



ECMWF Global Data Monitoring Report

January 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	Dec	Jan	Ident	Time	Dec	Jan
04417	(00)	29	11	26477	(00)	16	31
04417	(12)	29	10	26477	(12)	17	31
08579	(12)	26	1	28951	(12)	15	31
16144	(00)	14	0	30230	(00)	1	31
24343	(00)	25	11	30230	(12)	2	31
24343	(12)	26	13	35229	(12)	18	31
24507	(00)	28	16	35394	(12)	15	31
33008	(00)	16	0	35671	(12)	16	30
33041	(00)	14	0	43599	(12)	0	21
37789	(00)	31	4	68110	(12)	1	19
40417	(00)	29	18	78397	(00)	0	27
41923	(00)	29	7	83554	(00)	20	31
41923	(12)	29	6	83554	(12)	20	31
42123	(00)	24	0	91680	(12)	0	28
42182	(12)	23	0	-	-	-	-
42809	(12)	11	0	-	-	-	-
42867	(12)	11	0	-	-	-	-
43150	(12)	19	0	-	-	-	-
47909	(00)	27	0	-	-	-	-
61660	(12)	37	26	-	-	-	-
62423	(12)	13	0	-	-	-	-
64500	(12)	48	28	-	-	-	-
67083	(00)	31	13	-	-	-	-
70026	(00)	29	16	-	-	-	-
70026	(12)	29	13	-	-	-	-
72797	(12)	30	14	-	-	-	-
74006	(00)	36	14	-	-	-	-
76225	(12)	13	0	-	-	-	-
76644	(00)	30	7	-	-	-	-
76654	(00)	31	17	-	-	-	-
76654	(12)	29	12	-	-	-	-
82411	(00)	28	0	-	-	-	-
82411	(12)	25	1	-	-	-	-
82705	(00)	26	8	-	-	-	-
82705	(12)	26	9	-	-	-	-
82765	(12)	22	5	-	-	-	-
83362	(12)	31	6	-	-	-	-
83566	(00)	29	14	-	-	-	-
83566	(12)	30	14	-	-	-	-
83768	(12)	29	13	-	-	-	-
85586	(00)	24	0	-	-	-	-
91334	(00)	23	0	-	-	-	-
91334	(12)	20	0	-	-	-	-
94294	(00)	31	17	-	-	-	-

2.2 Drifting Buoys

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

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

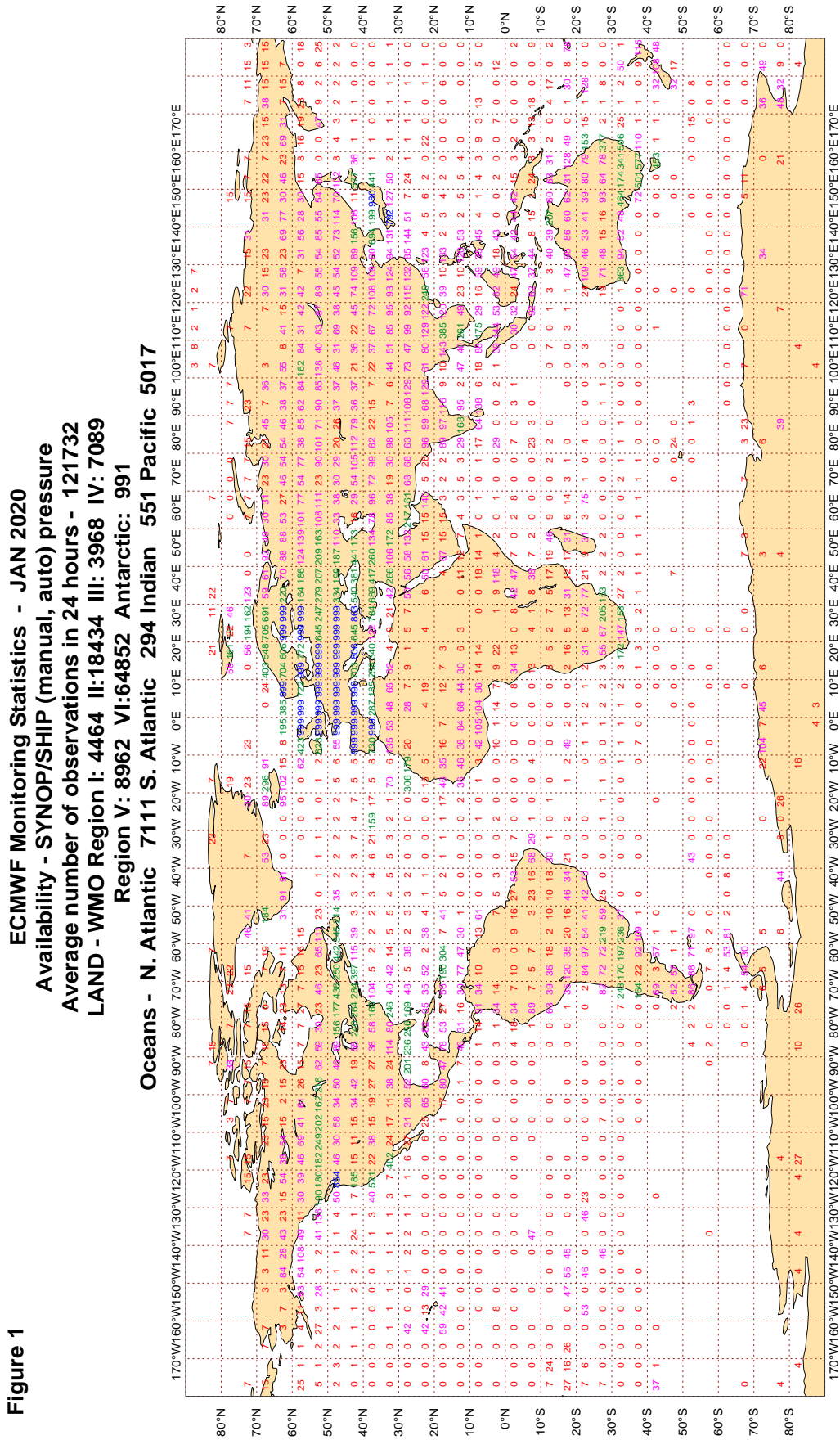
Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

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

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

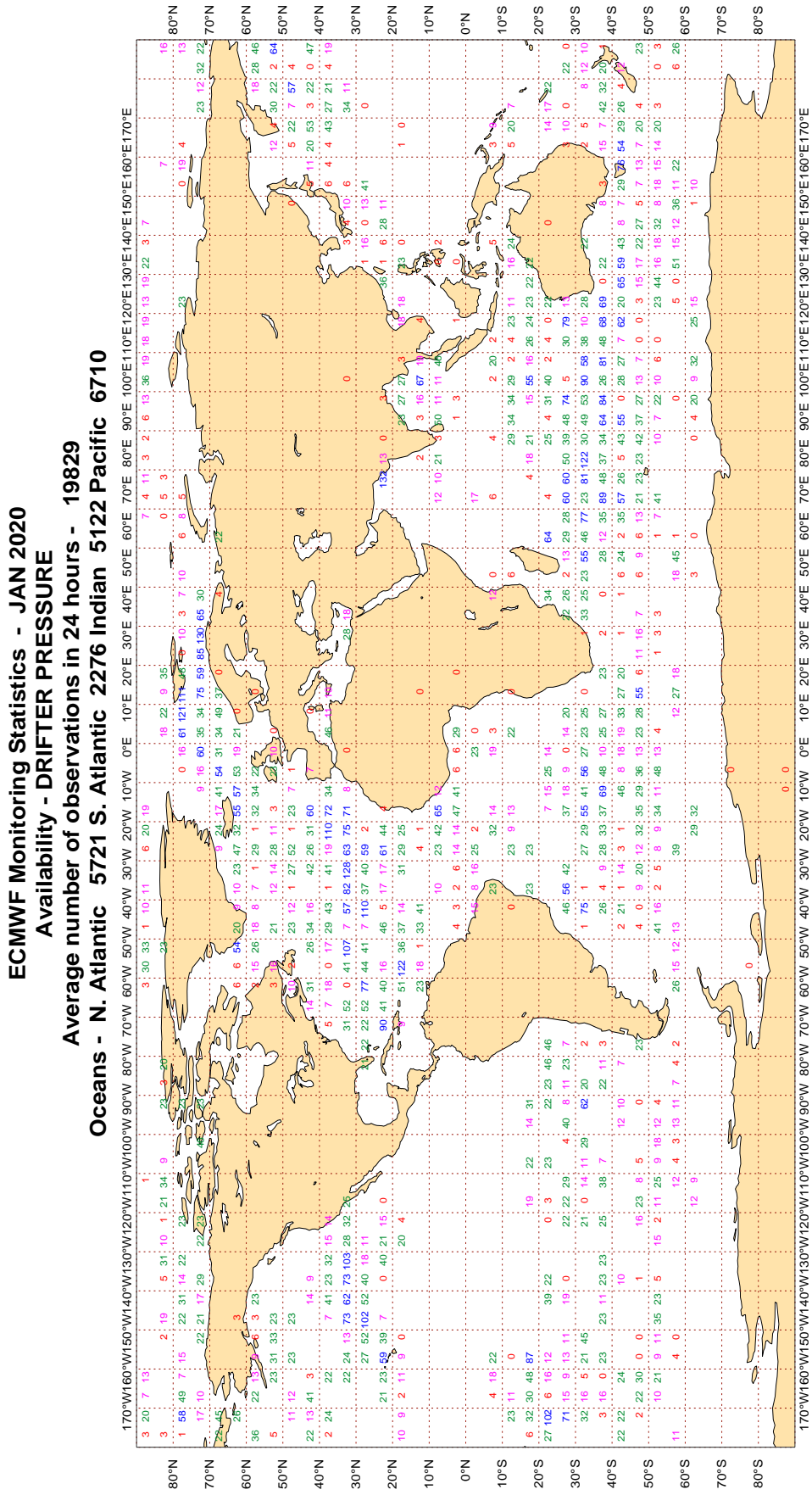
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE



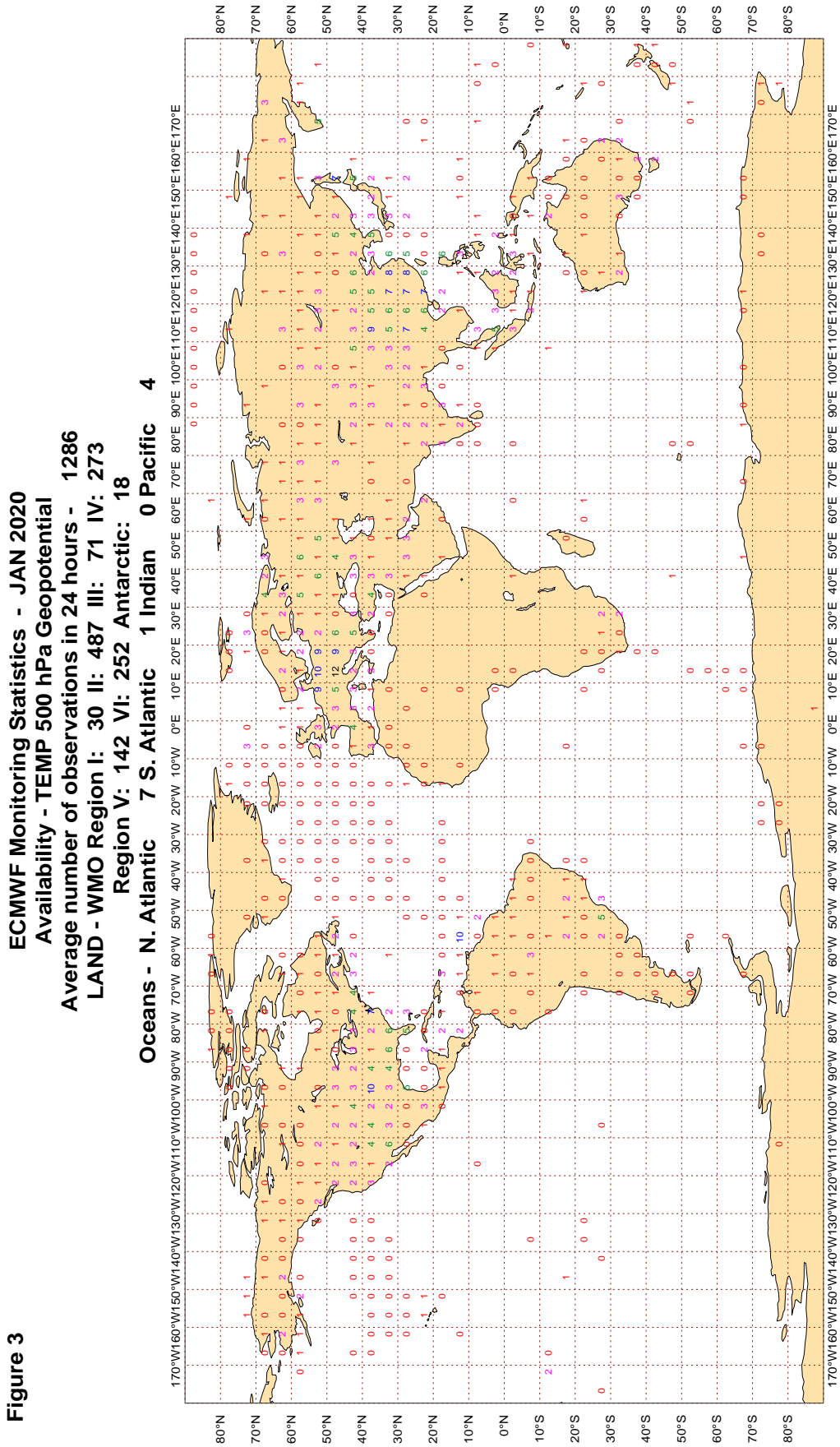
3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



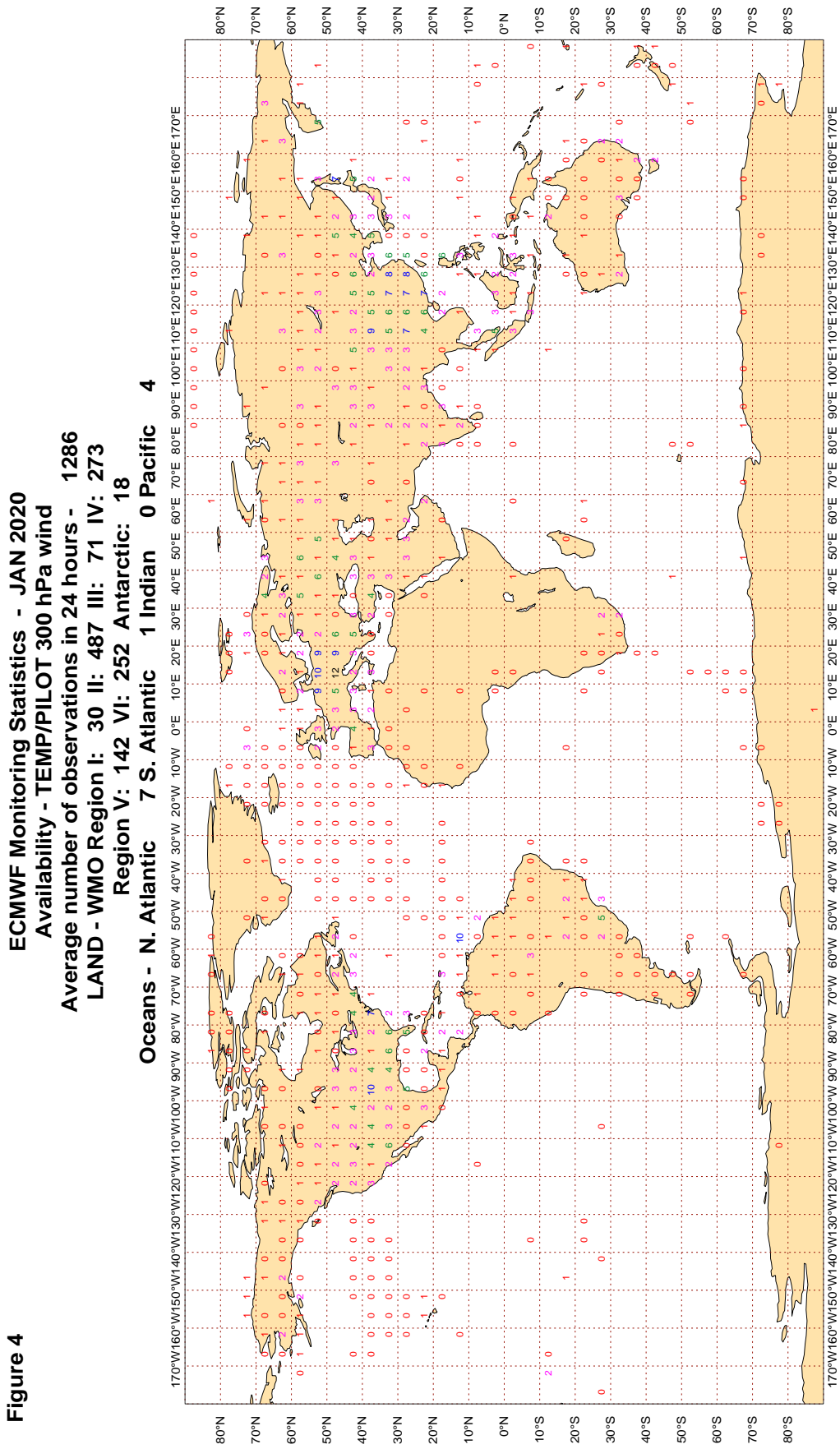
Magics 3.0.4 (64 bit)

3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



Magics 3.0.4 (64 bit)

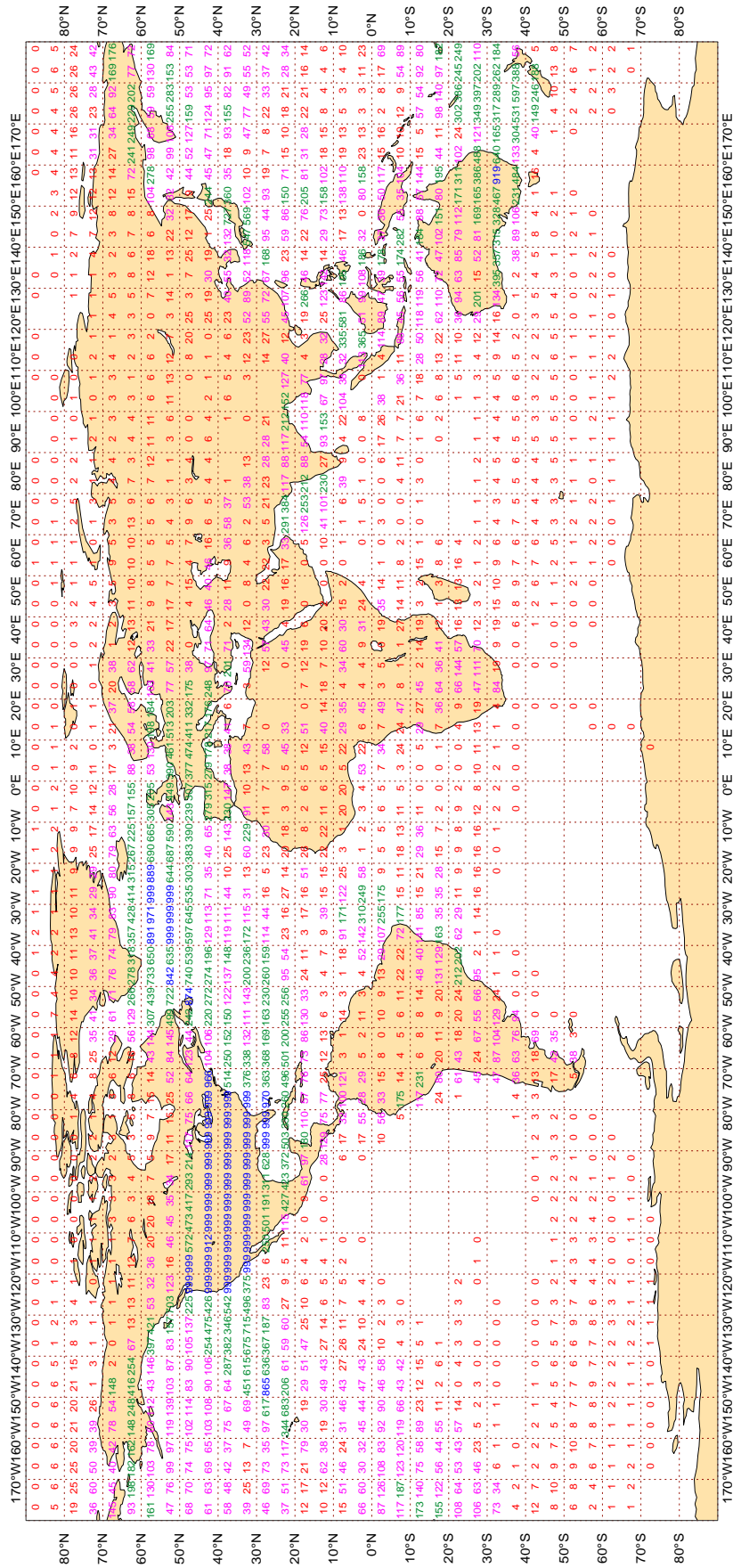
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

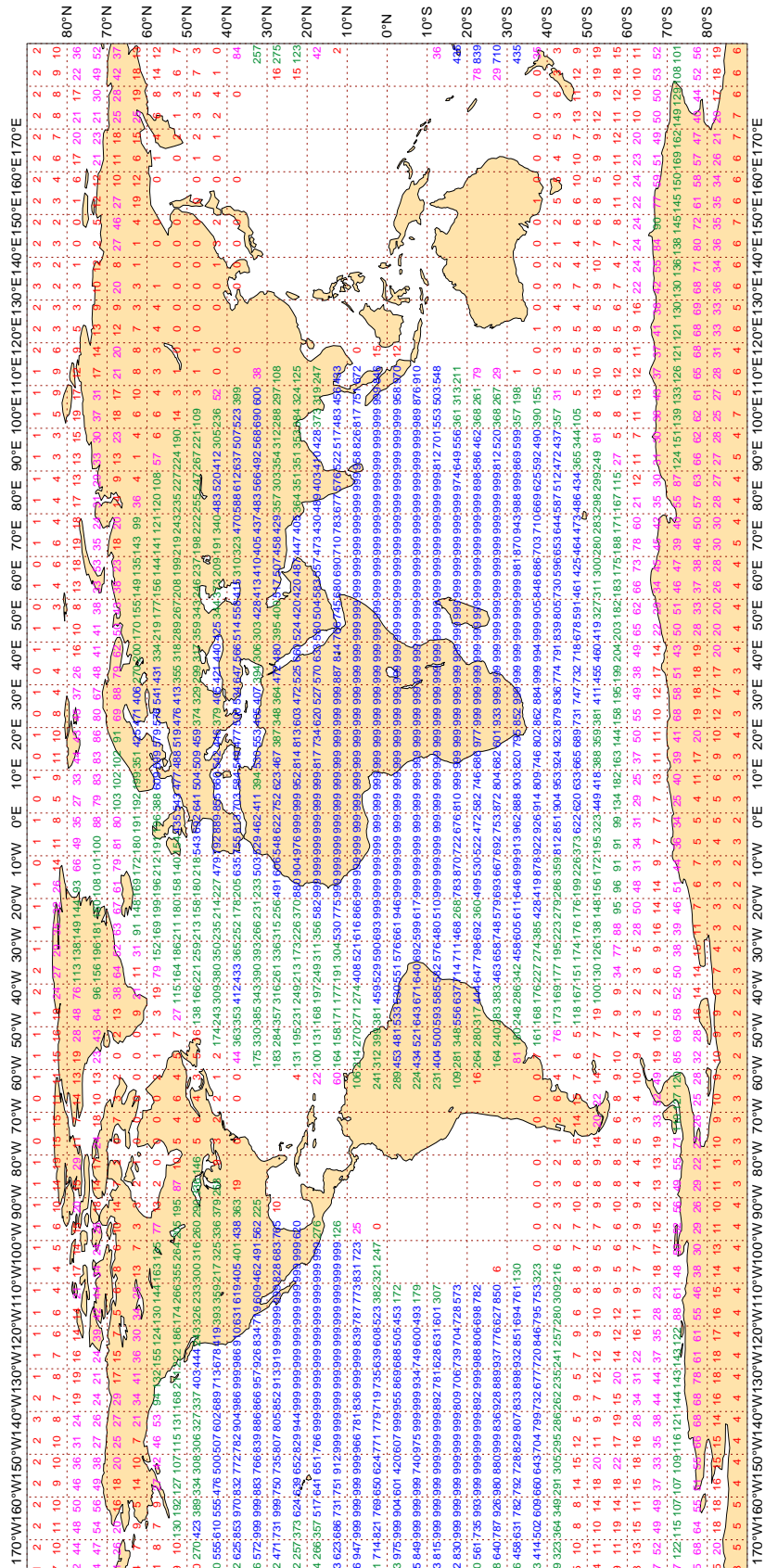
ECMWF Monitoring Statistics - JAN 2020
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 220574



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

Figure 6

ECMWF Monitoring Statistics - JAN 2020
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 837117



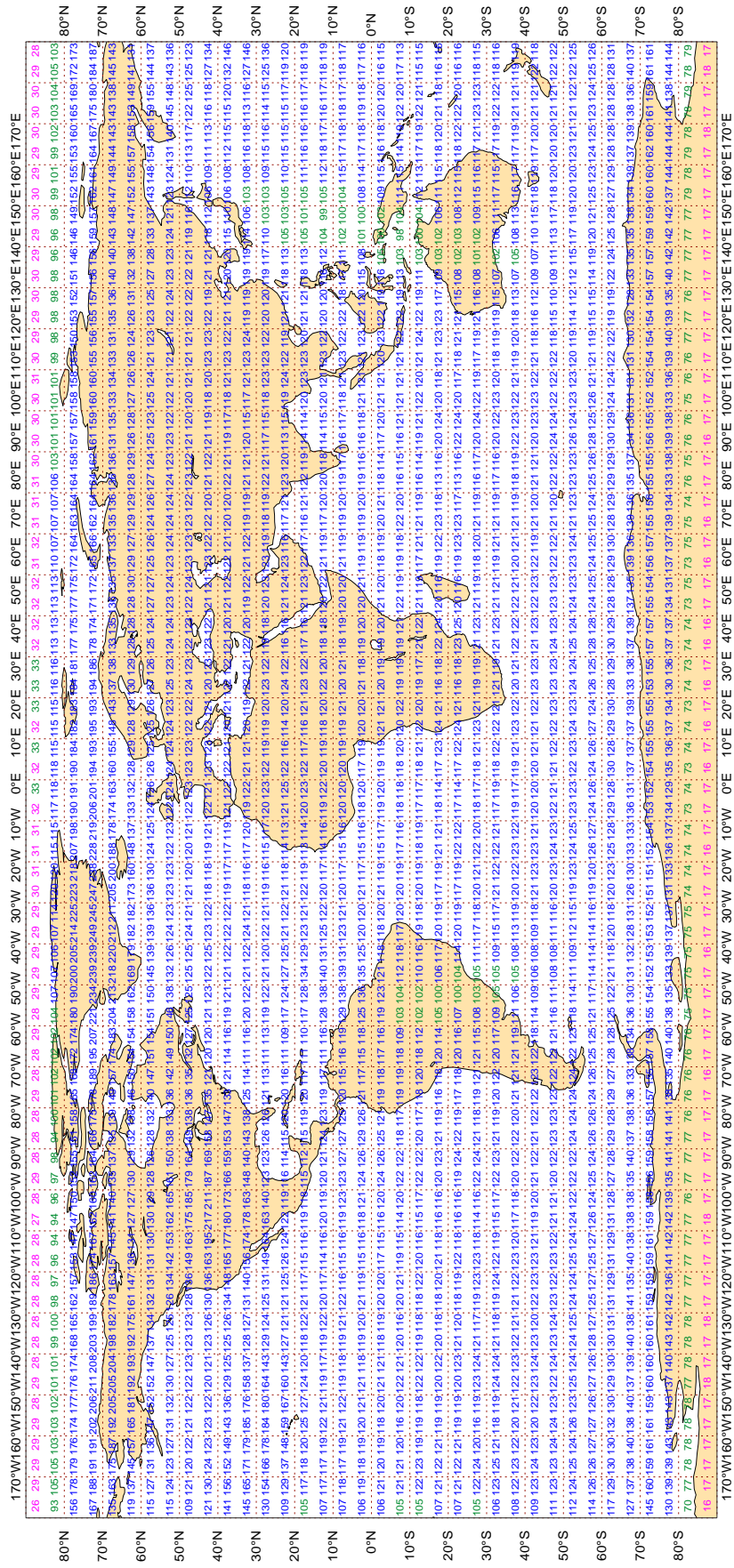
Magics 3.0.4 (64 bit)



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

Figure 8

ECMWF Monitoring Statistics - JAN 2020
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 316134



Magics 3.0.4 (64 bit)

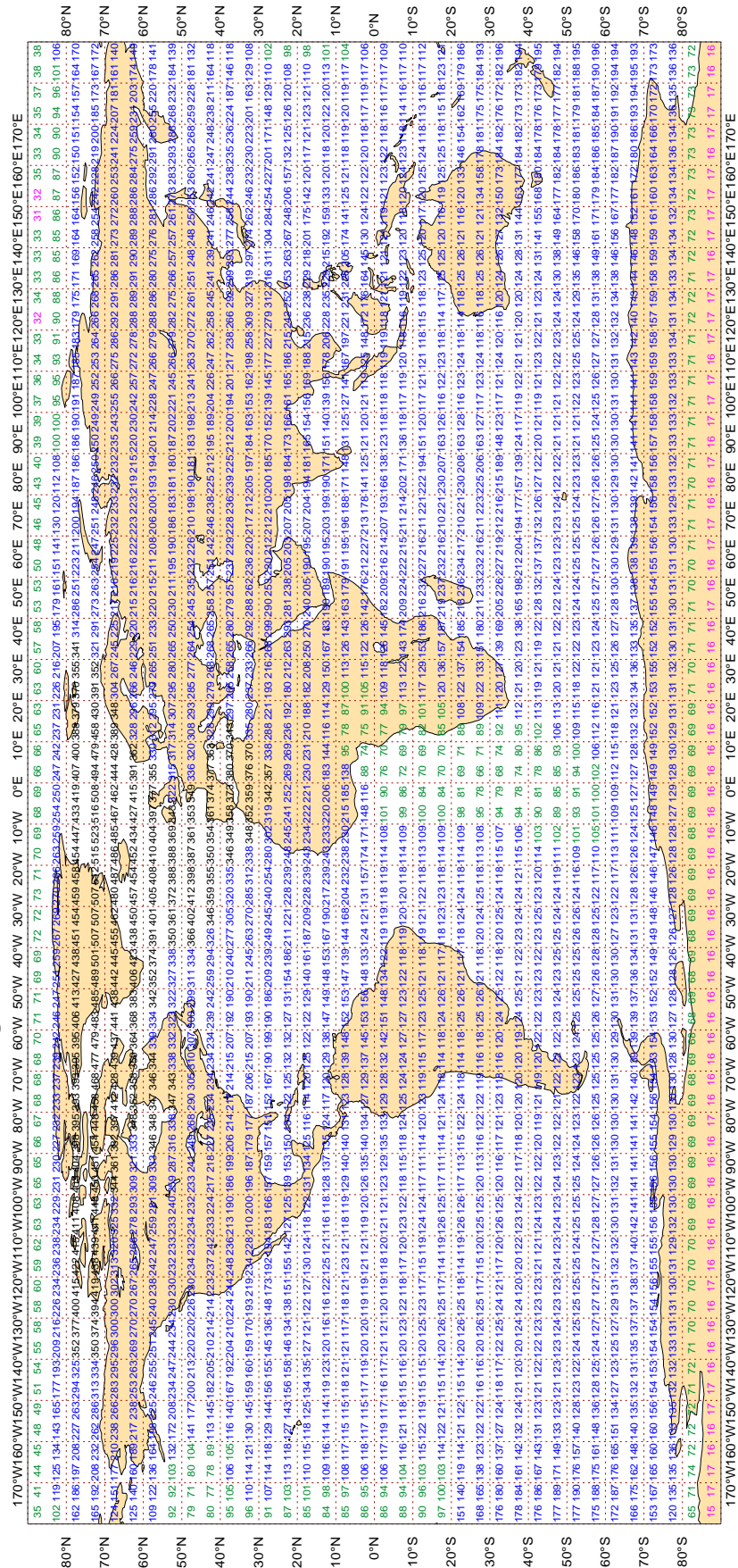


3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - JAN 2020
Availability - NOAA18 ATOVS : AMSU-A

Average number of observations in 24 hours - 447117



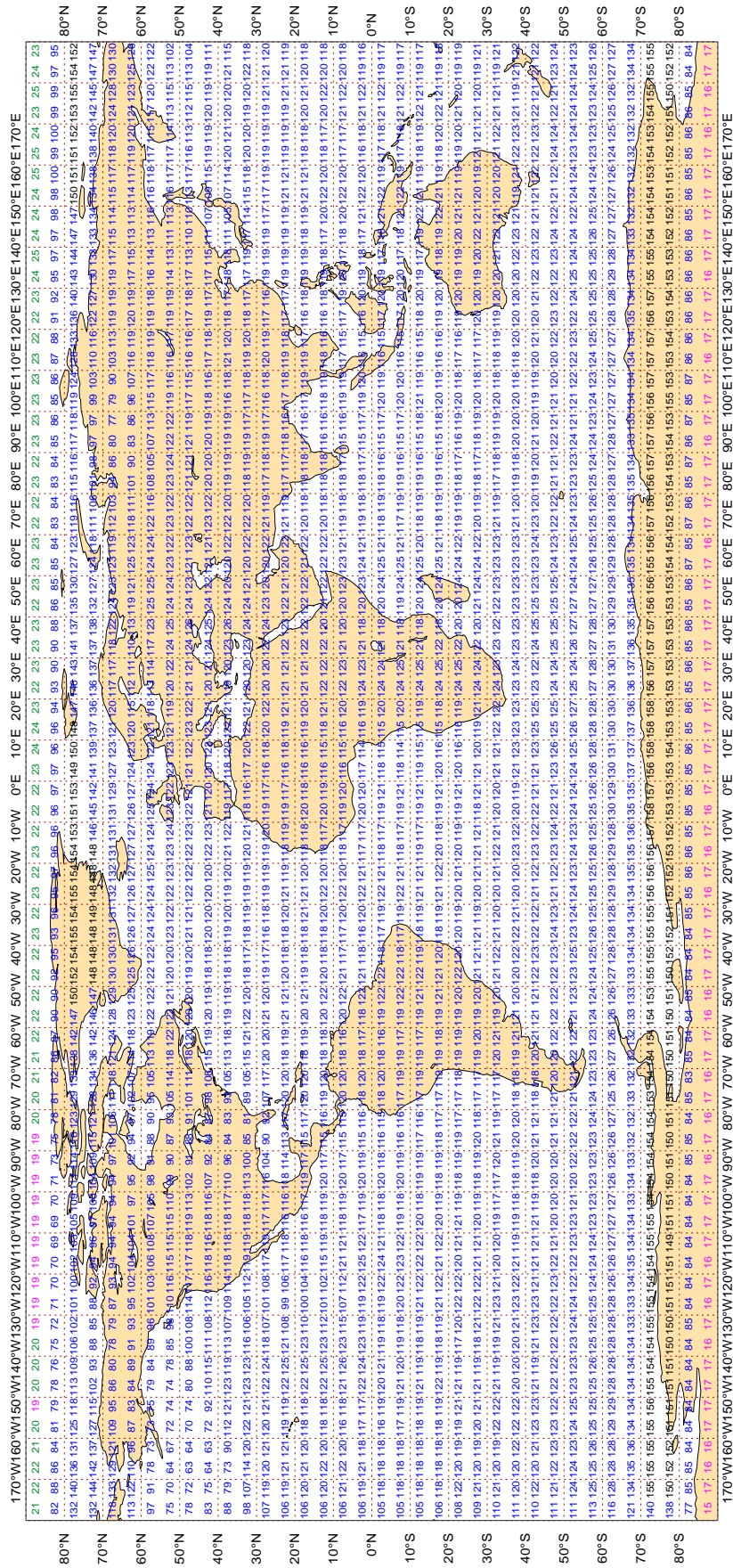
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - JAN 2020
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 296609



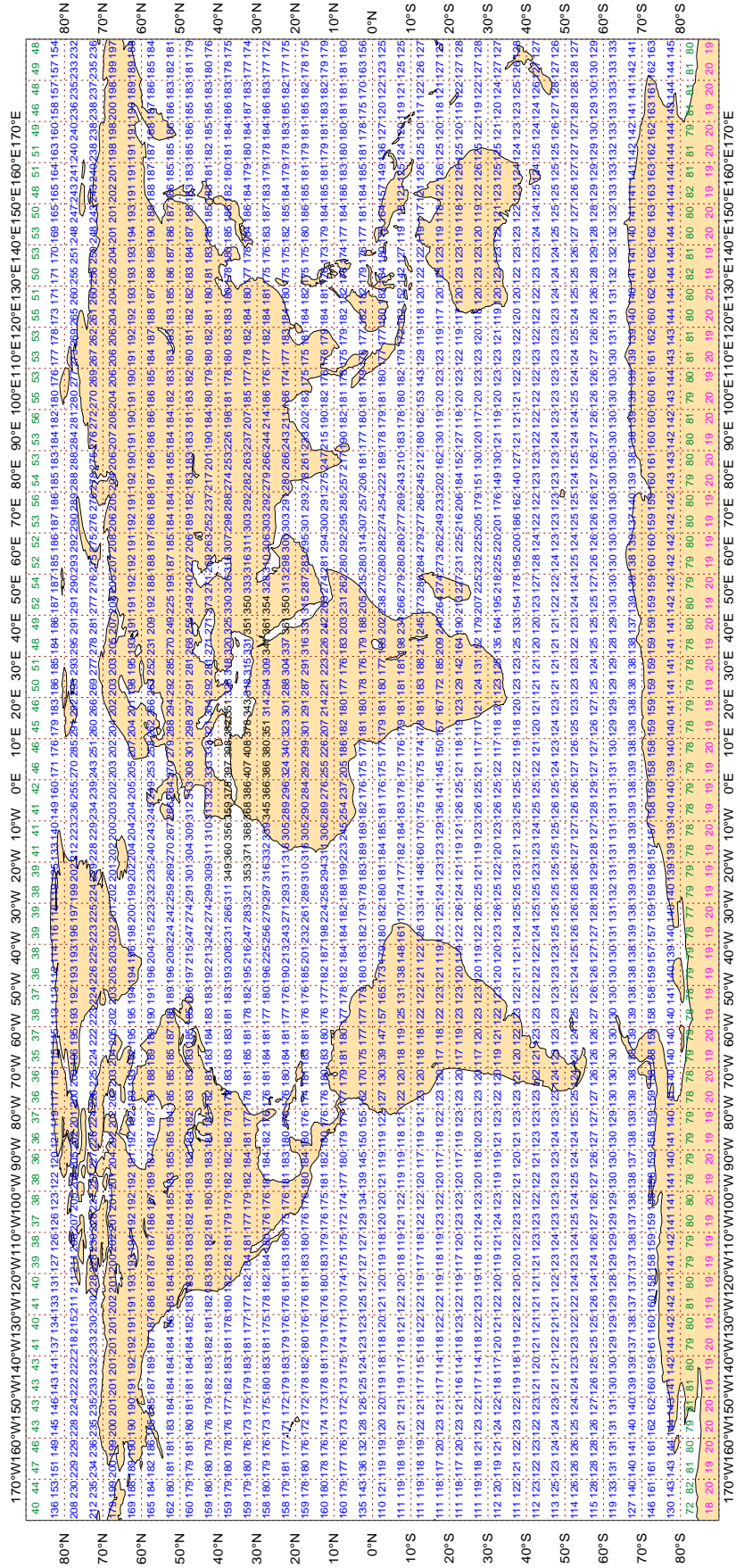
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - JAN 2020
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 427135



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 : JAN 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	22	0	1.2	7.0	7.0
2ILJ7	99	P	SUR	28	0	1.9	3.6	4.1
3FPS9	99	P	SUR	20	0	1.8	4.8	5.1
44009	99	P	SUR	132	0	0.6	-3.3	3.3
44058	99	P	SUR	165	0	0.7	3.2	3.3
7KAP	99	P	SUR	30	0	0.6	-3.1	3.1
8TAP	99	P	SUR	75	42	4.0	-4.6	6.1
9HA3667	99	P	SUR	75	0	3.7	4.0	5.4
9HA4883	99	P	SUR	29	0	0.5	-3.7	3.8
9HJF9	99	P	SUR	29	0	1.2	3.8	4.0
9V2779	99	P	SUR	67	4	4.6	7.7	9.0
9V7987	99	P	SUR	21	4	5.7	8.6	10.3
9V9793	99	P	SUR	17	1	1.6	3.2	3.6
9VHK7	99	P	SUR	16	0	2.7	4.0	4.9
A8OR8	99	P	SUR	44	0	2.6	4.7	5.4
A8SG7	99	P	SUR	18	0	3.4	3.9	5.2
C6AB8	99	P	SUR	19	0	2.8	4.9	5.6
C6DD6	99	P	SUR	73	0	1.7	3.4	3.8
C6DQ2	99	P	SUR	17	0	1.6	3.0	3.4
C6FV8	99	P	SUR	39	0	1.3	-5.3	5.5
C6LG6	99	P	SUR	57	0	1.5	-3.3	3.7
C6SY3	99	P	SUR	20	0	2.6	3.3	4.2
H3VU	99	P	SUR	55	0	1.6	3.5	3.8
KCOJ	99	P	SUR	29	0	2.3	5.0	5.5
LAIG7	99	P	SUR	67	0	2.5	-3.8	4.6
LAQL7	99	P	SUR	36	0	1.0	3.3	3.5
LF8A	99	P	SUR	123	1	3.6	-3.9	5.3
OUIY2	99	P	SUR	34	1	2.4	7.8	8.2
OYCY2	99	P	SUR	49	0	2.2	5.7	6.1
OYIK2	99	P	SUR	51	0	2.3	7.9	8.2
OYJS2	99	P	SUR	18	0	3.6	4.0	5.4
OZ2049	99	P	SUR	59	0	1.2	-7.0	7.1

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
UAEV	99	P	SUR	42	0	1.2	3.0	3.2
UBSH5	99	P	SUR	47	0	2.0	-3.2	3.7
VRBH6	99	P	SUR	20	0	1.6	8.0	8.1
VRCI9	99	P	SUR	17	0	2.7	4.0	4.8
VRCY7	99	P	SUR	15	0	0.8	-3.5	3.6
VRDJ3	99	P	SUR	129	0	2.1	-3.3	3.9
VRFN3	99	P	SUR	21	0	2.9	7.6	8.2
VRFU9	99	P	SUR	39	0	0.5	-4.5	4.6
VRFX2	99	P	SUR	19	0	0.9	-4.2	4.3
VRGO2	99	P	SUR	16	0	2.7	4.0	4.9
VRMX8	99	P	SUR	32	0	2.6	4.1	4.9
VRPF9	99	P	SUR	21	0	2.8	-5.4	6.1
VRQE9	99	P	SUR	24	0	0.9	-3.0	3.2
VRRB6	99	P	SUR	154	0	2.5	3.2	4.1
VRVQ9	99	P	SUR	47	0	1.9	-3.9	4.4
VRYP3	99	P	SUR	41	0	1.2	4.1	4.2
VTWS	99	P	SUR	119	44	6.9	1.0	6.9
VXKF	99	P	SUR	120	30	3.2	-1.3	3.5
WDG2803	99	P	SUR	19	0	1.6	-4.0	4.3
WDJ3199	99	P	SUR	49	0	1.0	-3.9	4.0
WHRN	99	P	SUR	25	0	2.6	3.9	4.7
WLPI	99	P	SUR	20	0	0.5	-3.9	4.0
WPKW	99	P	SUR	108	3	4.4	-4.2	6.1
WSRL	99	P	SUR	57	0	2.1	-4.4	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 : JAN 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
44069	99	SPEED	SUR	38	0	0	2.1	-5.2	5.6
46181	99	SPEED	SUR	91	0	0	3.3	4.2	5.4

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : JAN 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	135	0	0	17.5	-74.8	76.8
46118	99	DIRN	SUR	48	0	0	62.1	-54.1	82.3

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : JAN 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
1701507	99	P	SUR	-28	106	351	0	2.9	4.6	5.5
1701565	99	P	SUR	-57	7	407	0	0.7	11.5	11.5
1701566	99	P	SUR	-40	0	706	2	2.6	4.0	4.8
2201571	99	P	SUR	14	109	37	25	7.4	5.0	8.9
2501540	99	P	SUR	73	173	746	331	5.2	-9.7	11.0
2501662	99	P	SUR	71	-171	744	224	4.2	3.5	5.5
2501663	99	P	SUR	79	44	558	383	5.4	8.8	10.3
2501667	99	P	SUR	77	113	744	416	9.0	1.3	9.1
2501668	99	P	SUR	77	146	742	607	6.0	-8.2	10.1
2501669	99	P	SUR	79	145	274	274	0.0	0.0	0.0
2601627	99	P	SUR	77	61	185	121	4.8	9.5	10.7
3101538	99	P	SUR	-48	10	702	0	1.9	4.3	4.7
4701658	99	P	SUR	72	-95	744	744	0.0	0.0	0.0
4701660	99	P	SUR	70	-102	744	744	0.0	0.0	0.0
4800770	99	P	SUR	59	-22	729	729	0.0	0.0	0.0
4801652	99	P	SUR	84	-152	697	397	8.9	-5.7	10.5
4801654	99	P	SUR	72	170	696	696	0.0	0.0	0.0
4801667	99	P	SUR	77	-174	714	683	3.8	-6.0	7.2
4801668	99	P	SUR	75	-173	659	643	1.7	-11.7	11.8
4801715	99	P	SUR	62	-173	121	53	7.4	-0.0	7.4
4801718	99	P	SUR	60	-172	734	184	2.3	0.3	2.4
4802514	99	P	SUR	75	-170	744	389	9.3	2.1	9.5
6100280	99	P	SUR	41	1	678	215	0.3	0.6	0.7
62093	99	P	SUR	55	-10	32	25	1.7	-0.5	1.8
6301503	99	P	SUR	82	18	107	61	7.8	-6.4	10.0
7401507	99	P	SUR	-44	-35	400	42	2.7	4.7	5.5

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : JAN 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
44069	99	SPEED	SUR	41	-73	198	0	0	2.1	-5.2	5.6

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : JAN 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
0062087	99	DIRN	SUR	55	7	287	0	0	8.7	-57.8	58.5
1400047	99	DIRN	SUR	-4	57	139	0	0	158.5	-0.5	158.5
1500001	99	DIRN	SUR	-10	-10	668	0	0	84.2	-30.5	89.5
23091	99	DIRN	SUR	18	89	63	0	0	20.8	-27.6	34.6
23094	99	DIRN	SUR	14	84	228	0	0	9.4	-32.0	33.4
23170	99	DIRN	SUR	15	74	63	0	0	37.6	21.3	43.2
23451	99	DIRN	SUR	15	69	110	0	0	10.7	-27.0	29.0
23452	99	DIRN	SUR	12	69	127	0	0	23.8	-53.3	58.3
23454	99	DIRN	SUR	10	73	90	0	0	63.2	29.5	69.7
23456	99	DIRN	SUR	18	67	106	0	0	145.5	-87.3	169.7
23460	99	DIRN	SUR	7	88	139	0	0	12.9	21.4	25.0
23491	99	DIRN	SUR	12	93	20	0	0	21.9	-22.8	31.6
23492	99	DIRN	SUR	11	72	73	0	0	33.8	-24.3	41.7
23497	99	DIRN	SUR	11	72	94	0	0	42.1	-40.9	58.7
3100003	99	DIRN	SUR	-8	-31	235	0	0	12.4	25.3	28.1
4400029	99	DIRN	SUR	43	-71	642	0	0	14.8	-21.9	26.4
4400072	99	DIRN	SUR	37	-76	3296	0	0	21.0	-74.3	77.2
44029	99	DIRN	SUR	43	-71	775	0	0	14.5	-21.8	26.2
44072	99	DIRN	SUR	37	-76	743	0	0	23.6	-75.5	79.1
44139	99	DIRN	SUR	44	-57	646	0	0	19.1	-21.9	29.1
4600118	99	DIRN	SUR	49	-123	200	2	0	49.8	-59.6	77.7
4600120	99	DIRN	SUR	48	-122	960	0	0	23.1	-22.2	32.0
46118	99	DIRN	SUR	49	-123	302	3	0	54.3	-55.2	77.5
46120	99	DIRN	SUR	48	-122	279	0	0	20.3	-25.0	32.2
5300040	99	DIRN	SUR	-8	95	164	0	0	148.9	57.3	159.5
5300056	99	DIRN	SUR	-5	95	249	0	0	156.2	-3.7	156.2
53040	99	DIRN	SUR	-8	95	67	0	0	114.4	98.8	151.1
53056	99	DIRN	SUR	-5	95	94	0	0	150.5	-15.8	151.3
6202670	99	DIRN	SUR	57	-14	208	63	0	121.9	-25.0	124.4

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 AREA : GLOBAL
 PERIOD : JAN 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	17	0	4.0	81.2	81.3
01400	00	Z	1000	57	3	17	0	4.0	81.4	81.5
04417	00	Z	1000	73	-38	11	5	38.0	-31.9	49.6
26075	12	Z	30	60	31	28	1	117.3	242.2	269.1
33791	12	Z	200	48	33	29	0	59.4	-57.8	82.9
42634	00	Z	1000	23	70	30	0	4.4	48.0	48.2
47138	00	Z	30	36	129	24	0	91.2	283.4	297.7
65578	12	Z	850	5	-4	31	0	4.0	-79.9	80.0
98233	12	Z	1000	18	122	29	1	28.1	12.9	30.9
JNKN7J	00	Z	1000	45	-60	11	0	3.9	37.2	37.4

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 AREA : GLOBAL
 PERIOD : JAN 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
42079	00	V	100	32	77	11	0	9.8	0.5	16.7
64910	12	V	925	4	10	8	3	-13.4	-3.3	23.5

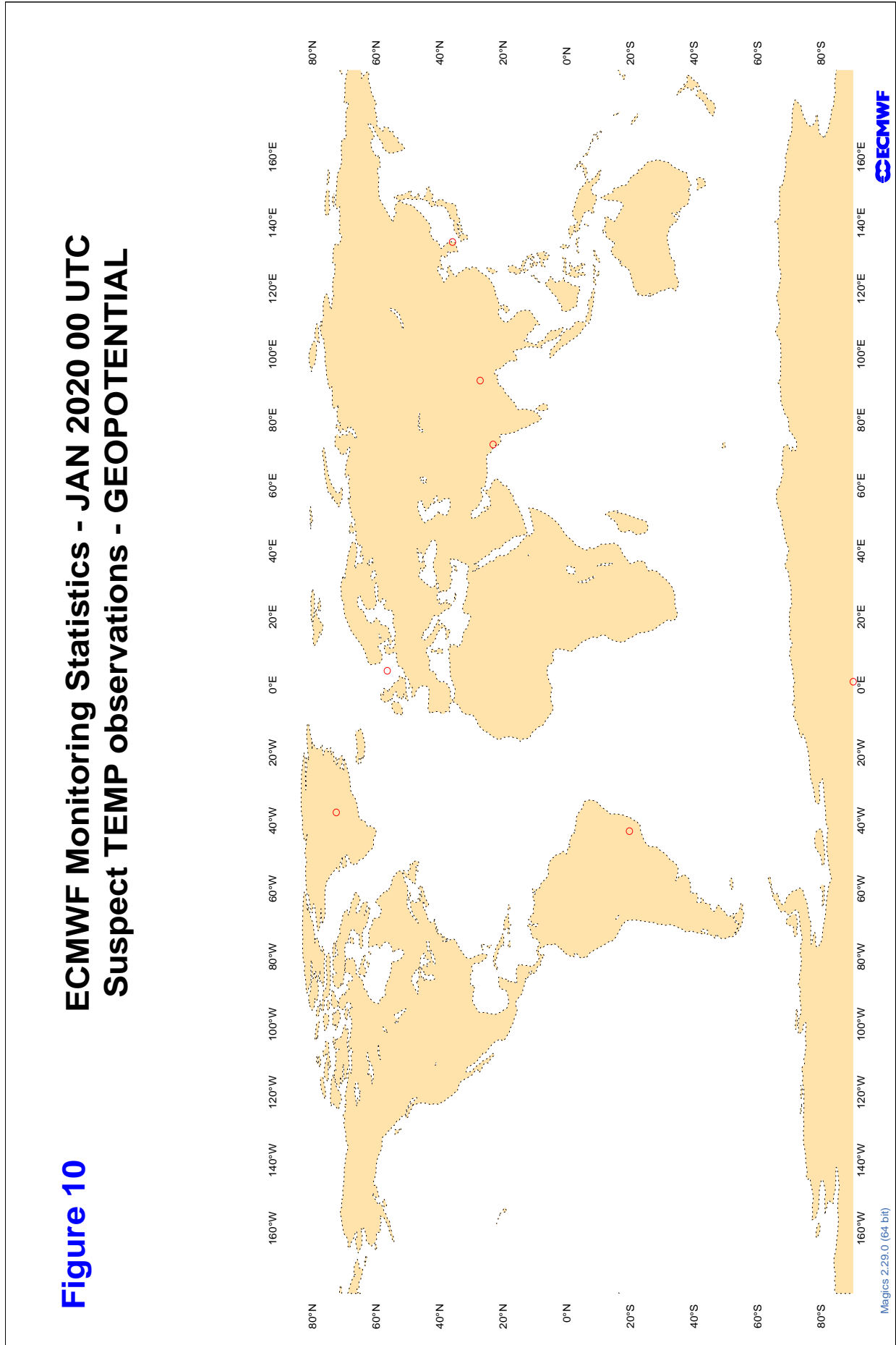
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

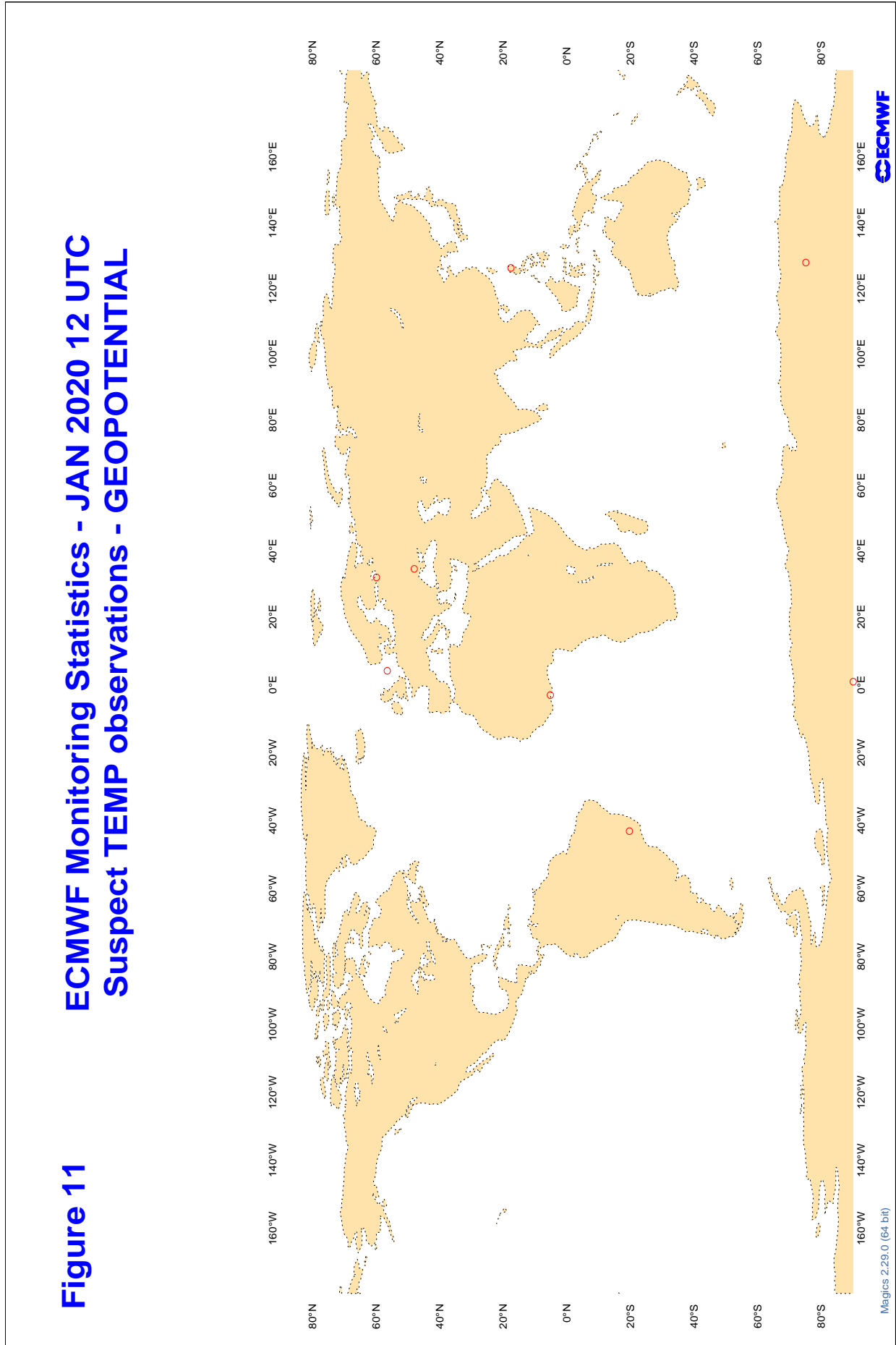
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48	33	29	10.1	6.4	14.4

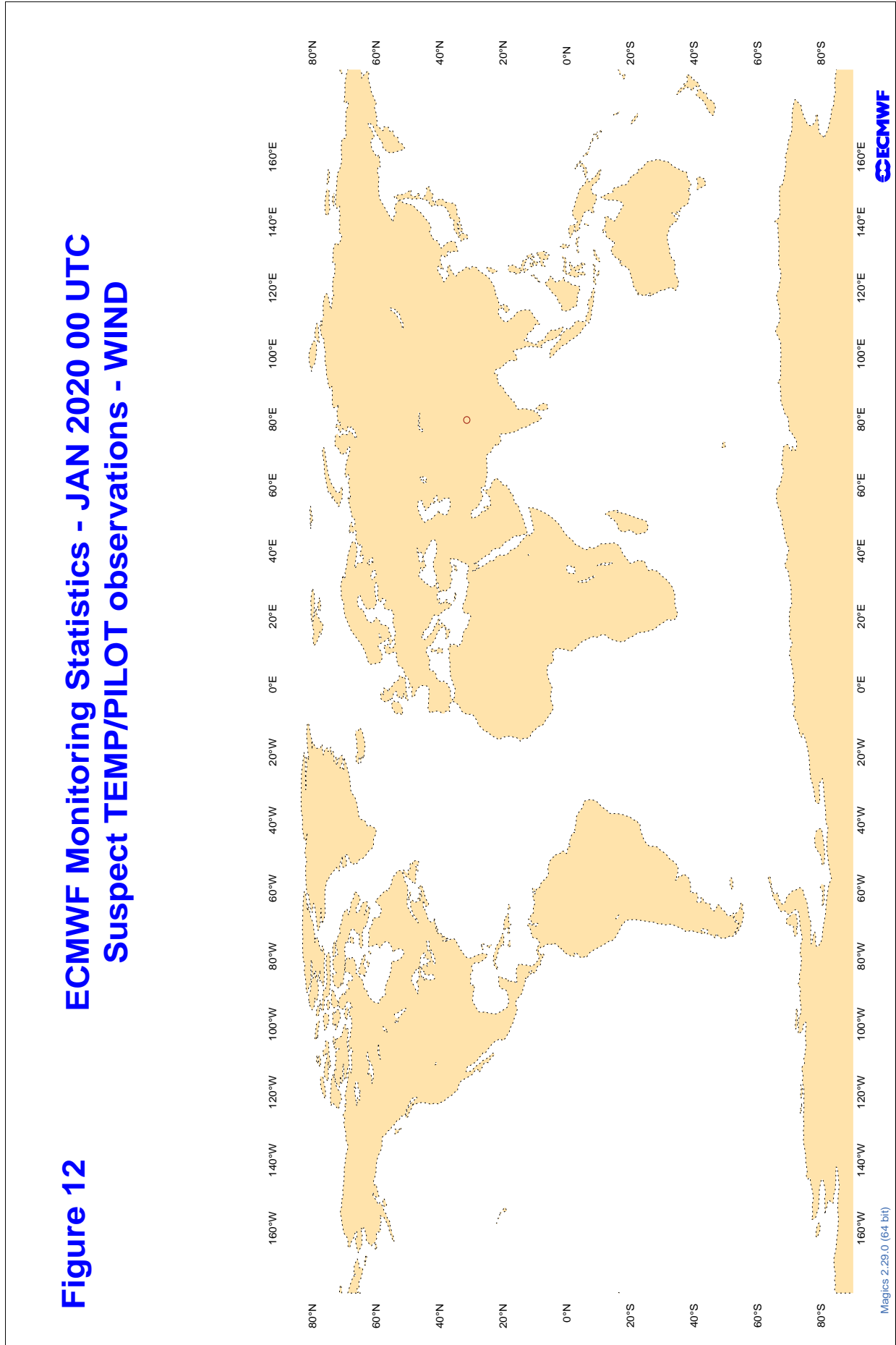
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



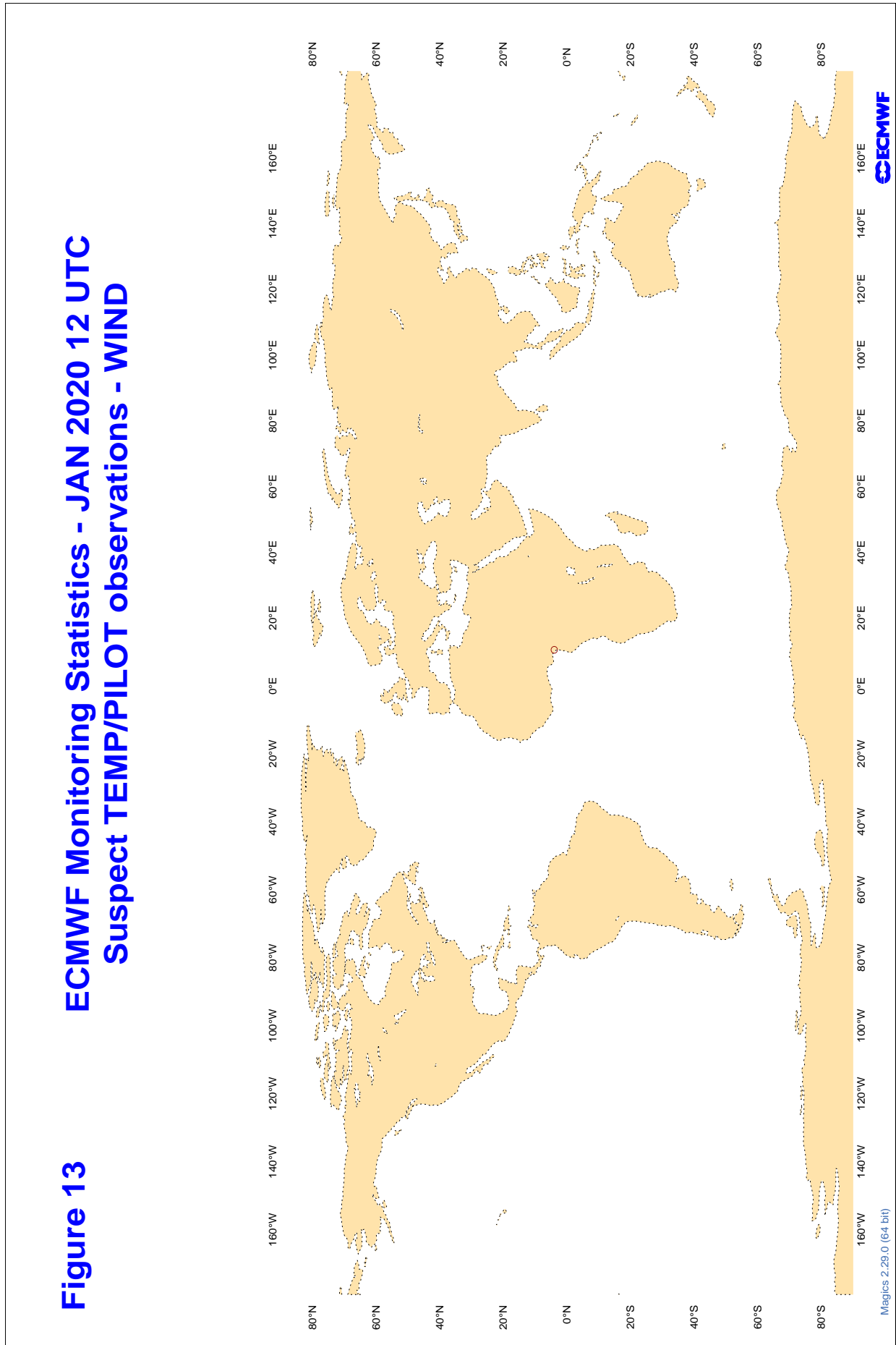
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : JAN 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	6	16.5	14.3
5QPW8X	00	Z	100	6	16.2	15.6
7JUNA4	12	Z	100	1	15.3	-15.3
7JUNA4	00	Z	100	1	14.5	14.5
BPMWB2	12	Z	100	2	26.8	19.8
BPMWB2	00	Z	100	2	6.6	4.9
DBLK	12	Z	100	30	3.6	1.1
DBLK	00	Z	100	31	3.3	-0.2
FPUW5G	00	Z	100	1	18.4	18.4
HTXUH4	00	Z	100	21	11.3	3.4
JNKN7J	12	Z	100	8	55.0	53.3
JNKN7J	00	Z	100	9	26.5	25.8
KJJF9X	12	Z	100	7	11.0	8.7
KJJF9X	00	Z	100	7	22.9	21.3
KMPLHP	12	Z	100	7	74.1	74.1
KMPLHP	00	Z	100	6	184.2	158.9
LRYQE3	12	Z	100	2	14.6	8.8
LRYQE3	00	Z	100	2	10.4	-0.5
USBOD	12	Z	100	2	0.0	0.0
USBOD	00	Z	100	0	0.0	0.0
VKB4L5	12	Z	100	3	38.9	38.1
VKB4L5	00	Z	100	2	44.1	43.3
WSD	00	Z	100	11	4.1	-4.1
XKQLWQ	12	Z	100	7	41.9	40.8
XQFJRG	12	Z	100	6	30.6	24.2
XQFJRG	00	Z	100	2	6.0	6.0
YLV96W	12	Z	100	5	46.1	38.6
YLV96W	00	Z	100	5	76.2	-14.3
ZVQEQC	12	Z	100	1	25.5	25.5
ZVQEQC	00	Z	100	7	20.3	19.8

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

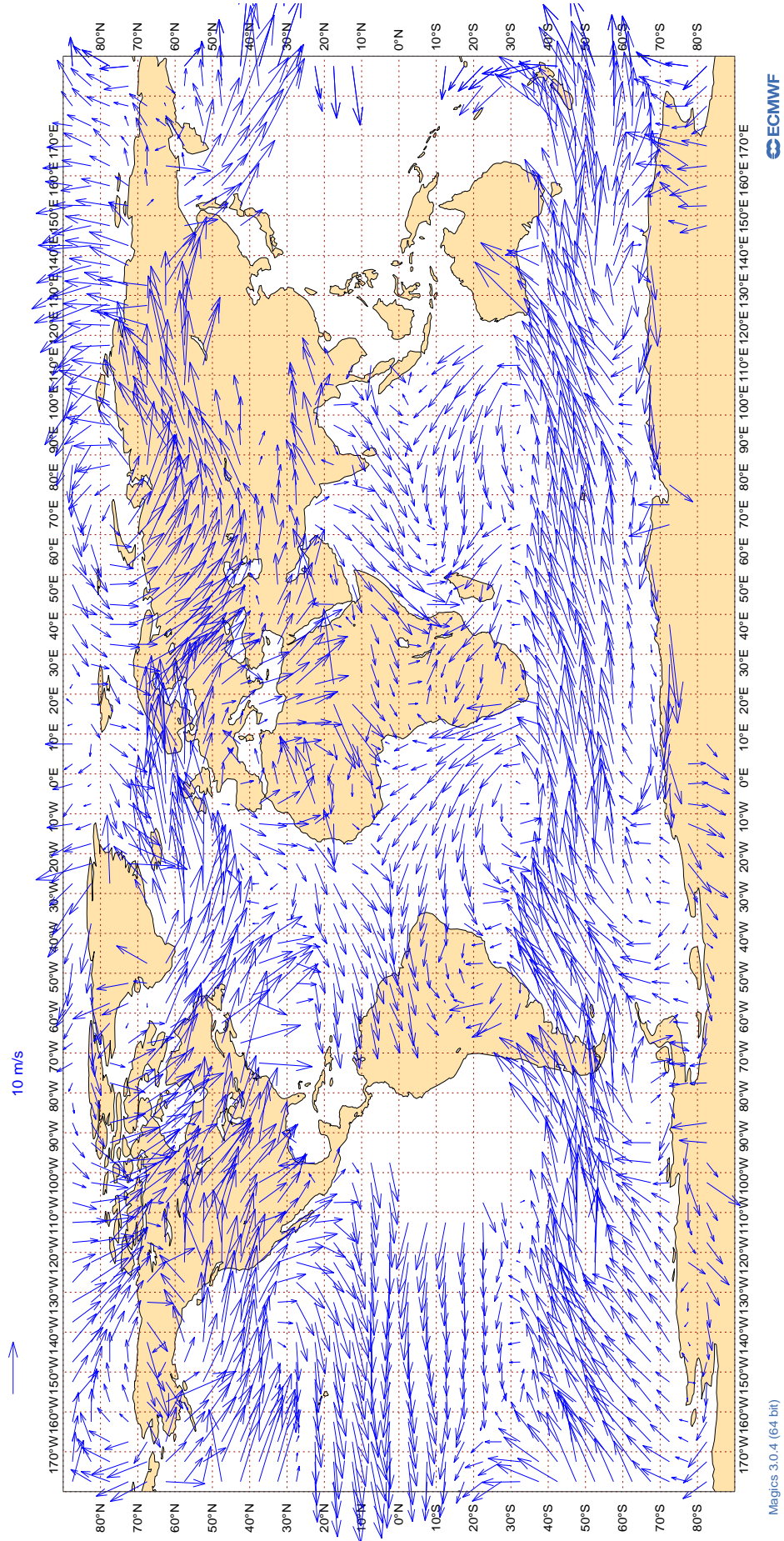
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	5	4.9	-1.7	1.0
5QPW8X	00	V	100	5	3.7	1.7	-1.4
7JUNA4	12	V	100	1	8.2	7.5	-3.4
7JUNA4	00	V	100	1	6.2	4.7	4.0
BPMWB2	12	V	100	2	3.1	-0.8	0.4
BPMWB2	00	V	100	2	3.9	-0.2	2.2
DBLK	12	V	100	30	2.1	-0.1	-0.1
DBLK	00	V	100	31	2.2	0.4	-0.4
FPUW5G	00	V	100	1	3.7	0.4	3.7
HTXUH4	00	V	100	20	2.8	-0.1	0.2
JNKN7J	12	V	100	7	4.1	-0.2	1.3
JNKN7J	00	V	100	9	3.2	0.2	1.4
KJJF9X	12	V	100	7	3.3	0.7	-1.2
KJJF9X	00	V	100	7	3.6	-0.2	-0.5
KMPLHP	12	V	100	7	4.1	-1.0	1.6
KMPLHP	00	V	100	6	5.8	-0.9	4.4
LRYQE3	12	V	100	2	3.7	-2.5	-2.6
LRYQE3	00	V	100	2	2.5	2.0	0.7
USBOD	12	V	100	1	8.2	-5.4	-6.2
USBOD	00	V	100	0	0.0	0.0	0.0
VKB4L5	12	V	100	3	2.7	0.1	0.9
VKB4L5	00	V	100	2	5.6	1.6	-4.0
WSD	00	V	100	11	1.8	-0.7	0.3
XKQLWQ	12	V	100	7	2.9	0.6	0.6
XQFJRG	12	V	100	6	3.7	1.7	-0.7
XQFJRG	00	V	100	2	4.5	-2.2	3.7
YLV96W	12	V	100	5	1.9	1.3	-1.0
YLV96W	00	V	100	5	2.1	-0.5	0.5
ZVQEQC	12	V	100	1	4.8	4.8	0.5
ZVQEQC	00	V	100	7	3.2	0.4	0.8

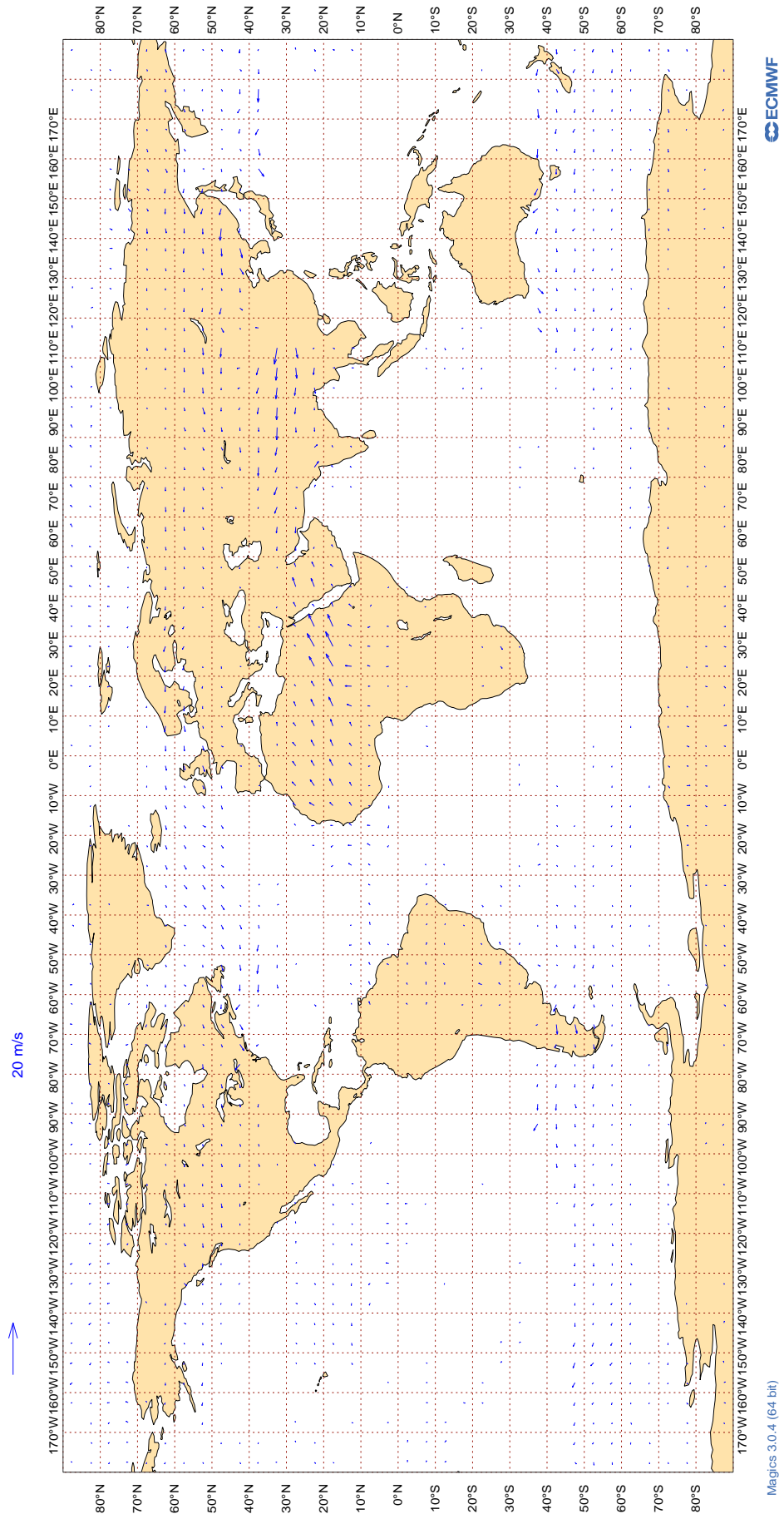
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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



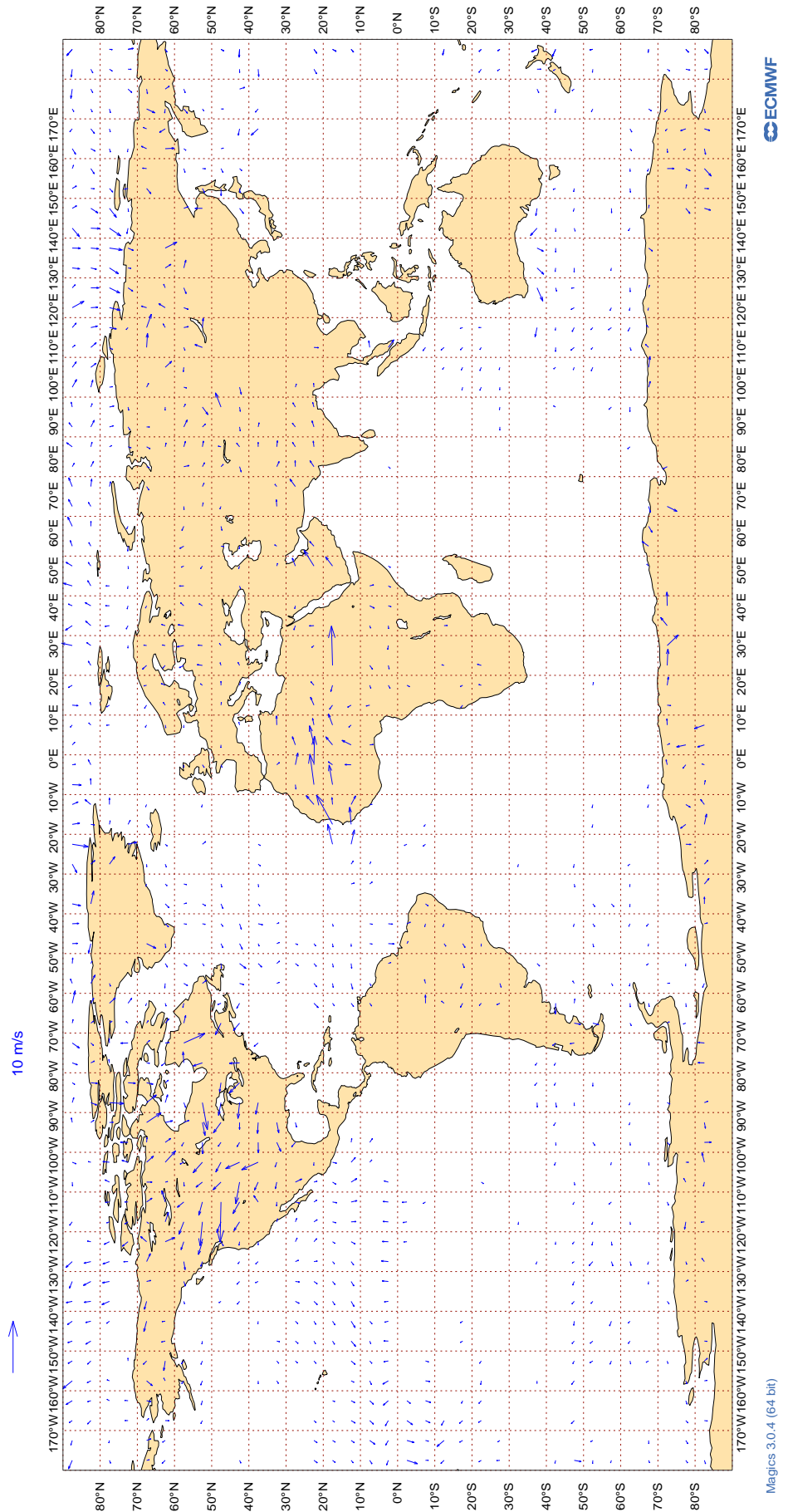
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

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



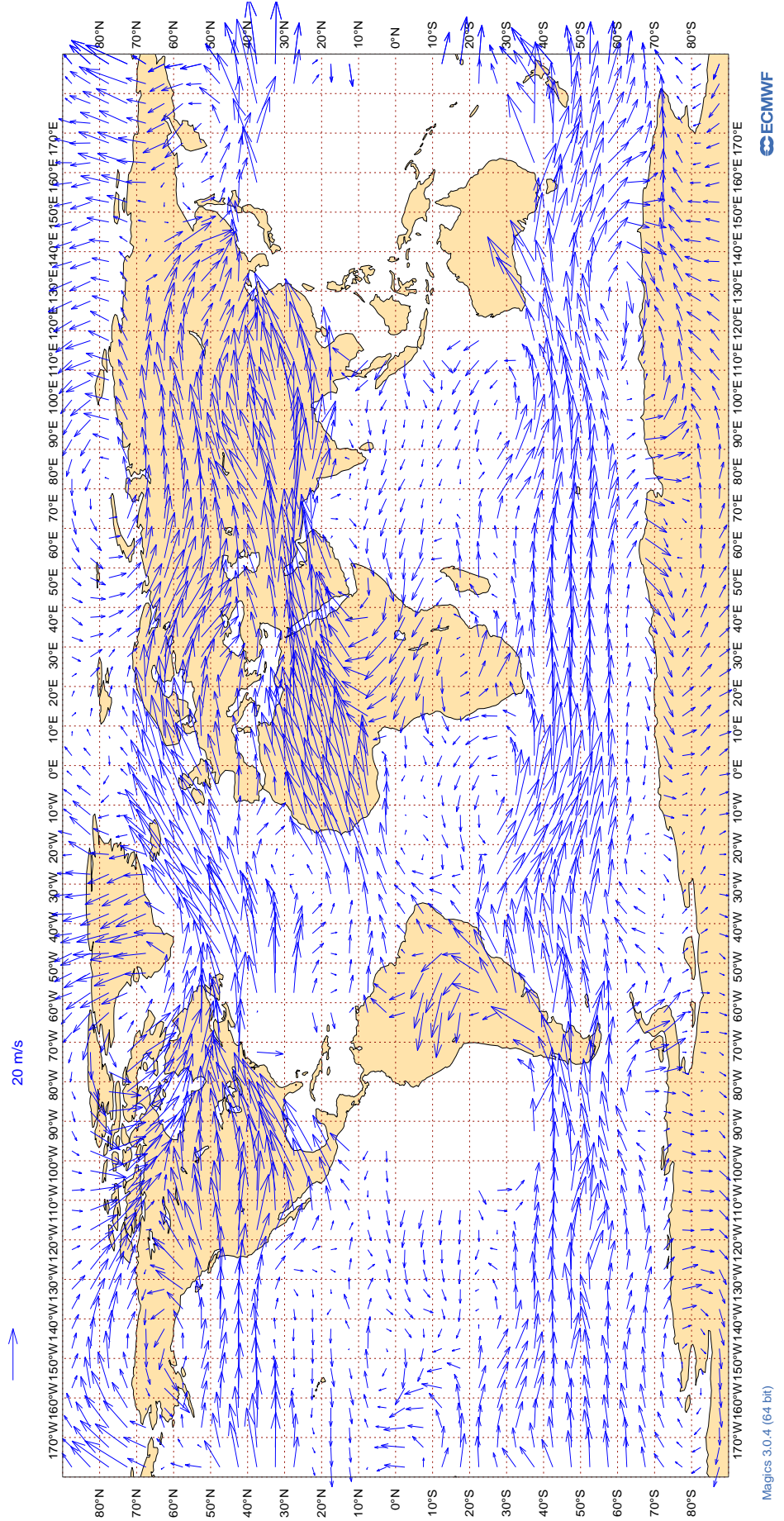
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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



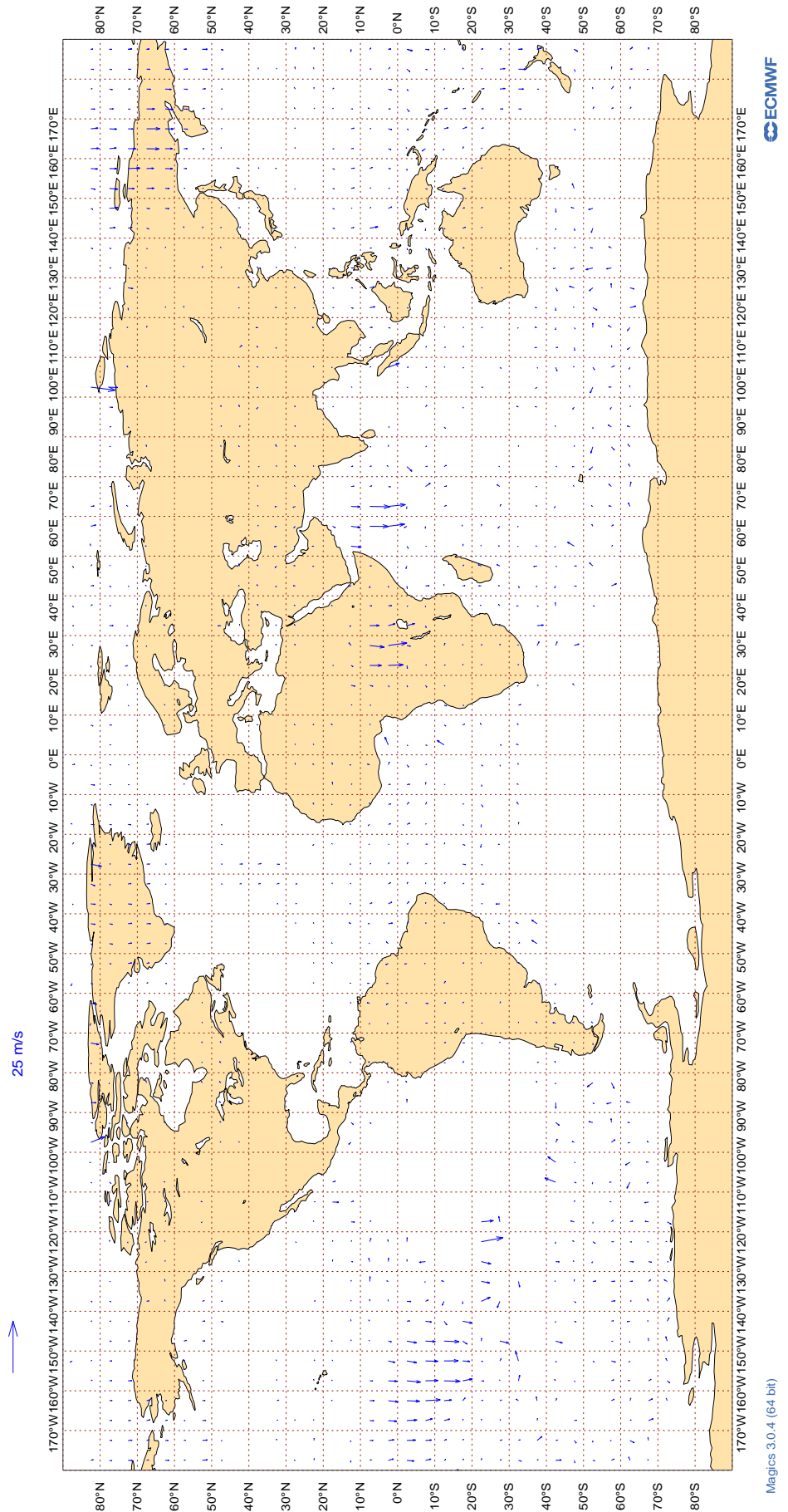
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Jan 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 : JAN 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
AAB	99	V	300-150	88	0	0	3.5	0.3
AAL	99	V	300-150	39764	6	0	6.8	0.2
AAR	99	V	300-150	183	0	2	5.0	-1.8
ABB	99	V	300-150	106	0	0	3.3	0.5
ABD	99	V	300-150	513	0	0	4.6	0.1
ABG	99	V	300-150	256	0	0	2.9	-0.0
ABP	99	V	300-150	29	0	0	3.7	1.1
ABR	99	V	300-150	20	0	0	3.9	2.6
ABW	99	V	300-150	545	0	0	4.1	-1.1
ACA	99	V	300-150	26334	9	0	7.1	0.2
ACI	99	V	300-150	3218	0	0	3.6	0.6
AEA	99	V	300-150	421	5	2	10.2	-0.3
AFL	99	V	300-150	1941	0	0	3.4	0.2
AFR	99	V	300-150	26122	1	0	4.3	0.1
AHO	99	V	300-150	99	0	0	3.6	0.6
AHY	99	V	300-150	184	31	0	10.8	0.2
AIC	99	V	300-150	1669	3	0	5.7	0.0
AIZ	99	V	300-150	53	0	0	3.0	0.7
ALK	99	V	300-150	1191	0	0	3.4	0.6
AMX	99	V	300-150	3002	23	0	10.0	-0.1
ANG	99	V	300-150	32	0	0	4.0	0.5
ANZ	99	V	300-150	34011	3	0	7.6	0.4
AOJ	99	V	300-150	29	0	0	3.0	-0.1
ASA	99	V	300-150	24	0	4	6.1	0.5
ASL	99	V	300-150	364	0	0	3.7	0.3
ASY	99	V	300-150	536	0	0	4.7	0.7
ATC	99	V	300-150	91	2	0	11.6	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ATN	99	V	300-150	141	1	0	4.7	0.5
AUA	99	V	300-150	3747	0	0	4.2	0.2
AUH	99	V	300-150	54	0	0	3.5	0.3
AUI	99	V	300-150	663	0	0	3.8	0.3
AVA	99	V	300-150	559	8	2	6.6	-0.1
AWC	99	V	300-150	118	0	0	4.9	0.9
AXM	99	V	300-150	173	0	1	4.7	0.8
AXY	99	V	300-150	21	0	0	6.2	0.6
AZA	99	V	300-150	4458	0	0	3.8	0.2
AZG	99	V	300-150	269	0	0	3.2	-0.3
BAR	99	V	300-150	38	0	0	3.5	0.0
BAW	99	V	300-150	48648	5	0	4.8	0.0
BBB	99	V	300-150	26	0	0	4.5	1.8
BBC	99	V	300-150	370	0	0	3.8	1.0
BCS	99	V	300-150	815	0	0	3.3	-0.0
BEL	99	V	300-150	1094	0	0	3.4	0.0
BFF	99	V	300-150	21	0	0	11.3	-3.5
BLU	99	V	300-150	36	0	0	4.6	0.3
BLX	99	V	300-150	580	17	0	6.3	-0.2
BMW	99	V	300-150	79	0	0	3.4	0.9
BOS	99	V	300-150	1559	0	0	3.7	0.3
BOX	99	V	300-150	2235	0	0	3.6	-0.1
BOX	99	V	300-150	54	0	0	4.1	0.9
BPA	99	V	300-150	107	0	0	5.1	0.2
CAL	99	V	300-150	407	0	0	3.3	0.5
CAZ	99	V	300-150	204	0	0	3.8	-0.2
CCA	99	V	300-150	1456	6	0	12.4	0.4
CEB	99	V	300-150	64	0	2	3.6	0.4
CEF	99	V	300-150	35	0	0	4.2	-0.6
CES	99	V	300-150	2657	4	0	8.8	0.4
CFC	99	V	300-150	290	0	0	4.2	0.2
CFG	99	V	300-150	4674	0	0	4.3	-0.1
CHH	99	V	300-150	289	1	0	6.3	0.3
CJT	99	V	300-150	131	0	0	3.2	0.3
CKS	99	V	300-150	1732	0	0	3.6	-0.3
CLF	99	V	300-150	33	0	0	2.8	0.6
CLX	99	V	300-150	2748	0	0	3.9	-0.4
CMB	99	V	300-150	500	0	0	3.9	-0.5
CNV	99	V	300-150	200	0	1	4.1	0.1
CPA	99	V	300-150	1767	0	0	3.5	0.2
CRL	99	V	300-150	1947	0	0	4.0	-0.1
CRV	99	V	300-150	43	0	0	4.6	-1.9
CSC	99	V	300-150	238	0	0	4.0	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CSN	99	V	300-150	1213	9	0	12.9	-0.0
CTM	99	V	300-150	38	0	0	3.7	0.9
CUB	99	V	300-150	21	0	0	4.4	0.1
CXA	99	V	300-150	23	4	0	11.6	-0.2
CXB	99	V	300-150	95	0	0	3.8	0.4
DAH	99	V	300-150	478	0	0	3.6	-0.1
DAL	99	V	300-150	47556	0	0	3.7	0.1
DGX	99	V	300-150	37	0	0	4.1	-0.2
DHK	99	V	300-150	604	0	0	5.1	0.1
DJT	99	V	300-150	1809	0	0	3.8	0.2
DLH	99	V	300-150	26839	0	0	3.7	-0.0
DSO	99	V	300-150	37	0	0	4.1	0.2
EDC	99	V	300-150	203	0	0	4.1	-0.0
EDG	99	V	300-150	50	0	0	3.6	0.4
EDW	99	V	300-150	1294	0	0	3.8	0.4
EIN	99	V	300-150	12950	0	0	3.8	0.1
EJM	99	V	300-150	669	0	0	3.8	0.1
ELY	99	V	300-150	4461	19	0	8.4	0.0
EMM	99	V	300-150	28	0	0	3.7	1.2
ETD	99	V	300-150	5809	4	0	6.1	0.2
ETH	99	V	300-150	3849	3	0	6.7	0.3
EVE	99	V	300-150	54	0	2	4.0	1.5
EWG	99	V	300-150	3208	0	0	3.7	0.2
EXS	99	V	300-150	100	0	2	4.1	0.2
FAF	99	V	300-150	41	0	0	3.3	0.6
FBU	99	V	300-150	543	0	0	4.5	0.6
FDX	99	V	300-150	6483	0	0	3.7	0.1
FIN	99	V	300-150	1285	0	0	3.3	0.2
FJI	99	V	300-150	9443	0	0	4.5	0.8
FRH	99	V	300-150	232	0	0	4.3	0.2
FWI	99	V	300-150	2485	0	1	3.9	0.0
FWK	99	V	300-150	36	0	0	4.2	-0.5
FYG	99	V	300-150	54	0	0	4.2	0.6
FYL	99	V	300-150	37	0	0	5.5	0.9
GAF	99	V	300-150	119	0	0	3.6	-0.0
GAJ	99	V	300-150	53	0	0	5.0	0.7
GCK	99	V	300-150	25	0	4	2.9	0.8
GEC	99	V	300-150	1382	0	0	3.4	-0.0
GES	99	V	300-150	27	4	0	3.6	0.0
GFA	99	V	300-150	290	0	0	3.2	0.6
GIA	99	V	300-150	614	0	0	3.2	0.5
GLO	99	V	300-150	21	24	0	12.7	-0.2
GMA	99	V	300-150	51	0	0	3.3	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
GOL	99	V	300-150	29	0	0	3.5	1.1
GTH	99	V	300-150	62	0	0	3.2	0.4
GTI	99	V	300-150	2912	0	0	4.1	-0.3
HAL	99	V	300-150	4202	0	0	5.0	1.2
HRT	99	V	300-150	97	0	1	3.4	-0.1
HUA	99	V	300-150	32	0	0	3.4	0.1
HZS	99	V	300-150	43	0	0	3.2	0.6
IBE	99	V	300-150	3036	0	1	3.7	0.1
ICL	99	V	300-150	295	0	0	3.8	0.2
ICV	99	V	300-150	117	1	0	3.5	-0.7
IFA	99	V	300-150	141	0	0	3.4	-0.4
IJM	99	V	300-150	57	0	0	5.6	-0.7
ISS	99	V	300-150	1841	0	0	3.6	0.1
JAF	99	V	300-150	975	16	0	6.9	-0.1
JAS	99	V	300-150	114	0	1	3.5	-0.1
JCL	99	V	300-150	30	0	0	3.3	0.0
JCO	99	V	300-150	89	0	0	3.5	0.2
JET	99	V	300-150	112	0	0	3.5	-0.5
JJA	99	V	300-150	88	0	2	3.4	0.7
JME	99	V	300-150	81	0	0	4.7	-0.6
JML	99	V	300-150	76	0	0	3.7	-1.3
JSI	99	V	300-150	26	0	0	3.1	-0.1
JST	99	V	300-150	1778	2	0	10.2	0.6
KAC	99	V	300-150	1327	0	0	3.5	0.4
KAI	99	V	300-150	92	1	0	5.1	0.7
KAL	99	V	300-150	2197	0	0	3.7	0.4
KAY	99	V	300-150	146	0	0	3.9	-0.5
KCE	99	V	300-150	31	0	0	2.7	-0.6
KIW	99	V	300-150	163	0	0	4.1	1.6
KLM	99	V	300-150	17729	7	0	5.7	-0.0
KQA	99	V	300-150	277	14	1	12.7	0.8
KTK	99	V	300-150	628	0	0	3.2	0.1
LAN	99	V	300-150	2186	12	0	10.2	0.2
LCO	99	V	300-150	23	0	0	5.7	-2.3
LGT	99	V	300-150	38	0	0	4.0	0.1
LHO	99	V	300-150	23	0	0	5.4	-1.4
LNI	99	V	300-150	380	0	0	3.5	0.5
LNK	99	V	300-150	94	0	0	3.6	-1.0
LOT	99	V	300-150	4316	13	0	6.5	0.0
LUC	99	V	300-150	40	0	0	4.2	0.7
LWG	99	V	300-150	40	0	0	3.3	-0.3
LXG	99	V	300-150	93	0	0	3.5	0.1
LXJ	99	V	300-150	314	0	1	3.6	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MAS	99	V	300-150	759	0	0	3.6	0.7
MAU	99	V	300-150	292	0	0	4.4	0.8
MED	99	V	300-150	73	0	0	4.3	-0.3
MHV	99	V	300-150	79	0	0	3.5	0.3
MLM	99	V	300-150	38	0	3	4.1	-0.4
MMD	99	V	300-150	253	0	0	3.5	0.4
MPH	99	V	300-150	564	0	0	4.2	-0.7
MSR	99	V	300-150	1760	18	0	6.5	-0.1
NAX	99	V	300-150	6279	22	0	8.1	-0.0
NCA	99	V	300-150	33	0	3	5.6	-0.1
NJE	99	V	300-150	343	0	0	4.0	0.3
NOS	99	V	300-150	624	12	0	8.4	0.0
NRS	99	V	300-150	6300	23	0	8.1	-0.1
NWS	99	V	300-150	930	0	0	3.4	0.2
OAE	99	V	300-150	993	0	0	4.0	0.0
OLI	99	V	300-150	32	0	0	3.5	0.8
OMA	99	V	300-150	566	1	0	3.9	0.2
PAC	99	V	300-150	140	0	0	4.9	-0.2
PAL	99	V	300-150	604	0	0	3.5	0.0
PEG	99	V	300-150	37	0	0	6.4	-0.9
PIA	99	V	300-150	227	0	0	3.3	0.2
PLM	99	V	300-150	38	0	0	3.8	-0.0
QAF	99	V	300-150	32	0	0	3.5	0.9
QFA	99	V	300-150	24957	1	0	7.3	0.4
QQE	99	V	300-150	42	0	0	3.1	1.0
QTR	99	V	300-150	16434	0	0	4.1	0.2
RAM	99	V	300-150	598	20	1	8.1	0.5
RBA	99	V	300-150	82	0	0	7.9	0.5
RCH	99	V	300-150	5451	0	0	4.8	0.1
RDN	99	V	300-150	79	0	0	3.3	-0.1
RJA	99	V	300-150	1323	23	0	9.0	-0.3
RJR	99	V	300-150	42	0	0	4.5	-0.4
RKK	99	V	300-150	37	0	0	5.3	-0.0
ROU	99	V	300-150	352	0	0	4.1	0.3
RRR	99	V	300-150	344	0	0	4.3	0.5
RSY	99	V	300-150	63	0	0	2.6	0.1
RWD	99	V	300-150	32	0	0	3.5	0.4
RZO	99	V	300-150	203	0	6	4.1	0.3
SAM	99	V	300-150	466	0	0	3.9	0.2
SAS	99	V	300-150	4217	0	0	3.2	0.0
SAZ	99	V	300-150	78	0	0	2.9	0.3
SCX	99	V	300-150	143	0	1	5.4	0.3
SEY	99	V	300-150	55	0	0	4.5	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SHE	99	V	300-150	20	0	0	4.0	2.7
SIA	99	V	300-150	3999	0	0	3.7	-0.0
SIO	99	V	300-150	88	0	0	4.9	-0.9
SLM	99	V	300-150	120	0	0	4.2	1.3
SOO	99	V	300-150	409	0	0	3.6	-0.3
SPA	99	V	300-150	71	0	0	4.2	-0.4
SVA	99	V	300-150	4934	1	0	5.0	0.5
SVW	99	V	300-150	225	0	0	4.0	-0.1
SWA	99	V	300-150	52	4	2	4.1	0.9
SWR	99	V	300-150	10655	0	0	3.9	0.1
SYB	99	V	300-150	61	0	0	3.4	-0.7
TAM	99	V	300-150	61	2	5	4.7	0.9
TAP	99	V	300-150	1632	0	2	3.8	0.1
TAR	99	V	300-150	303	0	0	3.2	-0.0
TAY	99	V	300-150	137	0	0	3.8	0.1
TCV	99	V	300-150	116	3	3	7.9	-0.4
TEU	99	V	300-150	29	0	0	4.0	1.1
TFL	99	V	300-150	1641	19	0	7.2	0.0
TGW	99	V	300-150	76	8	0	3.0	0.3
THA	99	V	300-150	353	12	0	13.2	0.5
THT	99	V	300-150	2864	11	0	12.5	0.4
THY	99	V	300-150	9614	5	0	5.1	0.1
TMN	99	V	300-150	215	0	0	4.0	0.0
TOM	99	V	300-150	4032	17	0	8.6	-0.1
TOW	99	V	300-150	79	0	0	3.4	0.4
TPA	99	V	300-150	85	0	0	3.6	-0.3
TSC	99	V	300-150	4223	0	0	3.7	-0.0
TWB	99	V	300-150	46	0	0	3.3	0.2
TWY	99	V	300-150	538	0	0	3.9	0.3
UAE	99	V	300-150	17584	0	0	3.7	0.2
UAL	99	V	300-150	70210	4	2	7.0	0.2
ULC	99	V	300-150	76	0	0	4.0	-0.2
UPS	99	V	300-150	3894	0	0	4.0	0.1
UZB	99	V	300-150	107	7	0	11.8	-0.1
VAJ	99	V	300-150	29	0	0	3.8	0.5
VBA	99	V	300-150	48	0	0	3.6	1.1
VCG	99	V	300-150	83	0	0	2.9	0.4
VIR	99	V	300-150	20275	5	0	4.9	0.0
VJT	99	V	300-150	895	0	0	3.6	0.2
VKG	99	V	300-150	402	0	0	3.6	0.2
VMP	99	V	300-150	30	0	0	7.0	2.6
VOZ	99	V	300-150	7053	0	0	4.3	0.5
VTI	99	V	300-150	21	0	0	3.5	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
VXS	99	V	300-150	20	0	0	6.1	-1.0
WGN	99	V	300-150	113	0	0	3.7	0.0
WGT	99	V	300-150	46	0	0	4.7	0.2
WJA	99	V	300-150	3401	8	0	7.2	0.3
WWI	99	V	300-150	45	0	0	5.2	-0.3
XAX	99	V	300-150	94	0	0	3.4	0.2
XRO	99	V	300-150	34	0	0	3.5	-0.3

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 : JAN 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	24	17.0	13.7
01001	12	Z	50	23	62.1	20.5
01028	00	Z	50	57	12.2	9.9
01028	12	Z	50	55	11.8	9.9
01400	00	Z	50	15	91.8	91.0
01400	12	Z	50	15	91.0	90.5
01415	12	Z	50	30	28.6	11.6
01415	00	Z	50	29	21.1	15.7
02365	12	Z	50	26	16.6	9.4
02365	00	Z	50	18	18.7	14.4
02591	00	Z	50	25	23.7	21.5
02591	12	Z	50	25	20.2	16.4
02836	00	Z	50	22	13.8	7.3
02836	12	Z	50	23	14.1	7.4
02963	00	Z	50	27	18.6	12.9
02963	12	Z	50	31	28.7	12.9
03005	12	Z	50	30	15.1	10.5
03005	00	Z	50	30	16.2	11.1
03238	00	Z	50	29	17.2	11.8
03808	00	Z	50	30	19.6	15.3
03808	12	Z	50	31	18.9	13.9
03918	00	Z	50	25	22.0	18.5
03918	12	Z	50	3	19.2	14.4
03953	12	Z	50	31	40.1	37.6
03953	00	Z	50	26	30.1	25.4
04018	00	Z	50	19	21.7	18.3
04018	12	Z	50	18	16.2	12.5
04220	12	Z	50	30	15.5	6.5
04220	00	Z	50	29	11.4	9.3
04270	12	Z	50	28	27.6	7.6
04270	00	Z	50	31	29.8	13.5
04320	00	Z	50	23	11.2	9.9
04320	12	Z	50	20	10.3	7.4
04339	12	Z	50	27	12.5	7.5
04339	00	Z	50	26	17.4	10.4
04360	00	Z	50	23	11.2	5.7
04360	12	Z	50	22	11.8	1.4
06011	00	Z	50	21	16.3	4.0
06011	12	Z	50	25	20.6	16.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	50	30	12.8	9.7
06260	12	Z	50	6	25.6	21.6
06610	00	Z	50	26	17.9	15.6
06610	12	Z	50	32	26.0	18.8
07110	00	Z	50	29	14.9	8.6
07110	12	Z	50	30	25.9	21.2
07510	00	Z	50	36	30.2	28.4
07510	12	Z	50	30	29.9	28.4
07645	00	Z	50	30	25.2	22.6
07645	12	Z	50	28	27.5	24.9
07761	00	Z	50	30	29.8	28.3
07761	12	Z	50	30	36.9	33.8
08001	12	Z	50	27	19.1	17.8
08001	00	Z	50	28	22.1	20.8
08221	12	Z	50	30	28.7	27.8
08221	00	Z	50	31	23.9	22.9
08302	12	Z	50	31	12.7	11.3
08302	00	Z	50	30	15.4	12.5
08508	12	Z	50	26	16.3	15.0
08522	12	Z	50	31	21.8	21.2
08579	12	Z	50	1	23.8	23.8
10035	12	Z	50	32	25.7	24.5
10035	00	Z	50	28	26.3	24.8
10393	12	Z	50	31	16.9	14.8
10393	00	Z	50	30	16.0	13.9
10410	00	Z	50	29	15.9	14.2
10410	12	Z	50	30	14.5	11.9
10739	12	Z	50	30	19.7	18.7
10739	00	Z	50	29	19.0	17.1
11035	00	Z	50	30	28.0	23.7
11035	12	Z	50	32	34.0	29.3
12982	00	Z	50	28	71.9	28.9
12982	12	Z	50	27	40.5	34.5
16080	12	Z	50	31	13.3	9.2
16080	00	Z	50	31	17.8	13.7
16245	00	Z	50	29	19.0	18.3
16245	12	Z	50	30	14.4	12.4
16320	12	Z	50	31	23.1	22.2
16320	00	Z	50	31	24.3	23.4
16429	00	Z	50	31	20.2	19.6
16429	12	Z	50	30	19.5	18.4
16622	00	Z	50	24	20.7	18.4
16754	00	Z	50	26	22.1	15.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	31	24.4	22.5
26435	12	Z	50	15	11.6	8.1
5QPW8X	12	Z	50	5	23.1	21.5
5QPW8X	00	Z	50	5	30.7	24.6
60018	00	Z	50	30	23.7	23.0
60018	12	Z	50	30	23.3	22.6
7JUNA4	12	Z	50	1	12.1	12.1
7JUNA4	00	Z	50	1	19.1	19.1
BPMWB2	12	Z	50	2	40.0	30.2
BPMWB2	00	Z	50	1	26.1	26.1
FPUW5G	00	Z	50	0	0.0	0.0
JNKN7J	12	Z	50	5	115.1	104.8
JNKN7J	00	Z	50	6	32.8	31.7
KJJF9X	12	Z	50	6	21.9	19.5
KJJF9X	00	Z	50	6	38.4	36.4
KMPLHP	12	Z	50	5	156.5	156.5
KMPLHP	00	Z	50	1	34.1	34.1
LRYQE3	12	Z	50	2	39.3	34.8
LRYQE3	00	Z	50	2	14.0	8.4
VKB4L5	12	Z	50	3	43.5	43.3
VKB4L5	00	Z	50	1	66.1	66.1
XKQLWQ	12	Z	50	6	57.6	57.1
XQFJRG	12	Z	50	6	67.6	62.5
XQFJRG	00	Z	50	2	27.9	27.9
YLV96W	12	Z	50	5	91.0	73.7
YLV96W	00	Z	50	4	77.5	-14.6
ZVQEQC	12	Z	50	1	37.5	37.5
ZVQEQC	00	Z	50	7	31.6	30.8

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JAN 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	21	2.9	1.1	-0.3
01001	12	V	50	22	3.3	0.8	0.0
01028	00	V	50	26	3.3	-0.2	-0.9
01028	12	V	50	26	4.1	0.3	0.3
01400	00	V	50	12	4.3	-0.9	-0.1
01400	12	V	50	15	3.8	0.0	-0.1
01415	12	V	50	30	3.3	0.5	0.1
01415	00	V	50	22	5.1	-0.5	-1.0
02365	12	V	50	24	4.0	1.2	-0.4
02365	00	V	50	14	4.3	0.9	-0.1
02591	00	V	50	16	3.0	-0.5	0.3
02591	12	V	50	23	4.1	0.7	-0.5
02836	00	V	50	17	4.7	-0.7	-0.5
02836	12	V	50	21	3.8	0.2	-0.7
02963	00	V	50	20	4.4	-0.5	-0.4
02963	12	V	50	30	4.7	0.8	-0.8
03005	12	V	50	29	3.0	0.0	0.0
03005	00	V	50	24	4.3	0.8	-0.5
03238	00	V	50	22	4.8	0.1	0.1
03808	00	V	50	25	3.5	0.0	0.7
03808	12	V	50	31	3.8	0.6	0.2
03918	00	V	50	19	3.5	-0.4	0.1
03918	12	V	50	3	2.6	0.4	0.3
03953	12	V	50	31	4.0	0.9	-0.1
03953	00	V	50	20	4.1	0.4	-0.5
04018	00	V	50	14	4.0	0.1	1.0
04018	12	V	50	16	5.1	1.7	1.0
04220	12	V	50	30	3.3	0.6	0.4
04220	00	V	50	20	3.4	0.3	-0.4
04270	12	V	50	28	6.0	0.6	0.0
04270	00	V	50	26	6.6	-0.1	-0.2
04320	00	V	50	19	2.1	0.5	-0.3
04320	12	V	50	20	2.8	0.2	0.0
04339	12	V	50	26	3.9	0.3	-0.6
04339	00	V	50	22	3.1	0.0	0.6
04360	00	V	50	20	2.9	0.2	-0.7
04360	12	V	50	22	3.9	0.0	0.3
06011	00	V	50	17	4.2	0.5	-0.6
06011	12	V	50	25	3.9	0.1	-0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	50	26	2.5	0.1	0.8
06260	12	V	50	4	2.3	-1.2	-0.5
06610	00	V	50	21	3.4	-0.1	-0.7
06610	12	V	50	31	4.7	-0.1	0.5
07110	00	V	50	22	3.4	0.7	-0.3
07110	12	V	50	30	3.8	2.0	-0.2
07510	00	V	50	23	3.9	-0.1	0.0
07510	12	V	50	30	3.3	-0.2	-0.4
07645	00	V	50	24	2.9	0.2	-0.3
07645	12	V	50	28	3.4	0.6	0.5
07761	00	V	50	26	3.5	1.0	-0.6
07761	12	V	50	30	3.3	-0.2	0.1
08001	12	V	50	25	3.1	-0.1	-0.7
08001	00	V	50	18	3.8	0.6	-0.2
08221	12	V	50	28	3.5	0.1	-0.2
08221	00	V	50	20	2.6	0.3	-0.4
08302	12	V	50	29	3.3	0.2	-0.9
08302	00	V	50	23	3.9	1.7	0.5
08508	12	V	50	26	3.5	-0.5	0.5
08522	12	V	50	31	3.0	0.4	0.1
08579	12	V	50	1	3.9	-3.9	-0.1
10035	12	V	50	31	3.5	-0.2	0.1
10035	00	V	50	28	3.5	0.1	-0.2
10393	12	V	50	31	3.4	-0.1	-1.0
10393	00	V	50	27	3.8	0.3	0.3
10410	00	V	50	27	3.2	0.0	0.3
10410	12	V	50	30	3.3	0.0	-0.4
10739	12	V	50	30	3.5	0.9	0.0
10739	00	V	50	28	3.4	-0.1	-0.2
11035	00	V	50	24	3.5	-0.2	-0.1
11035	12	V	50	31	3.2	0.1	0.2
12982	00	V	50	25	3.3	-0.4	0.6
12982	12	V	50	27	3.2	0.3	0.2
16080	12	V	50	31	3.3	0.0	-0.5
16080	00	V	50	27	3.4	0.1	1.1
16245	00	V	50	24	3.3	0.6	-0.1
16245	12	V	50	30	3.3	0.5	0.4
16320	12	V	50	31	3.4	0.8	0.5
16320	00	V	50	25	4.1	0.5	-0.9
16429	00	V	50	21	3.4	0.5	0.0
16429	12	V	50	30	4.0	0.0	-0.5
16622	00	V	50	21	3.8	0.1	-0.7
16754	00	V	50	20	4.3	1.3	0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	5	2.3	1.5	-1.2
26435	12	V	50	13	3.3	0.1	-0.8
5QPW8X	12	V	50	5	3.5	-0.8	1.9
5QPW8X	00	V	50	5	4.0	-0.5	2.0
60018	00	V	50	25	3.5	0.2	-0.1
60018	12	V	50	29	4.0	0.1	0.1
7JUNA4	12	V	50	1	1.5	1.5	-0.1
7JUNA4	00	V	50	1	3.2	-3.2	0.3
BPMWB2	12	V	50	2	3.5	-1.4	3.2
BPMWB2	00	V	50	1	1.9	-1.7	0.8
FPUW5G	00	V	50	0	0.0	0.0	0.0
JNKN7J	12	V	50	5	3.7	0.9	0.9
JNKN7J	00	V	50	6	3.0	1.4	-0.3
KJJF9X	12	V	50	6	4.2	0.1	0.6
KJJF9X	00	V	50	6	4.2	-0.4	1.1
KMPLHP	12	V	50	5	6.8	-2.3	-2.1
KMPLHP	00	V	50	1	3.2	2.6	-1.8
LRYQE3	12	V	50	2	7.5	0.3	-3.8
LRYQE3	00	V	50	2	6.8	-2.7	1.7
VKB4L5	12	V	50	3	3.5	-1.2	-2.4
VKB4L5	00	V	50	0	0.0	0.0	0.0
XKQLWQ	12	V	50	6	3.7	-0.9	1.7
XQFJRG	12	V	50	6	4.3	-0.5	0.0
XQFJRG	00	V	50	2	3.0	-1.9	-1.6
YLV96W	12	V	50	5	2.4	0.3	-0.2
YLV96W	00	V	50	4	4.8	0.6	1.3
ZVQEQC	12	V	50	1	2.1	-1.7	-1.2
ZVQEQC	00	V	50	7	4.1	0.5	-1.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	8.8	1.7
01001	12	Z	100	29	28.9	5.0
01028	00	Z	100	60	5.5	1.2
01028	12	Z	100	61	5.0	1.2
01400	00	Z	100	16	84.4	84.0
01400	12	Z	100	17	82.9	82.3
01415	12	Z	100	30	15.2	2.1
01415	00	Z	100	29	11.6	4.1
02365	12	Z	100	30	11.3	3.6
02365	00	Z	100	29	12.8	6.9
02591	00	Z	100	27	13.5	11.1
02591	12	Z	100	27	13.6	10.5
02836	00	Z	100	31	8.4	-0.8
02836	12	Z	100	31	7.7	-1.4
02963	00	Z	100	29	9.6	2.2
02963	12	Z	100	31	24.4	4.7
03005	12	Z	100	33	8.2	0.7
03005	00	Z	100	31	8.9	1.7
03238	00	Z	100	30	11.0	3.4
03808	00	Z	100	30	10.0	6.6
03808	12	Z	100	31	12.7	7.3
03918	00	Z	100	25	11.5	8.3
03918	12	Z	100	3	6.3	1.7
03953	12	Z	100	31	23.0	20.1
03953	00	Z	100	29	16.4	11.2
04018	00	Z	100	21	8.6	5.4
04018	12	Z	100	21	6.4	0.2
04220	12	Z	100	30	13.5	-0.3
04220	00	Z	100	29	5.6	2.9
04270	12	Z	100	29	16.4	3.4
04270	00	Z	100	31	19.0	9.2
04320	00	Z	100	23	5.0	2.6
04320	12	Z	100	23	6.1	1.1
04339	12	Z	100	29	7.4	-0.5
04339	00	Z	100	27	14.3	4.2
04360	00	Z	100	27	9.7	-5.3
04360	12	Z	100	26	10.0	-7.8
06011	00	Z	100	26	12.1	0.3
06011	12	Z	100	28	13.8	7.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	100	30	6.4	0.3
06260	12	Z	100	6	11.2	8.2
06610	00	Z	100	33	8.5	4.6
06610	12	Z	100	33	8.3	6.1
07110	00	Z	100	31	9.8	-1.9
07110	12	Z	100	31	12.6	7.5
07510	00	Z	100	38	14.2	11.3
07510	12	Z	100	30	16.0	14.4
07645	00	Z	100	30	12.9	10.3
07645	12	Z	100	28	15.6	12.8
07761	00	Z	100	30	14.2	12.2
07761	12	Z	100	30	20.8	17.4
08001	12	Z	100	30	9.2	6.1
08001	00	Z	100	31	10.5	9.1
08221	12	Z	100	30	16.8	15.6
08221	00	Z	100	31	14.4	13.2
08302	12	Z	100	31	5.8	0.9
08302	00	Z	100	30	7.2	1.7
08508	12	Z	100	26	8.4	6.2
08522	12	Z	100	31	13.1	12.3
08579	12	Z	100	1	15.3	15.3
10035	12	Z	100	32	17.9	15.7
10035	00	Z	100	31	18.2	16.1
10393	12	Z	100	31	8.4	5.2
10393	00	Z	100	31	7.6	5.5
10410	00	Z	100	31	6.8	3.5
10410	12	Z	100	31	7.9	3.2
10739	12	Z	100	30	11.7	9.4
10739	00	Z	100	31	9.7	7.7
11035	00	Z	100	30	13.8	11.8
11035	12	Z	100	32	21.1	16.4
12982	00	Z	100	28	10.4	8.3
12982	12	Z	100	27	23.3	15.6
16080	12	Z	100	31	5.7	1.4
16080	00	Z	100	31	12.1	1.1
16245	00	Z	100	31	5.7	4.4
16245	12	Z	100	31	5.4	3.3
16320	12	Z	100	31	14.6	12.8
16320	00	Z	100	31	14.4	12.6
16429	00	Z	100	31	7.5	6.5
16429	12	Z	100	32	11.3	8.1
16622	00	Z	100	29	11.3	8.2
16754	00	Z	100	28	16.9	2.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	31	12.4	9.6
26435	12	Z	100	15	5.5	2.4
5QPW8X	12	Z	100	6	16.5	14.3
5QPW8X	00	Z	100	6	16.2	15.6
60018	00	Z	100	30	14.4	12.8
60018	12	Z	100	31	13.5	12.8
7JUNA4	12	Z	100	1	15.3	-15.3
7JUNA4	00	Z	100	1	14.5	14.5
BPMWB2	12	Z	100	2	26.8	19.8
BPMWB2	00	Z	100	2	6.6	4.9
FPUW5G	00	Z	100	1	18.4	18.4
JNKN7J	12	Z	100	8	55.0	53.3
JNKN7J	00	Z	100	9	26.5	25.8
KJJF9X	12	Z	100	7	11.0	8.7
KJJF9X	00	Z	100	7	22.9	21.3
KMPLHP	12	Z	100	7	74.1	74.1
KMPLHP	00	Z	100	6	184.2	158.9
LRYQE3	12	Z	100	2	14.6	8.8
LRYQE3	00	Z	100	2	10.4	-0.5
VKB4L5	12	Z	100	3	38.9	38.1
VKB4L5	00	Z	100	2	44.1	43.3
XKQLWQ	12	Z	100	7	41.9	40.8
XQFJRG	12	Z	100	6	30.6	24.2
XQFJRG	00	Z	100	2	6.0	6.0
YLV96W	12	Z	100	5	46.1	38.6
YLV96W	00	Z	100	5	76.2	-14.3
ZVQEQC	12	Z	100	1	25.5	25.5
ZVQEQC	00	Z	100	7	20.3	19.8

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	25	3.0	0.3	0.0
01001	12	V	100	29	2.4	0.3	-0.1
01028	00	V	100	29	2.6	-0.2	0.0
01028	12	V	100	31	2.5	0.3	0.2
01400	00	V	100	14	3.1	0.0	0.2
01400	12	V	100	16	4.0	-0.5	0.3
01415	12	V	100	30	4.8	0.7	0.1
01415	00	V	100	28	3.9	0.9	0.6
02365	12	V	100	28	3.7	0.3	0.2
02365	00	V	100	20	3.4	0.1	-0.3
02591	00	V	100	20	4.2	-0.4	0.9
02591	12	V	100	27	3.4	-0.8	-0.2
02836	00	V	100	25	3.6	-0.5	0.2
02836	12	V	100	31	3.7	0.5	-0.3
02963	00	V	100	23	5.0	0.4	-1.0
02963	12	V	100	30	4.5	0.9	-0.3
03005	12	V	100	30	2.8	0.9	-0.9
03005	00	V	100	25	3.7	-1.4	0.0
03238	00	V	100	23	3.8	0.6	0.3
03808	00	V	100	25	3.8	-0.5	-0.9
03808	12	V	100	31	3.8	0.2	-0.1
03918	00	V	100	19	3.4	1.1	0.1
03918	12	V	100	3	3.4	-0.6	2.9
03953	12	V	100	31	3.0	-0.5	0.6
03953	00	V	100	21	3.0	0.1	-0.8
04018	00	V	100	21	2.9	-0.1	-0.4
04018	12	V	100	19	3.6	0.9	0.1
04220	12	V	100	30	2.4	0.4	0.8
04220	00	V	100	29	2.8	0.4	-0.2
04270	12	V	100	29	3.8	-0.6	-0.5
04270	00	V	100	31	4.0	-0.3	0.6
04320	00	V	100	23	2.1	0.2	-0.5
04320	12	V	100	22	2.5	0.4	0.2
04339	12	V	100	29	2.9	0.7	-0.1
04339	00	V	100	25	2.8	0.5	-0.2
04360	00	V	100	25	3.1	0.0	-0.4
04360	12	V	100	26	2.5	0.2	0.4
06011	00	V	100	25	3.2	-0.2	-0.9
06011	12	V	100	28	2.9	0.2	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	100	26	3.5	0.9	0.3
06260	12	V	100	6	3.7	1.5	0.4
06610	00	V	100	28	3.0	0.6	0.3
06610	12	V	100	31	3.5	0.5	-0.2
07110	00	V	100	23	3.3	0.6	-0.6
07110	12	V	100	31	4.0	-0.3	0.3
07510	00	V	100	25	3.9	-0.2	-0.6
07510	12	V	100	30	3.8	-0.2	-0.1
07645	00	V	100	24	3.3	0.2	0.5
07645	12	V	100	28	3.4	0.2	0.0
07761	00	V	100	26	3.9	0.0	-0.8
07761	12	V	100	30	3.0	0.0	-0.2
08001	12	V	100	29	4.7	1.0	0.1
08001	00	V	100	26	4.3	-0.2	-0.3
08221	12	V	100	30	4.4	0.1	-0.3
08221	00	V	100	20	3.7	0.4	0.9
08302	12	V	100	31	3.8	0.7	0.1
08302	00	V	100	23	3.8	0.4	0.7
08508	12	V	100	26	3.2	0.8	-0.6
08522	12	V	100	31	4.1	0.8	0.4
08579	12	V	100	1	2.1	-2.0	0.6
10035	12	V	100	31	3.4	0.3	-0.3
10035	00	V	100	31	4.3	1.1	0.5
10393	12	V	100	31	3.4	0.0	0.1
10393	00	V	100	31	3.3	-0.2	0.3
10410	00	V	100	30	3.3	-0.2	1.1
10410	12	V	100	31	3.5	-0.2	-0.1
10739	12	V	100	30	3.3	0.5	-0.5
10739	00	V	100	29	3.0	-0.2	0.6
11035	00	V	100	25	3.6	0.9	0.2
11035	12	V	100	31	3.6	0.4	0.0
12982	00	V	100	26	3.0	-0.2	-0.3
12982	12	V	100	27	3.3	0.6	0.0
16080	12	V	100	31	3.5	0.6	0.4
16080	00	V	100	29	3.4	0.3	0.4
16245	00	V	100	26	3.5	1.1	-0.1
16245	12	V	100	31	3.9	0.5	0.0
16320	12	V	100	31	3.8	0.6	-0.9
16320	00	V	100	29	3.7	0.2	0.6
16429	00	V	100	31	3.6	0.9	-0.2
16429	12	V	100	30	3.2	0.2	0.7
16622	00	V	100	24	3.4	0.1	-0.3
16754	00	V	100	22	4.1	0.8	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	8	3.5	0.6	-0.3
26435	12	V	100	15	4.3	-1.1	0.3
5QPW8X	12	V	100	5	4.9	-1.7	1.0
5QPW8X	00	V	100	5	3.7	1.7	-1.4
60018	00	V	100	26	3.8	0.3	0.1
60018	12	V	100	30	3.7	0.5	-0.4
7JUNA4	12	V	100	1	8.2	7.5	-3.4
7JUNA4	00	V	100	1	6.2	4.7	4.0
BPMWB2	12	V	100	2	3.1	-0.8	0.4
BPMWB2	00	V	100	2	3.9	-0.2	2.2
FPUW5G	00	V	100	1	3.7	0.4	3.7
JNKN7J	12	V	100	7	4.1	-0.2	1.3
JNKN7J	00	V	100	9	3.2	0.2	1.4
KJJF9X	12	V	100	7	3.3	0.7	-1.2
KJJF9X	00	V	100	7	3.6	-0.2	-0.5
KMPLHP	12	V	100	7	4.1	-1.0	1.6
KMPLHP	00	V	100	6	5.8	-0.9	4.4
LRYQE3	12	V	100	2	3.7	-2.5	-2.6
LRYQE3	00	V	100	2	2.5	2.0	0.7
VKB4L5	12	V	100	3	2.7	0.1	0.9
VKB4L5	00	V	100	2	5.6	1.6	-4.0
XKQLWQ	12	V	100	7	2.9	0.6	0.6
XQFJRG	12	V	100	6	3.7	1.7	-0.7
XQFJRG	00	V	100	2	4.5	-2.2	3.7
YLV96W	12	V	100	5	1.9	1.3	-1.0
YLV96W	00	V	100	5	2.1	-0.5	0.5
ZVQEQC	12	V	100	1	4.8	4.8	0.5
ZVQEQC	00	V	100	7	3.2	0.4	0.8

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	8.4	-2.8
01001	12	Z	500	32	7.5	-2.1
01028	00	Z	500	47	4.2	0.5
01028	12	Z	500	47	3.9	0.2
01400	00	Z	500	17	81.5	81.3
01400	12	Z	500	17	81.4	81.1
01415	12	Z	500	30	5.1	3.7
01415	00	Z	500	29	7.2	4.6
02365	12	Z	500	31	6.7	4.2
02365	00	Z	500	31	8.4	4.6
02591	00	Z	500	27	10.7	9.8
02591	12	Z	500	27	10.8	10.2
02836	00	Z	500	31	5.2	-1.2
02836	12	Z	500	31	4.3	-0.3
02963	00	Z	500	30	3.4	1.6
02963	12	Z	500	32	20.6	6.8
03005	12	Z	500	33	4.9	-1.8
03005	00	Z	500	34	4.6	-2.2
03238	00	Z	500	31	5.4	3.1
03808	00	Z	500	30	5.8	5.3
03808	12	Z	500	31	8.0	6.2
03918	00	Z	500	25	9.6	8.7
03918	12	Z	500	3	9.1	9.1
03953	12	Z	500	31	9.3	5.8
03953	00	Z	500	29	8.7	4.0
04018	00	Z	500	21	5.9	0.9
04018	12	Z	500	21	4.4	0.5
04220	12	Z	500	31	13.4	-1.3
04220	00	Z	500	31	4.2	-1.0
04270	12	Z	500	30	4.4	-1.2
04270	00	Z	500	31	6.4	-1.5
04320	00	Z	500	24	4.7	0.3
04320	12	Z	500	23	4.8	0.2
04339	12	Z	500	29	6.4	-0.2
04339	00	Z	500	27	14.6	3.3
04360	00	Z	500	27	12.9	-11.6
04360	12	Z	500	28	11.5	-10.4
06011	00	Z	500	27	9.0	4.8
06011	12	Z	500	29	12.7	6.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	500	31	5.8	0.1
06260	12	Z	500	6	5.1	3.2
06610	00	Z	500	34	4.2	3.0
06610	12	Z	500	33	5.2	3.9
07110	00	Z	500	30	5.5	-2.3
07110	12	Z	500	31	6.5	-0.1
07510	00	Z	500	38	5.9	4.0
07510	12	Z	500	30	8.1	6.8
07645	00	Z	500	30	5.8	0.5
07645	12	Z	500	28	7.0	2.9
07761	00	Z	500	29	4.3	2.3
07761	12	Z	500	30	7.5	3.4
08001	12	Z	500	31	7.2	6.0
08001	00	Z	500	31	6.4	5.6
08221	12	Z	500	30	9.8	9.0
08221	00	Z	500	32	8.4	7.9
08302	12	Z	500	31	5.2	-2.5
08302	00	Z	500	32	2.9	-1.8
08508	12	Z	500	28	6.2	4.5
08522	12	Z	500	31	8.4	8.0
08579	12	Z	500	1	6.6	6.6
10035	12	Z	500	32	13.1	12.8
10035	00	Z	500	33	13.5	13.2
10393	12	Z	500	31	3.7	2.7
10393	00	Z	500	31	4.0	2.9
10410	00	Z	500	32	3.1	1.8
10410	12	Z	500	31	4.6	1.9
10739	12	Z	500	30	7.4	6.3
10739	00	Z	500	31	6.4	5.2
11035	00	Z	500	30	7.0	5.7
11035	12	Z	500	31	11.3	7.3
12982	00	Z	500	28	4.8	2.8
12982	12	Z	500	28	14.7	2.3
16080	12	Z	500	31	2.8	0.1
16080	00	Z	500	31	2.9	-0.2
16245	00	Z	500	31	3.3	-1.2
16245	12	Z	500	31	2.4	-0.3
16320	12	Z	500	31	10.8	9.1
16320	00	Z	500	31	9.0	7.4
16429	00	Z	500	31	4.0	2.5
16429	12	Z	500	33	6.0	5.0
16622	00	Z	500	31	5.5	3.4
16754	00	Z	500	30	16.6	-2.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	31	6.2	4.9
26435	12	Z	500	15	4.2	2.7
5QPW8X	12	Z	500	8	20.8	20.3
5QPW8X	00	Z	500	8	23.4	23.1
60018	00	Z	500	30	6.4	6.1
60018	12	Z	500	30	6.9	6.4
7JUNA4	12	Z	500	2	6.5	-3.4
7JUNA4	00	Z	500	4	27.7	16.9
BPMWB2	12	Z	500	2	9.8	9.7
BPMWB2	00	Z	500	2	17.3	-11.8
FPUW5G	00	Z	500	1	14.0	14.0
JNKN7J	12	Z	500	9	35.2	34.5
JNKN7J	00	Z	500	9	34.2	33.7
KJFF9X	12	Z	500	7	4.4	2.8
KJFF9X	00	Z	500	7	7.8	4.6
KMPLHP	12	Z	500	7	70.8	62.7
KMPLHP	00	Z	500	7	51.8	47.6
LRYQE3	12	Z	500	2	4.6	3.5
LRYQE3	00	Z	500	2	5.2	0.4
VKB4L5	12	Z	500	3	37.7	37.6
VKB4L5	00	Z	500	3	35.7	35.7
XKQLWQ	12	Z	500	7	23.6	23.1
XQFJRG	12	Z	500	8	10.4	0.2
XQFJRG	00	Z	500	4	11.7	-11.6
YLV96W	12	Z	500	6	25.3	12.4
YLV96W	00	Z	500	6	22.6	12.1
ZVQEQC	12	Z	500	1	10.9	10.9
ZVQEQC	00	Z	500	7	10.1	10.0

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	3.3	0.2	0.0
01001	12	V	500	31	3.9	0.4	-0.1
01028	00	V	500	31	2.5	-0.3	-0.7
01028	12	V	500	31	2.5	-0.5	-0.2
01400	00	V	500	16	3.5	0.0	-0.6
01400	12	V	500	17	4.9	-0.5	-0.1
01415	12	V	500	30	3.4	0.1	1.3
01415	00	V	500	29	3.2	0.6	0.5
02365	12	V	500	31	5.0	1.4	0.8
02365	00	V	500	31	5.0	0.5	-1.5
02591	00	V	500	27	3.1	-0.1	-0.2
02591	12	V	500	27	2.8	-0.3	-0.4
02836	00	V	500	31	3.1	0.1	-0.4
02836	12	V	500	31	2.5	0.7	-0.1
02963	00	V	500	30	3.3	1.1	-0.1
02963	12	V	500	31	3.6	0.7	0.0
03005	12	V	500	30	3.6	0.4	-0.1
03005	00	V	500	31	4.2	-0.7	0.0
03238	00	V	500	31	2.5	0.8	0.1
03808	00	V	500	30	2.8	-0.5	0.4
03808	12	V	500	31	4.3	-0.7	-0.5
03918	00	V	500	25	3.5	0.2	-0.6
03918	12	V	500	3	2.9	-2.4	-0.6
03953	12	V	500	31	3.6	0.7	-0.3
03953	00	V	500	29	3.1	0.8	-0.1
04018	00	V	500	21	3.8	-1.0	1.6
04018	12	V	500	21	3.0	0.3	0.8
04220	12	V	500	31	3.3	0.7	-0.5
04220	00	V	500	31	3.3	0.3	-0.2
04270	12	V	500	30	3.0	-0.2	-0.1
04270	00	V	500	31	3.0	0.8	0.7
04320	00	V	500	24	3.1	-0.1	0.4
04320	12	V	500	23	2.7	-0.4	0.5
04339	12	V	500	29	3.8	-0.2	0.9
04339	00	V	500	27	3.3	-0.2	0.7
04360	00	V	500	27	4.0	-1.1	1.2
04360	12	V	500	28	4.9	-0.5	-0.1
06011	00	V	500	27	4.0	1.1	-0.4
06011	12	V	500	29	3.5	-0.3	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	500	31	3.3	-0.3	0.6
06260	12	V	500	6	4.1	0.7	0.9
06610	00	V	500	30	2.7	-0.3	-0.5
06610	12	V	500	31	3.4	-0.3	0.1
07110	00	V	500	30	2.4	-0.1	0.0
07110	12	V	500	31	3.0	0.6	0.8
07510	00	V	500	31	3.1	0.4	0.0
07510	12	V	500	30	2.6	0.9	0.0
07645	00	V	500	30	3.0	0.4	-0.8
07645	12	V	500	28	3.0	0.5	0.4
07761	00	V	500	29	2.1	-0.2	-0.2
07761	12	V	500	30	2.5	0.3	-0.3
08001	12	V	500	31	2.6	0.1	0.4
08001	00	V	500	31	3.2	-0.2	0.7
08221	12	V	500	30	2.7	-0.2	-0.2
08221	00	V	500	31	2.8	0.0	0.0
08302	12	V	500	31	3.1	0.0	-0.5
08302	00	V	500	30	2.8	-0.3	-0.3
08508	12	V	500	28	2.3	0.1	-0.4
08522	12	V	500	31	2.2	-0.3	-0.1
08579	12	V	500	1	0.3	0.1	0.3
10035	12	V	500	31	2.4	-0.4	-0.2
10035	00	V	500	31	2.2	0.2	0.1
10393	12	V	500	31	2.3	0.4	-0.3
10393	00	V	500	31	2.9	0.0	-0.5
10410	00	V	500	31	2.3	0.1	-0.3
10410	12	V	500	31	2.6	-0.4	-0.3
10739	12	V	500	30	2.8	0.2	0.2
10739	00	V	500	30	2.6	0.2	0.0
11035	00	V	500	30	2.6	0.1	0.3
11035	12	V	500	31	2.7	0.1	-0.5
12982	00	V	500	28	2.6	-0.3	-0.7
12982	12	V	500	28	2.6	0.7	0.0
16080	12	V	500	31	3.0	-0.2	0.4
16080	00	V	500	31	2.4	0.2	-0.3
16245	00	V	500	31	3.1	0.3	0.4
16245	12	V	500	31	2.3	0.4	-0.4
16320	12	V	500	31	2.8	0.7	0.3
16320	00	V	500	31	2.3	-0.1	-0.3
16429	00	V	500	31	2.5	0.2	0.1
16429	12	V	500	31	3.0	0.6	-0.3
16622	00	V	500	31	2.8	0.3	0.1
16754	00	V	500	26	4.7	0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	21	4.8	0.8	-0.6
26435	12	V	500	15	3.1	-0.7	-0.3
5QPW8X	12	V	500	8	2.5	-0.1	0.1
5QPW8X	00	V	500	8	2.7	1.3	0.9
60018	00	V	500	30	2.1	0.2	0.3
60018	12	V	500	30	2.1	0.6	0.0
7JUNA4	12	V	500	2	4.6	0.1	-2.1
7JUNA4	00	V	500	4	4.2	-1.3	-0.5
BPMWB2	12	V	500	2	5.9	2.9	-1.0
BPMWB2	00	V	500	2	1.1	0.7	0.9
FPUW5G	00	V	500	1	4.5	-1.8	4.1
JNKN7J	12	V	500	9	3.9	1.0	1.6
JNKN7J	00	V	500	9	7.4	0.5	2.1
KJJF9X	12	V	500	7	2.6	-0.9	0.8
KJJF9X	00	V	500	7	3.1	0.0	0.0
KMPLHP	12	V	500	7	2.6	0.5	0.6
KMPLHP	00	V	500	7	6.5	2.5	-1.5
LRYQE3	12	V	500	2	3.4	-1.8	-2.6
LRYQE3	00	V	500	2	2.1	0.1	-1.2
VKB4L5	12	V	500	3	3.6	0.1	-0.2
VKB4L5	00	V	500	3	2.0	-0.9	1.2
XKQLWQ	12	V	500	7	3.0	-1.9	-0.4
XQFJRG	12	V	500	8	2.5	0.9	0.5
XQFJRG	00	V	500	4	1.4	0.0	-0.7
YLV96W	12	V	500	6	2.4	1.0	-0.5
YLV96W	00	V	500	6	3.2	0.8	0.9
ZVQEQC	12	V	500	1	1.2	0.4	1.1
ZVQEQC	00	V	500	7	2.1	0.2	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 : JAN 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	6.1	-1.5
01001	12	Z	850	32	5.6	-2.9
01028	00	Z	850	47	2.8	0.2
01028	12	Z	850	47	3.1	-0.7
01400	00	Z	850	17	81.7	81.6
01400	12	Z	850	17	81.6	81.5
01415	12	Z	850	30	6.0	5.0
01415	00	Z	850	29	4.7	3.7
02365	12	Z	850	31	7.1	6.6
02365	00	Z	850	31	7.9	7.4
02591	00	Z	850	27	8.9	8.5
02591	12	Z	850	27	9.4	9.1
02836	00	Z	850	31	2.9	0.4
02836	12	Z	850	31	3.1	1.6
02963	00	Z	850	30	3.5	2.8
02963	12	Z	850	32	4.1	3.2
03005	12	Z	850	33	4.4	-2.5
03005	00	Z	850	34	3.7	-1.7
03238	00	Z	850	31	4.8	3.8
03808	00	Z	850	30	5.0	3.8
03808	12	Z	850	31	5.2	4.5
03918	00	Z	850	26	8.6	8.2
03918	12	Z	850	3	4.0	3.6
03953	12	Z	850	31	5.5	3.9
03953	00	Z	850	29	6.1	4.9
04018	00	Z	850	21	2.9	-1.4
04018	12	Z	850	21	4.3	-0.3
04220	12	Z	850	31	14.8	0.9
04220	00	Z	850	31	3.2	-0.3
04270	12	Z	850	30	3.3	1.1
04270	00	Z	850	31	2.9	0.1
04320	00	Z	850	24	3.7	-1.1
04320	12	Z	850	23	6.2	-3.7
04339	12	Z	850	29	9.1	1.7
04339	00	Z	850	27	14.5	2.8
04360	00	Z	850	27	14.9	-12.5
04360	12	Z	850	28	16.6	-8.1
06011	00	Z	850	28	5.1	3.8
06011	12	Z	850	29	10.3	5.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	850	31	6.0	0.2
06260	12	Z	850	6	1.2	0.2
06610	00	Z	850	34	3.1	1.9
06610	12	Z	850	33	3.4	1.4
07110	00	Z	850	30	2.3	-0.3
07110	12	Z	850	31	2.3	0.4
07510	00	Z	850	38	4.7	3.9
07510	12	Z	850	30	4.9	4.0
07645	00	Z	850	30	2.2	-0.5
07645	12	Z	850	28	2.7	-0.1
07761	00	Z	850	29	2.8	-0.4
07761	12	Z	850	30	3.3	-0.4
08001	12	Z	850	31	3.4	2.7
08001	00	Z	850	31	4.3	3.4
08221	12	Z	850	30	5.9	5.1
08221	00	Z	850	32	5.5	5.1
08302	12	Z	850	31	6.3	-5.8
08302	00	Z	850	32	5.1	-4.6
08508	12	Z	850	28	5.1	4.0
08522	12	Z	850	31	5.7	5.0
08579	12	Z	850	1	5.8	5.8
10035	12	Z	850	32	12.4	12.1
10035	00	Z	850	33	12.1	11.7
10393	12	Z	850	31	3.2	1.9
10393	00	Z	850	31	3.4	1.3
10410	00	Z	850	32	2.7	0.7
10410	12	Z	850	31	2.9	0.0
10739	12	Z	850	30	4.2	3.5
10739	00	Z	850	31	5.1	4.3
11035	00	Z	850	30	7.1	6.0
11035	12	Z	850	31	11.7	7.6
12982	00	Z	850	28	4.0	1.6
12982	12	Z	850	28	5.3	3.4
16080	12	Z	850	31	3.6	-2.2
16080	00	Z	850	31	3.4	-1.9
16245	00	Z	850	31	3.5	-2.3
16245	12	Z	850	31	2.8	-1.4
16320	12	Z	850	31	10.7	8.3
16320	00	Z	850	31	9.4	6.1
16429	00	Z	850	31	2.9	0.7
16429	12	Z	850	33	4.8	2.9
16622	00	Z	850	31	4.7	1.7
16754	00	Z	850	31	15.7	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	31	3.2	2.5
26435	12	Z	850	15	2.7	1.9
5QPW8X	12	Z	850	8	23.5	23.2
5QPW8X	00	Z	850	8	26.4	25.4
60018	00	Z	850	30	3.3	2.0
60018	12	Z	850	30	3.5	2.5
7JUNA4	12	Z	850	2	10.7	-2.6
7JUNA4	00	Z	850	4	6.7	5.3
BPMWB2	12	Z	850	2	0.4	-0.4
BPMWB2	00	Z	850	2	3.6	-2.2
FPUW5G	00	Z	850	1	7.4	7.4
JNKN7J	12	Z	850	9	41.3	41.1
JNKN7J	00	Z	850	10	37.3	37.1
KJFF9X	12	Z	850	7	3.3	0.3
KJFF9X	00	Z	850	7	5.4	1.9
KMPLHP	12	Z	850	7	22.7	19.9
KMPLHP	00	Z	850	7	20.2	19.8
LRYQE3	12	Z	850	2	7.9	-0.1
LRYQE3	00	Z	850	2	4.8	-1.3
VKB4L5	12	Z	850	3	34.7	34.7
VKB4L5	00	Z	850	3	32.9	32.8
XKQLWQ	12	Z	850	7	16.8	16.4
XQFJRG	12	Z	850	10	13.2	-8.7
XQFJRG	00	Z	850	4	13.8	-13.7
YLV96W	12	Z	850	6	26.1	10.6
YLV96W	00	Z	850	7	29.7	16.5
ZVQEQC	12	Z	850	1	4.6	4.6
ZVQEQC	00	Z	850	7	6.0	5.6

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JAN 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	4.2	1.0	0.7
01001	12	V	850	31	4.1	0.2	0.6
01028	00	V	850	31	4.9	0.5	0.2
01028	12	V	850	31	3.0	0.7	0.3
01400	00	V	850	16	2.5	-0.4	-1.1
01400	12	V	850	17	2.5	0.2	-0.1
01415	12	V	850	30	2.7	0.1	0.1
01415	00	V	850	29	3.3	0.5	0.5
02365	12	V	850	31	3.3	0.0	-0.8
02365	00	V	850	31	4.4	0.2	-1.9
02591	00	V	850	27	2.9	0.0	0.0
02591	12	V	850	27	3.6	-0.6	0.5
02836	00	V	850	31	3.6	-0.3	-0.3
02836	12	V	850	31	2.6	0.0	-0.5
02963	00	V	850	30	3.1	-0.2	-0.1
02963	12	V	850	31	3.2	-0.2	-1.2
03005	12	V	850	30	3.3	-0.3	-0.2
03005	00	V	850	31	3.2	0.4	-0.5
03238	00	V	850	31	2.6	0.0	-0.1
03808	00	V	850	30	2.7	0.5	-0.1
03808	12	V	850	31	4.0	-0.4	-0.4
03918	00	V	850	25	2.8	-0.3	-0.9
03918	12	V	850	3	3.9	2.1	1.5
03953	12	V	850	31	2.8	0.0	0.3
03953	00	V	850	29	2.9	0.2	0.3
04018	00	V	850	21	3.2	-0.2	0.3
04018	12	V	850	21	4.4	-0.8	0.7
04220	12	V	850	31	4.0	0.7	0.4
04220	00	V	850	31	3.8	0.6	0.1
04270	12	V	850	30	3.6	0.7	0.4
04270	00	V	850	31	3.8	0.2	0.6
04320	00	V	850	24	4.6	1.4	0.6
04320	12	V	850	23	4.2	1.2	0.5
04339	12	V	850	29	8.5	1.2	3.2
04339	00	V	850	27	7.4	1.5	4.0
04360	00	V	850	27	6.3	4.0	0.5
04360	12	V	850	28	6.4	2.4	1.3
06011	00	V	850	28	3.6	0.5	-0.5
06011	12	V	850	29	4.4	0.9	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	850	31	2.5	-0.1	0.3
06260	12	V	850	6	3.1	0.0	-1.3
06610	00	V	850	30	2.4	0.3	-0.3
06610	12	V	850	31	3.6	-0.2	-0.7
07110	00	V	850	30	2.6	-0.3	0.2
07110	12	V	850	31	3.1	0.3	-0.7
07510	00	V	850	31	2.7	-0.2	-0.3
07510	12	V	850	30	3.1	-0.5	-0.1
07645	00	V	850	30	3.7	-0.6	-0.3
07645	12	V	850	28	3.6	-0.3	-0.3
07761	00	V	850	29	3.5	0.7	0.0
07761	12	V	850	30	4.8	1.4	-0.4
08001	12	V	850	31	3.1	0.1	-0.1
08001	00	V	850	31	2.7	-0.1	0.5
08221	12	V	850	30	3.3	0.5	0.5
08221	00	V	850	31	2.1	0.3	-0.3
08302	12	V	850	31	4.3	0.5	-0.4
08302	00	V	850	30	3.0	0.4	-0.5
08508	12	V	850	28	3.1	-0.4	-0.4
08522	12	V	850	31	2.6	0.3	0.0
08579	12	V	850	1	0.9	0.4	0.8
10035	12	V	850	31	3.0	0.2	-0.7
10035	00	V	850	31	3.3	0.1	-0.6
10393	12	V	850	31	2.3	-0.3	0.1
10393	00	V	850	31	3.1	-0.6	0.2
10410	00	V	850	31	2.7	0.3	-1.1
10410	12	V	850	31	2.6	0.3	0.3
10739	12	V	850	30	2.9	-0.1	0.3
10739	00	V	850	30	2.3	-0.3	-0.4
11035	00	V	850	30	2.8	0.5	0.4
11035	12	V	850	31	3.7	0.4	0.0
12982	00	V	850	28	3.2	0.3	-0.3
12982	12	V	850	28	3.4	-0.9	-0.7
16080	12	V	850	31	3.4	0.0	0.1
16080	00	V	850	31	2.8	0.6	-0.9
16245	00	V	850	31	2.9	0.9	-0.3
16245	12	V	850	31	3.2	0.5	0.1
16320	12	V	850	31	2.9	0.5	-0.3
16320	00	V	850	31	3.0	0.3	-0.7
16429	00	V	850	31	2.5	0.2	0.1
16429	12	V	850	31	2.5	-0.2	0.0
16622	00	V	850	30	3.4	0.4	-0.2
16754	00	V	850	26	3.7	1.4	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	30	2.5	0.7	0.2
26435	12	V	850	15	2.7	0.4	-1.1
5QPW8X	12	V	850	8	2.9	0.4	-0.4
5QPW8X	00	V	850	8	3.0	0.0	-0.4
60018	00	V	850	30	3.6	0.6	0.6
60018	12	V	850	30	2.8	0.9	-0.2
7JUNA4	12	V	850	2	1.3	1.1	-0.4
7JUNA4	00	V	850	4	2.6	0.3	0.8
BPMWB2	12	V	850	2	1.9	-1.0	-0.1
BPMWB2	00	V	850	2	3.1	0.9	0.8
FPUW5G	00	V	850	1	2.7	-2.3	1.4
JNKN7J	12	V	850	9	3.5	-1.6	1.3
JNKN7J	00	V	850	9	3.8	-0.6	2.0
KJJF9X	12	V	850	7	2.1	-0.2	0.4
KJJF9X	00	V	850	7	2.3	-0.4	0.5
KMPLHP	12	V	850	7	2.0	0.7	0.2
KMPLHP	00	V	850	7	1.8	-0.1	0.2
LRYQE3	12	V	850	2	4.5	-1.3	0.1
LRYQE3	00	V	850	2	3.4	-0.7	1.7
VKB4L5	12	V	850	3	2.1	1.4	-0.9
VKB4L5	00	V	850	3	3.4	-0.1	-0.2
XKQLWQ	12	V	850	6	4.9	-2.3	1.2
XQFJRG	12	V	850	10	4.6	0.0	1.2
XQFJRG	00	V	850	4	2.1	-0.3	0.6
YLV96W	12	V	850	6	4.0	0.2	-2.5
YLV96W	00	V	850	7	3.8	-0.4	0.5
ZVQEQC	12	V	850	1	4.7	-4.5	-1.3
ZVQEQC	00	V	850	7	2.9	0.1	-0.2

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JAN 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
0062087	99	P	SUR	55	7	400	0	0.4	-0.2	0.5
0066023	99	P	SUR	55	11	399	0	0.3	0.2	0.4
0066024	99	P	SUR	55	13	41	0	0.5	-0.2	0.6
03380	99	P	SUR	54	0	782	0	0.4	-0.3	0.5
0640046	99	P	SUR	60	-4	528	0	0.5	-0.5	0.7
1300001	99	P	SUR	11	-23	716	0	0.4	0.3	0.5
1300008	99	P	SUR	15	-38	670	0	0.3	0.1	0.3
1300131	99	P	SUR	28	-17	744	0	0.4	0.4	0.6
1301569	99	P	SUR	22	-40	741	0	0.3	-0.3	0.5
1301603	99	P	SUR	30	-56	743	0	0.8	0.1	0.8
1301605	99	P	SUR	29	-63	743	0	0.6	0.1	0.6
1301608	99	P	SUR	29	-44	741	0	1.4	0.3	1.4
1301610	99	P	SUR	21	-62	742	0	0.5	0.0	0.5
1301612	99	P	SUR	26	-45	743	0	0.4	0.0	0.4
1301618	99	P	SUR	18	-43	743	0	0.6	0.1	0.6
1301619	99	P	SUR	31	-34	508	0	2.2	0.0	2.2
1301620	99	P	SUR	12	-43	744	0	0.3	0.4	0.5
1501531	99	P	SUR	32	-53	742	0	0.4	-0.4	0.5
1501584	99	P	SUR	11	-47	577	0	0.3	-0.0	0.3
2501643	99	P	SUR	87	-42	730	0	0.5	-0.0	0.5
2501644	99	P	SUR	87	-24	730	0	0.5	-0.2	0.5
2501645	99	P	SUR	88	-58	730	0	0.4	0.2	0.5
2501647	99	P	SUR	87	-57	744	0	0.4	0.2	0.5
2501651	99	P	SUR	88	-61	744	0	0.4	-0.4	0.6
2501653	99	P	SUR	87	-17	730	0	0.5	0.5	0.7
2501661	99	P	SUR	78	-2	130	16	4.3	-2.2	4.8
2601623	99	P	SUR	75	20	743	3	3.2	1.2	3.4
2601625	99	P	SUR	77	17	745	0	5.0	-0.2	5.0
4100040	99	P	SUR	15	-53	4451	0	0.3	-0.3	0.4
4100044	99	P	SUR	22	-59	4444	0	0.3	0.6	0.6
4100046	99	P	SUR	24	-68	4250	0	0.3	0.2	0.3
4100048	99	P	SUR	32	-70	4165	0	0.4	-0.2	0.5
4100049	99	P	SUR	27	-63	4451	0	0.4	0.7	0.8
4100052	99	P	SUR	18	-65	4450	0	0.3	-1.3	1.3
4100053	99	P	SUR	18	-66	4412	0	0.3	-1.1	1.1
4100056	99	P	SUR	18	-65	4450	0	0.3	-1.0	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100139	99	P	SUR	20	-38	728	0	0.3	0.0	0.3
4100300	99	P	SUR	16	-57	742	0	0.3	0.1	0.3
4100597	99	P	SUR	31	-23	743	0	0.3	0.3	0.5
4100729	99	P	SUR	34	-34	583	0	0.7	0.5	0.8
4101529	99	P	SUR	35	-62	742	0	0.5	-1.3	1.4
4101530	99	P	SUR	35	-22	385	0	0.2	0.5	0.5
4101531	99	P	SUR	30	-19	742	0	0.3	0.8	0.8
4101536	99	P	SUR	43	-23	443	0	0.5	0.3	0.6
4101537	99	P	SUR	35	-16	719	0	0.3	-0.3	0.4
4101539	99	P	SUR	37	-17	743	0	0.3	0.4	0.5
4101554	99	P	SUR	27	-64	709	0	0.4	0.8	1.0
4101557	99	P	SUR	31	-23	703	0	0.2	0.2	0.3
4101558	99	P	SUR	26	-63	703	0	0.3	0.2	0.4
4101560	99	P	SUR	39	-22	743	0	0.3	0.7	0.7
4101562	99	P	SUR	28	-54	678	0	0.3	0.5	0.6
4101564	99	P	SUR	27	-42	696	0	0.3	-0.0	0.3
4101565	99	P	SUR	26	-39	743	0	0.4	0.3	0.4
4101567	99	P	SUR	33	-38	741	0	0.4	0.5	0.6
4101570	99	P	SUR	28	-59	742	0	0.4	0.1	0.4
4101572	99	P	SUR	50	-9	743	0	0.5	0.4	0.7
4101573	99	P	SUR	31	-31	743	0	0.4	0.2	0.4
4101574	99	P	SUR	37	-52	742	0	0.5	0.1	0.5
4101603	99	P	SUR	15	-61	701	0	0.3	-0.1	0.3
4101606	99	P	SUR	43	-9	238	0	0.8	0.0	0.8
4101607	99	P	SUR	39	-12	743	0	0.3	0.4	0.5
4101609	99	P	SUR	36	-25	742	0	0.3	0.2	0.3
4101610	99	P	SUR	65	-9	743	0	0.5	0.6	0.8
4101613	99	P	SUR	30	-18	743	0	0.3	0.7	0.7
4101614	99	P	SUR	35	-19	743	0	0.3	0.1	0.3
4101615	99	P	SUR	19	-63	743	0	0.3	0.1	0.3
4101616	99	P	SUR	38	-21	743	0	0.3	0.2	0.3
4101617	99	P	SUR	29	-27	743	0	0.3	0.4	0.5
4101618	99	P	SUR	32	-26	743	0	0.3	0.2	0.3
4101620	99	P	SUR	52	-5	327	0	2.3	-0.6	2.3
4101621	99	P	SUR	38	-32	743	0	0.4	0.2	0.5
4101622	99	P	SUR	67	-24	741	0	0.7	0.2	0.7
4101623	99	P	SUR	57	-53	740	0	0.4	0.0	0.5
4101627	99	P	SUR	60	-54	743	0	0.5	0.0	0.5
4101630	99	P	SUR	16	-58	743	0	0.3	0.0	0.3
4101658	99	P	SUR	62	-20	743	0	0.6	0.1	0.6
4101659	99	P	SUR	60	-11	743	0	0.6	0.0	0.6
4101662	99	P	SUR	63	0	743	0	0.5	0.2	0.5
4101663	99	P	SUR	61	-50	743	0	0.6	-0.2	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101664	99	P	SUR	60	-28	743	0	0.5	0.2	0.6
4101669	99	P	SUR	14	-43	740	0	0.3	0.1	0.3
4101690	99	P	SUR	42	-32	733	0	0.5	0.0	0.5
4101702	99	P	SUR	31	-66	743	0	0.6	0.0	0.6
4101705	99	P	SUR	30	-35	743	0	0.4	-0.1	0.5
4101706	99	P	SUR	36	-23	741	0	0.4	-0.5	0.7
4101707	99	P	SUR	38	-31	743	0	0.4	-0.1	0.4
4101708	99	P	SUR	33	-52	604	0	0.9	-0.3	0.9
4101712	99	P	SUR	42	-21	415	95	4.3	-1.1	4.4
4101714	99	P	SUR	29	-36	743	0	0.5	-0.2	0.5
4101715	99	P	SUR	28	-62	743	0	0.5	-0.7	0.8
4101716	99	P	SUR	24	-63	743	0	1.3	-0.9	1.6
4101717	99	P	SUR	27	-66	602	0	0.3	-0.1	0.4
4101718	99	P	SUR	31	-28	743	0	0.3	-0.0	0.3
4101719	99	P	SUR	31	-53	742	0	0.5	0.2	0.5
4101720	99	P	SUR	39	-46	743	0	0.8	0.4	0.9
4101721	99	P	SUR	31	-42	743	0	0.4	0.8	0.9
4101742	99	P	SUR	32	-35	742	0	0.5	0.1	0.5
4101752	99	P	SUR	12	-64	743	0	0.3	-0.1	0.3
4101753	99	P	SUR	24	-29	743	0	0.3	0.3	0.4
4101754	99	P	SUR	15	-58	743	0	0.8	0.2	0.8
4101755	99	P	SUR	20	-30	743	0	0.3	0.2	0.4
41040	99	P	SUR	15	-53	1135	0	0.4	-0.3	0.5
41044	99	P	SUR	22	-59	1151	0	0.4	0.6	0.7
41046	99	P	SUR	24	-68	1187	0	0.4	0.2	0.4
41048	99	P	SUR	32	-70	1166	0	0.4	-0.2	0.5
41049	99	P	SUR	28	-63	1150	0	0.4	0.7	0.8
41052	99	P	SUR	18	-65	1599	0	0.4	-1.2	1.3
41053	99	P	SUR	19	-66	1597	0	0.3	-1.1	1.1
41056	99	P	SUR	18	-66	1615	0	0.4	-1.0	1.1
4200059	99	P	SUR	15	-67	4189	0	0.3	0.6	0.6
4200085	99	P	SUR	18	-67	4419	0	0.3	-0.9	0.9
42059	99	P	SUR	15	-68	1256	0	0.3	0.5	0.6
42085	99	P	SUR	18	-67	1627	0	0.3	-0.9	1.0
4400008	99	P	SUR	41	-69	4450	0	0.4	0.6	0.8
4400011	99	P	SUR	41	-67	4434	0	0.5	0.5	0.7
4400027	99	P	SUR	44	-67	742	0	0.6	-0.3	0.7
4400032	99	P	SUR	44	-69	741	0	0.5	-1.5	1.6
4400033	99	P	SUR	44	-69	646	0	0.6	-1.0	1.2
4400034	99	P	SUR	44	-68	556	0	0.6	-0.3	0.7
4400037	99	P	SUR	43	-68	704	0	0.5	0.0	0.5
4400777	99	P	SUR	30	-59	743	0	0.8	0.2	0.8
44008	99	P	SUR	41	-69	2871	0	0.5	0.7	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400857	99	P	SUR	34	-30	743	0	0.3	0.3	0.4
4400874	99	P	SUR	30	-24	743	0	0.3	0.4	0.5
44011	99	P	SUR	41	-67	2471	0	0.6	0.5	0.8
4401531	99	P	SUR	38	-23	703	0	0.3	0.4	0.5
4401536	99	P	SUR	36	-19	738	0	0.3	0.6	0.6
4401539	99	P	SUR	28	-29	562	0	1.2	-0.2	1.2
4401540	99	P	SUR	35	-35	703	0	0.3	0.1	0.4
4401541	99	P	SUR	34	-37	702	0	0.3	-0.4	0.5
4401542	99	P	SUR	31	-65	703	0	0.4	0.2	0.4
4401551	99	P	SUR	32	-32	705	0	1.7	-0.2	1.7
4401556	99	P	SUR	25	-55	742	0	1.1	-0.3	1.2
4401557	99	P	SUR	34	-45	611	0	0.6	0.3	0.7
4401558	99	P	SUR	66	12	743	0	0.5	-0.5	0.8
4401561	99	P	SUR	31	-55	743	2	1.5	-0.1	1.5
4401562	99	P	SUR	27	-43	555	0	1.8	-0.8	2.0
4401563	99	P	SUR	36	-44	477	34	2.0	-0.7	2.1
4401564	99	P	SUR	36	-21	742	0	1.4	0.5	1.5
4401565	99	P	SUR	61	-42	407	0	1.5	-0.1	1.5
4401567	99	P	SUR	55	-10	261	0	0.6	0.4	0.7
4401568	99	P	SUR	55	-15	743	0	0.6	0.2	0.7
4401569	99	P	SUR	54	-28	743	0	0.6	-0.0	0.6
4401572	99	P	SUR	45	-20	742	0	0.5	0.4	0.7
4401573	99	P	SUR	57	-7	343	41	2.6	-0.3	2.6
4401574	99	P	SUR	62	-36	742	0	0.7	0.1	0.7
4401576	99	P	SUR	40	-20	743	0	0.5	0.7	0.8
4401577	99	P	SUR	44	-32	742	0	0.6	0.2	0.7
4401578	99	P	SUR	40	-23	742	0	0.4	0.1	0.5
4401579	99	P	SUR	42	-32	742	0	0.4	0.1	0.5
4401580	99	P	SUR	49	-32	743	0	0.7	0.2	0.7
4401581	99	P	SUR	41	-44	743	0	1.0	0.2	1.1
4401582	99	P	SUR	45	-31	741	0	0.6	0.2	0.6
4401611	99	P	SUR	46	-31	744	0	0.6	0.2	0.7
4401613	99	P	SUR	28	-29	744	0	0.4	0.3	0.5
4401750	99	P	SUR	68	1	709	0	0.6	-1.0	1.2
4401751	99	P	SUR	66	-1	740	0	0.5	0.3	0.5
4401753	99	P	SUR	69	6	189	0	0.6	1.0	1.2
4401799	99	P	SUR	23	-66	671	0	0.3	0.0	0.3
4401822	99	P	SUR	59	-62	288	25	2.5	-0.1	2.5
4401826	99	P	SUR	44	-54	738	0	1.0	-0.9	1.3
4401827	99	P	SUR	44	-64	259	0	0.4	0.3	0.5
4401828	99	P	SUR	50	-47	690	0	0.6	0.4	0.7
4401829	99	P	SUR	49	-48	740	0	1.0	0.4	1.1
4401830	99	P	SUR	45	-47	658	0	0.6	0.3	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401870	99	P	SUR	20	-23	743	0	0.4	0.4	0.5
4401872	99	P	SUR	23	-28	743	0	0.3	0.1	0.3
4401873	99	P	SUR	18	-21	743	0	0.4	0.5	0.6
4401874	99	P	SUR	23	-21	610	0	0.4	0.5	0.6
4401894	99	P	SUR	43	-51	731	0	0.7	0.4	0.8
4402687	99	P	SUR	44	-64	744	0	0.7	0.4	0.8
4402688	99	P	SUR	45	-64	332	0	0.6	0.1	0.6
4402689	99	P	SUR	42	-66	744	0	0.6	0.2	0.6
44027	99	P	SUR	44	-67	782	0	0.6	-0.3	0.7
44032	99	P	SUR	44	-69	751	0	0.5	-1.5	1.6
44033	99	P	SUR	44	-69	656	0	0.6	-1.0	1.2
44034	99	P	SUR	44	-68	564	0	0.6	-0.3	0.7
44037	99	P	SUR	44	-68	712	0	0.5	0.0	0.5
44137	99	P	SUR	42	-62	731	0	0.6	-0.3	0.7
44139	99	P	SUR	44	-57	725	0	0.6	-0.1	0.6
44150	99	P	SUR	43	-64	728	0	0.6	-0.1	0.6
44258	99	P	SUR	45	-63	731	0	0.6	0.0	0.7
4700546	99	P	SUR	34	-54	738	9	4.9	0.1	4.9
4701669	99	P	SUR	45	-14	254	44	1.7	0.1	1.7
4800770	99	P	SUR	59	-22	729	729	0.0	0.0	0.0
4802505	99	P	SUR	83	-53	744	0	0.5	1.0	1.1
6100001	99	P	SUR	43	8	736	0	0.5	0.3	0.6
6100002	99	P	SUR	42	5	590	0	0.4	0.0	0.4
6100196	99	P	SUR	42	4	719	0	0.6	0.5	0.8
6100197	99	P	SUR	40	4	731	0	0.4	0.6	0.7
6100198	99	P	SUR	37	-2	407	0	2.0	-0.0	2.0
6100280	99	P	SUR	41	1	678	215	0.3	0.6	0.7
6100281	99	P	SUR	40	0	738	0	0.6	0.4	0.7
6100417	99	P	SUR	38	0	728	0	0.4	0.5	0.7
6100430	99	P	SUR	40	2	739	0	0.4	0.4	0.6
6101005	99	P	SUR	38	26	165	0	1.1	1.6	1.9
6101007	99	P	SUR	36	25	167	0	0.6	-0.2	0.6
6101008	99	P	SUR	37	22	21	0	0.5	0.6	0.8
6102507	99	P	SUR	34	28	743	0	0.3	0.2	0.4
6102508	99	P	SUR	34	29	743	0	0.4	-0.2	0.4
6200024	99	P	SUR	44	-3	742	0	0.5	0.4	0.6
6200025	99	P	SUR	44	-6	127	0	0.6	0.0	0.6
6200082	99	P	SUR	44	-8	729	0	0.5	0.2	0.6
6200083	99	P	SUR	43	-9	736	0	0.6	0.1	0.7
6200084	99	P	SUR	42	-9	729	0	0.5	0.2	0.5
6200085	99	P	SUR	36	-7	698	0	0.3	0.7	0.8
6200091	99	P	SUR	53	-5	740	0	0.5	-0.3	0.6
6200093	99	P	SUR	55	-10	328	25	0.7	-0.6	0.9

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	529	0	0.4	-0.0	0.4
6200095	99	P	SUR	53	-15	718	0	1.2	-0.2	1.2
62001	99	P	SUR	45	-5	775	0	0.5	0.1	0.5
6200191	99	P	SUR	41	-10	14	7	2.1	9.7	9.9
6200199	99	P	SUR	40	-9	742	0	0.3	1.6	1.7
6200200	99	P	SUR	36	-8	741	0	0.3	0.1	0.3
6201030	99	P	SUR	44	-4	352	0	0.6	0.3	0.6
62023	99	P	SUR	51	-8	607	0	0.5	-0.3	0.6
6202613	99	P	SUR	19	-31	743	0	0.3	0.1	0.3
6202614	99	P	SUR	18	-27	582	0	0.7	0.8	1.1
6202615	99	P	SUR	20	-25	588	0	0.4	-0.0	0.4
6202638	99	P	SUR	15	-49	743	0	0.3	-0.0	0.3
6202639	99	P	SUR	28	-38	743	0	0.3	0.1	0.3
6202640	99	P	SUR	24	-46	743	0	0.3	-0.0	0.3
6202641	99	P	SUR	18	-57	743	0	0.2	0.2	0.3
6202642	99	P	SUR	17	-59	743	0	0.3	-0.2	0.3
6202643	99	P	SUR	17	-58	743	1	0.6	-0.4	0.7
6202644	99	P	SUR	24	-48	743	0	0.3	0.0	0.3
6202645	99	P	SUR	15	-55	743	0	0.2	-0.1	0.3
6202646	99	P	SUR	18	-51	743	1	0.3	0.1	0.3
6202647	99	P	SUR	17	-56	743	0	0.3	-0.1	0.3
6202670	99	P	SUR	57	-14	212	13	4.0	2.5	4.7
6202671	99	P	SUR	58	-18	560	4	1.8	0.8	2.0
6202675	99	P	SUR	58	-18	683	0	0.6	0.2	0.7
6202676	99	P	SUR	63	-22	710	0	0.6	0.3	0.7
6202677	99	P	SUR	63	-16	719	0	0.5	0.2	0.6
6202678	99	P	SUR	59	-32	634	0	0.5	0.3	0.6
6202679	99	P	SUR	61	-55	653	0	0.5	0.3	0.6
6202680	99	P	SUR	62	-15	704	0	0.7	0.4	0.8
6202681	99	P	SUR	63	-22	714	0	0.6	0.2	0.7
6202683	99	P	SUR	61	-11	677	0	0.6	0.4	0.7
6202684	99	P	SUR	66	-21	670	0	0.6	0.7	1.0
6202685	99	P	SUR	39	3	742	0	0.6	0.6	0.9
6202686	99	P	SUR	38	3	743	0	0.4	0.4	0.6
6202687	99	P	SUR	40	6	733	0	0.3	0.7	0.8
62029	99	P	SUR	49	-10	800	0	0.5	-0.1	0.5
6203523	99	P	SUR	69	1	702	0	0.5	-0.6	0.7
6203528	99	P	SUR	24	-28	679	0	0.3	-0.5	0.6
6203529	99	P	SUR	38	-56	741	0	0.6	-1.0	1.1
6203574	99	P	SUR	60	-59	732	0	0.6	0.2	0.6
6203576	99	P	SUR	51	-59	700	13	2.3	0.8	2.5
6203580	99	P	SUR	66	-12	667	0	0.5	0.7	0.9
6203581	99	P	SUR	66	5	661	0	0.5	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203582	99	P	SUR	60	-42	657	0	0.5	0.2	0.5
6203583	99	P	SUR	58	-29	591	0	0.6	0.1	0.6
6203585	99	P	SUR	65	-12	729	0	0.6	0.6	0.9
6203586	99	P	SUR	68	-11	723	0	0.6	0.8	1.0
6203587	99	P	SUR	63	-5	662	0	0.5	0.0	0.5
6203588	99	P	SUR	60	-42	711	0	0.6	0.5	0.8
6203601	99	P	SUR	27	-27	743	0	0.4	0.5	0.6
6203607	99	P	SUR	32	-21	743	0	0.4	0.4	0.6
6203609	99	P	SUR	39	-18	742	0	0.4	0.1	0.4
6203634	99	P	SUR	45	-9	37	0	0.4	0.0	0.4
6203641	99	P	SUR	46	-8	37	0	0.4	0.3	0.5
62091	99	P	SUR	53	-5	445	0	0.5	-0.3	0.6
62093	99	P	SUR	55	-10	32	25	1.7	-0.5	1.8
62094	99	P	SUR	52	-7	234	0	0.4	-0.0	0.4
62095	99	P	SUR	53	-15	423	0	0.6	-0.3	0.7
62102	99	P	SUR	58	2	780	0	0.5	0.1	0.5
62103	99	P	SUR	50	-3	737	2	0.5	0.5	0.7
62104	99	P	SUR	57	1	782	0	0.4	-0.2	0.5
62105	99	P	SUR	55	-13	1196	4	1.4	-0.4	1.5
62107	99	P	SUR	50	-6	1393	0	0.6	0.3	0.6
62112	99	P	SUR	58	0	780	0	0.5	0.1	0.5
62113	99	P	SUR	58	0	780	0	0.7	0.6	1.0
62114	99	P	SUR	58	0	1395	0	0.6	-0.1	0.6
62115	99	P	SUR	58	-3	779	0	0.5	-0.1	0.5
62116	99	P	SUR	58	1	782	0	0.7	-0.1	0.7
62118	99	P	SUR	58	1	782	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	782	0	0.5	0.3	0.6
62120	99	P	SUR	56	2	782	0	0.5	-0.3	0.5
62121	99	P	SUR	54	3	782	0	0.7	0.7	1.0
62122	99	P	SUR	57	2	1397	0	0.4	0.2	0.5
62124	99	P	SUR	54	-4	778	0	0.4	-0.0	0.4
62127	99	P	SUR	54	1	777	0	0.4	0.5	0.7
62129	99	P	SUR	58	0	780	0	0.8	0.7	1.0
62130	99	P	SUR	59	1	776	0	0.5	-0.3	0.6
62131	99	P	SUR	54	1	780	0	0.4	0.5	0.7
62132	99	P	SUR	56	2	782	0	0.5	0.6	0.8
62133	99	P	SUR	57	1	782	0	0.7	0.0	0.7
62134	99	P	SUR	58	1	778	0	0.4	0.7	0.8
62135	99	P	SUR	54	2	780	0	0.4	0.3	0.5
62138	99	P	SUR	54	0	1155	0	0.5	1.1	1.2
62140	99	P	SUR	57	1	1397	0	0.5	0.0	0.5
62141	99	P	SUR	58	-4	372	0	0.5	-2.3	2.4
62143	99	P	SUR	58	2	780	0	0.6	0.8	1.0

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62144	99	P	SUR	53	2	782	0	0.4	0.3	0.5
62145	99	P	SUR	53	3	1397	0	0.4	0.4	0.6
62146	99	P	SUR	57	2	781	0	0.6	0.1	0.6
62148	99	P	SUR	54	2	782	0	0.4	0.9	1.0
62149	99	P	SUR	54	1	780	0	0.4	0.7	0.8
62150	99	P	SUR	54	1	646	0	0.4	1.3	1.3
62151	99	P	SUR	57	2	1397	0	0.4	0.2	0.4
62152	99	P	SUR	57	2	782	0	0.4	0.8	0.9
62153	99	P	SUR	57	2	1393	0	0.4	0.2	0.4
62154	99	P	SUR	56	2	782	0	0.4	0.2	0.5
62155	99	P	SUR	58	1	703	0	0.4	0.7	0.9
62157	99	P	SUR	58	0	780	0	0.6	0.0	0.6
62160	99	P	SUR	57	2	1397	0	0.4	0.2	0.5
62161	99	P	SUR	58	1	780	0	0.8	0.6	1.1
62162	99	P	SUR	57	1	777	0	0.4	-0.2	0.5
62163	99	P	SUR	48	-8	740	0	0.5	0.3	0.5
62164	99	P	SUR	57	1	767	0	0.4	0.3	0.5
62165	99	P	SUR	54	1	775	0	0.4	0.5	0.7
62168	99	P	SUR	58	1	780	0	0.4	0.2	0.4
62296	99	P	SUR	53	2	782	0	0.4	0.1	0.4
62297	99	P	SUR	59	2	1393	0	0.5	0.2	0.5
62302	99	P	SUR	61	-2	780	0	1.0	0.2	1.1
62304	99	P	SUR	51	2	779	0	0.5	0.2	0.5
62305	99	P	SUR	50	0	463	0	0.4	0.4	0.6
6301503	99	P	SUR	82	18	107	61	7.8	-6.4	10.0
6301508	99	P	SUR	72	23	731	0	0.4	0.1	0.5
6301535	99	P	SUR	72	24	723	0	0.4	0.2	0.5
6301536	99	P	SUR	70	34	725	0	0.4	0.3	0.5
6301537	99	P	SUR	72	31	658	0	0.4	0.2	0.5
6301538	99	P	SUR	76	7	722	0	0.5	0.2	0.5
6301542	99	P	SUR	71	-14	739	2	1.4	0.6	1.5
6301543	99	P	SUR	73	20	726	0	0.5	0.3	0.6
6301544	99	P	SUR	73	26	694	0	0.4	0.4	0.5
6301545	99	P	SUR	74	28	723	0	0.4	0.3	0.5
6301546	99	P	SUR	72	30	683	0	0.4	0.3	0.5
6301548	99	P	SUR	81	14	487	76	2.9	-0.3	3.0
6301562	99	P	SUR	54	-40	657	0	1.9	0.5	1.9
6301563	99	P	SUR	50	-29	743	0	0.6	0.8	1.0
6301564	99	P	SUR	62	-36	740	0	0.6	0.4	0.7
6301683	99	P	SUR	77	2	722	0	0.5	-0.0	0.5
6301688	99	P	SUR	76	14	726	0	0.5	0.2	0.6
63055	99	P	SUR	61	2	780	0	0.6	0.4	0.7
63056	99	P	SUR	60	2	780	0	0.7	0.5	0.9

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
63057	99	P	SUR	59	2	778	0	0.5	-0.3	0.5
63058	99	P	SUR	53	2	2269	0	0.4	0.3	0.5
63059	99	P	SUR	58	-1	780	0	0.5	0.3	0.6
63101	99	P	SUR	61	1	778	0	1.0	0.1	1.0
63102	99	P	SUR	61	1	780	0	0.6	0.5	0.8
63103	99	P	SUR	61	1	778	0	0.5	0.5	0.7
63104	99	P	SUR	61	2	777	0	0.7	-0.3	0.7
63108	99	P	SUR	61	2	780	0	0.7	0.6	0.9
63109	99	P	SUR	60	2	780	0	0.5	-0.4	0.6
63110	99	P	SUR	60	2	780	0	0.6	-0.4	0.8
63112	99	P	SUR	61	1	778	0	0.5	-0.5	0.7
63115	99	P	SUR	62	1	779	0	0.6	-0.1	0.6
63117	99	P	SUR	61	1	1392	0	0.8	0.8	1.1
63118	99	P	SUR	60	6	378	0	0.4	0.2	0.5
6401502	99	P	SUR	72	12	715	0	0.5	0.5	0.7
6401503	99	P	SUR	67	5	501	0	0.5	0.8	1.0
6401506	99	P	SUR	70	-1	598	0	0.5	0.6	0.8
6401531	99	P	SUR	61	-29	742	0	0.6	0.0	0.6
6401539	99	P	SUR	50	-37	706	0	0.6	0.3	0.7
6401556	99	P	SUR	71	24	742	0	0.7	0.2	0.7
6401561	99	P	SUR	63	-1	741	0	0.5	0.1	0.5
6401568	99	P	SUR	66	5	741	0	1.1	0.4	1.1
6401569	99	P	SUR	70	-8	383	9	1.7	0.5	1.8
6401570	99	P	SUR	70	15	451	0	2.3	-0.2	2.3
6401784	99	P	SUR	75	13	2909	0	0.4	0.2	0.5
6401785	99	P	SUR	78	6	729	0	0.5	0.2	0.5
6401787	99	P	SUR	77	10	725	0	0.6	0.2	0.6
6401788	99	P	SUR	80	17	725	0	1.1	0.2	1.1
6401789	99	P	SUR	77	13	708	0	0.8	0.0	0.8
6401795	99	P	SUR	74	10	701	0	0.6	0.5	0.8
6401796	99	P	SUR	73	19	698	0	0.5	0.2	0.5
6401797	99	P	SUR	74	30	725	0	0.4	0.3	0.5
6401799	99	P	SUR	79	9	505	35	3.4	-0.7	3.5
6401800	99	P	SUR	79	12	741	0	0.6	0.5	0.8
6401803	99	P	SUR	76	9	712	0	0.5	0.4	0.6
6401804	99	P	SUR	74	22	711	0	0.4	0.3	0.5
6401806	99	P	SUR	74	18	681	0	0.4	0.2	0.5
6401807	99	P	SUR	73	23	720	0	0.4	0.2	0.5
6401808	99	P	SUR	76	13	695	0	1.3	-0.0	1.3
64041	99	P	SUR	61	-3	780	0	0.7	-0.5	0.8
64045	99	P	SUR	59	-12	831	0	0.6	-0.4	0.8
64046	99	P	SUR	61	-4	756	0	0.5	-0.3	0.6
6501556	99	P	SUR	71	12	650	27	1.6	0.6	1.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
66023	99	P	SUR	55	11	385	0	0.4	0.2	0.4

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JAN 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
0062087	99	SPEED	SUR	55	7	290	0	0	1.6	1.5	2.2
0066023	99	SPEED	SUR	55	11	398	0	0	1.5	1.8	2.3
0066024	99	SPEED	SUR	55	13	41	0	0	1.5	1.1	1.8
0640046	99	SPEED	SUR	60	-4	528	0	0	1.6	-1.7	2.3
1300001	99	SPEED	SUR	11	-23	716	0	0	0.8	0.5	1.0
1300002	99	SPEED	SUR	20	-23	730	0	0	0.8	0.5	1.0
1300008	99	SPEED	SUR	15	-38	670	0	0	0.9	0.3	1.0
1300131	99	SPEED	SUR	28	-17	740	0	0	1.9	1.1	2.2
4100026	99	SPEED	SUR	12	-38	254	0	0	0.7	-0.0	0.7
4100040	99	SPEED	SUR	15	-53	4453	0	0	0.8	0.3	0.8
4100043	99	SPEED	SUR	21	-65	4451	0	0	1.0	0.0	1.0
4100044	99	SPEED	SUR	22	-59	4453	0	0	1.1	0.2	1.1
4100046	99	SPEED	SUR	24	-68	4243	0	0	1.0	0.2	1.0
4100048	99	SPEED	SUR	32	-70	4165	0	0	1.1	-0.1	1.1
4100049	99	SPEED	SUR	27	-63	4450	0	0	1.3	-0.2	1.3
4100052	99	SPEED	SUR	18	-65	4450	0	0	1.2	-0.4	1.3
4100053	99	SPEED	SUR	18	-66	4412	0	0	1.5	1.3	2.0
4100056	99	SPEED	SUR	18	-65	4450	0	0	1.6	-0.7	1.7
4100139	99	SPEED	SUR	20	-38	728	0	0	0.9	0.2	0.9
4100300	99	SPEED	SUR	16	-57	742	0	0	0.9	-0.3	0.9
41040	99	SPEED	SUR	15	-53	1135	0	0	0.8	-0.0	0.8
41043	99	SPEED	SUR	21	-65	1112	0	0	1.0	-0.2	1.1
41044	99	SPEED	SUR	22	-59	1153	0	0	1.1	-0.3	1.2
41046	99	SPEED	SUR	24	-68	1186	0	0	1.1	0.1	1.2
41048	99	SPEED	SUR	32	-70	1166	0	0	1.1	-0.2	1.2
41049	99	SPEED	SUR	28	-63	1150	0	0	1.3	-0.2	1.3
41052	99	SPEED	SUR	18	-65	1599	0	0	1.2	-0.2	1.2
41053	99	SPEED	SUR	19	-66	1597	0	0	1.5	0.7	1.6
41056	99	SPEED	SUR	18	-66	1615	0	0	1.6	-0.5	1.6
4200059	99	SPEED	SUR	15	-67	4192	0	0	1.0	0.2	1.0
4200085	99	SPEED	SUR	18	-67	4419	0	0	1.4	-0.3	1.4
42059	99	SPEED	SUR	15	-68	1260	0	0	1.0	0.0	1.0
42085	99	SPEED	SUR	18	-67	1627	0	0	1.3	0.1	1.3
4400008	99	SPEED	SUR	41	-69	4449	0	0	1.6	0.5	1.7

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
4400027	99	SPEED	SUR	44	-67	742	0	0	1.4	0.7	1.5
4400032	99	SPEED	SUR	44	-69	742	0	0	1.5	0.2	1.5
4400033	99	SPEED	SUR	44	-69	740	0	0	1.5	-0.1	1.5
4400034	99	SPEED	SUR	44	-68	743	0	0	1.4	0.1	1.4
4400037	99	SPEED	SUR	43	-68	720	0	0	1.1	0.2	1.1
44008	99	SPEED	SUR	41	-69	2880	0	0	1.6	-0.2	1.6
44027	99	SPEED	SUR	44	-67	782	0	0	1.4	0.7	1.5
44032	99	SPEED	SUR	44	-69	752	0	0	1.5	0.3	1.5
44033	99	SPEED	SUR	44	-69	750	0	0	1.5	0.2	1.6
44034	99	SPEED	SUR	44	-68	753	0	0	1.5	0.1	1.5
44037	99	SPEED	SUR	44	-68	728	0	0	1.2	0.3	1.2
44139	99	SPEED	SUR	44	-57	725	0	0	1.6	-0.1	1.6
44150	99	SPEED	SUR	43	-64	721	0	0	1.5	0.4	1.5
44258	99	SPEED	SUR	45	-63	735	1	0	1.5	0.8	1.7
6100001	99	SPEED	SUR	43	8	736	0	0	1.6	0.2	1.6
6100196	99	SPEED	SUR	42	4	514	0	0	1.4	-0.7	1.6
6100197	99	SPEED	SUR	40	4	713	0	0	1.2	-0.5	1.3
6100198	99	SPEED	SUR	37	-2	366	0	0	1.6	-0.1	1.7
6100280	99	SPEED	SUR	41	1	450	0	0	1.4	-0.7	1.6
6100281	99	SPEED	SUR	40	0	341	0	0	1.9	-0.0	1.9
6100417	99	SPEED	SUR	38	0	710	0	0	1.3	-0.3	1.3
6100430	99	SPEED	SUR	40	2	731	0	0	1.4	-0.3	1.4
6101005	99	SPEED	SUR	38	26	222	0	0	3.4	-2.1	3.9
6101007	99	SPEED	SUR	36	25	167	0	0	1.8	-1.0	2.1
6101008	99	SPEED	SUR	37	22	21	0	0	1.6	-0.2	1.6
6200024	99	SPEED	SUR	44	-3	106	0	0	1.6	-0.4	1.7
6200025	99	SPEED	SUR	44	-6	127	0	0	1.9	-0.3	1.9
6200082	99	SPEED	SUR	44	-8	131	0	0	1.3	-1.6	2.1
6200083	99	SPEED	SUR	43	-9	733	0	0	1.0	-0.0	1.0
6200084	99	SPEED	SUR	42	-9	717	0	0	1.2	-0.3	1.3
6200085	99	SPEED	SUR	36	-7	689	0	0	1.4	0.1	1.4
6200091	99	SPEED	SUR	53	-5	740	0	0	1.3	0.3	1.4
6200092	99	SPEED	SUR	51	-11	103	0	0	2.3	-0.8	2.4
6200093	99	SPEED	SUR	55	-10	740	0	0	1.7	-0.6	1.8
6200094	99	SPEED	SUR	52	-7	529	0	0	1.2	-0.2	1.2
6200095	99	SPEED	SUR	53	-15	298	0	0	2.2	-1.5	2.7
62001	99	SPEED	SUR	45	-5	775	0	0	1.5	0.9	1.7
6200199	99	SPEED	SUR	40	-9	340	1	0	1.7	-0.2	1.7
6200200	99	SPEED	SUR	36	-8	741	0	0	1.2	0.3	1.3
6201030	99	SPEED	SUR	44	-4	339	0	0	1.5	-1.3	2.0
62023	99	SPEED	SUR	51	-8	605	0	0	1.6	0.8	1.8

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6202670	99	SPEED	SUR	57	-14	212	63	0	1.7	3.9	4.2
6202671	99	SPEED	SUR	58	-18	560	0	0	1.7	4.0	4.4
62029	99	SPEED	SUR	49	-10	800	0	0	1.1	0.2	1.1
62091	99	SPEED	SUR	53	-5	445	0	0	1.3	0.2	1.3
62092	99	SPEED	SUR	51	-11	4	0	0	7.1	-6.0	9.3
62093	99	SPEED	SUR	55	-10	445	0	0	1.6	-0.5	1.6
62094	99	SPEED	SUR	52	-7	234	0	0	1.4	-0.4	1.5
62095	99	SPEED	SUR	53	-15	2	0	0	0.2	-0.2	0.3
62102	99	SPEED	SUR	58	2	780	0	0	1.7	-1.5	2.2
62103	99	SPEED	SUR	50	-3	736	0	0	1.6	1.2	2.0
62104	99	SPEED	SUR	57	1	782	0	0	1.4	-0.2	1.4
62105	99	SPEED	SUR	55	-13	1197	0	0	1.4	0.1	1.4
62107	99	SPEED	SUR	50	-6	1393	0	0	1.5	1.3	2.0
62112	99	SPEED	SUR	58	0	780	0	0	1.5	-0.0	1.5
62113	99	SPEED	SUR	58	0	780	0	0	1.7	1.1	2.0
62114	99	SPEED	SUR	58	0	1395	0	0	1.7	1.3	2.1
62118	99	SPEED	SUR	58	1	782	0	0	1.7	1.0	1.9
62119	99	SPEED	SUR	57	2	782	0	0	1.6	0.4	1.6
62120	99	SPEED	SUR	56	2	782	0	0	1.5	0.4	1.5
62121	99	SPEED	SUR	54	3	782	0	0	1.4	-0.5	1.4
62122	99	SPEED	SUR	57	2	1397	0	0	1.2	-0.2	1.2
62129	99	SPEED	SUR	58	0	780	0	0	1.4	0.5	1.5
62131	99	SPEED	SUR	54	1	780	0	0	1.3	0.5	1.4
62132	99	SPEED	SUR	56	2	739	0	0	2.0	-2.6	3.3
62133	99	SPEED	SUR	57	1	782	0	0	1.4	0.2	1.4
62134	99	SPEED	SUR	58	1	778	0	0	1.5	0.3	1.5
62140	99	SPEED	SUR	57	1	276	0	0	1.2	0.3	1.2
62143	99	SPEED	SUR	58	2	780	0	0	2.7	-2.0	3.3
62144	99	SPEED	SUR	53	2	782	0	0	1.9	-0.2	2.0
62145	99	SPEED	SUR	53	3	1397	0	0	1.7	1.0	2.0
62146	99	SPEED	SUR	57	2	726	0	0	1.2	0.1	1.2
62148	99	SPEED	SUR	54	2	782	0	0	2.0	-0.5	2.1
62149	99	SPEED	SUR	54	1	780	0	0	1.3	0.4	1.3
62150	99	SPEED	SUR	54	1	646	0	0	1.8	-0.4	1.9
62152	99	SPEED	SUR	57	2	782	0	0	1.4	-1.3	1.9
62153	99	SPEED	SUR	57	2	1393	0	0	3.1	-1.9	3.6
62154	99	SPEED	SUR	56	2	764	0	0	1.2	-0.4	1.2
62155	99	SPEED	SUR	58	1	702	0	0	1.5	0.4	1.6
62163	99	SPEED	SUR	48	-8	740	0	0	1.2	0.1	1.2
62164	99	SPEED	SUR	57	1	767	0	0	1.6	-1.3	2.1
62165	99	SPEED	SUR	54	1	775	0	0	1.9	-0.7	2.0

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
62304	99	SPEED	SUR	51	2	777	0	0	1.9	1.6	2.5
62305	99	SPEED	SUR	50	0	461	0	0	1.5	1.3	2.0
63055	99	SPEED	SUR	61	2	780	0	0	1.3	-1.0	1.7
63056	99	SPEED	SUR	60	2	780	0	0	1.5	0.7	1.7
63057	99	SPEED	SUR	59	2	778	0	0	2.2	0.8	2.4
63058	99	SPEED	SUR	53	2	1478	0	0	1.2	0.2	1.2
63101	99	SPEED	SUR	61	1	778	0	0	1.5	-1.0	1.8
63103	99	SPEED	SUR	61	1	778	0	0	2.0	0.4	2.0
63104	99	SPEED	SUR	61	2	777	0	0	1.6	-0.3	1.6
63106	99	SPEED	SUR	61	2	715	0	0	1.8	-0.9	2.0
63108	99	SPEED	SUR	61	2	780	0	0	1.7	0.5	1.8
63109	99	SPEED	SUR	60	2	780	0	0	1.5	0.7	1.7
63110	99	SPEED	SUR	60	2	780	0	0	1.5	-0.8	1.7
63112	99	SPEED	SUR	61	1	778	0	0	1.5	-0.7	1.7
63115	99	SPEED	SUR	62	1	779	0	0	1.5	-0.5	1.6
63117	99	SPEED	SUR	61	1	1392	0	0	1.5	-0.6	1.7
64041	99	SPEED	SUR	61	-3	780	0	0	1.7	-0.0	1.7
64045	99	SPEED	SUR	59	-12	831	0	0	1.7	0.7	1.9
64046	99	SPEED	SUR	61	-4	756	0	0	1.4	0.5	1.5
66023	99	SPEED	SUR	55	11	385	0	0	1.6	0.6	1.7
66024	99	SPEED	SUR	55	13	727	0	0	1.4	0.9	1.7

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 : JAN 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
0640046	99	DIRN	SUR	60	-4	517	0	0	9.8	-2.3	10.1
1300001	99	DIRN	SUR	11	-23	708	0	0	8.4	-1.0	8.5
1300002	99	DIRN	SUR	20	-23	727	0	0	7.7	1.0	7.8
1300008	99	DIRN	SUR	15	-38	660	0	0	9.3	4.5	10.4
1300131	99	DIRN	SUR	28	-17	476	0	0	17.7	-2.5	17.9
4100002	99	DIRN	SUR	32	-75	4246	4	0	22.6	10.8	25.1
4100008	99	DIRN	SUR	31	-81	585	0	0	20.5	2.5	20.6
4100009	99	DIRN	SUR	29	-80	3823	0	0	15.5	7.7	17.3
4100010	99	DIRN	SUR	29	-78	3699	0	0	12.9	9.2	15.9
4100013	99	DIRN	SUR	33	-78	3706	0	0	15.7	6.8	17.1
4100024	99	DIRN	SUR	34	-78	562	0	0	30.7	1.1	30.7
4100025	99	DIRN	SUR	35	-75	4006	0	0	20.4	8.8	22.2
4100026	99	DIRN	SUR	12	-38	254	0	0	9.0	7.9	12.0
4100029	99	DIRN	SUR	33	-80	598	0	0	24.1	-9.7	25.9
4100033	99	DIRN	SUR	32	-80	602	0	0	24.6	-5.6	25.2
4100037	99	DIRN	SUR	34	-77	641	0	0	16.6	-8.3	18.5
4100038	99	DIRN	SUR	34	-78	613	1	0	20.0	-4.5	20.5
4100040	99	DIRN	SUR	15	-53	4342	0	0	10.6	5.5	11.9
4100043	99	DIRN	SUR	21	-65	3340	0	0	13.6	3.2	14.0
4100044	99	DIRN	SUR	22	-59	3523	0	0	14.7	3.9	15.2
4100046	99	DIRN	SUR	24	-68	3214	0	0	12.9	10.9	16.9
4100047	99	DIRN	SUR	28	-71	3556	0	0	18.6	-2.8	18.8
4100048	99	DIRN	SUR	32	-70	3921	0	0	11.8	9.1	14.9
4100049	99	DIRN	SUR	27	-63	3973	0	0	15.6	6.9	17.0
4100052	99	DIRN	SUR	18	-65	3505	0	0	16.0	4.7	16.6
4100053	99	DIRN	SUR	18	-66	2559	0	0	20.6	0.6	20.6
4100056	99	DIRN	SUR	18	-65	3498	0	0	14.6	4.2	15.2
4100064	99	DIRN	SUR	34	-77	651	0	0	17.3	-11.8	20.9
4100139	99	DIRN	SUR	20	-38	663	0	0	10.9	4.7	11.9
41002	99	DIRN	SUR	32	-75	1005	0	0	12.8	6.5	14.4
4100300	99	DIRN	SUR	16	-57	686	0	0	13.0	3.0	13.3
41008	99	DIRN	SUR	31	-81	602	0	0	18.9	1.6	19.0

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
41009	99	DIRN	SUR	29	-80	1023	0	0	17.9	5.6	18.8
41010	99	DIRN	SUR	29	-79	943	0	0	13.8	8.3	16.1
41013	99	DIRN	SUR	33	-78	1050	0	0	15.7	5.9	16.8
41024	99	DIRN	SUR	34	-79	553	0	0	30.7	1.5	30.7
41025	99	DIRN	SUR	35	-75	1153	0	0	20.3	8.0	21.8
41029	99	DIRN	SUR	33	-80	627	0	0	24.2	-10.2	26.3
41033	99	DIRN	SUR	32	-80	595	0	0	24.9	-6.1	25.7
41037	99	DIRN	SUR	34	-77	637	0	0	16.9	-8.8	19.0
41038	99	DIRN	SUR	34	-78	607	1	0	20.3	-4.5	20.8
41040	99	DIRN	SUR	15	-53	1090	0	0	10.4	6.3	12.2
41043	99	DIRN	SUR	21	-65	841	0	0	13.6	2.8	13.8
41044	99	DIRN	SUR	22	-59	909	0	0	14.0	3.0	14.3
41046	99	DIRN	SUR	24	-68	883	0	0	12.6	10.4	16.4
41047	99	DIRN	SUR	28	-72	902	0	0	20.5	-4.1	20.9
41048	99	DIRN	SUR	32	-70	1081	0	0	11.9	7.9	14.3
41049	99	DIRN	SUR	28	-63	1009	0	0	17.6	4.5	18.1
41052	99	DIRN	SUR	18	-65	1221	0	0	16.5	4.3	17.1
41053	99	DIRN	SUR	19	-66	956	0	0	20.9	0.5	20.9
41056	99	DIRN	SUR	18	-66	1249	0	0	14.7	3.8	15.1
41064	99	DIRN	SUR	34	-77	651	0	0	18.0	-12.0	21.6
4200013	99	DIRN	SUR	27	-83	73	0	0	48.0	11.2	49.3
4200022	99	DIRN	SUR	28	-84	1322	0	0	19.3	4.3	19.8
4200023	99	DIRN	SUR	26	-83	1329	0	0	14.2	-4.6	14.9
4200026	99	DIRN	SUR	25	-83	1284	0	0	14.4	4.8	15.2
4200036	99	DIRN	SUR	29	-85	3850	0	0	14.9	12.8	19.7
4200056	99	DIRN	SUR	20	-85	3812	0	0	10.3	5.3	11.6
4200057	99	DIRN	SUR	17	-81	3807	0	0	11.7	3.0	12.1
4200058	99	DIRN	SUR	15	-75	3843	0	0	8.3	3.5	9.0
4200059	99	DIRN	SUR	15	-67	3543	0	0	12.5	-7.2	14.4
4200085	99	DIRN	SUR	18	-67	3255	0	0	16.9	17.5	24.3
42013	99	DIRN	SUR	27	-83	73	0	0	47.4	9.1	48.3
42022	99	DIRN	SUR	28	-84	1286	0	0	18.6	2.6	18.7
42023	99	DIRN	SUR	26	-83	1184	0	0	14.9	-5.4	15.8
42026	99	DIRN	SUR	25	-84	1243	0	0	15.1	4.3	15.7
42036	99	DIRN	SUR	29	-85	2461	0	0	14.9	11.7	18.9
42056	99	DIRN	SUR	20	-85	1005	0	0	10.7	3.8	11.3
42057	99	DIRN	SUR	17	-81	1011	0	0	12.6	5.5	13.8
42058	99	DIRN	SUR	15	-75	1049	0	0	8.8	1.4	8.9
42059	99	DIRN	SUR	15	-68	1051	0	0	12.1	-9.8	15.5
42085	99	DIRN	SUR	18	-67	1130	0	0	18.6	15.9	24.4
4400007	99	DIRN	SUR	44	-70	609	0	0	24.7	0.5	24.7

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400008	99	DIRN	SUR	41	-69	3657	0	0	13.1	7.1	14.9
4400009	99	DIRN	SUR	38	-75	651	0	0	14.9	15.9	21.8
4400013	99	DIRN	SUR	42	-71	630	0	0	15.8	7.6	17.5
4400014	99	DIRN	SUR	37	-75	639	0	0	17.6	7.7	19.2
4400018	99	DIRN	SUR	42	-70	644	0	0	14.6	9.1	17.2
4400022	99	DIRN	SUR	41	-74	1118	0	0	12.8	10.0	16.2
4400027	99	DIRN	SUR	44	-67	677	0	0	13.4	3.8	13.9
4400029	99	DIRN	SUR	43	-71	642	0	0	14.8	-21.9	26.4
4400030	99	DIRN	SUR	43	-70	635	0	0	24.1	5.2	24.7
4400032	99	DIRN	SUR	44	-69	651	0	0	19.1	3.9	19.5
4400033	99	DIRN	SUR	44	-69	588	0	0	22.4	-4.0	22.7
4400034	99	DIRN	SUR	44	-68	673	0	0	50.2	-7.7	50.8
4400037	99	DIRN	SUR	43	-68	659	0	0	12.4	3.1	12.8
4400040	99	DIRN	SUR	41	-74	889	0	0	15.9	1.2	15.9
4400042	99	DIRN	SUR	38	-76	4755	3	0	25.0	15.4	29.4
4400058	99	DIRN	SUR	38	-76	1794	0	0	23.9	-4.7	24.3
4400062	99	DIRN	SUR	39	-76	686	0	0	34.3	-9.5	35.6
4400064	99	DIRN	SUR	37	-76	3245	0	0	19.6	-13.5	23.8
4400065	99	DIRN	SUR	40	-74	3788	0	0	14.5	6.8	16.0
4400066	99	DIRN	SUR	40	-73	2923	0	0	26.3	5.1	26.8
4400072	99	DIRN	SUR	37	-76	3296	0	0	21.0	-74.3	77.2
4400073	99	DIRN	SUR	43	-71	390	0	0	16.7	5.2	17.5
44007	99	DIRN	SUR	44	-70	666	0	0	24.8	1.2	24.8
44008	99	DIRN	SUR	41	-69	2355	0	0	12.8	4.1	13.4
44009	99	DIRN	SUR	39	-75	658	0	0	15.0	15.2	21.3
44013	99	DIRN	SUR	42	-71	649	0	0	16.2	6.2	17.3
44014	99	DIRN	SUR	37	-75	651	0	0	19.1	7.2	20.5
44018	99	DIRN	SUR	42	-70	665	0	0	14.0	9.3	16.8
44022	99	DIRN	SUR	41	-74	412	0	0	12.0	9.9	15.5
44027	99	DIRN	SUR	44	-67	709	0	0	13.0	3.9	13.6
44029	99	DIRN	SUR	43	-71	775	0	0	14.5	-21.8	26.2
44030	99	DIRN	SUR	43	-70	628	0	0	22.7	5.6	23.4
44032	99	DIRN	SUR	44	-69	651	0	0	19.0	3.7	19.4
44033	99	DIRN	SUR	44	-69	582	0	0	21.9	-4.3	22.3
44034	99	DIRN	SUR	44	-68	670	0	0	50.3	-7.5	50.8
44037	99	DIRN	SUR	44	-68	654	0	0	12.5	3.1	12.9
44040	99	DIRN	SUR	41	-74	454	0	0	16.3	2.3	16.4
44042	99	DIRN	SUR	38	-76	749	0	0	26.0	14.1	29.6
44058	99	DIRN	SUR	38	-76	596	0	0	26.1	-6.0	26.8
44062	99	DIRN	SUR	39	-76	216	0	0	38.3	-16.3	41.7
44064	99	DIRN	SUR	37	-76	778	0	0	19.7	-14.4	24.4

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
44065	99	DIRN	SUR	40	-74	989	0	0	14.7	4.0	15.3
44066	99	DIRN	SUR	40	-73	1906	0	0	26.9	2.4	27.0
44069	99	DIRN	SUR	41	-73	2	0	0	7.7	21.8	23.1
44072	99	DIRN	SUR	37	-76	743	0	0	23.6	-75.5	79.1
44073	99	DIRN	SUR	43	-71	386	0	0	18.0	5.9	19.0
44139	99	DIRN	SUR	44	-57	646	0	0	19.1	-21.9	29.1
44150	99	DIRN	SUR	43	-64	641	0	0	12.7	-5.1	13.7
44258	99	DIRN	SUR	45	-63	598	1	0	18.6	-7.5	20.0
6100198	99	DIRN	SUR	37	-2	222	0	0	23.1	1.0	23.1
6100281	99	DIRN	SUR	40	0	64	0	0	32.2	-1.9	32.2
6100417	99	DIRN	SUR	38	0	439	0	0	21.9	0.7	21.9
6200024	99	DIRN	SUR	44	-3	51	0	0	23.8	13.2	27.2
6200025	99	DIRN	SUR	44	-6	72	0	0	20.6	-18.9	27.9
6200082	99	DIRN	SUR	44	-8	123	0	0	8.8	3.2	9.3
6200083	99	DIRN	SUR	43	-9	625	0	0	12.3	3.0	12.6
6200084	99	DIRN	SUR	42	-9	540	0	0	15.6	3.5	16.0
6200085	99	DIRN	SUR	36	-7	443	0	0	19.5	3.3	19.8
6200091	99	DIRN	SUR	53	-5	691	0	0	10.9	1.1	11.0
6200092	99	DIRN	SUR	51	-11	96	0	0	10.8	4.4	11.7
6200093	99	DIRN	SUR	55	-10	724	0	0	12.0	-0.6	12.0
6200094	99	DIRN	SUR	52	-7	472	0	0	10.4	-2.3	10.7
6200095	99	DIRN	SUR	53	-15	298	0	0	18.8	4.0	19.2
62001	99	DIRN	SUR	45	-5	706	0	0	12.8	6.6	14.4
6200199	99	DIRN	SUR	40	-9	153	1	0	28.9	13.1	31.7
6200200	99	DIRN	SUR	36	-8	490	0	0	16.6	0.1	16.6
6201030	99	DIRN	SUR	44	-4	214	0	0	30.8	-16.9	35.1
62023	99	DIRN	SUR	51	-8	555	0	0	11.9	4.4	12.7
6202670	99	DIRN	SUR	57	-14	208	63	0	121.9	-25.0	124.4
6202671	99	DIRN	SUR	58	-18	537	0	0	22.6	-2.8	22.8
62029	99	DIRN	SUR	49	-10	743	0	0	11.4	4.8	12.4
62091	99	DIRN	SUR	53	-5	396	0	0	11.2	-0.1	11.2
62092	99	DIRN	SUR	51	-11	1	0	0	0.0	4.4	4.4
62093	99	DIRN	SUR	55	-10	435	0	0	13.7	-1.4	13.7
62094	99	DIRN	SUR	52	-7	193	0	0	11.0	-4.9	12.1
62095	99	DIRN	SUR	53	-15	2	0	0	0.8	3.3	3.4
62103	99	DIRN	SUR	50	-3	721	0	0	24.3	4.6	24.7
62105	99	DIRN	SUR	55	-13	1180	0	0	12.0	4.0	12.6
62107	99	DIRN	SUR	50	-6	1314	0	0	16.1	2.6	16.3
62112	99	DIRN	SUR	58	0	739	0	0	10.6	-2.3	10.9
62114	99	DIRN	SUR	58	0	1341	0	0	9.9	0.9	10.0
62163	99	DIRN	SUR	48	-8	703	0	0	9.5	0.1	9.5

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62305	99	DIRN	SUR	50	0	445	0	0	14.1	3.1	14.4
64041	99	DIRN	SUR	61	-3	732	0	0	9.4	8.7	12.8
64045	99	DIRN	SUR	59	-12	807	0	0	12.7	2.0	12.9
64046	99	DIRN	SUR	61	-4	715	0	0	13.4	-5.3	14.4

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	Atalante		BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN
KMPLHPW	LRYQE3U	VKB4L5Q	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N
01001	01004	01010	01028	01241	01400	01415	01492	02365
02527	02591	02836	02963	03005	03238	03354	03502	03743
03808	03882	03918	03953	04018	04089	04220	04270	04320
04339	04360	06011	06060	06260	06458	06610	07110	07145
07510	07645	07761	08001	08023	08190	08221	08302	08383
08430	08508	08522	08536	08579	10035	10113	10184	10238
10304	10393	10410	10548	10618	10739	10771	10868	10954
10962	11010	11035	11120	11240	11520	11747	11952	12120
12374	12425	12843	12982	13275	13388	14015	14240	14430
15420	15614	16045	16080	16113	16245	16320	16429	16546
16622	16716	16754	17030	17064	17095	17130	17220	17240
17281	17516	17607	22008	23205	23472	23884	26038	26435
26850	27707	27713	29612	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	56146
56187	56492	56571	56651	56691	56739	56778	56964	56985
57083	57127	57131	57178	57245	57447	57461	57494	57516
57687	57749	57816	57957	57972	57993	58027	58150	58203
58238	58362	58424	58457	58606	58633	58665	58725	58847
59023	59134	59211	59265	59280	59293	59316	59431	59758
59981	60018	60096	60155	60571	60630	60656	60680	61660
61901	61980	61998	63741	67083	68263	68424	68442	68512
68538	68816	68842	70026	70133	70200	70219	70231	70261
70308	70316	70326	70350	70361	70398	71043	71081	71082
71109	71119	71603	71722	71802	71811	71815	71816	71823
71836	71845	71867	71906	71907	71908	71909	71917	71924
71925	71926	71934	71945	71957	71964	72201	72206	72208
72210	72215	72230	72233	72235	72240	72248	72249	72250
72251	72261	72265	72274	72293	72317	72327	72340	72363
72364	72365	72376	72388	72413	72426	72440	72451	72476
72489	72493	72501	72518	72520	72528	72558	72562	72572
72582	72597	72632	72634	72645	72649	72659	72662	72672
72694	72712	72747	72764	72768	72776	72786	72797	73033
73110	74389	74494	74560	76256	76394	76405	76458	76526
76595	76612	76644	76654	76679	76692	76743	76805	76903
78897	78954	81405	82765	82983	83525	83649	83768	84384
85442	85586	85799	85934	87155	87344	87418	87576	87623
87715	87860	88889	89002	89022	89062	89564	89571	89592
89611	89625	89642	89662	89859	91212	91285	91592	91610
91765	91925	91938	91948	91958	93112	93417	93817	93844
93997	94120	94150	94170	94203	94294	94299	94302	94312
94326	94332	94374	94403	94430	94461	94510	94578	94610
94637	94638	94653	94659	94672	94711	94767	94776	94802
94821	94866	94910	94975	94995	94996	94998	95527	96996

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

	ASDE09	Atalante		BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF
KJJF9XN	KMPLHPW	LRYQE3U	VKB4L5Q	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG
7JUNA4N	01001	01010	01028	01241	01400	01415	01492	02836
02963	06610	07110	07145	07510	07645	07761	08536	11010
11035	11120	11240	17607	40186	47155	61980	61998	69003
72413	73033	73110	76743	76903	78897	81405	84384	89642
89859	91592	91938	93817					

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.