



ECMWF Global Data Monitoring Report

June 2018

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

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Summary of Revisions (in reverse order)

- Revision 28 (June 15) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for Noaa_14 MSU replaced by ATOVS AMSU-A for Noaa_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A) TOVS AMSU-A and MSU (Noaa_15 and Noaa_14).
- Revision 21 (May 99) - Monitoring statistics ceased for Noaa_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage of rejection.

1 Introduction

The ECMWF global data monitoring report is a monthly publication intended to give an overview of the availability and quality of observations from the Global Observing System within the World Weather Watch of the World Meteorological Organisation. It should be recognised that the statistics given in this report refer to data as received at ECMWF in time for the appropriate analysis. The annex of the report gives further explanations of the methods applied to compile the statistics and on the reference used to establish the quality of observations.

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. It should be recognised that although the quality of the first-guess is of a generally high standard this is only true to a limited extent in certain areas, such as the tropics and data-sparse areas of both northern and southern hemispheres. The data quality results should therefore be used with care when assessing the absolute quality of a particular observing platform. Other indicators such as long-term trends of station performance, particularly in comparison with nearby stations, can be more useful in this respect.

The global monitoring results presented in this report are meant to serve a wider meteorological community as well as to support special WMO programmes such as TOGA and EUCOS. The contents of the report may therefore be adapted for special requirements as necessary.

As recommended at the ninth session of the Commission for Basic Systems at Geneva 1988, lead centres have been appointed for each main type of observation which should liaise with the participating centres and 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	May	Jun	Ident	Time	May	Jun
01241	(00)	27	16	30715	(00)	0	29
02185	(00)	28	7	30715	(12)	0	30
03005	(00)	36	1	31510	(00)	8	27
03882	(12)	15	1	31510	(12)	7	25
10304	(00)	18	2	43150	(12)	0	23
10954	(00)	18	1	74004	(00)	13	34
24343	(00)	28	14	74626	(00)	0	13
24343	(12)	28	14	74626	(12)	0	19
40809	(12)	31	19	76458	(00)	0	15
40841	(12)	31	19	78897	(00)	0	28
40948	(00)	29	9	82332	(00)	0	16
40948	(12)	27	9	82332	(12)	0	17
42667	(12)	11	0	83612	(00)	0	29
43063	(00)	27	9	84008	(12)	0	14
43063	(12)	28	7	-	-	-	-
43599	(12)	29	4	-	-	-	-
48650	(12)	31	6	-	-	-	-
61024	(12)	29	0	-	-	-	-
61442	(12)	29	0	-	-	-	-
68424	(00)	55	5	-	-	-	-
68442	(12)	50	32	-	-	-	-
68512	(12)	62	34	-	-	-	-
68538	(12)	62	25	-	-	-	-
68842	(00)	55	31	-	-	-	-
68842	(12)	58	34	-	-	-	-
70361	(00)	35	20	-	-	-	-
70398	(00)	20	9	-	-	-	-
71081	(00)	29	14	-	-	-	-
71081	(12)	29	17	-	-	-	-
71603	(00)	31	15	-	-	-	-
71603	(12)	30	16	-	-	-	-
71934	(00)	31	20	-	-	-	-
72248	(12)	45	30	-	-	-	-
74494	(00)	37	17	-	-	-	-
76256	(12)	28	0	-	-	-	-
76692	(12)	24	0	-	-	-	-
82532	(00)	15	0	-	-	-	-
82532	(12)	16	0	-	-	-	-
85442	(12)	55	35	-	-	-	-
85469	(00)	52	28	-	-	-	-
85799	(12)	54	35	-	-	-	-
85934	(12)	51	35	-	-	-	-
89859	(00)	29	15	-	-	-	-
91212	(00)	44	29	-	-	-	-
91348	(12)	31	18	-	-	-	-
91643	(00)	25	4	-	-	-	-
96253	(12)	29	13	-	-	-	-
96413	(00)	31	16	-	-	-	-
96413	(12)	31	17	-	-	-	-
96441	(12)	31	14	-	-	-	-
96481	(12)	29	11	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1340** drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

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

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

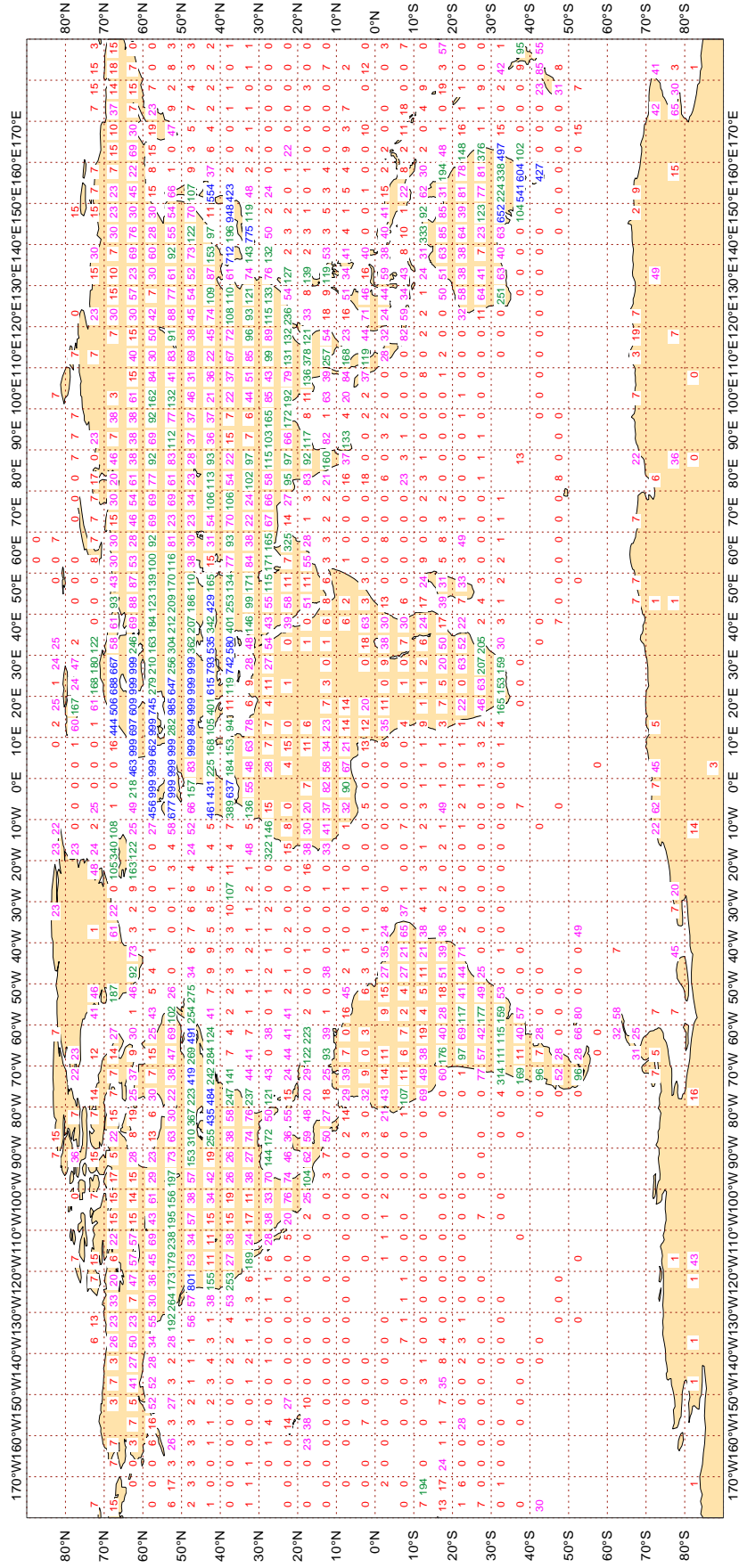
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1

ECMWF Monitoring Statistics - JUN 2018
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 96387
 LAND - WMO Region I: 4191 II:18698 III: 3852 IV: 7108
 Region V: 8694 VI:39711 Antarctic: 856

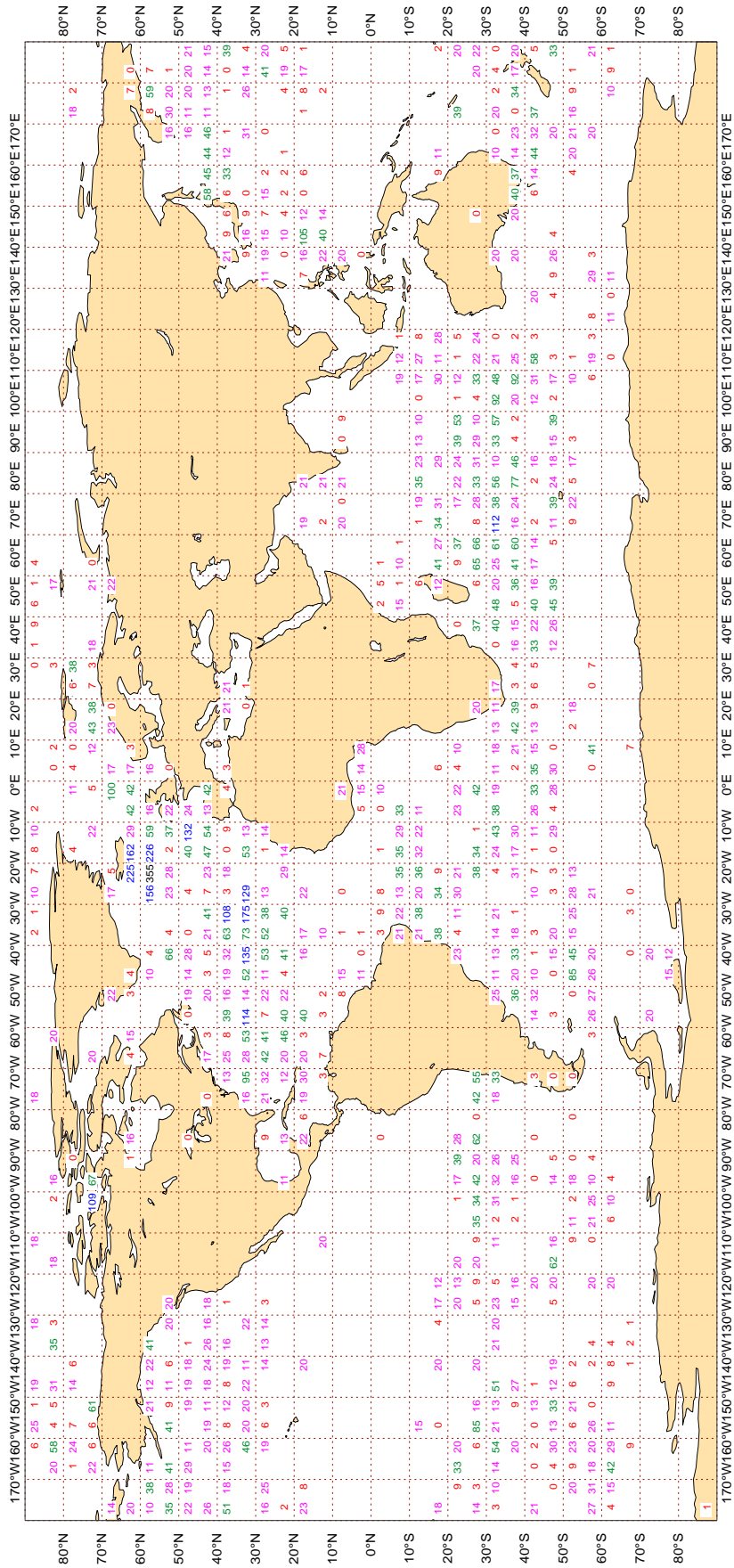
Oceans - N. Atlantic 7736 S. Atlantic 183 Indian 464 Pacific 4894



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

ECMWF Monitoring Statistics - JUN 2018
 Availability - DRIFTER PRESSURE
 Average number of observations in 24 hours - 16613
 Oceans - N. Atlantic 5019 S. Atlantic 2207 Indian 3352 Pacific 6035



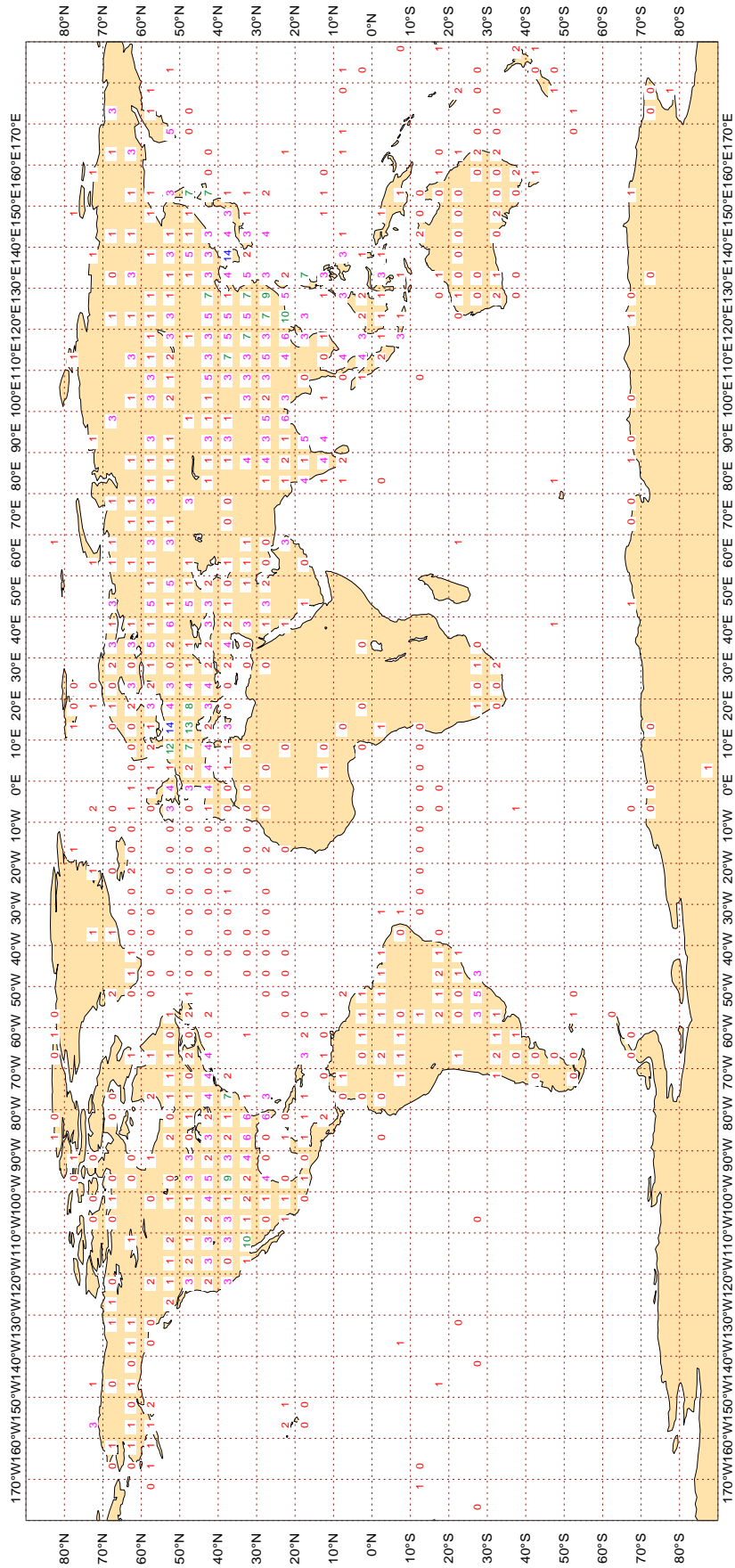
Magics 2.24.2 (64 bit)



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

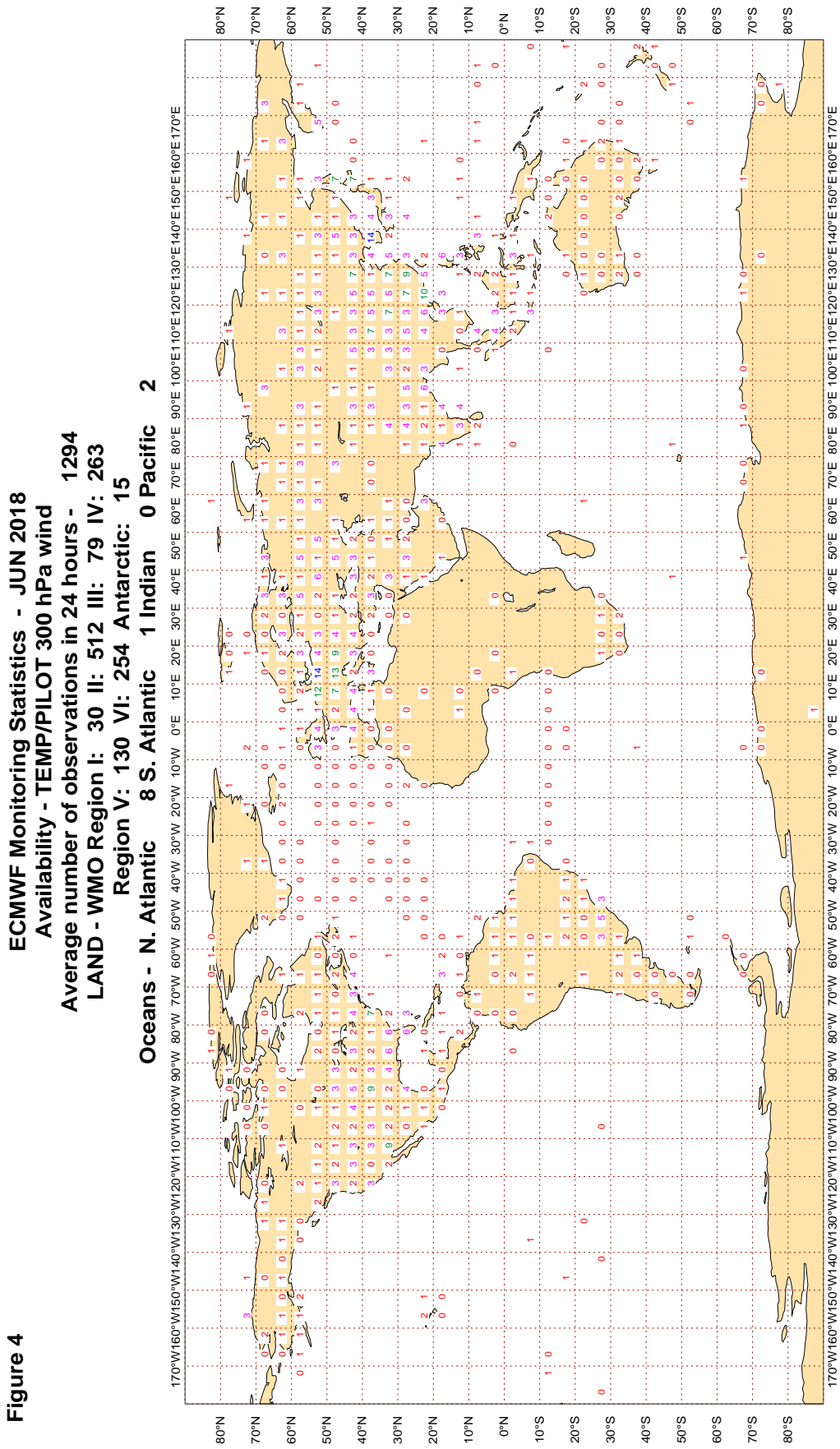
ECMWF Monitoring Statistics - JUN 2018
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1308
 LAND - WMO Region I: 30 II: 517 III: 79 IV: 266
 Region V: 132 VI: 257 Antarctic: 15
 Oceans - N. Atlantic 9 S. Atlantic 1 Indian 0 Pacific 2



Magics 2.24.2 (64 bit)



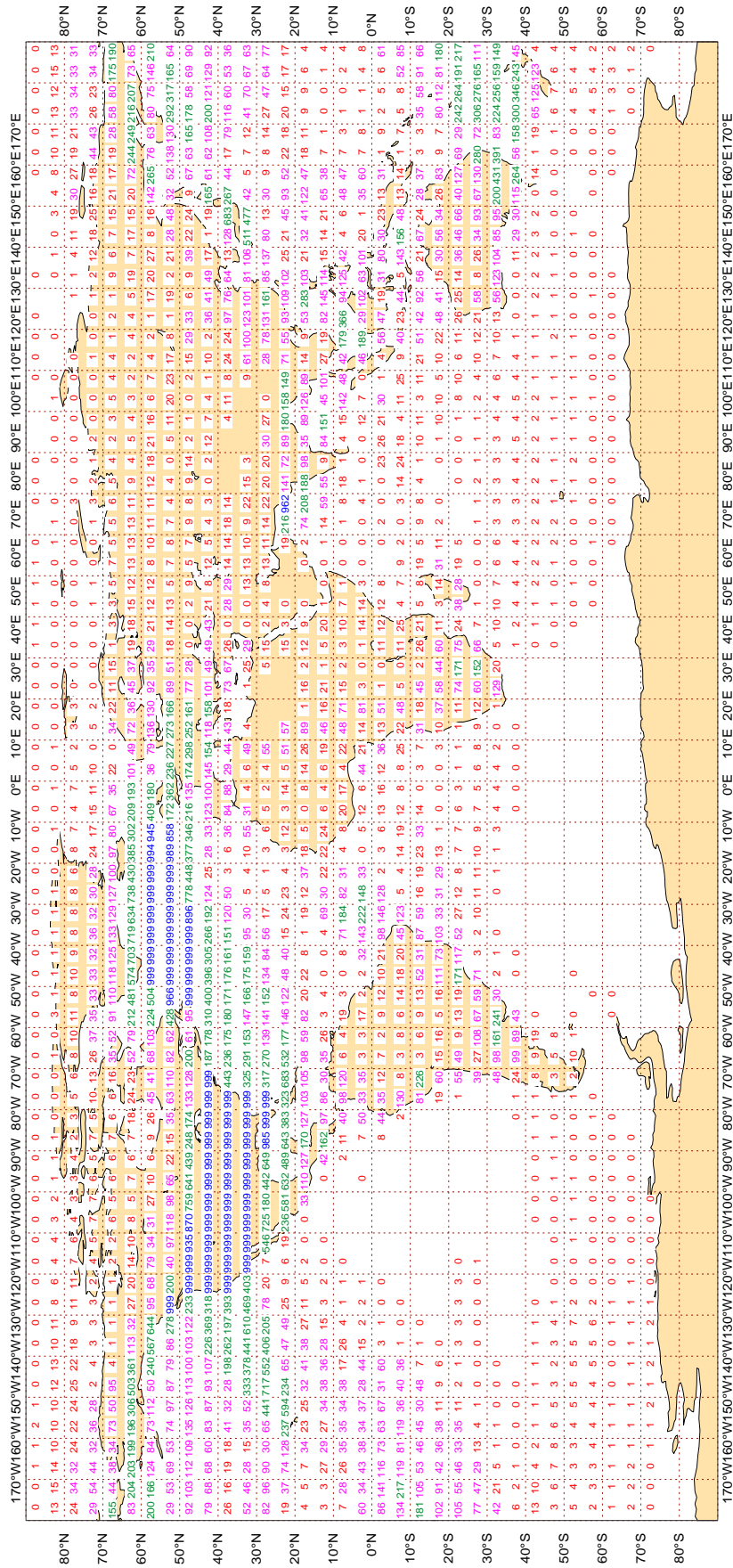
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

ECMWF Monitoring Statistics - JUN 2018
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 237628



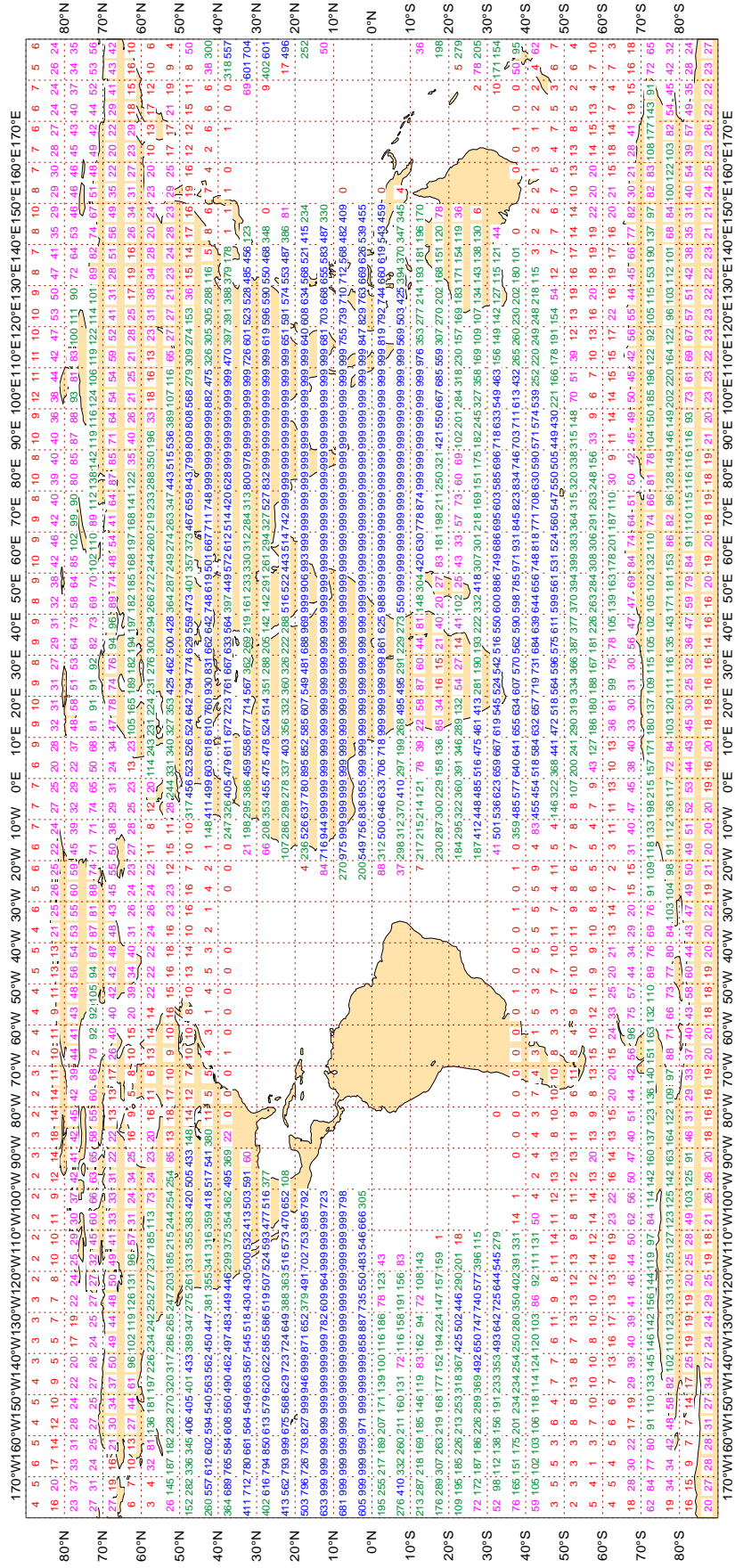
Majics 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - JUN 2018
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 682682

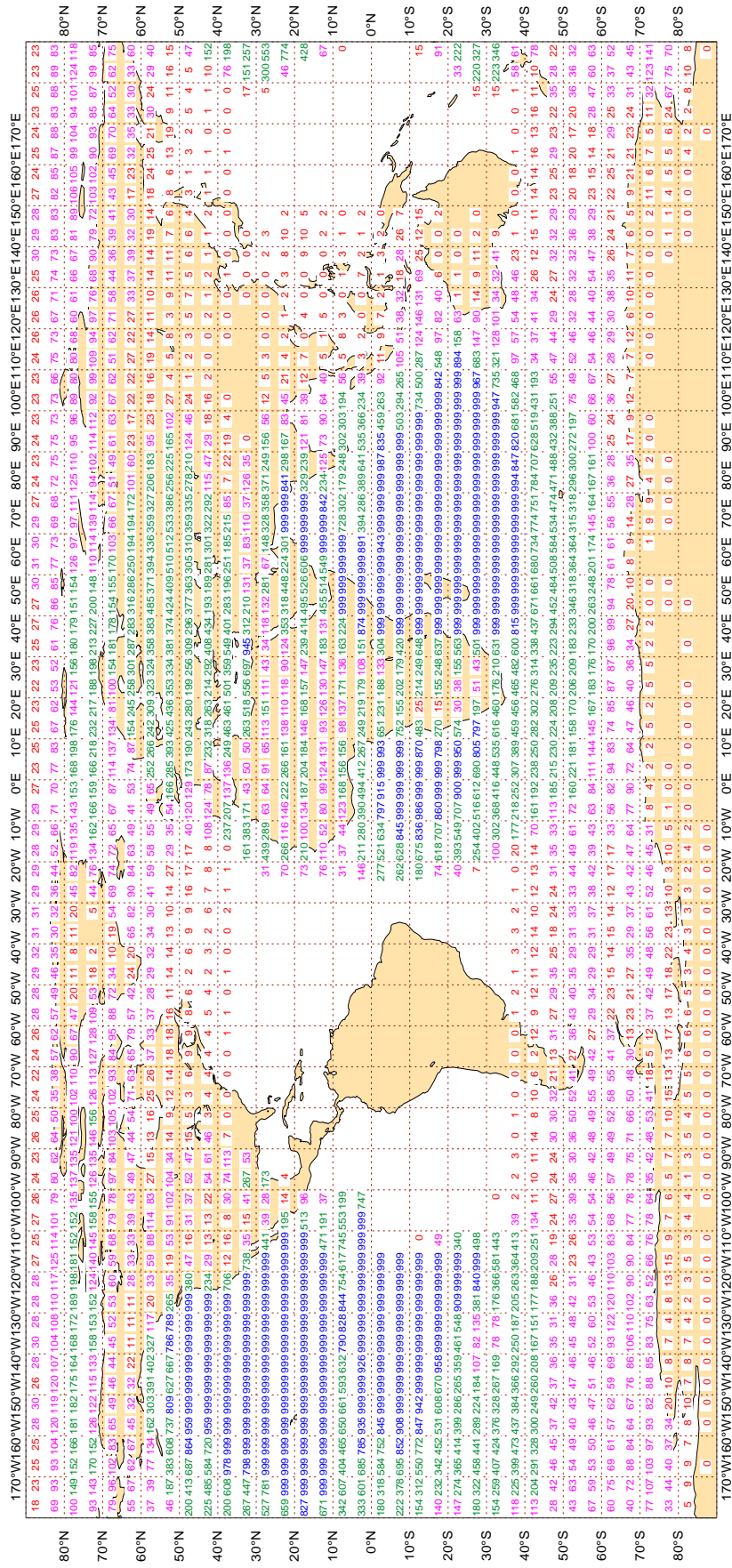


Majics 2.24.2 (64 bit)

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

Figure 7

ECMWF Monitoring Statistics - JUN 2018
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 809622



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

Figure 9.1

ECMWF Monitoring Statistics - JUN 2018
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 536506

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 80°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA18 ATOVS AMSU-A in June 2018.

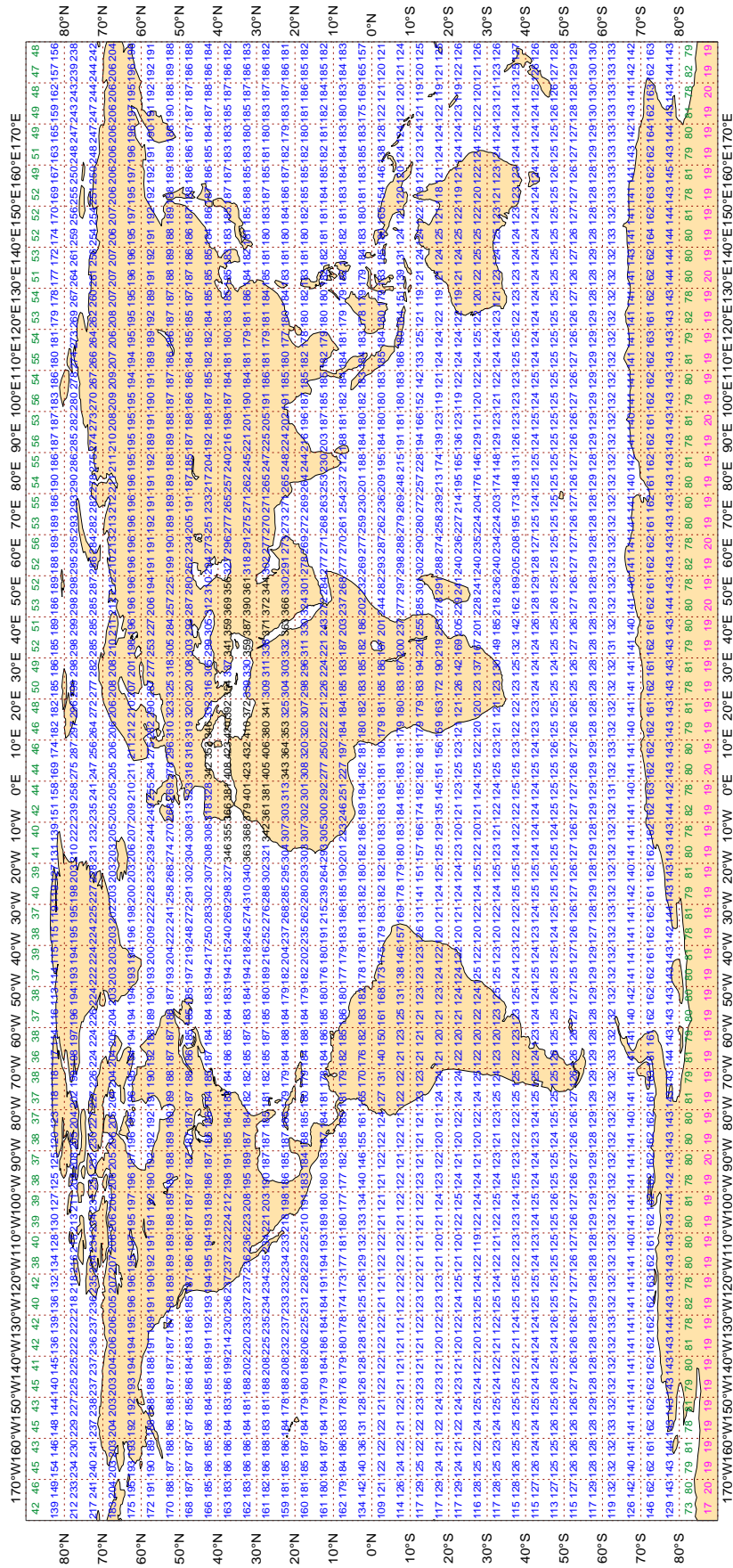
Magics 2.24.2 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - JUN 2018
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 436115



Magics 2.24.2 (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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,
 Manual (Automatic) ABSOLUTE BIAS >= 3(2) HPA, OR,
 STANDARD DEVIATION >= 5(4) HPA, OR,
 % GROSS ERROR >= 25(15)
 (GROSS ERROR LIMIT = 15 HPA)

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
3FMO7	99	P	SUR	29	0	0.8	4.3	4.4
42045	99	P	SUR	144	0	1.4	-10.3	10.4
5BZE2	99	P	SUR	24	0	1.2	5.3	5.5
9HA3553	99	P	SUR	22	0	4.2	3.3	5.3
9HA4638	99	P	SUR	48	1	0.7	3.2	3.2
9HA5353	99	P	SUR	17	0	2.2	8.6	8.8
9HJD9	99	P	SUR	48	0	0.7	-3.9	3.9
9V5542	99	P	SUR	16	0	3.9	3.4	5.2
9V8208	99	P	SUR	20	0	1.0	4.2	4.3
9V9401	99	P	SUR	54	0	2.1	-3.2	3.8
9V9926	99	P	SUR	38	0	3.0	5.2	6.0
9VKQ2	99	P	SUR	28	0	0.9	4.2	4.2
AUFI	99	P	SUR	15	0	0.9	8.1	8.1
C6AB7	99	P	SUR	33	0	0.8	11.2	11.2
C6FM5	99	P	SUR	18	0	0.4	3.2	3.2
C6SE8	99	P	SUR	15	0	0.9	-3.4	3.5
C6SJ5	99	P	SUR	16	0	2.7	3.1	4.1
C6TQ6	99	P	SUR	28	0	3.9	5.9	7.0
C6UC3	99	P	SUR	50	0	0.7	9.0	9.0
HPYE	99	P	SUR	30	0	1.2	-3.2	3.4
MAZS3	99	P	SUR	25	0	1.7	3.7	4.1
OZ2049	99	P	SUR	15	0	0.3	-5.7	5.7
PBAD	99	P	SUR	29	0	2.4	-3.6	4.3
PCBZ	99	P	SUR	28	0	1.1	-5.7	5.8
S6LT5	99	P	SUR	37	0	2.8	3.2	4.3
TCZF2	99	P	SUR	25	2	4.4	-4.8	6.5
UBMO9	99	P	SUR	47	0	1.1	4.0	4.1
UGWJ	99	P	SUR	46	7	3.7	-5.9	7.0
UGYU	99	P	SUR	17	1	1.7	3.5	3.8
V7BY3	99	P	SUR	85	0	5.3	-2.2	5.7
V7TU9	99	P	SUR	35	0	0.5	-3.2	3.2
VRBH9	99	P	SUR	64	0	1.9	4.6	5.0

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
VRG07	99	P	SUR	22	0	0.8	-4.0	4.1
VRG08	99	P	SUR	17	0	1.0	-4.6	4.7
VRID2	99	P	SUR	41	0	2.0	6.6	6.9
VRJT8	99	P	SUR	64	0	3.3	4.3	5.4
VRKF2	99	P	SUR	39	0	2.9	3.8	4.8
VRLA4	99	P	SUR	18	0	1.2	3.5	3.7
VRNM9	99	P	SUR	19	0	2.1	3.6	4.2
VRNR5	99	P	SUR	16	0	0.9	5.5	5.6
VROB9	99	P	SUR	53	0	1.6	3.2	3.6
VRR15	99	P	SUR	127	0	1.8	3.4	3.8
VRWE8	99	P	SUR	17	0	0.5	-3.9	3.9
VTFG	99	P	SUR	65	0	0.6	-3.2	3.2
VTXB	99	P	SUR	113	66	6.0	5.9	8.4
VWTI	99	P	SUR	122	0	1.0	7.9	8.0
WCAJ	99	P	SUR	22	0	0.5	4.9	4.9
WDB3161	99	P	SUR	51	1	1.9	4.2	4.6
WDC6925	99	P	SUR	37	0	0.6	4.3	4.4
ZCDJ9	99	P	SUR	39	0	4.4	3.2	5.5

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,
 Manual (Automatic) ABSOLUTE BIAS >= 4(4) M/S, OR,
 % GROSS ERROR >= 25(15)
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42045	99	SPEED	SUR	144	0	0	1.3	-6.8	6.9
46004	99	SPEED	SUR	44	0	0	2.7	-5.4	6.0

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41038	99	DIRN	SUR	84	0	0	73.2	-1.0	73.2
44037	99	DIRN	SUR	84	0	0	13.5	34.1	36.7
45006	99	DIRN	SUR	69	0	0	35.0	34.5	49.2
45024	99	DIRN	SUR	78	0	0	26.3	40.5	48.3
45026	99	DIRN	SUR	68	0	0	80.7	-14.9	82.1
45166	99	DIRN	SUR	105	0	0	14.7	-46.7	49.0
46118	99	DIRN	SUR	75	0	0	38.4	-37.0	53.3
46120	99	DIRN	SUR	38	0	0	63.5	-50.8	81.3

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,
 ABSOLUTE BIAS >= 4 HPA, OR,
 STANDARD DEVIATION >= 6 HPA, OR,
 % GROSS ERROR >= 25
 (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
1301000	99	P	SUR	33	-17	440	440	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	441	441	0.0	0.0	0.0
1501517	99	P	SUR	-37	-12	648	0	1.0	-5.7	5.8
3201502	99	P	SUR	-36	-110	91	80	2.0	-13.0	13.2
3301530	99	P	SUR	-43	-37	119	0	4.1	5.3	6.7
42045	99	P	SUR	26	-97	859	0	1.4	-10.2	10.3
45509	99	P	SUR	45	-88	20	20	0.0	0.0	0.0
46128	99	P	SUR	43	-125	77	0	7.3	3.0	7.9
4701674	99	P	SUR	70	-67	641	0	0.5	-5.7	5.8
4800282	99	P	SUR	71	-156	640	640	0.0	0.0	0.0
4800770	99	P	SUR	78	-16	88	2	6.2	-0.2	6.2
4801625	99	P	SUR	79	163	643	449	0.7	0.3	0.8
4802000	99	P	SUR	79	-124	263	94	3.5	2.0	4.0
4802004	99	P	SUR	63	-21	644	2	6.4	2.9	7.0
4802012	99	P	SUR	35	-122	642	515	0.4	0.2	0.4
48282	99	P	SUR	71	-156	702	702	0.0	0.0	0.0
48770	99	P	SUR	78	-16	89	2	6.1	-0.2	6.1
5401591	99	P	SUR	-66	-164	91	54	5.3	1.3	5.5
5401593	99	P	SUR	-65	-142	216	55	3.5	-0.7	3.6
5401594	99	P	SUR	-64	-171	550	182	3.3	0.3	3.3
5501549	99	P	SUR	-65	-165	93	92	0.0	-14.2	14.2
5501558	99	P	SUR	-66	-165	63	23	5.3	-0.8	5.4
5601611	99	P	SUR	-18	69	611	0	0.0	7.8	7.8
6202402	99	P	SUR	38	-26	452	452	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	213	213	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	455	455	0.0	0.0	0.0
7101508	99	P	SUR	-67	-31	117	99	5.5	0.3	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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,
 ABSOLUTE BIAS >= 5 M/S, OR,
 % GROSS ERROR >= 25
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
3100231	99	SPEED	SUR	-27	-47	203	2	0	3.9	6.1	7.2
31231	99	SPEED	SUR	-27	-47	204	2	0	4.0	5.9	7.1
42045	99	SPEED	SUR	26	-97	859	0	0	1.4	-7.0	7.1
46004	99	SPEED	SUR	51	-136	259	0	0	2.6	-5.1	5.8

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20 (WIND SPEEDS > 3M/S), AND ,
 ABSOLUTE BIAS >= 20 DEGREES, OR,
 STANDARD DEVIATION >= 60 DEGREES
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
2200106	99	DIRN	SUR	36	130	600	0	0	18.6	-36.4	40.9
2200107	99	DIRN	SUR	33	126	485	0	0	61.0	39.7	72.8
23451	99	DIRN	SUR	15	69	58	0	0	20.0	23.8	31.1
23454	99	DIRN	SUR	10	73	151	0	0	14.3	23.5	27.5
23460	99	DIRN	SUR	7	88	175	0	0	22.2	37.1	43.2
23492	99	DIRN	SUR	11	72	196	0	0	15.0	43.9	46.3
23497	99	DIRN	SUR	11	72	76	0	0	13.5	20.5	24.6
3100231	99	DIRN	SUR	-27	-47	187	2	0	35.6	61.8	71.4
3100262	99	DIRN	SUR	-23	-43	21	0	0	17.4	-30.5	35.2
3100374	99	DIRN	SUR	-25	-45	48	0	0	51.7	-23.5	56.8
31231	99	DIRN	SUR	-27	-47	189	2	0	35.9	61.0	70.8
31262	99	DIRN	SUR	-23	-43	23	0	0	26.1	-40.1	47.9
31374	99	DIRN	SUR	-25	-45	53	0	0	61.1	-15.2	62.9
41038	99	DIRN	SUR	34	-78	492	0	0	72.5	7.0	72.8
42019	99	DIRN	SUR	28	-95	683	0	0	14.6	27.1	30.8
44037	99	DIRN	SUR	44	-68	451	0	0	15.1	34.9	38.0
44058	99	DIRN	SUR	38	-76	676	0	0	26.6	-27.8	38.4
45003	99	DIRN	SUR	45	-83	404	0	0	30.0	22.3	37.3
45006	99	DIRN	SUR	47	-90	660	0	0	32.0	28.2	42.7
45024	99	DIRN	SUR	44	-87	428	0	0	25.9	38.1	46.1
45026	99	DIRN	SUR	42	-87	391	0	0	74.1	-6.7	74.4
45136	99	DIRN	SUR	49	-87	137	0	0	41.0	21.3	46.2
45166	99	DIRN	SUR	45	-73	404	0	0	15.7	-48.0	50.5
45183	99	DIRN	SUR	45	-86	179	0	0	31.8	31.7	44.9
46087	99	DIRN	SUR	49	-125	295	0	0	29.1	22.3	36.7
46118	99	DIRN	SUR	49	-123	435	0	0	38.2	-34.8	51.6
46120	99	DIRN	SUR	48	-122	199	0	0	74.5	-41.8	85.4
5300040	99	DIRN	SUR	-8	95	571	0	0	158.2	27.5	160.6
5300056	99	DIRN	SUR	-5	95	428	0	0	157.5	31.4	160.6
53040	99	DIRN	SUR	-8	95	566	0	0	158.3	26.1	160.4
53056	99	DIRN	SUR	-5	95	422	0	0	157.7	29.3	160.4

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6100281	99	DIRN	SUR	40	0	314	0	0	45.0	-22.8	50.4

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 3 LEVELS WITH
 10 OBS AND 100 M WEIGHTED RMS

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	00	Z	1000	57	3	27	0	5.7	81.9	82.1
01400	12	Z	1000	57	3	27	0	12.0	80.0	80.9
04360	00	Z	1000	66	-38	20	0	3.0	44.1	44.2
04360	12	Z	1000	66	-38	20	0	5.8	42.2	42.6
17351	00	Z	70	37	35	21	7	99.5	73.6	123.8
22820	12	Z	200	62	34	30	0	26.7	-86.9	90.9
22820	00	Z	200	62	34	28	0	36.8	-74.6	83.2
27962	12	Z	50	53	45	28	0	111.6	-81.4	138.1
34882	12	Z	50	46	48	28	0	19.1	140.3	141.6
40437	12	Z	850	25	47	19	0	2.6	33.5	33.6
42299	12	Z	925	27	89	27	0	6.7	-56.6	57.0
42299	00	Z	925	27	89	28	1	5.6	-52.7	53.0
47122	12	Z	1000	37	127	28	11	14.7	-46.0	48.3
47122	00	Z	1000	37	127	27	6	23.9	-34.8	42.2
47158	00	Z	30	35	127	20	0	141.9	108.1	178.4
78988	12	Z	1000	12	-69	29	0	27.4	17.9	32.7
YLV96W	12	Z	400	45	-56	11	3	65.4	81.8	104.7

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 10 OBS AND 15 M/S RMS VECTOR WIND

STANDARD LEVEL (1000-100 HPA) WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
71081	12	V	1000	69	-81	16	0	1.1	-10.9	18.2

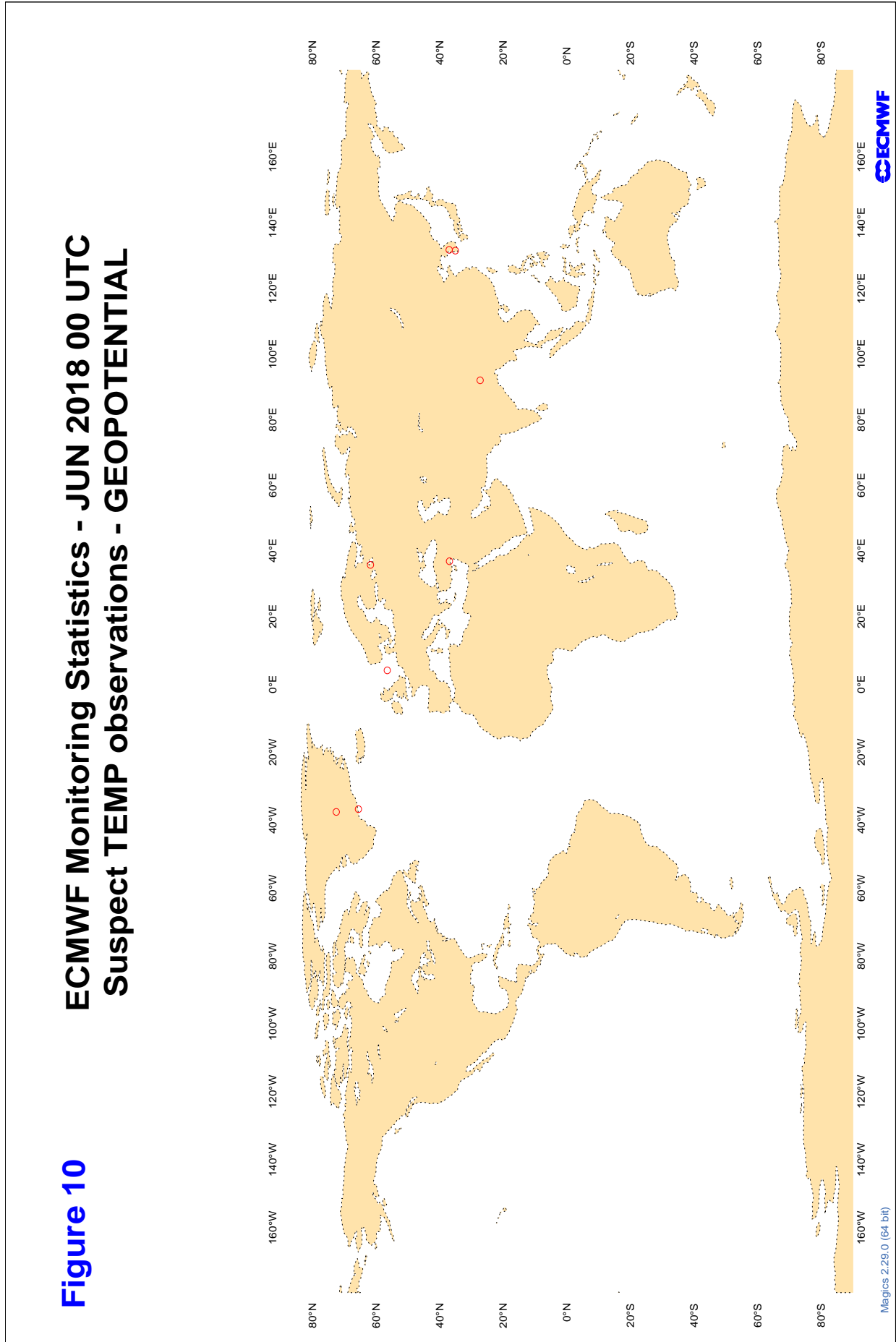
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

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

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



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

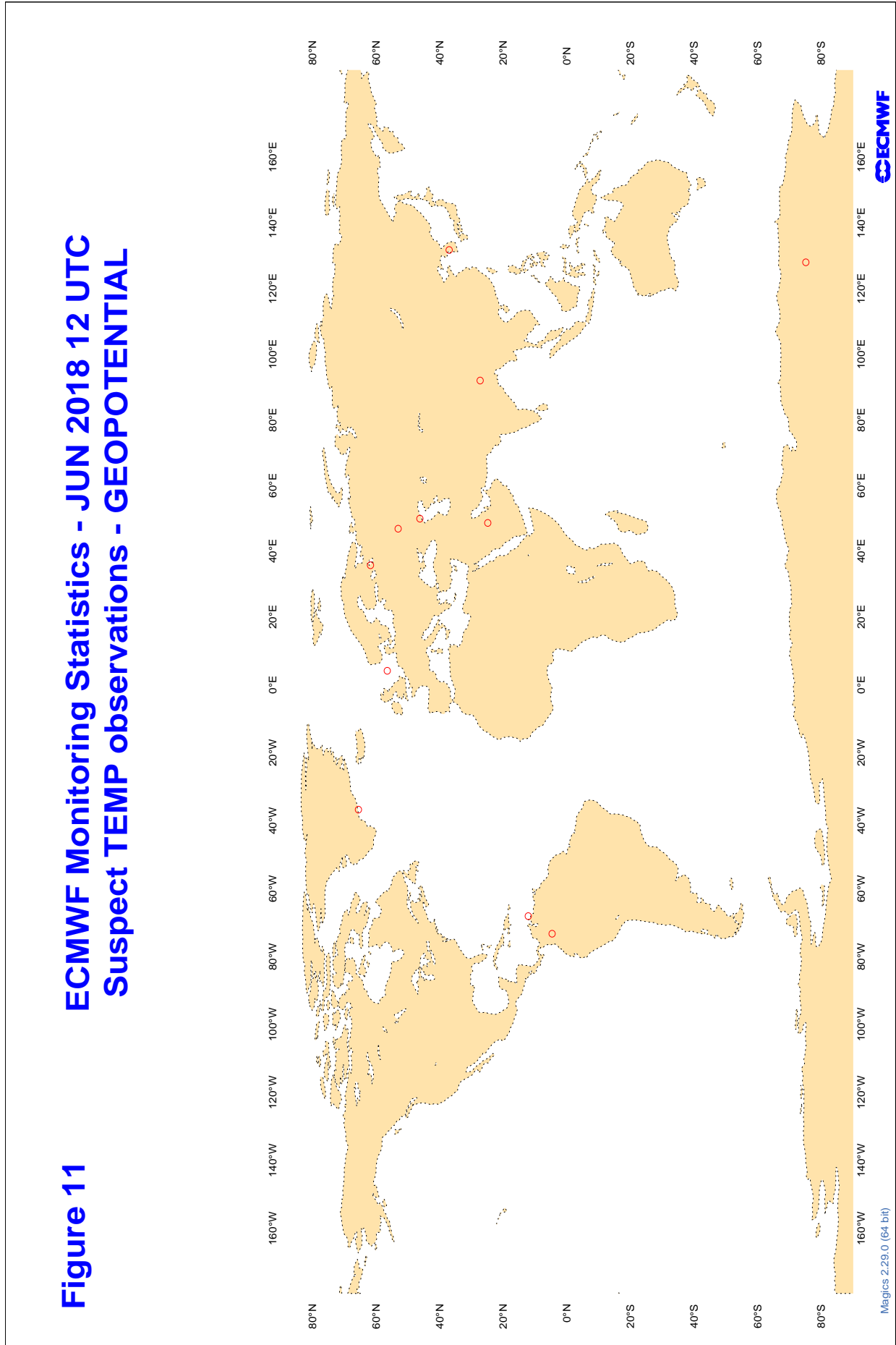
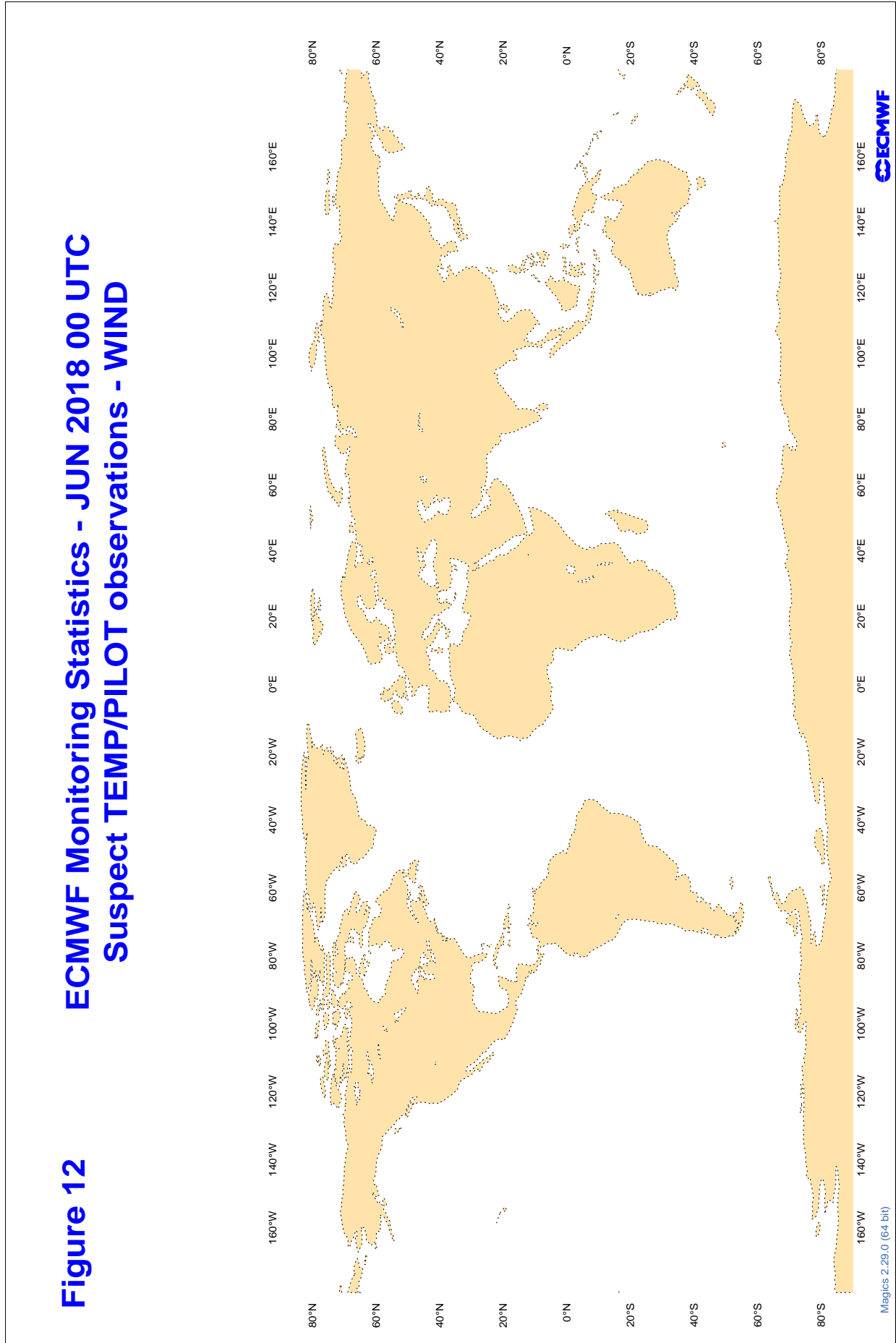
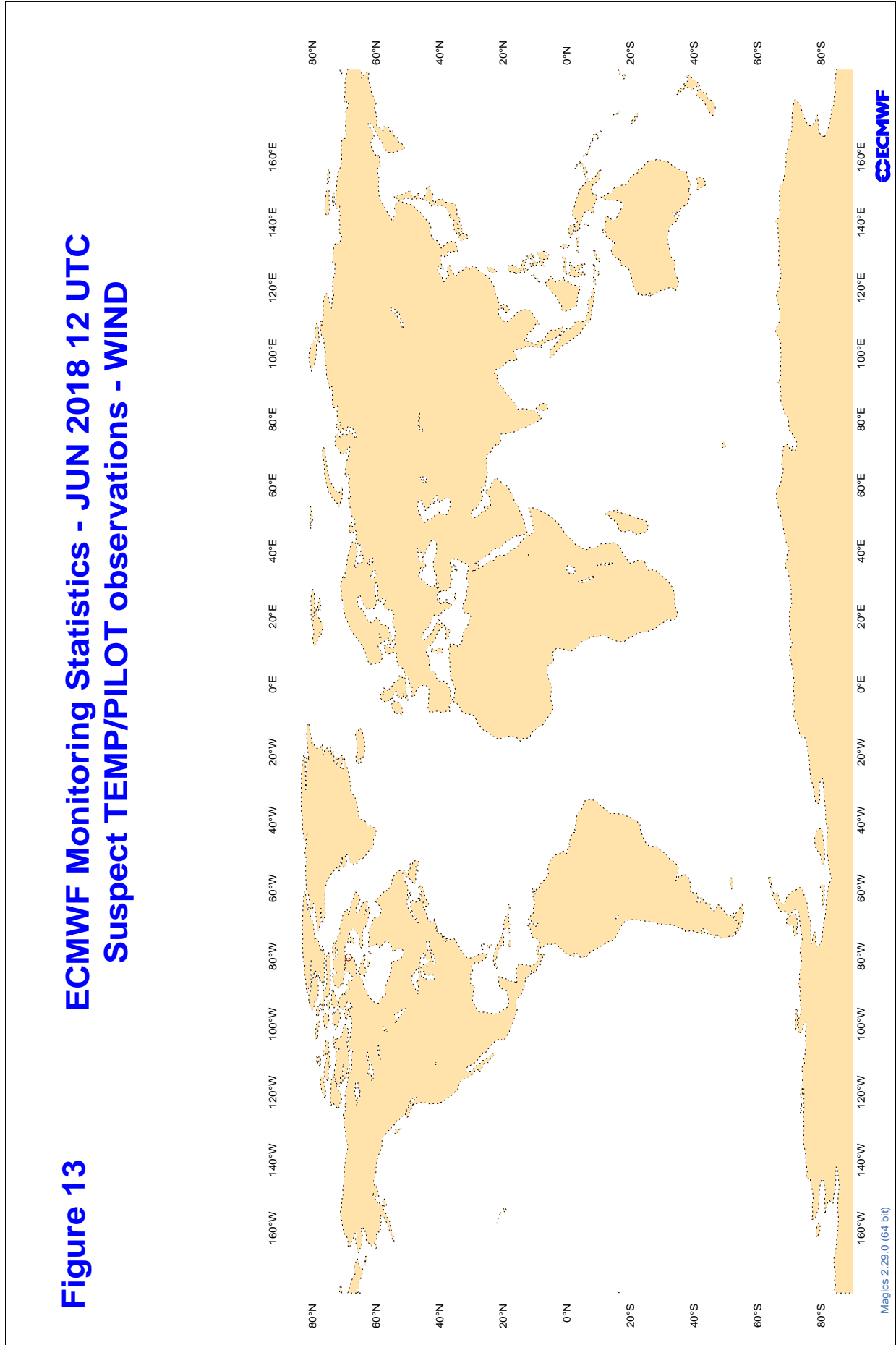


Figure 11 ECMWF Monitoring Statistics - JUN 2018 12 UTC
Suspect TEMP observations - GEOPOTENTIAL

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	8	19.8	18.9
5QPW8X	00	Z	100	9	18.4	15.2
7JUNA4	00	Z	100	9	9.0	-2.0
7JUNA4	12	Z	100	8	43.0	37.7
ASDE09	12	Z	100	3	92.1	74.1
ASFR3	00	Z	100	3	21.0	17.9
ASFR3	12	Z	100	3	26.9	25.3
ASFR4	12	Z	100	0	0.0	0.0
ASFR4	00	Z	100	1	8.0	8.0
DBLK	12	Z	100	7	7.6	3.2
FHM5H	00	Z	100	4	5.4	-0.2
FHM5H	12	Z	100	5	6.9	-2.2
FHM5UJ	12	Z	100	7	4.5	2.5
FHM5UJ	00	Z	100	6	9.1	6.6
FPUW5G	12	Z	100	19	8.6	1.4
GRAI2	12	Z	100	11	13.4	10.8
GRAI2	00	Z	100	9	6.0	5.1
GRAI3	12	Z	100	10	17.0	16.0
GRAI3	00	Z	100	8	15.5	14.3
HTXUH	00	Z	100	1	11.3	-11.3
HTXUH	12	Z	100	3	7.0	-6.2
HTXUH4	00	Z	100	2	8.9	-7.2
HTXUH4	12	Z	100	5	5.9	0.4
JGQH	00	Z	100	2	3.9	-0.7
JGQH	12	Z	100	2	2.2	1.9
PGZ76Y	00	Z	100	10	26.5	23.9
PGZ76Y	12	Z	100	9	28.1	22.2
QCY3TG	00	Z	100	6	22.4	20.9
QCY3TG	12	Z	100	5	26.7	25.8
VKB4L5	00	Z	100	4	59.1	58.3
VKB4L5	12	Z	100	9	42.6	41.1
XKQLWQ	12	Z	100	12	22.0	20.8
XQFJRG	00	Z	100	4	8.9	-2.0
XQFJRG	12	Z	100	5	13.1	9.5
YLV96W	00	Z	100	8	183.3	181.7
YLV96W	12	Z	100	7	23.3	23.3
ZVQEQC	12	Z	100	13	17.3	15.3
ZVQEQC	00	Z	100	4	20.7	20.6

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

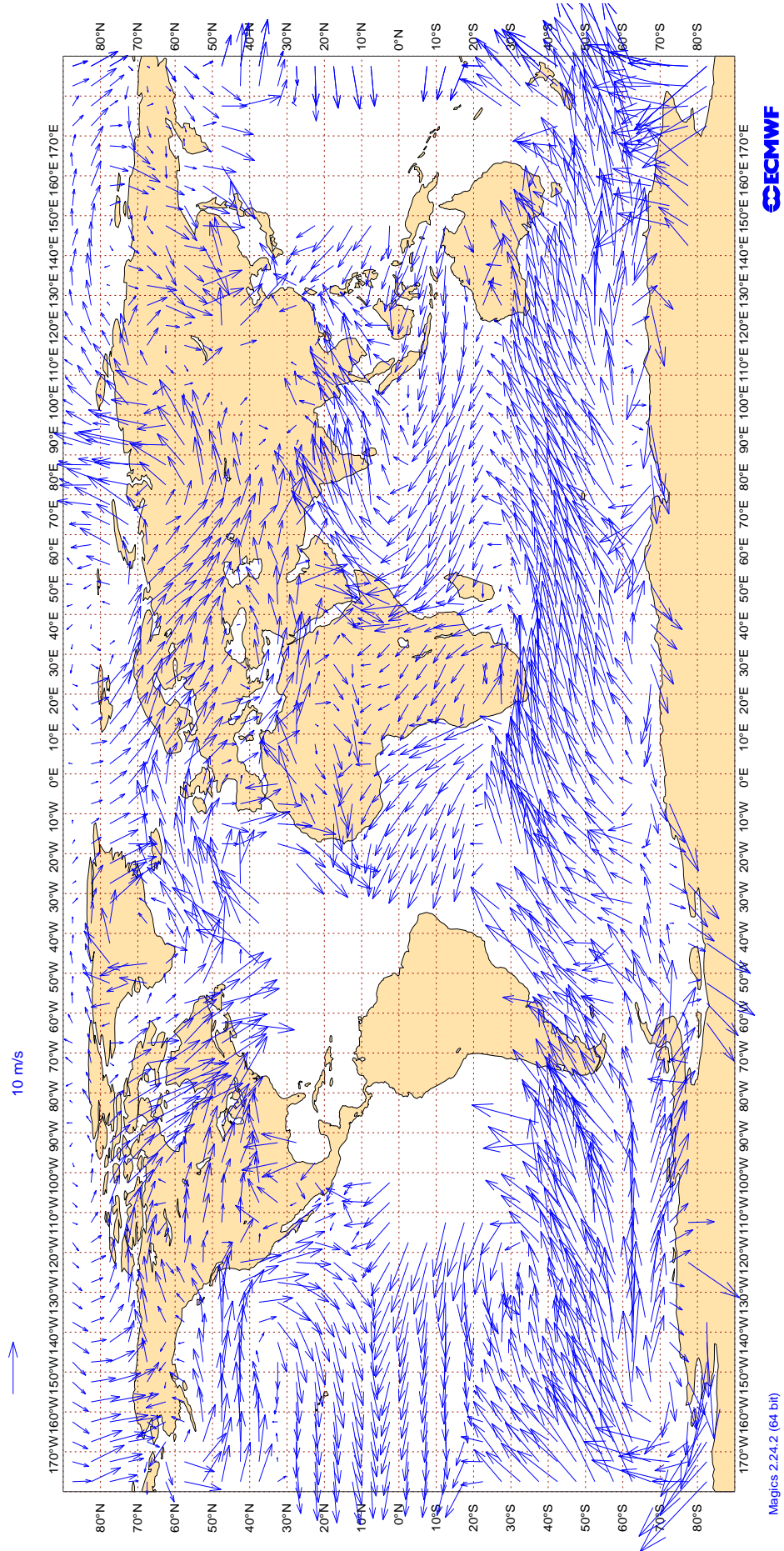
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	8	2.3	0.1	-0.8
5QPW8X	00	V	100	9	2.7	1.4	0.5
7JUNA4	00	V	100	9	2.8	0.9	-0.4
7JUNA4	12	V	100	8	2.7	-0.4	-0.3
ASDE09	12	V	100	3	1.6	-0.8	0.0
ASFR3	00	V	100	3	2.0	0.4	0.1
ASFR3	12	V	100	3	2.1	1.6	0.1
ASFR4	12	V	100	0	0.0	0.0	0.0
ASFR4	00	V	100	1	3.1	1.8	2.5
DBLK	12	V	100	6	2.5	0.3	-1.6
FHM5H	00	V	100	4	2.1	-0.1	0.5
FHM5H	12	V	100	5	4.0	2.8	0.5
FHM5UJ	12	V	100	7	3.4	1.3	0.0
FHM5UJ	00	V	100	6	2.3	-0.2	1.2
FPUW5G	12	V	100	15	3.2	0.3	0.6
GRAI2	12	V	100	4	5.4	-0.7	-1.8
GRAI2	00	V	100	5	6.6	-0.5	0.3
GRAI3	12	V	100	4	3.8	-0.7	0.8
GRAI3	00	V	100	3	8.3	-0.5	5.7
HTXUH	00	V	100	1	1.9	1.1	1.5
HTXUH	12	V	100	3	3.6	-1.2	-1.9
HTXUH4	00	V	100	2	2.0	-0.2	0.5
HTXUH4	12	V	100	5	3.2	1.1	-0.5
JGQH	00	V	100	2	4.5	2.4	2.7
JGQH	12	V	100	2	2.5	1.1	-0.4
PGZ76Y	00	V	100	10	2.5	0.7	0.1
PGZ76Y	12	V	100	9	3.4	-0.3	-1.1
QCY3TG	00	V	100	6	1.5	0.1	-0.4
QCY3TG	12	V	100	5	2.8	-1.0	-0.5
VKB4L5	00	V	100	4	2.2	-0.9	-0.8
VKB4L5	12	V	100	7	4.4	1.8	-1.0
XKQLWQ	12	V	100	12	2.6	-0.3	0.0
XQFJRG	00	V	100	4	2.2	0.0	0.7
XQFJRG	12	V	100	5	3.2	0.0	-0.9
YLV96W	00	V	100	7	2.4	0.4	0.6
YLV96W	12	V	100	7	3.0	-0.7	0.6
ZVQEQC	12	V	100	12	3.4	-0.2	-0.6
ZVQEQC	00	V	100	4	2.3	0.3	0.1

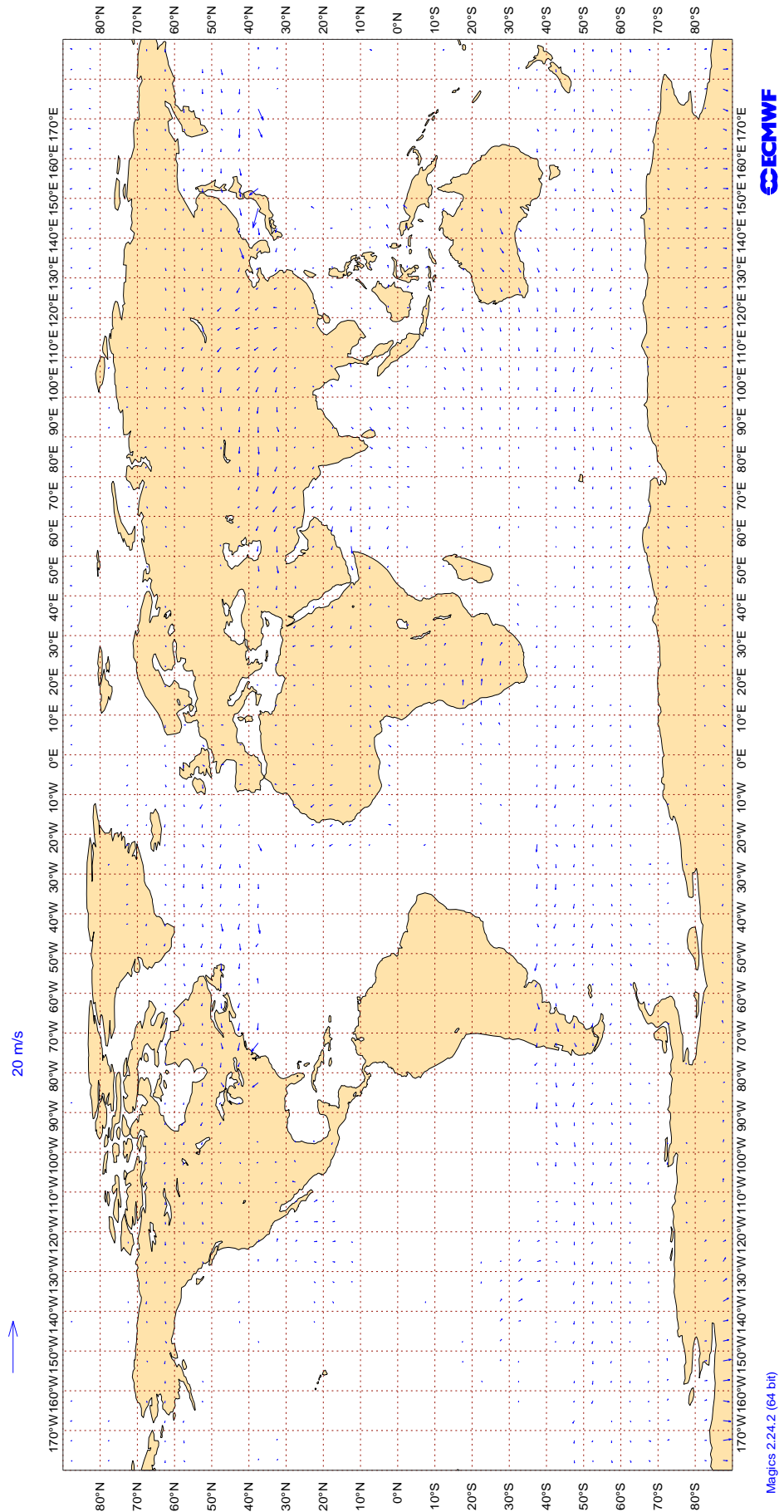
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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



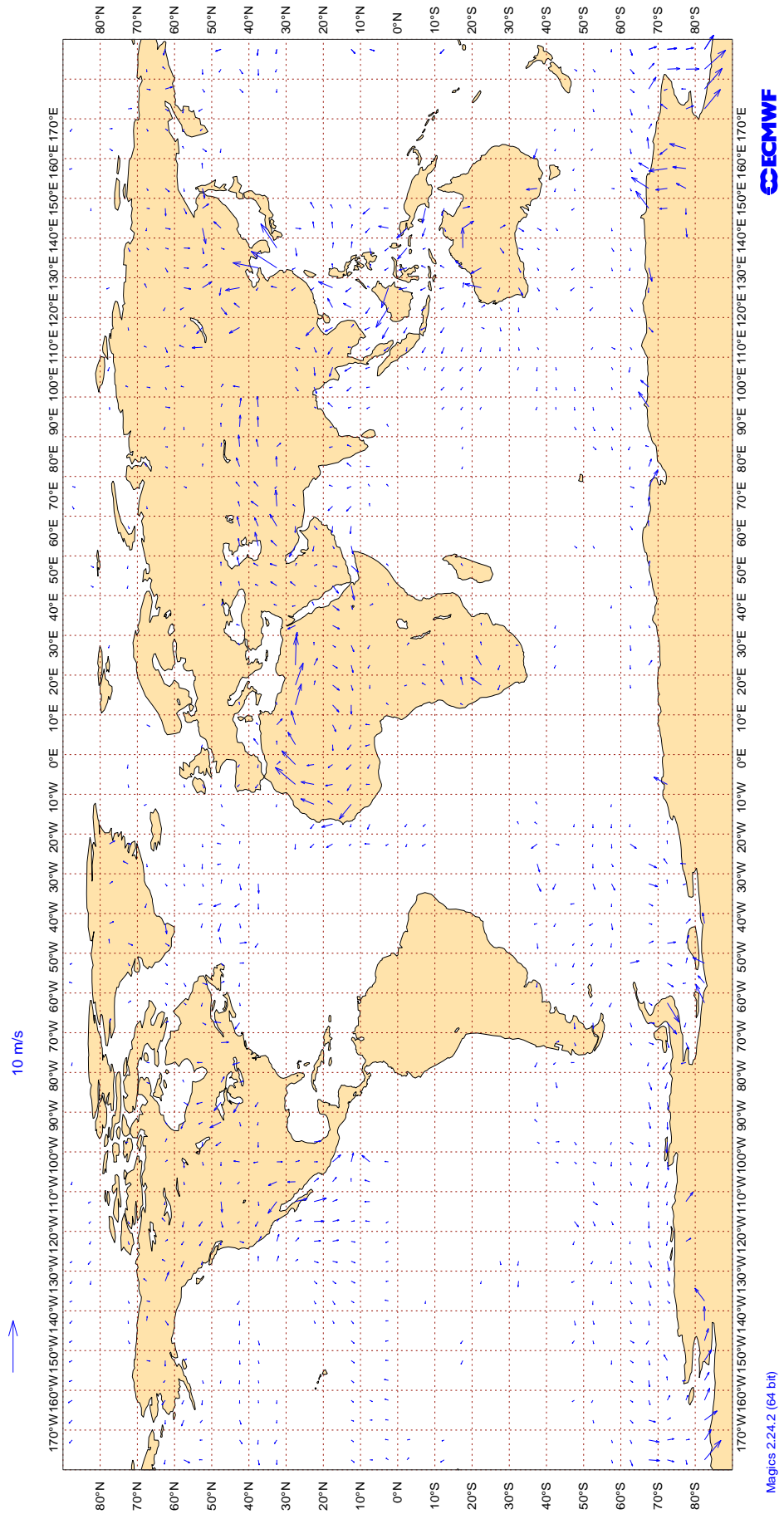
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

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



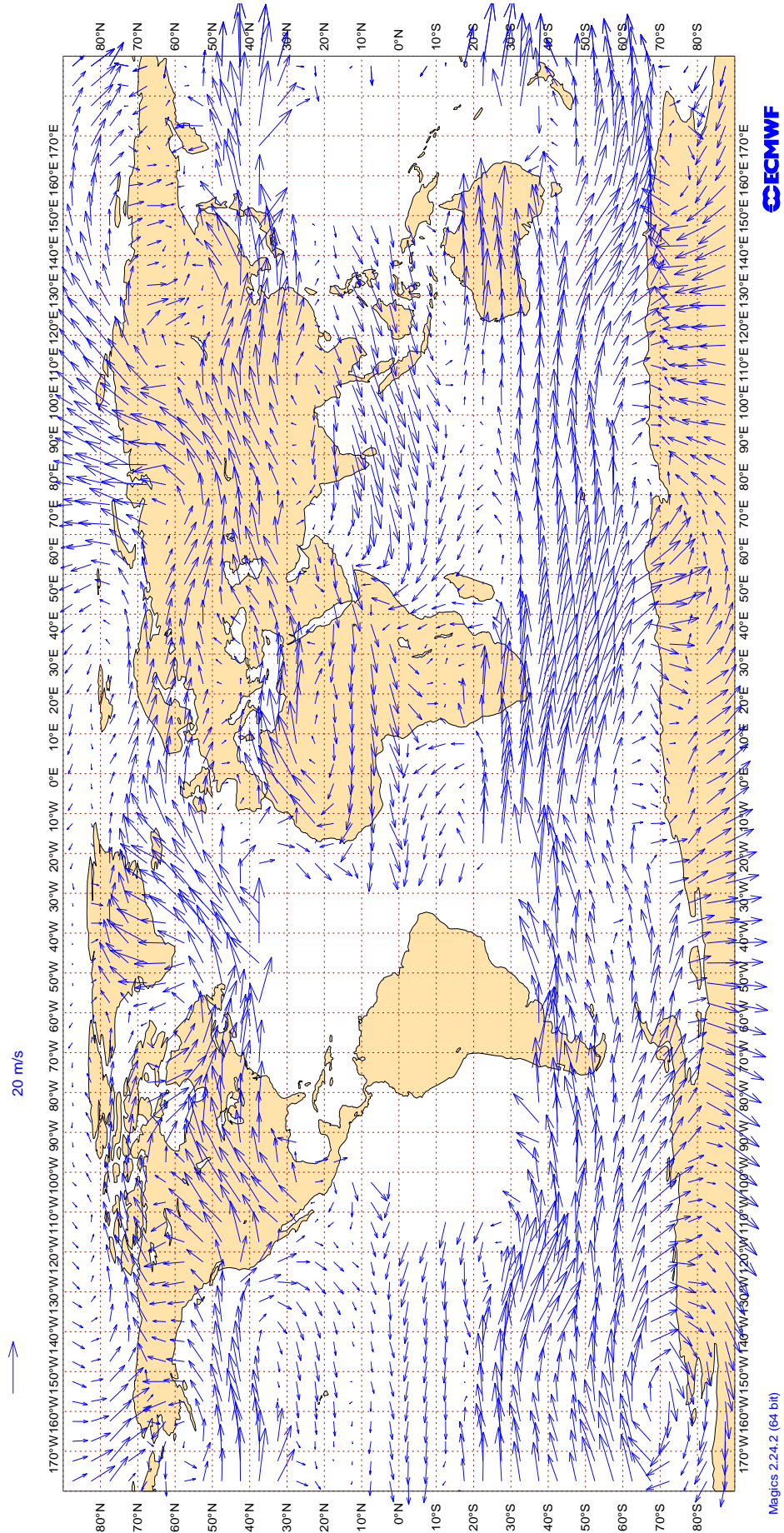
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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



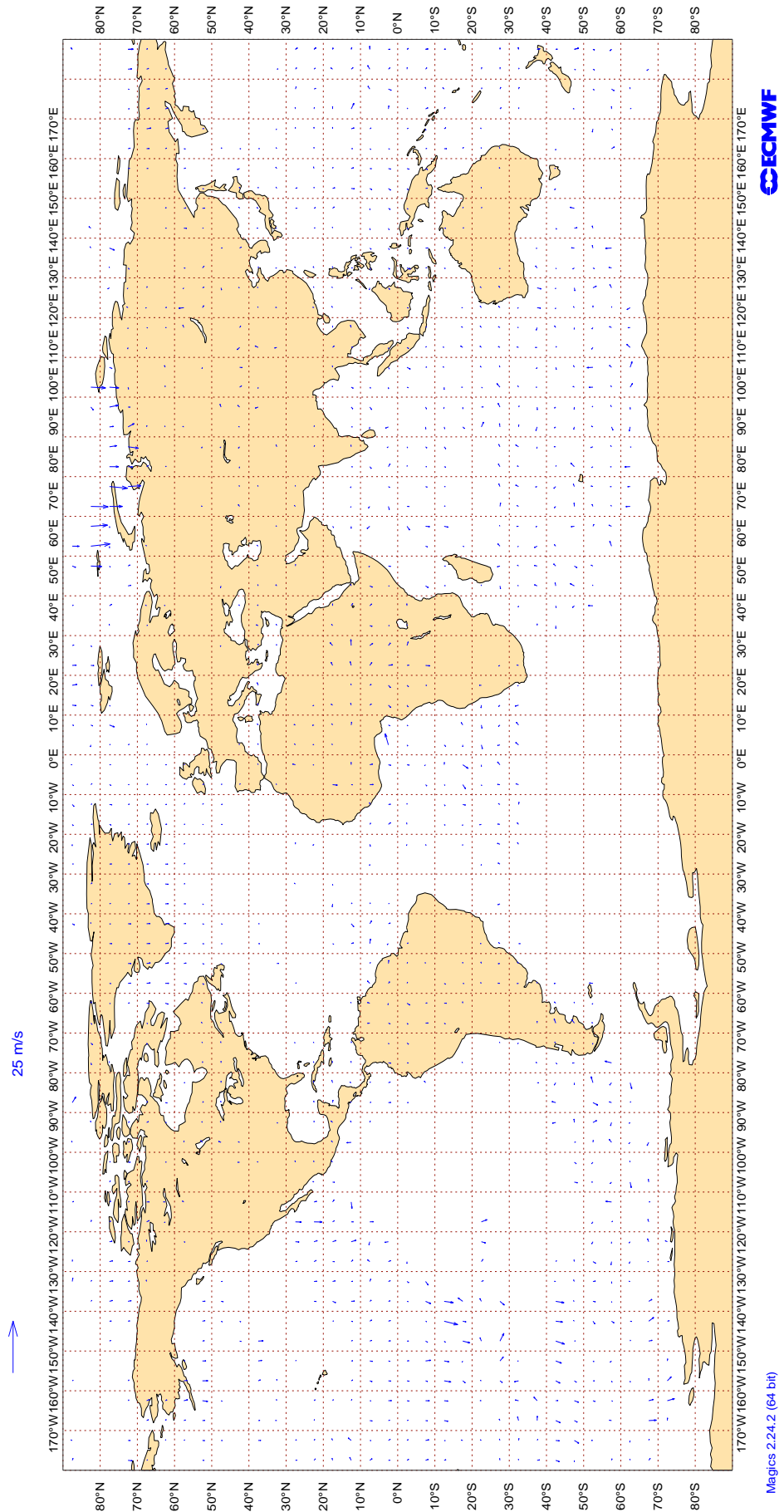
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Jun 2018
Aircraft Winds: 150- 300hPa
Wind bias: Observation - FG



3.2.32 Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : VECTOR WIND (M/S)
 AREA : GLOBAL
 PERIOD : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	92	0	0	4.3	-0.3
AAL	99	V	300-150	67560	2	0	5.7	0.2
AAR	99	V	300-150	259	0	0	4.3	-1.1
ABD	99	V	300-150	987	0	0	4.2	-0.3
ABW	99	V	300-150	1017	0	0	3.7	-0.3
ACA	99	V	300-150	36271	5	0	7.3	0.2
ACI	99	V	300-150	2594	0	0	4.4	0.7
AEA	99	V	300-150	717	1	0	5.3	0.2
AFL	99	V	300-150	2611	0	0	3.0	0.3
AFR	99	V	300-150	30134	1	0	4.3	0.2
AHY	99	V	300-150	272	14	0	10.8	0.3
AIC	99	V	300-150	1929	4	0	6.7	0.1
ALK	99	V	300-150	1143	0	0	4.1	0.2
AMX	99	V	300-150	3059	18	0	11.5	-0.1
ANZ	99	V	300-150	22173	1	0	5.2	0.6
ASA	99	V	300-150	126	1	2	6.8	0.2
ASL	99	V	300-150	772	0	0	3.3	0.3
ASY	99	V	300-150	411	0	0	4.1	1.1
ATN	99	V	300-150	69	0	3	5.7	0.0
AUA	99	V	300-150	5492	0	0	4.0	-0.3
AUI	99	V	300-150	527	0	0	3.7	0.2
AVA	99	V	300-150	568	6	0	11.0	0.0
AVL	99	V	300-150	40	0	0	3.1	0.9
AWC	99	V	300-150	63	0	0	3.7	0.9
AXB	99	V	300-150	30	0	0	6.2	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AXM	99	V	300-150	207	0	0	4.8	0.3
AZA	99	V	300-150	9777	0	0	3.5	0.3
AZG	99	V	300-150	187	0	0	4.0	-0.1
BAH	99	V	300-150	74	0	0	4.3	1.3
BAW	99	V	300-150	55102	2	0	5.5	0.1
BBC	99	V	300-150	31	0	0	3.3	-2.1
BEL	99	V	300-150	2952	0	0	3.3	0.2
BMW	99	V	300-150	72	0	0	4.2	0.2
BOX	99	V	300-150	1795	0	0	3.3	0.1
BOX	99	V	300-150	64	0	0	2.9	0.3
BVR	99	V	300-150	60	52	0	22.6	0.8
CAF	99	V	300-150	31	0	0	3.2	0.3
CAL	99	V	300-150	418	0	0	4.1	0.9
CAT	99	V	300-150	78	0	0	7.2	1.2
CAZ	99	V	300-150	237	0	0	3.4	-0.2
CCA	99	V	300-150	908	3	0	5.6	1.0
CEB	99	V	300-150	101	0	0	3.2	0.9
CEF	99	V	300-150	38	0	0	2.8	1.1
CES	99	V	300-150	1504	0	0	3.9	0.7
CFC	99	V	300-150	360	0	0	4.1	0.8
CFG	99	V	300-150	5029	0	0	3.9	-0.2
CHH	99	V	300-150	202	6	0	9.9	0.1
CJT	99	V	300-150	291	0	0	3.5	0.3
CKS	99	V	300-150	1538	0	0	3.5	0.1
CLE	99	V	300-150	116	0	0	4.0	0.8
CLF	99	V	300-150	52	0	0	3.0	0.1
CLU	99	V	300-150	600	0	0	3.7	-0.1
CLX	99	V	300-150	3567	0	0	3.7	-0.3
CMB	99	V	300-150	1257	0	0	3.9	0.1
CNK	99	V	300-150	23	0	0	3.0	-0.8
CNV	99	V	300-150	328	0	0	3.3	0.2
CPA	99	V	300-150	565	0	0	3.8	0.6
CRK	99	V	300-150	521	0	0	3.6	0.9
CRL	99	V	300-150	1024	0	0	3.5	0.2
CRV	99	V	300-150	32	0	0	5.1	-0.7
CSC	99	V	300-150	151	0	0	3.4	1.0
CSN	99	V	300-150	737	1	0	5.0	0.8
CTM	99	V	300-150	72	0	1	3.7	-0.7
CWG	99	V	300-150	33	0	0	3.8	1.6
DAH	99	V	300-150	883	0	0	3.6	0.3
DAL	99	V	300-150	80653	0	0	3.5	0.1
DCM	99	V	300-150	49	0	0	4.2	-0.0
DCS	99	V	300-150	37	0	0	3.6	0.9

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DGX	99	V	300-150	79	0	0	3.4	-0.2
DHK	99	V	300-150	1060	0	0	4.1	-0.1
DJT	99	V	300-150	1924	0	0	4.1	0.1
DLH	99	V	300-150	35386	0	0	3.4	0.1
DUB	99	V	300-150	66	0	0	3.7	-0.0
EAU	99	V	300-150	21	29	0	21.9	0.4
EDC	99	V	300-150	44	0	0	3.1	-0.7
EDG	99	V	300-150	64	45	0	15.3	0.6
EDW	99	V	300-150	2437	0	0	3.2	0.3
EIN	99	V	300-150	16771	0	0	3.4	0.2
EJM	99	V	300-150	1648	4	0	6.3	0.2
ELY	99	V	300-150	3967	8	0	6.7	-0.0
ETD	99	V	300-150	7095	2	0	4.9	0.2
ETH	99	V	300-150	3200	5	0	7.4	0.4
EUW	99	V	300-150	31	0	0	2.9	0.2
EVA	99	V	300-150	20	0	0	6.1	0.3
EWG	99	V	300-150	4145	0	0	3.4	0.4
EXS	99	V	300-150	86	0	0	2.6	0.1
FBU	99	V	300-150	724	0	0	3.8	-0.1
FDX	99	V	300-150	5583	0	0	3.4	0.3
FIN	99	V	300-150	913	0	0	2.8	0.1
FJI	99	V	300-150	6781	0	0	4.4	0.7
FPG	99	V	300-150	21	0	0	4.9	-2.4
FWI	99	V	300-150	1158	0	0	3.0	0.2
FYG	99	V	300-150	133	0	0	3.4	-0.1
FYL	99	V	300-150	40	0	0	4.6	1.0
GAF	99	V	300-150	112	0	0	3.2	-0.7
GAJ	99	V	300-150	38	0	0	2.6	0.7
GCK	99	V	300-150	37	0	0	4.5	1.5
GCR	99	V	300-150	58	0	0	3.7	0.9
GEC	99	V	300-150	2443	0	0	3.2	0.2
GES	99	V	300-150	196	0	0	3.6	0.3
GFA	99	V	300-150	837	0	0	3.2	0.3
GHO	99	V	300-150	56	0	0	10.0	-6.6
GIA	99	V	300-150	344	0	0	4.1	0.5
GLJ	99	V	300-150	67	0	0	3.6	-0.4
GLO	99	V	300-150	47	6	9	11.4	2.0
GMA	99	V	300-150	55	0	0	3.1	-0.7
GTH	99	V	300-150	180	0	0	4.1	-0.3
GTI	99	V	300-150	3227	0	0	3.8	-0.3
HAL	99	V	300-150	4457	0	0	3.9	0.7
HAN	99	V	300-150	20	0	0	4.0	1.6
HFM	99	V	300-150	40	0	0	4.2	-0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
HRT	99	V	300-150	81	49	0	23.2	-0.2
HZS	99	V	300-150	39	0	0	4.6	-0.2
HZS	99	V	300-150	89	0	0	3.4	0.4
IAM	99	V	300-150	29	0	0	3.6	0.6
IBE	99	V	300-150	2634	0	0	3.3	0.3
IBK	99	V	300-150	399	0	0	3.6	0.2
ICE	99	V	300-150	1020	0	1	3.2	0.2
ICL	99	V	300-150	792	0	0	4.1	-0.2
ICV	99	V	300-150	223	0	0	3.6	-0.6
IFA	99	V	300-150	57	53	0	28.6	0.0
IJM	99	V	300-150	54	0	0	5.9	-1.4
ISS	99	V	300-150	1486	0	0	3.4	0.2
JAF	99	V	300-150	1033	10	0	9.3	0.1
JAI	99	V	300-150	1604	0	0	3.2	0.0
JAS	99	V	300-150	209	0	0	3.4	0.3
JET	99	V	300-150	32	0	0	3.5	-0.5
JJA	99	V	300-150	42	0	2	9.2	1.0
JME	99	V	300-150	46	0	0	3.9	0.6
JML	99	V	300-150	22	0	0	2.7	0.3
JST	99	V	300-150	3122	1	0	6.4	0.4
JSX	99	V	300-150	45	0	0	4.3	-0.5
JTL	99	V	300-150	34	0	3	4.8	-1.5
KAC	99	V	300-150	1375	0	0	3.7	0.4
KAI	99	V	300-150	86	0	0	3.1	0.6
KAL	99	V	300-150	1432	0	0	4.4	1.0
KAY	99	V	300-150	24	0	0	3.2	0.4
KCE	99	V	300-150	97	0	0	3.5	0.2
KIW	99	V	300-150	86	0	1	4.6	-0.7
KLM	99	V	300-150	18292	4	0	6.5	0.0
KQA	99	V	300-150	195	0	0	4.6	0.6
KRF	99	V	300-150	38	0	0	2.8	0.4
LAN	99	V	300-150	2243	6	0	7.9	0.3
LDX	99	V	300-150	72	0	0	3.0	0.2
LEA	99	V	300-150	63	0	0	4.0	0.3
LGT	99	V	300-150	22	0	0	3.8	-0.2
LMJ	99	V	300-150	58	0	0	3.5	0.5
LNI	99	V	300-150	21	0	0	3.7	1.0
LOT	99	V	300-150	3482	14	0	14.7	-0.2
LSM	99	V	300-150	22	0	0	4.3	-0.3
LUC	99	V	300-150	58	0	0	3.3	-0.2
LXJ	99	V	300-150	48	0	0	3.4	0.5
MAS	99	V	300-150	620	0	0	3.7	0.5
MAU	99	V	300-150	149	0	0	5.1	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
MED	99	V	300-150	52	0	0	3.9	0.1
MMD	99	V	300-150	380	0	0	3.5	-0.4
MPH	99	V	300-150	533	0	0	3.9	-0.9
MSR	99	V	300-150	1463	0	0	3.3	0.2
MXD	99	V	300-150	36	0	0	5.8	1.0
NAF	99	V	300-150	38	0	0	4.2	0.3
NAS	99	V	300-150	543	0	0	3.6	0.3
NAX	99	V	300-150	9943	12	0	11.8	-0.1
NCA	99	V	300-150	84	0	0	4.4	-1.1
NJE	99	V	300-150	428	0	0	3.5	0.1
NOS	99	V	300-150	380	2	0	6.9	0.1
NRS	99	V	300-150	7895	15	0	12.9	-0.0
NWS	99	V	300-150	279	0	0	3.7	0.7
OAE	99	V	300-150	1456	0	0	4.0	0.3
OMA	99	V	300-150	729	0	0	4.7	0.1
PAC	99	V	300-150	205	0	0	4.0	0.5
PAL	99	V	300-150	1144	0	0	3.8	0.8
PAT	99	V	300-150	71	0	0	3.2	0.1
PEG	99	V	300-150	45	0	2	2.7	-0.0
PIA	99	V	300-150	128	0	0	3.2	0.5
PJZ	99	V	300-150	71	0	0	3.8	0.1
PLF	99	V	300-150	32	0	0	3.4	0.0
PLM	99	V	300-150	22	0	0	3.3	-1.1
PNC	99	V	300-150	41	0	0	3.7	0.3
PRD	99	V	300-150	28	0	7	4.2	-0.0
PRI	99	V	300-150	3218	0	0	4.0	0.4
QAF	99	V	300-150	72	0	0	2.6	0.2
QFA	99	V	300-150	17328	0	0	4.7	0.4
QQE	99	V	300-150	46	0	0	10.2	0.8
QTR	99	V	300-150	14614	0	0	3.8	0.2
RAM	99	V	300-150	299	8	0	9.8	0.3
RBA	99	V	300-150	143	0	0	4.1	0.2
RCH	99	V	300-150	5041	0	0	4.4	0.3
RDN	99	V	300-150	91	0	0	3.7	0.3
REN	99	V	300-150	37	0	0	4.0	1.2
RJA	99	V	300-150	1811	16	0	12.2	-0.2
RMA	99	V	300-150	22	0	0	4.3	-0.0
ROM	99	V	300-150	51	0	0	3.7	0.8
ROU	99	V	300-150	11222	0	0	4.0	-0.1
RRR	99	V	300-150	187	0	0	3.0	0.2
RZO	99	V	300-150	94	0	0	4.0	0.8
SAM	99	V	300-150	272	0	0	3.4	0.2
SAS	99	V	300-150	4848	0	0	3.0	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SCX	99	V	300-150	102	0	1	4.8	0.2
SDM	99	V	300-150	37	0	3	3.0	0.6
SIA	99	V	300-150	3459	0	0	3.7	0.2
SLM	99	V	300-150	105	0	0	2.6	0.2
SOO	99	V	300-150	398	0	0	3.6	-0.1
SPA	99	V	300-150	180	0	0	4.2	-0.1
SVA	99	V	300-150	5228	2	0	4.7	0.2
SVW	99	V	300-150	59	0	0	3.3	0.1
SWR	99	V	300-150	10992	0	0	3.5	0.4
SXN	99	V	300-150	61	0	0	3.0	0.2
TAM	99	V	300-150	395	0	0	3.5	-0.0
TAP	99	V	300-150	1178	0	0	3.7	0.3
TAR	99	V	300-150	551	0	0	3.2	0.1
TAY	99	V	300-150	441	0	0	4.4	-0.0
TBJ	99	V	300-150	37	0	0	3.9	0.5
TCX	99	V	300-150	7921	0	0	3.3	0.3
TEU	99	V	300-150	39	0	0	5.1	0.7
TFF	99	V	300-150	54	0	0	5.3	-1.0
TFL	99	V	300-150	1684	13	0	10.7	-0.1
TGW	99	V	300-150	79	0	0	5.0	-0.1
THA	99	V	300-150	389	0	0	3.6	0.3
THT	99	V	300-150	4091	0	0	3.8	0.3
THY	99	V	300-150	9404	0	0	3.6	0.2
TMN	99	V	300-150	31	0	13	4.2	1.0
TOM	99	V	300-150	6449	13	0	11.2	0.1
TOW	99	V	300-150	69	0	0	3.0	-0.0
TRE	99	V	300-150	65	0	0	6.2	-1.0
TRK	99	V	300-150	37	0	0	3.6	-0.7
TSC	99	V	300-150	17699	0	0	3.5	0.2
TWB	99	V	300-150	30	0	3	9.1	2.1
TWY	99	V	300-150	407	0	0	3.5	-0.2
UAE	99	V	300-150	16585	0	0	3.7	0.2
UAL	99	V	300-150	88056	1	2	5.2	0.2
ULC	99	V	300-150	101	0	0	3.4	-0.1
UPS	99	V	300-150	5133	0	0	3.8	0.1
UZB	99	V	300-150	123	7	0	13.0	-0.4
VCJ	99	V	300-150	32	0	0	5.0	-1.0
VCN	99	V	300-150	102	0	0	3.5	0.4
VIR	99	V	300-150	24340	3	0	6.3	0.1
VJT	99	V	300-150	1171	28	0	17.8	0.0
VMP	99	V	300-150	77	0	1	3.3	-0.0
VOZ	99	V	300-150	6144	0	0	4.1	0.3
WGT	99	V	300-150	32	0	0	3.2	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
WJA	99	V	300-150	6118	0	0	3.8	0.2
WOW	99	V	300-150	3299	0	0	2.8	0.1
WWI	99	V	300-150	56	0	0	3.8	0.2
XAX	99	V	300-150	464	0	0	3.6	1.0
XLF	99	V	300-150	1823	0	0	3.4	0.5

4 EUCOS Area Monitoring Statistics

The following tables provide information on the quality of upper-air data and surface DRIFTER data over the EUCOS area as received at ECMWF during the month.

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area 10°N - 90°N, 70°W - 40°E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.

Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area 10°N - 90°N, 70°W - 40°E. The statistics are in the same form as tables 4-6.

4.1 Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	30	12.1	10.4
01001	00	Z	50	29	14.1	12.3
01028	00	Z	50	30	8.2	5.6
01028	12	Z	50	30	17.6	5.6
01400	00	Z	50	23	98.6	98.2
01400	12	Z	50	24	86.6	84.9
01415	00	Z	50	28	20.5	18.3
01415	12	Z	50	28	13.1	10.9
02365	12	Z	50	28	9.5	8.3
02365	00	Z	50	23	15.8	15.1
02591	00	Z	50	30	24.9	24.5
02591	12	Z	50	30	14.0	12.3
02836	12	Z	50	30	9.6	5.3
02836	00	Z	50	29	12.1	11.1
02963	00	Z	50	27	17.7	16.8
02963	12	Z	50	29	11.4	9.7
03005	12	Z	50	30	11.9	10.2
03005	00	Z	50	1	15.2	15.2
03238	12	Z	50	3	16.0	15.2
03238	00	Z	50	30	21.6	21.0
03808	00	Z	50	29	18.9	18.3
03808	12	Z	50	30	12.1	10.9
03918	00	Z	50	26	24.0	22.9
03918	12	Z	50	5	17.1	16.4
03953	12	Z	50	30	23.6	20.4
03953	00	Z	50	28	19.4	17.5
04018	12	Z	50	27	10.9	9.6
04018	00	Z	50	31	11.6	9.4
04220	12	Z	50	29	13.7	9.9
04220	00	Z	50	30	14.4	13.2
04270	12	Z	50	29	14.7	13.8
04270	00	Z	50	30	13.2	9.6
04320	00	Z	50	30	12.9	11.8
04320	12	Z	50	30	15.0	14.4
04339	00	Z	50	30	17.7	13.2
04339	12	Z	50	30	19.8	13.3
04360	12	Z	50	28	59.2	53.4
04360	00	Z	50	28	39.5	37.7
06011	12	Z	50	28	18.9	16.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	30	18.4	8.9
06260	00	Z	50	30	17.4	16.1
06260	12	Z	50	3	11.3	11.1
06610	00	Z	50	30	22.5	21.8
06610	12	Z	50	30	14.7	12.4
07110	00	Z	50	27	46.3	45.3
07110	12	Z	50	28	38.9	37.1
07510	12	Z	50	30	45.3	42.0
07510	00	Z	50	26	51.1	49.2
07645	12	Z	50	28	29.1	26.4
07645	00	Z	50	28	34.5	34.1
07761	12	Z	50	30	38.9	37.2
07761	00	Z	50	30	41.7	40.4
08001	12	Z	50	29	18.7	16.3
08001	00	Z	50	23	46.6	16.2
08221	00	Z	50	26	23.6	23.2
08221	12	Z	50	27	15.8	14.7
08302	12	Z	50	29	8.0	6.3
08302	00	Z	50	29	19.2	18.5
08508	12	Z	50	27	16.1	14.6
08522	12	Z	50	27	22.0	19.6
08579	12	Z	50	25	25.2	22.6
10035	12	Z	50	28	30.2	27.5
10393	00	Z	50	29	20.8	19.8
10393	12	Z	50	29	13.2	11.5
10410	00	Z	50	27	16.3	15.4
10410	12	Z	50	28	12.5	10.1
10739	12	Z	50	30	19.9	15.9
10739	00	Z	50	29	23.3	22.4
11035	12	Z	50	31	23.6	15.4
11035	00	Z	50	29	28.1	27.8
12982	00	Z	50	14	25.3	24.4
12982	12	Z	50	12	34.4	32.3
16080	00	Z	50	29	18.8	17.9
16080	12	Z	50	30	9.9	6.9
16245	00	Z	50	26	23.1	20.9
16245	12	Z	50	28	16.7	12.8
16320	12	Z	50	23	25.3	20.4
16320	00	Z	50	29	28.6	28.2
16429	00	Z	50	29	26.0	24.9
16429	12	Z	50	28	15.0	12.4
16622	00	Z	50	24	44.6	35.5
16754	00	Z	50	18	29.9	29.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	50	28	20.2	18.5
26435	00	Z	50	13	17.5	16.4
5QPW8X	12	Z	50	8	31.8	31.1
5QPW8X	00	Z	50	8	30.4	28.4
60018	00	Z	50	31	23.6	22.9
60018	12	Z	50	30	12.2	11.1
7JUNA4	00	Z	50	8	15.2	10.4
7JUNA4	12	Z	50	7	53.2	50.9
ASDE09	12	Z	50	2	95.1	67.8
ASFR3	00	Z	50	1	29.9	29.9
ASFR3	12	Z	50	2	35.5	35.3
ASFR4	12	Z	50	0	0.0	0.0
ASFR4	00	Z	50	1	21.0	21.0
DBLK	12	Z	50	6	17.0	13.7
FHM5H	00	Z	50	4	17.2	14.5
FHM5H	12	Z	50	5	19.2	18.4
FHM5UJ	12	Z	50	7	16.4	16.0
FHM5UJ	00	Z	50	6	21.5	20.9
FPUW5G	12	Z	50	15	12.4	9.9
GRAI2	12	Z	50	3	29.0	28.6
GRAI2	00	Z	50	2	16.2	9.3
GRAI3	12	Z	50	2	30.8	30.4
GRAI3	00	Z	50	0	0.0	0.0
HTXUH	00	Z	50	1	5.8	5.8
HTXUH	12	Z	50	3	185.7	-108.4
HTXUH4	00	Z	50	1	6.8	6.8
HTXUH4	12	Z	50	2	0.8	0.2
PGZ76Y	00	Z	50	9	41.4	38.2
PGZ76Y	12	Z	50	9	41.0	34.8
QCY3TG	00	Z	50	6	43.0	41.5
QCY3TG	12	Z	50	5	37.6	37.0
VKB4L5	00	Z	50	4	74.9	73.7
VKB4L5	12	Z	50	7	57.6	56.4
XKQLWQ	12	Z	50	12	36.6	35.4
XQFJRG	00	Z	50	2	5.0	4.5
XQFJRG	12	Z	50	5	31.5	27.0
YLV96W	00	Z	50	6	315.9	311.6
YLV96W	12	Z	50	6	0.0	0.0

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	30	2.5	0.7	-0.2
01001	00	V	50	27	2.7	0.4	-0.4
01028	00	V	50	28	2.3	0.3	0.2
01028	12	V	50	30	3.0	-0.7	-0.1
01400	00	V	50	22	3.1	0.7	0.2
01400	12	V	50	24	2.1	0.0	-0.2
01415	00	V	50	26	2.6	0.2	0.1
01415	12	V	50	28	2.7	0.1	0.1
02365	12	V	50	25	3.1	-0.4	-0.6
02365	00	V	50	22	2.8	-0.7	0.2
02591	00	V	50	25	3.0	-1.2	0.3
02591	12	V	50	29	3.3	-0.9	0.3
02836	12	V	50	29	2.4	-0.2	0.0
02836	00	V	50	24	2.7	0.6	-0.1
02963	00	V	50	24	3.4	-0.1	0.1
02963	12	V	50	28	3.3	-0.6	-0.3
03005	12	V	50	30	2.7	0.1	0.3
03005	00	V	50	1	2.5	1.8	-1.8
03238	12	V	50	3	2.4	1.2	-1.3
03238	00	V	50	30	2.6	-0.1	-0.4
03808	00	V	50	27	2.9	-0.3	0.1
03808	12	V	50	30	2.8	0.3	0.0
03918	00	V	50	25	2.7	-0.7	-0.7
03918	12	V	50	5	3.4	1.6	-1.3
03953	12	V	50	30	2.8	0.0	-0.6
03953	00	V	50	25	2.6	0.2	-0.4
04018	12	V	50	22	2.4	-0.2	-0.1
04018	00	V	50	22	3.0	0.3	-0.4
04220	12	V	50	29	2.8	0.3	-0.4
04220	00	V	50	28	3.1	-0.1	0.3
04270	12	V	50	29	2.7	0.7	0.1
04270	00	V	50	28	3.1	0.4	-0.4
04320	00	V	50	28	2.7	0.8	0.1
04320	12	V	50	30	2.6	0.6	-0.2
04339	00	V	50	27	2.9	0.1	-0.6
04339	12	V	50	30	2.2	0.1	-0.2
04360	12	V	50	28	2.5	-0.2	0.2
04360	00	V	50	26	2.8	-0.2	-0.1
06011	12	V	50	28	1.9	-0.1	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	28	2.3	-0.1	0.5
06260	00	V	50	28	2.9	0.2	0.0
06260	12	V	50	3	4.9	1.0	-1.6
06610	00	V	50	28	2.4	0.2	-0.3
06610	12	V	50	30	2.9	0.5	-0.4
07110	00	V	50	25	2.6	0.3	-0.7
07110	12	V	50	28	2.8	0.9	-0.3
07510	12	V	50	29	3.3	1.1	0.2
07510	00	V	50	25	2.8	0.2	0.8
07645	12	V	50	28	3.0	0.1	-0.7
07645	00	V	50	26	3.0	0.5	0.3
07761	12	V	50	30	3.2	0.5	-0.4
07761	00	V	50	28	3.0	0.3	-0.2
08001	12	V	50	27	2.8	-0.4	-0.5
08001	00	V	50	21	2.8	-0.3	0.0
08221	00	V	50	24	2.8	0.3	0.5
08221	12	V	50	27	3.0	0.6	-0.1
08302	12	V	50	29	3.3	0.4	-0.3
08302	00	V	50	28	3.0	0.8	0.1
08508	12	V	50	27	2.8	0.7	0.2
08522	12	V	50	27	3.5	1.0	0.5
08579	12	V	50	25	3.0	0.4	0.1
10035	12	V	50	27	2.5	0.3	-0.1
10393	00	V	50	27	2.8	0.4	-0.2
10393	12	V	50	29	3.1	-0.2	0.3
10410	00	V	50	27	3.0	0.2	0.2
10410	12	V	50	28	3.2	-0.2	-0.2
10739	12	V	50	30	3.3	-0.1	0.4
10739	00	V	50	29	2.8	0.2	0.2
11035	12	V	50	30	3.4	0.5	0.7
11035	00	V	50	26	3.5	0.2	1.2
12982	00	V	50	14	3.3	1.5	0.4
12982	12	V	50	12	4.0	1.1	-0.6
16080	00	V	50	28	3.7	0.2	0.0
16080	12	V	50	29	2.8	0.9	0.1
16245	00	V	50	23	3.1	0.0	-0.4
16245	12	V	50	27	3.2	0.4	-0.4
16320	12	V	50	21	2.8	0.2	0.0
16320	00	V	50	28	3.8	0.1	-1.0
16429	00	V	50	28	3.8	0.3	0.6
16429	12	V	50	27	3.7	0.1	-0.1
16622	00	V	50	19	4.7	2.1	0.5
16754	00	V	50	15	3.3	0.8	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	50	4	4.3	1.0	1.0
26435	00	V	50	12	3.4	0.1	0.6
5QPW8X	12	V	50	5	2.6	0.4	1.8
5QPW8X	00	V	50	6	2.3	-0.4	-0.3
60018	00	V	50	28	3.3	0.4	-0.1
60018	12	V	50	30	3.2	0.3	0.6
7JUNA4	00	V	50	8	2.5	0.2	-0.4
7JUNA4	12	V	50	7	2.0	0.3	0.1
ASDE09	12	V	50	2	2.6	1.6	1.1
ASFR3	00	V	50	1	3.3	1.2	3.1
ASFR3	12	V	50	2	2.5	0.9	0.3
ASFR4	12	V	50	0	0.0	0.0	0.0
ASFR4	00	V	50	1	3.0	-1.5	2.6
DBLK	12	V	50	6	3.0	-0.1	1.7
FHM5H	00	V	50	4	2.5	0.2	1.8
FHM5H	12	V	50	5	3.1	1.5	-0.5
FHM5UJ	12	V	50	7	2.5	0.7	-1.1
FHM5UJ	00	V	50	6	2.5	-0.1	1.0
FPUW5G	12	V	50	14	3.0	0.6	0.7
GRAI2	12	V	50	0	0.0	0.0	0.0
GRAI2	00	V	50	0	0.0	0.0	0.0
GRAI3	12	V	50	0	0.0	0.0	0.0
GRAI3	00	V	50	0	0.0	0.0	0.0
HTXUH	00	V	50	1	2.2	-0.8	2.1
HTXUH	12	V	50	2	3.2	0.0	0.7
HTXUH4	00	V	50	1	2.4	-0.5	2.3
HTXUH4	12	V	50	1	2.1	2.0	-0.7
PGZ76Y	00	V	50	9	3.1	0.4	0.4
PGZ76Y	12	V	50	9	1.3	-0.3	-0.1
QCY3TG	00	V	50	6	3.3	-2.1	1.2
QCY3TG	12	V	50	5	3.4	0.5	-0.7
VKB4L5	00	V	50	4	3.5	-1.6	-1.2
VKB4L5	12	V	50	7	2.9	1.1	-1.1
XKQLWQ	12	V	50	11	3.2	-0.5	-0.4
XQFJRG	00	V	50	2	1.5	-0.9	-0.3
XQFJRG	12	V	50	5	2.9	1.7	1.1
YLV96W	00	V	50	6	2.2	-0.5	0.9
YLV96W	12	V	50	6	4.0	-1.7	0.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	30	5.9	0.1
01001	00	Z	100	29	5.9	0.6
01028	00	Z	100	31	7.1	-5.0
01028	12	Z	100	31	16.5	-4.8
01400	00	Z	100	28	86.8	86.4
01400	12	Z	100	28	80.7	79.2
01415	00	Z	100	30	9.2	6.4
01415	12	Z	100	29	6.2	1.9
02365	12	Z	100	29	4.9	-0.8
02365	00	Z	100	27	6.6	1.9
02591	00	Z	100	31	12.3	11.9
02591	12	Z	100	30	5.6	2.8
02836	12	Z	100	31	8.7	-5.5
02836	00	Z	100	31	4.7	-0.3
02963	00	Z	100	32	6.2	4.3
02963	12	Z	100	32	4.3	0.2
03005	12	Z	100	31	5.1	-1.4
03005	00	Z	100	1	2.3	2.3
03238	12	Z	100	3	5.7	3.8
03238	00	Z	100	30	8.9	7.6
03808	00	Z	100	29	6.6	5.8
03808	12	Z	100	30	3.6	0.0
03918	00	Z	100	27	12.4	10.9
03918	12	Z	100	5	11.3	10.4
03953	12	Z	100	31	12.3	5.6
03953	00	Z	100	28	6.1	3.0
04018	12	Z	100	28	4.8	-0.1
04018	00	Z	100	26	4.7	-1.4
04220	12	Z	100	30	8.8	1.3
04220	00	Z	100	31	5.2	3.0
04270	12	Z	100	30	3.6	2.1
04270	00	Z	100	31	6.8	-1.6
04320	00	Z	100	30	4.4	0.1
04320	12	Z	100	30	4.9	2.9
04339	00	Z	100	30	12.4	2.3
04339	12	Z	100	30	14.2	2.3
04360	12	Z	100	28	46.7	41.8
04360	00	Z	100	29	32.5	31.6
06011	12	Z	100	31	11.0	2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	31	10.6	-0.3
06260	00	Z	100	30	7.3	3.9
06260	12	Z	100	3	4.3	-1.1
06610	00	Z	100	31	9.6	9.0
06610	12	Z	100	31	6.4	2.9
07110	00	Z	100	28	24.0	23.1
07110	12	Z	100	28	22.9	20.3
07510	12	Z	100	31	30.2	26.5
07510	00	Z	100	30	28.9	27.7
07645	12	Z	100	28	14.8	12.7
07645	00	Z	100	28	16.3	15.7
07761	12	Z	100	30	21.3	19.0
07761	00	Z	100	31	22.5	20.6
08001	12	Z	100	31	7.5	2.9
08001	00	Z	100	29	19.0	4.7
08221	00	Z	100	27	12.0	11.2
08221	12	Z	100	27	7.0	5.3
08302	12	Z	100	30	4.3	-1.1
08302	00	Z	100	30	8.5	6.5
08508	12	Z	100	30	8.1	6.4
08522	12	Z	100	28	10.8	6.7
08579	12	Z	100	26	10.7	7.9
10035	12	Z	100	31	21.0	17.7
10393	00	Z	100	30	9.4	8.3
10393	12	Z	100	31	5.0	1.3
10410	00	Z	100	27	5.6	2.8
10410	12	Z	100	28	6.1	-0.8
10739	12	Z	100	31	10.1	3.9
10739	00	Z	100	30	12.9	11.8
11035	12	Z	100	31	9.6	8.4
11035	00	Z	100	30	16.2	15.8
12982	00	Z	100	14	11.7	11.2
12982	12	Z	100	12	15.3	12.8
16080	00	Z	100	30	8.2	6.5
16080	12	Z	100	31	6.0	-2.7
16245	00	Z	100	28	10.1	7.2
16245	12	Z	100	29	8.5	2.0
16320	12	Z	100	30	15.3	7.2
16320	00	Z	100	30	14.0	12.9
16429	00	Z	100	30	10.6	9.0
16429	12	Z	100	30	5.7	-0.5
16622	00	Z	100	30	29.6	21.3
16754	00	Z	100	30	18.2	17.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	100	29	7.6	3.6
26435	00	Z	100	15	7.8	4.7
5QPW8X	12	Z	100	8	19.8	18.9
5QPW8X	00	Z	100	9	18.4	15.2
60018	00	Z	100	32	11.6	11.1
60018	12	Z	100	31	7.7	5.1
7JUNA4	00	Z	100	9	9.0	-2.0
7JUNA4	12	Z	100	8	43.0	37.7
ASDE09	12	Z	100	3	92.1	74.1
ASFR3	00	Z	100	3	21.0	17.9
ASFR3	12	Z	100	3	26.9	25.3
ASFR4	12	Z	100	0	0.0	0.0
ASFR4	00	Z	100	1	8.0	8.0
DBLK	12	Z	100	7	7.6	3.2
FHM5H	00	Z	100	4	5.4	-0.2
FHM5H	12	Z	100	5	6.9	-2.2
FHM5UJ	12	Z	100	7	4.5	2.5
FHM5UJ	00	Z	100	6	9.1	6.6
FPUW5G	12	Z	100	19	8.6	1.4
GRAI2	12	Z	100	11	13.4	10.8
GRAI2	00	Z	100	9	6.0	5.1
GRAI3	12	Z	100	10	17.0	16.0
GRAI3	00	Z	100	8	15.5	14.3
HTXUH	00	Z	100	1	11.3	-11.3
HTXUH	12	Z	100	3	7.0	-6.2
HTXUH4	00	Z	100	2	8.9	-7.2
HTXUH4	12	Z	100	5	5.9	0.4
PGZ76Y	00	Z	100	10	26.5	23.9
PGZ76Y	12	Z	100	9	28.1	22.2
QCY3TG	00	Z	100	6	22.4	20.9
QCY3TG	12	Z	100	5	26.7	25.8
VKB4L5	00	Z	100	4	59.1	58.3
VKB4L5	12	Z	100	9	42.6	41.1
XKQLWQ	12	Z	100	12	22.0	20.8
XQFJRG	00	Z	100	4	8.9	-2.0
XQFJRG	12	Z	100	5	13.1	9.5
YLV96W	00	Z	100	8	183.3	181.7
YLV96W	12	Z	100	7	23.3	23.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	30	2.5	-0.3	-0.1
01001	00	V	100	27	2.5	0.2	-0.1
01028	00	V	100	29	2.5	0.9	0.0
01028	12	V	100	30	2.1	0.0	-0.4
01400	00	V	100	24	2.6	0.1	0.4
01400	12	V	100	27	2.4	-0.2	-0.3
01415	00	V	100	29	2.6	0.3	0.2
01415	12	V	100	29	3.8	-0.2	-0.6
02365	12	V	100	29	3.2	-0.2	0.3
02365	00	V	100	25	3.0	0.4	-0.4
02591	00	V	100	27	3.1	-0.2	0.3
02591	12	V	100	30	2.8	-0.1	0.2
02836	12	V	100	30	2.7	-0.2	-0.4
02836	00	V	100	28	3.0	0.6	-0.1
02963	00	V	100	29	2.8	0.3	0.6
02963	12	V	100	30	3.3	0.2	-0.4
03005	12	V	100	30	2.3	0.0	-0.2
03005	00	V	100	1	4.8	0.1	4.8
03238	12	V	100	3	1.5	0.3	1.2
03238	00	V	100	30	2.3	0.4	0.3
03808	00	V	100	27	2.1	0.6	0.2
03808	12	V	100	30	2.6	0.5	-0.1
03918	00	V	100	25	2.6	-0.2	0.2
03918	12	V	100	5	1.6	0.7	-0.6
03953	12	V	100	30	2.8	-0.1	0.0
03953	00	V	100	25	2.5	0.4	0.8
04018	12	V	100	26	2.5	-0.1	0.2
04018	00	V	100	25	2.6	0.2	-0.1
04220	12	V	100	30	2.6	0.1	0.0
04220	00	V	100	30	2.8	-0.5	0.3
04270	12	V	100	29	2.7	-0.4	-0.2
04270	00	V	100	30	3.1	0.1	0.2
04320	00	V	100	30	2.6	0.1	-0.3
04320	12	V	100	30	2.6	0.1	0.0
04339	00	V	100	29	2.8	-0.3	-1.0
04339	12	V	100	30	2.4	-0.4	-0.1
04360	12	V	100	28	2.7	-0.9	-0.8
04360	00	V	100	26	2.6	0.0	-0.4
06011	12	V	100	30	2.3	0.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	29	2.1	0.0	0.0
06260	00	V	100	28	2.1	0.5	0.1
06260	12	V	100	3	2.5	0.9	-0.3
06610	00	V	100	29	3.1	0.2	-0.5
06610	12	V	100	30	3.0	0.3	-0.2
07110	00	V	100	26	2.3	0.6	0.2
07110	12	V	100	28	2.4	0.4	0.0
07510	12	V	100	30	2.3	0.0	0.0
07510	00	V	100	28	2.6	-0.1	-0.1
07645	12	V	100	28	3.1	0.7	0.2
07645	00	V	100	26	3.4	0.0	0.3
07761	12	V	100	30	3.1	0.7	1.0
07761	00	V	100	28	2.8	0.1	-0.3
08001	12	V	100	30	2.6	-0.3	0.7
08001	00	V	100	27	2.5	0.1	0.0
08221	00	V	100	24	3.2	-0.3	-0.9
08221	12	V	100	27	2.4	0.6	0.9
08302	12	V	100	29	3.5	0.3	0.9
08302	00	V	100	28	3.3	0.7	0.3
08508	12	V	100	30	2.7	0.2	0.2
08522	12	V	100	27	3.4	0.2	0.1
08579	12	V	100	25	3.1	1.0	0.1
10035	12	V	100	30	2.4	0.0	0.5
10393	00	V	100	30	2.4	0.2	0.2
10393	12	V	100	30	2.5	-0.3	-0.3
10410	00	V	100	27	2.5	0.6	0.4
10410	12	V	100	28	2.7	0.2	-0.3
10739	12	V	100	30	2.2	0.1	0.0
10739	00	V	100	30	2.8	0.6	0.1
11035	12	V	100	30	2.8	0.2	-0.5
11035	00	V	100	27	3.5	0.3	0.8
12982	00	V	100	14	3.0	1.0	0.0
12982	12	V	100	12	2.6	-0.3	0.6
16080	00	V	100	29	2.7	-0.1	-0.5
16080	12	V	100	30	3.0	0.1	-0.2
16245	00	V	100	26	3.0	-0.2	0.2
16245	12	V	100	28	3.5	0.6	0.3
16320	12	V	100	29	2.6	0.8	0.1
16320	00	V	100	28	3.1	0.0	-0.4
16429	00	V	100	28	4.3	0.6	0.8
16429	12	V	100	30	4.7	2.0	0.8
16622	00	V	100	29	3.6	0.6	-0.3
16754	00	V	100	28	4.2	0.2	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	100	13	11.2	4.2	-0.5
26435	00	V	100	15	2.5	0.2	-0.5
5QPW8X	12	V	100	8	2.3	0.1	-0.8
5QPW8X	00	V	100	9	2.7	1.4	0.5
60018	00	V	100	28	3.5	0.2	0.4
60018	12	V	100	30	3.3	-0.2	0.0
7JUNA4	00	V	100	9	2.8	0.9	-0.4
7JUNA4	12	V	100	8	2.7	-0.4	-0.3
ASDE09	12	V	100	3	1.6	-0.8	0.0
ASFR3	00	V	100	3	2.0	0.4	0.1
ASFR3	12	V	100	3	2.1	1.6	0.1
ASFR4	12	V	100	0	0.0	0.0	0.0
ASFR4	00	V	100	1	3.1	1.8	2.5
DBLK	12	V	100	6	2.5	0.3	-1.6
FHM5H	00	V	100	4	2.1	-0.1	0.5
FHM5H	12	V	100	5	4.0	2.8	0.5
FHM5UJ	12	V	100	7	3.4	1.3	0.0
FHM5UJ	00	V	100	6	2.3	-0.2	1.2
FPUW5G	12	V	100	15	3.2	0.3	0.6
GRAI2	12	V	100	4	5.4	-0.7	-1.8
GRAI2	00	V	100	5	6.6	-0.5	0.3
GRAI3	12	V	100	4	3.8	-0.7	0.8
GRAI3	00	V	100	3	8.3	-0.5	5.7
HTXUH	00	V	100	1	1.9	1.1	1.5
HTXUH	12	V	100	3	3.6	-1.2	-1.9
HTXUH4	00	V	100	2	2.0	-0.2	0.5
HTXUH4	12	V	100	5	3.2	1.1	-0.5
PGZ76Y	00	V	100	10	2.5	0.7	0.1
PGZ76Y	12	V	100	9	3.4	-0.3	-1.1
QCY3TG	00	V	100	6	1.5	0.1	-0.4
QCY3TG	12	V	100	5	2.8	-1.0	-0.5
VKB4L5	00	V	100	4	2.2	-0.9	-0.8
VKB4L5	12	V	100	7	4.4	1.8	-1.0
XKQLWQ	12	V	100	12	2.6	-0.3	0.0
XQFJRG	00	V	100	4	2.2	0.0	0.7
XQFJRG	12	V	100	5	3.2	0.0	-0.9
YLV96W	00	V	100	7	2.4	0.4	0.6
YLV96W	12	V	100	7	3.0	-0.7	0.6

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	6.9	1.7
01001	00	Z	500	30	6.7	1.3
01028	00	Z	500	30	6.5	-5.1
01028	12	Z	500	30	14.4	-2.0
01400	00	Z	500	27	83.2	83.0
01400	12	Z	500	28	82.2	81.1
01415	00	Z	500	29	5.9	4.0
01415	12	Z	500	29	4.9	4.2
02365	12	Z	500	30	4.7	1.5
02365	00	Z	500	30	4.9	3.4
02591	00	Z	500	30	9.8	9.4
02591	12	Z	500	30	8.4	7.9
02836	12	Z	500	30	4.1	1.3
02836	00	Z	500	30	3.8	0.5
02963	00	Z	500	30	4.6	3.9
02963	12	Z	500	31	4.0	2.2
03005	12	Z	500	30	3.8	-0.8
03005	00	Z	500	1	1.6	1.6
03238	12	Z	500	3	2.7	2.6
03238	00	Z	500	30	5.0	4.5
03808	00	Z	500	29	4.1	3.7
03808	12	Z	500	30	3.0	2.5
03918	00	Z	500	26	11.4	10.9
03918	12	Z	500	5	10.1	10.0
03953	12	Z	500	30	10.1	0.9
03953	00	Z	500	30	4.9	-0.6
04018	12	Z	500	26	3.4	-0.7
04018	00	Z	500	26	2.8	0.0
04220	12	Z	500	30	7.1	1.5
04220	00	Z	500	30	4.3	3.3
04270	12	Z	500	30	4.8	-1.4
04270	00	Z	500	30	4.2	0.0
04320	00	Z	500	30	3.3	-0.3
04320	12	Z	500	30	3.6	1.3
04339	00	Z	500	30	12.9	2.2
04339	12	Z	500	30	15.2	0.5
04360	12	Z	500	29	39.4	39.1
04360	00	Z	500	30	40.0	39.9
06011	12	Z	500	30	8.9	2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	30	7.6	0.0
06260	00	Z	500	30	5.6	0.7
06260	12	Z	500	3	3.3	2.5
06610	00	Z	500	30	5.1	4.2
06610	12	Z	500	30	2.3	1.5
07110	00	Z	500	28	8.3	7.1
07110	12	Z	500	30	11.0	8.2
07510	12	Z	500	30	27.4	20.7
07510	00	Z	500	29	18.0	17.7
07645	12	Z	500	30	7.0	5.4
07645	00	Z	500	28	7.6	6.6
07761	12	Z	500	30	9.8	5.2
07761	00	Z	500	30	6.4	5.8
08001	12	Z	500	30	3.9	2.5
08001	00	Z	500	29	5.2	3.7
08221	00	Z	500	27	6.5	6.0
08221	12	Z	500	27	5.1	4.0
08302	12	Z	500	29	4.5	-2.7
08302	00	Z	500	30	3.3	1.5
08508	12	Z	500	30	7.5	6.7
08522	12	Z	500	27	6.3	5.6
08579	12	Z	500	25	5.0	3.7
10035	12	Z	500	30	20.2	17.8
10393	00	Z	500	30	3.7	3.1
10393	12	Z	500	30	2.6	1.3
10410	00	Z	500	27	4.4	1.0
10410	12	Z	500	28	3.3	0.2
10739	12	Z	500	30	3.5	2.5
10739	00	Z	500	30	5.2	4.5
11035	12	Z	500	30	7.7	6.9
11035	00	Z	500	30	10.0	9.4
12982	00	Z	500	14	7.3	5.6
12982	12	Z	500	12	5.5	3.9
16080	00	Z	500	30	2.9	-0.1
16080	12	Z	500	30	4.2	-2.8
16245	00	Z	500	27	3.3	0.0
16245	12	Z	500	28	2.9	-1.3
16320	12	Z	500	31	16.6	5.9
16320	00	Z	500	29	8.6	6.5
16429	00	Z	500	30	5.1	3.7
16429	12	Z	500	30	4.1	1.5
16622	00	Z	500	30	15.8	12.7
16754	00	Z	500	30	7.5	6.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	500	30	5.0	3.7
26435	00	Z	500	15	5.9	3.6
5QPW8X	12	Z	500	9	24.2	23.8
5QPW8X	00	Z	500	10	22.0	21.1
60018	00	Z	500	31	5.3	4.2
60018	12	Z	500	30	4.1	3.2
7JUNA4	00	Z	500	12	9.1	1.1
7JUNA4	12	Z	500	12	23.1	3.4
ASDE09	12	Z	500	4	75.6	56.0
ASFR3	00	Z	500	4	8.8	6.0
ASFR3	12	Z	500	5	7.5	7.0
ASFR4	12	Z	500	2	7.3	6.9
ASFR4	00	Z	500	2	6.8	-4.6
DBLK	12	Z	500	7	3.5	2.9
FHM5H	00	Z	500	4	7.1	5.0
FHM5H	12	Z	500	5	6.4	3.0
FHM5UJ	12	Z	500	7	4.7	3.6
FHM5UJ	00	Z	500	6	8.4	6.8
FPUW5G	12	Z	500	19	6.6	-4.4
GRAI2	12	Z	500	12	5.2	-0.7
GRAI2	00	Z	500	11	9.8	4.5
GRAI3	12	Z	500	10	7.3	5.6
GRAI3	00	Z	500	8	9.4	6.6
HTXUH	00	Z	500	1	7.3	-7.3
HTXUH	12	Z	500	3	7.9	-7.0
HTXUH4	00	Z	500	2	0.3	-0.3
HTXUH4	12	Z	500	5	5.1	2.3
PGZ76Y	00	Z	500	11	13.4	11.6
PGZ76Y	12	Z	500	9	16.6	14.9
QCY3TG	00	Z	500	6	10.5	9.4
QCY3TG	12	Z	500	5	14.7	13.9
VKB4L5	00	Z	500	4	43.3	42.8
VKB4L5	12	Z	500	9	33.3	30.0
XKQLWQ	12	Z	500	13	13.4	11.0
XQFJRG	00	Z	500	4	6.6	-4.6
XQFJRG	12	Z	500	6	8.5	-5.8
YLV96W	00	Z	500	10	41.1	33.2
YLV96W	12	Z	500	12	86.3	67.8

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.1	0.1	-0.1
01001	00	V	500	30	2.6	0.1	0.0
01028	00	V	500	30	2.9	0.1	0.4
01028	12	V	500	30	2.3	0.5	-0.2
01400	00	V	500	25	2.4	0.4	0.3
01400	12	V	500	27	2.5	0.1	-0.2
01415	00	V	500	29	1.9	-0.2	0.5
01415	12	V	500	29	2.4	0.2	0.1
02365	12	V	500	30	3.2	0.0	0.4
02365	00	V	500	30	2.9	-0.2	0.5
02591	00	V	500	30	2.1	0.0	0.0
02591	12	V	500	30	3.2	-0.9	0.3
02836	12	V	500	30	2.8	0.8	-0.4
02836	00	V	500	30	3.3	0.5	-0.4
02963	00	V	500	29	2.2	0.4	-0.1
02963	12	V	500	30	3.7	0.4	-0.2
03005	12	V	500	30	2.6	-0.2	-0.1
03005	00	V	500	1	2.4	-2.4	-0.3
03238	12	V	500	3	2.1	1.5	1.0
03238	00	V	500	30	2.4	0.2	0.1
03808	00	V	500	29	2.3	-0.5	0.2
03808	12	V	500	30	2.4	0.2	0.0
03918	00	V	500	26	2.4	0.4	0.3
03918	12	V	500	5	2.2	0.5	-0.4
03953	12	V	500	30	2.8	0.0	-0.2
03953	00	V	500	27	3.0	-0.1	0.4
04018	12	V	500	26	2.1	0.1	0.3
04018	00	V	500	25	2.8	0.2	-0.3
04220	12	V	500	30	3.0	-0.3	-0.1
04220	00	V	500	30	2.7	-0.2	-0.6
04270	12	V	500	30	3.3	-0.2	-0.4
04270	00	V	500	30	3.3	-0.4	0.2
04320	00	V	500	30	3.0	0.3	0.3
04320	12	V	500	30	2.6	0.3	-0.1
04339	00	V	500	30	2.6	0.4	0.2
04339	12	V	500	30	2.5	0.2	0.6
04360	12	V	500	29	3.0	0.1	-0.2
04360	00	V	500	30	2.9	0.6	0.6
06011	12	V	500	30	1.8	-0.3	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	30	2.1	0.1	-0.3
06260	00	V	500	30	2.1	0.1	0.3
06260	12	V	500	3	1.3	0.0	0.7
06610	00	V	500	30	2.8	-0.2	0.1
06610	12	V	500	30	2.4	0.0	-0.2
07110	00	V	500	28	2.4	0.0	-0.4
07110	12	V	500	30	2.5	-0.1	-0.2
07510	12	V	500	30	2.6	0.0	0.0
07510	00	V	500	29	2.4	0.6	-0.2
07645	12	V	500	30	2.8	-0.3	-0.3
07645	00	V	500	28	2.1	0.0	0.4
07761	12	V	500	30	2.9	0.1	-0.2
07761	00	V	500	30	2.2	0.2	0.1
08001	12	V	500	30	2.5	0.1	0.1
08001	00	V	500	28	4.1	0.1	-0.1
08221	00	V	500	26	2.6	0.2	0.0
08221	12	V	500	27	3.1	0.2	0.1
08302	12	V	500	29	2.5	-0.1	-0.3
08302	00	V	500	30	2.4	0.2	0.4
08508	12	V	500	30	2.3	-0.5	-0.1
08522	12	V	500	27	2.4	0.3	-0.7
08579	12	V	500	25	2.6	-0.4	-0.4
10035	12	V	500	30	3.0	-0.4	0.4
10393	00	V	500	30	2.5	0.4	-0.4
10393	12	V	500	30	1.7	0.4	-0.3
10410	00	V	500	27	2.1	0.6	-0.5
10410	12	V	500	28	1.9	-0.1	0.2
10739	12	V	500	30	2.1	0.2	0.1
10739	00	V	500	30	2.7	0.0	-0.4
11035	12	V	500	30	2.9	0.2	-0.2
11035	00	V	500	30	3.1	0.1	-0.4
12982	00	V	500	14	3.5	-0.1	-0.3
12982	12	V	500	12	3.1	0.1	0.8
16080	00	V	500	30	2.4	0.2	-0.5
16080	12	V	500	30	2.5	0.1	-0.2
16245	00	V	500	27	3.2	-0.6	0.3
16245	12	V	500	28	2.3	0.0	0.1
16320	12	V	500	30	3.3	0.5	0.2
16320	00	V	500	29	2.3	0.8	0.1
16429	00	V	500	30	2.9	-0.1	0.2
16429	12	V	500	30	2.5	0.4	0.0
16622	00	V	500	30	2.9	0.3	0.1
16754	00	V	500	30	2.2	0.4	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	500	29	4.1	0.0	0.3
26435	00	V	500	15	2.4	0.2	0.2
5QPW8X	12	V	500	9	3.3	-0.7	-1.4
5QPW8X	00	V	500	10	2.2	-0.3	1.2
60018	00	V	500	30	2.1	0.5	-0.3
60018	12	V	500	30	2.5	0.6	-0.3
7JUNA4	00	V	500	12	3.6	-0.3	-0.6
7JUNA4	12	V	500	11	2.5	0.0	-0.3
ASDE09	12	V	500	4	1.7	0.7	0.6
ASFR3	00	V	500	4	2.7	-1.1	-0.3
ASFR3	12	V	500	5	2.4	-0.2	0.9
ASFR4	12	V	500	2	1.2	-0.6	0.2
ASFR4	00	V	500	2	0.7	-0.2	0.3
DBLK	12	V	500	6	2.2	0.1	0.1
FHM5H	00	V	500	4	2.6	-0.1	-1.4
FHM5H	12	V	500	5	0.9	0.3	0.2
FHM5UJ	12	V	500	7	2.1	-0.7	0.3
FHM5UJ	00	V	500	6	1.6	-0.8	-0.3
FPUW5G	12	V	500	15	2.5	-0.2	-0.3
GRAI2	12	V	500	4	5.5	0.9	0.8
GRAI2	00	V	500	5	4.3	0.8	-0.3
GRAI3	12	V	500	4	4.0	-1.2	-0.1
GRAI3	00	V	500	3	4.1	0.5	-0.7
HTXUH	00	V	500	1	2.1	2.1	-0.2
HTXUH	12	V	500	3	18.2	1.0	-11.3
HTXUH4	00	V	500	2	0.7	0.3	-0.2
HTXUH4	12	V	500	5	2.5	1.0	-0.5
PGZ76Y	00	V	500	11	2.1	0.0	1.0
PGZ76Y	12	V	500	9	2.2	0.3	0.2
QCY3TG	00	V	500	6	2.0	0.1	-0.7
QCY3TG	12	V	500	5	2.2	-0.1	-1.5
VKB4L5	00	V	500	4	2.4	0.4	1.5
VKB4L5	12	V	500	7	4.0	0.9	-0.9
XKQLWQ	12	V	500	13	2.1	-0.5	-0.5
XQFJRG	00	V	500	4	2.2	-0.3	-1.4
XQFJRG	12	V	500	6	2.5	0.2	0.0
YLV96W	00	V	500	9	2.4	-0.6	0.2
YLV96W	12	V	500	11	4.0	-0.3	-1.0

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	6.9	1.6
01001	00	Z	850	31	6.5	2.4
01028	00	Z	850	30	3.7	-2.6
01028	12	Z	850	30	14.4	0.4
01400	00	Z	850	27	82.0	81.9
01400	12	Z	850	27	81.0	80.2
01415	00	Z	850	29	5.0	4.3
01415	12	Z	850	29	4.3	3.3
02365	12	Z	850	30	3.3	2.3
02365	00	Z	850	30	4.2	3.6
02591	00	Z	850	30	9.5	9.3
02591	12	Z	850	30	9.3	9.0
02836	12	Z	850	30	3.1	2.0
02836	00	Z	850	30	3.8	2.8
02963	00	Z	850	30	4.8	4.4
02963	12	Z	850	31	4.5	3.8
03005	12	Z	850	30	3.3	-0.3
03005	00	Z	850	1	2.7	2.7
03238	12	Z	850	3	3.1	3.0
03238	00	Z	850	30	4.5	3.7
03808	00	Z	850	29	2.9	2.6
03808	12	Z	850	30	2.6	2.0
03918	00	Z	850	26	11.3	11.2
03918	12	Z	850	5	10.5	10.5
03953	12	Z	850	30	3.7	3.0
03953	00	Z	850	30	3.7	1.6
04018	12	Z	850	26	2.3	-0.9
04018	00	Z	850	26	1.9	0.5
04220	12	Z	850	30	8.6	5.2
04220	00	Z	850	30	5.1	4.5
04270	12	Z	850	30	3.2	0.9
04270	00	Z	850	30	4.4	3.1
04320	00	Z	850	30	2.9	1.2
04320	12	Z	850	30	2.5	1.7
04339	00	Z	850	30	15.7	4.1
04339	12	Z	850	30	15.6	1.5
04360	12	Z	850	29	44.1	44.0
04360	00	Z	850	30	44.7	44.6
06011	12	Z	850	30	5.2	3.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	30	6.3	2.3
06260	00	Z	850	30	5.4	0.4
06260	12	Z	850	3	3.1	2.7
06610	00	Z	850	30	5.4	4.3
06610	12	Z	850	30	3.5	2.9
07110	00	Z	850	28	16.2	-0.2
07110	12	Z	850	30	3.9	3.3
07510	12	Z	850	30	16.7	16.6
07510	00	Z	850	29	17.6	17.5
07645	12	Z	850	30	4.2	3.8
07645	00	Z	850	29	5.1	4.1
07761	12	Z	850	30	3.5	2.2
07761	00	Z	850	30	4.0	3.1
08001	12	Z	850	30	2.8	1.7
08001	00	Z	850	29	4.3	3.7
08221	00	Z	850	26	5.4	5.2
08221	12	Z	850	27	4.7	4.2
08302	12	Z	850	29	3.6	-2.1
08302	00	Z	850	30	2.4	-0.4
08508	12	Z	850	30	5.3	4.7
08522	12	Z	850	27	3.9	3.2
08579	12	Z	850	25	3.2	2.7
10035	12	Z	850	30	19.4	16.9
10393	00	Z	850	30	3.2	2.3
10393	12	Z	850	30	2.8	1.9
10410	00	Z	850	27	3.7	-0.2
10410	12	Z	850	28	3.3	0.2
10739	12	Z	850	30	3.8	3.3
10739	00	Z	850	30	3.8	2.9
11035	12	Z	850	30	10.6	10.3
11035	00	Z	850	30	10.3	10.0
12982	00	Z	850	14	8.0	7.3
12982	12	Z	850	12	7.5	7.3
16080	00	Z	850	30	2.4	0.3
16080	12	Z	850	30	2.6	-0.9
16245	00	Z	850	27	2.5	0.5
16245	12	Z	850	28	2.4	-0.7
16320	12	Z	850	30	19.3	9.2
16320	00	Z	850	29	8.9	6.5
16429	00	Z	850	30	4.3	3.1
16429	12	Z	850	30	3.2	1.8
16622	00	Z	850	30	11.9	11.6
16754	00	Z	850	30	5.4	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
17607	12	Z	850	30	4.2	3.7
26435	00	Z	850	15	4.1	3.4
5QPW8X	12	Z	850	9	25.6	25.2
5QPW8X	00	Z	850	10	24.9	24.1
60018	00	Z	850	31	3.0	1.9
60018	12	Z	850	30	3.0	1.4
7JUNA4	00	Z	850	12	7.8	0.2
7JUNA4	12	Z	850	12	15.8	8.7
ASDE09	12	Z	850	4	10.1	5.6
ASFR3	00	Z	850	5	2.2	1.9
ASFR3	12	Z	850	5	2.8	1.4
ASFR4	12	Z	850	2	2.7	-2.5
ASFR4	00	Z	850	2	4.2	-4.1
DBLK	12	Z	850	7	2.9	-0.1
FHM5H	00	Z	850	4	15.8	13.0
FHM5H	12	Z	850	5	9.2	7.3
FHM5UJ	12	Z	850	7	6.3	5.2
FHM5UJ	00	Z	850	6	10.7	9.9
FPUW5G	12	Z	850	19	7.2	-5.8
GRAI2	12	Z	850	12	4.1	1.6
GRAI2	00	Z	850	11	7.4	0.4
GRAI3	12	Z	850	10	7.1	5.2
GRAI3	00	Z	850	8	7.5	4.2
HTXUH	00	Z	850	1	3.4	-3.4
HTXUH	12	Z	850	3	4.2	1.4
HTXUH4	00	Z	850	2	2.3	1.2
HTXUH4	12	Z	850	5	3.9	2.9
PGZ76Y	00	Z	850	11	11.1	10.6
PGZ76Y	12	Z	850	9	13.5	13.0
QCY3TG	00	Z	850	6	6.5	5.8
QCY3TG	12	Z	850	5	7.1	6.8
VKB4L5	00	Z	850	4	35.8	35.5
VKB4L5	12	Z	850	9	28.5	23.6
XKQLWQ	12	Z	850	13	10.2	5.4
XQFJRG	00	Z	850	5	9.5	-8.0
XQFJRG	12	Z	850	6	11.4	-10.4
YLV96W	00	Z	850	11	11.4	6.5
YLV96W	12	Z	850	12	12.1	7.4

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	2.9	0.2	-0.5
01001	00	V	850	30	3.1	0.1	0.3
01028	00	V	850	30	2.2	0.1	-0.3
01028	12	V	850	30	3.5	-0.2	-0.1
01400	00	V	850	25	2.0	-0.1	-0.5
01400	12	V	850	27	2.4	-0.2	-0.4
01415	00	V	850	29	2.3	0.1	0.2
01415	12	V	850	29	2.6	0.2	-0.2
02365	12	V	850	30	3.5	-0.3	-0.7
02365	00	V	850	30	2.8	-0.4	0.5
02591	00	V	850	30	2.6	0.4	-0.3
02591	12	V	850	30	2.4	0.4	-0.4
02836	12	V	850	30	2.5	0.7	-0.5
02836	00	V	850	30	2.7	0.1	0.3
02963	00	V	850	29	2.4	0.4	0.2
02963	12	V	850	30	2.5	-0.4	-0.1
03005	12	V	850	30	3.0	0.5	-0.5
03005	00	V	850	1	0.9	0.9	-0.3
03238	12	V	850	3	1.1	0.4	0.4
03238	00	V	850	30	2.3	0.3	-0.2
03808	00	V	850	29	2.2	0.1	0.2
03808	12	V	850	30	2.4	0.4	-0.3
03918	00	V	850	26	2.1	0.3	0.3
03918	12	V	850	5	2.0	0.2	0.1
03953	12	V	850	30	2.1	0.0	0.2
03953	00	V	850	27	2.3	0.2	0.4
04018	12	V	850	26	2.3	0.0	-0.4
04018	00	V	850	25	2.3	-0.2	-0.1
04220	12	V	850	30	3.0	-0.1	-0.4
04220	00	V	850	30	3.6	0.1	0.9
04270	12	V	850	30	4.6	-0.7	-0.3
04270	00	V	850	30	4.9	0.0	0.9
04320	00	V	850	30	2.9	0.3	0.0
04320	12	V	850	30	2.5	0.2	-0.1
04339	00	V	850	30	2.8	-0.2	0.0
04339	12	V	850	30	3.7	0.6	0.2
04360	12	V	850	29	3.6	0.5	-0.3
04360	00	V	850	30	3.2	-1.1	0.0
06011	12	V	850	30	2.2	-0.1	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	30	2.8	-0.2	-0.2
06260	00	V	850	30	2.4	0.3	-0.3
06260	12	V	850	3	2.7	1.1	-0.9
06610	00	V	850	30	3.6	1.2	0.6
06610	12	V	850	30	2.5	0.8	0.8
07110	00	V	850	28	2.3	0.0	-0.3
07110	12	V	850	30	2.7	0.2	-0.5
07510	12	V	850	30	2.5	-0.2	0.1
07510	00	V	850	29	2.8	0.7	0.8
07645	12	V	850	30	2.9	0.2	0.0
07645	00	V	850	29	3.0	0.4	0.4
07761	12	V	850	30	2.9	0.4	0.7
07761	00	V	850	30	2.8	0.4	-0.1
08001	12	V	850	30	2.9	0.2	-0.1
08001	00	V	850	29	2.8	0.3	0.4
08221	00	V	850	26	3.7	0.0	-0.3
08221	12	V	850	27	2.1	-0.4	0.1
08302	12	V	850	29	2.7	0.4	-0.8
08302	00	V	850	30	3.3	-0.5	0.1
08508	12	V	850	30	2.4	-0.3	-0.8
08522	12	V	850	27	3.1	-0.4	0.2
08579	12	V	850	25	3.3	-0.3	-0.2
10035	12	V	850	30	3.1	0.1	-0.9
10393	00	V	850	30	2.4	0.2	0.5
10393	12	V	850	30	3.0	0.0	0.0
10410	00	V	850	27	2.7	0.2	-0.1
10410	12	V	850	28	2.1	0.1	-0.2
10739	12	V	850	30	2.4	-0.5	0.2
10739	00	V	850	30	3.9	0.6	0.3
11035	12	V	850	30	2.6	0.3	-0.4
11035	00	V	850	30	3.4	0.0	-0.4
12982	00	V	850	14	3.5	-0.5	-1.0
12982	12	V	850	12	3.6	0.2	-0.2
16080	00	V	850	30	2.7	0.1	0.0
16080	12	V	850	30	3.1	0.5	-1.1
16245	00	V	850	27	3.1	0.6	0.2
16245	12	V	850	28	2.4	-0.3	0.3
16320	12	V	850	30	2.5	0.4	-0.5
16320	00	V	850	29	2.7	0.8	-0.4
16429	00	V	850	30	2.2	-0.4	0.3
16429	12	V	850	30	2.0	-0.4	0.1
16622	00	V	850	30	3.1	0.5	-1.0
16754	00	V	850	30	2.5	0.4	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
17607	12	V	850	30	2.9	0.9	-0.5
26435	00	V	850	15	2.6	0.1	0.1
5QPW8X	12	V	850	9	3.7	1.2	1.0
5QPW8X	00	V	850	10	3.1	0.5	1.0
60018	00	V	850	30	3.5	0.1	1.2
60018	12	V	850	30	3.2	-0.3	0.8
7JUNA4	00	V	850	12	2.5	-0.2	1.2
7JUNA4	12	V	850	11	3.8	1.3	1.0
ASDE09	12	V	850	4	3.3	0.2	-1.5
ASFR3	00	V	850	5	4.0	-0.9	-2.5
ASFR3	12	V	850	5	2.4	-1.4	-0.7
ASFR4	12	V	850	2	2.4	-0.2	1.7
ASFR4	00	V	850	2	1.8	-0.7	-1.1
DBLK	12	V	850	6	2.2	0.5	0.7
FHM5H	00	V	850	4	3.1	1.0	0.0
FHM5H	12	V	850	5	3.3	-1.7	-0.4
FHM5UJ	12	V	850	7	4.0	-0.6	-0.3
FHM5UJ	00	V	850	6	2.1	-0.1	-0.7
FPUW5G	12	V	850	15	3.4	-0.1	-0.7
GRAI2	12	V	850	4	5.8	-3.5	1.9
GRAI2	00	V	850	5	5.9	0.2	-2.1
GRAI3	12	V	850	4	3.9	0.2	-1.5
GRAI3	00	V	850	3	5.3	2.6	2.7
HTXUH	00	V	850	1	1.8	-1.2	1.4
HTXUH	12	V	850	2	4.5	-0.4	-3.7
HTXUH4	00	V	850	2	3.9	-2.7	2.4
HTXUH4	12	V	850	5	1.9	-1.0	-1.0
PGZ76Y	00	V	850	11	2.6	0.5	-0.8
PGZ76Y	12	V	850	9	2.4	0.2	0.5
QCY3TG	00	V	850	6	2.1	-0.1	-0.1
QCY3TG	12	V	850	5	1.5	0.1	-0.5
VKB4L5	00	V	850	4	1.5	-0.2	-0.6
VKB4L5	12	V	850	7	2.9	0.8	-0.1
XKQLWQ	12	V	850	13	2.0	0.0	-0.8
XQFJRG	00	V	850	5	1.5	0.8	0.2
XQFJRG	12	V	850	6	3.0	1.3	1.4
YLV96W	00	V	850	10	2.3	-0.7	-1.2
YLV96W	12	V	850	11	3.0	-0.6	0.5

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	725	0	0.3	0.1	0.3
1300001	99	P	SUR	11	-23	708	0	0.5	0.0	0.5
1300008	99	P	SUR	15	-38	720	0	0.3	-0.1	0.3
1300130	99	P	SUR	28	-16	559	0	0.3	0.2	0.3
1300131	99	P	SUR	28	-17	703	0	0.3	-0.0	0.3
1300869	99	P	SUR	30	-66	616	0	1.8	-0.7	2.0
1300872	99	P	SUR	32	-36	696	0	0.2	0.6	0.6
1301000	99	P	SUR	33	-17	440	440	0.0	0.0	0.0
1301001	99	P	SUR	33	-17	441	441	0.0	0.0	0.0
1301603	99	P	SUR	19	-40	685	0	0.2	0.4	0.5
1301605	99	P	SUR	26	-41	685	0	0.2	0.2	0.3
1301606	99	P	SUR	15	-36	686	0	0.3	0.5	0.5
1301607	99	P	SUR	17	-27	682	0	0.3	0.4	0.5
1301608	99	P	SUR	22	-33	684	0	0.2	0.6	0.6
1301609	99	P	SUR	23	-25	684	0	0.3	0.5	0.6
1301610	99	P	SUR	25	-31	684	0	0.2	0.3	0.4
1301611	99	P	SUR	27	-39	684	0	0.2	-0.0	0.2
1301612	99	P	SUR	30	-30	685	0	0.2	0.2	0.3
13869	99	P	SUR	30	-66	616	0	1.8	-0.7	2.0
13872	99	P	SUR	32	-36	696	0	0.2	0.6	0.6
1501529	99	P	SUR	27	-32	648	0	0.2	0.4	0.5
1501531	99	P	SUR	19	-45	649	0	0.2	0.1	0.2
1501534	99	P	SUR	23	-45	647	0	0.2	-0.4	0.5
2500622	99	P	SUR	60	-16	689	0	0.6	0.1	0.6
25622	99	P	SUR	60	-16	689	0	0.6	0.1	0.6
2601621	99	P	SUR	89	-32	720	0	0.5	-0.4	0.6
4100139	99	P	SUR	20	-38	576	0	0.2	-0.1	0.3
4100300	99	P	SUR	16	-58	716	0	0.3	0.1	0.3
4100597	99	P	SUR	31	-33	693	0	0.2	0.5	0.6
4100729	99	P	SUR	32	-28	696	0	0.2	0.5	0.5
4100730	99	P	SUR	41	-35	698	0	0.4	0.4	0.5
4101528	99	P	SUR	38	-69	101	0	0.3	0.5	0.6
4101530	99	P	SUR	35	-36	681	0	0.3	0.6	0.7
4101531	99	P	SUR	43	-47	103	0	0.5	0.7	0.9
4101532	99	P	SUR	42	-41	104	0	0.3	0.3	0.4
4101535	99	P	SUR	39	-64	101	0	0.4	-0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101537	99	P	SUR	42	-37	103	0	0.3	0.7	0.8
4101538	99	P	SUR	34	-57	632	0	0.4	0.4	0.6
4101554	99	P	SUR	31	-59	694	0	0.3	0.4	0.5
4101556	99	P	SUR	33	-41	697	0	0.2	0.6	0.6
4101557	99	P	SUR	30	-34	699	0	0.2	0.4	0.5
4101558	99	P	SUR	41	-14	697	0	0.3	0.7	0.8
4101560	99	P	SUR	28	-45	684	0	0.2	0.8	0.8
4101562	99	P	SUR	36	-42	649	0	0.4	0.5	0.7
4101564	99	P	SUR	30	-45	689	0	0.3	0.0	0.3
4101565	99	P	SUR	36	-40	621	0	0.3	0.5	0.5
4101566	99	P	SUR	26	-61	663	0	0.3	0.3	0.4
4101567	99	P	SUR	36	-47	676	0	0.3	0.6	0.7
4101568	99	P	SUR	33	-61	687	0	0.3	0.4	0.5
4101570	99	P	SUR	32	-48	691	0	0.2	0.5	0.6
4101574	99	P	SUR	36	-61	588	0	0.4	0.6	0.7
4101576	99	P	SUR	17	-59	685	0	0.3	0.6	0.7
4101577	99	P	SUR	21	-63	686	0	0.3	0.4	0.5
4101579	99	P	SUR	19	-47	140	0	1.0	0.8	1.3
4101596	99	P	SUR	51	-43	441	0	0.4	0.6	0.8
4101599	99	P	SUR	48	-14	690	0	0.3	0.1	0.3
4101619	99	P	SUR	51	-43	450	0	0.4	0.0	0.4
4101620	99	P	SUR	48	-14	698	0	0.3	0.3	0.5
4101700	99	P	SUR	27	-41	684	0	0.2	0.4	0.4
4101702	99	P	SUR	34	-56	697	0	0.3	0.1	0.3
4101705	99	P	SUR	34	-32	696	0	0.2	0.3	0.4
4101706	99	P	SUR	31	-33	697	0	0.2	-0.5	0.6
4101707	99	P	SUR	34	-34	696	0	0.2	0.0	0.2
4101708	99	P	SUR	31	-26	697	0	0.2	-0.1	0.2
4101709	99	P	SUR	24	-17	684	1	1.0	1.3	1.6
4101712	99	P	SUR	35	-39	685	0	0.3	0.1	0.3
4101713	99	P	SUR	35	-57	697	0	0.3	-0.0	0.3
4101714	99	P	SUR	32	-42	697	0	0.2	-0.2	0.3
4101715	99	P	SUR	30	-50	684	0	0.2	0.1	0.3
4101716	99	P	SUR	24	-53	684	0	0.3	-0.8	0.8
4101717	99	P	SUR	24	-61	684	0	0.3	-0.1	0.3
4101741	99	P	SUR	18	-68	684	0	0.4	0.6	0.7
4101743	99	P	SUR	25	-52	684	0	0.2	0.8	0.9
4101746	99	P	SUR	14	-67	685	0	1.8	0.5	1.9
41041	99	P	SUR	14	-46	1138	0	0.3	0.6	0.7
41043	99	P	SUR	21	-65	1207	0	0.3	0.2	0.4
41044	99	P	SUR	22	-59	1224	0	0.3	0.5	0.6
41046	99	P	SUR	24	-68	1202	0	0.3	0.6	0.7
41048	99	P	SUR	32	-70	1166	0	0.4	-0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41049	99	P	SUR	28	-63	1146	0	0.4	0.3	0.5
41052	99	P	SUR	18	-65	199	0	0.3	-1.2	1.2
41053	99	P	SUR	19	-66	1723	0	0.4	-0.6	0.7
41056	99	P	SUR	18	-66	1656	0	0.4	-0.8	0.9
41300	99	P	SUR	16	-58	717	0	0.3	0.1	0.3
41597	99	P	SUR	31	-33	693	0	0.2	0.5	0.6
41729	99	P	SUR	32	-28	696	0	0.2	0.5	0.5
41730	99	P	SUR	41	-35	698	0	0.4	0.4	0.5
42060	99	P	SUR	16	-63	1175	0	0.4	0.0	0.4
42085	99	P	SUR	18	-67	821	0	0.4	-0.9	0.9
44005	99	P	SUR	43	-69	234	0	0.4	-0.1	0.4
4400513	99	P	SUR	54	-10	683	0	0.3	-0.3	0.5
4400517	99	P	SUR	21	-56	683	0	0.3	0.3	0.4
4400521	99	P	SUR	36	-33	694	0	0.2	-0.7	0.7
4400746	99	P	SUR	31	-44	697	0	0.3	0.2	0.3
4400776	99	P	SUR	32	-64	271	0	0.4	0.5	0.6
4400777	99	P	SUR	32	-47	697	0	0.2	0.2	0.3
4400778	99	P	SUR	26	-29	684	0	0.2	0.5	0.6
44008	99	P	SUR	41	-69	715	0	0.4	-0.5	0.7
4400857	99	P	SUR	25	-38	683	0	0.2	0.5	0.6
4400874	99	P	SUR	31	-43	693	0	0.3	0.5	0.5
4400887	99	P	SUR	35	-43	687	0	0.3	-0.1	0.3
4400891	99	P	SUR	36	-50	676	0	0.7	-1.0	1.2
4401503	99	P	SUR	31	-68	689	0	0.3	0.1	0.3
4401527	99	P	SUR	30	-64	688	0	0.3	-0.0	0.3
4401531	99	P	SUR	34	-57	687	0	0.3	0.4	0.5
4401536	99	P	SUR	44	-15	636	0	0.3	0.6	0.7
4401537	99	P	SUR	30	-29	643	0	0.3	-0.4	0.5
4401539	99	P	SUR	32	-40	687	0	0.2	-0.1	0.2
4401540	99	P	SUR	33	-62	688	0	0.4	0.2	0.5
4401541	99	P	SUR	40	-33	688	0	0.3	0.1	0.3
4401543	99	P	SUR	24	-64	524	0	0.3	-0.0	0.3
4401544	99	P	SUR	32	-56	687	0	0.3	-0.6	0.7
4401549	99	P	SUR	58	-22	2247	0	0.3	-0.2	0.3
4401550	99	P	SUR	55	-11	676	1	0.5	0.2	0.6
4401551	99	P	SUR	36	-33	681	0	0.2	0.6	0.6
4401552	99	P	SUR	31	-12	659	0	0.3	0.4	0.5
4401553	99	P	SUR	57	-24	697	0	0.5	0.2	0.5
4401554	99	P	SUR	55	-26	696	0	0.4	0.5	0.6
4401555	99	P	SUR	57	-13	697	0	0.4	0.0	0.4
4401556	99	P	SUR	31	-39	697	0	0.2	-0.1	0.2
4401557	99	P	SUR	38	-35	697	0	0.2	0.2	0.3
4401558	99	P	SUR	52	-23	696	0	0.4	0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401559	99	P	SUR	48	-12	697	0	0.4	0.5	0.7
4401560	99	P	SUR	40	-19	696	0	0.3	0.3	0.4
4401561	99	P	SUR	39	-24	696	0	0.3	0.2	0.3
4401562	99	P	SUR	40	-25	697	0	0.3	0.1	0.3
4401563	99	P	SUR	32	-35	697	0	0.2	-0.2	0.3
4401564	99	P	SUR	40	-35	697	0	0.6	0.7	0.9
4401565	99	P	SUR	54	-26	697	0	0.4	0.4	0.6
4401566	99	P	SUR	50	-18	697	0	0.4	0.6	0.7
4401570	99	P	SUR	51	-43	450	0	0.4	0.0	0.4
4401571	99	P	SUR	51	-43	449	0	0.5	0.2	0.5
4401601	99	P	SUR	53	-26	639	0	0.4	-0.1	0.4
4401603	99	P	SUR	57	-13	641	0	0.4	0.5	0.7
4401605	99	P	SUR	57	-21	645	0	0.3	-0.2	0.4
4401611	99	P	SUR	47	-54	643	0	0.4	0.4	0.6
4401613	99	P	SUR	47	-7	639	0	0.3	0.6	0.7
4401616	99	P	SUR	36	-33	643	0	0.2	0.0	0.2
4401633	99	P	SUR	47	-17	644	0	0.3	0.3	0.4
4401750	99	P	SUR	59	-22	2267	0	0.3	-1.7	1.7
4401751	99	P	SUR	58	-26	2250	0	0.3	0.4	0.5
4401753	99	P	SUR	60	-19	2239	0	0.3	0.4	0.5
4401755	99	P	SUR	65	-2	587	0	0.3	0.6	0.7
4401757	99	P	SUR	70	-3	448	0	0.4	0.5	0.7
4401802	99	P	SUR	41	-35	644	0	0.5	0.1	0.5
4401803	99	P	SUR	51	-43	430	0	0.4	0.3	0.5
4401804	99	P	SUR	60	-22	1149	0	0.3	0.2	0.4
4401805	99	P	SUR	58	-24	1145	0	0.3	0.3	0.5
4401806	99	P	SUR	59	-22	1146	0	0.3	0.3	0.4
4401807	99	P	SUR	60	-20	1150	0	0.3	0.3	0.5
4401808	99	P	SUR	58	-26	1148	0	0.4	0.2	0.5
44027	99	P	SUR	44	-67	733	0	0.5	0.1	0.5
44032	99	P	SUR	44	-69	664	0	0.5	-1.0	1.2
44033	99	P	SUR	44	-69	680	0	0.4	-0.3	0.5
44034	99	P	SUR	44	-68	680	0	0.4	-0.9	1.0
44037	99	P	SUR	44	-68	572	0	0.4	-0.9	1.0
44137	99	P	SUR	42	-62	709	0	0.4	0.0	0.4
44139	99	P	SUR	44	-57	421	0	0.5	0.1	0.5
44150	99	P	SUR	43	-64	720	0	0.4	0.0	0.4
44513	99	P	SUR	54	-10	683	0	0.3	-0.3	0.5
44517	99	P	SUR	21	-56	683	0	0.3	0.3	0.4
44521	99	P	SUR	36	-33	693	0	0.2	-0.7	0.7
44746	99	P	SUR	31	-44	697	0	0.3	0.2	0.3
44776	99	P	SUR	32	-64	271	0	0.4	0.5	0.6
44777	99	P	SUR	32	-47	697	0	0.2	0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44778	99	P	SUR	26	-29	684	0	0.2	0.5	0.6
44857	99	P	SUR	25	-38	683	0	0.2	0.5	0.6
44874	99	P	SUR	31	-43	693	0	0.3	0.5	0.5
44887	99	P	SUR	35	-43	687	0	0.3	-0.1	0.3
44891	99	P	SUR	36	-50	676	0	0.7	-1.0	1.2
45138	99	P	SUR	50	-66	712	0	0.7	-0.4	0.8
4700546	99	P	SUR	30	-30	641	0	0.2	0.4	0.5
4700560	99	P	SUR	72	13	646	0	0.4	0.2	0.4
4700568	99	P	SUR	44	-3	624	0	0.7	0.2	0.7
4700574	99	P	SUR	30	-16	639	0	0.2	0.5	0.5
4701668	99	P	SUR	43	-64	642	0	0.4	0.4	0.6
4701669	99	P	SUR	44	-52	641	0	0.5	0.4	0.6
4701673	99	P	SUR	63	-63	642	0	0.4	-1.4	1.5
4701674	99	P	SUR	70	-67	641	0	0.5	-5.7	5.8
4701677	99	P	SUR	44	-43	696	0	0.6	0.1	0.6
47546	99	P	SUR	30	-30	710	0	0.2	0.5	0.5
47560	99	P	SUR	72	14	712	0	0.4	0.2	0.4
47568	99	P	SUR	44	-3	706	0	0.7	0.1	0.7
47574	99	P	SUR	30	-16	712	0	0.3	0.5	0.5
4800770	99	P	SUR	78	-16	88	2	6.2	-0.2	6.2
4802004	99	P	SUR	63	-21	644	2	6.4	2.9	7.0
48770	99	P	SUR	78	-16	89	2	6.1	-0.2	6.1
6100001	99	P	SUR	43	8	718	0	0.5	0.3	0.5
6100002	99	P	SUR	42	5	702	0	0.4	0.5	0.6
61001	99	P	SUR	43	8	719	0	0.5	0.3	0.5
6100196	99	P	SUR	42	4	711	0	0.4	0.2	0.5
6100197	99	P	SUR	40	4	716	0	0.4	0.3	0.5
6100198	99	P	SUR	37	-2	716	0	0.4	0.3	0.5
61002	99	P	SUR	42	5	703	0	0.4	0.5	0.6
6100280	99	P	SUR	41	1	716	0	0.4	0.2	0.4
6100281	99	P	SUR	40	0	716	0	0.4	0.2	0.4
6100417	99	P	SUR	38	0	716	0	0.4	0.3	0.5
6100430	99	P	SUR	40	2	711	0	0.4	0.2	0.4
6101001	99	P	SUR	38	24	123	0	0.5	0.5	0.7
6101003	99	P	SUR	40	25	129	1	0.4	0.6	0.7
6101007	99	P	SUR	36	25	165	0	0.9	0.7	1.1
6101008	99	P	SUR	37	22	156	0	0.7	0.4	0.8
6102501	99	P	SUR	35	18	697	0	0.4	0.5	0.6
6102502	99	P	SUR	35	23	697	0	0.3	0.4	0.5
6102503	99	P	SUR	35	-4	16	0	0.4	0.3	0.5
6102504	99	P	SUR	36	-2	234	0	5.8	-2.6	6.3
6200024	99	P	SUR	44	-3	716	0	0.4	0.3	0.5
6200025	99	P	SUR	44	-6	715	0	0.4	0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200082	99	P	SUR	44	-8	717	0	0.4	0.1	0.4
6200083	99	P	SUR	43	-9	717	0	0.4	0.2	0.5
6200084	99	P	SUR	42	-9	716	0	0.4	0.1	0.5
6200085	99	P	SUR	36	-7	716	0	0.3	0.4	0.5
6200091	99	P	SUR	53	-5	139	2	2.7	0.7	2.8
6200092	99	P	SUR	51	-11	716	0	0.3	0.0	0.3
6200093	99	P	SUR	55	-10	713	0	0.4	0.0	0.4
6200094	99	P	SUR	52	-7	534	0	0.5	0.0	0.5
62001	99	P	SUR	45	-5	707	0	0.3	0.3	0.4
6200191	99	P	SUR	41	-10	685	0	0.4	-0.1	0.4
6200192	99	P	SUR	40	-10	683	0	0.4	-0.7	0.8
6200513	99	P	SUR	64	-17	370	0	0.4	-0.5	0.6
6200940	99	P	SUR	33	-41	681	0	0.3	-0.1	0.3
6200941	99	P	SUR	28	-64	582	0	0.3	-0.4	0.5
6201030	99	P	SUR	44	-4	322	0	0.4	1.3	1.4
6201070	99	P	SUR	43	-9	132	0	0.7	-1.2	1.4
62023	99	P	SUR	51	-8	700	0	0.3	0.4	0.5
6202402	99	P	SUR	38	-26	452	452	0.0	0.0	0.0
6202403	99	P	SUR	39	-31	213	213	0.0	0.0	0.0
6202404	99	P	SUR	39	-29	455	455	0.0	0.0	0.0
62029	99	P	SUR	49	-12	1428	0	0.3	0.0	0.3
62030	99	P	SUR	50	-4	1306	0	0.3	0.1	0.3
6203503	99	P	SUR	33	-44	512	0	0.3	0.0	0.3
6203504	99	P	SUR	28	-67	682	0	0.3	0.0	0.3
6203510	99	P	SUR	20	-65	663	0	0.3	0.1	0.3
6203523	99	P	SUR	65	-2	636	0	0.3	-0.3	0.4
6203525	99	P	SUR	64	-2	640	0	0.3	-0.7	0.7
6203526	99	P	SUR	73	14	575	0	0.4	0.3	0.5
6203527	99	P	SUR	58	-26	2225	0	0.3	-2.4	2.4
6203528	99	P	SUR	31	-17	647	0	0.3	0.4	0.5
6203529	99	P	SUR	18	-58	684	0	0.3	0.0	0.3
6203600	99	P	SUR	43	-11	695	0	0.3	0.4	0.5
6203601	99	P	SUR	47	-14	695	0	0.4	0.5	0.6
6203602	99	P	SUR	59	-45	695	0	0.4	0.3	0.6
6203603	99	P	SUR	57	-29	697	0	0.4	0.1	0.4
6203604	99	P	SUR	44	-18	697	0	0.3	0.4	0.5
6203605	99	P	SUR	63	-25	697	0	0.3	0.1	0.3
6203606	99	P	SUR	44	-6	79	0	0.5	1.8	1.9
6203607	99	P	SUR	34	-34	697	0	0.3	0.1	0.3
6203608	99	P	SUR	48	-14	692	0	0.3	0.4	0.5
6203609	99	P	SUR	49	-14	695	0	0.3	0.2	0.4
6203610	99	P	SUR	49	-14	692	0	0.3	0.2	0.4
62050	99	P	SUR	50	-4	725	0	0.3	0.5	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62081	99	P	SUR	51	-13	726	0	0.4	-0.0	0.4
62095	99	P	SUR	53	-16	723	0	0.4	0.0	0.4
62102	99	P	SUR	58	2	725	0	0.3	0.3	0.4
62103	99	P	SUR	50	-3	727	0	0.3	0.7	0.8
62104	99	P	SUR	57	1	725	0	0.3	0.1	0.3
62107	99	P	SUR	50	-6	1431	2	0.5	0.5	0.8
62111	99	P	SUR	58	0	725	0	0.4	1.5	1.5
62112	99	P	SUR	58	0	725	0	0.3	0.5	0.5
62113	99	P	SUR	58	0	725	0	0.4	0.1	0.4
62114	99	P	SUR	58	0	1429	0	0.4	0.4	0.5
62115	99	P	SUR	58	-3	718	0	0.3	0.4	0.5
62116	99	P	SUR	58	1	725	0	0.4	0.2	0.4
62118	99	P	SUR	58	1	725	0	0.3	0.7	0.8
62119	99	P	SUR	57	2	724	0	0.3	0.3	0.5
62120	99	P	SUR	56	2	722	0	0.4	0.2	0.5
62121	99	P	SUR	54	3	725	0	0.3	0.4	0.5
62122	99	P	SUR	57	2	1429	0	0.4	0.3	0.5
62124	99	P	SUR	54	-4	715	0	0.3	0.2	0.3
62127	99	P	SUR	54	1	724	0	0.3	0.8	0.9
62129	99	P	SUR	58	0	725	0	0.4	0.2	0.4
62130	99	P	SUR	59	1	725	0	0.3	0.2	0.4
62131	99	P	SUR	54	1	716	0	0.3	0.7	0.7
62132	99	P	SUR	56	2	725	0	0.3	0.6	0.7
62133	99	P	SUR	57	1	725	0	0.3	0.2	0.4
62134	99	P	SUR	58	1	725	0	0.3	0.5	0.6
62135	99	P	SUR	54	2	538	0	0.3	0.7	0.7
62136	99	P	SUR	54	3	725	0	0.3	0.8	0.8
62138	99	P	SUR	54	0	1429	0	0.3	0.9	1.0
62139	99	P	SUR	53	2	1331	0	0.3	0.7	0.7
62140	99	P	SUR	57	1	1396	0	0.3	0.3	0.5
62141	99	P	SUR	61	2	646	0	0.7	-0.1	0.8
62143	99	P	SUR	58	2	725	0	0.5	1.0	1.1
62144	99	P	SUR	53	2	725	0	0.3	0.5	0.5
62145	99	P	SUR	53	3	1429	0	0.3	0.7	0.8
62146	99	P	SUR	57	2	711	0	0.4	0.5	0.6
62148	99	P	SUR	54	2	725	0	0.3	0.6	0.6
62149	99	P	SUR	54	1	725	0	0.3	0.9	1.0
62150	99	P	SUR	54	1	725	0	0.3	1.6	1.6
62151	99	P	SUR	57	2	1421	0	0.3	0.4	0.5
62152	99	P	SUR	57	2	725	0	0.3	0.6	0.7
62153	99	P	SUR	57	2	1395	0	0.4	0.6	0.7
62154	99	P	SUR	56	2	724	0	0.3	0.2	0.4
62155	99	P	SUR	58	1	713	0	0.3	0.6	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62157	99	P	SUR	58	0	724	0	0.3	0.2	0.4
62160	99	P	SUR	57	2	1429	0	0.3	0.6	0.6
62161	99	P	SUR	58	1	297	0	0.3	0.0	0.3
62162	99	P	SUR	57	1	702	0	0.3	0.3	0.5
62163	99	P	SUR	48	-8	701	0	0.4	0.4	0.6
62164	99	P	SUR	57	1	714	0	0.3	0.7	0.8
62165	99	P	SUR	54	1	725	0	0.3	0.8	0.8
62168	99	P	SUR	58	1	710	0	0.3	0.3	0.5
62170	99	P	SUR	51	2	726	0	0.7	0.4	0.8
62296	99	P	SUR	53	2	725	0	0.3	0.4	0.5
62297	99	P	SUR	59	2	1429	0	0.3	0.3	0.5
62302	99	P	SUR	61	-2	721	0	0.4	0.1	0.4
62304	99	P	SUR	51	2	616	0	0.3	0.5	0.6
62305	99	P	SUR	50	0	720	0	0.4	0.5	0.6
62442	99	P	SUR	49	-17	386	0	0.4	0.0	0.4
62513	99	P	SUR	64	-17	368	0	0.4	-0.5	0.6
62940	99	P	SUR	33	-41	681	0	0.3	-0.1	0.3
62941	99	P	SUR	28	-64	582	0	0.3	-0.4	0.5
6301552	99	P	SUR	79	27	695	0	0.4	-0.2	0.4
6301555	99	P	SUR	76	27	696	0	0.4	0.5	0.7
6301556	99	P	SUR	80	6	610	0	0.4	-0.3	0.5
6301557	99	P	SUR	81	27	106	0	0.9	1.8	2.0
63055	99	P	SUR	61	2	723	0	0.5	0.2	0.5
63056	99	P	SUR	60	2	725	0	0.3	0.4	0.5
63057	99	P	SUR	59	2	725	0	0.3	0.1	0.3
63058	99	P	SUR	53	2	2168	0	0.3	0.6	0.7
63059	99	P	SUR	58	-1	724	0	0.3	0.7	0.8
63101	99	P	SUR	61	1	725	0	0.4	0.2	0.4
63102	99	P	SUR	61	1	724	0	0.4	0.3	0.5
63103	99	P	SUR	61	1	724	0	0.3	0.4	0.5
63104	99	P	SUR	61	2	725	0	0.4	0.2	0.5
63105	99	P	SUR	61	2	725	0	0.4	0.0	0.5
63108	99	P	SUR	61	2	724	0	0.5	0.1	0.5
63109	99	P	SUR	60	2	725	0	0.3	0.0	0.3
63110	99	P	SUR	60	2	725	0	0.3	-0.0	0.3
63111	99	P	SUR	61	2	1414	0	0.4	-0.1	0.4
63112	99	P	SUR	61	1	725	0	0.3	-0.2	0.4
63115	99	P	SUR	62	1	725	0	0.3	0.2	0.4
63117	99	P	SUR	61	1	1429	0	0.3	0.4	0.5
63118	99	P	SUR	60	-4	724	0	0.5	-0.1	0.5
63120	99	P	SUR	54	2	725	0	0.3	0.7	0.8
6400526	99	P	SUR	44	-6	412	2	1.5	0.1	1.5
6400562	99	P	SUR	66	-4	697	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401501	99	P	SUR	70	17	528	0	0.4	0.4	0.5
6401502	99	P	SUR	59	-19	2237	0	0.3	0.3	0.4
6401503	99	P	SUR	59	-20	2265	0	0.3	0.3	0.4
6401504	99	P	SUR	59	-19	2261	0	0.3	0.2	0.3
6401505	99	P	SUR	60	-22	2268	0	0.3	0.1	0.3
6401506	99	P	SUR	59	-26	2265	0	0.3	0.2	0.4
6401507	99	P	SUR	79	11	647	0	0.5	0.1	0.5
6401550	99	P	SUR	68	12	698	0	0.3	0.0	0.3
6401555	99	P	SUR	72	6	697	0	0.4	0.3	0.5
6401556	99	P	SUR	68	-1	698	0	0.4	0.3	0.4
6401557	99	P	SUR	49	-47	696	0	0.5	0.3	0.6
6401560	99	P	SUR	58	1	507	24	3.6	-0.7	3.7
6401561	99	P	SUR	61	-21	698	0	0.3	-0.0	0.3
6401562	99	P	SUR	64	3	696	0	0.5	0.5	0.7
6401563	99	P	SUR	65	-25	697	0	1.1	0.2	1.2
6401564	99	P	SUR	62	-2	695	0	1.0	0.0	1.0
6401565	99	P	SUR	63	-4	696	0	1.1	-0.0	1.1
6401566	99	P	SUR	63	-12	698	0	0.3	0.3	0.4
6401567	99	P	SUR	63	-23	697	0	0.4	0.1	0.4
6401568	99	P	SUR	61	-10	697	0	0.3	0.2	0.4
6401569	99	P	SUR	63	-17	698	0	0.4	0.1	0.4
6401570	99	P	SUR	67	-5	698	0	0.3	0.2	0.4
6401654	99	P	SUR	89	-15	642	0	0.5	0.2	0.5
6401655	99	P	SUR	83	-62	641	0	0.4	0.2	0.5
64041	99	P	SUR	61	-3	720	0	0.4	0.1	0.4
64045	99	P	SUR	59	-12	821	0	0.4	-0.2	0.4
64046	99	P	SUR	61	-4	712	0	0.3	0.0	0.3
64526	99	P	SUR	44	-6	412	2	1.5	0.1	1.5
64562	99	P	SUR	66	-4	697	0	0.3	0.1	0.3
6500519	99	P	SUR	70	33	587	0	0.5	-0.4	0.6
6500596	99	P	SUR	72	-12	696	0	0.5	0.6	0.8
6500602	99	P	SUR	70	11	696	0	0.4	0.5	0.6
6501553	99	P	SUR	55	-12	697	0	0.5	0.4	0.6
6501555	99	P	SUR	65	-52	697	0	0.5	-0.4	0.6
6501556	99	P	SUR	60	-17	697	0	0.3	0.2	0.3
65519	99	P	SUR	70	33	587	0	0.5	-0.4	0.6
65596	99	P	SUR	72	-12	696	0	0.5	0.6	0.8
65602	99	P	SUR	70	11	696	0	0.4	0.5	0.6
95392	99	P	SUR	35	20	53	0	1.3	-2.7	3.0

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	708	0	0	1.1	0.5	1.2
1300002	99	SPEED	SUR	20	-23	714	0	0	0.9	0.4	1.0
1300008	99	SPEED	SUR	15	-38	720	0	0	0.8	0.0	0.8
1300130	99	SPEED	SUR	28	-16	558	0	0	0.8	-0.1	0.8
1300131	99	SPEED	SUR	28	-17	703	0	0	2.2	2.2	3.1
4100026	99	SPEED	SUR	12	-38	296	0	0	0.8	-0.6	1.0
4100139	99	SPEED	SUR	20	-38	576	0	0	0.8	0.1	0.8
4100300	99	SPEED	SUR	16	-58	716	0	0	0.7	-0.4	0.8
41026	99	SPEED	SUR	12	-38	296	0	0	0.9	-0.6	1.0
41041	99	SPEED	SUR	14	-46	1137	0	0	0.8	-0.4	1.0
41043	99	SPEED	SUR	21	-65	1207	0	0	0.9	-0.2	0.9
41044	99	SPEED	SUR	22	-59	1223	0	0	0.9	-0.2	0.9
41046	99	SPEED	SUR	24	-68	1201	0	0	0.9	-0.2	0.9
41048	99	SPEED	SUR	32	-70	1164	0	0	1.1	-0.6	1.2
41049	99	SPEED	SUR	28	-63	1144	0	0	1.1	-0.0	1.1
41052	99	SPEED	SUR	18	-65	199	0	0	0.7	-0.5	0.9
41053	99	SPEED	SUR	19	-66	1723	0	0	1.2	0.6	1.4
41056	99	SPEED	SUR	18	-66	1663	0	0	1.1	-0.7	1.2
41300	99	SPEED	SUR	16	-58	717	0	0	0.8	-0.3	0.9
42060	99	SPEED	SUR	16	-63	1175	0	0	1.1	-0.3	1.2
42085	99	SPEED	SUR	18	-67	805	0	0	1.1	-0.1	1.1
44027	99	SPEED	SUR	44	-67	733	0	0	1.7	-0.6	1.8
44032	99	SPEED	SUR	44	-69	664	0	0	1.4	-0.9	1.7
44033	99	SPEED	SUR	44	-69	680	0	0	1.5	-0.5	1.6
44034	99	SPEED	SUR	44	-68	680	0	0	1.8	-1.3	2.2
44037	99	SPEED	SUR	44	-68	572	0	0	1.3	-0.4	1.4
44137	99	SPEED	SUR	42	-62	713	0	0	1.4	0.0	1.4
44139	99	SPEED	SUR	44	-57	422	0	0	1.6	-0.6	1.7
45138	99	SPEED	SUR	50	-66	714	0	0	1.7	-0.4	1.8
6100001	99	SPEED	SUR	43	8	718	0	0	1.4	-0.2	1.4
6100002	99	SPEED	SUR	42	5	717	0	0	1.3	-0.0	1.3
61001	99	SPEED	SUR	43	8	719	0	0	1.5	-0.5	1.6
6100196	99	SPEED	SUR	42	4	708	0	0	1.9	-0.6	2.0
6100197	99	SPEED	SUR	40	4	696	0	0	1.3	-0.4	1.4

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6100198	99	SPEED	SUR	37	-2	185	0	0	2.2	-2.0	2.9
61002	99	SPEED	SUR	42	5	718	0	0	1.4	-0.5	1.5
6100280	99	SPEED	SUR	41	1	696	0	0	1.5	-0.5	1.6
6100281	99	SPEED	SUR	40	0	703	0	0	1.7	0.1	1.8
6100417	99	SPEED	SUR	38	0	711	0	0	1.2	-0.1	1.2
6100430	99	SPEED	SUR	40	2	698	0	0	1.5	0.1	1.5
6101001	99	SPEED	SUR	38	24	123	0	0	1.7	-0.9	1.9
6101003	99	SPEED	SUR	40	25	129	0	0	1.6	-0.9	1.8
6101007	99	SPEED	SUR	36	25	165	0	0	1.5	-1.0	1.8
6101008	99	SPEED	SUR	37	22	168	0	0	1.5	-0.8	1.7
6200024	99	SPEED	SUR	44	-3	702	0	0	1.4	-0.4	1.5
6200025	99	SPEED	SUR	44	-6	701	0	0	1.5	-0.4	1.6
6200082	99	SPEED	SUR	44	-8	715	0	0	1.2	-0.2	1.2
6200083	99	SPEED	SUR	43	-9	690	0	0	1.4	-0.6	1.5
6200084	99	SPEED	SUR	42	-9	707	0	0	1.1	-0.3	1.2
6200085	99	SPEED	SUR	36	-7	709	0	0	1.3	-0.5	1.4
6200091	99	SPEED	SUR	53	-5	139	0	0	2.1	-0.7	2.2
6200092	99	SPEED	SUR	51	-11	716	0	0	1.1	0.0	1.1
6200093	99	SPEED	SUR	55	-10	713	0	0	1.0	-0.2	1.1
6200094	99	SPEED	SUR	52	-7	534	0	0	1.1	0.5	1.2
62001	99	SPEED	SUR	45	-5	707	0	0	1.1	0.7	1.3
6200191	99	SPEED	SUR	41	-10	685	0	0	1.2	0.1	1.2
6200192	99	SPEED	SUR	40	-10	683	0	0	1.3	-0.1	1.3
6201030	99	SPEED	SUR	44	-4	658	0	0	1.2	-0.5	1.3
6201070	99	SPEED	SUR	43	-9	131	0	0	1.1	-0.3	1.2
62023	99	SPEED	SUR	51	-8	700	0	0	1.4	0.3	1.4
62029	99	SPEED	SUR	49	-12	1428	0	0	0.9	0.5	1.0
62050	99	SPEED	SUR	50	-4	725	0	0	1.2	0.5	1.3
62081	99	SPEED	SUR	51	-13	726	0	0	1.1	0.3	1.2
62095	99	SPEED	SUR	53	-16	710	0	0	1.3	0.4	1.4
62102	99	SPEED	SUR	58	2	725	0	0	1.1	-0.2	1.1
62103	99	SPEED	SUR	50	-3	726	0	0	1.3	0.5	1.5
62104	99	SPEED	SUR	57	1	725	0	0	1.2	-0.4	1.2
62107	99	SPEED	SUR	50	-6	1431	0	0	1.3	0.8	1.5
62111	99	SPEED	SUR	58	0	723	0	0	1.4	-0.5	1.5
62112	99	SPEED	SUR	58	0	725	0	0	1.9	-1.1	2.2
62113	99	SPEED	SUR	58	0	725	0	0	1.4	-0.2	1.4
62114	99	SPEED	SUR	58	0	1429	0	0	1.3	0.3	1.3
62118	99	SPEED	SUR	58	1	725	0	0	1.1	0.2	1.1
62119	99	SPEED	SUR	57	2	724	0	0	1.2	-0.2	1.2
62120	99	SPEED	SUR	56	2	722	0	0	1.1	0.0	1.1

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
62121	99	SPEED	SUR	54	3	725	0	0	1.1	-0.0	1.1
62122	99	SPEED	SUR	57	2	1429	0	0	1.2	-0.3	1.3
62129	99	SPEED	SUR	58	0	725	0	0	1.2	-0.3	1.3
62131	99	SPEED	SUR	54	1	716	0	0	1.5	0.1	1.5
62132	99	SPEED	SUR	56	2	725	0	0	2.9	-2.0	3.5
62133	99	SPEED	SUR	57	1	725	0	0	1.1	-0.0	1.1
62134	99	SPEED	SUR	58	1	725	0	0	1.1	-0.4	1.2
62140	99	SPEED	SUR	57	1	1394	2	0	1.1	0.0	1.1
62143	99	SPEED	SUR	58	2	725	0	0	1.5	-0.5	1.6
62144	99	SPEED	SUR	53	2	725	0	0	1.3	-0.2	1.3
62145	99	SPEED	SUR	53	3	1429	0	0	1.5	0.6	1.6
62146	99	SPEED	SUR	57	2	693	0	0	1.1	0.2	1.2
62148	99	SPEED	SUR	54	2	725	0	0	1.3	0.0	1.3
62149	99	SPEED	SUR	54	1	725	0	0	1.6	-0.1	1.6
62150	99	SPEED	SUR	54	1	725	0	0	2.0	-0.8	2.1
62152	99	SPEED	SUR	57	2	725	0	0	1.2	-0.6	1.3
62153	99	SPEED	SUR	57	2	1395	0	0	2.1	-1.5	2.6
62154	99	SPEED	SUR	56	2	722	0	0	1.1	-0.3	1.2
62155	99	SPEED	SUR	58	1	711	0	0	1.8	-0.3	1.9
62163	99	SPEED	SUR	48	-8	701	0	0	1.0	0.4	1.1
62164	99	SPEED	SUR	57	1	714	0	0	1.3	-0.8	1.5
62165	99	SPEED	SUR	54	1	725	0	0	1.2	0.1	1.2
62170	99	SPEED	SUR	51	2	726	0	0	1.6	0.6	1.8
62304	99	SPEED	SUR	51	2	614	0	0	2.0	1.6	2.5
62305	99	SPEED	SUR	50	0	720	0	0	1.4	0.4	1.4
62442	99	SPEED	SUR	49	-17	386	0	0	0.9	0.3	0.9
63055	99	SPEED	SUR	61	2	723	0	0	1.2	-0.9	1.5
63056	99	SPEED	SUR	60	2	725	0	0	1.1	-0.1	1.1
63057	99	SPEED	SUR	59	2	725	0	0	1.5	-0.1	1.5
63058	99	SPEED	SUR	53	2	1442	0	0	1.3	0.2	1.3
63101	99	SPEED	SUR	61	1	725	0	0	1.1	-0.4	1.2
63103	99	SPEED	SUR	61	1	724	0	0	1.2	-0.2	1.3
63104	99	SPEED	SUR	61	2	725	0	0	1.1	-0.4	1.1
63105	99	SPEED	SUR	61	2	725	0	0	1.1	-0.1	1.1
63106	99	SPEED	SUR	61	2	724	0	0	1.2	0.0	1.2
63108	99	SPEED	SUR	61	2	724	0	0	1.9	-0.6	2.0
63109	99	SPEED	SUR	60	2	634	0	0	1.0	0.2	1.1
63110	99	SPEED	SUR	60	2	725	0	0	1.1	-0.3	1.2
63112	99	SPEED	SUR	61	1	725	0	0	1.0	-0.4	1.1
63113	99	SPEED	SUR	61	2	725	0	0	1.0	-0.4	1.1
63115	99	SPEED	SUR	62	1	724	0	0	1.3	-0.6	1.5

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
63117	99	SPEED	SUR	61	1	1429	0	0	1.1	-0.4	1.2
64041	99	SPEED	SUR	61	-3	720	0	0	1.3	-0.1	1.3
64045	99	SPEED	SUR	59	-12	821	0	0	1.0	0.5	1.1
64046	99	SPEED	SUR	61	-4	712	0	0	1.0	0.3	1.0
66021	99	SPEED	SUR	55	14	716	0	0	1.2	0.8	1.4
66022	99	SPEED	SUR	54	14	1200	0	0	1.3	0.4	1.4
66024	99	SPEED	SUR	55	13	710	0	0	1.4	0.8	1.6
95392	99	SPEED	SUR	35	20	53	0	0	1.7	0.7	1.9

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 : JUN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	554	0	0	15.5	-1.8	15.6
1300002	99	DIRN	SUR	20	-23	712	0	0	8.9	-1.5	9.0
1300008	99	DIRN	SUR	15	-38	720	0	0	7.9	1.9	8.1
1300130	99	DIRN	SUR	28	-16	490	0	0	12.3	-3.2	12.7
1300131	99	DIRN	SUR	28	-17	291	0	0	23.9	-2.9	24.0
4100026	99	DIRN	SUR	12	-38	296	0	0	8.2	-16.8	18.7
4100139	99	DIRN	SUR	20	-38	560	0	0	8.3	3.5	9.0
41002	99	DIRN	SUR	32	-75	908	0	0	18.8	7.9	20.3
4100300	99	DIRN	SUR	16	-58	716	0	0	8.7	3.3	9.4
41004	99	DIRN	SUR	33	-79	776	0	0	21.9	4.0	22.3
41008	99	DIRN	SUR	31	-81	539	0	0	26.3	11.2	28.6
41009	99	DIRN	SUR	29	-80	585	0	0	26.3	3.7	26.6
41010	99	DIRN	SUR	29	-79	882	0	0	17.6	11.2	20.9
41013	99	DIRN	SUR	33	-78	826	0	0	25.4	4.6	25.8
41024	99	DIRN	SUR	34	-79	550	0	0	23.7	-13.3	27.2
41025	99	DIRN	SUR	35	-75	823	0	0	20.5	3.5	20.8
41026	99	DIRN	SUR	12	-38	296	0	0	8.6	-17.6	19.5
41029	99	DIRN	SUR	33	-80	766	0	0	30.6	-14.1	33.7
41033	99	DIRN	SUR	32	-80	495	0	0	26.7	-8.5	28.0
41037	99	DIRN	SUR	34	-77	491	0	0	26.6	2.4	26.8
41038	99	DIRN	SUR	34	-78	492	0	0	72.5	7.0	72.8
41041	99	DIRN	SUR	14	-46	1137	0	0	9.1	-11.1	14.4
41043	99	DIRN	SUR	21	-65	1124	0	0	14.7	-13.6	20.0
41044	99	DIRN	SUR	22	-59	1004	0	0	10.5	0.8	10.5
41046	99	DIRN	SUR	24	-68	903	0	0	11.6	0.5	11.6
41047	99	DIRN	SUR	28	-72	693	0	0	16.6	-6.1	17.7
41048	99	DIRN	SUR	32	-70	900	0	0	19.6	-1.3	19.6
41049	99	DIRN	SUR	28	-63	687	0	0	20.6	4.6	21.1
41052	99	DIRN	SUR	18	-65	198	0	0	7.7	3.8	8.6
41053	99	DIRN	SUR	19	-66	1434	0	0	15.7	2.1	15.8
41056	99	DIRN	SUR	18	-66	1644	0	0	20.0	2.2	20.1
41063	99	DIRN	SUR	35	-76	705	0	0	20.6	-8.3	22.2

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41064	99	DIRN	SUR	34	-77	449	0	0	27.1	4.9	27.6
41300	99	DIRN	SUR	16	-58	717	0	0	8.7	3.3	9.4
42013	99	DIRN	SUR	27	-83	420	0	0	25.4	-2.7	25.5
42022	99	DIRN	SUR	28	-84	268	0	0	27.9	-0.6	27.9
42023	99	DIRN	SUR	26	-83	149	0	0	22.7	5.5	23.4
42056	99	DIRN	SUR	20	-85	1119	0	0	15.7	5.2	16.5
42057	99	DIRN	SUR	17	-81	1204	0	0	12.6	2.1	12.7
42058	99	DIRN	SUR	15	-75	428	0	0	5.3	7.7	9.3
42060	99	DIRN	SUR	16	-63	1170	0	0	10.6	-1.9	10.8
42085	99	DIRN	SUR	18	-67	798	0	0	14.2	10.3	17.5
44007	99	DIRN	SUR	44	-70	472	0	0	23.3	5.0	23.8
44009	99	DIRN	SUR	39	-75	460	0	0	19.8	18.1	26.8
44013	99	DIRN	SUR	42	-71	512	0	0	20.3	17.1	26.5
44014	99	DIRN	SUR	37	-75	341	0	0	18.0	7.0	19.3
44017	99	DIRN	SUR	41	-72	446	0	0	22.4	7.0	23.5
44018	99	DIRN	SUR	42	-70	497	0	0	15.6	12.0	19.7
44020	99	DIRN	SUR	42	-70	825	0	0	14.0	3.9	14.6
44025	99	DIRN	SUR	40	-73	476	0	0	23.1	4.6	23.6
44027	99	DIRN	SUR	44	-67	548	0	0	21.2	14.8	25.8
44030	99	DIRN	SUR	43	-70	450	0	0	22.8	7.7	24.0
44032	99	DIRN	SUR	44	-69	438	0	0	23.6	14.6	27.8
44033	99	DIRN	SUR	44	-69	422	0	0	22.6	0.7	22.7
44034	99	DIRN	SUR	44	-68	429	0	0	21.6	9.4	23.6
44037	99	DIRN	SUR	44	-68	451	0	0	15.1	34.9	38.0
44039	99	DIRN	SUR	41	-73	362	0	0	19.9	4.3	20.3
44040	99	DIRN	SUR	41	-74	130	0	0	17.2	-2.3	17.3
44042	99	DIRN	SUR	38	-76	189	0	0	28.2	-12.7	30.9
44058	99	DIRN	SUR	38	-76	676	0	0	26.6	-27.8	38.4
44062	99	DIRN	SUR	39	-76	687	0	0	23.5	-18.2	29.7
44063	99	DIRN	SUR	39	-76	651	0	0	25.0	-17.4	30.4
44064	99	DIRN	SUR	37	-76	718	0	0	25.2	-15.5	29.6
44065	99	DIRN	SUR	40	-74	697	0	0	23.4	6.3	24.2
44066	99	DIRN	SUR	40	-73	469	0	0	16.9	7.6	18.5
44069	99	DIRN	SUR	41	-73	392	0	0	20.8	-4.5	21.2
44072	99	DIRN	SUR	37	-76	708	0	0	32.3	-16.0	36.0
44137	99	DIRN	SUR	42	-62	644	0	0	14.3	-13.4	19.6
44139	99	DIRN	SUR	44	-57	318	0	0	14.9	12.0	19.1
45003	99	DIRN	SUR	45	-83	404	0	0	30.0	22.3	37.3
45005	99	DIRN	SUR	42	-82	964	0	0	26.3	8.9	27.8
45008	99	DIRN	SUR	44	-82	749	0	0	20.0	17.6	26.7
45012	99	DIRN	SUR	44	-77	403	0	0	21.3	17.2	27.4

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
45132	99	DIRN	SUR	43	-81	490	0	0	21.3	6.6	22.3
45135	99	DIRN	SUR	44	-77	544	0	0	20.7	-6.1	21.6
45137	99	DIRN	SUR	46	-81	171	0	0	17.6	3.1	17.9
45138	99	DIRN	SUR	50	-66	492	0	0	26.5	7.8	27.6
45139	99	DIRN	SUR	43	-80	320	0	0	21.2	1.5	21.2
45142	99	DIRN	SUR	43	-79	404	0	0	21.3	4.4	21.7
45143	99	DIRN	SUR	45	-81	551	0	0	21.2	11.5	24.1
45147	99	DIRN	SUR	42	-83	380	0	0	22.1	0.3	22.1
45149	99	DIRN	SUR	44	-82	603	0	0	20.6	-4.6	21.1
45151	99	DIRN	SUR	45	-79	273	0	0	19.2	4.0	19.6
45152	99	DIRN	SUR	46	-80	176	0	0	17.9	0.8	17.9
45154	99	DIRN	SUR	46	-83	292	0	0	34.5	11.9	36.5
45159	99	DIRN	SUR	44	-79	352	0	0	24.8	18.2	30.8
45162	99	DIRN	SUR	45	-83	355	0	0	26.6	-10.4	28.6
45163	99	DIRN	SUR	44	-84	562	0	0	22.1	-0.1	22.1
45164	99	DIRN	SUR	42	-82	158	0	0	32.2	-4.2	32.5
45165	99	DIRN	SUR	42	-83	666	0	0	32.8	11.6	34.8
45166	99	DIRN	SUR	45	-73	404	0	0	15.7	-48.0	50.5
45167	99	DIRN	SUR	42	-80	539	0	0	23.6	-13.6	27.3
45169	99	DIRN	SUR	42	-82	223	0	0	32.1	-18.0	36.8
45175	99	DIRN	SUR	46	-85	500	0	0	30.8	-11.0	32.7
45176	99	DIRN	SUR	42	-82	582	0	0	28.2	-15.1	32.0
6100198	99	DIRN	SUR	37	-2	149	0	0	11.3	3.2	11.8
6100281	99	DIRN	SUR	40	0	314	0	0	45.0	-22.8	50.4
6100417	99	DIRN	SUR	38	0	444	0	0	18.0	4.3	18.5
6200024	99	DIRN	SUR	44	-3	367	0	0	29.0	6.3	29.7
6200025	99	DIRN	SUR	44	-6	330	0	0	20.5	1.6	20.6
6200082	99	DIRN	SUR	44	-8	527	0	0	21.8	8.4	23.4
6200083	99	DIRN	SUR	43	-9	407	0	0	16.8	8.0	18.6
6200084	99	DIRN	SUR	42	-9	476	0	0	18.5	8.7	20.5
6200085	99	DIRN	SUR	36	-7	513	0	0	14.0	5.1	15.0
6200091	99	DIRN	SUR	53	-5	61	0	0	21.9	-2.0	22.0
6200092	99	DIRN	SUR	51	-11	512	0	0	10.4	5.9	12.0
6200093	99	DIRN	SUR	55	-10	521	0	0	15.8	4.1	16.3
6200094	99	DIRN	SUR	52	-7	410	0	0	13.0	-0.8	13.1
62001	99	DIRN	SUR	45	-5	555	0	0	18.7	3.5	19.0
6200191	99	DIRN	SUR	41	-10	467	0	0	16.9	0.3	16.9
6200192	99	DIRN	SUR	40	-10	498	0	0	15.9	-2.3	16.1
6201030	99	DIRN	SUR	44	-4	333	0	0	20.6	-2.4	20.7
6201070	99	DIRN	SUR	43	-9	68	0	0	25.0	16.0	29.7
62023	99	DIRN	SUR	51	-8	529	0	0	14.4	6.6	15.8

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62029	99	DIRN	SUR	49	-12	1346	0	0	12.1	8.5	14.8
62050	99	DIRN	SUR	50	-4	563	0	0	13.6	-0.1	13.7
62081	99	DIRN	SUR	51	-13	556	0	0	12.0	12.2	17.1
62095	99	DIRN	SUR	53	-16	473	0	0	14.7	7.7	16.6
62103	99	DIRN	SUR	50	-3	622	0	0	19.8	11.8	23.0
62107	99	DIRN	SUR	50	-6	1225	0	0	18.8	8.8	20.7
62111	99	DIRN	SUR	58	0	522	0	0	13.8	0.0	13.8
62112	99	DIRN	SUR	58	0	517	0	0	13.1	2.5	13.4
62114	99	DIRN	SUR	58	0	1165	0	0	10.6	-0.7	10.6
62163	99	DIRN	SUR	48	-8	564	0	0	12.3	-4.5	13.1
62305	99	DIRN	SUR	50	0	644	0	0	13.9	8.2	16.1
62442	99	DIRN	SUR	49	-17	366	0	0	9.3	-3.8	10.0
64041	99	DIRN	SUR	61	-3	593	0	0	11.0	7.9	13.5
64045	99	DIRN	SUR	59	-12	648	0	0	13.3	4.8	14.2
64046	99	DIRN	SUR	61	-4	578	0	0	11.3	-2.7	11.6

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	ASFR3	ASFR4	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	PGZ76YF	QCY3TGN
VKB4L5Q	XKQLWQB	XQFJRGX	YLV96WM	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001
01004	01010	01028	01241	01400	01415	02185	02365	02527
02591	02836	02963	03005	03023	03238	03354	03502	03743
03808	03882	03918	03953	04018	04220	04270	04320	04339
04360	04417	06011	06260	06610	07110	07145	07510	07645
07761	08001	08023	08190	08221	08302	08430	08508	08522
08579	10035	10113	10184	10238	10304	10393	10410	10548
10618	10739	10771	10868	10954	10962	11010	11035	11120
11240	11520	11747	11952	12120	12374	12425	12843	12982
13275	13388	14015	14240	14430	15420	15614	16045	16080
16113	16144	16245	16320	16429	16546	16622	16716	16754
17030	17064	17095	17220	17240	17281	17516	17607	33008
37789	40179	40186	43599	45004	47102	47104	47138	47155
47169	47186	60018	61901	61904	61980	61998	68263	68424
68442	68512	68538	68816	68842	70026	70133	70200	70219
70231	70261	70308	70316	70326	70350	70361	70398	71043
71081	71082	71109	71119	71600	71603	71722	71802	71811
71815	71816	71823	71836	71845	71867	71906	71907	71908
71909	71913	71917	71924	71925	71926	71934	71945	71957
71964	72201	72206	72208	72210	72214	72215	72230	72233
72235	72240	72248	72249	72250	72251	72261	72265	72274
72293	72317	72327	72340	72363	72364	72365	72376	72388
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72582	72597	72632	72634	72645
72649	72659	72662	72672	72681	72694	72712	72747	72764
72768	72776	72786	72797	73033	74389	74494	74560	76612
76679	76805	76903	78897	78954	81405	85442	85469	85586
85799	85934	88889	89002	89062	89564	89571	89611	89642
89859	91212	91285	91592	91765	91925	91938	91948	91958
93112	93417	93817	93844	93997	94120	94150	94170	94203
94294	94299	94302	94312	94326	94332	94374	94403	94430
94461	94510	94578	94610	94637	94638	94653	94659	94672
94711	94767	94776	94802	94821	94866	94910	94975	94995
94996	94998	95527	96996					

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

ASDE09	ASFR3	ASFR4	DBLK	FHM5UJH	FPUW5GN	HTXUH4H	PGZ76YF	QCY3TGN
VKB4L5Q	XKQLWQB	XQFJRGX	YLV96WM	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001
01004	01010	01028	01241	01400	01415	02185	02836	02963
06610	16716	17607	40186	47155	61904	72551	73033	76903
94637	94653	94767						

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

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

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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