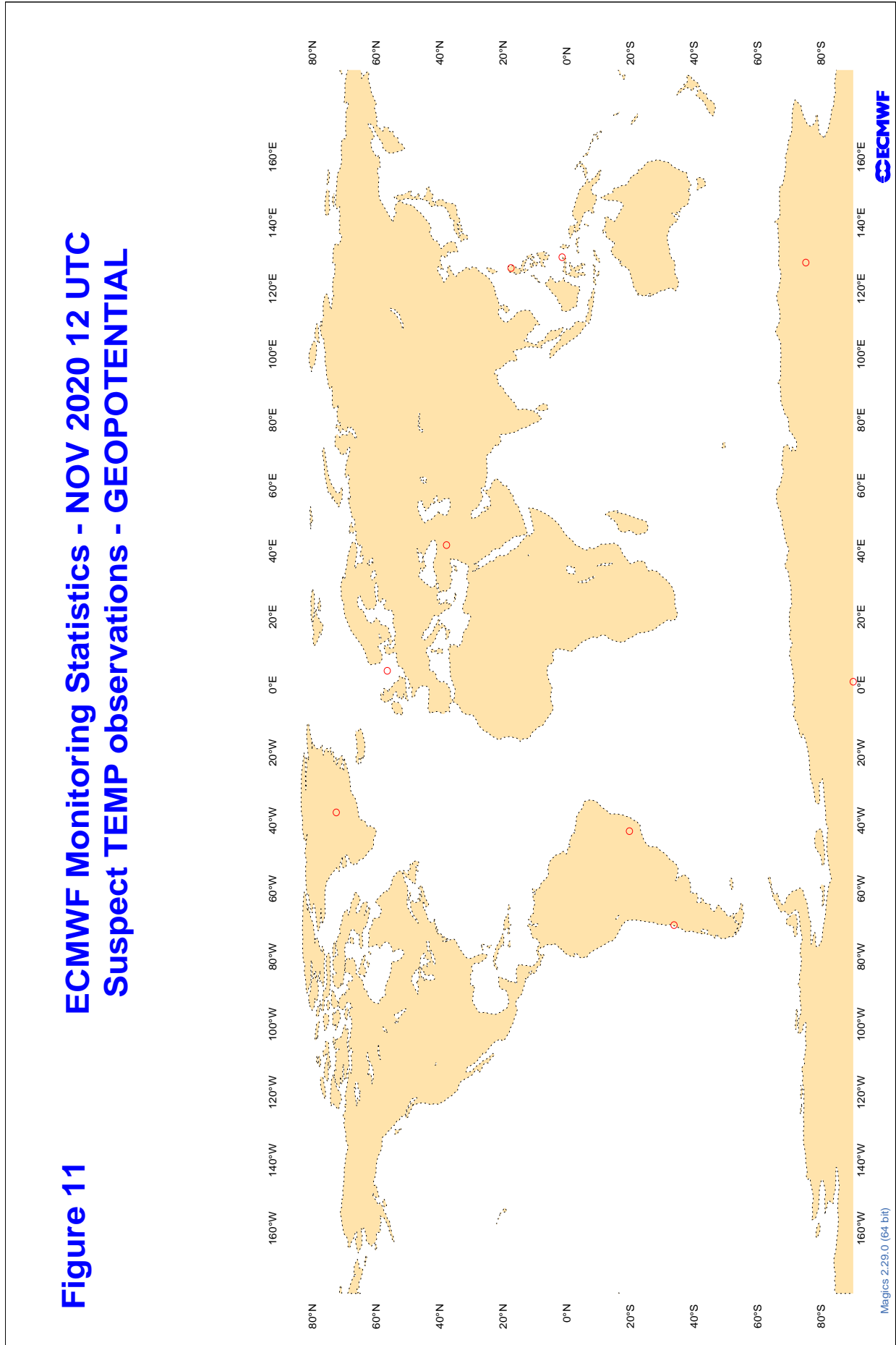
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
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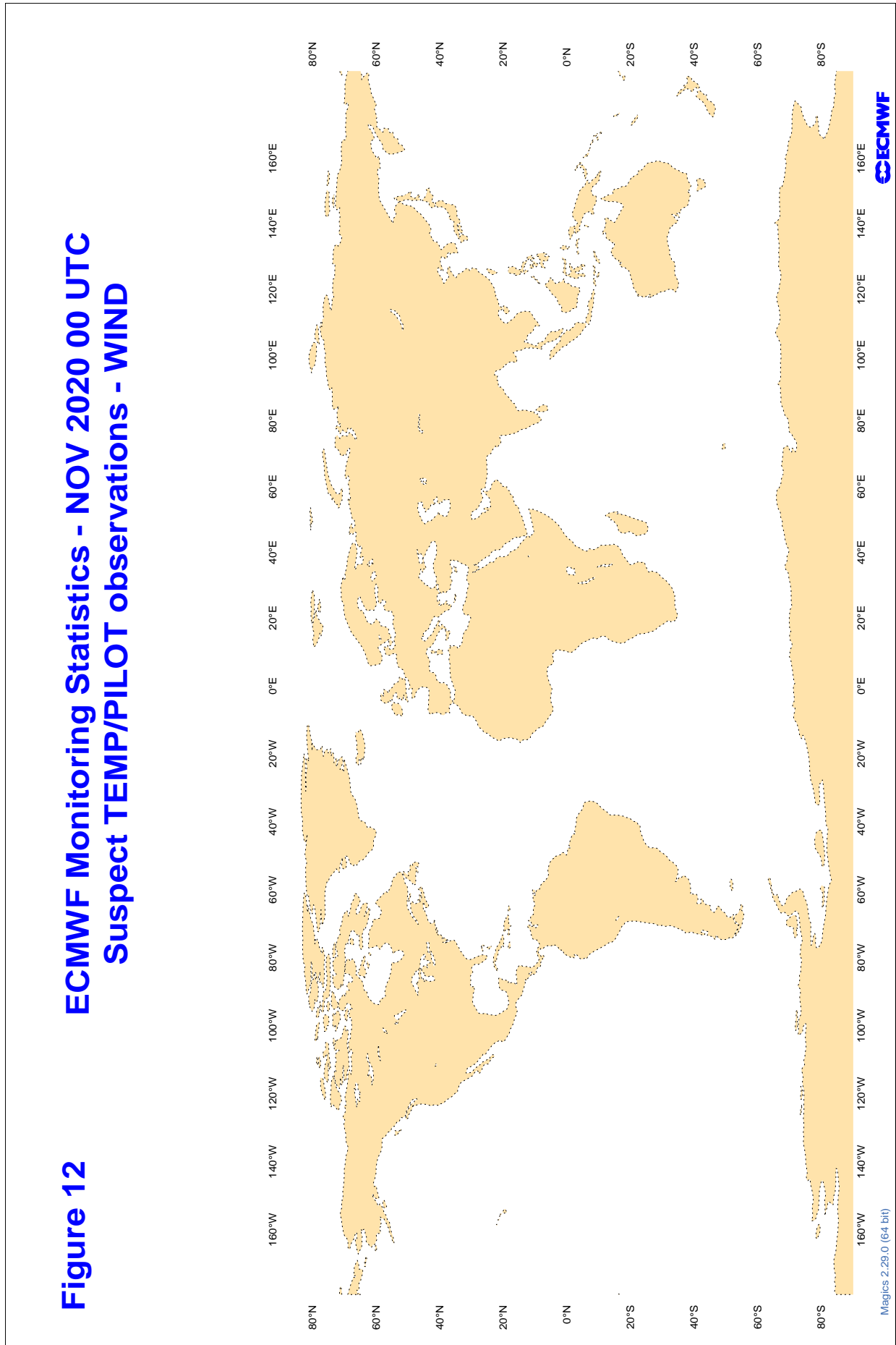
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



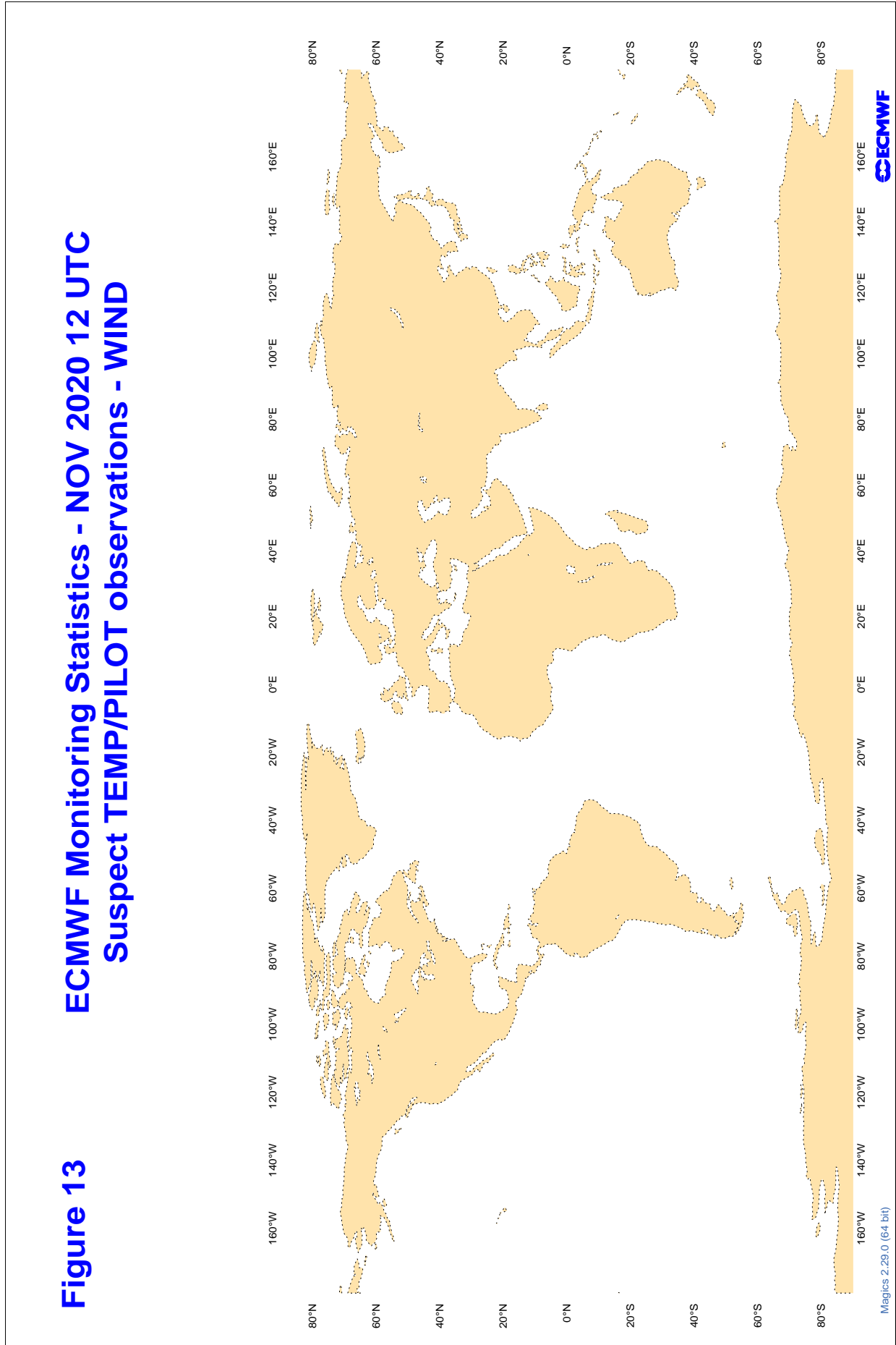
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	10	71.8	-11.1
7JUNA4	00	Z	100	10	10.3	3.7
ASDE09	12	Z	100	11	23.5	22.1
BPMWB2	12	Z	100	2	35.0	35.0
BPMWB2	00	Z	100	3	12.1	12.0
DBLK	12	Z	100	2	89.3	57.0
DBLK	00	Z	100	0	0.0	0.0
FPUW5G	12	Z	100	3	10.9	10.7
HTXUH4	12	Z	100	4	3.5	-0.8
HTXUH4	00	Z	100	4	8.3	5.6
JGQH	00	Z	100	0	0.0	0.0
JNKN7J	12	Z	100	11	63.1	59.8
JNKN7J	00	Z	100	9	52.4	39.9
KJJF9X	12	Z	100	3	19.3	11.3
KJJF9X	00	Z	100	7	17.6	15.9
KMPLHP	12	Z	100	7	73.1	70.2
KMPLHP	00	Z	100	8	9.3	-2.2
LRYQE3	12	Z	100	11	74.6	62.4
LRYQE3	00	Z	100	11	28.5	25.1
UXK5JT	12	Z	100	2	12.6	12.1
UXK5JT	00	Z	100	1	5.1	5.1
VKB4L5	00	Z	100	4	36.1	35.6
VKB4L5	12	Z	100	6	46.6	43.7
WDK38H	12	Z	100	15	9.8	-9.4
XQFJRG	12	Z	100	5	17.6	-2.6
XQFJRG	00	Z	100	3	19.5	-14.6
YLV96W	00	Z	100	2	25.7	24.3
YLV96W	12	Z	100	2	35.7	35.6
ZVQEQC	12	Z	100	9	6.9	3.6

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

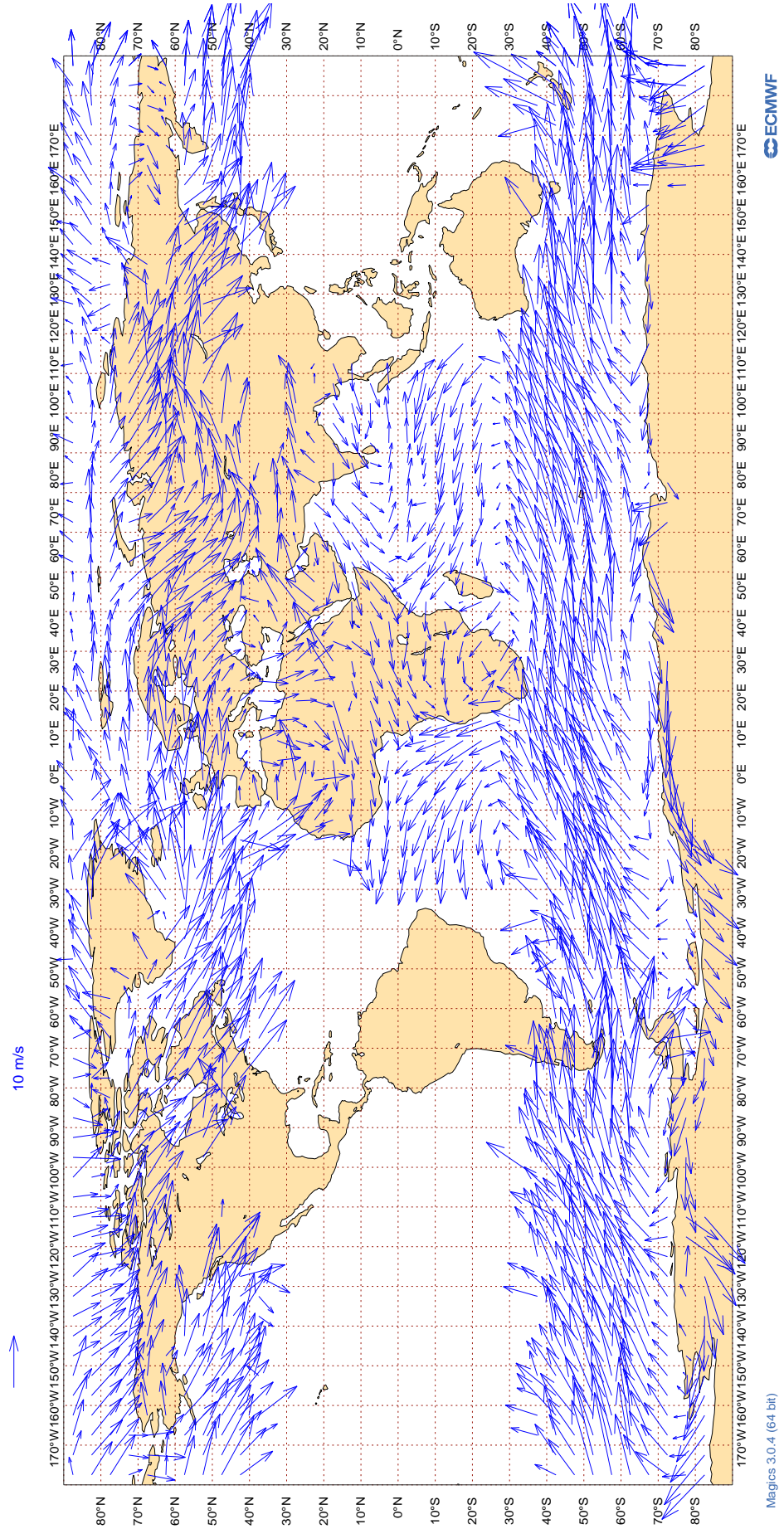
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : NOV 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	9	4.3	1.8	-1.0
7JUNA4	00	V	100	10	3.3	-0.3	-0.5
ASDE09	12	V	100	11	3.2	-0.1	0.3
BPMWB2	12	V	100	2	5.0	-2.3	2.9
BPMWB2	00	V	100	3	2.4	1.0	0.3
DBLK	12	V	100	2	8.2	2.6	-7.3
DBLK	00	V	100	0	0.0	0.0	0.0
FPUW5G	12	V	100	3	3.7	0.2	1.2
HTXUH4	12	V	100	4	5.1	-2.4	-1.4
HTXUH4	00	V	100	4	5.8	-1.4	-0.8
JGQH	00	V	100	0	0.0	0.0	0.0
JNKN7J	12	V	100	9	5.0	-2.4	-0.3
JNKN7J	00	V	100	7	2.4	-0.2	0.3
KJJF9X	12	V	100	3	1.4	-0.7	0.9
KJJF9X	00	V	100	7	4.2	0.7	1.6
KMPLHP	12	V	100	7	3.8	-0.4	-0.8
KMPLHP	00	V	100	8	4.6	0.7	0.2
LRYQE3	12	V	100	10	3.3	0.2	0.8
LRYQE3	00	V	100	10	4.5	-1.4	0.0
UXK5JT	12	V	100	2	7.0	-1.1	5.7
UXK5JT	00	V	100	1	2.5	-0.3	2.5
VKB4L5	00	V	100	4	2.7	0.0	-0.6
VKB4L5	12	V	100	6	3.9	0.5	-0.5
WDK38H	12	V	100	15	3.2	-0.9	0.4
XQFJRG	12	V	100	5	5.8	-3.0	0.2
XQFJRG	00	V	100	3	1.7	-0.7	-1.4
YLV96W	00	V	100	2	4.2	-0.4	2.6
YLV96W	12	V	100	2	3.7	-2.6	-1.9
ZVQEQC	12	V	100	9	4.0	1.3	0.7

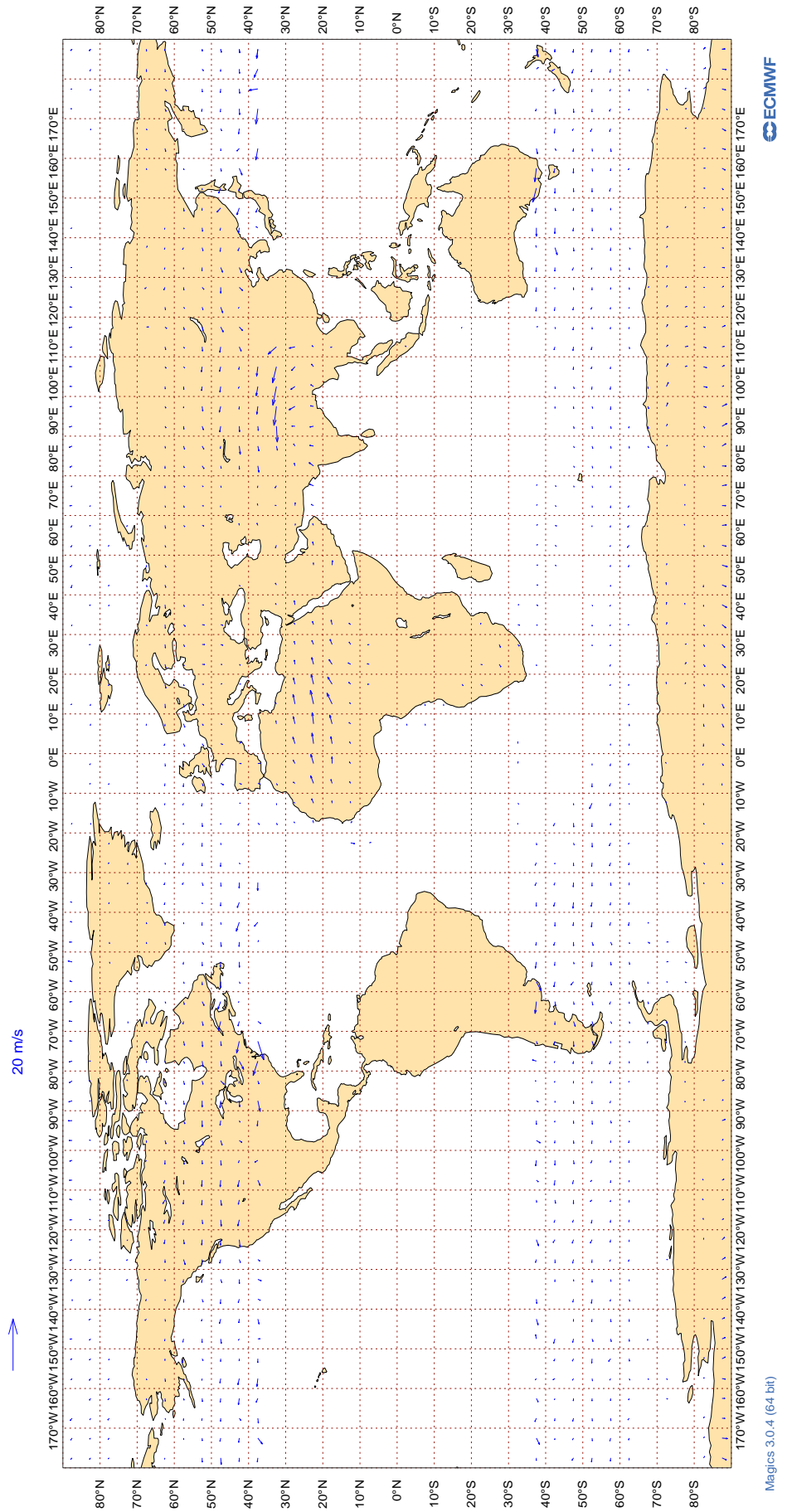
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Nov 2020
AMV Winds: 700-1000hPa
Mean Observed Wind



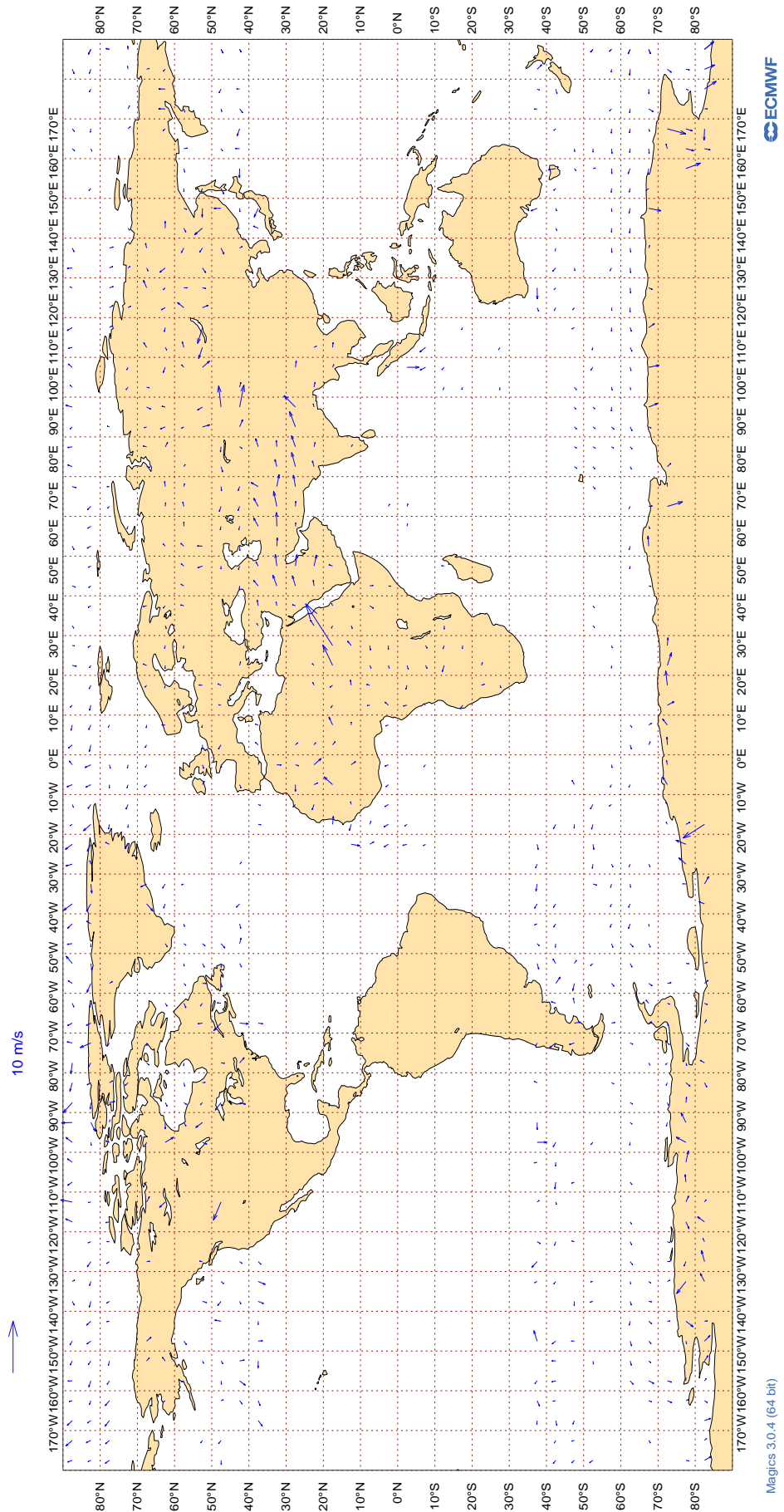
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Nov 2020
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



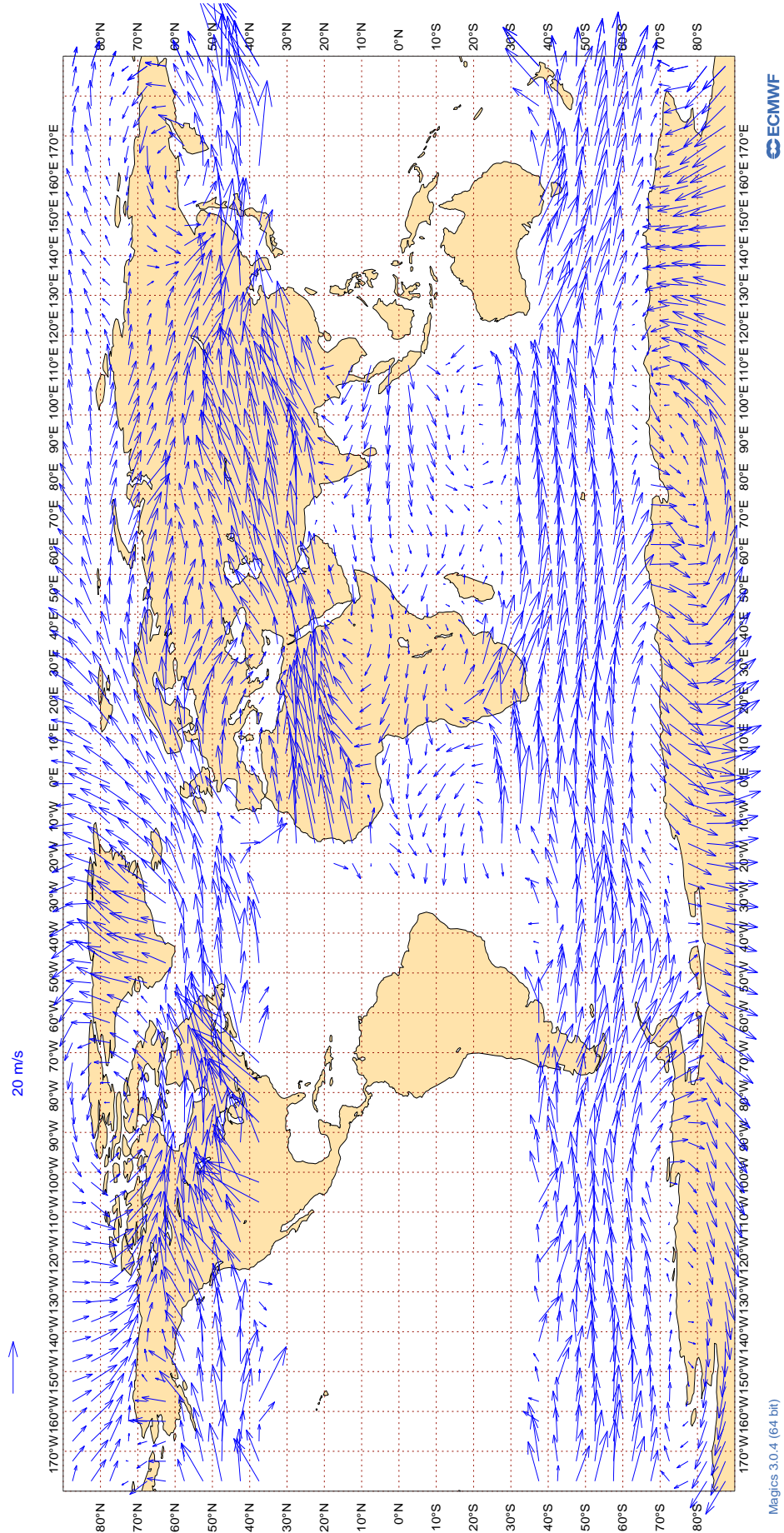
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Nov 2020
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



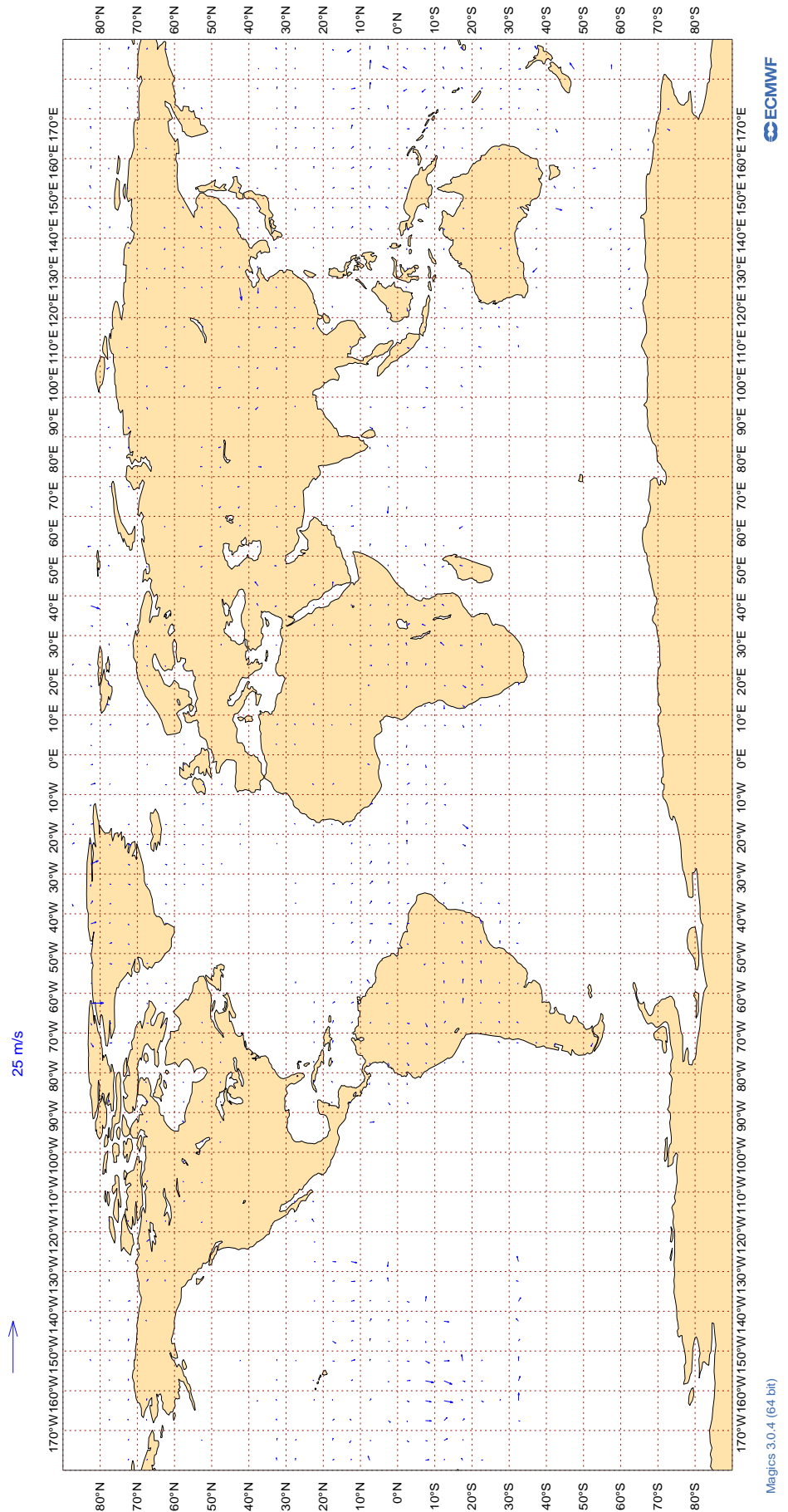
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Nov 2020
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Nov 2020
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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	12420	5	0	5.6	0.2
AAR	99	V	300-150	175	1	0	4.0	-1.3
ABD	99	V	300-150	1320	0	0	4.0	-0.3
ABP	99	V	300-150	45	0	0	3.8	-0.5
ABW	99	V	300-150	471	0	0	3.9	-0.2
ABX	99	V	300-150	133	0	2	3.9	0.1
ACA	99	V	300-150	10528	6	0	5.8	0.0
ADN	99	V	300-150	29	0	0	4.3	-0.1
AFL	99	V	300-150	473	0	0	3.3	0.3
AFR	99	V	300-150	14312	3	0	4.5	0.2
AHO	99	V	300-150	89	0	0	4.1	0.3
AHY	99	V	300-150	37	32	0	3.9	-0.8
AIC	99	V	300-150	1234	7	0	5.7	-0.1
AJT	99	V	300-150	578	0	0	3.9	0.2
ALK	99	V	300-150	252	0	0	3.5	0.9
AMX	99	V	300-150	836	12	0	6.6	-0.0
ANZ	99	V	300-150	7058	4	0	8.1	0.4
AOJ	99	V	300-150	49	0	0	3.5	-0.4
ARG	99	V	300-150	191	0	0	4.7	0.9
ASA	99	V	300-150	22	0	5	6.9	-1.3
ASL	99	V	300-150	207	0	0	3.3	0.5
ATC	99	V	300-150	24	0	0	5.9	0.1
ATN	99	V	300-150	88	0	6	4.7	0.5
AUA	99	V	300-150	789	0	0	4.2	0.0
AVA	99	V	300-150	55	16	0	7.7	0.9
AWC	99	V	300-150	49	0	0	3.5	0.4
AZA	99	V	300-150	1118	0	0	3.7	0.5
AZG	99	V	300-150	517	0	0	3.7	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZV	99	V	300-150	25	0	0	2.7	1.0
BAF	99	V	300-150	79	0	0	4.6	0.1
BAH	99	V	300-150	32	0	0	3.4	-0.4
BAW	99	V	300-150	16255	7	0	6.0	0.1
BBC	99	V	300-150	142	0	0	3.5	1.0
BCS	99	V	300-150	1474	0	0	3.6	0.3
BOX	99	V	300-150	2406	0	0	3.3	0.0
CAL	99	V	300-150	287	0	0	3.9	0.7
CCA	99	V	300-150	20	0	0	4.8	0.7
CEB	99	V	300-150	64	0	0	3.5	0.1
CES	99	V	300-150	76	0	0	7.4	0.5
CFC	99	V	300-150	581	0	0	4.2	0.2
CFG	99	V	300-150	282	0	0	4.0	-0.4
CJT	99	V	300-150	1724	0	0	3.8	-0.2
CKS	99	V	300-150	2441	0	0	3.8	0.1
CLU	99	V	300-150	738	0	0	3.9	-0.4
CLX	99	V	300-150	4057	0	0	3.9	-0.2
CMB	99	V	300-150	736	0	0	3.9	0.0
CNV	99	V	300-150	212	0	0	3.3	0.2
CPA	99	V	300-150	404	0	0	4.0	0.6
CRL	99	V	300-150	274	0	0	3.4	0.3
CRV	99	V	300-150	43	0	0	3.8	0.2
CSC	99	V	300-150	24	0	0	2.3	0.0
CSN	99	V	300-150	320	7	0	7.3	-0.1
CTM	99	V	300-150	123	0	0	3.5	-0.0
CWG	99	V	300-150	34	0	0	5.7	0.6
CXB	99	V	300-150	36	0	0	4.4	0.1
DAL	99	V	300-150	15352	0	0	3.6	0.2
DGX	99	V	300-150	23	0	0	3.4	-0.8
DHK	99	V	300-150	727	0	0	4.6	-0.2
DLH	99	V	300-150	8553	0	0	3.6	0.1
DUB	99	V	300-150	73	0	0	4.2	0.2
EAU	99	V	300-150	27	0	0	3.9	0.7
EDG	99	V	300-150	67	0	0	4.3	1.4
EDW	99	V	300-150	288	0	0	3.4	0.3
EIN	99	V	300-150	2962	0	0	3.5	0.4
EJM	99	V	300-150	165	0	0	3.6	-0.1
ELY	99	V	300-150	859	11	0	6.2	0.2
EMM	99	V	300-150	25	0	0	4.2	0.9
ETD	99	V	300-150	2961	3	0	6.0	0.2
ETH	99	V	300-150	3355	9	0	6.2	0.0
EUW	99	V	300-150	23	0	0	3.7	0.1
EWG	99	V	300-150	35	0	0	3.5	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
FBU	99	V	300-150	245	0	0	4.2	0.5
FDX	99	V	300-150	6814	0	0	3.7	0.2
FIN	99	V	300-150	339	0	0	3.6	-0.5
FJI	99	V	300-150	365	0	0	4.2	1.0
FRH	99	V	300-150	940	0	0	4.1	0.0
FWI	99	V	300-150	660	0	0	3.9	0.0
FYG	99	V	300-150	73	0	0	3.6	0.7
GAF	99	V	300-150	141	0	0	5.4	-0.8
GCK	99	V	300-150	28	0	0	4.0	0.5
GEC	99	V	300-150	1887	0	0	3.8	0.1
GES	99	V	300-150	38	0	0	4.0	0.2
GFA	99	V	300-150	32	3	0	7.5	0.7
GIA	99	V	300-150	98	0	0	4.2	0.2
GOL	99	V	300-150	35	0	0	3.2	-0.2
GTI	99	V	300-150	2325	0	0	4.0	-0.0
HUA	99	V	300-150	69	0	0	4.7	1.0
IBE	99	V	300-150	866	0	1	3.9	0.2
ICE	99	V	300-150	75	0	3	4.2	1.4
ICL	99	V	300-150	33	0	0	4.4	0.1
ICV	99	V	300-150	388	0	0	4.0	-0.2
IFA	99	V	300-150	86	0	0	3.6	0.3
IJM	99	V	300-150	194	0	0	4.6	-0.2
JAF	99	V	300-150	325	8	0	6.8	-0.2
JAS	99	V	300-150	31	0	0	3.7	1.0
JCO	99	V	300-150	39	0	0	4.4	0.5
JET	99	V	300-150	63	0	0	4.3	0.0
JME	99	V	300-150	40	0	0	4.8	-0.3
KAC	99	V	300-150	136	0	0	3.0	0.4
KAF	99	V	300-150	68	0	0	3.6	0.5
KAI	99	V	300-150	92	0	0	4.0	0.5
KAL	99	V	300-150	31	0	3	6.1	1.4
KAY	99	V	300-150	314	0	0	3.4	0.3
KLM	99	V	300-150	13355	5	0	5.3	0.1
KQA	99	V	300-150	121	0	0	9.8	0.7
LCO	99	V	300-150	344	0	0	4.3	-1.5
LGT	99	V	300-150	35	0	0	3.6	0.3
LNK	99	V	300-150	34	0	0	4.6	-0.8
LOT	99	V	300-150	1211	13	0	7.3	-0.3
LUC	99	V	300-150	21	0	0	3.5	-1.3
LXJ	99	V	300-150	258	0	0	3.8	0.4
MAS	99	V	300-150	111	0	0	4.0	0.2
MAU	99	V	300-150	28	0	0	5.2	1.0
MED	99	V	300-150	65	0	0	3.7	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MHV	99	V	300-150	24	0	0	3.1	1.5
MLM	99	V	300-150	63	0	0	3.6	0.9
MLT	99	V	300-150	553	0	0	3.9	0.4
MMD	99	V	300-150	103	0	0	3.7	-0.8
MNB	99	V	300-150	35	0	0	4.0	-0.8
MPH	99	V	300-150	714	0	0	4.3	-1.1
MSR	99	V	300-150	851	5	0	5.2	0.1
NCR	99	V	300-150	326	0	0	3.8	0.1
NJE	99	V	300-150	263	0	0	4.0	0.5
NSP	99	V	300-150	65	0	0	9.0	0.8
NWS	99	V	300-150	170	0	0	3.6	0.5
OAE	99	V	300-150	820	0	0	4.7	0.7
OMA	99	V	300-150	34	0	0	2.4	-0.4
PAC	99	V	300-150	93	0	0	3.4	-0.5
PAL	99	V	300-150	271	0	0	2.7	0.3
PDY	99	V	300-150	35	0	0	3.7	0.6
PIA	99	V	300-150	159	0	0	2.5	0.4
PLM	99	V	300-150	509	0	0	4.2	0.3
QFA	99	V	300-150	335	0	0	4.2	0.5
QQE	99	V	300-150	47	0	0	4.1	0.8
QTR	99	V	300-150	13286	0	0	3.8	0.2
RAM	99	V	300-150	183	10	0	5.2	-0.5
RCH	99	V	300-150	3198	0	0	4.6	0.4
RJA	99	V	300-150	356	15	0	8.6	-0.2
RRR	99	V	300-150	316	0	0	4.6	1.0
RYR	99	V	300-150	32	0	6	3.1	-0.1
SAM	99	V	300-150	450	0	0	3.8	0.2
SAS	99	V	300-150	1307	0	0	3.5	0.1
SCX	99	V	300-150	88	0	0	3.9	0.1
SEY	99	V	300-150	23	0	0	3.8	0.8
SHE	99	V	300-150	48	0	0	2.5	-0.0
SIA	99	V	300-150	1293	0	0	4.0	-0.1
SIO	99	V	300-150	21	0	0	4.7	0.4
SLM	99	V	300-150	33	0	0	3.1	0.7
SOO	99	V	300-150	682	0	0	3.6	-0.0
SPA	99	V	300-150	69	0	0	4.2	0.3
SVA	99	V	300-150	1825	0	0	4.1	0.2
SVW	99	V	300-150	84	0	1	4.3	0.5
SWA	99	V	300-150	38	0	3	5.6	-0.2
SWR	99	V	300-150	2661	0	1	3.7	0.3
SYB	99	V	300-150	38	0	0	4.5	-1.7
TAP	99	V	300-150	398	0	4	3.8	0.6
TAR	99	V	300-150	71	0	0	3.1	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TAY	99	V	300-150	403	0	0	4.2	-0.0
TEU	99	V	300-150	99	0	0	4.0	-0.1
TFF	99	V	300-150	42	0	0	5.1	0.9
TFL	99	V	300-150	610	12	0	6.0	-0.1
THT	99	V	300-150	1535	2	0	5.1	0.3
THY	99	V	300-150	6394	4	0	5.3	0.1
TMN	99	V	300-150	245	0	0	4.9	0.5
TOM	99	V	300-150	439	13	0	5.7	0.0
TOW	99	V	300-150	68	0	0	3.8	0.2
TPA	99	V	300-150	333	0	0	3.5	0.7
TSC	99	V	300-150	452	0	0	3.8	0.3
TWY	99	V	300-150	77	0	0	3.3	-0.2
UAE	99	V	300-150	9435	0	0	3.4	0.3
UAL	99	V	300-150	27077	7	2	6.9	0.2
UPS	99	V	300-150	4473	0	0	3.9	-0.0
UTN	99	V	300-150	94	0	0	5.5	-0.5
UZB	99	V	300-150	27	0	0	8.4	-1.2
VCG	99	V	300-150	22	0	0	3.6	-0.3
VCN	99	V	300-150	20	0	0	4.7	-1.0
VIR	99	V	300-150	6325	8	0	6.0	0.0
VJT	99	V	300-150	786	0	0	3.9	0.4
VMP	99	V	300-150	42	0	0	5.2	-0.4
VTI	99	V	300-150	40	0	0	2.3	0.4
VXS	99	V	300-150	81	0	0	5.3	1.0
WGN	99	V	300-150	122	0	0	3.9	0.6
WJA	99	V	300-150	248	10	0	6.9	-0.1
XRO	99	V	300-150	39	0	0	3.7	-0.5

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	26	11.8	0.4
01001	12	Z	50	26	13.3	-5.3
01028	00	Z	50	30	8.1	-2.4
01028	12	Z	50	28	30.8	4.5
01400	12	Z	50	20	77.0	76.2
01400	00	Z	50	21	79.6	78.9
01415	00	Z	50	28	14.6	4.5
01415	12	Z	50	30	11.6	-2.4
014152	00	Z	50	0	0.0	0.0
02365	00	Z	50	25	7.0	0.0
02365	12	Z	50	23	8.0	-3.9
02836	00	Z	50	31	9.5	0.6
02836	12	Z	50	32	8.5	1.4
02963	00	Z	50	28	7.7	3.4
02963	12	Z	50	30	6.4	-0.1
03005	12	Z	50	30	10.0	-2.6
03005	00	Z	50	28	9.8	-3.0
03238	00	Z	50	30	10.3	1.9
03238	12	Z	50	2	3.1	-1.1
03808	00	Z	50	29	9.5	-2.0
03808	12	Z	50	29	8.0	-0.1
03918	00	Z	50	6	11.2	8.9
03918	12	Z	50	0	0.0	0.0
03953	12	Z	50	30	13.9	-8.3
03953	00	Z	50	30	9.3	-6.0
04018	12	Z	50	30	16.4	-0.4
04018	00	Z	50	30	13.4	0.8
04220	00	Z	50	28	8.4	3.6
04220	12	Z	50	28	7.8	-1.8
04270	12	Z	50	30	14.0	-0.7
04270	00	Z	50	26	16.8	-1.2
04320	12	Z	50	29	10.4	-4.2
04320	00	Z	50	28	15.1	-2.5
04339	00	Z	50	28	18.0	-4.9
04339	12	Z	50	30	11.8	-3.6
04360	12	Z	50	22	15.1	-7.5
04360	00	Z	50	23	17.3	-9.4
06011	12	Z	50	26	7.8	2.2
06011	00	Z	50	23	8.4	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	50	30	9.2	3.0
06260	12	Z	50	4	12.2	1.3
06610	12	Z	50	29	7.1	2.0
06610	00	Z	50	26	5.5	2.5
07110	12	Z	50	29	12.1	1.2
07110	00	Z	50	28	15.6	1.1
07510	00	Z	50	28	18.2	15.5
07510	12	Z	50	30	19.1	12.8
07645	00	Z	50	28	14.7	12.6
07645	12	Z	50	30	21.2	16.9
07761	12	Z	50	25	16.3	12.5
07761	00	Z	50	23	16.1	14.1
08001	00	Z	50	26	10.3	8.6
08001	12	Z	50	28	8.7	2.7
08221	12	Z	50	28	11.3	7.9
08221	00	Z	50	29	13.0	8.3
08302	12	Z	50	29	7.5	-5.1
08302	00	Z	50	30	5.7	-1.7
08508	00	Z	50	29	11.8	8.6
08508	12	Z	50	30	9.2	4.0
08522	12	Z	50	30	19.2	10.4
10035	12	Z	50	30	14.6	12.4
10035	00	Z	50	30	19.9	17.9
10393	12	Z	50	30	10.3	0.4
10393	00	Z	50	29	8.9	5.4
10410	00	Z	50	30	7.5	-1.5
10410	12	Z	50	30	7.2	-3.7
10739	12	Z	50	27	9.1	5.5
10739	00	Z	50	26	9.7	7.6
11035	00	Z	50	26	16.4	11.7
11035	12	Z	50	30	43.6	31.4
12982	00	Z	50	29	7.7	6.0
12982	12	Z	50	30	4.2	1.6
16080	12	Z	50	30	5.4	-0.7
16080	00	Z	50	29	4.7	1.2
16245	12	Z	50	30	5.7	-1.3
16245	00	Z	50	29	6.8	4.6
16320	12	Z	50	30	7.8	5.5
16320	00	Z	50	28	11.9	10.1
16429	12	Z	50	30	9.2	5.1
16429	00	Z	50	31	9.8	8.1
16622	00	Z	50	26	18.6	17.6
16754	00	Z	50	23	10.3	6.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	25	9.9	7.2
26435	12	Z	50	14	4.9	-2.6
60018	00	Z	50	28	17.5	14.1
60018	12	Z	50	25	8.2	4.5
7JUNA4	12	Z	50	7	28.8	25.3
7JUNA4	00	Z	50	9	65.1	24.3
ASDE09	12	Z	50	11	29.3	27.8
BPMWB2	12	Z	50	2	44.3	44.3
BPMWB2	00	Z	50	3	16.9	16.8
DBLK	12	Z	50	1	8.7	-8.7
DBLK	00	Z	50	0	0.0	0.0
FPUW5G	12	Z	50	2	8.0	7.8
HTXUH4	12	Z	50	4	6.3	0.7
HTXUH4	00	Z	50	4	7.9	1.5
JNKN7J	12	Z	50	9	128.9	108.6
JNKN7J	00	Z	50	5	123.8	72.0
KJFF9X	12	Z	50	3	26.4	18.9
KJFF9X	00	Z	50	7	29.7	28.0
KMPLHP	12	Z	50	7	149.9	146.9
KMPLHP	00	Z	50	8	18.0	-1.0
LRYQE3	12	Z	50	7	118.2	78.1
LRYQE3	00	Z	50	11	67.8	44.4
UXK5JT	12	Z	50	2	21.3	21.0
UXK5JT	00	Z	50	1	6.1	6.1
VKB4L5	00	Z	50	4	34.2	33.8
VKB4L5	12	Z	50	6	49.3	44.5
WDK38H	12	Z	50	15	9.3	-5.9
XQFJRG	12	Z	50	5	32.6	7.2
XQFJRG	00	Z	50	2	14.7	-12.1
YLV96W	00	Z	50	2	28.9	28.2
YLV96W	12	Z	50	2	48.9	48.8
ZVQEQC	12	Z	50	9	6.9	1.7

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	21	4.0	0.6	0.1
01001	12	V	50	26	3.9	0.9	-1.2
01028	00	V	50	25	3.4	0.5	0.3
01028	12	V	50	28	3.3	-0.4	-0.2
01400	12	V	50	17	3.5	0.8	0.6
01400	00	V	50	18	3.9	-0.4	-0.1
01415	00	V	50	22	4.7	0.8	1.4
01415	12	V	50	30	3.7	0.4	0.5
014152	00	V	50	0	0.0	0.0	0.0
02365	00	V	50	21	3.7	0.0	0.1
02365	12	V	50	23	3.5	-0.3	0.9
02836	00	V	50	22	4.8	-0.6	-0.3
02836	12	V	50	30	3.5	-0.3	0.2
02963	00	V	50	21	5.1	-1.5	0.4
02963	12	V	50	30	4.1	-0.6	0.2
03005	12	V	50	29	3.9	0.7	-0.2
03005	00	V	50	22	4.3	0.3	0.0
03238	00	V	50	24	5.7	-1.3	0.1
03238	12	V	50	2	3.0	1.5	0.4
03808	00	V	50	23	3.1	0.8	0.5
03808	12	V	50	29	4.0	0.0	0.3
03918	00	V	50	4	4.2	-0.3	-0.2
03918	12	V	50	0	0.0	0.0	0.0
03953	12	V	50	30	3.5	0.4	0.0
03953	00	V	50	24	3.6	0.1	0.9
04018	12	V	50	29	4.3	0.4	1.0
04018	00	V	50	24	4.0	0.5	-0.2
04220	00	V	50	24	4.5	-0.9	0.1
04220	12	V	50	28	3.5	0.3	-0.4
04270	12	V	50	29	6.1	0.6	0.1
04270	00	V	50	22	5.0	-0.1	-1.5
04320	12	V	50	29	3.7	0.4	1.0
04320	00	V	50	23	3.5	1.3	-0.5
04339	00	V	50	22	3.2	0.5	0.3
04339	12	V	50	30	3.6	-0.3	0.5
04360	12	V	50	22	2.9	0.2	0.1
04360	00	V	50	20	3.7	0.2	-0.4
06011	12	V	50	26	4.4	0.6	-0.3
06011	00	V	50	19	4.1	-1.3	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	50	23	2.8	0.3	0.1
06260	12	V	50	4	3.3	1.7	-2.5
06610	12	V	50	29	3.0	0.1	-0.2
06610	00	V	50	22	2.8	0.6	-0.9
07110	12	V	50	29	3.2	0.4	-1.3
07110	00	V	50	21	3.2	0.2	0.5
07510	00	V	50	24	2.8	0.3	-0.2
07510	12	V	50	30	2.5	0.2	-0.5
07645	00	V	50	25	2.7	1.0	0.1
07645	12	V	50	30	2.9	0.4	-0.6
07761	12	V	50	25	2.7	0.1	-0.2
07761	00	V	50	21	3.6	0.3	0.4
08001	00	V	50	19	3.2	-0.3	0.1
08001	12	V	50	26	3.2	0.6	0.6
08221	12	V	50	28	3.7	0.4	-1.2
08221	00	V	50	26	3.3	0.2	-0.1
08302	12	V	50	29	2.8	-0.4	-0.3
08302	00	V	50	22	3.1	0.3	-0.2
08508	00	V	50	24	3.6	0.0	-1.0
08508	12	V	50	30	3.3	0.4	-0.2
08522	12	V	50	30	3.3	0.4	0.0
10035	12	V	50	30	3.6	0.4	-0.9
10035	00	V	50	23	3.5	0.8	0.2
10393	12	V	50	30	3.1	-0.6	-0.5
10393	00	V	50	25	4.0	-0.4	-1.0
10410	00	V	50	28	2.6	-0.1	-0.1
10410	12	V	50	30	3.3	0.2	-1.1
10739	12	V	50	27	2.8	0.2	0.2
10739	00	V	50	25	3.1	-0.3	-0.7
11035	00	V	50	21	3.5	0.2	0.3
11035	12	V	50	30	3.3	0.5	-0.6
12982	00	V	50	26	2.8	-0.3	0.8
12982	12	V	50	30	2.7	0.1	-0.5
16080	12	V	50	30	3.2	0.3	0.3
16080	00	V	50	24	3.2	-0.3	-0.6
16245	12	V	50	29	2.8	-0.3	-0.2
16245	00	V	50	26	2.6	-0.1	-0.1
16320	12	V	50	30	3.0	0.7	0.3
16320	00	V	50	22	2.6	-0.1	0.9
16429	12	V	50	29	2.9	0.7	-0.4
16429	00	V	50	27	3.3	1.2	-0.4
16622	00	V	50	20	2.5	0.1	0.8
16754	00	V	50	14	2.7	1.1	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	21	3.3	0.6	-0.8
26435	12	V	50	13	2.8	-0.3	-0.5
60018	00	V	50	23	4.2	-0.7	-0.1
60018	12	V	50	25	3.6	-0.4	-0.7
7JUNA4	12	V	50	7	4.2	0.9	0.2
7JUNA4	00	V	50	9	3.7	-0.7	1.0
ASDE09	12	V	50	11	3.7	0.6	-1.3
BPMWB2	12	V	50	2	2.3	-0.3	0.6
BPMWB2	00	V	50	3	2.3	-1.0	-0.4
DBLK	12	V	50	1	3.1	3.0	-0.7
DBLK	00	V	50	0	0.0	0.0	0.0
FPUW5G	12	V	50	1	2.4	-0.1	-2.4
HTXUH4	12	V	50	4	3.9	1.6	0.3
HTXUH4	00	V	50	4	3.1	-0.1	0.4
JNKN7J	12	V	50	7	3.8	0.4	0.7
JNKN7J	00	V	50	4	4.2	-1.0	0.5
KJFF9X	12	V	50	3	3.3	-1.7	-0.6
KJFF9X	00	V	50	7	3.4	1.3	-1.8
KMPLHP	12	V	50	7	3.6	0.8	0.3
KMPLHP	00	V	50	8	3.8	-0.9	-0.5
LRYQE3	12	V	50	7	2.7	0.1	1.0
LRYQE3	00	V	50	9	3.9	-1.4	0.1
UXK5JT	12	V	50	2	5.2	4.6	1.3
UXK5JT	00	V	50	1	4.8	-4.4	-2.0
VKB4L5	00	V	50	4	1.8	1.0	-0.8
VKB4L5	12	V	50	6	1.5	-0.2	0.4
WDK38H	12	V	50	11	3.3	0.6	1.3
XQFJRG	12	V	50	5	2.5	0.1	1.7
XQFJRG	00	V	50	2	2.3	1.4	1.6
YLV96W	00	V	50	2	4.0	3.3	1.5
YLV96W	12	V	50	2	4.5	0.8	-3.3
ZVQEQC	12	V	50	9	2.7	-0.1	-0.6

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	28	11.7	-5.7
01001	12	Z	100	27	14.9	-10.8
01028	00	Z	100	30	7.6	-5.0
01028	12	Z	100	29	30.0	1.2
01400	12	Z	100	22	74.7	74.1
01400	00	Z	100	21	74.4	73.9
01415	00	Z	100	29	12.1	-3.5
01415	12	Z	100	30	10.4	-4.4
014152	00	Z	100	0	0.0	0.0
02365	00	Z	100	28	7.5	-1.7
02365	12	Z	100	27	8.0	-5.5
02836	00	Z	100	31	7.5	-2.6
02836	12	Z	100	32	7.2	-3.4
02963	00	Z	100	29	6.5	-0.1
02963	12	Z	100	30	7.9	-4.3
03005	12	Z	100	30	9.6	-5.8
03005	00	Z	100	29	8.9	-6.1
03238	00	Z	100	30	9.0	-1.0
03238	12	Z	100	2	1.2	-0.5
03808	00	Z	100	30	8.7	-1.9
03808	12	Z	100	30	7.1	-0.4
03918	00	Z	100	6	8.3	1.4
03918	12	Z	100	0	0.0	0.0
03953	12	Z	100	30	12.0	-8.8
03953	00	Z	100	30	12.2	-7.6
04018	12	Z	100	30	10.7	-0.6
04018	00	Z	100	30	8.4	-4.2
04220	00	Z	100	28	5.4	1.4
04220	12	Z	100	28	8.6	0.4
04270	12	Z	100	30	10.5	-1.6
04270	00	Z	100	28	13.1	-0.6
04320	12	Z	100	29	9.2	-4.7
04320	00	Z	100	28	13.2	-3.3
04339	00	Z	100	28	14.7	-6.6
04339	12	Z	100	30	10.7	-5.8
04360	12	Z	100	23	16.3	-13.5
04360	00	Z	100	25	17.4	-10.5
06011	12	Z	100	26	6.0	-0.9
06011	00	Z	100	24	9.7	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	100	30	6.8	-1.0
06260	12	Z	100	4	13.1	-3.9
06610	12	Z	100	31	4.3	-0.4
06610	00	Z	100	32	4.4	0.0
07110	12	Z	100	29	10.4	-4.9
07110	00	Z	100	28	12.3	-4.1
07510	00	Z	100	29	12.2	7.8
07510	12	Z	100	30	12.6	7.6
07645	00	Z	100	29	7.4	5.2
07645	12	Z	100	30	12.5	8.6
07761	12	Z	100	25	9.1	4.2
07761	00	Z	100	23	7.2	4.1
08001	00	Z	100	29	6.7	3.4
08001	12	Z	100	30	7.4	2.9
08221	12	Z	100	29	9.3	6.3
08221	00	Z	100	30	9.9	6.5
08302	12	Z	100	29	6.6	-5.5
08302	00	Z	100	30	8.0	-5.1
08508	00	Z	100	29	10.4	6.9
08508	12	Z	100	30	8.5	3.7
08522	12	Z	100	30	20.4	9.7
10035	12	Z	100	30	13.5	11.7
10035	00	Z	100	30	16.2	14.5
10393	12	Z	100	30	6.1	-1.5
10393	00	Z	100	30	5.0	0.5
10410	00	Z	100	30	6.1	-2.4
10410	12	Z	100	30	6.6	-3.9
10739	12	Z	100	27	6.2	3.1
10739	00	Z	100	26	7.1	5.5
11035	00	Z	100	30	11.9	8.0
11035	12	Z	100	30	29.5	20.4
12982	00	Z	100	29	5.5	2.8
12982	12	Z	100	30	4.3	-0.2
16080	12	Z	100	30	5.7	-3.6
16080	00	Z	100	30	4.6	-1.9
16245	12	Z	100	30	6.4	-4.2
16245	00	Z	100	30	4.2	-0.2
16320	12	Z	100	30	4.9	2.9
16320	00	Z	100	30	6.1	3.8
16429	12	Z	100	30	8.6	2.1
16429	00	Z	100	31	5.5	3.3
16622	00	Z	100	30	13.2	11.7
16754	00	Z	100	28	7.3	4.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	26	7.4	3.0
26435	12	Z	100	15	5.0	-3.9
60018	00	Z	100	29	11.8	9.3
60018	12	Z	100	29	8.4	3.7
7JUNA4	12	Z	100	10	71.8	-11.1
7JUNA4	00	Z	100	10	10.3	3.7
ASDE09	12	Z	100	11	23.5	22.1
BPMWB2	12	Z	100	2	35.0	35.0
BPMWB2	00	Z	100	3	12.1	12.0
DBLK	12	Z	100	2	89.3	57.0
DBLK	00	Z	100	0	0.0	0.0
FPUW5G	12	Z	100	3	10.9	10.7
HTXUH4	12	Z	100	4	3.5	-0.8
HTXUH4	00	Z	100	4	8.3	5.6
JNKN7J	12	Z	100	11	63.1	59.8
JNKN7J	00	Z	100	9	52.4	39.9
KJJF9X	12	Z	100	3	19.3	11.3
KJJF9X	00	Z	100	7	17.6	15.9
KMPLHP	12	Z	100	7	73.1	70.2
KMPLHP	00	Z	100	8	9.3	-2.2
LRYQE3	12	Z	100	11	74.6	62.4
LRYQE3	00	Z	100	11	28.5	25.1
UXK5JT	12	Z	100	2	12.6	12.1
UXK5JT	00	Z	100	1	5.1	5.1
VKB4L5	00	Z	100	4	36.1	35.6
VKB4L5	12	Z	100	6	46.6	43.7
WDK38H	12	Z	100	15	9.8	-9.4
XQFJRG	12	Z	100	5	17.6	-2.6
XQFJRG	00	Z	100	3	19.5	-14.6
YLV96W	00	Z	100	2	25.7	24.3
YLV96W	12	Z	100	2	35.7	35.6
ZVQEQC	12	Z	100	9	6.9	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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	23	3.1	0.3	0.3
01001	12	V	100	27	3.3	-0.2	-0.6
01028	00	V	100	25	3.2	0.6	-0.3
01028	12	V	100	29	3.3	-0.2	0.2
01400	12	V	100	20	2.9	1.1	-0.5
01400	00	V	100	16	3.1	0.9	0.2
01415	00	V	100	24	4.2	1.7	-0.5
01415	12	V	100	30	3.7	0.5	-1.0
014152	00	V	100	0	0.0	0.0	0.0
02365	00	V	100	23	3.3	-0.3	-0.1
02365	12	V	100	26	4.9	0.5	0.7
02836	00	V	100	22	3.8	-0.7	-1.0
02836	12	V	100	30	3.5	0.0	-0.6
02963	00	V	100	21	3.9	-0.5	0.0
02963	12	V	100	30	4.0	0.1	-0.5
03005	12	V	100	30	4.3	-0.1	0.2
03005	00	V	100	23	3.2	0.8	-0.3
03238	00	V	100	24	3.5	-0.1	-0.7
03238	12	V	100	2	2.0	-0.6	0.5
03808	00	V	100	23	3.1	0.3	-0.4
03808	12	V	100	30	3.6	-0.3	0.2
03918	00	V	100	4	3.5	1.0	0.2
03918	12	V	100	0	0.0	0.0	0.0
03953	12	V	100	30	4.0	-0.1	0.3
03953	00	V	100	24	2.8	0.3	0.1
04018	12	V	100	30	4.1	-0.7	0.4
04018	00	V	100	30	4.3	0.3	-0.6
04220	00	V	100	27	2.8	-0.3	-0.4
04220	12	V	100	28	3.3	-0.5	-0.2
04270	12	V	100	30	5.1	-1.1	0.6
04270	00	V	100	25	4.1	0.0	0.4
04320	12	V	100	29	4.0	-0.4	0.1
04320	00	V	100	27	3.5	0.6	0.2
04339	00	V	100	27	3.5	0.1	0.3
04339	12	V	100	30	3.1	0.5	0.2
04360	12	V	100	23	2.6	0.2	0.7
04360	00	V	100	18	2.6	0.5	0.3
06011	12	V	100	26	3.7	0.6	-0.2
06011	00	V	100	21	3.7	0.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	100	23	3.1	0.9	0.2
06260	12	V	100	4	3.9	2.0	-0.3
06610	12	V	100	30	3.4	0.6	0.8
06610	00	V	100	28	3.3	-0.4	0.1
07110	12	V	100	29	3.4	-0.2	-0.4
07110	00	V	100	21	3.1	0.8	-0.5
07510	00	V	100	24	3.4	1.4	-0.1
07510	12	V	100	30	3.1	0.3	0.3
07645	00	V	100	25	3.1	0.3	0.2
07645	12	V	100	30	3.1	0.5	0.1
07761	12	V	100	25	3.0	0.0	-0.3
07761	00	V	100	21	3.1	0.1	0.3
08001	00	V	100	20	3.3	0.4	0.4
08001	12	V	100	30	3.4	-0.5	0.0
08221	12	V	100	29	3.8	-0.1	0.5
08221	00	V	100	26	3.9	-0.2	0.2
08302	12	V	100	29	2.9	-0.3	0.8
08302	00	V	100	23	3.3	0.3	0.1
08508	00	V	100	24	3.8	0.1	-0.3
08508	12	V	100	30	4.0	-0.2	0.6
08522	12	V	100	30	4.4	0.5	1.2
10035	12	V	100	30	2.8	0.1	-0.4
10035	00	V	100	30	4.0	-0.1	0.1
10393	12	V	100	30	3.1	0.3	-0.7
10393	00	V	100	29	3.3	0.3	-0.6
10410	00	V	100	29	3.2	0.5	-0.2
10410	12	V	100	30	2.6	0.2	-0.2
10739	12	V	100	27	3.0	0.2	-0.1
10739	00	V	100	26	3.5	0.0	-0.6
11035	00	V	100	24	2.7	0.5	-0.1
11035	12	V	100	30	2.5	0.5	-0.8
12982	00	V	100	26	2.7	0.2	-0.2
12982	12	V	100	30	2.5	0.0	-0.1
16080	12	V	100	30	3.6	0.0	0.0
16080	00	V	100	28	2.4	0.2	-0.5
16245	12	V	100	30	3.0	0.3	-0.3
16245	00	V	100	24	3.1	0.3	-0.2
16320	12	V	100	30	2.8	-0.4	0.1
16320	00	V	100	28	3.2	1.3	0.3
16429	12	V	100	30	3.0	1.2	-0.3
16429	00	V	100	22	3.5	0.8	0.9
16622	00	V	100	22	3.0	0.9	-0.5
16754	00	V	100	21	3.7	1.0	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	25	4.0	0.4	-0.6
26435	12	V	100	14	3.1	0.1	0.3
60018	00	V	100	23	3.7	-0.2	0.9
60018	12	V	100	29	5.1	-0.2	0.8
7JUNA4	12	V	100	9	4.3	1.8	-1.0
7JUNA4	00	V	100	10	3.3	-0.3	-0.5
ASDE09	12	V	100	11	3.2	-0.1	0.3
BPMWB2	12	V	100	2	5.0	-2.3	2.9
BPMWB2	00	V	100	3	2.4	1.0	0.3
DBLK	12	V	100	2	8.2	2.6	-7.3
DBLK	00	V	100	0	0.0	0.0	0.0
FPUW5G	12	V	100	3	3.7	0.2	1.2
HTXUH4	12	V	100	4	5.1	-2.4	-1.4
HTXUH4	00	V	100	4	5.8	-1.4	-0.8
JNKN7J	12	V	100	9	5.0	-2.4	-0.3
JNKN7J	00	V	100	7	2.4	-0.2	0.3
KJJF9X	12	V	100	3	1.4	-0.7	0.9
KJJF9X	00	V	100	7	4.2	0.7	1.6
KMPLHP	12	V	100	7	3.8	-0.4	-0.8
KMPLHP	00	V	100	8	4.6	0.7	0.2
LRYQE3	12	V	100	10	3.3	0.2	0.8
LRYQE3	00	V	100	10	4.5	-1.4	0.0
UXK5JT	12	V	100	2	7.0	-1.1	5.7
UXK5JT	00	V	100	1	2.5	-0.3	2.5
VKB4L5	00	V	100	4	2.7	0.0	-0.6
VKB4L5	12	V	100	6	3.9	0.5	-0.5
WDK38H	12	V	100	15	3.2	-0.9	0.4
XQFJRG	12	V	100	5	5.8	-3.0	0.2
XQFJRG	00	V	100	3	1.7	-0.7	-1.4
YLV96W	00	V	100	2	4.2	-0.4	2.6
YLV96W	12	V	100	2	3.7	-2.6	-1.9
ZVQEQC	12	V	100	9	4.0	1.3	0.7

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	12.4	-10.5
01001	12	Z	500	27	11.9	-9.5
01028	00	Z	500	30	2.9	0.0
01028	12	Z	500	30	3.3	-0.8
01400	12	Z	500	24	78.2	78.0
01400	00	Z	500	23	78.3	78.1
01415	00	Z	500	29	6.5	4.4
01415	12	Z	500	30	6.0	3.0
014152	00	Z	500	0	0.0	0.0
02365	00	Z	500	28	4.0	3.0
02365	12	Z	500	28	3.7	0.4
02836	00	Z	500	31	3.7	1.2
02836	12	Z	500	32	4.0	0.7
02963	00	Z	500	29	3.8	2.7
02963	12	Z	500	31	5.6	2.8
03005	12	Z	500	30	4.4	-2.1
03005	00	Z	500	29	5.1	-2.6
03238	00	Z	500	30	3.5	1.8
03238	12	Z	500	2	2.8	1.5
03808	00	Z	500	30	4.4	2.7
03808	12	Z	500	30	4.1	2.2
03918	00	Z	500	6	10.0	9.5
03918	12	Z	500	0	0.0	0.0
03953	12	Z	500	30	3.5	-1.1
03953	00	Z	500	30	3.7	-0.3
04018	12	Z	500	30	4.5	1.6
04018	00	Z	500	30	5.0	-0.6
04220	00	Z	500	28	4.5	2.8
04220	12	Z	500	28	7.6	2.9
04270	12	Z	500	30	6.8	-2.7
04270	00	Z	500	29	3.4	-0.6
04320	12	Z	500	29	4.3	-0.5
04320	00	Z	500	28	14.2	4.0
04339	00	Z	500	28	6.2	-0.1
04339	12	Z	500	30	5.9	-0.6
04360	12	Z	500	26	11.8	-11.2
04360	00	Z	500	26	13.3	-11.1
06011	12	Z	500	28	7.9	3.6
06011	00	Z	500	27	7.6	3.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	500	30	3.5	1.7
06260	12	Z	500	4	3.9	0.4
06610	12	Z	500	31	2.6	1.6
06610	00	Z	500	32	4.1	3.1
07110	12	Z	500	30	7.3	-4.5
07110	00	Z	500	30	8.4	-5.5
07510	00	Z	500	29	5.8	4.6
07510	12	Z	500	30	7.2	6.3
07645	00	Z	500	30	3.7	-0.5
07645	12	Z	500	30	7.4	1.2
07761	12	Z	500	25	5.2	-1.6
07761	00	Z	500	24	4.0	-2.1
08001	00	Z	500	29	5.3	4.2
08001	12	Z	500	30	5.4	4.7
08221	12	Z	500	30	6.7	6.2
08221	00	Z	500	30	7.4	7.0
08302	12	Z	500	29	4.9	-4.2
08302	00	Z	500	30	5.8	-5.2
08508	00	Z	500	29	7.8	6.7
08508	12	Z	500	30	7.7	5.8
08522	12	Z	500	30	18.3	9.8
10035	12	Z	500	30	15.3	15.2
10035	00	Z	500	30	15.7	15.5
10393	12	Z	500	30	2.4	0.3
10393	00	Z	500	30	3.5	2.5
10410	00	Z	500	30	2.5	0.2
10410	12	Z	500	30	2.6	-0.3
10739	12	Z	500	27	5.7	5.2
10739	00	Z	500	26	5.9	5.5
11035	00	Z	500	30	13.6	8.7
11035	12	Z	500	31	19.6	14.3
12982	00	Z	500	30	4.8	3.0
12982	12	Z	500	31	3.6	2.1
16080	12	Z	500	30	3.2	-2.7
16080	00	Z	500	30	1.6	-0.8
16245	12	Z	500	30	2.9	-2.5
16245	00	Z	500	30	2.4	-1.1
16320	12	Z	500	30	5.0	4.2
16320	00	Z	500	30	5.3	3.7
16429	12	Z	500	30	12.1	3.8
16429	00	Z	500	31	4.1	2.5
16622	00	Z	500	30	12.1	11.8
16754	00	Z	500	28	5.7	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	27	4.5	3.5
26435	12	Z	500	15	2.0	0.5
60018	00	Z	500	29	6.0	3.1
60018	12	Z	500	29	5.0	3.6
7JUNA4	12	Z	500	12	5.7	1.5
7JUNA4	00	Z	500	11	10.7	6.4
ASDE09	12	Z	500	11	29.1	28.8
BPMWB2	12	Z	500	5	14.1	13.5
BPMWB2	00	Z	500	5	6.9	3.5
DBLK	12	Z	500	2	135.9	-135.9
DBLK	00	Z	500	0	0.0	0.0
FPUW5G	12	Z	500	3	11.5	11.3
HTXUH4	12	Z	500	4	5.6	0.2
HTXUH4	00	Z	500	4	7.3	6.1
JNKN7J	12	Z	500	12	35.5	35.1
JNKN7J	00	Z	500	10	31.9	30.5
KJJF9X	12	Z	500	6	8.8	4.1
KJJF9X	00	Z	500	7	11.6	9.8
KMPLHP	12	Z	500	7	10.8	7.3
KMPLHP	00	Z	500	8	5.3	1.0
LRYQE3	12	Z	500	11	37.3	36.8
LRYQE3	00	Z	500	12	35.3	35.1
UXK5JT	12	Z	500	5	9.4	6.9
UXK5JT	00	Z	500	2	1.2	-1.1
VKB4L5	00	Z	500	4	32.0	31.7
VKB4L5	12	Z	500	6	43.4	40.6
WDK38H	12	Z	500	17	7.7	-6.5
XQFJRG	12	Z	500	5	7.4	-7.3
XQFJRG	00	Z	500	5	11.1	-10.9
YLV96W	00	Z	500	3	26.9	26.5
YLV96W	12	Z	500	3	35.6	35.5
ZVQEQC	12	Z	500	9	4.7	4.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : NOV 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	3.9	0.2	-0.1
01001	12	V	500	27	4.0	0.7	0.7
01028	00	V	500	30	3.3	-0.5	-0.1
01028	12	V	500	30	2.5	0.4	0.2
01400	12	V	500	24	3.2	0.2	-0.1
01400	00	V	500	22	2.4	-0.1	0.0
01415	00	V	500	29	3.2	-0.7	0.8
01415	12	V	500	30	2.3	-0.2	0.3
014152	00	V	500	0	0.0	0.0	0.0
02365	00	V	500	28	2.2	0.0	0.4
02365	12	V	500	28	3.1	0.2	-0.8
02836	00	V	500	30	3.0	0.1	0.0
02836	12	V	500	30	2.5	0.7	-0.4
02963	00	V	500	29	2.5	0.4	-0.2
02963	12	V	500	30	3.0	0.0	-0.1
03005	12	V	500	30	3.3	0.0	-0.4
03005	00	V	500	29	3.8	0.6	0.2
03238	00	V	500	30	2.4	0.7	0.0
03238	12	V	500	2	4.9	0.6	3.1
03808	00	V	500	29	2.7	0.5	-0.1
03808	12	V	500	30	4.2	0.7	-0.2
03918	00	V	500	6	4.6	0.7	-0.7
03918	12	V	500	0	0.0	0.0	0.0
03953	12	V	500	30	4.0	0.3	0.3
03953	00	V	500	30	3.8	0.4	0.6
04018	12	V	500	30	3.6	-0.3	1.0
04018	00	V	500	30	3.6	-0.2	0.0
04220	00	V	500	28	2.9	0.7	-0.4
04220	12	V	500	28	2.5	0.6	-0.1
04270	12	V	500	30	3.9	0.6	0.1
04270	00	V	500	29	3.5	-0.1	0.1
04320	12	V	500	29	3.3	0.3	-0.2
04320	00	V	500	28	2.9	-0.1	-0.2
04339	00	V	500	28	2.8	0.2	-0.1
04339	12	V	500	30	2.8	-0.3	-0.5
04360	12	V	500	26	2.8	0.2	0.1
04360	00	V	500	26	3.0	0.0	0.4
06011	12	V	500	28	3.2	-0.1	-0.1
06011	00	V	500	27	3.4	0.2	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	500	29	2.4	-0.1	0.5
06260	12	V	500	4	2.5	0.4	-0.5
06610	12	V	500	30	2.6	0.2	-0.7
06610	00	V	500	30	2.4	0.5	-0.4
07110	12	V	500	30	2.9	1.1	0.2
07110	00	V	500	30	2.6	0.5	0.2
07510	00	V	500	29	2.5	-0.4	-0.6
07510	12	V	500	30	2.6	-0.1	0.0
07645	00	V	500	30	1.9	-0.1	-0.2
07645	12	V	500	30	2.0	0.0	-0.4
07761	12	V	500	25	2.1	0.6	-0.2
07761	00	V	500	24	2.1	-0.2	0.2
08001	00	V	500	29	2.9	0.3	-0.4
08001	12	V	500	30	3.3	-0.5	0.4
08221	12	V	500	30	3.0	-0.2	0.1
08221	00	V	500	30	2.5	-0.4	0.0
08302	12	V	500	29	2.2	0.0	-0.2
08302	00	V	500	29	2.3	0.5	-0.4
08508	00	V	500	29	2.8	0.2	-0.4
08508	12	V	500	30	3.0	0.9	-0.1
08522	12	V	500	30	3.3	-0.1	-0.1
10035	12	V	500	30	2.5	-0.4	-0.5
10035	00	V	500	30	2.3	-0.2	0.2
10393	12	V	500	30	2.3	-0.2	-0.1
10393	00	V	500	30	1.9	-0.3	0.1
10410	00	V	500	30	2.4	0.7	-0.1
10410	12	V	500	30	1.6	0.1	0.0
10739	12	V	500	27	2.1	0.6	-0.4
10739	00	V	500	26	2.1	0.3	-0.5
11035	00	V	500	30	2.0	0.3	0.0
11035	12	V	500	30	2.1	0.3	0.0
12982	00	V	500	30	2.1	0.4	0.4
12982	12	V	500	30	1.9	0.1	0.1
16080	12	V	500	30	2.5	-0.4	-0.6
16080	00	V	500	30	1.7	-0.1	0.0
16245	12	V	500	30	2.3	0.1	0.0
16245	00	V	500	30	2.1	-0.1	0.3
16320	12	V	500	30	3.0	-0.3	-0.3
16320	00	V	500	30	2.8	0.7	0.1
16429	12	V	500	30	2.5	0.2	0.3
16429	00	V	500	30	2.5	0.1	0.8
16622	00	V	500	30	1.9	0.4	-0.5
16754	00	V	500	27	3.1	0.8	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	27	3.7	0.8	-0.5
26435	12	V	500	15	2.1	-0.6	0.5
60018	00	V	500	28	2.3	0.1	0.0
60018	12	V	500	29	3.1	0.2	-0.1
7JUNA4	12	V	500	12	2.3	-0.5	0.7
7JUNA4	00	V	500	11	2.5	-0.2	-0.4
ASDE09	12	V	500	11	1.7	-0.2	-0.4
BPMWB2	12	V	500	5	3.2	1.5	-1.5
BPMWB2	00	V	500	5	2.1	-0.2	-0.9
DBLK	12	V	500	1	18.0	15.2	-9.7
DBLK	00	V	500	0	0.0	0.0	0.0
FPUW5G	12	V	500	3	2.6	1.0	-0.7
HTXUH4	12	V	500	4	1.8	0.1	1.2
HTXUH4	00	V	500	4	1.4	-0.7	-0.2
JNKN7J	12	V	500	12	3.6	0.7	-0.6
JNKN7J	00	V	500	10	3.6	-0.3	1.0
KJJF9X	12	V	500	6	1.9	0.3	-0.8
KJJF9X	00	V	500	7	1.6	0.6	0.2
KMPLHP	12	V	500	7	2.4	0.9	-1.0
KMPLHP	00	V	500	8	2.4	-0.8	-0.2
LRYQE3	12	V	500	11	3.9	-0.3	-0.2
LRYQE3	00	V	500	12	2.5	0.4	0.3
UXK5JT	12	V	500	5	2.0	0.2	-0.7
UXK5JT	00	V	500	2	1.8	0.4	0.0
VKB4L5	00	V	500	4	1.2	0.6	-0.1
VKB4L5	12	V	500	6	2.8	-1.0	0.7
WDK38H	12	V	500	17	2.1	-0.2	0.2
XQFJRG	12	V	500	5	2.6	0.5	1.1
XQFJRG	00	V	500	5	3.1	-0.2	-1.8
YLV96W	00	V	500	2	3.1	-2.4	-1.0
YLV96W	12	V	500	3	5.1	-1.5	2.3
ZVQEQC	12	V	500	9	2.7	-0.4	0.3

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	31	7.7	-7.0
01001	12	Z	850	31	9.0	-8.3
01028	00	Z	850	30	2.7	-0.6
01028	12	Z	850	30	3.4	-1.4
01400	12	Z	850	24	77.7	77.6
01400	00	Z	850	23	77.1	77.0
01415	00	Z	850	29	4.2	2.9
01415	12	Z	850	30	5.0	3.7
014152	00	Z	850	2	0.0	0.0
02365	00	Z	850	28	4.0	3.1
02365	12	Z	850	28	3.6	2.9
02836	00	Z	850	31	2.1	0.8
02836	12	Z	850	32	2.4	1.4
02963	00	Z	850	29	3.8	3.1
02963	12	Z	850	31	5.0	2.0
03005	12	Z	850	30	3.2	-1.4
03005	00	Z	850	29	4.6	-2.7
03238	00	Z	850	30	3.2	1.4
03238	12	Z	850	2	1.7	1.6
03808	00	Z	850	30	3.3	1.4
03808	12	Z	850	30	2.8	0.7
03918	00	Z	850	6	8.1	7.5
03918	12	Z	850	0	0.0	0.0
03953	12	Z	850	30	4.6	-1.8
03953	00	Z	850	30	3.5	-2.0
04018	12	Z	850	30	3.8	-1.6
04018	00	Z	850	30	2.6	-1.6
04220	00	Z	850	28	3.7	2.1
04220	12	Z	850	28	8.2	2.6
04270	12	Z	850	30	3.3	0.3
04270	00	Z	850	29	6.4	-1.2
04320	12	Z	850	29	5.2	-3.0
04320	00	Z	850	29	12.9	0.7
04339	00	Z	850	28	3.8	-1.3
04339	12	Z	850	30	5.2	-2.1
04360	12	Z	850	26	12.1	-11.4
04360	00	Z	850	26	11.6	-11.0
06011	12	Z	850	28	6.3	5.2
06011	00	Z	850	27	5.3	2.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	850	30	2.1	0.3
06260	12	Z	850	4	2.6	0.4
06610	12	Z	850	31	2.5	-1.0
06610	00	Z	850	32	2.7	1.2
07110	12	Z	850	30	3.3	-2.4
07110	00	Z	850	30	3.9	-2.6
07510	00	Z	850	29	3.6	2.8
07510	12	Z	850	30	3.8	2.7
07645	00	Z	850	30	3.3	-2.3
07645	12	Z	850	30	3.5	-2.4
07761	12	Z	850	25	2.8	-2.4
07761	00	Z	850	24	3.4	-2.2
08001	00	Z	850	29	2.9	1.5
08001	12	Z	850	30	3.1	1.6
08221	12	Z	850	30	3.9	3.4
08221	00	Z	850	30	3.5	3.1
08302	12	Z	850	29	9.9	-9.7
08302	00	Z	850	30	8.1	-7.9
08508	00	Z	850	29	4.0	3.0
08508	12	Z	850	30	5.1	3.3
08522	12	Z	850	30	15.1	6.0
10035	12	Z	850	30	15.0	14.8
10035	00	Z	850	30	14.1	14.0
10393	12	Z	850	30	1.8	-0.9
10393	00	Z	850	31	2.4	0.7
10410	00	Z	850	30	2.1	-0.7
10410	12	Z	850	30	1.9	-0.6
10739	12	Z	850	27	3.3	2.4
10739	00	Z	850	26	3.4	2.9
11035	00	Z	850	30	13.8	7.8
11035	12	Z	850	31	18.3	14.2
12982	00	Z	850	30	3.8	0.4
12982	12	Z	850	31	3.7	-0.6
16080	12	Z	850	30	5.4	-5.0
16080	00	Z	850	30	4.0	-3.5
16245	12	Z	850	30	5.2	-4.7
16245	00	Z	850	30	4.2	-3.6
16320	12	Z	850	30	3.5	1.2
16320	00	Z	850	30	4.0	1.0
16429	12	Z	850	30	12.3	2.9
16429	00	Z	850	31	3.4	0.4
16622	00	Z	850	30	9.5	9.3
16754	00	Z	850	28	3.4	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	27	2.6	1.4
26435	12	Z	850	15	2.0	0.6
60018	00	Z	850	29	3.1	1.2
60018	12	Z	850	29	2.7	1.3
7JUNA4	12	Z	850	13	5.7	0.2
7JUNA4	00	Z	850	12	11.6	8.3
ASDE09	12	Z	850	11	33.1	33.1
BPMWB2	12	Z	850	5	5.9	5.6
BPMWB2	00	Z	850	6	5.3	2.9
DBLK	12	Z	850	1	0.0	0.0
DBLK	00	Z	850	0	0.0	0.0
FPUW5G	12	Z	850	3	8.5	8.2
HTXUH4	12	Z	850	4	6.2	-0.6
HTXUH4	00	Z	850	4	7.5	5.9
JNKN7J	12	Z	850	13	37.3	36.9
JNKN7J	00	Z	850	10	33.5	33.3
KJFF9X	12	Z	850	5	5.5	2.3
KJFF9X	00	Z	850	7	9.6	5.1
KMPLHP	12	Z	850	7	7.7	4.0
KMPLHP	00	Z	850	8	8.3	-0.5
LRYQE3	12	Z	850	11	40.8	40.6
LRYQE3	00	Z	850	12	36.0	35.8
UXK5JT	12	Z	850	5	7.1	3.4
UXK5JT	00	Z	850	4	5.0	-4.9
VKB4L5	00	Z	850	4	30.0	29.9
VKB4L5	12	Z	850	6	40.3	37.2
WDK38H	12	Z	850	18	7.5	-6.6
XQFJRG	12	Z	850	5	11.8	-11.7
XQFJRG	00	Z	850	5	12.8	-12.5
YLV96W	00	Z	850	3	31.7	31.6
YLV96W	12	Z	850	3	36.6	36.4
ZVQEQC	12	Z	850	9	1.8	0.0

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 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.7	0.0	0.0
01001	12	V	850	30	3.4	-0.1	0.0
01028	00	V	850	30	2.9	0.4	-0.2
01028	12	V	850	30	2.4	0.1	-0.4
01400	12	V	850	24	2.1	0.4	0.7
01400	00	V	850	23	1.9	0.0	0.2
01415	00	V	850	29	2.5	0.4	0.4
01415	12	V	850	30	2.8	0.4	1.0
014152	00	V	850	1	35.5	-35.4	2.7
02365	00	V	850	28	3.2	0.4	0.0
02365	12	V	850	28	3.4	-0.6	-0.1
02836	00	V	850	30	3.2	-0.9	0.0
02836	12	V	850	30	2.6	0.2	-0.4
02963	00	V	850	29	2.5	-0.7	0.5
02963	12	V	850	30	2.3	-0.1	-0.4
03005	12	V	850	30	3.0	-0.3	-0.3
03005	00	V	850	29	3.3	-0.5	0.4
03238	00	V	850	30	3.1	0.3	0.5
03238	12	V	850	2	2.4	-1.6	0.9
03808	00	V	850	29	3.2	-0.1	-0.5
03808	12	V	850	30	2.8	0.4	-0.9
03918	00	V	850	6	2.1	-0.7	0.8
03918	12	V	850	0	0.0	0.0	0.0
03953	12	V	850	30	3.8	-0.1	1.0
03953	00	V	850	30	3.2	0.8	0.4
04018	12	V	850	30	3.0	-0.4	-0.3
04018	00	V	850	30	3.2	1.0	-0.1
04220	00	V	850	28	2.5	-0.2	-0.1
04220	12	V	850	28	2.7	0.0	-0.6
04270	12	V	850	30	4.5	0.8	0.7
04270	00	V	850	29	2.3	0.1	0.2
04320	12	V	850	29	3.9	-0.2	0.9
04320	00	V	850	29	3.5	0.1	0.2
04339	00	V	850	28	5.4	1.1	0.8
04339	12	V	850	30	4.4	1.4	0.3
04360	12	V	850	26	4.8	0.7	0.3
04360	00	V	850	26	6.3	1.3	0.3
06011	12	V	850	28	2.7	-0.1	-0.5
06011	00	V	850	27	2.6	0.0	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	850	29	2.1	0.1	-0.2
06260	12	V	850	4	2.5	-0.1	-0.4
06610	12	V	850	30	2.9	-0.1	-0.5
06610	00	V	850	30	3.1	0.3	0.0
07110	12	V	850	30	2.5	0.3	-0.2
07110	00	V	850	30	3.2	0.4	-0.1
07510	00	V	850	29	2.9	0.8	0.6
07510	12	V	850	30	3.5	-1.0	0.7
07645	00	V	850	30	2.6	-0.3	-0.2
07645	12	V	850	30	2.8	0.3	-0.5
07761	12	V	850	25	3.3	0.9	0.2
07761	00	V	850	24	3.5	0.9	-1.0
08001	00	V	850	29	3.1	0.1	0.2
08001	12	V	850	30	3.3	0.0	0.1
08221	12	V	850	30	2.5	0.8	-0.1
08221	00	V	850	30	2.8	-0.2	-0.3
08302	12	V	850	29	2.7	-0.5	-0.3
08302	00	V	850	30	2.6	-0.2	0.4
08508	00	V	850	29	3.1	-0.3	-0.4
08508	12	V	850	30	4.4	-0.2	-1.0
08522	12	V	850	30	3.4	0.4	0.2
10035	12	V	850	30	2.4	-0.3	-0.3
10035	00	V	850	30	3.0	0.5	0.3
10393	12	V	850	30	2.3	0.2	0.1
10393	00	V	850	30	2.1	0.0	-0.3
10410	00	V	850	30	1.8	0.0	0.2
10410	12	V	850	30	2.1	0.3	-0.3
10739	12	V	850	27	2.3	0.0	-0.1
10739	00	V	850	26	2.1	-1.0	-0.4
11035	00	V	850	30	2.3	0.2	-0.4
11035	12	V	850	30	2.3	1.0	0.0
12982	00	V	850	30	2.2	0.5	0.6
12982	12	V	850	30	3.0	0.1	-0.2
16080	12	V	850	30	2.1	0.5	0.6
16080	00	V	850	30	3.5	1.1	-1.0
16245	12	V	850	30	2.8	0.0	-0.3
16245	00	V	850	30	3.1	0.5	0.1
16320	12	V	850	30	2.5	0.2	-0.6
16320	00	V	850	30	2.8	-0.5	-1.3
16429	12	V	850	30	2.6	0.1	-0.2
16429	00	V	850	30	2.3	0.0	-0.3
16622	00	V	850	30	2.4	0.7	-0.5
16754	00	V	850	27	2.8	0.4	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	27	3.1	1.1	-0.4
26435	12	V	850	15	2.6	-0.2	0.0
60018	00	V	850	29	3.9	0.0	0.2
60018	12	V	850	29	3.7	1.2	0.1
7JUNA4	12	V	850	13	3.4	-0.1	1.0
7JUNA4	00	V	850	12	2.4	-0.3	-0.2
ASDE09	12	V	850	11	2.0	-0.1	0.3
BPMWB2	12	V	850	5	3.4	-1.8	0.9
BPMWB2	00	V	850	6	3.2	-0.1	-0.8
DBLK	12	V	850	1	0.6	0.4	0.4
DBLK	00	V	850	0	0.0	0.0	0.0
FPUW5G	12	V	850	3	1.0	1.0	-0.1
HTXUH4	12	V	850	4	2.1	-0.5	-0.5
HTXUH4	00	V	850	4	3.9	0.4	0.2
JNKN7J	12	V	850	13	2.5	0.2	0.2
JNKN7J	00	V	850	10	3.4	0.4	0.6
KJFF9X	12	V	850	5	3.6	1.5	0.3
KJFF9X	00	V	850	7	2.6	-0.2	-0.6
KMPLHP	12	V	850	7	3.3	1.0	-0.8
KMPLHP	00	V	850	8	2.4	0.3	0.1
LRYQE3	12	V	850	11	2.6	-1.1	-0.3
LRYQE3	00	V	850	12	3.7	0.9	-0.6
UXK5JT	12	V	850	5	2.8	0.5	-1.6
UXK5JT	00	V	850	4	2.6	-1.0	0.1
VKB4L5	00	V	850	4	2.9	-1.1	1.4
VKB4L5	12	V	850	6	3.9	-1.3	2.0
WDK38H	12	V	850	18	2.4	-0.5	0.1
XQFJRG	12	V	850	5	2.1	-0.1	-0.3
XQFJRG	00	V	850	5	2.3	0.9	-0.3
YLV96W	00	V	850	3	3.4	0.7	0.3
YLV96W	12	V	850	3	1.7	0.3	0.9
ZVQEQC	12	V	850	9	2.9	1.3	-0.4

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 2020
 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	2051	0	0.3	-0.4	0.5
0640046	99	P	SUR	60	-4	708	0	0.5	-0.4	0.6
1300001	99	P	SUR	11	-23	576	0	0.3	0.0	0.3
1300130	99	P	SUR	28	-16	696	0	0.5	0.5	0.7
1300131	99	P	SUR	28	-17	697	0	0.5	0.1	0.5
1301569	99	P	SUR	23	-46	720	0	0.3	-0.6	0.7
1301603	99	P	SUR	32	-62	720	6	2.0	0.2	2.1
1301608	99	P	SUR	33	-56	719	27	1.8	-0.3	1.8
1301612	99	P	SUR	36	-40	716	0	0.5	-0.0	0.5
1301619	99	P	SUR	30	-43	720	0	0.5	0.2	0.5
1301620	99	P	SUR	23	-69	720	0	0.4	0.1	0.4
1701631	99	P	SUR	21	-55	720	0	0.4	0.2	0.4
1701632	99	P	SUR	20	-56	720	0	0.3	0.0	0.3
1701633	99	P	SUR	18	-54	720	0	0.3	0.5	0.7
1701634	99	P	SUR	15	-56	720	0	0.3	-0.0	0.3
1701635	99	P	SUR	19	-58	646	0	0.5	0.1	0.5
2501538	99	P	SUR	85	-29	690	0	0.9	0.2	1.0
2501543	99	P	SUR	79	-1	158	0	0.7	-0.4	0.8
2501544	99	P	SUR	77	-9	722	1	0.7	-0.0	0.7
4100040	99	P	SUR	15	-53	4194	0	0.4	-0.2	0.4
4100043	99	P	SUR	21	-65	4196	0	0.3	0.1	0.3
4100044	99	P	SUR	22	-59	4192	0	0.3	-0.0	0.3
4100046	99	P	SUR	24	-68	4193	0	0.4	-0.0	0.4
4100048	99	P	SUR	32	-70	4197	0	0.3	0.0	0.3
4100049	99	P	SUR	27	-63	3903	2	0.8	-0.2	0.8
4100052	99	P	SUR	18	-65	4131	0	0.6	-1.1	1.2
4100053	99	P	SUR	18	-66	4203	0	0.4	-1.2	1.3
4100056	99	P	SUR	18	-65	4192	0	0.4	-1.1	1.1
4100139	99	P	SUR	20	-38	582	0	0.3	-0.1	0.3
4100300	99	P	SUR	16	-57	720	0	0.3	0.1	0.3
4101531	99	P	SUR	26	-28	719	0	0.3	-0.1	0.3
4101557	99	P	SUR	26	-58	718	0	0.4	0.1	0.4
4101560	99	P	SUR	19	-39	716	0	0.3	-0.0	0.3
4101564	99	P	SUR	25	-47	718	0	0.3	-0.3	0.4
4101565	99	P	SUR	33	-57	500	0	0.4	0.1	0.4
4101567	99	P	SUR	34	-42	720	0	0.3	0.4	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101570	99	P	SUR	24	-70	719	0	0.3	-0.1	0.3
4101573	99	P	SUR	36	-49	719	0	0.4	-0.2	0.4
4101574	99	P	SUR	34	-39	720	0	0.3	0.3	0.4
4101609	99	P	SUR	35	-17	720	0	0.3	0.2	0.3
4101613	99	P	SUR	29	-24	720	0	0.3	0.4	0.5
4101614	99	P	SUR	31	-20	720	0	0.4	-0.1	0.4
4101616	99	P	SUR	36	-26	720	0	0.4	-0.0	0.4
4101617	99	P	SUR	26	-30	716	1	0.5	0.3	0.5
4101618	99	P	SUR	32	-32	720	0	0.3	0.1	0.3
4101621	99	P	SUR	35	-35	720	0	0.3	0.2	0.3
4101622	99	P	SUR	65	-2	502	0	0.5	0.2	0.5
4101627	99	P	SUR	57	-52	720	0	0.5	-0.2	0.5
4101630	99	P	SUR	37	-52	720	0	0.4	0.0	0.4
4101652	99	P	SUR	63	-18	1297	0	0.5	-0.2	0.5
4101653	99	P	SUR	62	3	720	0	0.4	-0.4	0.6
4101655	99	P	SUR	64	0	720	0	0.4	-0.0	0.4
4101656	99	P	SUR	62	-19	720	0	0.5	-0.1	0.5
4101657	99	P	SUR	64	-7	720	0	0.4	-0.1	0.4
4101658	99	P	SUR	57	-28	720	0	0.4	-0.1	0.4
4101659	99	P	SUR	71	29	720	0	0.3	-0.1	0.3
4101661	99	P	SUR	68	9	720	2	1.0	0.3	1.0
4101662	99	P	SUR	70	33	720	0	0.4	-0.2	0.4
4101663	99	P	SUR	39	-50	720	0	0.5	-0.1	0.5
4101664	99	P	SUR	59	-44	720	0	0.5	-0.0	0.5
4101669	99	P	SUR	25	-58	720	0	0.4	-0.1	0.4
4101690	99	P	SUR	44	-13	661	0	0.4	0.0	0.4
4101696	99	P	SUR	27	-52	720	0	0.3	-0.2	0.4
4101698	99	P	SUR	13	-60	647	0	0.4	-0.1	0.4
4101699	99	P	SUR	13	-61	713	0	0.4	-1.1	1.2
4101702	99	P	SUR	33	-70	720	0	0.6	-0.1	0.6
4101707	99	P	SUR	30	-28	425	7	4.6	-1.7	4.9
4101708	99	P	SUR	39	-46	720	8	2.0	0.0	2.0
4101714	99	P	SUR	28	-34	719	0	0.7	-0.2	0.8
4101717	99	P	SUR	40	-48	653	60	1.1	-0.4	1.2
4101718	99	P	SUR	28	-43	720	0	0.3	-0.2	0.3
4101719	99	P	SUR	33	-47	719	0	0.4	-0.1	0.4
4101720	99	P	SUR	35	-37	715	0	0.5	0.2	0.5
4101742	99	P	SUR	34	-49	718	11	2.0	-0.4	2.1
4101752	99	P	SUR	40	-51	720	21	0.9	-0.2	0.9
4101753	99	P	SUR	29	-41	719	0	0.3	0.2	0.4
4101755	99	P	SUR	25	-46	719	0	0.3	0.0	0.3
4101781	99	P	SUR	43	-37	1302	0	0.4	-0.2	0.5
4101782	99	P	SUR	25	-64	1303	0	0.4	0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101783	99	P	SUR	28	-61	1294	0	0.4	0.1	0.4
4101784	99	P	SUR	28	-63	1288	0	0.4	0.2	0.5
4101785	99	P	SUR	33	-61	1250	0	0.5	0.5	0.7
4101806	99	P	SUR	36	-61	1291	0	0.4	0.1	0.4
4101807	99	P	SUR	30	-60	1285	0	0.4	0.4	0.5
4101810	99	P	SUR	29	-59	1301	0	0.4	0.2	0.4
4101815	99	P	SUR	63	-15	1297	0	0.5	0.0	0.5
4101816	99	P	SUR	34	-59	1298	0	0.4	0.3	0.5
4101817	99	P	SUR	36	-62	1288	0	0.4	0.0	0.4
4101818	99	P	SUR	36	-61	1283	0	0.4	0.2	0.5
4101819	99	P	SUR	36	-60	145	0	0.4	0.0	0.4
4101820	99	P	SUR	37	-61	1308	0	0.5	-0.1	0.5
4101821	99	P	SUR	37	-58	5	0	0.5	-0.5	0.7
4101822	99	P	SUR	36	-62	5	0	0.2	-0.3	0.3
4101823	99	P	SUR	38	-59	4	0	0.4	-0.8	0.9
4101824	99	P	SUR	36	-63	3	0	0.2	-0.5	0.6
4101825	99	P	SUR	35	-64	6	0	0.3	-0.1	0.3
41040	99	P	SUR	15	-53	1053	0	0.4	-0.2	0.5
41043	99	P	SUR	21	-65	1048	0	0.4	0.1	0.4
41044	99	P	SUR	22	-59	1053	0	0.3	-0.0	0.3
41046	99	P	SUR	24	-68	2798	0	0.4	-0.0	0.4
41048	99	P	SUR	32	-70	2822	0	0.4	0.0	0.4
41049	99	P	SUR	28	-63	2578	2	0.7	-0.2	0.8
41052	99	P	SUR	18	-65	1720	0	0.6	-1.0	1.2
41053	99	P	SUR	19	-66	1539	0	0.4	-1.2	1.3
41056	99	P	SUR	18	-66	1529	0	0.5	-1.1	1.2
4200060	99	P	SUR	16	-63	4194	0	0.4	-0.2	0.4
4200085	99	P	SUR	18	-67	4162	0	0.4	-1.0	1.0
4201528	99	P	SUR	42	-46	1111	0	0.5	0.1	0.5
4201530	99	P	SUR	35	-44	285	0	0.9	3.5	3.6
42060	99	P	SUR	16	-63	1041	0	0.4	-0.2	0.5
42085	99	P	SUR	18	-67	1960	0	0.4	-1.0	1.1
4400005	99	P	SUR	43	-69	697	0	0.6	0.2	0.6
4400008	99	P	SUR	41	-69	4195	0	0.4	0.5	0.7
4400032	99	P	SUR	44	-69	701	0	0.6	-0.1	0.6
4400033	99	P	SUR	44	-69	669	0	1.0	-0.2	1.0
4400034	99	P	SUR	44	-68	696	0	0.6	0.7	1.0
4400037	99	P	SUR	43	-68	676	0	0.9	0.8	1.2
44005	99	P	SUR	43	-69	1927	0	0.6	0.2	0.6
4400777	99	P	SUR	36	-67	720	0	0.5	0.1	0.5
44008	99	P	SUR	41	-69	2782	0	0.5	0.5	0.7
4400857	99	P	SUR	29	-43	720	0	0.9	0.2	1.0
4401531	99	P	SUR	21	-46	718	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
4401539	99	P	SUR	33	-57	358	2	4.2	-1.7	4.5
4401541	99	P	SUR	32	-42	709	10	2.9	-1.3	3.2
4401542	99	P	SUR	27	-68	718	0	0.3	0.3	0.4
4401551	99	P	SUR	26	-47	681	0	0.7	0.0	0.7
4401557	99	P	SUR	32	-49	720	0	0.5	0.1	0.5
4401562	99	P	SUR	30	-59	720	0	0.4	-0.5	0.6
4401563	99	P	SUR	33	-33	720	0	0.4	-0.3	0.5
4401565	99	P	SUR	64	-23	469	64	2.3	-1.0	2.5
4401569	99	P	SUR	57	-19	720	0	0.5	-0.0	0.5
4401572	99	P	SUR	30	-28	706	0	1.4	0.5	1.5
4401574	99	P	SUR	60	-55	717	0	0.6	-0.2	0.6
4401577	99	P	SUR	42	-25	717	0	0.7	0.4	0.8
4401578	99	P	SUR	24	-42	720	0	0.3	-0.1	0.3
4401580	99	P	SUR	39	-15	720	0	0.6	0.3	0.7
4401581	99	P	SUR	36	-43	720	0	0.3	0.3	0.5
4401582	99	P	SUR	40	-21	717	0	0.4	0.3	0.5
4401750	99	P	SUR	65	-5	506	0	0.4	-1.2	1.3
4401751	99	P	SUR	71	23	679	0	0.5	-0.3	0.6
4401827	99	P	SUR	44	-64	217	0	0.5	0.2	0.5
4401828	99	P	SUR	51	-33	652	0	0.5	0.3	0.6
4401829	99	P	SUR	47	-24	696	0	0.5	0.2	0.5
4401831	99	P	SUR	41	-33	671	0	0.7	0.2	0.7
4401837	99	P	SUR	38	-31	718	0	0.4	0.0	0.4
4401838	99	P	SUR	45	-18	601	0	0.5	0.3	0.6
4401840	99	P	SUR	53	-26	658	0	0.4	0.7	0.8
4401848	99	P	SUR	44	-57	710	0	0.5	0.2	0.6
4401850	99	P	SUR	44	-59	720	0	0.7	0.0	0.7
4401851	99	P	SUR	42	-48	714	44	2.3	0.1	2.3
4401854	99	P	SUR	30	-62	720	0	0.3	-0.6	0.7
4401870	99	P	SUR	26	-38	720	0	0.3	0.0	0.3
4401872	99	P	SUR	24	-42	720	0	0.3	-0.1	0.3
4401873	99	P	SUR	20	-41	720	0	0.4	-0.5	0.7
4401874	99	P	SUR	24	-32	720	0	0.2	0.2	0.3
4401894	99	P	SUR	56	-25	708	0	0.5	0.0	0.5
4402603	99	P	SUR	51	-55	720	0	0.5	0.2	0.5
4402604	99	P	SUR	46	-47	719	0	0.5	-0.0	0.5
4402605	99	P	SUR	51	-47	720	0	0.4	0.1	0.5
4402606	99	P	SUR	54	-49	719	0	0.5	0.2	0.5
4402607	99	P	SUR	48	-46	720	0	0.5	0.0	0.5
4402608	99	P	SUR	49	-48	720	0	0.4	0.2	0.5
4402609	99	P	SUR	50	-49	720	0	0.4	0.1	0.4
4402610	99	P	SUR	48	-48	720	0	0.5	0.2	0.5
4402657	99	P	SUR	45	-63	720	0	0.5	-0.9	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402659	99	P	SUR	44	-59	720	0	0.8	0.5	1.0
4402660	99	P	SUR	45	-51	718	0	0.5	0.3	0.5
4402661	99	P	SUR	71	-64	715	135	3.5	1.3	3.8
4402662	99	P	SUR	45	-63	559	0	0.5	0.6	0.8
4402663	99	P	SUR	43	-62	720	0	0.5	-0.0	0.5
4402665	99	P	SUR	45	-57	719	0	0.5	0.3	0.6
4402687	99	P	SUR	38	-37	717	0	0.4	0.2	0.4
44032	99	P	SUR	44	-69	1285	0	0.6	-0.1	0.6
44033	99	P	SUR	44	-69	1225	0	1.0	-0.2	1.0
44034	99	P	SUR	44	-68	1275	0	0.7	0.7	1.0
44037	99	P	SUR	44	-68	1242	0	0.9	0.8	1.2
44078	99	P	SUR	60	-40	3654	0	0.7	-1.1	1.3
44137	99	P	SUR	42	-62	1273	0	0.5	-0.1	0.6
44139	99	P	SUR	44	-57	1308	0	0.6	-0.4	0.7
44150	99	P	SUR	43	-64	1274	0	0.6	-0.4	0.7
4700546	99	P	SUR	38	-52	720	126	2.1	-0.3	2.2
4801625	99	P	SUR	86	-63	652	0	0.5	0.0	0.5
4801722	99	P	SUR	81	25	720	0	1.2	0.1	1.2
4801723	99	P	SUR	82	33	718	0	0.8	0.0	0.8
6100001	99	P	SUR	43	8	716	0	0.5	-0.0	0.5
6100002	99	P	SUR	42	5	718	0	0.4	-0.1	0.4
6100196	99	P	SUR	42	4	719	0	0.5	0.3	0.6
6100197	99	P	SUR	40	4	698	0	0.4	0.5	0.6
6100198	99	P	SUR	37	-2	709	0	0.4	0.3	0.5
6100280	99	P	SUR	41	1	711	0	0.4	0.3	0.5
6100281	99	P	SUR	40	0	704	0	0.5	0.4	0.6
6100417	99	P	SUR	38	0	698	0	0.5	0.5	0.7
6100430	99	P	SUR	40	2	717	0	0.4	0.2	0.4
6101007	99	P	SUR	36	25	129	0	0.4	-0.3	0.5
6101008	99	P	SUR	37	22	142	0	0.5	-0.5	0.7
6102782	99	P	SUR	39	14	636	0	0.3	0.2	0.4
6102783	99	P	SUR	35	15	261	0	0.2	0.1	0.2
6102784	99	P	SUR	35	15	636	0	0.4	-0.0	0.4
6102785	99	P	SUR	36	15	636	0	0.3	-0.1	0.3
6200024	99	P	SUR	44	-3	718	0	0.4	0.1	0.4
6200025	99	P	SUR	44	-6	717	0	0.4	0.3	0.5
6200082	99	P	SUR	44	-8	712	0	0.4	0.3	0.5
6200083	99	P	SUR	43	-9	714	0	0.4	0.0	0.5
6200084	99	P	SUR	42	-9	716	0	0.4	0.2	0.5
6200085	99	P	SUR	36	-7	717	0	0.4	0.4	0.6
6200091	99	P	SUR	53	-5	720	0	0.6	-0.3	0.6
6200092	99	P	SUR	51	-11	719	0	0.5	-0.2	0.5
6200093	99	P	SUR	55	-10	720	0	0.5	-0.3	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200094	99	P	SUR	52	-7	720	0	0.4	-0.0	0.5
6200095	99	P	SUR	53	-16	720	0	0.5	-0.2	0.5
62001	99	P	SUR	45	-5	2054	0	0.3	-0.1	0.3
6200199	99	P	SUR	40	-9	703	0	0.4	-0.7	0.8
6200200	99	P	SUR	36	-8	713	0	3.3	0.4	3.4
6201030	99	P	SUR	44	-4	690	0	0.4	0.2	0.4
6201065	99	P	SUR	54	7	705	0	0.3	0.8	0.9
6201066	99	P	SUR	55	7	654	0	0.4	0.3	0.5
62023	99	P	SUR	51	-8	2160	0	0.5	-0.3	0.5
6202613	99	P	SUR	23	-41	720	0	0.3	-0.1	0.3
6202614	99	P	SUR	24	-45	720	0	0.7	0.2	0.7
6202623	99	P	SUR	68	1	720	0	0.5	-0.1	0.5
6202624	99	P	SUR	59	-27	720	0	0.4	-0.1	0.4
6202625	99	P	SUR	49	-6	163	0	0.4	0.2	0.5
6202626	99	P	SUR	50	-13	720	0	0.4	0.1	0.4
6202627	99	P	SUR	54	-30	720	0	0.4	-0.1	0.4
6202628	99	P	SUR	64	-29	712	39	1.4	-0.2	1.4
6202629	99	P	SUR	45	-40	720	0	0.4	-0.4	0.6
6202630	99	P	SUR	48	-14	720	0	0.4	0.0	0.4
6202631	99	P	SUR	56	-20	720	0	0.4	-0.2	0.5
6202632	99	P	SUR	56	-18	720	0	0.4	-0.1	0.5
6202633	99	P	SUR	58	-26	720	0	0.6	-0.3	0.6
6202634	99	P	SUR	66	0	720	0	0.4	-0.0	0.4
6202635	99	P	SUR	69	-11	720	0	0.4	0.2	0.4
6202636	99	P	SUR	68	-13	720	0	0.4	0.3	0.5
6202637	99	P	SUR	62	-3	720	0	0.5	0.1	0.5
6202638	99	P	SUR	19	-65	720	0	0.4	-0.5	0.6
6202639	99	P	SUR	35	-40	720	0	0.3	-0.1	0.3
6202640	99	P	SUR	28	-66	720	0	0.3	-0.4	0.5
6202644	99	P	SUR	31	-47	720	0	0.3	-0.2	0.4
6202645	99	P	SUR	26	-61	720	0	0.5	0.2	0.5
6202646	99	P	SUR	26	-61	720	0	0.4	-0.3	0.5
6202677	99	P	SUR	69	17	303	0	0.6	-0.3	0.6
6202678	99	P	SUR	57	-57	528	0	0.5	0.4	0.6
6202680	99	P	SUR	64	10	469	0	0.5	-0.3	0.5
6202683	99	P	SUR	70	19	694	0	0.4	0.2	0.5
6202684	99	P	SUR	66	-6	672	0	0.4	0.5	0.7
6202685	99	P	SUR	39	13	627	0	0.4	0.2	0.5
6202687	99	P	SUR	38	15	392	0	0.4	-2.6	2.6
6202688	99	P	SUR	37	8	47	0	0.2	-2.7	2.7
6202690	99	P	SUR	42	10	720	0	0.3	-0.2	0.4
6202691	99	P	SUR	40	7	526	0	1.0	0.1	1.0
6202692	99	P	SUR	41	6	720	0	0.4	0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202693	99	P	SUR	40	2	720	0	0.4	-0.7	0.8
6202694	99	P	SUR	39	1	653	0	0.4	-0.0	0.4
6202695	99	P	SUR	39	1	654	0	0.4	0.2	0.4
6203529	99	P	SUR	35	-48	718	0	0.6	0.1	0.6
6203574	99	P	SUR	52	-35	702	0	0.5	0.2	0.5
6203580	99	P	SUR	65	-1	538	0	0.4	0.5	0.6
6203582	99	P	SUR	61	-59	694	0	0.5	0.4	0.7
6203583	99	P	SUR	59	-8	596	0	0.4	0.1	0.4
6203585	99	P	SUR	72	18	587	0	0.4	0.3	0.5
6203587	99	P	SUR	69	14	563	0	0.5	-0.4	0.6
6203588	99	P	SUR	58	-38	641	0	0.5	0.5	0.7
6203601	99	P	SUR	28	-54	719	0	0.3	0.4	0.5
6203607	99	P	SUR	24	-48	716	0	0.4	-0.0	0.4
6203609	99	P	SUR	34	-15	720	0	0.4	-0.7	0.8
6203612	99	P	SUR	33	-30	720	0	0.4	0.1	0.4
6203613	99	P	SUR	33	-27	717	0	0.4	0.3	0.5
6203614	99	P	SUR	18	-36	8	0	0.3	-0.1	0.3
6203626	99	P	SUR	58	-13	720	0	0.5	0.3	0.5
6203631	99	P	SUR	26	-53	720	0	0.3	-0.3	0.5
6203632	99	P	SUR	29	-23	276	0	0.3	0.4	0.5
6203633	99	P	SUR	57	-29	720	0	0.5	0.0	0.5
6203634	99	P	SUR	45	-18	720	0	0.6	0.3	0.6
6203635	99	P	SUR	10	-29	275	0	0.3	-0.1	0.3
6203637	99	P	SUR	55	-24	719	0	0.6	0.1	0.6
6203639	99	P	SUR	43	-37	717	0	0.9	0.4	0.9
6203640	99	P	SUR	45	-30	718	0	0.8	0.3	0.9
6203641	99	P	SUR	45	-3	720	0	0.6	0.5	0.8
6203645	99	P	SUR	10	-29	132	0	0.4	-0.2	0.4
6203646	99	P	SUR	72	-59	298	56	4.3	2.1	4.8
6203730	99	P	SUR	20	-26	720	0	0.3	0.2	0.4
6203732	99	P	SUR	14	-24	720	0	0.3	0.2	0.3
6203735	99	P	SUR	20	-31	5	0	0.2	0.0	0.2
6203737	99	P	SUR	20	-32	5	0	0.2	0.0	0.2
6203754	99	P	SUR	49	-8	720	0	0.4	0.0	0.4
6203755	99	P	SUR	50	-14	720	0	0.4	-0.0	0.4
6203756	99	P	SUR	52	-12	720	0	0.4	-0.5	0.7
6203757	99	P	SUR	49	-10	720	0	0.4	-0.5	0.7
6203758	99	P	SUR	57	-7	661	0	0.4	-0.0	0.4
6203760	99	P	SUR	53	-14	720	0	0.5	-0.1	0.5
6203761	99	P	SUR	50	-9	720	0	0.4	-0.0	0.4
62087	99	P	SUR	55	7	720	0	0.4	-0.4	0.6
62091	99	P	SUR	53	-5	720	0	0.6	-0.3	0.6
62092	99	P	SUR	51	-11	719	0	0.5	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62093	99	P	SUR	55	-10	720	0	0.5	-0.3	0.6
62094	99	P	SUR	52	-7	720	0	0.4	-0.0	0.5
62095	99	P	SUR	53	-16	720	0	0.5	-0.2	0.5
62102	99	P	SUR	58	2	2054	0	0.5	0.2	0.5
62103	99	P	SUR	50	-3	2014	0	0.4	0.4	0.6
62104	99	P	SUR	57	1	2051	0	0.4	-0.2	0.4
62107	99	P	SUR	50	-6	2730	0	0.4	0.2	0.5
62112	99	P	SUR	58	0	2055	0	0.4	0.1	0.4
62113	99	P	SUR	58	0	2053	0	0.5	0.4	0.7
62114	99	P	SUR	58	0	2730	0	0.5	0.0	0.5
62115	99	P	SUR	58	-3	2052	0	0.4	-0.1	0.4
62116	99	P	SUR	58	1	2054	0	0.6	0.0	0.6
62118	99	P	SUR	58	1	2054	0	0.3	0.3	0.5
62119	99	P	SUR	57	2	2044	0	0.4	0.3	0.5
62120	99	P	SUR	56	2	2053	0	0.4	-0.2	0.5
62121	99	P	SUR	54	3	1473	0	0.5	0.5	0.7
62122	99	P	SUR	57	2	2730	0	0.4	0.1	0.4
62124	99	P	SUR	54	-4	2054	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	2054	0	0.3	0.5	0.6
62129	99	P	SUR	58	0	1791	0	0.5	0.3	0.6
62130	99	P	SUR	59	1	2038	0	0.4	-0.2	0.5
62131	99	P	SUR	54	1	2048	0	0.4	0.4	0.5
62132	99	P	SUR	56	2	2050	0	0.4	0.4	0.6
62133	99	P	SUR	57	1	2051	0	0.6	0.1	0.6
62134	99	P	SUR	58	1	2053	0	0.4	0.5	0.7
62135	99	P	SUR	54	2	2052	0	0.4	0.2	0.4
62138	99	P	SUR	54	0	2723	0	0.5	0.8	0.9
62140	99	P	SUR	57	1	2727	0	0.4	0.0	0.4
62143	99	P	SUR	58	2	2054	0	0.5	0.6	0.8
62144	99	P	SUR	53	2	2054	0	0.4	0.2	0.5
62145	99	P	SUR	53	3	2730	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	2050	0	0.5	0.0	0.5
62149	99	P	SUR	54	1	2054	0	0.3	0.6	0.6
62150	99	P	SUR	54	1	2054	0	0.3	1.2	1.2
62151	99	P	SUR	57	2	2663	0	0.3	0.2	0.4
62152	99	P	SUR	57	2	2052	0	0.4	0.5	0.7
62153	99	P	SUR	57	2	2728	0	0.3	0.2	0.4
62154	99	P	SUR	56	2	2050	0	0.4	0.1	0.4
62155	99	P	SUR	58	1	2044	0	0.4	0.5	0.6
62157	99	P	SUR	58	0	1980	0	0.5	-0.1	0.5
62160	99	P	SUR	57	2	2724	0	0.4	0.2	0.4
62161	99	P	SUR	58	1	2048	0	0.6	0.2	0.6
62162	99	P	SUR	57	1	2052	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
62163	99	P	SUR	48	-8	2056	0	0.3	0.2	0.4
62164	99	P	SUR	57	1	1976	0	0.4	0.2	0.4
62165	99	P	SUR	54	1	2053	0	0.4	0.4	0.6
62168	99	P	SUR	58	1	2051	0	0.3	0.0	0.3
62296	99	P	SUR	53	2	2048	0	0.3	-0.0	0.3
62297	99	P	SUR	59	2	2707	0	0.3	0.0	0.3
62302	99	P	SUR	61	-2	2054	0	0.7	-0.0	0.7
62304	99	P	SUR	51	2	2048	0	0.5	0.0	0.5
62305	99	P	SUR	50	0	30	0	0.4	0.2	0.5
62442	99	P	SUR	49	-16	505	0	0.3	-0.0	0.3
6301004	99	P	SUR	72	20	557	0	0.9	0.2	0.9
6301005	99	P	SUR	73	35	556	0	6.6	-0.8	6.7
6301006	99	P	SUR	63	6	718	0	0.4	-1.1	1.2
6301510	99	P	SUR	82	9	690	0	0.6	0.1	0.7
6301511	99	P	SUR	82	9	689	0	0.7	0.2	0.7
6301564	99	P	SUR	63	-35	720	0	0.6	0.7	1.0
6301567	99	P	SUR	68	-22	719	0	1.2	-0.0	1.2
6301569	99	P	SUR	65	-35	217	0	0.8	-0.2	0.8
6301570	99	P	SUR	64	-39	719	0	0.9	0.3	1.0
6301571	99	P	SUR	63	-41	673	0	2.5	-0.2	2.5
63055	99	P	SUR	61	2	2054	0	0.5	-0.0	0.5
63056	99	P	SUR	60	2	2053	0	0.8	0.5	0.9
63057	99	P	SUR	59	2	2053	0	0.4	-0.2	0.5
63058	99	P	SUR	53	2	2227	0	0.3	0.2	0.4
63059	99	P	SUR	58	-1	2055	0	0.4	0.3	0.5
63101	99	P	SUR	61	1	694	0	0.7	-0.0	0.7
63102	99	P	SUR	61	1	2052	0	0.5	0.1	0.5
63103	99	P	SUR	61	1	622	0	0.4	0.2	0.5
63104	99	P	SUR	61	2	2054	0	0.6	-0.3	0.7
63108	99	P	SUR	61	2	2053	0	0.6	0.0	0.6
63109	99	P	SUR	60	2	2051	0	0.4	-0.4	0.6
63110	99	P	SUR	60	2	2053	0	0.7	-0.2	0.7
63112	99	P	SUR	61	1	674	0	0.4	-0.6	0.7
63115	99	P	SUR	62	1	2053	0	0.5	-0.1	0.5
63117	99	P	SUR	61	1	860	0	0.7	0.5	0.8
63118	99	P	SUR	58	1	2153	0	0.4	-0.4	0.6
6401531	99	P	SUR	60	-58	718	0	0.7	0.2	0.7
6401539	99	P	SUR	46	-4	718	0	0.3	0.5	0.6
6401569	99	P	SUR	66	-22	649	0	0.7	0.0	0.7
6401573	99	P	SUR	84	-12	716	0	0.6	0.2	0.6
6401574	99	P	SUR	86	-29	719	0	0.5	0.1	0.5
6401575	99	P	SUR	87	-41	713	0	0.5	0.6	0.8
6401576	99	P	SUR	88	30	711	0	0.5	0.3	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401577	99	P	SUR	88	25	713	0	0.6	-0.4	0.8
6401578	99	P	SUR	88	-21	720	0	0.6	0.1	0.6
6401581	99	P	SUR	87	-58	720	0	0.4	0.1	0.5
6401784	99	P	SUR	81	20	1585	148	2.6	7.5	7.9
6401795	99	P	SUR	73	-9	702	0	0.5	0.3	0.6
6402539	99	P	SUR	61	-57	718	0	0.6	0.0	0.6
6402540	99	P	SUR	66	-58	609	0	0.5	0.4	0.6
6402541	99	P	SUR	67	-1	578	0	0.5	0.2	0.6
6402542	99	P	SUR	64	-18	718	0	1.2	-0.4	1.3
6402543	99	P	SUR	58	-40	664	0	0.4	0.0	0.4
6402544	99	P	SUR	64	0	533	0	0.5	0.4	0.7
6402545	99	P	SUR	62	-2	549	0	0.4	0.1	0.4
6402546	99	P	SUR	64	-13	609	0	0.4	0.2	0.4
6402547	99	P	SUR	60	-49	616	0	0.5	0.2	0.5
6402548	99	P	SUR	67	-17	665	0	0.4	0.2	0.5
6402549	99	P	SUR	62	-3	690	0	0.4	0.1	0.4
6402550	99	P	SUR	64	-9	701	0	0.4	0.2	0.4
6402551	99	P	SUR	65	-29	708	0	0.5	0.2	0.5
6402552	99	P	SUR	68	-19	626	0	0.4	0.2	0.5
6402553	99	P	SUR	65	-9	503	0	0.4	0.2	0.5
6402554	99	P	SUR	64	-14	418	0	0.4	0.3	0.5
64041	99	P	SUR	61	-3	2054	0	0.6	-0.3	0.7
64045	99	P	SUR	59	-12	2053	0	0.5	-0.5	0.7
64046	99	P	SUR	61	-4	2055	0	0.4	-0.2	0.5

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 2020
 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
0640046	99	SPEED	SUR	60	-4	708	0	0	1.4	-1.0	1.7
1300001	99	SPEED	SUR	11	-23	576	0	0	0.8	0.6	1.0
1300002	99	SPEED	SUR	20	-23	600	0	0	0.8	0.3	0.9
1300130	99	SPEED	SUR	28	-16	682	0	0	1.5	-0.0	1.5
1300131	99	SPEED	SUR	28	-17	695	0	0	1.7	1.0	2.0
4100026	99	SPEED	SUR	12	-38	163	0	0	0.8	-0.8	1.1
4100040	99	SPEED	SUR	15	-53	4193	0	0	1.1	0.5	1.2
4100043	99	SPEED	SUR	21	-65	4195	0	0	1.1	0.4	1.2
4100044	99	SPEED	SUR	22	-59	4193	0	0	1.0	0.1	1.0
4100046	99	SPEED	SUR	24	-68	4189	0	0	1.3	0.1	1.3
4100048	99	SPEED	SUR	32	-70	4194	0	0	0.9	0.4	1.0
4100049	99	SPEED	SUR	27	-63	4189	0	0	1.3	-0.1	1.3
4100052	99	SPEED	SUR	18	-65	4183	0	0	1.1	-0.3	1.1
4100053	99	SPEED	SUR	18	-66	4203	0	0	1.5	0.8	1.7
4100056	99	SPEED	SUR	18	-65	4192	0	0	1.1	-0.5	1.3
4100139	99	SPEED	SUR	20	-38	582	0	0	1.0	0.2	1.0
4100300	99	SPEED	SUR	16	-57	720	0	0	1.0	0.0	1.0
4101781	99	SPEED	SUR	43	-37	1302	0	0	1.1	3.3	3.5
4101782	99	SPEED	SUR	25	-64	1303	0	0	1.3	2.6	2.9
4101783	99	SPEED	SUR	28	-61	1294	0	0	1.1	2.4	2.6
4101784	99	SPEED	SUR	28	-63	1288	0	0	1.1	2.3	2.6
4101785	99	SPEED	SUR	33	-61	1250	0	0	1.4	3.0	3.3
4101806	99	SPEED	SUR	36	-61	1291	0	0	1.7	4.1	4.4
4101807	99	SPEED	SUR	30	-60	1285	0	0	1.3	3.0	3.2
4101810	99	SPEED	SUR	29	-59	1301	0	0	1.7	-4.8	5.1
4101816	99	SPEED	SUR	34	-59	1298	0	0	1.3	3.0	3.3
4101817	99	SPEED	SUR	36	-62	1288	0	0	1.4	3.2	3.5
4101818	99	SPEED	SUR	36	-61	1283	0	0	1.4	3.5	3.8
4101819	99	SPEED	SUR	36	-60	145	0	0	1.0	3.2	3.4
4101820	99	SPEED	SUR	37	-61	1308	0	0	1.4	2.8	3.1
41040	99	SPEED	SUR	15	-53	1060	0	0	1.2	0.2	1.2
41043	99	SPEED	SUR	21	-65	1047	0	0	1.1	0.2	1.1
41044	99	SPEED	SUR	22	-59	1054	0	0	1.0	-0.1	1.0
41046	99	SPEED	SUR	24	-68	2790	0	0	1.3	-0.2	1.3

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41048	99	SPEED	SUR	32	-70	2821	0	0	1.0	0.0	1.0
41049	99	SPEED	SUR	28	-63	2762	0	0	1.3	-0.2	1.3
41052	99	SPEED	SUR	18	-65	1745	0	0	1.1	-0.2	1.1
41053	99	SPEED	SUR	19	-66	1539	0	0	1.5	0.1	1.5
41056	99	SPEED	SUR	18	-66	1529	0	0	1.2	-0.3	1.2
4200060	99	SPEED	SUR	16	-63	4195	0	0	1.1	0.1	1.1
4200085	99	SPEED	SUR	18	-67	4171	0	0	1.5	-0.4	1.5
42060	99	SPEED	SUR	16	-63	1049	0	0	1.1	-0.0	1.2
42085	99	SPEED	SUR	18	-67	1965	0	0	1.5	-0.0	1.5
4400005	99	SPEED	SUR	43	-69	697	0	0	1.3	0.1	1.3
4400008	99	SPEED	SUR	41	-69	4192	0	0	1.5	0.1	1.5
4400027	99	SPEED	SUR	44	-67	696	0	0	1.3	0.2	1.4
4400032	99	SPEED	SUR	44	-69	702	0	0	1.4	-0.1	1.4
4400033	99	SPEED	SUR	44	-69	670	0	0	1.5	-0.1	1.5
4400034	99	SPEED	SUR	44	-68	697	0	0	1.4	-0.3	1.4
4400037	99	SPEED	SUR	43	-68	677	0	0	1.2	-0.3	1.2
44005	99	SPEED	SUR	43	-69	1927	0	0	1.3	0.1	1.3
44008	99	SPEED	SUR	41	-69	2781	0	0	1.6	-0.0	1.6
44027	99	SPEED	SUR	44	-67	1925	0	0	1.4	0.3	1.4
44032	99	SPEED	SUR	44	-69	1287	0	0	1.5	-0.0	1.5
44033	99	SPEED	SUR	44	-69	1227	0	0	1.5	0.3	1.5
44034	99	SPEED	SUR	44	-68	1277	0	0	1.4	-0.3	1.5
44037	99	SPEED	SUR	44	-68	1244	0	0	1.3	-0.2	1.3
44078	99	SPEED	SUR	60	-40	3655	0	0	2.4	-2.2	3.2
44137	99	SPEED	SUR	42	-62	1264	0	0	1.7	-0.0	1.7
44139	99	SPEED	SUR	44	-57	1294	0	0	1.4	-0.3	1.5
44150	99	SPEED	SUR	43	-64	1254	0	0	1.5	-0.2	1.5
6100001	99	SPEED	SUR	43	8	716	0	0	1.7	-0.6	1.8
6100002	99	SPEED	SUR	42	5	718	0	0	1.3	-0.1	1.3
6100196	99	SPEED	SUR	42	4	702	0	0	1.2	-0.7	1.4
6100197	99	SPEED	SUR	40	4	678	0	0	1.2	-0.5	1.3
6100198	99	SPEED	SUR	37	-2	181	0	0	1.6	-0.3	1.7
6100280	99	SPEED	SUR	41	1	630	0	0	1.3	-0.6	1.5
6100281	99	SPEED	SUR	40	0	697	0	0	1.8	0.2	1.8
6100417	99	SPEED	SUR	38	0	693	0	0	1.2	-0.4	1.3
6100430	99	SPEED	SUR	40	2	707	0	0	1.4	-0.1	1.4
6101007	99	SPEED	SUR	36	25	136	0	0	0.9	0.1	0.9
6101008	99	SPEED	SUR	37	22	142	0	0	1.8	-0.4	1.8
6101009	99	SPEED	SUR	35	25	12	0	0	1.8	-3.3	3.7
6200024	99	SPEED	SUR	44	-3	710	0	0	1.5	-0.2	1.5
6200025	99	SPEED	SUR	44	-6	707	0	0	1.4	-0.6	1.5

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200082	99	SPEED	SUR	44	-8	712	0	0	1.4	-0.8	1.6
6200083	99	SPEED	SUR	43	-9	677	0	0	2.1	-0.7	2.2
6200084	99	SPEED	SUR	42	-9	710	0	0	1.3	-0.1	1.3
6200085	99	SPEED	SUR	36	-7	715	0	0	1.5	0.0	1.5
6200091	99	SPEED	SUR	53	-5	720	0	0	1.4	0.3	1.4
6200092	99	SPEED	SUR	51	-11	719	0	0	1.1	0.6	1.3
6200093	99	SPEED	SUR	55	-10	720	0	0	1.3	0.9	1.6
6200094	99	SPEED	SUR	52	-7	720	0	0	1.0	0.0	1.0
6200095	99	SPEED	SUR	53	-16	720	0	0	1.4	-0.8	1.6
62001	99	SPEED	SUR	45	-5	2056	0	0	1.3	0.4	1.4
6200199	99	SPEED	SUR	40	-9	703	8	0	1.4	0.1	1.4
6200200	99	SPEED	SUR	36	-8	713	0	0	1.6	0.1	1.6
6201030	99	SPEED	SUR	44	-4	676	0	0	1.3	-0.4	1.3
6201066	99	SPEED	SUR	55	7	647	0	0	1.6	0.2	1.6
62023	99	SPEED	SUR	51	-8	2160	0	0	1.4	1.1	1.8
62087	99	SPEED	SUR	55	7	720	0	0	1.4	2.0	2.4
62091	99	SPEED	SUR	53	-5	720	0	0	1.4	0.3	1.5
62092	99	SPEED	SUR	51	-11	719	0	0	1.2	0.7	1.3
62093	99	SPEED	SUR	55	-10	720	0	0	1.3	0.9	1.6
62094	99	SPEED	SUR	52	-7	720	0	0	1.0	0.0	1.0
62095	99	SPEED	SUR	53	-16	720	0	0	1.5	-0.9	1.7
62102	99	SPEED	SUR	58	2	2054	0	0	1.4	-0.3	1.5
62103	99	SPEED	SUR	50	-3	1995	0	0	1.4	1.5	2.1
62104	99	SPEED	SUR	57	1	2029	0	0	1.3	-0.3	1.4
62107	99	SPEED	SUR	50	-6	2730	0	0	1.4	1.2	1.9
62112	99	SPEED	SUR	58	0	2055	0	0	1.3	-0.2	1.3
62113	99	SPEED	SUR	58	0	2053	0	0	1.7	0.7	1.9
62114	99	SPEED	SUR	58	0	2730	0	0	1.7	1.0	2.0
62118	99	SPEED	SUR	58	1	2054	0	0	1.4	0.7	1.5
62119	99	SPEED	SUR	57	2	2044	0	0	1.6	-0.4	1.7
62120	99	SPEED	SUR	56	2	2053	0	0	1.3	0.1	1.3
62121	99	SPEED	SUR	54	3	1473	0	0	1.4	-0.6	1.6
62122	99	SPEED	SUR	57	2	2730	0	0	1.2	-0.3	1.3
62129	99	SPEED	SUR	58	0	6	0	0	2.7	1.1	2.9
62131	99	SPEED	SUR	54	1	2048	0	0	1.7	0.2	1.7
62132	99	SPEED	SUR	56	2	2050	0	0	2.1	-1.2	2.4
62133	99	SPEED	SUR	57	1	2051	0	0	1.5	0.0	1.5
62134	99	SPEED	SUR	58	1	2053	0	0	1.4	0.3	1.4
62140	99	SPEED	SUR	57	1	2727	0	0	1.3	0.0	1.3
62143	99	SPEED	SUR	58	2	2054	0	0	2.3	-0.8	2.4
62144	99	SPEED	SUR	53	2	2051	0	0	2.1	-0.6	2.2

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62145	99	SPEED	SUR	53	3	2730	0	0	1.5	0.5	1.5
62146	99	SPEED	SUR	57	2	999	0	0	1.3	-0.3	1.3
62149	99	SPEED	SUR	54	1	2054	0	0	1.3	0.2	1.4
62150	99	SPEED	SUR	54	1	2054	0	0	2.0	-0.6	2.0
62152	99	SPEED	SUR	57	2	2052	0	0	1.6	-1.1	1.9
62153	99	SPEED	SUR	57	2	2728	0	0	3.3	-1.5	3.6
62154	99	SPEED	SUR	56	2	2050	0	0	1.3	0.3	1.4
62155	99	SPEED	SUR	58	1	1982	0	0	1.4	-0.4	1.5
62163	99	SPEED	SUR	48	-8	2053	0	0	0.9	0.0	0.9
62164	99	SPEED	SUR	57	1	1976	0	0	1.6	-1.2	2.0
62165	99	SPEED	SUR	54	1	2053	0	0	1.7	-0.7	1.8
62304	99	SPEED	SUR	51	2	2045	0	0	1.7	1.6	2.3
62305	99	SPEED	SUR	50	0	9	0	0	1.9	2.5	3.2
6301004	99	SPEED	SUR	72	20	557	0	0	2.2	-2.1	3.0
6301006	99	SPEED	SUR	63	6	717	2	0	2.2	1.0	2.4
63055	99	SPEED	SUR	61	2	2054	0	0	1.5	-1.0	1.8
63056	99	SPEED	SUR	60	2	2053	0	0	1.4	0.5	1.5
63057	99	SPEED	SUR	59	2	2053	0	0	1.9	0.3	2.0
63058	99	SPEED	SUR	53	2	1950	0	0	1.3	-0.2	1.3
63101	99	SPEED	SUR	61	1	694	0	0	1.3	-1.1	1.7
63103	99	SPEED	SUR	61	1	622	0	0	1.6	0.3	1.6
63104	99	SPEED	SUR	61	2	2054	0	0	1.4	-0.3	1.4
63106	99	SPEED	SUR	61	2	1312	0	0	1.6	-0.8	1.8
63108	99	SPEED	SUR	61	2	2053	0	0	1.5	0.2	1.5
63109	99	SPEED	SUR	60	2	2036	0	0	1.4	0.5	1.5
63110	99	SPEED	SUR	60	2	2053	0	0	1.4	-0.4	1.4
63112	99	SPEED	SUR	61	1	674	0	0	1.4	-0.7	1.6
63115	99	SPEED	SUR	62	1	2053	0	0	1.2	-0.5	1.3
63117	99	SPEED	SUR	61	1	860	0	0	1.3	-0.8	1.5
64041	99	SPEED	SUR	61	-3	2054	0	0	1.4	-0.2	1.4
64045	99	SPEED	SUR	59	-12	2053	0	0	1.2	0.3	1.2
64046	99	SPEED	SUR	61	-4	2055	0	0	1.2	0.4	1.3
66021	99	SPEED	SUR	55	14	1295	0	0	1.1	0.7	1.3
66022	99	SPEED	SUR	54	14	1988	26	0	2.4	-0.5	2.4
66024	99	SPEED	SUR	55	13	1421	0	0	1.2	1.0	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 2020
 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
04134	99	DIRN	SUR	24	-82	2	0	0	0.0	25.1	25.1
0640046	99	DIRN	SUR	60	-4	656	0	0	14.5	-0.2	14.5
1300001	99	DIRN	SUR	11	-23	448	0	0	12.1	5.0	13.1
1300002	99	DIRN	SUR	20	-23	554	0	0	11.6	0.5	11.6
1300130	99	DIRN	SUR	28	-16	467	0	0	13.6	-7.9	15.8
1300131	99	DIRN	SUR	28	-17	437	0	0	23.6	0.5	23.7
15124	99	DIRN	SUR	24	-82	1	1	0	0.0	80.0	80.0
15144	99	DIRN	SUR	24	-81	2	2	0	0.0	82.9	82.9
18214	99	DIRN	SUR	25	-80	1	0	0	0.0	30.3	30.3
27144	99	DIRN	SUR	24	-80	1	1	0	0.0	58.4	58.4
30214	99	DIRN	SUR	26	-80	1	1	0	0.0	-149.3	149.3
4100001	99	DIRN	SUR	35	-72	3816	0	0	19.5	6.9	20.7
4100004	99	DIRN	SUR	33	-79	3904	5	0	22.0	10.2	24.2
4100008	99	DIRN	SUR	31	-81	602	0	0	19.9	5.3	20.7
4100009	99	DIRN	SUR	29	-80	3619	0	0	19.7	6.2	20.6
4100010	99	DIRN	SUR	29	-78	3649	0	0	12.7	5.1	13.7
4100013	99	DIRN	SUR	33	-78	3933	0	0	24.9	6.9	25.9
4100024	99	DIRN	SUR	34	-78	544	0	0	21.3	-14.1	25.6
4100025	99	DIRN	SUR	35	-75	3849	0	0	26.5	5.2	27.0
4100026	99	DIRN	SUR	12	-38	163	0	0	9.4	8.3	12.6
4100029	99	DIRN	SUR	33	-80	410	0	0	21.4	-15.5	26.4
4100033	99	DIRN	SUR	32	-80	529	0	0	20.5	-3.3	20.8
4100037	99	DIRN	SUR	34	-77	581	0	0	28.4	-9.0	29.8
4100038	99	DIRN	SUR	34	-78	575	0	0	25.1	-3.6	25.4
4100040	99	DIRN	SUR	15	-53	4178	0	0	18.9	3.8	19.3
4100043	99	DIRN	SUR	21	-65	3882	0	0	12.3	4.6	13.2
4100044	99	DIRN	SUR	22	-59	3651	0	0	11.3	3.5	11.8
4100046	99	DIRN	SUR	24	-68	3964	0	0	15.8	2.7	16.0
4100048	99	DIRN	SUR	32	-70	4002	0	0	11.4	-1.8	11.5
4100049	99	DIRN	SUR	27	-63	3890	0	0	14.8	5.6	15.9
4100052	99	DIRN	SUR	18	-65	3982	0	0	16.8	4.6	17.5
4100053	99	DIRN	SUR	18	-66	2258	0	0	19.6	-4.0	20.0

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
4100056	99	DIRN	SUR	18	-65	3952	0	0	16.8	3.5	17.2
4100064	99	DIRN	SUR	34	-77	596	0	0	26.1	-11.2	28.4
41001	99	DIRN	SUR	35	-72	2514	0	0	20.0	2.1	20.1
4100139	99	DIRN	SUR	20	-38	528	0	0	12.6	3.7	13.1
4100300	99	DIRN	SUR	16	-57	702	0	0	13.4	7.4	15.3
41004	99	DIRN	SUR	33	-79	2893	0	0	21.7	5.9	22.4
41008	99	DIRN	SUR	31	-81	1623	0	0	19.5	4.4	20.0
41009	99	DIRN	SUR	29	-80	2686	0	0	18.9	4.1	19.3
41010	99	DIRN	SUR	29	-79	2391	0	0	13.6	0.5	13.6
41013	99	DIRN	SUR	33	-78	2804	0	0	25.6	5.4	26.2
4101781	99	DIRN	SUR	43	-37	1208	0	0	27.0	-15.1	30.9
4101782	99	DIRN	SUR	25	-64	1244	0	0	18.4	-17.4	25.3
4101783	99	DIRN	SUR	28	-61	1129	0	0	19.5	-23.1	30.2
4101784	99	DIRN	SUR	28	-63	1103	0	0	18.0	-13.8	22.7
4101785	99	DIRN	SUR	33	-61	1195	0	0	16.8	-6.6	18.1
4101806	99	DIRN	SUR	36	-61	1158	0	0	21.4	-18.5	28.3
4101807	99	DIRN	SUR	30	-60	1104	0	0	18.3	-15.1	23.8
4101816	99	DIRN	SUR	34	-59	1223	0	0	15.3	-12.7	19.8
4101817	99	DIRN	SUR	36	-62	943	0	0	14.5	-9.4	17.2
4101818	99	DIRN	SUR	36	-61	1156	0	0	19.8	-11.0	22.6
4101819	99	DIRN	SUR	36	-60	145	0	0	18.4	-3.1	18.7
4101820	99	DIRN	SUR	37	-61	1139	0	0	17.5	-11.5	20.9
41024	99	DIRN	SUR	34	-79	989	0	0	23.3	-13.5	26.9
41025	99	DIRN	SUR	35	-75	2828	0	0	25.0	4.5	25.4
41029	99	DIRN	SUR	33	-80	1091	0	0	20.8	-15.5	26.0
41033	99	DIRN	SUR	32	-80	937	0	0	21.0	-3.9	21.4
41037	99	DIRN	SUR	34	-77	1052	0	0	27.9	-9.9	29.7
41038	99	DIRN	SUR	34	-78	1048	0	0	25.9	-1.7	25.9
41040	99	DIRN	SUR	15	-53	1053	0	0	20.1	3.7	20.4
41043	99	DIRN	SUR	21	-65	968	0	0	12.9	4.0	13.5
41044	99	DIRN	SUR	22	-59	882	0	0	11.0	2.2	11.2
41046	99	DIRN	SUR	24	-68	2616	0	0	15.4	2.5	15.5
41048	99	DIRN	SUR	32	-70	2655	0	0	11.6	-1.4	11.7
41049	99	DIRN	SUR	28	-63	2542	0	0	15.4	4.8	16.1
41052	99	DIRN	SUR	18	-65	1646	0	0	17.4	4.4	17.9
41053	99	DIRN	SUR	19	-66	925	0	0	20.1	-4.6	20.7
41056	99	DIRN	SUR	18	-66	1425	0	0	17.2	3.3	17.5
41064	99	DIRN	SUR	34	-77	1083	0	0	26.4	-11.8	28.9
4200013	99	DIRN	SUR	27	-83	1137	1	0	14.9	6.1	16.1
4200022	99	DIRN	SUR	28	-84	810	0	0	9.7	-4.5	10.7
4200023	99	DIRN	SUR	26	-83	1278	0	0	10.3	-4.6	11.3

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4200026	99	DIRN	SUR	25	-83	1115	0	0	11.8	-0.2	11.8
4200036	99	DIRN	SUR	29	-85	3755	0	0	10.3	10.4	14.6
4200056	99	DIRN	SUR	20	-85	3881	0	0	12.1	3.6	12.6
4200057	99	DIRN	SUR	17	-81	4056	0	0	15.7	5.7	16.7
4200060	99	DIRN	SUR	16	-63	4144	0	0	15.4	11.2	19.0
4200085	99	DIRN	SUR	18	-67	3717	0	0	25.3	19.2	31.8
42013	99	DIRN	SUR	27	-83	1596	2	0	15.3	5.6	16.3
42022	99	DIRN	SUR	28	-84	1139	0	0	12.5	-4.8	13.4
42023	99	DIRN	SUR	26	-83	1910	0	0	10.9	-4.8	11.9
42026	99	DIRN	SUR	25	-84	1564	0	0	11.5	-0.1	11.5
42036	99	DIRN	SUR	29	-85	2297	0	0	10.7	9.4	14.3
42056	99	DIRN	SUR	20	-85	922	0	0	11.8	2.7	12.1
42057	99	DIRN	SUR	17	-81	1015	0	0	17.1	6.5	18.2
42060	99	DIRN	SUR	16	-63	1035	0	0	15.7	10.3	18.8
42085	99	DIRN	SUR	18	-67	1711	0	0	24.1	17.7	29.9
4400005	99	DIRN	SUR	43	-69	625	0	0	16.1	4.8	16.9
4400007	99	DIRN	SUR	44	-70	3358	0	0	30.4	5.3	30.9
4400008	99	DIRN	SUR	41	-69	3617	0	0	14.4	8.9	17.0
4400013	99	DIRN	SUR	42	-71	3407	0	0	17.3	7.6	18.9
4400014	99	DIRN	SUR	37	-75	2992	0	0	19.1	5.8	19.9
4400018	99	DIRN	SUR	42	-70	3633	0	0	17.1	9.1	19.3
4400020	99	DIRN	SUR	41	-70	3449	0	0	15.6	7.8	17.4
4400022	99	DIRN	SUR	41	-74	877	0	0	13.1	9.7	16.3
4400025	99	DIRN	SUR	40	-73	3733	0	0	13.3	7.2	15.1
4400027	99	DIRN	SUR	44	-67	646	0	0	14.0	3.6	14.5
4400029	99	DIRN	SUR	43	-71	599	0	0	19.8	2.2	19.9
4400030	99	DIRN	SUR	43	-70	577	0	0	28.6	0.3	28.6
4400032	99	DIRN	SUR	44	-69	606	0	0	17.2	12.7	21.4
4400033	99	DIRN	SUR	44	-69	554	0	0	18.3	3.0	18.5
4400034	99	DIRN	SUR	44	-68	634	0	0	14.7	-3.4	15.1
4400037	99	DIRN	SUR	43	-68	620	0	0	12.9	7.7	15.0
4400058	99	DIRN	SUR	38	-76	3252	0	0	22.9	-3.1	23.1
4400062	99	DIRN	SUR	39	-76	1896	0	0	25.1	-5.6	25.7
4400065	99	DIRN	SUR	40	-74	3703	0	0	16.2	8.5	18.3
4400072	99	DIRN	SUR	37	-76	1408	0	0	18.7	-56.7	59.7
4400073	99	DIRN	SUR	43	-71	554	0	0	23.8	8.4	25.3
4400075	99	DIRN	SUR	40	-71	2868	0	0	13.8	-12.8	18.9
4400076	99	DIRN	SUR	40	-71	3034	0	0	14.7	-13.3	19.8
4400077	99	DIRN	SUR	40	-71	3080	0	0	15.2	-13.1	20.1
44005	99	DIRN	SUR	43	-69	1702	0	0	16.6	4.1	17.1
44007	99	DIRN	SUR	44	-70	2416	0	0	33.0	3.7	33.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44008	99	DIRN	SUR	41	-69	2360	0	0	15.0	7.7	16.8
44013	99	DIRN	SUR	42	-71	2477	0	0	17.4	6.8	18.7
44014	99	DIRN	SUR	37	-75	1827	0	0	17.1	4.5	17.7
44018	99	DIRN	SUR	42	-70	2647	0	0	16.8	10.1	19.6
44020	99	DIRN	SUR	42	-70	2403	0	0	15.6	7.0	17.1
44022	99	DIRN	SUR	41	-74	800	0	0	13.4	9.6	16.5
44025	99	DIRN	SUR	40	-73	2668	0	0	13.7	5.9	14.9
44027	99	DIRN	SUR	44	-67	1780	0	0	14.1	3.0	14.4
44029	99	DIRN	SUR	43	-71	1614	0	0	21.3	2.0	21.4
44030	99	DIRN	SUR	43	-70	1040	0	0	26.8	0.8	26.8
44032	99	DIRN	SUR	44	-69	1081	0	0	18.0	12.6	22.0
44033	99	DIRN	SUR	44	-69	986	0	0	18.7	2.3	18.9
44034	99	DIRN	SUR	44	-68	1146	0	0	14.4	-3.4	14.8
44037	99	DIRN	SUR	44	-68	1104	0	0	12.9	7.2	14.8
44058	99	DIRN	SUR	38	-76	1913	0	0	22.3	-4.3	22.7
44062	99	DIRN	SUR	39	-76	1221	0	0	25.9	-5.9	26.5
44065	99	DIRN	SUR	40	-74	2590	0	0	16.7	7.0	18.1
44069	99	DIRN	SUR	41	-73	865	0	0	23.9	3.4	24.2
44072	99	DIRN	SUR	37	-76	961	0	0	19.8	-57.8	61.1
44073	99	DIRN	SUR	43	-71	1010	0	0	24.4	8.2	25.8
44075	99	DIRN	SUR	40	-71	2611	0	0	14.9	-13.0	19.7
44076	99	DIRN	SUR	40	-71	3412	0	0	16.1	-13.7	21.1
44077	99	DIRN	SUR	40	-71	3571	0	0	16.0	-13.8	21.2
44078	99	DIRN	SUR	60	-40	3429	0	0	14.8	-20.5	25.3
44137	99	DIRN	SUR	42	-62	1150	0	0	12.7	-29.0	31.7
44139	99	DIRN	SUR	44	-57	1197	0	0	13.7	-29.3	32.3
44150	99	DIRN	SUR	43	-64	1156	0	0	13.5	-33.8	36.4
4500003	99	DIRN	SUR	45	-83	3940	0	0	12.7	9.1	15.6
4500005	99	DIRN	SUR	42	-82	3456	0	0	13.3	8.7	15.9
4500008	99	DIRN	SUR	44	-82	1704	0	0	13.6	14.6	20.0
4500012	99	DIRN	SUR	44	-77	415	0	0	13.9	0.6	13.9
4500169	99	DIRN	SUR	42	-82	154	0	0	38.5	-41.7	56.8
4500175	99	DIRN	SUR	46	-85	2336	7	0	81.3	-30.8	86.9
45003	99	DIRN	SUR	45	-83	2543	0	0	13.6	10.2	17.0
45005	99	DIRN	SUR	42	-82	2186	0	0	14.3	9.1	16.9
45008	99	DIRN	SUR	44	-82	1098	0	0	14.0	18.0	22.8
45012	99	DIRN	SUR	44	-77	276	0	0	13.0	2.2	13.2
45132	99	DIRN	SUR	43	-81	1005	0	0	12.1	0.6	12.1
45137	99	DIRN	SUR	46	-81	858	0	0	15.4	1.2	15.5
45139	99	DIRN	SUR	43	-80	623	0	0	17.0	5.8	18.0
45142	99	DIRN	SUR	43	-79	910	0	0	14.5	-1.8	14.6

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45143	99	DIRN	SUR	45	-81	463	0	0	18.3	2.8	18.5
45147	99	DIRN	SUR	42	-83	454	0	0	13.0	8.0	15.3
45149	99	DIRN	SUR	44	-82	612	0	0	20.1	23.0	30.6
45152	99	DIRN	SUR	46	-80	150	0	0	12.7	7.3	14.7
45154	99	DIRN	SUR	46	-83	790	0	0	19.2	-0.1	19.2
45159	99	DIRN	SUR	44	-79	546	0	0	25.1	4.2	25.4
45169	99	DIRN	SUR	42	-82	144	0	0	35.9	-42.9	55.9
45175	99	DIRN	SUR	46	-85	1097	3	0	79.2	-34.1	86.2
6100198	99	DIRN	SUR	37	-2	126	0	0	31.6	6.8	32.3
6100281	99	DIRN	SUR	40	0	258	0	0	35.5	-13.8	38.1
6100417	99	DIRN	SUR	38	0	400	0	0	18.7	11.4	21.9
6200024	99	DIRN	SUR	44	-3	519	0	0	17.4	1.3	17.4
6200025	99	DIRN	SUR	44	-6	353	0	0	24.1	0.5	24.1
6200082	99	DIRN	SUR	44	-8	573	0	0	23.9	6.9	24.9
6200083	99	DIRN	SUR	43	-9	510	0	0	40.3	40.1	56.8
6200084	99	DIRN	SUR	42	-9	536	0	0	13.9	5.1	14.8
6200085	99	DIRN	SUR	36	-7	602	0	0	19.8	5.6	20.5
6200091	99	DIRN	SUR	53	-5	666	0	0	11.9	2.9	12.2
6200092	99	DIRN	SUR	51	-11	663	0	0	13.1	1.9	13.3
6200093	99	DIRN	SUR	55	-10	694	0	0	16.1	-0.4	16.1
6200094	99	DIRN	SUR	52	-7	659	0	0	12.4	3.5	12.9
6200095	99	DIRN	SUR	53	-16	660	0	0	14.5	2.5	14.8
62001	99	DIRN	SUR	45	-5	1825	0	0	14.3	7.9	16.3
6200199	99	DIRN	SUR	40	-9	456	8	0	166.1	-20.8	167.4
6200200	99	DIRN	SUR	36	-8	563	0	0	18.0	2.1	18.2
6201030	99	DIRN	SUR	44	-4	456	0	0	19.7	3.8	20.0
62023	99	DIRN	SUR	51	-8	2030	0	0	10.5	6.0	12.1
62091	99	DIRN	SUR	53	-5	657	0	0	11.5	2.3	11.8
62092	99	DIRN	SUR	51	-11	661	0	0	13.3	1.5	13.4
62093	99	DIRN	SUR	55	-10	693	0	0	16.5	-0.8	16.5
62094	99	DIRN	SUR	52	-7	657	0	0	12.9	3.0	13.2
62095	99	DIRN	SUR	53	-16	656	0	0	14.6	2.0	14.7
62103	99	DIRN	SUR	50	-3	1944	0	0	17.0	7.6	18.6
62107	99	DIRN	SUR	50	-6	2621	0	0	13.9	3.2	14.2
62112	99	DIRN	SUR	58	0	1981	0	0	11.0	-2.0	11.2
62114	99	DIRN	SUR	58	0	2598	0	0	10.8	0.1	10.8
62163	99	DIRN	SUR	48	-8	1913	0	0	12.4	-0.5	12.4
62305	99	DIRN	SUR	50	0	6	0	0	9.7	12.2	15.5
64041	99	DIRN	SUR	61	-3	1924	0	0	11.7	9.8	15.2
64045	99	DIRN	SUR	59	-12	1898	0	0	13.0	2.7	13.3
64046	99	DIRN	SUR	61	-4	1922	0	0	15.1	-3.2	15.4

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
UXK5JTU	VKB4L5Q	WDK38HS	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02527	02836	02963
03005	03238	03354	03502	03743	03808	03882	03918	03953
04018	04089	04220	04270	04320	04339	04360	04417	06011
06060	06260	06458	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08383	08430	08508	08522
08536	10035	10113	10184	10238	10304	10393	10410	10548
10618	10739	10771	10868	10954	10962	11010	11035	11120
11240	11520	11747	11952	12120	12374	12425	12843	12982
13275	13388	14015	14240	14430	15420	15614	16045	16080
16113	16245	16320	16429	16546	16622	16716	16754	17030
17064	17095	17130	17196	17220	17240	17281	17516	17607
22008	23205	23472	23884	24908	26038	26435	26850	27459
27707	27713	28225	29612	29698	33008	33041	37789	40179
40186	45004	47102	47104	47138	47155	47169	47186	47401
47412	47418	47582	47600	47646	47678	47741	47778	47807
47827	47909	47918	47945	47971	47991	48698	50527	50557
50774	50953	51076	51243	51431	51463	51644	51656	51709
51777	51828	51839	52203	52267	52323	52418	52533	52652
52681	52818	52836	52866	52983	53068	53463	53513	53543
53614	53772	53845	53915	54102	54135	54161	54218	54292
54374	54511	54662	54727	54857	55299	55591	56029	56046
56080	56137	56187	56492	56651	56691	56739	56778	56964
56985	57083	57127	57131	57178	57245	57447	57494	57687
57816	57957	57993	58027	58203	58238	58362	58424	58606
58633	58665	58725	59023	59134	59211	59265	59280	59293
59431	59758	60018	60096	60390	60571	60630	60656	60680
61901	61980	61998	68263	68424	68512	68816	68842	70133
70200	70219	70231	70261	70308	70316	70326	70350	70361
70398	71043	71081	71082	71109	71119	71603	71722	71802
71811	71815	71816	71823	71836	71845	71867	71906	71907
71908	71909	71917	71924	71925	71926	71934	71945	71957
71964	72206	72208	72210	72214	72215	72230	72233	72235
72240	72248	72249	72250	72251	72265	72274	72293	72305
72317	72327	72340	72363	72364	72365	72376	72388	72426
72440	72451	72476	72489	72493	72501	72518	72520	72528
72558	72562	72572	72582	72597	72632	72634	72645	72649
72659	72662	72672	72694	72712	72764	72768	72776	72786
72797	73033	73110	74389	74494	74560	76225	76256	76394
76405	76458	76526	76595	76612	76644	76654	76679	76692
76743	76805	76903	78897	78954	81405	83525	83649	83768
85442	85586	85799	85934	87155	87344	87576	87623	87715
87860	88889	89002	89062	89564	89571	89611	89625	89642
89662	89859	91212	91285	91592	91765	91925	91938	91948
91958	93112	93417	93817	93844	94120	94150	94170	94203
94299	94302	94312	94326	94332	94374	94403	94430	94461
94510	94578	94610	94637	94638	94653	94659	94672	94711
94767	94776	94802	94821	94866	94910	94975	94995	94996
94998	95527	96996						

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

ASDE09	BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
UXK5JTU	VKB4L5Q	WDK38HS	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01004
01010	01028	01241	01400	01415	01492	02365	02527	02836
02963	03953	06610	07110	07145	07510	07645	07761	08536
11010	11035	11120	11240	17607	26708	40186	47155	51243
51656	52652	53543	56046	56492	56651	57245	59023	59293
61980	61998	76743	76903	78897	81405	89002	89642	89859
91592	91938	93817	94767					

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

- (i) all results are based on software that may undergo further development;
- (ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;
- (iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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