



ECMWF Global Data Monitoring Report

April 2016

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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 18) - 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 (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 26 (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 25 (Dec 14) - Coverage chart for ATOVS AMSU-A for NOAA_16 removed
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for NOAA_14 MSU replaced by ATOVS AMSU-A for NOAA_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A) TOVS AMSU-A and MSU (NOAA_15 and NOAA_14).
- Revision 21 (May 99) - Monitoring statistics ceased for NOAA_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage of rejection.

1 Introduction

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

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

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

As recommended at the ninth session of the Commission for Basic Systems at Geneva 1988, lead centres have been appointed for each main type of observation which should liaise with the participating centres and coordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

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

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

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

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	Mar	Apr	Ident	Time	Mar	Apr
17196	(00)	30	4	06060	(00)	3	19
17196	(12)	30	5	10304	(00)	3	16
30635	(00)	24	0	10954	(00)	2	20
30635	(12)	25	0	10954	(12)	20	35
82705	(00)	31	0	13388	(00)	0	29
82705	(12)	30	0	13388	(12)	0	30
-	-	-	-	33345	(12)	0	27
-	-	-	-	40948	(12)	0	24
-	-	-	-	41891	(00)	0	23
-	-	-	-	41891	(12)	1	19
-	-	-	-	42314	(00)	14	28
-	-	-	-	42369	(00)	14	27
-	-	-	-	42492	(00)	0	12
-	-	-	-	42667	(00)	13	29
-	-	-	-	43295	(12)	3	19
-	-	-	-	43346	(00)	17	28
-	-	-	-	44373	(00)	9	30
-	-	-	-	44373	(12)	10	29
-	-	-	-	47058	(00)	0	11
-	-	-	-	48615	(00)	1	30
-	-	-	-	48615	(12)	1	30
-	-	-	-	74004	(00)	14	26
-	-	-	-	76394	(12)	0	18
-	-	-	-	76405	(12)	14	29
-	-	-	-	78073	(12)	0	15
-	-	-	-	83768	(00)	14	30
-	-	-	-	83928	(12)	0	15
-	-	-	-	91610	(00)	12	24
-	-	-	-	96253	(00)	5	29
-	-	-	-	96253	(12)	6	27
-	-	-	-	96581	(00)	6	30
-	-	-	-	96581	(12)	8	29
-	-	-	-	96685	(00)	5	30
-	-	-	-	96685	(12)	7	29
-	-	-	-	97900	(00)	7	30
-	-	-	-	97900	(12)	8	30

2.2 Drifting Buoys

Surface pressure observations from **1410** 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.

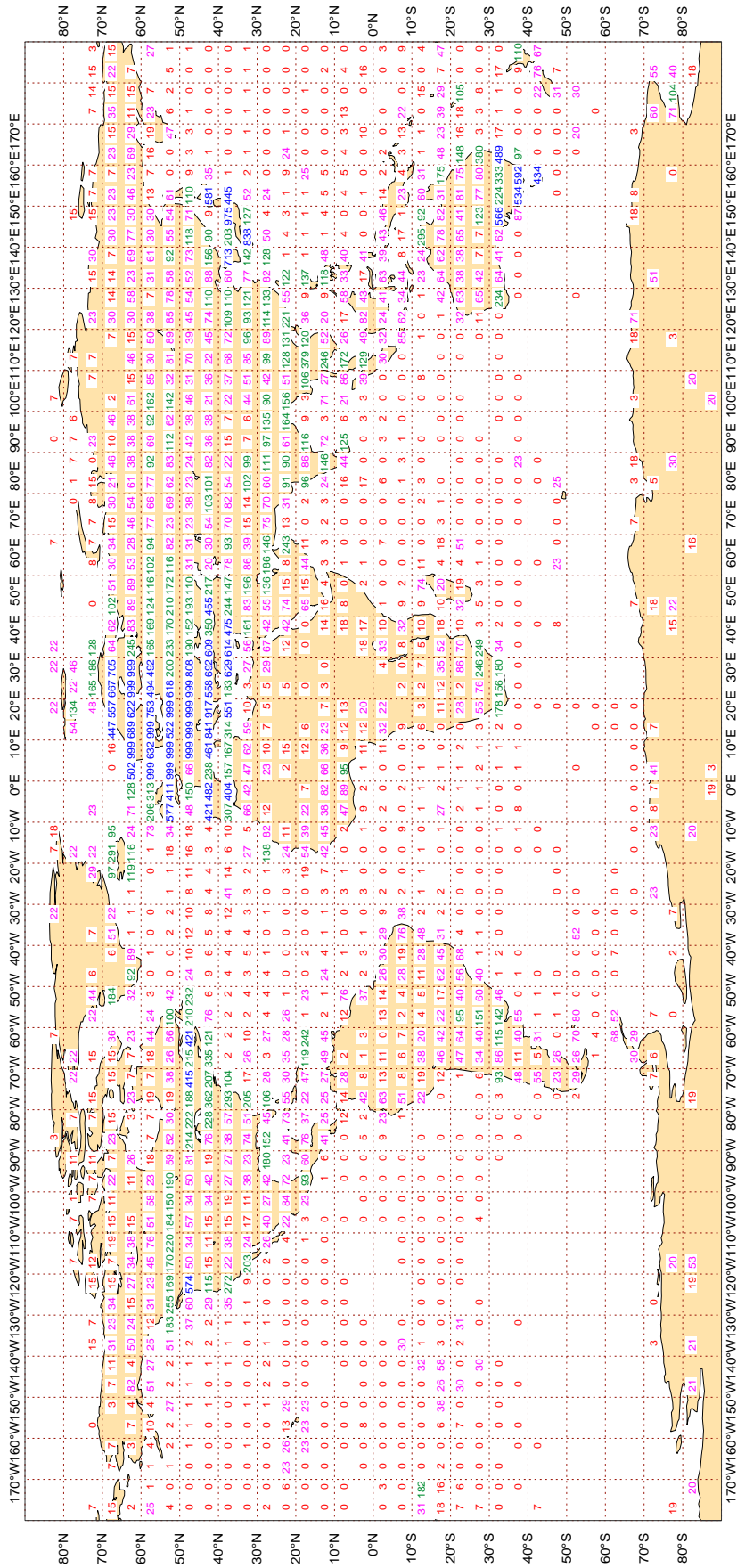
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

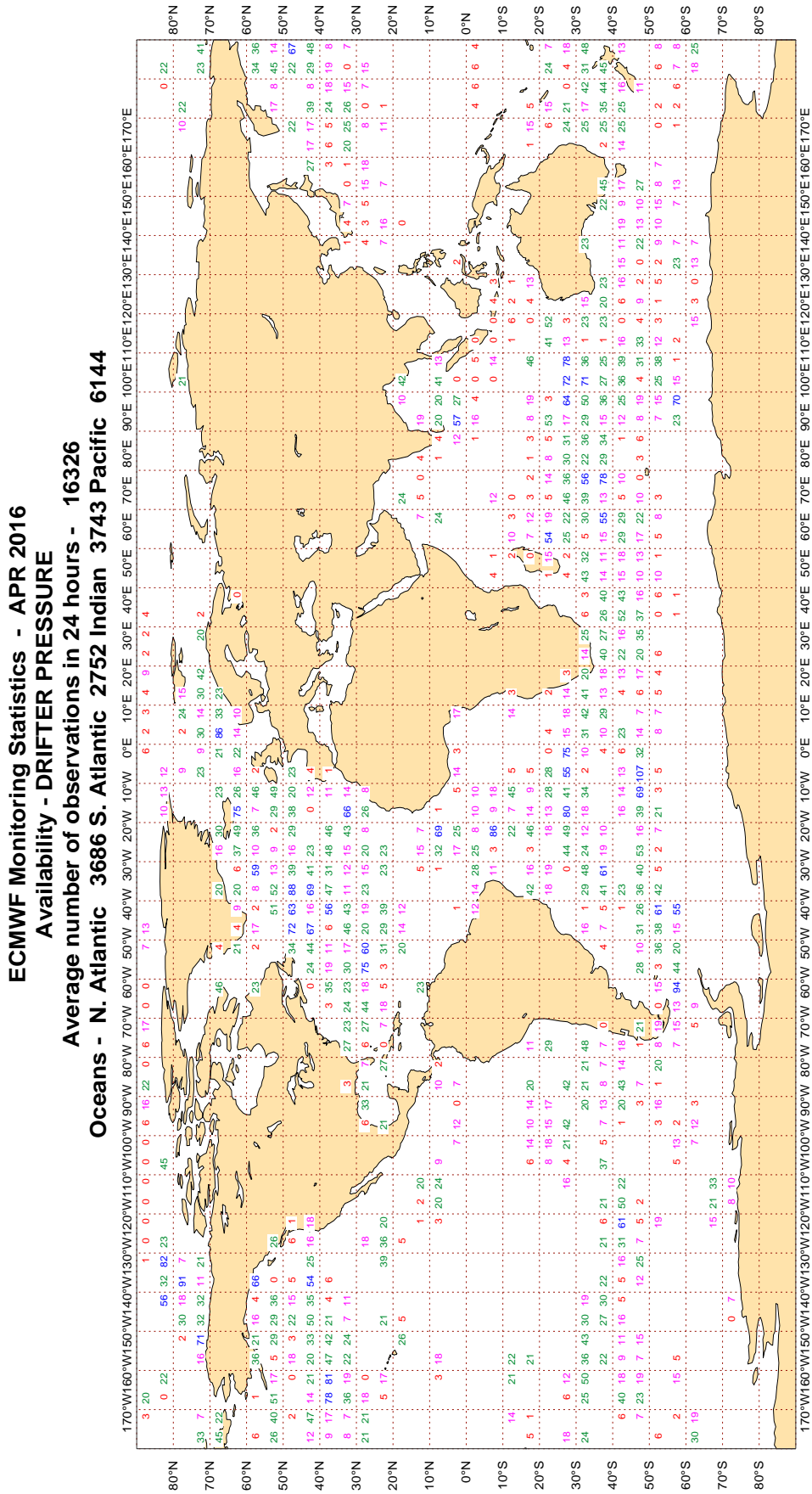
Figure 1

ECMWF Monitoring Statistics - APR 2016
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 96869
 LAND - WMO Region I: 0 II: 0 III: 0 IV: 0
 Region V: 0 VI: 0 Antarctic: 0
 Oceans - N. Atlantic 52426 S. Atlantic 3088 Indian 10942 Pacific 30413



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

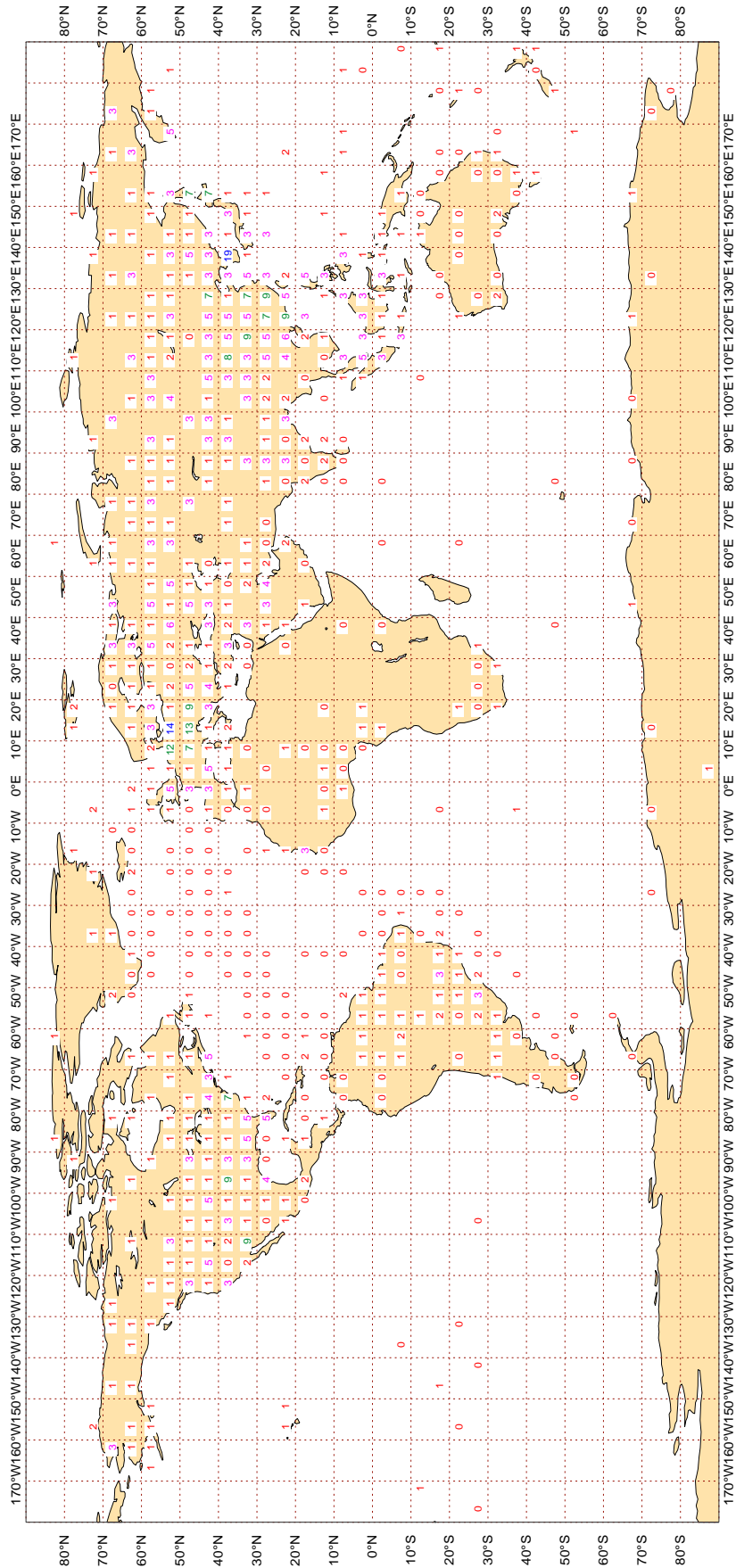
ECMWF Monitoring Statistics - APR 2016

Availability - TEMP 500 hPa Geopotential
Average number of observations in 24 hours - 1310

LAND - WMO Region I: 45 II: 508 III: 71 IV: 259

Region V: 140 VI: 258 Antarctic: 14

Oceans - N. Atlantic 14 S. Atlantic 1 Indian 0 Pacific 0



Magics 2.24.2 (64 bit)



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

Figure 4

ECMWF Monitoring Statistics - APR 2016

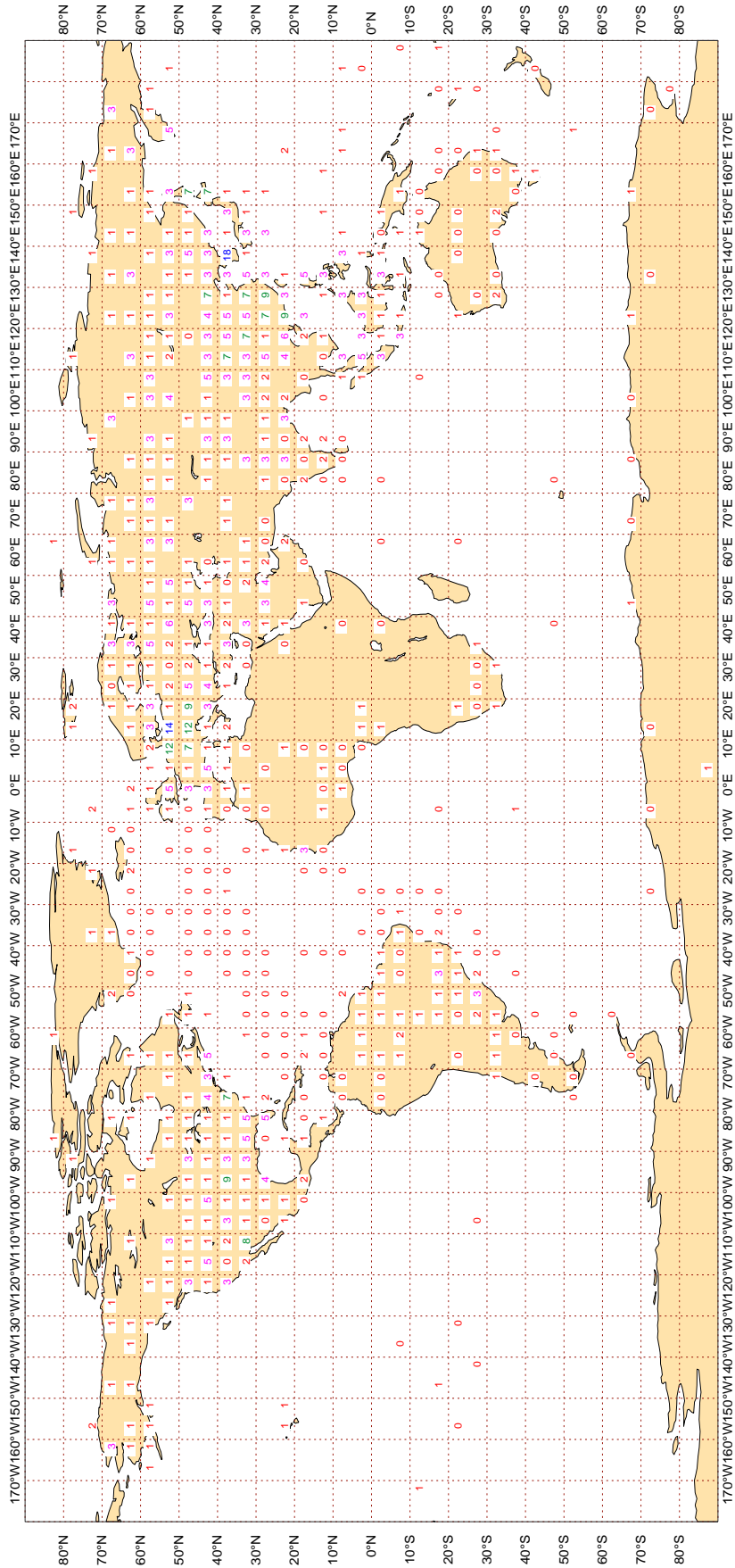
Availability - TEMP/PILOT 300 hPa wind

Average number of observations in 24 hours - 1273

LAND - WMO Region I: 44 II: 489 III: 70 IV: 255

Region V: 132 VI: 256 Antarctic: 14

Oceans - N. Atlantic 13 S. Atlantic 1 Indian 0 Pacific 0



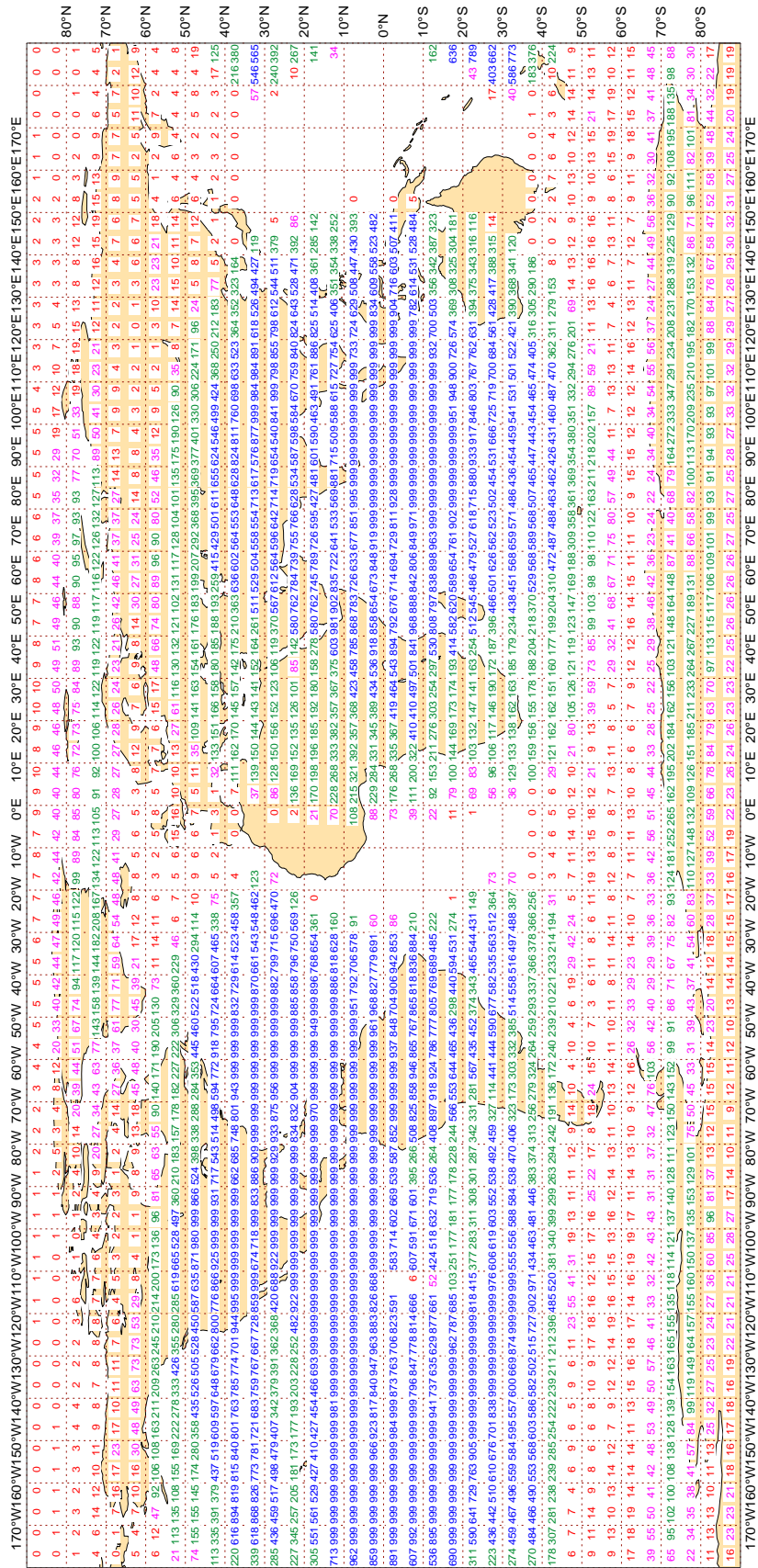
Magics 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - APR 2016
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 801641



Magics 2.24.2 (64 bit)

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

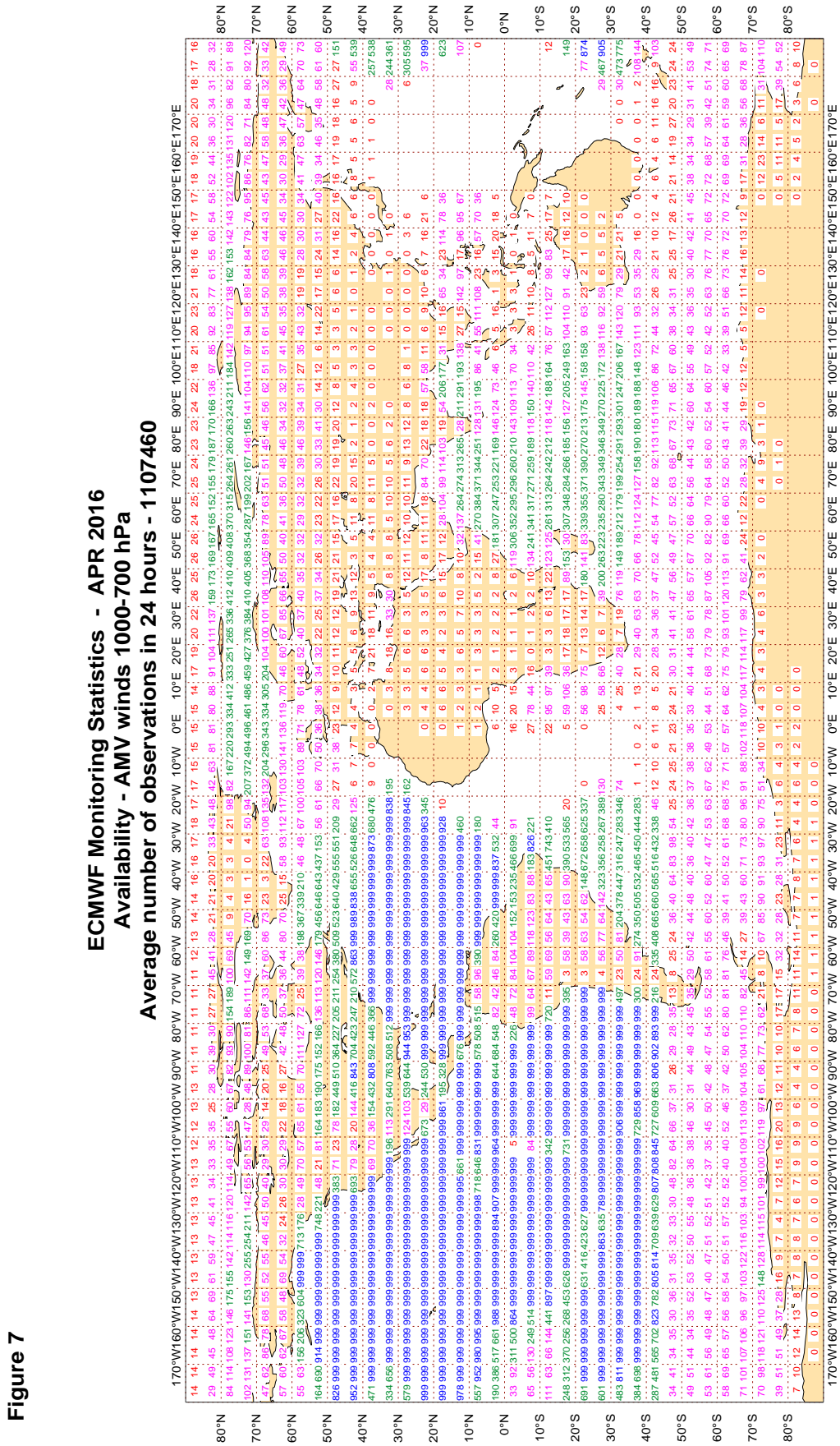


Figure 7



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

Figure 8

ECMWF Monitoring Statistics - APR 2016
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 331192

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 70°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA15 ATOVS AMSU-A in April 2016.



Majics 2.24.2 (64 bit)

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

Figure 9.1

ECMWF Monitoring Statistics - APR 2016
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 553535

Table with 10 columns representing longitude (170°W to 170°E) and 10 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 April 2016.

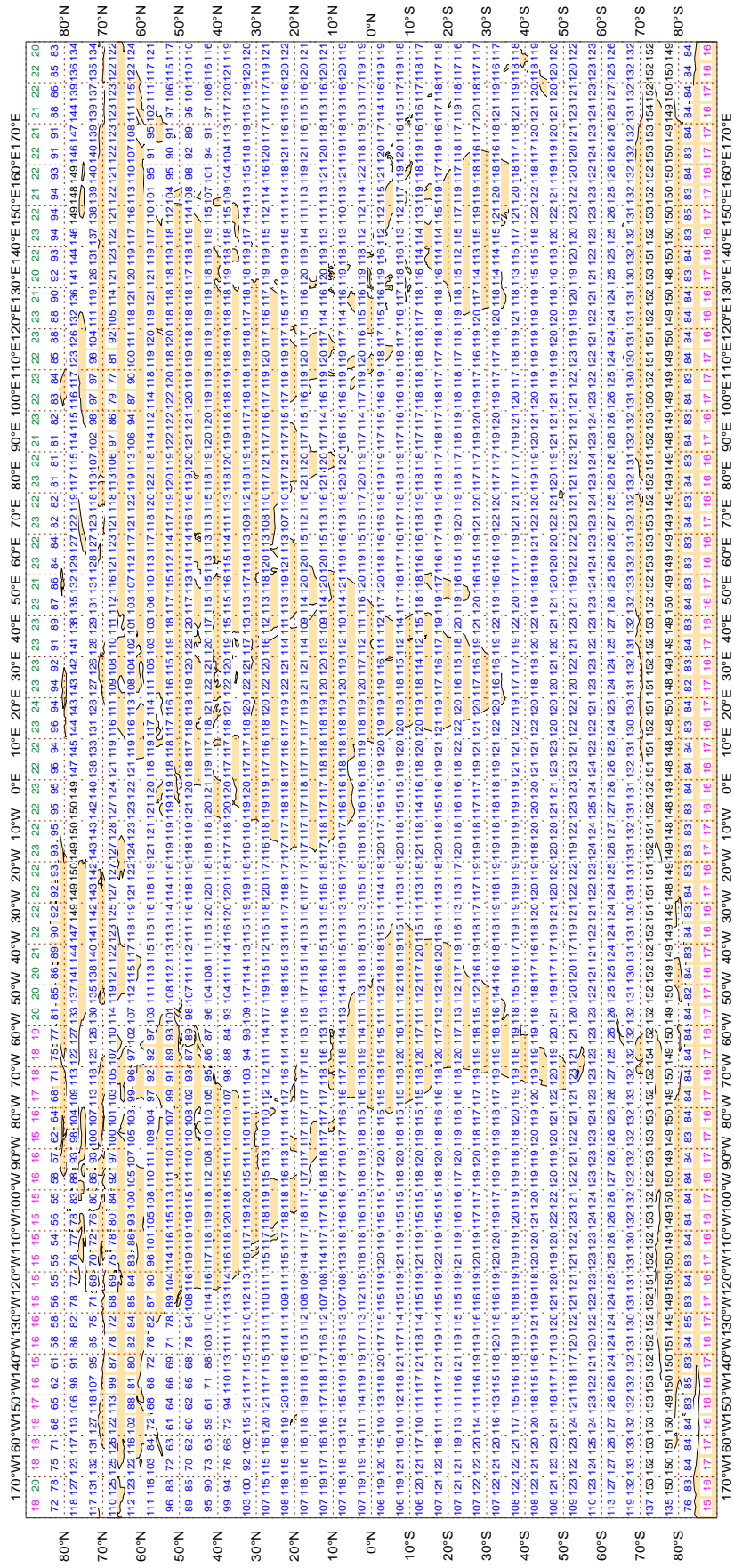
Magics 2.24.2 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - APR 2016
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 289115



Majics 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 : APR 2016
 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
9HA3047	99	P	SUR	31	1	1.8	-3.9	4.3
9HRJ9	99	P	SUR	16	0	1.8	-4.5	4.9
9V2731	99	P	SUR	36	0	1.0	6.5	6.6
9V2781	99	P	SUR	42	0	2.3	5.9	6.3
9V2782	99	P	SUR	21	0	1.8	5.3	5.6
9V9290	99	P	SUR	29	0	2.9	7.8	8.3
AUYN	99	P	SUR	22	1	1.0	5.3	5.4
C6AV5	99	P	SUR	30	0	0.6	3.5	3.5
C6FZ8	99	P	SUR	29	0	0.7	-3.4	3.5
CQDE	99	P	SUR	37	0	1.9	-4.0	4.4
D5AG9	99	P	SUR	45	0	2.0	4.0	4.5
DVRF	99	P	SUR	113	64	4.6	-0.1	4.6
KRAU	99	P	SUR	58	1	1.0	6.8	6.9
LAPD7	99	P	SUR	21	0	4.7	3.1	5.6
LAPE7	99	P	SUR	15	0	2.5	7.0	7.4
LF8G	99	P	SUR	108	12	8.2	-0.8	8.3
MYRF	99	P	SUR	43	2	5.2	-1.0	5.3
OZ2049	99	P	SUR	23	0	0.5	-4.5	4.5
S6LT3	99	P	SUR	18	0	0.8	-5.3	5.3
S6LT5	99	P	SUR	22	0	0.8	3.0	3.1
S6TE	99	P	SUR	15	0	2.0	-3.2	3.8
UASX	99	P	SUR	24	0	4.3	3.0	5.2
UBSH5	99	P	SUR	15	0	5.5	-2.3	5.9
UCSJ	99	P	SUR	40	0	0.7	3.4	3.4
UHSY	99	P	SUR	70	0	2.6	8.3	8.7
V7DS8	99	P	SUR	20	4	2.5	-4.1	4.8
V7PR8	99	P	SUR	15	2	4.1	7.9	8.9
VRCX7	99	P	SUR	32	0	3.3	8.2	8.8
VRDJ3	99	P	SUR	69	0	0.8	-3.6	3.6
VRDU8	99	P	SUR	46	0	1.1	-4.2	4.3
VRFI7	99	P	SUR	30	0	1.2	4.8	5.0
VRFW9	99	P	SUR	15	0	2.2	9.6	9.8

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
VRGN7	99	P	SUR	15	0	0.9	3.6	3.7
VRGO7	99	P	SUR	33	0	3.0	-3.5	4.6
VRGV9	99	P	SUR	24	0	1.3	3.5	3.7
VRKE9	99	P	SUR	50	0	2.2	5.6	6.0
VRTJ8	99	P	SUR	15	0	2.2	5.8	6.2
VTGB	99	P	SUR	101	101	0.0	0.0	0.0
WACW	99	P	SUR	27	0	0.7	3.4	3.4
WCX8882	99	P	SUR	40	0	1.4	-3.8	4.0
WCX8884	99	P	SUR	38	0	0.7	-5.5	5.6
WNTL	99	P	SUR	16	0	0.3	5.3	5.3

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 : APR 2016
 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
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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 : APR 2016
 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
42361	99	DIRN	SUR	102	0	0	17.9	31.0	35.8
44069	99	DIRN	SUR	56	0	0	35.4	33.8	48.9
45168	99	DIRN	SUR	34	0	0	19.6	-38.8	43.5
46119	99	DIRN	SUR	44	0	0	18.3	40.3	44.3
62030	99	DIRN	SUR	80	0	0	49.8	96.8	108.9

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : APR 2016
 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
23673	99	P	SUR	16	89	169	119	0.3	0.1	0.3
26545	99	P	SUR	71	-5	712	125	7.4	-2.4	7.8
42527	99	P	SUR	24	-84	381	116	3.2	1.2	3.4
44878	99	P	SUR	42	-9	202	1	6.1	-3.3	7.0
47503	99	P	SUR	62	-27	577	551	2.5	-12.0	12.3
48513	99	P	SUR	75	163	668	205	7.9	-1.4	8.1
48570	99	P	SUR	68	-176	679	252	7.2	3.4	8.0
48643	99	P	SUR	70	-144	713	478	8.8	-3.0	9.3
55633	99	P	SUR	-56	-66	542	0	1.3	4.9	5.1
56562	99	P	SUR	-58	103	83	6	3.0	5.4	6.2
72830	99	P	SUR	-72	-117	158	39	7.3	-0.5	7.3

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 : APR 2016
 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
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3.2.17 Table 6 - Suspect drifters: Wind direction (degrees)

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : APR 2016
 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
23092	99	DIRN	SUR	18	90	172	0	0	11.9	-31.7	33.8
23170	99	DIRN	SUR	15	74	75	0	0	23.7	-28.2	36.8
23454	99	DIRN	SUR	10	73	89	0	0	101.4	-126.8	162.3
23460	99	DIRN	SUR	7	88	48	0	0	17.2	27.7	32.6
23497	99	DIRN	SUR	11	72	59	0	0	71.1	-38.2	80.7
31053	99	DIRN	SUR	-32	-50	213	1	0	31.4	-40.1	50.9
31260	99	DIRN	SUR	-16	-38	52	0	0	133.7	79.0	155.3
31380	99	DIRN	SUR	-20	-40	180	1	0	25.9	-20.7	33.2
32303	99	DIRN	SUR	5	-95	52	0	0	54.6	75.9	93.5
42361	99	DIRN	SUR	28	-93	605	0	0	19.5	29.2	35.1
44059	99	DIRN	SUR	37	-76	669	0	0	17.2	-24.9	30.3
44069	99	DIRN	SUR	41	-73	236	0	0	37.0	37.1	52.3
45026	99	DIRN	SUR	42	-87	186	0	0	30.0	-27.3	40.6
45168	99	DIRN	SUR	42	-86	203	0	0	20.5	-36.4	41.7
46119	99	DIRN	SUR	48	-125	277	0	0	20.2	40.6	45.3
46125	99	DIRN	SUR	48	-123	44	0	0	58.8	30.9	66.4
62030	99	DIRN	SUR	50	-4	515	0	0	43.3	98.5	107.6
62127	99	DIRN	SUR	54	1	483	0	0	12.4	20.8	24.2

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 AREA : GLOBAL
 PERIOD : APR 2016
 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
08594	12	Z	1000	17	-23	20	0	5.4	29.0	29.5
33393	00	Z	200	50	24	22	1	70.1	89.8	113.9
33658	00	Z	200	48	26	20	0	46.5	80.1	92.6
40437	00	Z	925	25	47	30	1	5.3	35.1	35.5
40437	12	Z	925	25	47	29	0	6.3	32.8	33.4
42492	00	Z	30	26	85	11	0	21.4	207.1	208.2
42874	00	Z	30	21	82	19	1	35.3	214.0	216.9
43014	00	Z	30	20	75	19	0	12.5	195.9	196.3
43041	00	Z	30	19	82	16	0	14.3	205.1	205.6
43128	00	Z	30	17	78	20	0	86.3	235.8	251.1
43295	12	Z	30	13	78	16	0	15.2	230.0	230.5
43311	00	Z	30	11	73	20	0	49.1	194.6	200.7
43333	00	Z	50	12	93	25	0	46.0	150.2	157.1
43346	00	Z	850	11	80	29	0	17.8	28.6	33.7
47058	00	Z	200	39	126	10	3	52.2	178.1	185.6
71126	00	Z	250	54	-114	28	0	69.1	-153.7	168.5
71126	12	Z	250	54	-114	28	0	34.4	-153.4	157.2
76405	12	Z	400	24	-110	29	2	78.7	41.6	89.0
76654	12	Z	500	19	-104	26	1	38.1	28.4	47.5
83362	12	Z	250	-16	-56	21	1	87.2	73.0	113.7
96147	12	Z	925	4	108	30	1	17.5	49.7	52.7
96147	00	Z	925	4	108	29	2	15.4	58.0	60.0
ASEU02	00	Z	1000	27	-59	14	0	3.4	28.0	28.2

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
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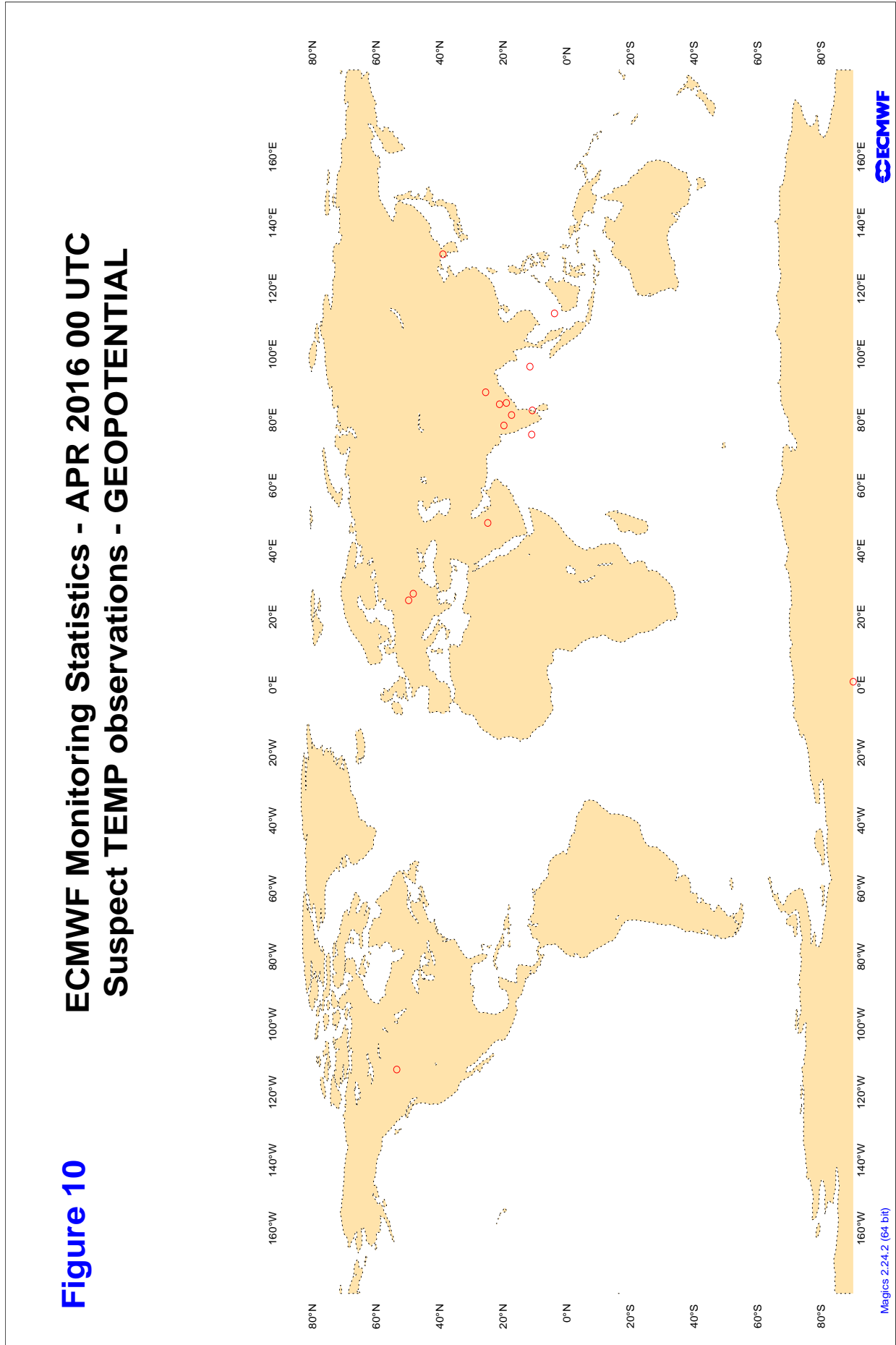
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

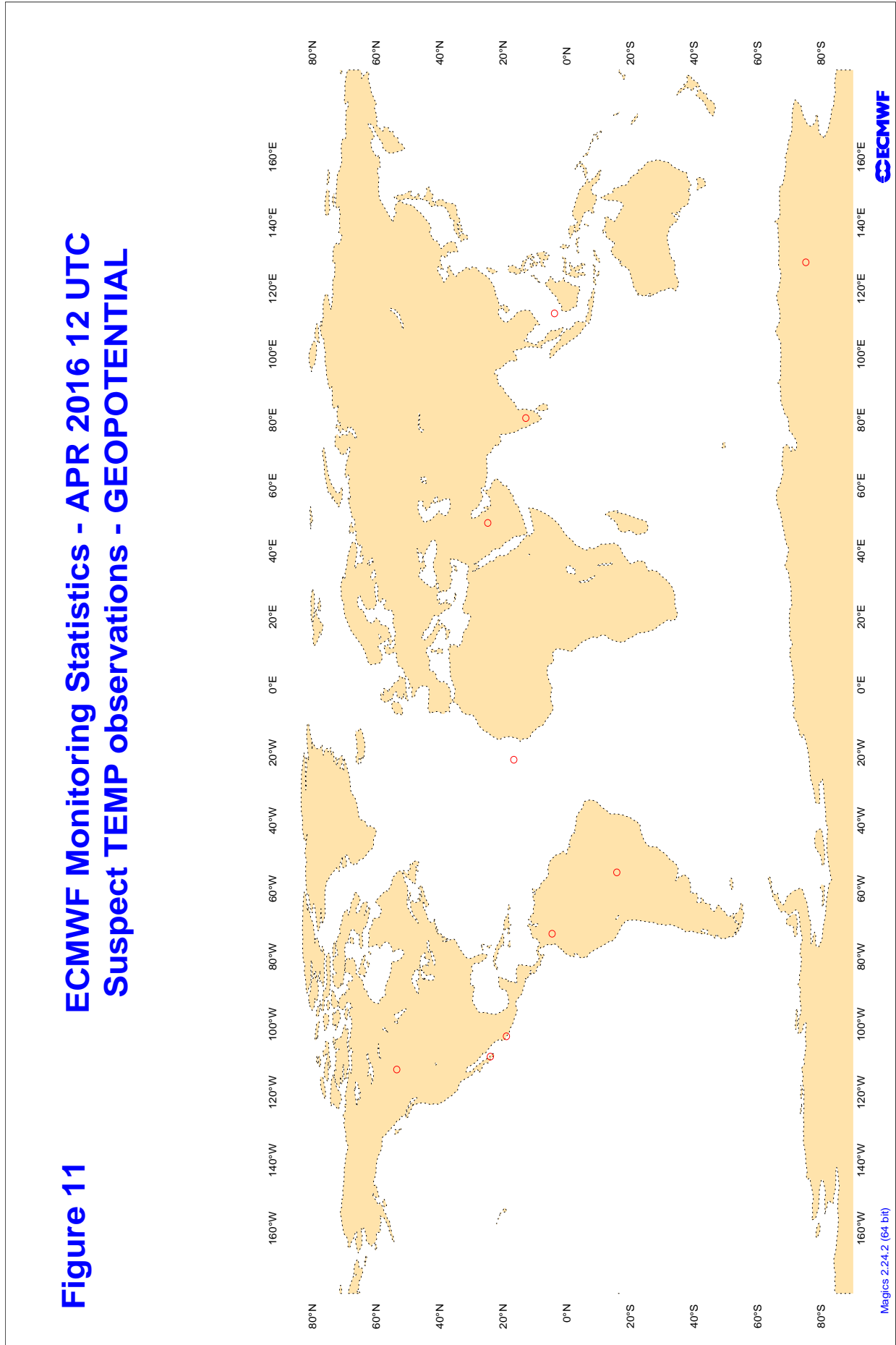
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	12	DD	26	113	30	10.1	2.2	10.1
57972	00	DD	26	113	29	11.0	2.4	8.7

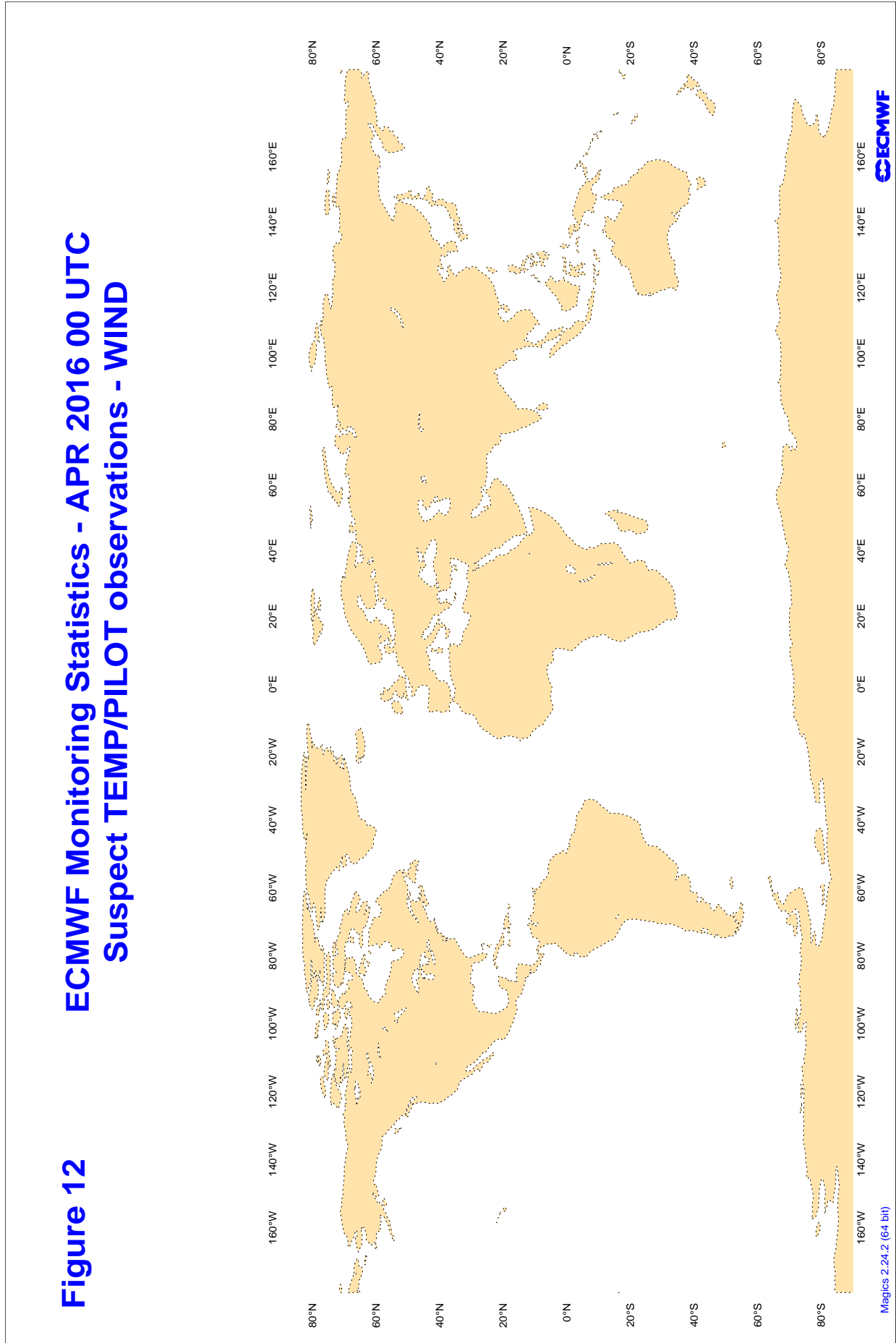
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



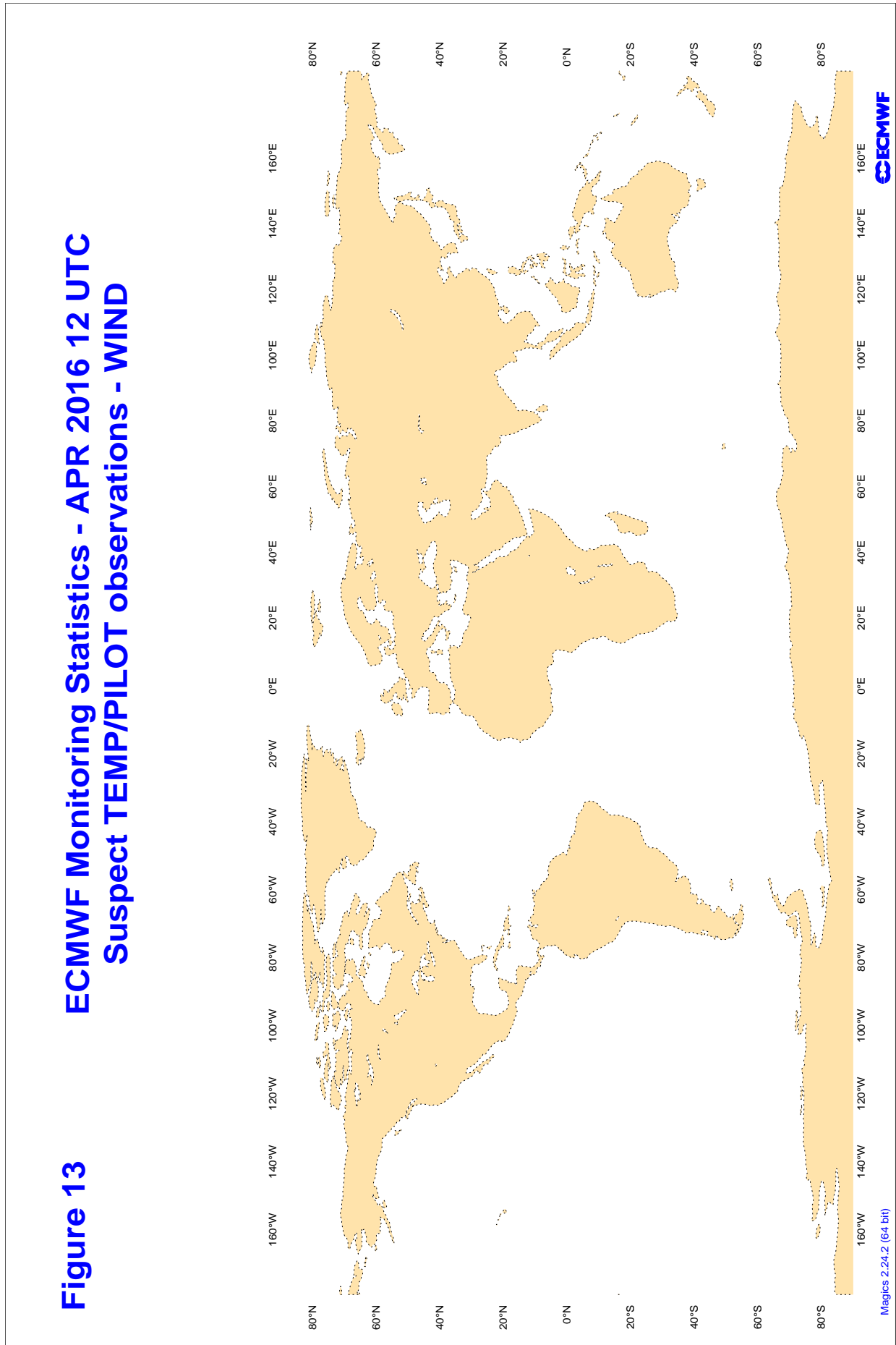
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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



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



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

RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	11	21.5	19.9
ASDE01	00	Z	100	13	8.6	0.9
ASDE02	00	Z	100	23	26.2	25.5
ASDE03	12	Z	100	12	25.5	24.0
ASDE03	00	Z	100	14	8.2	2.7
ASDE04	12	Z	100	9	46.3	45.5
ASDE04	00	Z	100	9	33.0	32.1
ASDE09	12	Z	100	2	18.5	18.5
ASDK01	12	Z	100	16	18.4	14.6
ASDK01	00	Z	100	12	12.8	8.5
ASDK02	12	Z	100	4	17.3	15.2
ASDK02	00	Z	100	4	12.2	12.2
ASDK03	00	Z	100	6	26.6	26.5
ASDK03	12	Z	100	7	26.6	25.4
ASDK1	00	Z	100	18	16.0	9.2
ASDK1	12	Z	100	18	21.2	13.1
ASDK2	12	Z	100	4	8.5	7.1
ASDK2	00	Z	100	6	8.6	7.4
ASDK3	00	Z	100	10	27.2	26.8
ASDK3	12	Z	100	12	26.0	24.6
ASES01	12	Z	100	21	18.5	16.6
ASEU01	12	Z	100	20	15.4	14.6
ASEU01	00	Z	100	15	11.8	7.2
ASEU02	12	Z	100	13	48.6	46.7
ASEU02	00	Z	100	12	41.8	41.0
ASEU03	00	Z	100	6	15.9	-14.6
ASEU03	12	Z	100	7	6.4	1.3
ASEU04	12	Z	100	1	12.4	-12.4
ASEU04	00	Z	100	3	12.0	12.0
ASEU06	12	Z	100	6	19.3	15.3
ASEU06	00	Z	100	10	18.3	7.5
ASFR1	12	Z	100	12	12.6	11.7
ASFR1	00	Z	100	9	14.1	6.5
ASFR2	12	Z	100	5	21.0	18.6
ASFR2	00	Z	100	6	14.3	12.8
ASFR3	12	Z	100	8	18.8	8.3
ASFR3	00	Z	100	7	9.9	8.6
ASFR4	00	Z	100	3	20.3	18.2
ASFR4	12	Z	100	3	21.8	21.6

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
DBLK	00	Z	100	2	9.9	9.9
DBLK	12	Z	100	41	13.4	10.4

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

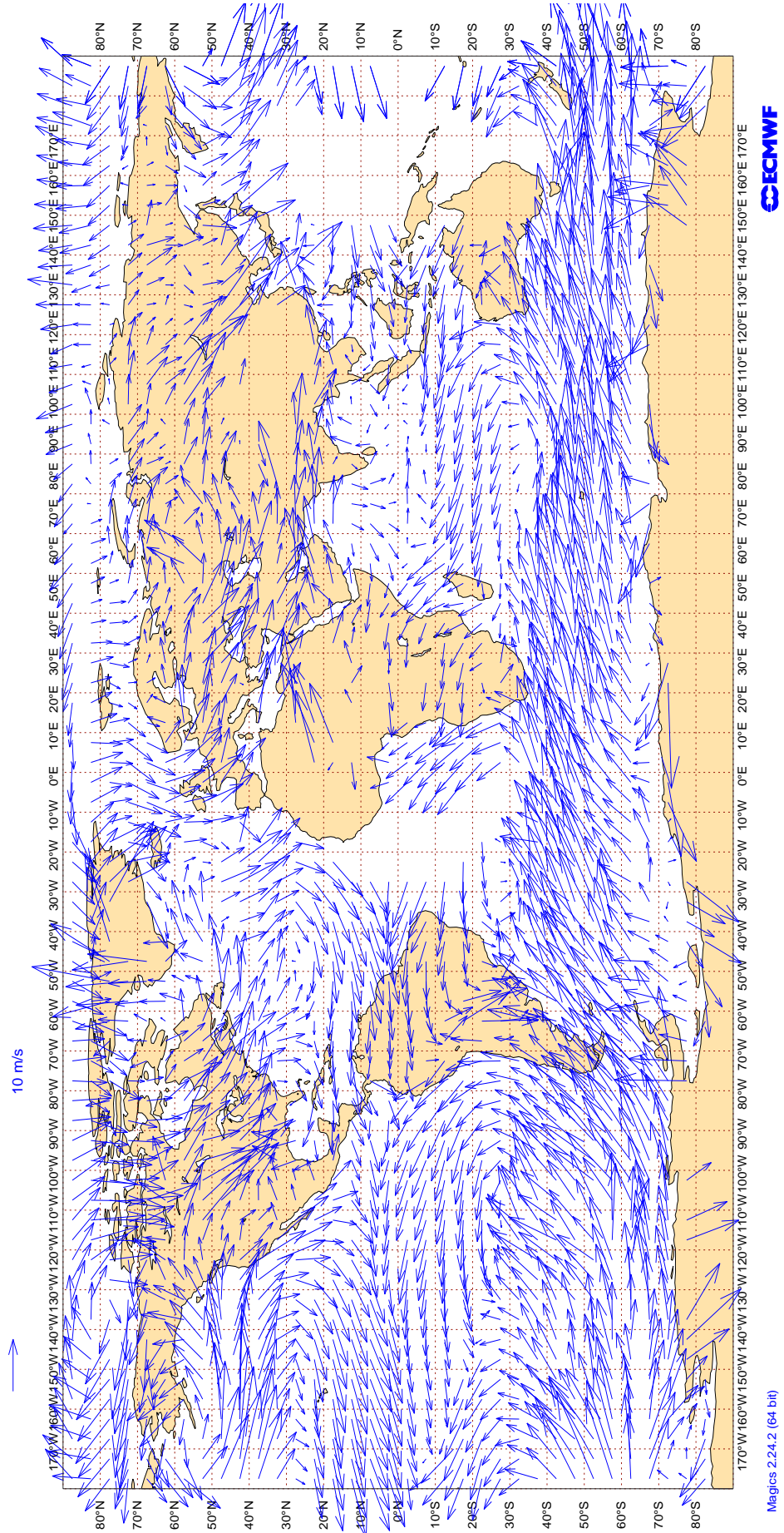
WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	11	3.3	-1.2	0.6
ASDE01	00	V	100	11	3.2	-1.8	0.4
ASDE02	00	V	100	11	6.0	0.2	1.7
ASDE03	12	V	100	11	5.5	-1.7	-0.2
ASDE03	00	V	100	12	2.7	-0.5	-0.1
ASDE04	12	V	100	7	4.7	0.2	0.5
ASDE04	00	V	100	7	3.5	-0.6	1.0
ASDE09	12	V	100	2	4.6	1.1	2.4
ASDK01	12	V	100	12	3.5	-0.5	0.4
ASDK01	00	V	100	12	4.1	-0.2	1.2
ASDK02	12	V	100	3	3.6	-0.1	-1.4
ASDK02	00	V	100	3	3.4	1.7	1.6
ASDK03	00	V	100	5	3.1	-1.3	1.5
ASDK03	12	V	100	6	3.0	-0.8	0.9
ASDK1	00	V	100	13	4.1	-0.6	0.9
ASDK1	12	V	100	12	3.9	-0.9	0.4
ASDK2	12	V	100	3	2.7	0.6	-0.7
ASDK2	00	V	100	2	3.7	1.9	1.3
ASDK3	00	V	100	6	2.5	0.5	0.4
ASDK3	12	V	100	7	2.7	-0.9	0.5
ASES01	12	V	100	18	5.5	2.0	0.5
ASEU01	12	V	100	16	3.4	0.0	0.0
ASEU01	00	V	100	12	3.5	0.1	-1.5
ASEU02	12	V	100	12	3.1	0.5	0.1
ASEU02	00	V	100	12	3.4	-0.1	0.3
ASEU03	00	V	100	6	2.1	-0.2	0.4
ASEU03	12	V	100	7	3.0	0.1	0.8
ASEU04	12	V	100	1	5.5	-5.5	-0.4
ASEU04	00	V	100	1	4.4	0.3	4.4
ASEU06	12	V	100	5	4.0	0.3	1.4
ASEU06	00	V	100	9	6.1	-1.4	-1.7
ASFR1	12	V	100	11	4.0	0.4	-0.8
ASFR1	00	V	100	8	2.8	0.3	-0.3
ASFR2	12	V	100	5	7.0	2.1	-2.6
ASFR2	00	V	100	6	4.9	-0.9	0.2
ASFR3	12	V	100	7	3.5	-0.9	2.3
ASFR3	00	V	100	7	4.6	0.9	1.9
ASFR4	00	V	100	3	3.9	2.6	0.5
ASFR4	12	V	100	3	2.0	1.1	0.7

RADIOSONDE MONITORING STATISTICS (SHIPS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
DBLK	00	V	100	1	5.5	0.5	5.5
DBLK	12	V	100	23	5.9	0.4	0.7

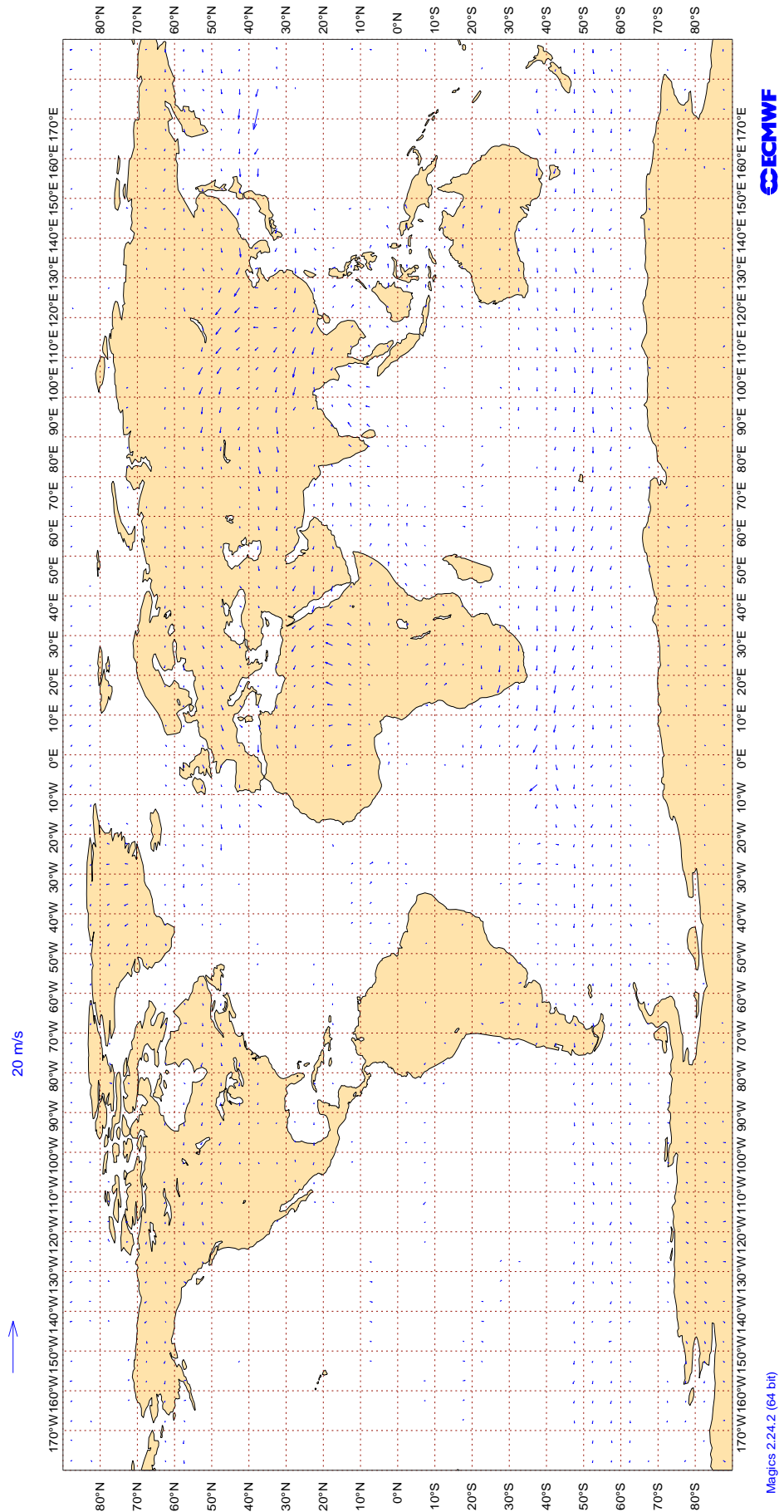
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Apr 2016
AMV Winds: 700-1000hPa
Mean Observed Wind



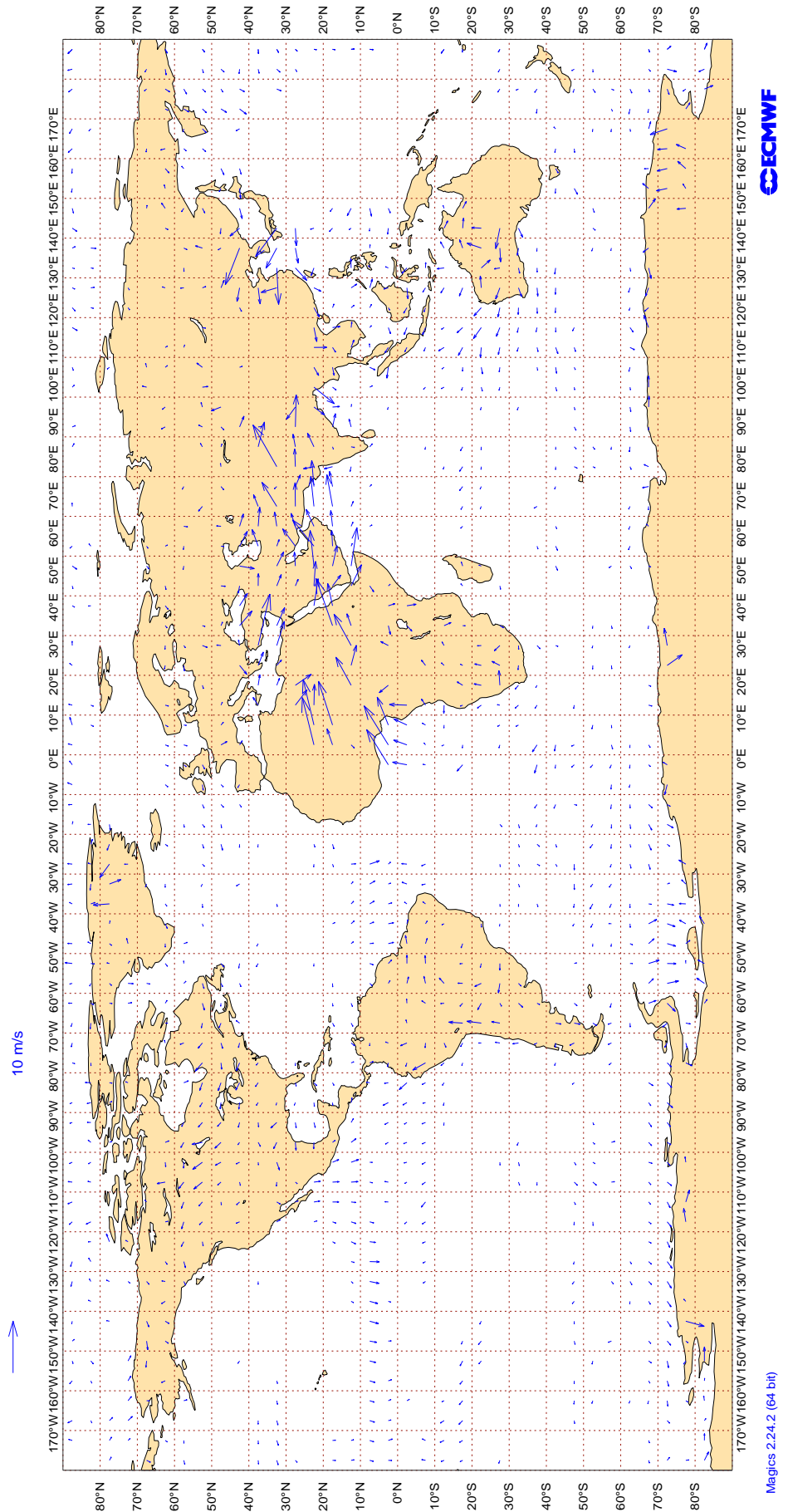
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Apr 2016
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



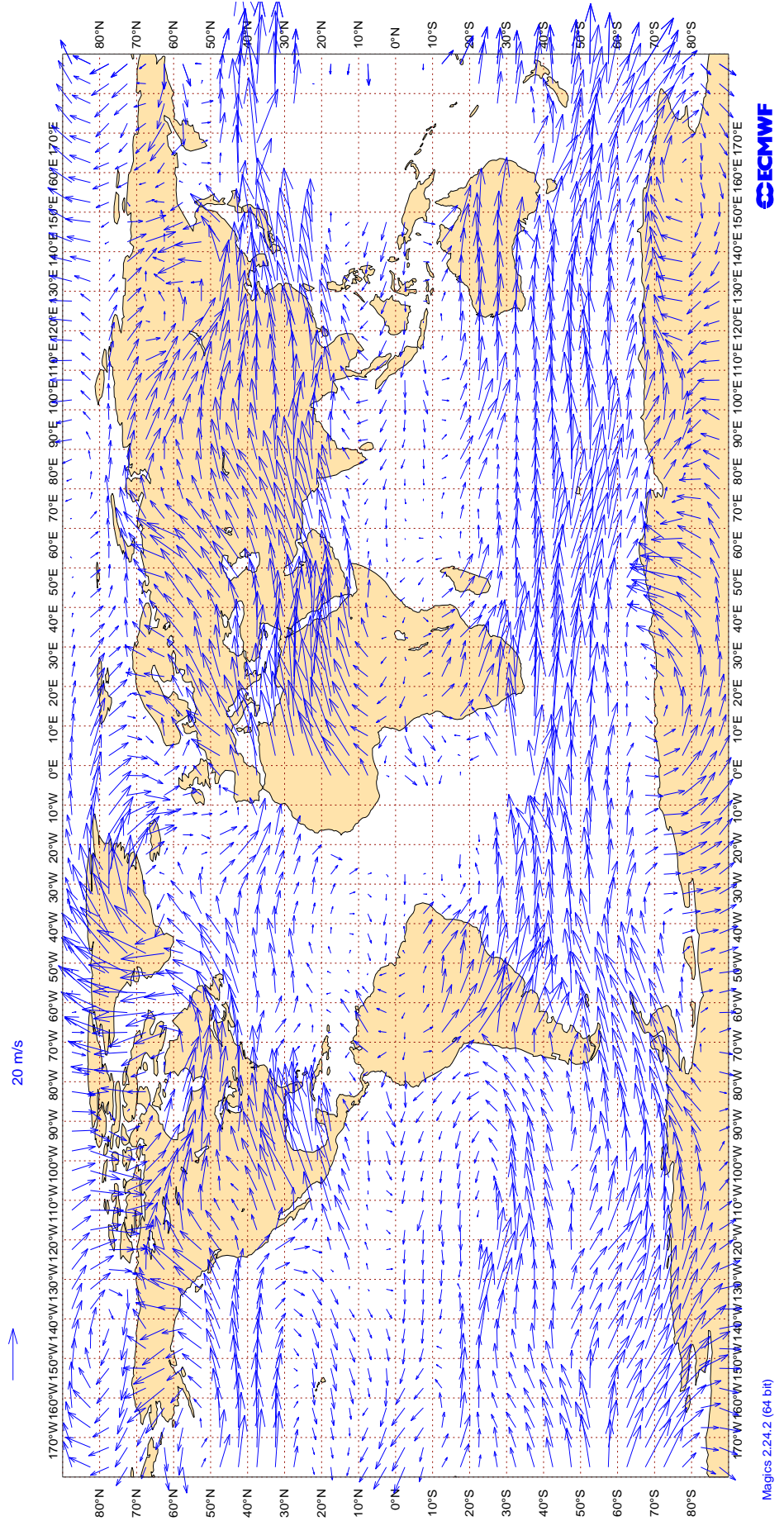
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Apr 2016
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



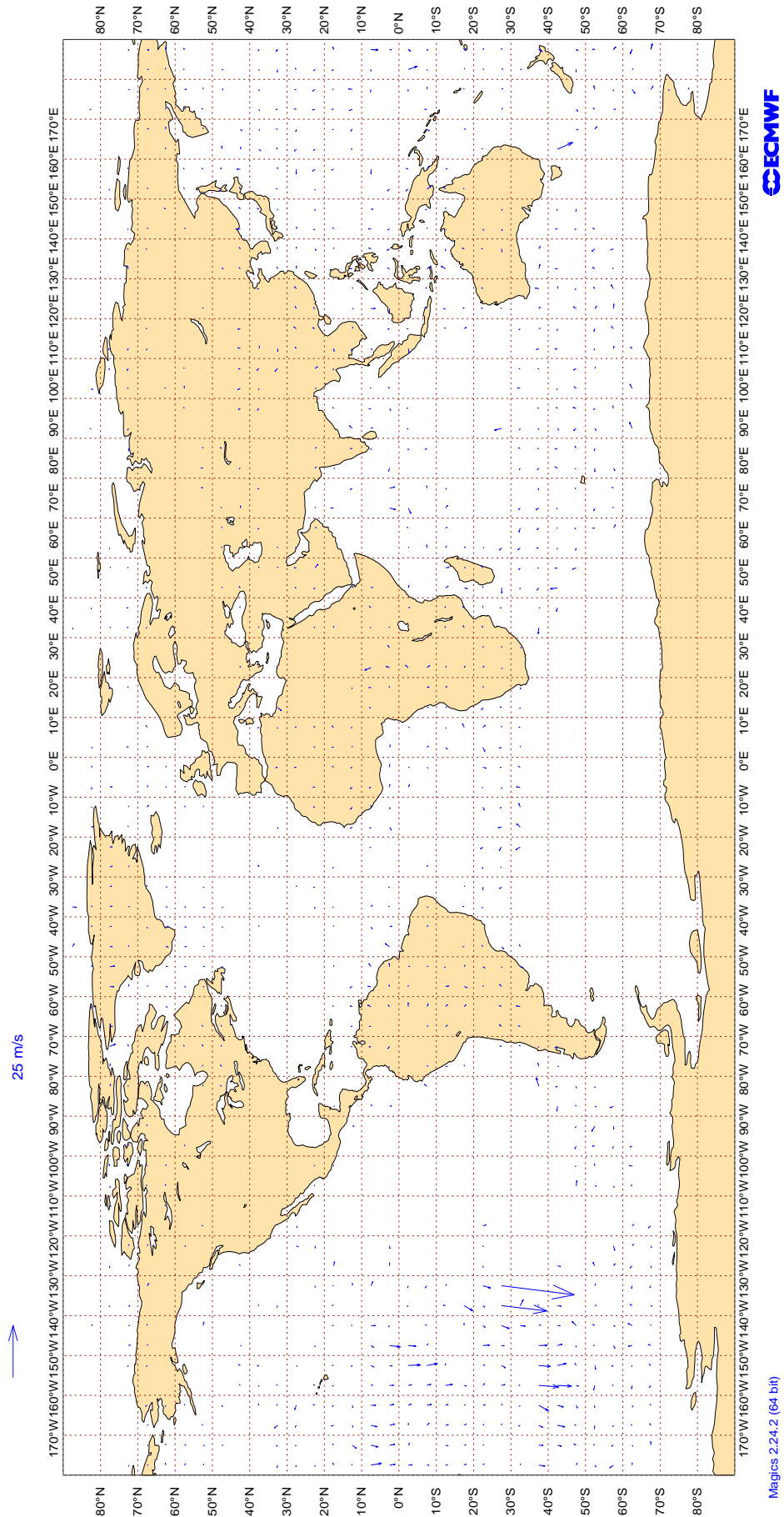
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Apr 2016
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Apr 2016
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 : APR 2016
 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	37	0	0	4.4	-3.1
AAL	99	V	300-150	56731	0	0	3.8	0.2
AAR	99	V	300-150	285	0	0	3.7	-0.5
AAY	99	V	300-150	189	0	1	4.6	0.5
ABP	99	V	300-150	33	0	0	4.5	2.9
ABW	99	V	300-150	929	0	0	4.1	-0.4
ABX	99	V	300-150	177	0	1	6.4	-0.7
ACA	99	V	300-150	24128	2	0	6.4	0.1
ACI	99	V	300-150	2559	0	0	4.0	0.5
AEA	99	V	300-150	1314	0	0	5.5	-0.0
AFL	99	V	300-150	1809	0	0	3.2	0.2
AFR	99	V	300-150	31178	0	0	3.6	0.3
AHY	99	V	300-150	246	17	0	10.4	0.5
AIB	99	V	300-150	30	0	0	3.0	0.1
AIC	99	V	300-150	1248	0	0	3.6	-0.0
AMX	99	V	300-150	2016	7	0	9.6	0.2
ANZ	99	V	300-150	17687	1	0	5.5	0.5
AOJ	99	V	300-150	32	0	0	3.5	0.6
ASA	99	V	300-150	6720	0	0	4.8	0.4
ASY	99	V	300-150	749	0	0	4.6	0.7
AUA	99	V	300-150	5055	0	0	4.2	-0.4
AVA	99	V	300-150	503	0	0	3.5	0.7
AVN	99	V	300-150	134	2	0	8.0	0.5
AXM	99	V	300-150	137	0	1	4.2	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZA	99	V	300-150	7541	0	0	3.6	0.3
AZG	99	V	300-150	37	0	0	2.9	-0.2
BAH	99	V	300-150	58	0	0	3.7	0.7
BAW	99	V	300-150	54189	1	0	5.0	0.2
BBR	99	V	300-150	117	1	2	10.2	-0.5
BEL	99	V	300-150	2822	0	0	3.5	0.3
BER	99	V	300-150	6886	0	0	3.5	0.4
BLU	99	V	300-150	35	0	0	6.7	3.8
BLX	99	V	300-150	131	0	0	4.2	-1.2
BMW	99	V	300-150	40	0	0	3.6	-0.4
BOR	99	V	300-150	72	0	0	5.3	-2.4
BOX	99	V	300-150	664	0	0	4.1	0.2
BOX	99	V	300-150	92	0	0	4.0	0.9
BPA	99	V	300-150	147	0	1	4.2	-0.0
CAL	99	V	300-150	308	0	0	4.5	0.2
CAO	99	V	300-150	154	0	0	3.7	0.4
CAZ	99	V	300-150	118	0	0	3.3	0.5
CCA	99	V	300-150	424	0	0	4.1	0.5
CES	99	V	300-150	1196	0	0	3.6	0.4
CFC	99	V	300-150	362	0	1	4.0	-0.3
CFG	99	V	300-150	3221	0	0	4.2	-0.4
CJT	99	V	300-150	180	0	1	4.3	0.0
CKS	99	V	300-150	1894	0	0	4.5	-0.3
CLE	99	V	300-150	102	0	0	5.1	0.7
CLX	99	V	300-150	3268	0	0	3.7	-0.1
CMB	99	V	300-150	1034	0	0	4.3	-0.1
CNV	99	V	300-150	412	0	0	3.6	0.3
COM	99	V	300-150	41	0	0	3.5	-0.4
CPA	99	V	300-150	135	0	0	3.6	-0.0
CRL	99	V	300-150	665	0	0	3.5	0.1
CRV	99	V	300-150	42	0	0	4.7	-0.7
CSN	99	V	300-150	826	2	0	8.2	0.3
CTM	99	V	300-150	45	0	0	4.0	0.5
DAH	99	V	300-150	670	0	0	3.3	0.0
DAL	99	V	300-150	66719	0	0	3.8	0.1
DHK	99	V	300-150	1687	0	0	4.2	-0.4
DLH	99	V	300-150	33425	0	0	3.6	0.2
DUB	99	V	300-150	84	0	0	3.5	-0.4
EDC	99	V	300-150	43	0	0	2.7	-0.7
EDG	99	V	300-150	50	0	0	3.6	0.2
EDW	99	V	300-150	1035	0	0	3.6	0.3
EIN	99	V	300-150	12306	0	0	3.7	0.3
EJM	99	V	300-150	1020	8	0	12.1	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ELY	99	V	300-150	2695	0	0	4.2	-0.0
ETD	99	V	300-150	3674	2	0	5.7	0.2
ETH	99	V	300-150	2036	5	0	8.7	-0.1
EVE	99	V	300-150	56	0	0	2.6	0.4
EWG	99	V	300-150	1044	0	0	3.9	0.0
FDX	99	V	300-150	5623	0	0	3.5	0.2
FIN	99	V	300-150	908	0	0	3.7	0.2
FJI	99	V	300-150	5261	0	0	4.8	0.6
FPG	99	V	300-150	43	0	0	3.4	-0.6
FWI	99	V	300-150	1184	0	0	3.2	0.1
FYG	99	V	300-150	36	0	0	3.1	0.6
FYL	99	V	300-150	59	0	0	5.6	-0.5
GAF	99	V	300-150	241	3	0	8.1	0.4
GEC	99	V	300-150	2631	0	0	3.4	0.0
GES	99	V	300-150	40	23	0	11.1	-0.4
GLJ	99	V	300-150	25	0	0	4.7	1.0
GLO	99	V	300-150	40	3	3	7.7	-0.2
GMA	99	V	300-150	40	0	0	3.6	0.7
GOL	99	V	300-150	175	0	0	6.0	-1.6
GRL	99	V	300-150	37	0	0	6.7	-0.7
GTH	99	V	300-150	20	0	0	3.7	-2.2
GTI	99	V	300-150	2788	0	0	4.2	-0.2
HAL	99	V	300-150	3571	0	0	4.9	0.8
HZS	99	V	300-150	45	0	2	4.0	0.1
IAM	99	V	300-150	77	0	0	3.4	0.3
IBE	99	V	300-150	3089	0	0	3.6	0.1
ICL	99	V	300-150	380	0	0	4.9	-0.3
ICV	99	V	300-150	429	0	0	3.7	-0.4
IJM	99	V	300-150	43	9	0	18.1	0.1
JAF	99	V	300-150	1157	2	0	6.5	-0.3
JAI	99	V	300-150	1085	0	0	3.3	0.4
JAS	99	V	300-150	132	13	0	10.7	0.4
JJA	99	V	300-150	70	0	3	6.3	-0.1
JME	99	V	300-150	46	28	0	20.4	0.2
JST	99	V	300-150	3387	2	0	9.8	0.6
KAC	99	V	300-150	850	0	0	3.6	0.5
KAI	99	V	300-150	77	0	0	5.1	0.6
KAL	99	V	300-150	1277	0	0	4.2	0.4
KAY	99	V	300-150	63	17	0	10.2	-0.0
KIW	99	V	300-150	53	0	0	4.2	1.4
KLM	99	V	300-150	17857	0	0	3.8	0.0
LAE	99	V	300-150	114	0	0	3.2	0.6
LAN	99	V	300-150	1745	10	0	10.7	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
LCO	99	V	300-150	186	0	0	5.0	-0.9
LDM	99	V	300-150	65	37	0	28.0	-0.3
LEA	99	V	300-150	27	0	0	3.9	-1.6
LOT	99	V	300-150	1753	16	0	15.0	-0.2
LUC	99	V	300-150	34	100	0	0.0	0.0
LXJ	99	V	300-150	167	5	2	11.2	0.2
MAS	99	V	300-150	266	0	0	3.3	0.1
MJE	99	V	300-150	24	0	0	19.7	-0.3
MLM	99	V	300-150	100	16	0	24.6	0.1
MMD	99	V	300-150	182	0	0	3.7	0.5
MPH	99	V	300-150	487	0	0	4.3	-0.9
MSR	99	V	300-150	1061	0	0	3.6	0.2
NAX	99	V	300-150	5929	10	0	11.5	-0.1
NCA	99	V	300-150	254	1	0	3.9	-0.5
NJE	99	V	300-150	291	3	0	12.1	0.2
NOS	99	V	300-150	666	0	0	4.5	-0.8
NWS	99	V	300-150	286	0	0	4.1	0.6
OAE	99	V	300-150	187	0	2	5.0	1.0
OPM	99	V	300-150	59	17	0	26.0	-0.5
PAA	99	V	300-150	22	9	0	26.7	-1.3
PAC	99	V	300-150	157	0	3	4.7	0.7
PAL	99	V	300-150	187	3	1	6.7	0.2
PEG	99	V	300-150	127	0	0	4.1	0.1
PIA	99	V	300-150	519	0	0	3.6	0.3
PJZ	99	V	300-150	25	0	0	4.4	0.5
PLM	99	V	300-150	24	0	0	4.7	-0.7
QAF	99	V	300-150	37	11	0	18.9	1.2
QFA	99	V	300-150	18509	0	0	4.7	0.3
QID	99	V	300-150	32	0	0	5.8	2.3
QTR	99	V	300-150	6981	0	0	3.9	0.0
RAM	99	V	300-150	200	8	0	10.2	0.4
RCH	99	V	300-150	7865	0	0	4.6	0.2
RJA	99	V	300-150	1371	9	0	11.0	-0.1
ROM	99	V	300-150	68	0	0	4.8	1.9
ROU	99	V	300-150	1533	0	0	3.8	-0.1
RRR	99	V	300-150	98	0	0	3.4	-0.3
SAM	99	V	300-150	343	12	0	8.8	-0.2
SAS	99	V	300-150	4804	0	0	3.7	0.3
SDM	99	V	300-150	23	0	0	2.3	0.1
SIA	99	V	300-150	1935	0	0	3.6	0.2
SIO	99	V	300-150	81	0	0	4.1	-0.5
SJE	99	V	300-150	22	14	0	20.3	0.7
SLM	99	V	300-150	45	0	0	7.7	-0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SOO	99	V	300-150	456	0	0	4.4	0.1
SPA	99	V	300-150	108	0	0	4.6	0.5
SQC	99	V	300-150	530	0	0	4.2	-0.2
SVA	99	V	300-150	3281	0	0	3.5	0.3
SVW	99	V	300-150	123	19	0	14.8	0.2
SWR	99	V	300-150	12154	0	0	3.5	0.4
TAM	99	V	300-150	469	0	0	3.2	0.1
TAP	99	V	300-150	377	0	0	3.9	0.6
TAY	99	V	300-150	1381	0	0	3.8	0.2
TCV	99	V	300-150	66	0	0	8.9	-1.1
TCX	99	V	300-150	3449	0	0	3.5	0.4
TFL	99	V	300-150	1529	5	0	8.4	-0.2
TGM	99	V	300-150	103	10	0	9.3	0.5
THA	99	V	300-150	173	0	0	4.2	0.1
THT	99	V	300-150	3989	0	0	4.5	0.7
THY	99	V	300-150	8819	0	0	3.8	0.2
TIP	99	V	300-150	115	0	0	4.9	1.1
TMN	99	V	300-150	114	0	0	5.2	0.0
TOM	99	V	300-150	5294	4	0	9.3	-0.1
TOW	99	V	300-150	54	0	0	3.1	-0.1
TPJ	99	V	300-150	30	53	0	29.7	-0.5
TRE	99	V	300-150	35	0	0	4.1	0.1
TSC	99	V	300-150	4110	0	0	3.5	0.1
TWB	99	V	300-150	44	0	2	5.1	-0.2
TWY	99	V	300-150	198	20	1	14.7	-0.2
UAE	99	V	300-150	10282	0	0	3.9	0.0
UAL	99	V	300-150	78077	0	2	4.9	0.2
UPS	99	V	300-150	4946	0	0	4.0	0.2
VIR	99	V	300-150	24366	1	0	4.8	0.2
VJT	99	V	300-150	533	47	0	25.8	0.0
VKG	99	V	300-150	197	0	0	4.0	0.1
VMP	99	V	300-150	30	40	0	25.8	0.0
VOZ	99	V	300-150	4938	0	0	4.3	0.2
WGT	99	V	300-150	143	0	0	4.2	-0.3
WJA	99	V	300-150	1876	0	1	5.5	0.3
XAX	99	V	300-150	310	0	0	3.6	0.2
XLF	99	V	300-150	2196	0	0	3.6	0.3
YZR	99	V	300-150	26	4	0	5.7	-1.8

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	27	19.5	12.3
01001	12	Z	50	26	18.0	15.7
01028	00	Z	50	30	12.5	10.6
01028	12	Z	50	29	21.2	19.6
01400	12	Z	50	24	30.0	14.2
01400	00	Z	50	23	32.9	27.7
01415	12	Z	50	29	22.4	18.9
01415	00	Z	50	26	18.7	16.7
02365	00	Z	50	28	14.2	12.7
02365	12	Z	50	30	15.6	14.5
02591	12	Z	50	26	22.6	21.2
02591	00	Z	50	26	21.5	20.8
02836	12	Z	50	30	21.5	19.9
02836	00	Z	50	30	14.6	11.7
02963	00	Z	50	30	15.6	14.5
02963	12	Z	50	29	16.0	14.5
03005	00	Z	50	30	16.5	14.4
03005	12	Z	50	30	22.9	18.8
03238	12	Z	50	8	22.6	20.7
03238	00	Z	50	25	20.3	18.6
03808	12	Z	50	30	16.6	14.2
03808	00	Z	50	30	18.0	15.3
03918	12	Z	50	15	22.9	16.4
03918	00	Z	50	28	22.3	19.5
03953	12	Z	50	17	36.1	33.7
03953	00	Z	50	19	18.4	16.2
04018	00	Z	50	27	13.5	12.5
04018	12	Z	50	29	18.6	15.6
04220	12	Z	50	29	20.7	20.0
04220	00	Z	50	28	17.9	13.6
04270	12	Z	50	29	20.5	17.9
04270	00	Z	50	29	15.4	14.1
04320	12	Z	50	29	22.9	21.7
04320	00	Z	50	29	18.0	14.4
04339	12	Z	50	28	69.5	29.7
04339	00	Z	50	29	13.6	11.0
04360	00	Z	50	11	15.3	10.7
04360	12	Z	50	18	24.9	22.3
06011	00	Z	50	22	18.3	12.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	26	29.2	26.0
06260	12	Z	50	4	27.6	27.0
06260	00	Z	50	28	20.0	19.0
06610	00	Z	50	27	13.5	5.4
06610	12	Z	50	30	19.1	13.3
07110	00	Z	50	24	35.8	32.6
07110	12	Z	50	30	57.9	52.2
07510	12	Z	50	17	54.6	52.9
07510	00	Z	50	20	37.3	36.3
07645	00	Z	50	28	14.0	10.0
07645	12	Z	50	30	34.3	30.8
07761	00	Z	50	28	38.7	37.0
07761	12	Z	50	27	40.8	37.1
08001	12	Z	50	28	28.9	27.2
08001	00	Z	50	20	22.8	21.3
08221	00	Z	50	30	18.6	17.3
08221	12	Z	50	30	20.2	17.5
08302	12	Z	50	27	12.5	7.2
08302	00	Z	50	30	12.0	9.9
08508	12	Z	50	28	40.1	37.6
08522	12	Z	50	24	22.1	19.6
08579	12	Z	50	30	26.7	25.0
10035	00	Z	50	28	15.1	14.1
10035	12	Z	50	30	17.1	14.3
10393	00	Z	50	30	14.9	13.2
10393	12	Z	50	30	17.0	12.9
10410	12	Z	50	30	16.7	12.0
10410	00	Z	50	29	14.6	12.6
10739	00	Z	50	28	23.0	19.5
10739	12	Z	50	31	23.7	22.1
11035	12	Z	50	30	16.4	14.1
11035	00	Z	50	31	14.9	11.2
12982	00	Z	50	30	20.5	19.2
12982	12	Z	50	25	77.0	55.7
16044	00	Z	50	30	21.0	19.5
16044	12	Z	50	30	20.8	17.4
16080	00	Z	50	30	14.9	12.3
16080	12	Z	50	30	11.9	8.0
16245	12	Z	50	30	13.2	8.0
16245	00	Z	50	28	16.1	14.2
16320	00	Z	50	30	19.0	16.7
16320	12	Z	50	30	18.2	14.2
16429	12	Z	50	29	12.7	7.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	50	29	14.9	10.7
16622	00	Z	50	28	56.2	53.5
16754	00	Z	50	28	34.6	33.2
17607	12	Z	50	14	18.9	-14.5
26435	00	Z	50	13	16.9	15.1
60018	00	Z	50	26	16.7	15.2
60018	12	Z	50	26	10.5	7.3
ASDE01	12	Z	50	11	36.6	35.4
ASDE01	00	Z	50	9	14.7	7.4
ASDE03	12	Z	50	9	43.2	40.7
ASDE03	00	Z	50	11	15.3	7.6
ASDE04	12	Z	50	8	50.2	49.3
ASDE04	00	Z	50	8	39.5	38.5
ASDE09	12	Z	50	1	33.7	33.7
ASDK01	12	Z	50	8	28.8	26.3
ASDK01	00	Z	50	11	18.8	16.5
ASDK02	12	Z	50	3	24.4	24.0
ASDK02	00	Z	50	1	17.2	17.2
ASDK03	00	Z	50	4	34.0	34.0
ASDK03	12	Z	50	6	31.7	30.7
ASDK1	00	Z	50	7	24.6	23.8
ASDK1	12	Z	50	7	33.7	27.7
ASDK2	12	Z	50	3	24.4	24.1
ASDK2	00	Z	50	1	20.0	20.0
ASDK3	00	Z	50	5	33.5	33.3
ASDK3	12	Z	50	7	31.1	30.0
ASES01	12	Z	50	18	20.3	18.5
ASEU01	12	Z	50	9	26.3	25.8
ASEU01	00	Z	50	7	15.2	13.4
ASEU02	12	Z	50	12	56.9	55.5
ASEU02	00	Z	50	11	52.5	51.6
ASEU03	00	Z	50	4	12.2	-11.3
ASEU03	12	Z	50	5	20.0	17.0
ASEU04	12	Z	50	1	8.3	8.3
ASEU04	00	Z	50	2	27.9	27.8
ASEU06	12	Z	50	7	37.1	34.8
ASEU06	00	Z	50	7	26.5	19.2
ASFR1	12	Z	50	12	23.8	22.0
ASFR1	00	Z	50	10	24.1	22.2
ASFR2	12	Z	50	4	32.4	29.4
ASFR2	00	Z	50	5	26.8	26.3
ASFR3	12	Z	50	6	35.2	23.8
ASFR3	00	Z	50	7	22.5	20.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR4	00	Z	50	3	32.5	29.3
ASFR4	12	Z	50	3	42.2	41.8
DBLK	00	Z	50	1	17.1	17.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	26	2.9	-0.7	0.3
01001	12	V	50	26	2.5	0.1	0.3
01028	00	V	50	30	2.9	0.6	0.4
01028	12	V	50	29	2.8	0.4	0.5
01400	12	V	50	21	3.0	0.4	-0.7
01400	00	V	50	18	3.3	0.9	-0.3
01415	12	V	50	28	3.1	-0.5	0.1
01415	00	V	50	26	4.0	-0.6	-0.3
02365	00	V	50	28	3.0	0.8	0.6
02365	12	V	50	30	3.4	0.5	0.3
02591	12	V	50	26	3.4	0.2	0.1
02591	00	V	50	25	3.2	-0.5	-0.3
02836	12	V	50	30	2.7	0.1	0.5
02836	00	V	50	30	2.8	-0.3	0.3
02963	00	V	50	28	2.8	-0.7	0.3
02963	12	V	50	29	3.4	-0.3	-0.2
03005	00	V	50	28	2.9	0.4	-0.4
03005	12	V	50	30	3.3	0.9	0.9
03238	12	V	50	8	3.0	1.3	0.9
03238	00	V	50	24	3.6	0.9	-0.3
03808	12	V	50	30	3.5	1.0	-0.5
03808	00	V	50	30	3.5	0.5	0.7
03918	12	V	50	15	3.6	0.8	-0.2
03918	00	V	50	25	3.1	0.9	-0.6
03953	12	V	50	17	2.6	1.0	0.0
03953	00	V	50	19	3.3	0.8	1.1
04018	00	V	50	20	2.7	0.3	0.2
04018	12	V	50	28	2.5	0.4	-0.1
04220	12	V	50	29	3.7	-0.6	0.3
04220	00	V	50	27	3.9	-0.3	-0.2
04270	12	V	50	29	4.1	0.5	0.1
04270	00	V	50	29	4.0	-0.2	0.0
04320	12	V	50	29	3.3	0.1	-0.8
04320	00	V	50	29	3.7	-0.1	-0.8
04339	12	V	50	28	3.0	0.1	0.7
04339	00	V	50	29	3.2	-1.4	0.7
04360	00	V	50	11	3.5	0.0	-0.8
04360	12	V	50	18	3.8	-0.4	-0.8
06011	00	V	50	22	3.3	0.2	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	26	2.5	0.4	0.1
06260	12	V	50	4	3.0	1.7	-0.2
06260	00	V	50	28	3.3	0.4	-0.2
06610	00	V	50	26	4.2	0.7	0.3
06610	12	V	50	30	4.2	0.4	-0.1
07110	00	V	50	24	4.1	0.8	0.6
07110	12	V	50	28	4.2	0.7	-0.9
07510	12	V	50	16	3.7	0.3	0.2
07510	00	V	50	20	3.7	1.2	0.5
07645	00	V	50	28	3.5	0.5	-0.3
07645	12	V	50	30	4.1	0.7	-0.4
07761	00	V	50	27	4.2	0.3	-0.2
07761	12	V	50	26	3.1	-0.3	0.0
08001	12	V	50	25	3.5	0.1	0.0
08001	00	V	50	18	3.3	0.2	-0.1
08221	00	V	50	29	4.5	0.9	-0.1
08221	12	V	50	30	3.7	-0.2	0.2
08302	12	V	50	26	5.1	-0.7	-0.3
08302	00	V	50	30	4.2	0.7	-0.4
08508	12	V	50	28	3.1	0.9	0.4
08522	12	V	50	24	4.8	-1.0	-0.8
08579	12	V	50	29	2.9	0.2	-0.2
10035	00	V	50	27	2.9	-0.5	0.1
10035	12	V	50	30	3.4	-0.1	0.5
10393	00	V	50	29	2.8	-0.5	-0.3
10393	12	V	50	30	2.9	0.3	-0.3
10410	12	V	50	30	3.3	0.2	0.5
10410	00	V	50	29	3.2	0.1	0.6
10739	00	V	50	28	3.0	1.3	-0.1
10739	12	V	50	30	3.1	0.5	-0.2
11035	12	V	50	30	3.1	-0.3	-0.9
11035	00	V	50	30	3.1	0.0	-0.3
12982	00	V	50	29	3.1	0.4	-0.5
12982	12	V	50	25	3.0	0.2	-0.1
16044	00	V	50	30	3.6	0.6	-0.6
16044	12	V	50	30	2.8	0.2	0.0
16080	00	V	50	30	4.0	1.0	-0.9
16080	12	V	50	30	3.9	0.6	-1.2
16245	12	V	50	29	4.5	-0.1	-0.5
16245	00	V	50	28	3.7	1.0	-0.1
16320	00	V	50	30	4.3	1.4	-1.1
16320	12	V	50	30	3.8	0.5	1.3
16429	12	V	50	28	4.5	0.6	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	50	27	5.3	1.3	-0.8
16622	00	V	50	23	5.6	-1.4	-1.6
16754	00	V	50	26	4.3	0.2	-0.1
17607	12	V	50	13	4.0	2.4	0.9
26435	00	V	50	12	2.1	0.1	0.1
60018	00	V	50	26	4.5	0.4	1.3
60018	12	V	50	26	4.6	-1.3	1.1
ASDE01	12	V	50	11	4.0	-0.2	-0.3
ASDE01	00	V	50	9	4.1	0.6	0.1
ASDE03	12	V	50	8	3.7	-1.1	0.1
ASDE03	00	V	50	10	4.5	-0.7	0.8
ASDE04	12	V	50	8	4.1	1.6	1.8
ASDE04	00	V	50	7	4.6	0.5	1.8
ASDE09	12	V	50	1	2.0	1.2	1.6
ASDK01	12	V	50	8	4.0	1.8	0.4
ASDK01	00	V	50	11	4.4	-1.4	-0.5
ASDK02	12	V	50	3	4.3	1.4	-1.9
ASDK02	00	V	50	1	3.7	3.2	-1.8
ASDK03	00	V	50	4	3.7	1.5	0.2
ASDK03	12	V	50	6	2.9	-0.1	0.2
ASDK1	00	V	50	7	3.3	0.1	-0.8
ASDK1	12	V	50	6	4.1	1.6	0.0
ASDK2	12	V	50	3	4.3	1.5	-2.0
ASDK2	00	V	50	1	4.4	4.3	-1.1
ASDK3	00	V	50	5	3.4	1.5	0.1
ASDK3	12	V	50	7	2.1	0.3	-0.4
ASES01	12	V	50	18	4.3	-1.7	0.4
ASEU01	12	V	50	8	3.3	0.3	-0.7
ASEU01	00	V	50	6	3.2	0.9	-0.5
ASEU02	12	V	50	11	3.6	-0.9	0.2
ASEU02	00	V	50	11	4.0	0.3	0.2
ASEU03	00	V	50	3	2.7	0.5	2.0
ASEU03	12	V	50	5	2.3	-1.2	0.4
ASEU04	12	V	50	1	1.1	0.7	-0.8
ASEU04	00	V	50	1	3.4	-2.0	2.8
ASEU06	12	V	50	5	4.7	-0.6	0.3
ASEU06	00	V	50	7	5.3	-1.8	-0.4
ASFR1	12	V	50	12	5.3	0.4	-0.1
ASFR1	00	V	50	10	4.2	-0.6	1.4
ASFR2	12	V	50	4	4.0	-0.3	0.9
ASFR2	00	V	50	5	4.9	-0.3	-2.2
ASFR3	12	V	50	6	4.4	1.8	1.8
ASFR3	00	V	50	7	5.0	-1.0	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR4	00	V	50	3	2.9	-0.9	1.8
ASFR4	12	V	50	3	3.5	-0.6	0.0
DBLK	00	V	50	1	3.4	-1.0	-3.3

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	29	14.1	2.2
01001	12	Z	100	28	8.6	4.1
01028	00	Z	100	30	5.3	0.5
01028	12	Z	100	29	9.4	7.4
01400	12	Z	100	26	24.0	5.2
01400	00	Z	100	27	24.9	17.5
01415	12	Z	100	29	10.5	6.8
01415	00	Z	100	26	9.1	6.2
02365	00	Z	100	30	6.2	3.4
02365	12	Z	100	30	5.7	2.8
02591	12	Z	100	26	12.2	10.2
02591	00	Z	100	27	10.5	9.9
02836	12	Z	100	30	8.4	6.1
02836	00	Z	100	30	6.0	2.2
02963	00	Z	100	30	6.6	4.8
02963	12	Z	100	29	7.6	4.7
03005	00	Z	100	29	6.7	3.4
03005	12	Z	100	30	12.6	7.5
03238	12	Z	100	11	10.3	7.9
03238	00	Z	100	27	10.8	9.3
03808	12	Z	100	30	8.7	5.0
03808	00	Z	100	30	8.4	6.2
03918	12	Z	100	16	11.7	6.3
03918	00	Z	100	30	14.4	10.9
03953	12	Z	100	30	21.7	18.2
03953	00	Z	100	30	12.1	8.3
04018	00	Z	100	28	6.5	3.3
04018	12	Z	100	28	10.4	6.5
04220	12	Z	100	29	10.8	9.7
04220	00	Z	100	28	9.6	5.8
04270	12	Z	100	29	11.0	7.8
04270	00	Z	100	29	8.7	6.0
04320	12	Z	100	29	12.7	11.7
04320	00	Z	100	29	8.6	6.3
04339	12	Z	100	29	17.6	7.8
04339	00	Z	100	29	9.8	3.3
04360	00	Z	100	22	13.0	9.2
04360	12	Z	100	22	20.1	17.6
06011	00	Z	100	24	9.9	4.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	19	13.1	9.4
06260	12	Z	100	4	16.0	15.3
06260	00	Z	100	29	9.9	8.0
06610	00	Z	100	30	10.0	3.5
06610	12	Z	100	30	9.8	3.6
07110	00	Z	100	28	19.1	15.4
07110	12	Z	100	32	38.0	33.8
07510	12	Z	100	26	35.6	34.8
07510	00	Z	100	27	24.0	22.4
07645	00	Z	100	30	8.8	-0.1
07645	12	Z	100	30	18.7	16.0
07761	00	Z	100	29	29.4	27.6
07761	12	Z	100	27	29.6	26.8
08001	12	Z	100	30	16.9	14.3
08001	00	Z	100	28	13.2	11.2
08221	00	Z	100	30	11.3	8.2
08221	12	Z	100	30	12.5	6.6
08302	12	Z	100	27	6.2	-0.9
08302	00	Z	100	30	5.9	1.0
08508	12	Z	100	28	25.5	22.2
08522	12	Z	100	25	13.8	10.2
08579	12	Z	100	30	12.6	10.3
10035	00	Z	100	31	6.3	4.1
10035	12	Z	100	31	8.4	5.2
10393	00	Z	100	31	7.2	5.2
10393	12	Z	100	30	9.1	2.8
10410	12	Z	100	30	8.6	1.6
10410	00	Z	100	30	5.7	3.1
10739	00	Z	100	30	14.7	11.1
10739	12	Z	100	31	14.6	13.0
11035	12	Z	100	30	8.6	2.8
11035	00	Z	100	31	9.0	1.8
12982	00	Z	100	30	11.5	8.9
12982	12	Z	100	26	26.2	23.5
16044	00	Z	100	30	12.5	10.3
16044	12	Z	100	30	10.5	6.7
16080	00	Z	100	30	6.8	2.1
16080	12	Z	100	30	6.9	0.0
16245	12	Z	100	30	9.6	-1.8
16245	00	Z	100	30	8.5	5.1
16320	00	Z	100	30	12.4	6.4
16320	12	Z	100	30	10.9	4.6
16429	12	Z	100	30	10.2	-1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	100	30	9.8	4.6
16622	00	Z	100	28	40.4	37.1
16754	00	Z	100	30	24.5	22.8
17607	12	Z	100	17	15.6	-11.6
26435	00	Z	100	14	7.0	5.2
60018	00	Z	100	27	10.8	9.8
60018	12	Z	100	26	9.1	6.0
ASDE01	12	Z	100	11	21.5	19.9
ASDE01	00	Z	100	13	8.6	0.9
ASDE03	12	Z	100	12	25.5	24.0
ASDE03	00	Z	100	14	8.2	2.7
ASDE04	12	Z	100	9	46.3	45.5
ASDE04	00	Z	100	9	33.0	32.1
ASDE09	12	Z	100	2	18.5	18.5
ASDK01	12	Z	100	16	18.4	14.6
ASDK01	00	Z	100	12	12.8	8.5
ASDK02	12	Z	100	4	17.3	15.2
ASDK02	00	Z	100	4	12.2	12.2
ASDK03	00	Z	100	6	26.6	26.5
ASDK03	12	Z	100	7	26.6	25.4
ASDK1	00	Z	100	18	16.0	9.2
ASDK1	12	Z	100	18	21.2	13.1
ASDK2	12	Z	100	4	8.5	7.1
ASDK2	00	Z	100	6	8.6	7.4
ASDK3	00	Z	100	10	27.2	26.8
ASDK3	12	Z	100	12	26.0	24.6
ASES01	12	Z	100	21	18.5	16.6
ASEU01	12	Z	100	20	15.4	14.6
ASEU01	00	Z	100	15	11.8	7.2
ASEU02	12	Z	100	13	48.6	46.7
ASEU02	00	Z	100	12	41.8	41.0
ASEU03	00	Z	100	6	15.9	-14.6
ASEU03	12	Z	100	7	6.4	1.3
ASEU04	12	Z	100	1	12.4	-12.4
ASEU04	00	Z	100	3	12.0	12.0
ASEU06	12	Z	100	6	19.3	15.3
ASEU06	00	Z	100	10	18.3	7.5
ASFR1	12	Z	100	12	12.6	11.7
ASFR1	00	Z	100	9	14.1	6.5
ASFR2	12	Z	100	5	21.0	18.6
ASFR2	00	Z	100	6	14.3	12.8
ASFR3	12	Z	100	8	18.8	8.3
ASFR3	00	Z	100	7	9.9	8.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR4	00	Z	100	3	20.3	18.2
ASFR4	12	Z	100	3	21.8	21.6
DBLK	00	Z	100	2	9.9	9.9

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	29	3.1	0.0	-0.4
01001	12	V	100	28	3.3	-0.4	-0.1
01028	00	V	100	30	2.3	-0.2	0.1
01028	12	V	100	28	2.4	0.0	-1.1
01400	12	V	100	21	2.9	0.4	-0.6
01400	00	V	100	22	2.4	-0.1	0.1
01415	12	V	100	29	2.9	-0.3	0.2
01415	00	V	100	26	3.1	0.4	-0.9
02365	00	V	100	30	2.7	0.7	0.3
02365	12	V	100	30	3.0	0.4	0.5
02591	12	V	100	26	3.1	-0.1	0.2
02591	00	V	100	26	2.7	-0.2	0.1
02836	12	V	100	30	2.6	0.0	0.6
02836	00	V	100	30	2.5	0.1	-0.2
02963	00	V	100	30	2.4	-0.3	-0.1
02963	12	V	100	29	2.5	0.0	0.3
03005	00	V	100	27	2.8	-0.1	0.1
03005	12	V	100	30	3.1	0.5	0.0
03238	12	V	100	11	3.0	0.9	0.7
03238	00	V	100	26	3.5	1.1	0.8
03808	12	V	100	30	3.2	1.2	0.3
03808	00	V	100	30	3.5	0.6	0.6
03918	12	V	100	16	3.3	0.1	0.9
03918	00	V	100	29	3.5	0.5	0.3
03953	12	V	100	30	3.5	0.4	-0.2
03953	00	V	100	30	3.0	-0.6	0.0
04018	00	V	100	28	3.9	-0.5	-0.5
04018	12	V	100	28	3.6	-0.4	-0.5
04220	12	V	100	29	4.6	-0.4	-0.5
04220	00	V	100	28	4.0	-0.8	0.0
04270	12	V	100	29	3.8	0.3	-0.2
04270	00	V	100	29	3.6	0.1	-0.1
04320	12	V	100	29	4.0	-0.8	0.5
04320	00	V	100	29	3.6	-0.4	-0.5
04339	12	V	100	29	3.9	0.2	0.4
04339	00	V	100	29	3.9	-1.0	-0.3
04360	00	V	100	22	3.6	0.7	0.0
04360	12	V	100	22	4.0	0.1	-0.5
06011	00	V	100	24	2.8	-0.4	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	19	2.7	-0.3	-0.2
06260	12	V	100	4	2.9	-1.0	-0.9
06260	00	V	100	29	2.8	-0.3	0.1
06610	00	V	100	29	4.2	0.0	-0.1
06610	12	V	100	30	4.0	-0.1	0.2
07110	00	V	100	28	2.9	0.7	0.3
07110	12	V	100	28	3.4	1.0	0.5
07510	12	V	100	24	2.4	0.4	-0.1
07510	00	V	100	25	3.4	0.2	0.9
07645	00	V	100	28	3.8	0.0	0.0
07645	12	V	100	27	3.1	-0.3	-0.8
07761	00	V	100	27	3.6	-0.5	0.5
07761	12	V	100	23	6.2	-1.1	-0.6
08001	12	V	100	30	4.2	0.7	0.6
08001	00	V	100	26	2.8	0.6	0.1
08221	00	V	100	29	3.6	0.4	-0.3
08221	12	V	100	30	4.7	0.8	0.6
08302	12	V	100	27	3.6	0.6	-0.5
08302	00	V	100	30	4.0	0.4	1.0
08508	12	V	100	28	3.3	0.1	0.2
08522	12	V	100	23	3.8	0.0	-0.5
08579	12	V	100	30	3.5	-0.5	0.1
10035	00	V	100	29	2.8	-0.2	-0.1
10035	12	V	100	30	2.5	0.1	0.0
10393	00	V	100	29	3.1	0.3	-0.1
10393	12	V	100	30	2.8	0.4	-0.2
10410	12	V	100	30	3.1	0.0	0.0
10410	00	V	100	30	2.9	0.2	0.1
10739	00	V	100	30	3.9	0.8	-0.1
10739	12	V	100	30	3.6	0.1	-0.4
11035	12	V	100	30	3.1	0.6	-0.5
11035	00	V	100	30	3.4	1.0	-0.1
12982	00	V	100	29	3.3	0.6	0.4
12982	12	V	100	26	3.1	-0.1	-0.3
16044	00	V	100	30	4.9	-0.4	-0.6
16044	12	V	100	30	4.2	-0.4	-0.6
16080	00	V	100	30	3.8	0.4	0.2
16080	12	V	100	30	3.8	-0.4	-0.8
16245	12	V	100	30	3.7	0.4	-0.1
16245	00	V	100	29	4.0	0.8	-0.1
16320	00	V	100	30	4.5	1.3	-0.6
16320	12	V	100	30	4.1	0.3	0.0
16429	12	V	100	30	5.1	1.5	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	100	28	3.9	0.1	0.1
16622	00	V	100	25	4.5	-0.8	0.1
16754	00	V	100	30	4.4	-0.2	-0.5
17607	12	V	100	17	4.4	0.6	-0.1
26435	00	V	100	14	2.3	0.0	-0.7
60018	00	V	100	27	4.5	0.8	0.2
60018	12	V	100	26	5.2	0.8	1.0
ASDE01	12	V	100	11	3.3	-1.2	0.6
ASDE01	00	V	100	11	3.2	-1.8	0.4
ASDE03	12	V	100	11	5.5	-1.7	-0.2
ASDE03	00	V	100	12	2.7	-0.5	-0.1
ASDE04	12	V	100	7	4.7	0.2	0.5
ASDE04	00	V	100	7	3.5	-0.6	1.0
ASDE09	12	V	100	2	4.6	1.1	2.4
ASDK01	12	V	100	12	3.5	-0.5	0.4
ASDK01	00	V	100	12	4.1	-0.2	1.2
ASDK02	12	V	100	3	3.6	-0.1	-1.4
ASDK02	00	V	100	3	3.4	1.7	1.6
ASDK03	00	V	100	5	3.1	-1.3	1.5
ASDK03	12	V	100	6	3.0	-0.8	0.9
ASDK1	00	V	100	13	4.1	-0.6	0.9
ASDK1	12	V	100	12	3.9	-0.9	0.4
ASDK2	12	V	100	3	2.7	0.6	-0.7
ASDK2	00	V	100	2	3.7	1.9	1.3
ASDK3	00	V	100	6	2.5	0.5	0.4
ASDK3	12	V	100	7	2.7	-0.9	0.5
ASES01	12	V	100	18	5.5	2.0	0.5
ASEU01	12	V	100	16	3.4	0.0	0.0
ASEU01	00	V	100	12	3.5	0.1	-1.5
ASEU02	12	V	100	12	3.1	0.5	0.1
ASEU02	00	V	100	12	3.4	-0.1	0.3
ASEU03	00	V	100	6	2.1	-0.2	0.4
ASEU03	12	V	100	7	3.0	0.1	0.8
ASEU04	12	V	100	1	5.5	-5.5	-0.4
ASEU04	00	V	100	1	4.4	0.3	4.4
ASEU06	12	V	100	5	4.0	0.3	1.4
ASEU06	00	V	100	9	6.1	-1.4	-1.7
ASFR1	12	V	100	11	4.0	0.4	-0.8
ASFR1	00	V	100	8	2.8	0.3	-0.3
ASFR2	12	V	100	5	7.0	2.1	-2.6
ASFR2	00	V	100	6	4.9	-0.9	0.2
ASFR3	12	V	100	7	3.5	-0.9	2.3
ASFR3	00	V	100	7	4.6	0.9	1.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR4	00	V	100	3	3.9	2.6	0.5
ASFR4	12	V	100	3	2.0	1.1	0.7
DBLK	00	V	100	1	5.5	0.5	5.5

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	8.7	0.0
01001	12	Z	500	30	6.2	-0.9
01028	00	Z	500	30	3.4	-0.4
01028	12	Z	500	31	4.0	1.1
01400	12	Z	500	27	12.9	1.7
01400	00	Z	500	27	19.3	11.2
01415	12	Z	500	29	3.8	2.4
01415	00	Z	500	26	4.4	3.1
02365	00	Z	500	30	3.9	2.1
02365	12	Z	500	30	4.3	-0.7
02591	12	Z	500	26	10.1	9.5
02591	00	Z	500	27	8.9	8.6
02836	12	Z	500	30	4.1	1.5
02836	00	Z	500	30	3.2	2.2
02963	00	Z	500	30	5.0	4.3
02963	12	Z	500	29	4.7	2.3
03005	00	Z	500	29	4.7	0.5
03005	12	Z	500	30	9.3	2.2
03238	12	Z	500	11	5.4	3.5
03238	00	Z	500	27	5.9	4.4
03808	12	Z	500	30	6.0	3.5
03808	00	Z	500	30	6.1	4.1
03918	12	Z	500	16	7.7	5.5
03918	00	Z	500	30	8.4	6.3
03953	12	Z	500	30	11.1	7.1
03953	00	Z	500	30	6.0	3.2
04018	00	Z	500	28	5.4	3.7
04018	12	Z	500	28	6.7	3.6
04220	12	Z	500	29	6.7	4.7
04220	00	Z	500	28	7.4	5.1
04270	12	Z	500	29	8.8	3.0
04270	00	Z	500	28	10.3	1.6
04320	12	Z	500	29	7.8	6.3
04320	00	Z	500	29	7.8	5.0
04339	12	Z	500	29	13.7	-0.2
04339	00	Z	500	28	6.0	2.5
04360	00	Z	500	25	5.4	2.7
04360	12	Z	500	26	7.3	4.8
06011	00	Z	500	27	10.0	4.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	19	5.4	2.6
06260	12	Z	500	4	5.4	4.2
06260	00	Z	500	29	4.6	3.4
06610	00	Z	500	30	8.7	7.4
06610	12	Z	500	30	4.3	2.2
07110	00	Z	500	28	9.6	6.2
07110	12	Z	500	33	10.9	9.0
07510	12	Z	500	30	12.7	11.3
07510	00	Z	500	30	11.8	9.0
07645	00	Z	500	30	6.7	-2.0
07645	12	Z	500	30	6.4	2.9
07761	00	Z	500	30	8.4	6.8
07761	12	Z	500	30	10.8	9.0
08001	12	Z	500	30	10.2	9.6
08001	00	Z	500	29	11.2	10.4
08221	00	Z	500	30	7.4	5.9
08221	12	Z	500	30	7.5	6.5
08302	12	Z	500	29	4.3	-0.5
08302	00	Z	500	30	2.7	0.5
08508	12	Z	500	28	15.4	13.9
08522	12	Z	500	29	9.1	6.9
08579	12	Z	500	30	8.1	6.2
10035	00	Z	500	31	3.8	-0.4
10035	12	Z	500	31	5.2	1.0
10393	00	Z	500	31	3.8	1.6
10393	12	Z	500	30	3.5	-0.7
10410	12	Z	500	30	5.4	-1.3
10410	00	Z	500	30	3.6	-0.2
10739	00	Z	500	30	9.7	8.0
10739	12	Z	500	32	8.9	8.4
11035	12	Z	500	30	4.8	-1.6
11035	00	Z	500	31	4.8	-0.9
12982	00	Z	500	30	7.7	5.6
12982	12	Z	500	29	10.1	5.0
16044	00	Z	500	30	6.4	4.7
16044	12	Z	500	30	6.1	1.6
16080	00	Z	500	30	5.0	-2.7
16080	12	Z	500	30	7.2	-5.3
16245	12	Z	500	30	10.5	-7.8
16245	00	Z	500	30	6.2	-1.4
16320	00	Z	500	30	5.9	1.5
16320	12	Z	500	30	8.4	0.2
16429	12	Z	500	30	8.0	-5.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	500	31	6.5	0.9
16622	00	Z	500	29	26.6	22.3
16754	00	Z	500	30	16.7	14.9
17607	12	Z	500	17	9.9	8.4
26435	00	Z	500	15	6.1	1.9
60018	00	Z	500	27	3.6	0.4
60018	12	Z	500	26	4.5	1.3
ASDE01	12	Z	500	11	5.2	-1.0
ASDE01	00	Z	500	14	6.6	-5.6
ASDE03	12	Z	500	13	7.9	4.5
ASDE03	00	Z	500	15	6.3	1.1
ASDE04	12	Z	500	9	33.6	33.2
ASDE04	00	Z	500	9	31.7	31.5
ASDE09	12	Z	500	3	6.4	5.7
ASDK01	12	Z	500	18	14.6	10.7
ASDK01	00	Z	500	19	10.2	7.2
ASDK02	12	Z	500	4	8.4	6.1
ASDK02	00	Z	500	4	4.7	4.7
ASDK03	00	Z	500	9	27.3	26.8
ASDK03	12	Z	500	7	23.1	21.9
ASDK1	00	Z	500	24	12.0	5.8
ASDK1	12	Z	500	19	17.3	7.5
ASDK2	12	Z	500	4	5.5	1.2
ASDK2	00	Z	500	6	3.2	-1.9
ASDK3	00	Z	500	12	27.3	26.8
ASDK3	12	Z	500	13	23.6	22.1
ASES01	12	Z	500	24	10.0	8.0
ASEU01	12	Z	500	20	7.2	6.2
ASEU01	00	Z	500	15	6.8	5.0
ASEU02	12	Z	500	14	34.3	33.5
ASEU02	00	Z	500	13	34.0	33.6
ASEU03	00	Z	500	6	22.7	-21.9
ASEU03	12	Z	500	7	22.9	-21.9
ASEU04	12	Z	500	3	8.4	-0.5
ASEU04	00	Z	500	4	5.1	4.1
ASEU06	12	Z	500	8	11.7	-5.7
ASEU06	00	Z	500	10	32.5	3.4
ASFR1	12	Z	500	12	6.0	-0.2
ASFR1	00	Z	500	9	8.2	-4.8
ASFR2	12	Z	500	6	18.1	16.0
ASFR2	00	Z	500	6	8.6	7.1
ASFR3	12	Z	500	8	3.7	-0.9
ASFR3	00	Z	500	7	4.5	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR4	00	Z	500	3	16.0	-0.6
ASFR4	12	Z	500	3	3.6	0.4
DBLK	00	Z	500	2	2.3	2.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	1.8	0.0	0.1
01001	12	V	500	30	3.0	-0.3	-0.2
01028	00	V	500	30	2.0	0.4	-0.5
01028	12	V	500	30	2.1	0.2	0.1
01400	12	V	500	27	2.9	0.1	0.0
01400	00	V	500	27	2.7	0.0	-0.3
01415	12	V	500	29	2.8	0.2	0.1
01415	00	V	500	26	3.3	0.8	-0.2
02365	00	V	500	30	2.5	-0.4	-0.4
02365	12	V	500	30	2.9	0.3	0.4
02591	12	V	500	26	2.7	0.5	0.7
02591	00	V	500	26	2.4	0.1	0.2
02836	12	V	500	30	2.8	-0.1	0.4
02836	00	V	500	30	2.0	0.4	-0.1
02963	00	V	500	30	3.1	0.2	-0.3
02963	12	V	500	29	3.0	0.5	-0.4
03005	00	V	500	27	2.8	-0.3	0.2
03005	12	V	500	30	3.6	0.1	-0.5
03238	12	V	500	11	2.3	0.2	0.5
03238	00	V	500	26	3.6	0.3	0.2
03808	12	V	500	30	3.6	0.6	-0.6
03808	00	V	500	30	3.4	0.5	-0.6
03918	12	V	500	16	3.5	0.3	0.7
03918	00	V	500	29	4.1	-0.3	-0.5
03953	12	V	500	30	3.7	0.2	0.3
03953	00	V	500	30	3.5	0.7	-0.1
04018	00	V	500	28	2.4	-0.8	-0.4
04018	12	V	500	28	2.7	-0.3	0.6
04220	12	V	500	29	3.7	-0.4	-0.4
04220	00	V	500	28	3.5	0.3	-0.5
04270	12	V	500	29	3.3	-0.8	0.3
04270	00	V	500	28	5.2	-0.6	0.4
04320	12	V	500	29	2.1	-0.4	-0.1
04320	00	V	500	29	3.1	1.1	0.0
04339	12	V	500	29	3.7	-0.2	-0.6
04339	00	V	500	28	2.8	0.0	-0.5
04360	00	V	500	25	2.1	0.0	0.5
04360	12	V	500	26	2.5	0.5	0.5
06011	00	V	500	27	3.7	0.0	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	19	3.3	0.3	-0.3
06260	12	V	500	4	2.0	-0.3	0.9
06260	00	V	500	29	2.8	0.6	0.9
06610	00	V	500	29	3.3	1.0	1.0
06610	12	V	500	30	3.3	0.3	-0.1
07110	00	V	500	28	3.5	0.4	1.0
07110	12	V	500	30	3.2	0.6	0.1
07510	12	V	500	29	3.7	0.2	-0.6
07510	00	V	500	28	3.9	-0.2	0.1
07645	00	V	500	30	3.5	1.0	1.1
07645	12	V	500	30	3.7	0.1	0.7
07761	00	V	500	29	3.3	0.9	0.3
07761	12	V	500	29	3.3	0.1	0.1
08001	12	V	500	30	4.4	0.2	-0.2
08001	00	V	500	29	2.8	-0.4	0.1
08221	00	V	500	30	4.1	-0.1	0.0
08221	12	V	500	30	3.4	-0.1	-0.9
08302	12	V	500	29	3.3	0.9	0.1
08302	00	V	500	30	3.5	0.2	-0.2
08508	12	V	500	28	3.3	1.0	-0.1
08522	12	V	500	29	2.9	0.1	-0.3
08579	12	V	500	30	3.3	0.0	-0.2
10035	00	V	500	30	3.1	0.4	0.2
10035	12	V	500	30	3.0	0.4	0.3
10393	00	V	500	30	2.2	0.3	0.4
10393	12	V	500	30	2.7	0.3	-0.1
10410	12	V	500	30	2.5	0.3	-0.2
10410	00	V	500	30	3.9	-0.2	-0.7
10739	00	V	500	30	3.6	1.1	0.5
10739	12	V	500	30	2.8	0.2	-0.3
11035	12	V	500	30	2.5	0.0	0.6
11035	00	V	500	30	3.3	0.1	-0.4
12982	00	V	500	29	2.6	-0.1	-0.3
12982	12	V	500	29	2.6	0.4	-0.4
16044	00	V	500	30	2.6	0.2	0.3
16044	12	V	500	30	3.0	0.7	-0.2
16080	00	V	500	30	2.9	0.1	-0.1
16080	12	V	500	30	2.5	0.8	-0.3
16245	12	V	500	30	3.2	-0.3	-0.3
16245	00	V	500	30	3.0	0.6	-0.2
16320	00	V	500	30	3.4	0.9	-0.3
16320	12	V	500	30	3.1	0.5	-0.1
16429	12	V	500	30	3.9	0.2	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	500	30	2.9	-1.1	0.5
16622	00	V	500	27	5.7	-0.3	-0.2
16754	00	V	500	30	4.0	0.3	0.4
17607	12	V	500	17	2.7	0.4	0.3
26435	00	V	500	15	3.4	0.5	0.3
60018	00	V	500	27	2.4	0.3	0.4
60018	12	V	500	26	2.3	0.1	0.1
ASDE01	12	V	500	11	3.5	0.7	0.0
ASDE01	00	V	500	13	4.5	0.9	0.4
ASDE03	12	V	500	12	3.2	-0.1	-0.4
ASDE03	00	V	500	13	3.2	0.0	-0.4
ASDE04	12	V	500	8	2.5	-0.6	0.0
ASDE04	00	V	500	7	1.2	0.2	-0.1
ASDE09	12	V	500	3	1.5	0.3	0.2
ASDK01	12	V	500	14	3.6	0.4	-0.4
ASDK01	00	V	500	16	2.7	-0.3	0.1
ASDK02	12	V	500	3	2.7	-0.5	-1.5
ASDK02	00	V	500	3	3.5	-2.0	-1.4
ASDK03	00	V	500	7	2.5	-0.7	0.0
ASDK03	12	V	500	7	2.0	0.8	-0.5
ASDK1	00	V	500	18	2.4	0.0	-0.6
ASDK1	12	V	500	13	3.4	-0.2	-0.2
ASDK2	12	V	500	3	1.6	-0.1	-1.0
ASDK2	00	V	500	2	0.8	-0.4	-0.6
ASDK3	00	V	500	7	2.8	-0.9	-0.2
ASDK3	12	V	500	9	2.3	0.9	-0.2
ASES01	12	V	500	21	2.8	0.6	0.4
ASEU01	12	V	500	17	2.1	0.5	0.3
ASEU01	00	V	500	12	1.8	-0.5	0.1
ASEU02	12	V	500	13	2.7	-0.7	-1.3
ASEU02	00	V	500	13	3.8	-2.1	0.2
ASEU03	00	V	500	6	1.9	0.7	0.7
ASEU03	12	V	500	7	2.9	-0.5	-1.2
ASEU04	12	V	500	3	3.2	0.6	0.6
ASEU04	00	V	500	3	3.1	2.9	1.0
ASEU06	12	V	500	8	4.7	-1.4	0.9
ASEU06	00	V	500	9	6.0	0.3	2.0
ASFR1	12	V	500	12	3.2	0.1	1.0
ASFR1	00	V	500	9	2.6	0.5	0.0
ASFR2	12	V	500	6	4.2	0.7	1.9
ASFR2	00	V	500	6	4.2	-2.1	-0.1
ASFR3	12	V	500	8	3.4	1.6	0.2
ASFR3	00	V	500	7	3.2	0.7	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR4	00	V	500	3	2.7	0.1	-1.1
ASFR4	12	V	500	3	2.4	0.7	-1.7
DBLK	00	V	500	1	0.5	-0.5	0.0

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 : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	6.6	-1.9
01001	12	Z	850	30	7.0	-3.3
01028	00	Z	850	30	3.0	0.0
01028	12	Z	850	31	4.1	-2.2
01400	12	Z	850	27	8.5	3.1
01400	00	Z	850	27	17.9	10.1
01415	12	Z	850	29	3.4	2.7
01415	00	Z	850	26	3.9	3.3
02365	00	Z	850	30	4.7	3.6
02365	12	Z	850	30	3.0	1.8
02591	12	Z	850	26	9.4	9.2
02591	00	Z	850	27	9.2	9.0
02836	12	Z	850	30	2.6	2.0
02836	00	Z	850	30	4.0	3.1
02963	00	Z	850	30	4.9	4.5
02963	12	Z	850	29	4.4	4.0
03005	00	Z	850	29	2.3	0.2
03005	12	Z	850	30	7.9	1.1
03238	12	Z	850	11	5.7	5.2
03238	00	Z	850	27	5.6	5.0
03808	12	Z	850	30	3.0	2.4
03808	00	Z	850	30	3.4	2.8
03918	12	Z	850	16	5.3	4.4
03918	00	Z	850	30	5.9	5.5
03953	12	Z	850	30	6.2	4.2
03953	00	Z	850	30	4.3	3.3
04018	00	Z	850	29	3.0	1.4
04018	12	Z	850	28	3.4	0.6
04220	12	Z	850	29	4.2	3.0
04220	00	Z	850	29	4.7	3.3
04270	12	Z	850	29	5.3	1.1
04270	00	Z	850	28	4.6	3.1
04320	12	Z	850	29	4.0	2.0
04320	00	Z	850	29	2.8	1.4
04339	12	Z	850	28	15.2	-2.3
04339	00	Z	850	28	4.1	0.0
04360	00	Z	850	28	5.7	-0.8
04360	12	Z	850	27	5.7	0.0
06011	00	Z	850	27	6.3	4.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	19	5.1	3.2
06260	12	Z	850	4	3.0	2.7
06260	00	Z	850	30	2.2	1.4
06610	00	Z	850	30	4.9	4.5
06610	12	Z	850	30	3.5	2.6
07110	00	Z	850	28	4.7	3.8
07110	12	Z	850	33	5.0	4.2
07510	12	Z	850	31	6.3	5.5
07510	00	Z	850	31	5.6	5.0
07645	00	Z	850	30	2.9	-0.9
07645	12	Z	850	31	3.1	-0.5
07761	00	Z	850	31	3.3	-0.4
07761	12	Z	850	30	2.8	-0.4
08001	12	Z	850	30	6.1	5.7
08001	00	Z	850	29	7.6	6.8
08221	00	Z	850	30	4.8	4.2
08221	12	Z	850	30	3.7	2.8
08302	12	Z	850	29	3.9	-3.3
08302	00	Z	850	30	2.6	-1.0
08508	12	Z	850	28	10.1	7.2
08522	12	Z	850	29	3.3	2.5
08579	12	Z	850	30	3.3	2.3
10035	00	Z	850	31	3.3	1.4
10035	12	Z	850	31	3.9	1.7
10393	00	Z	850	31	2.9	1.0
10393	12	Z	850	30	2.5	-0.2
10410	12	Z	850	30	2.8	-1.3
10410	00	Z	850	30	2.4	-1.5
10739	00	Z	850	31	8.7	8.3
10739	12	Z	850	32	7.8	7.4
11035	12	Z	850	30	3.0	-0.6
11035	00	Z	850	31	2.7	0.6
12982	00	Z	850	30	4.2	2.9
12982	12	Z	850	29	5.6	2.4
16044	00	Z	850	30	5.1	3.4
16044	12	Z	850	30	4.9	1.0
16080	00	Z	850	30	5.5	-4.3
16080	12	Z	850	30	7.7	-6.4
16245	12	Z	850	30	10.7	-9.6
16245	00	Z	850	30	6.3	-3.4
16320	00	Z	850	30	5.1	-0.7
16320	12	Z	850	30	6.8	-1.8
16429	12	Z	850	30	9.6	-7.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16429	00	Z	850	31	6.1	-2.1
16622	00	Z	850	29	17.0	13.5
16754	00	Z	850	30	8.2	7.3
17607	12	Z	850	18	2.3	-0.4
26435	00	Z	850	15	4.5	1.7
60018	00	Z	850	27	4.1	-3.4
60018	12	Z	850	26	3.7	-2.7
ASDE01	12	Z	850	11	7.8	-6.2
ASDE01	00	Z	850	14	10.6	-9.6
ASDE03	12	Z	850	13	3.4	-0.3
ASDE03	00	Z	850	15	5.6	-0.8
ASDE04	12	Z	850	9	29.1	29.0
ASDE04	00	Z	850	9	26.4	26.2
ASDE09	12	Z	850	3	8.5	8.4
ASDK01	12	Z	850	18	13.5	9.8
ASDK01	00	Z	850	19	10.2	6.7
ASDK02	12	Z	850	4	1.9	0.4
ASDK02	00	Z	850	4	5.3	5.2
ASDK03	00	Z	850	9	26.4	25.8
ASDK03	12	Z	850	7	23.6	22.9
ASDK1	00	Z	850	24	13.4	6.2
ASDK1	12	Z	850	19	14.2	9.2
ASDK2	12	Z	850	4	2.8	-2.0
ASDK2	00	Z	850	6	3.3	2.4
ASDK3	00	Z	850	12	26.8	26.1
ASDK3	12	Z	850	13	24.1	23.6
ASES01	12	Z	850	24	5.4	2.5
ASEU01	12	Z	850	20	3.3	0.8
ASEU01	00	Z	850	15	5.0	2.1
ASEU02	12	Z	850	14	29.5	29.1
ASEU02	00	Z	850	14	30.1	29.9
ASEU03	00	Z	850	6	27.8	-27.2
ASEU03	12	Z	850	7	30.6	-30.1
ASEU04	12	Z	850	3	8.6	-7.7
ASEU04	00	Z	850	5	5.2	-0.5
ASEU06	12	Z	850	8	9.6	-6.8
ASEU06	00	Z	850	10	17.1	-8.5
ASFR1	12	Z	850	12	8.5	-7.2
ASFR1	00	Z	850	9	7.4	-6.2
ASFR2	12	Z	850	6	13.5	12.9
ASFR2	00	Z	850	7	8.5	7.5
ASFR3	12	Z	850	8	3.7	-2.7
ASFR3	00	Z	850	7	3.7	-2.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASFR4	00	Z	850	3	6.1	-2.7
ASFR4	12	Z	850	3	9.7	-7.7
DBLK	00	Z	850	2	2.7	-2.7

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : APR 2016
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.8	-0.4	0.4
01001	12	V	850	30	3.5	0.4	0.2
01028	00	V	850	30	2.5	0.0	-0.1
01028	12	V	850	30	3.1	0.8	0.6
01400	12	V	850	27	2.5	0.1	0.0
01400	00	V	850	27	2.1	-0.3	-0.3
01415	12	V	850	29	2.6	-0.1	-0.1
01415	00	V	850	26	2.3	0.5	0.4
02365	00	V	850	30	2.6	-0.1	0.0
02365	12	V	850	30	3.1	0.0	0.8
02591	12	V	850	26	2.2	0.1	-0.1
02591	00	V	850	26	2.1	0.2	-0.1
02836	12	V	850	30	3.2	0.1	0.0
02836	00	V	850	30	3.0	0.4	-0.7
02963	00	V	850	30	2.3	0.3	-0.1
02963	12	V	850	29	2.8	0.7	-0.2
03005	00	V	850	27	2.5	0.0	0.1
03005	12	V	850	30	3.2	-0.5	0.1
03238	12	V	850	11	2.4	0.3	0.2
03238	00	V	850	26	2.5	-0.5	-0.2
03808	12	V	850	30	3.1	0.2	-0.3
03808	00	V	850	30	2.7	0.4	0.0
03918	12	V	850	16	2.9	1.2	-0.4
03918	00	V	850	29	2.5	-0.5	-0.4
03953	12	V	850	30	2.9	0.6	-0.2
03953	00	V	850	30	2.9	0.5	0.4
04018	00	V	850	29	2.9	0.1	0.3
04018	12	V	850	28	2.7	0.4	-0.5
04220	12	V	850	29	3.4	-1.0	-0.1
04220	00	V	850	29	3.7	0.1	0.0
04270	12	V	850	29	4.4	-0.2	0.0
04270	00	V	850	28	3.5	-0.1	-0.1
04320	12	V	850	29	3.0	0.0	-1.0
04320	00	V	850	29	2.9	-0.4	0.4
04339	12	V	850	28	5.4	1.8	-0.7
04339	00	V	850	28	5.0	1.3	-0.1
04360	00	V	850	28	5.9	2.4	0.1
04360	12	V	850	27	7.6	2.7	1.8
06011	00	V	850	27	3.2	-0.2	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	19	2.3	-0.5	0.2
06260	12	V	850	4	3.4	0.1	1.1
06260	00	V	850	30	2.3	0.1	-0.6
06610	00	V	850	29	4.3	0.5	-1.1
06610	12	V	850	30	3.6	1.0	0.7
07110	00	V	850	28	2.7	-0.1	0.2
07110	12	V	850	30	2.4	-0.5	-0.1
07510	12	V	850	29	3.7	0.6	0.0
07510	00	V	850	29	3.8	0.3	0.6
07645	00	V	850	30	3.8	0.8	0.6
07645	12	V	850	30	3.5	0.4	0.5
07761	00	V	850	30	3.6	-0.4	-0.8
07761	12	V	850	29	3.2	-0.4	0.1
08001	12	V	850	30	2.9	-0.2	0.7
08001	00	V	850	29	3.0	0.3	0.4
08221	00	V	850	30	2.4	0.2	-0.3
08221	12	V	850	30	2.6	0.1	0.0
08302	12	V	850	28	3.3	0.8	-0.1
08302	00	V	850	30	3.3	0.4	0.4
08508	12	V	850	28	2.9	0.1	-0.1
08522	12	V	850	29	3.3	0.7	0.0
08579	12	V	850	30	3.3	-0.2	-0.2
10035	00	V	850	30	2.3	0.3	0.4
10035	12	V	850	30	3.0	0.5	0.3
10393	00	V	850	30	2.2	-0.2	0.3
10393	12	V	850	30	2.7	-0.4	-0.4
10410	12	V	850	30	2.5	-0.1	0.1
10410	00	V	850	30	3.0	-0.1	-0.3
10739	00	V	850	30	3.8	0.4	0.3
10739	12	V	850	30	3.4	-0.2	0.4
11035	12	V	850	30	2.9	0.9	-0.1
11035	00	V	850	30	3.8	1.1	-0.5
12982	00	V	850	29	4.1	1.0	0.2
12982	12	V	850	29	2.7	0.0	0.4
16044	00	V	850	30	2.6	-0.2	0.0
16044	12	V	850	30	3.3	-0.2	-0.3
16080	00	V	850	30	3.7	-0.8	-0.9
16080	12	V	850	30	3.2	0.3	-0.7
16245	12	V	850	30	3.6	-0.5	-0.2
16245	00	V	850	30	2.7	-0.1	-0.3
16320	00	V	850	30	2.5	-0.1	-0.3
16320	12	V	850	30	3.1	0.0	0.2
16429	12	V	850	30	3.1	-0.4	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16429	00	V	850	30	2.7	-0.2	0.8
16622	00	V	850	27	4.8	0.7	0.7
16754	00	V	850	29	3.8	0.3	-0.1
17607	12	V	850	18	3.8	-0.1	0.8
26435	00	V	850	14	2.1	0.5	0.1
60018	00	V	850	27	4.3	-1.3	1.1
60018	12	V	850	26	3.0	-0.6	0.2
ASDE01	12	V	850	11	2.0	-0.4	0.2
ASDE01	00	V	850	13	3.5	-0.2	-0.9
ASDE03	12	V	850	12	2.8	0.3	-0.2
ASDE03	00	V	850	13	4.9	0.8	0.1
ASDE04	12	V	850	8	2.1	0.7	-0.2
ASDE04	00	V	850	7	1.8	0.7	-1.0
ASDE09	12	V	850	3	1.5	-0.6	0.9
ASDK01	12	V	850	14	2.4	0.0	-0.2
ASDK01	00	V	850	16	4.2	0.5	-0.8
ASDK02	12	V	850	3	2.2	-0.8	0.2
ASDK02	00	V	850	3	1.5	-0.3	0.8
ASDK03	00	V	850	7	2.2	0.5	-0.9
ASDK03	12	V	850	7	2.7	-1.0	0.1
ASDK1	00	V	850	18	4.7	0.8	-0.9
ASDK1	12	V	850	13	3.5	0.5	0.0
ASDK2	12	V	850	3	1.8	-0.8	0.0
ASDK2	00	V	850	2	0.9	0.0	0.7
ASDK3	00	V	850	7	1.8	0.0	-0.9
ASDK3	12	V	850	9	2.6	-1.0	0.6
ASES01	12	V	850	21	2.9	0.6	0.2
ASEU01	12	V	850	17	2.9	-0.3	0.6
ASEU01	00	V	850	12	2.1	0.7	0.2
ASEU02	12	V	850	13	3.5	1.4	-0.6
ASEU02	00	V	850	14	2.3	-0.5	-0.2
ASEU03	00	V	850	6	2.4	0.7	-0.4
ASEU03	12	V	850	7	3.7	0.1	-0.6
ASEU04	12	V	850	3	5.4	-0.8	-3.9
ASEU04	00	V	850	4	2.3	-0.4	-0.7
ASEU06	12	V	850	8	2.7	-0.3	0.3
ASEU06	00	V	850	6	7.8	0.8	3.5
ASFR1	12	V	850	12	2.5	-0.2	1.1
ASFR1	00	V	850	9	3.6	0.6	0.5
ASFR2	12	V	850	6	3.5	-1.2	0.7
ASFR2	00	V	850	7	3.1	0.3	0.3
ASFR3	12	V	850	8	3.7	-0.3	-0.6
ASFR3	00	V	850	7	1.4	-0.5	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASFR4	00	V	850	3	1.1	-0.3	0.1
ASFR4	12	V	850	3	3.1	0.6	-1.2
DBLK	00	V	850	1	3.1	3.1	-0.4

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : APR 2016
 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	717	0	0.3	-0.1	0.3
13008	99	P	SUR	15	-38	102	0	0.3	0.1	0.3
13015	99	P	SUR	17	-34	295	0	0.3	0.7	0.8
13515	99	P	SUR	27	-51	521	0	0.4	0.2	0.4
13519	99	P	SUR	20	-51	298	0	0.4	0.2	0.4
13530	99	P	SUR	13	-26	235	0	0.4	0.0	0.4
13572	99	P	SUR	34	-21	508	0	0.3	0.1	0.3
13592	99	P	SUR	11	-30	601	0	0.3	0.2	0.4
13633	99	P	SUR	29	-31	483	0	0.4	-0.7	0.8
13661	99	P	SUR	16	-50	720	0	0.3	-0.4	0.5
13665	99	P	SUR	23	-26	718	0	0.4	0.3	0.5
13868	99	P	SUR	30	-15	720	0	0.3	0.4	0.5
13869	99	P	SUR	24	-42	720	0	0.3	0.2	0.4
13871	99	P	SUR	28	-37	720	0	0.5	0.5	0.7
13872	99	P	SUR	24	-31	720	0	0.4	0.5	0.6
21942	99	P	SUR	30	-46	657	0	0.4	0.2	0.4
25575	99	P	SUR	66	-36	636	0	0.5	-0.1	0.5
25617	99	P	SUR	60	-41	720	0	0.9	0.2	1.0
26537	99	P	SUR	74	14	708	0	0.4	-0.1	0.4
26545	99	P	SUR	71	-5	712	125	7.4	-2.4	7.8
26546	99	P	SUR	64	-40	11	0	2.0	1.7	2.6
31863	99	P	SUR	24	-62	645	0	0.5	0.5	0.7
41040	99	P	SUR	15	-53	712	0	0.4	-0.6	0.7
41041	99	P	SUR	14	-46	731	0	0.3	-0.3	0.5
41043	99	P	SUR	21	-65	717	0	0.4	-0.3	0.5
41044	99	P	SUR	22	-59	715	0	0.4	-0.3	0.5
41046	99	P	SUR	24	-68	733	0	0.4	-0.1	0.4
41048	99	P	SUR	32	-70	738	0	0.4	-0.6	0.7
41049	99	P	SUR	28	-63	716	0	0.4	-0.2	0.5
41051	99	P	SUR	18	-65	1190	0	0.5	-0.3	0.6
41052	99	P	SUR	18	-65	938	0	0.5	-1.2	1.3
41053	99	P	SUR	19	-66	545	0	0.6	-0.6	0.8
41056	99	P	SUR	18	-66	480	0	0.5	-0.8	0.9
41139	99	P	SUR	20	-38	232	0	0.3	0.0	0.3
41506	99	P	SUR	37	-67	622	0	0.6	-0.4	0.7
41590	99	P	SUR	38	-64	663	0	0.5	-0.5	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41594	99	P	SUR	32	-61	521	1	0.5	-0.1	0.5
41597	99	P	SUR	25	-59	720	0	0.4	0.1	0.4
41598	99	P	SUR	29	-66	720	0	3.0	-0.4	3.0
41635	99	P	SUR	23	-51	719	0	0.4	0.5	0.6
41706	99	P	SUR	36	-41	720	0	0.4	0.0	0.4
41707	99	P	SUR	14	-61	716	0	0.4	-1.1	1.1
41708	99	P	SUR	17	-44	720	0	0.3	0.3	0.5
41709	99	P	SUR	34	-70	720	0	0.4	0.1	0.4
41711	99	P	SUR	31	-23	519	0	2.0	-1.3	2.4
41729	99	P	SUR	35	-60	719	0	0.5	-0.0	0.5
41731	99	P	SUR	29	-54	720	0	0.4	0.2	0.5
41936	99	P	SUR	28	-63	103	0	0.3	-0.8	0.9
41970	99	P	SUR	30	-69	720	0	0.4	0.1	0.4
41972	99	P	SUR	34	-45	720	0	0.6	-0.1	0.6
41975	99	P	SUR	28	-26	633	0	0.5	0.1	0.5
42059	99	P	SUR	16	-69	719	0	0.5	-0.2	0.5
42060	99	P	SUR	16	-63	721	0	0.5	-0.1	0.5
42085	99	P	SUR	18	-67	1580	0	0.4	-0.8	0.9
44005	99	P	SUR	43	-69	736	0	0.6	-0.6	0.9
44008	99	P	SUR	41	-69	717	0	0.6	-0.7	0.9
44011	99	P	SUR	41	-67	720	0	0.6	-1.1	1.3
44018	99	P	SUR	42	-70	673	0	1.1	-0.2	1.2
44024	99	P	SUR	42	-66	784	0	0.6	-0.9	1.0
44027	99	P	SUR	44	-67	821	0	0.7	-0.3	0.7
44032	99	P	SUR	44	-69	719	0	0.6	-1.2	1.3
44033	99	P	SUR	44	-69	717	0	0.6	-1.3	1.4
44034	99	P	SUR	44	-68	720	0	0.6	-0.3	0.7
44037	99	P	SUR	44	-68	464	0	0.5	-0.1	0.5
44137	99	P	SUR	42	-62	979	0	0.7	-0.1	0.7
44139	99	P	SUR	44	-57	707	0	0.5	-0.0	0.5
44141	99	P	SUR	43	-58	688	0	0.7	0.0	0.7
44150	99	P	SUR	43	-64	683	0	0.9	0.2	0.9
44251	99	P	SUR	46	-53	272	0	0.7	-0.0	0.7
44255	99	P	SUR	47	-57	970	0	0.6	-0.1	0.6
44513	99	P	SUR	53	-11	719	0	0.3	0.5	0.6
44515	99	P	SUR	53	-32	719	0	0.5	0.2	0.5
44517	99	P	SUR	40	-13	720	0	0.4	0.2	0.5
44521	99	P	SUR	44	-35	538	0	0.4	-0.6	0.8
44546	99	P	SUR	31	-46	720	0	0.4	-0.1	0.4
44551	99	P	SUR	67	5	720	0	0.4	0.2	0.5
44557	99	P	SUR	45	-37	720	0	0.6	0.6	0.9
44558	99	P	SUR	29	-46	492	0	0.4	0.7	0.8
44613	99	P	SUR	28	-44	720	0	0.4	-0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44614	99	P	SUR	53	-13	717	0	0.4	-0.1	0.4
44624	99	P	SUR	24	-45	710	0	0.5	-0.2	0.5
44625	99	P	SUR	58	-31	710	0	0.5	0.7	0.9
44670	99	P	SUR	47	-49	719	0	0.7	-0.1	0.7
44739	99	P	SUR	38	-40	720	0	0.6	0.4	0.7
44740	99	P	SUR	31	-58	242	1	0.4	-0.2	0.5
44744	99	P	SUR	48	-23	721	1	1.6	0.0	1.6
44746	99	P	SUR	34	-32	720	0	0.6	0.4	0.7
44747	99	P	SUR	50	-18	720	0	0.4	0.0	0.4
44761	99	P	SUR	58	-14	720	0	0.4	-0.4	0.6
44764	99	P	SUR	58	-14	720	0	0.4	-0.3	0.5
44765	99	P	SUR	50	-40	720	0	0.6	0.5	0.8
44766	99	P	SUR	41	-40	720	0	0.5	0.0	0.5
44768	99	P	SUR	39	-33	720	0	0.4	0.7	0.8
44772	99	P	SUR	51	-41	676	0	0.6	0.1	0.6
44773	99	P	SUR	50	-13	720	0	0.5	0.5	0.7
44776	99	P	SUR	38	-23	717	0	0.4	0.6	0.7
44777	99	P	SUR	42	-54	720	0	0.5	0.2	0.6
44778	99	P	SUR	39	-39	719	0	0.5	0.3	0.5
44779	99	P	SUR	44	-58	720	0	0.5	0.1	0.5
44835	99	P	SUR	31	-26	720	0	0.3	-0.3	0.4
44836	99	P	SUR	65	8	720	0	0.4	0.2	0.4
44837	99	P	SUR	21	-43	720	0	0.3	0.0	0.3
44839	99	P	SUR	31	-18	720	0	0.3	0.0	0.3
44846	99	P	SUR	37	-21	720	0	0.4	0.4	0.6
44848	99	P	SUR	34	-17	719	0	0.3	0.3	0.5
44856	99	P	SUR	46	-36	719	0	0.4	0.4	0.5
44857	99	P	SUR	47	-40	720	0	0.5	0.3	0.6
44858	99	P	SUR	44	-48	157	0	0.5	-0.5	0.7
44863	99	P	SUR	26	-56	720	0	0.4	-0.5	0.7
44866	99	P	SUR	68	1	720	0	0.3	-0.2	0.4
44867	99	P	SUR	63	-14	720	0	0.4	-0.1	0.4
44868	99	P	SUR	24	-58	720	0	0.5	0.1	0.5
44873	99	P	SUR	34	-43	720	0	0.7	0.9	1.1
44874	99	P	SUR	42	-35	720	0	0.5	0.3	0.6
44875	99	P	SUR	38	-31	720	0	0.9	0.4	1.0
44878	99	P	SUR	42	-9	202	1	6.1	-3.3	7.0
44885	99	P	SUR	28	-18	720	0	0.3	-0.0	0.3
44887	99	P	SUR	32	-39	719	0	0.4	0.1	0.5
44889	99	P	SUR	29	-51	720	0	0.4	-0.0	0.4
44890	99	P	SUR	25	-68	719	0	0.4	-0.1	0.4
44891	99	P	SUR	26	-55	719	0	0.4	-0.2	0.5
44896	99	P	SUR	37	-42	616	0	0.5	-0.5	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44901	99	P	SUR	41	-49	720	0	0.5	0.1	0.6
44902	99	P	SUR	42	-51	720	0	0.5	0.4	0.7
44904	99	P	SUR	46	-39	719	0	0.5	-0.2	0.5
47503	99	P	SUR	62	-27	577	551	2.5	-12.0	12.3
47509	99	P	SUR	81	-11	718	0	0.6	0.1	0.6
47539	99	P	SUR	41	-48	716	0	0.7	0.4	0.8
47540	99	P	SUR	47	-44	714	0	0.6	0.9	1.0
47546	99	P	SUR	45	-51	712	0	1.1	-0.1	1.1
47549	99	P	SUR	45	-45	718	0	0.7	0.2	0.7
47551	99	P	SUR	57	-61	717	0	0.6	-1.5	1.6
47552	99	P	SUR	67	-63	717	0	0.6	-1.6	1.7
47555	99	P	SUR	46	-51	718	0	0.6	0.4	0.7
47557	99	P	SUR	49	-44	713	0	0.5	0.0	0.5
47560	99	P	SUR	50	-39	717	0	0.5	0.6	0.8
47562	99	P	SUR	54	-42	718	0	0.6	0.5	0.7
47567	99	P	SUR	44	-47	712	0	1.2	2.1	2.4
47568	99	P	SUR	44	-45	625	0	0.7	0.8	1.0
47569	99	P	SUR	48	-37	669	0	0.5	0.1	0.5
47574	99	P	SUR	42	-51	714	0	0.6	0.3	0.7
47584	99	P	SUR	45	-50	715	0	0.5	0.3	0.6
47589	99	P	SUR	67	-63	719	117	2.1	-2.1	3.0
48568	99	P	SUR	62	-7	715	0	0.3	-0.5	0.6
61001	99	P	SUR	43	8	701	0	0.6	0.3	0.6
62001	99	P	SUR	45	-5	988	1	0.4	0.0	0.4
62027	99	P	SUR	49	-2	218	0	0.6	0.1	0.6
62029	99	P	SUR	49	-13	99	0	0.3	0.1	0.3
62030	99	P	SUR	50	-4	751	0	0.4	0.3	0.5
62050	99	P	SUR	50	-4	723	0	0.4	0.4	0.5
62081	99	P	SUR	51	-13	718	0	0.4	0.0	0.4
62095	99	P	SUR	53	-16	466	0	0.3	0.2	0.4
62102	99	P	SUR	58	2	719	0	0.4	0.2	0.4
62103	99	P	SUR	50	-3	721	0	0.4	0.6	0.7
62104	99	P	SUR	57	1	720	0	0.4	0.1	0.4
62105	99	P	SUR	55	-13	688	1	0.4	-0.1	0.4
62107	99	P	SUR	50	-6	1411	0	0.8	0.4	0.9
62111	99	P	SUR	58	0	716	0	0.3	1.3	1.4
62112	99	P	SUR	58	0	721	0	0.3	0.3	0.4
62113	99	P	SUR	58	0	721	0	0.5	0.1	0.5
62114	99	P	SUR	58	0	1436	0	0.4	0.3	0.5
62115	99	P	SUR	58	-3	720	0	0.4	0.1	0.4
62116	99	P	SUR	58	1	721	0	0.4	0.0	0.4
62117	99	P	SUR	58	0	720	0	0.4	0.3	0.5
62118	99	P	SUR	58	1	721	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
62119	99	P	SUR	57	2	721	0	0.4	0.0	0.4
62120	99	P	SUR	56	2	249	0	0.9	0.2	0.9
62121	99	P	SUR	54	3	721	0	0.4	0.5	0.7
62122	99	P	SUR	57	2	1437	0	0.4	-0.0	0.4
62123	99	P	SUR	56	2	1436	0	0.4	0.2	0.4
62124	99	P	SUR	54	-4	701	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	717	0	0.4	0.6	0.7
62128	99	P	SUR	59	1	721	0	0.4	0.2	0.5
62129	99	P	SUR	58	0	720	0	0.4	-0.0	0.4
62130	99	P	SUR	59	1	719	0	0.3	-0.1	0.3
62131	99	P	SUR	54	1	718	0	0.4	0.5	0.6
62132	99	P	SUR	56	2	721	0	0.4	0.3	0.5
62133	99	P	SUR	57	1	720	0	0.5	0.2	0.5
62134	99	P	SUR	58	1	721	0	0.3	0.3	0.5
62135	99	P	SUR	54	2	719	0	0.5	0.5	0.6
62136	99	P	SUR	54	3	720	0	0.4	0.6	0.7
62137	99	P	SUR	57	2	719	0	0.4	-0.0	0.5
62138	99	P	SUR	54	0	1434	0	0.5	0.7	0.9
62139	99	P	SUR	53	2	1429	0	0.4	0.4	0.5
62140	99	P	SUR	57	1	1431	0	0.4	0.2	0.5
62141	99	P	SUR	61	1	695	0	0.4	0.0	0.4
62143	99	P	SUR	58	2	713	0	0.4	0.6	0.7
62144	99	P	SUR	53	2	721	0	0.4	0.3	0.5
62145	99	P	SUR	53	3	1437	0	0.4	0.5	0.6
62146	99	P	SUR	57	2	712	0	0.4	0.2	0.5
62148	99	P	SUR	54	2	721	0	0.4	0.8	0.9
62149	99	P	SUR	54	1	717	0	0.3	0.8	0.9
62150	99	P	SUR	54	1	717	0	0.3	1.4	1.4
62151	99	P	SUR	57	2	1437	0	0.4	0.2	0.4
62152	99	P	SUR	57	2	720	0	0.4	0.5	0.6
62153	99	P	SUR	57	2	1138	0	0.4	0.4	0.6
62154	99	P	SUR	56	2	721	0	0.4	-0.1	0.4
62155	99	P	SUR	58	1	710	0	0.3	0.3	0.5
62157	99	P	SUR	58	0	720	0	0.4	0.1	0.4
62160	99	P	SUR	57	2	1437	0	0.4	0.1	0.4
62161	99	P	SUR	58	1	720	0	0.4	-0.1	0.4
62162	99	P	SUR	57	1	698	0	0.4	0.1	0.4
62163	99	P	SUR	48	-8	669	3	0.4	0.0	0.4
62164	99	P	SUR	57	1	721	0	0.4	0.4	0.5
62165	99	P	SUR	54	1	717	0	0.4	0.6	0.7
62166	99	P	SUR	53	3	590	0	0.4	0.4	0.5
62167	99	P	SUR	53	2	1433	0	0.4	0.3	0.5
62168	99	P	SUR	58	1	720	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62170	99	P	SUR	51	2	720	0	0.7	-0.1	0.7
62198	99	P	SUR	52	2	760	0	0.3	0.5	0.6
62296	99	P	SUR	53	2	720	0	0.4	0.1	0.4
62297	99	P	SUR	59	2	1433	0	0.3	0.1	0.4
62301	99	P	SUR	52	-4	85	0	0.3	-0.6	0.7
62302	99	P	SUR	61	-2	709	0	0.5	-0.1	0.5
62304	99	P	SUR	51	2	782	1	0.5	0.3	0.6
62305	99	P	SUR	50	0	789	0	0.5	0.4	0.6
62513	99	P	SUR	60	-29	720	0	0.5	0.1	0.5
62539	99	P	SUR	64	-18	669	0	0.6	-0.3	0.7
62553	99	P	SUR	62	-18	720	0	0.3	0.1	0.3
62554	99	P	SUR	46	-18	714	0	0.4	0.3	0.5
62555	99	P	SUR	47	-8	719	0	0.6	0.5	0.7
62556	99	P	SUR	39	-29	720	0	0.5	-0.3	0.6
62557	99	P	SUR	49	-19	719	0	0.4	0.2	0.4
62558	99	P	SUR	47	-27	714	0	0.5	0.2	0.5
62559	99	P	SUR	47	-32	665	0	0.5	0.4	0.6
62713	99	P	SUR	30	-59	717	0	0.4	-0.4	0.6
62714	99	P	SUR	33	-50	720	0	0.6	-0.4	0.7
62940	99	P	SUR	42	-29	720	0	0.4	-0.1	0.4
62941	99	P	SUR	31	-17	720	0	0.3	-0.0	0.3
63055	99	P	SUR	61	2	721	0	0.4	0.0	0.4
63056	99	P	SUR	60	2	713	0	0.4	0.2	0.4
63057	99	P	SUR	59	2	721	0	0.3	-0.0	0.3
63058	99	P	SUR	53	2	2159	0	0.4	0.4	0.6
63059	99	P	SUR	58	-1	720	0	0.4	0.4	0.6
63101	99	P	SUR	61	1	721	0	0.4	0.0	0.4
63102	99	P	SUR	61	1	720	0	0.4	0.2	0.4
63103	99	P	SUR	61	1	721	0	0.4	0.2	0.5
63104	99	P	SUR	61	2	719	0	0.4	0.1	0.4
63105	99	P	SUR	61	2	721	0	0.4	0.1	0.4
63107	99	P	SUR	61	2	568	0	0.4	-0.2	0.4
63108	99	P	SUR	61	2	721	0	0.4	-0.2	0.5
63109	99	P	SUR	60	2	721	0	0.3	-0.0	0.3
63110	99	P	SUR	60	2	715	0	0.3	-0.2	0.4
63111	99	P	SUR	61	2	1387	0	0.4	-0.2	0.4
63112	99	P	SUR	61	1	695	0	0.4	-0.3	0.5
63115	99	P	SUR	62	1	720	0	0.5	0.2	0.5
63117	99	P	SUR	61	1	1437	0	0.4	0.2	0.5
63118	99	P	SUR	62	1	719	0	0.5	-0.2	0.5
63119	99	P	SUR	58	-4	82	0	0.6	-0.4	0.7
63120	99	P	SUR	54	2	718	0	0.4	0.4	0.6
63561	99	P	SUR	72	0	669	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
63646	99	P	SUR	64	2	720	0	0.4	0.4	0.5
64041	99	P	SUR	61	-3	721	0	0.3	0.0	0.3
64045	99	P	SUR	59	-12	1438	0	0.4	0.1	0.4
64046	99	P	SUR	61	-4	720	0	0.3	0.2	0.3
64519	99	P	SUR	78	9	600	4	2.7	0.7	2.8
64521	99	P	SUR	73	20	609	0	0.4	-0.2	0.5
64523	99	P	SUR	71	13	679	0	0.5	0.2	0.5
64524	99	P	SUR	67	13	720	0	0.5	0.5	0.7
64526	99	P	SUR	58	-49	695	0	0.7	0.3	0.8
64528	99	P	SUR	71	18	720	0	0.4	0.3	0.5
64530	99	P	SUR	75	8	720	0	0.5	0.3	0.5
64547	99	P	SUR	70	0	720	0	0.4	0.2	0.4
64549	99	P	SUR	67	-24	720	0	0.5	0.2	0.6
64551	99	P	SUR	58	-31	720	0	0.4	-0.0	0.4
64553	99	P	SUR	68	6	720	0	0.4	-0.0	0.4
64554	99	P	SUR	65	-26	720	0	0.4	0.6	0.8
64555	99	P	SUR	62	-2	720	0	0.3	0.3	0.5
64560	99	P	SUR	64	-22	720	0	0.4	0.4	0.6
64562	99	P	SUR	63	-17	720	0	0.4	0.0	0.4
64606	99	P	SUR	73	30	720	0	0.6	0.9	1.1
64623	99	P	SUR	69	-12	720	0	1.4	-0.2	1.4
64666	99	P	SUR	72	-7	720	0	1.4	0.5	1.5
64667	99	P	SUR	61	-1	653	0	0.4	-0.1	0.4
64694	99	P	SUR	62	-40	720	0	0.9	-0.2	0.9
64748	99	P	SUR	87	-52	653	0	0.4	-0.0	0.4
64749	99	P	SUR	84	-19	715	0	0.5	-0.4	0.6
64754	99	P	SUR	88	32	390	0	0.5	0.2	0.6
64758	99	P	SUR	89	19	716	0	0.5	-0.2	0.5
65514	99	P	SUR	52	-43	720	0	0.6	0.3	0.7
65515	99	P	SUR	58	-32	273	0	0.6	0.5	0.8
65519	99	P	SUR	61	-21	720	0	0.4	0.8	0.9
65596	99	P	SUR	57	-21	714	0	0.6	0.6	0.8
65599	99	P	SUR	54	-24	720	0	0.5	0.3	0.6
65601	99	P	SUR	59	-51	720	0	0.6	0.1	0.6
65602	99	P	SUR	58	-35	720	0	0.5	-0.5	0.8
65603	99	P	SUR	68	-54	127	0	0.5	0.3	0.6
87121	99	P	SUR	40	16	1	0	0.0	6.3	6.3
87270	99	P	SUR	61	21	1	0	0.0	-9.2	9.2

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 : APR 2016
 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
13002	99	SPEED	SUR	20	-23	264	0	0	0.9	-0.0	0.9
13008	99	SPEED	SUR	15	-38	102	0	0	0.9	-0.1	0.9
17239	99	SPEED	SUR	67	0	1	0	0	0.0	4.8	4.8
41026	99	SPEED	SUR	12	-38	68	0	0	0.7	0.2	0.7
41040	99	SPEED	SUR	15	-53	712	0	0	0.8	-0.1	0.8
41041	99	SPEED	SUR	14	-46	731	0	0	0.8	-0.3	0.9
41043	99	SPEED	SUR	21	-65	717	0	0	1.5	0.2	1.5
41044	99	SPEED	SUR	22	-59	715	0	0	1.2	0.1	1.2
41046	99	SPEED	SUR	24	-68	733	0	0	1.7	0.4	1.7
41048	99	SPEED	SUR	32	-70	738	0	0	1.2	-0.4	1.3
41049	99	SPEED	SUR	28	-63	716	0	0	1.2	0.2	1.3
41051	99	SPEED	SUR	18	-65	1185	0	0	1.5	0.2	1.5
41052	99	SPEED	SUR	18	-65	938	0	0	1.3	0.2	1.3
41053	99	SPEED	SUR	19	-66	545	0	0	1.8	0.5	1.9
41056	99	SPEED	SUR	18	-66	480	0	0	1.7	0.2	1.7
41139	99	SPEED	SUR	20	-38	232	0	0	1.0	-0.4	1.0
42059	99	SPEED	SUR	16	-69	719	0	0	0.7	-0.1	0.7
42060	99	SPEED	SUR	16	-63	721	0	0	1.2	0.5	1.3
42085	99	SPEED	SUR	18	-67	1584	0	0	1.3	0.2	1.3
44005	99	SPEED	SUR	43	-69	736	0	0	1.4	-0.2	1.4
44008	99	SPEED	SUR	41	-69	717	0	0	1.6	-0.4	1.7
44018	99	SPEED	SUR	42	-70	673	0	0	2.0	-0.4	2.0
44024	99	SPEED	SUR	42	-66	787	0	0	1.6	-0.3	1.6
44027	99	SPEED	SUR	44	-67	821	0	0	1.5	0.0	1.5
44032	99	SPEED	SUR	44	-69	719	0	0	1.6	-0.1	1.6
44033	99	SPEED	SUR	44	-69	717	0	0	1.7	0.1	1.7
44034	99	SPEED	SUR	44	-68	720	0	0	1.6	-0.2	1.6
44037	99	SPEED	SUR	44	-68	464	0	0	1.5	0.0	1.5
44137	99	SPEED	SUR	42	-62	979	0	0	1.8	0.3	1.8
44139	99	SPEED	SUR	44	-57	713	0	0	1.6	0.1	1.6
44141	99	SPEED	SUR	43	-58	152	0	0	3.4	-0.6	3.5
44150	99	SPEED	SUR	43	-64	683	0	0	1.8	0.3	1.8
44251	99	SPEED	SUR	46	-53	273	0	0	2.3	-1.2	2.6
44255	99	SPEED	SUR	47	-57	970	0	0	1.6	0.4	1.7

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
61001	99	SPEED	SUR	43	8	700	0	0	1.8	-0.0	1.8
62001	99	SPEED	SUR	45	-5	988	0	0	1.6	0.2	1.6
62027	99	SPEED	SUR	49	-2	188	0	0	1.3	0.6	1.5
62029	99	SPEED	SUR	49	-13	99	0	0	0.9	0.5	1.1
62030	99	SPEED	SUR	50	-4	650	0	0	1.3	0.6	1.5
62050	99	SPEED	SUR	50	-4	723	0	0	1.2	0.6	1.3
62081	99	SPEED	SUR	51	-13	718	0	0	1.1	0.1	1.1
62095	99	SPEED	SUR	53	-16	466	0	0	0.9	0.2	0.9
62102	99	SPEED	SUR	58	2	719	0	0	1.3	-0.1	1.3
62103	99	SPEED	SUR	50	-3	720	0	0	1.8	1.5	2.3
62104	99	SPEED	SUR	57	1	720	0	0	1.2	-0.5	1.3
62105	99	SPEED	SUR	55	-13	630	0	0	1.2	0.4	1.3
62107	99	SPEED	SUR	50	-6	1411	0	0	1.7	1.2	2.1
62111	99	SPEED	SUR	58	0	699	0	0	1.5	-0.0	1.5
62112	99	SPEED	SUR	58	0	721	0	0	2.2	-1.5	2.6
62113	99	SPEED	SUR	58	0	721	0	0	1.6	-0.4	1.6
62114	99	SPEED	SUR	58	0	1436	0	0	1.5	0.2	1.5
62117	99	SPEED	SUR	58	0	720	0	0	1.2	-0.3	1.3
62118	99	SPEED	SUR	58	1	721	0	0	1.3	0.4	1.4
62119	99	SPEED	SUR	57	2	721	0	0	1.7	-1.0	2.0
62120	99	SPEED	SUR	56	2	720	0	0	1.3	-0.2	1.3
62121	99	SPEED	SUR	54	3	721	0	0	1.4	-0.2	1.4
62122	99	SPEED	SUR	57	2	1437	0	0	1.6	-0.3	1.6
62123	99	SPEED	SUR	56	2	1436	0	0	1.4	-0.2	1.4
62127	99	SPEED	SUR	54	1	717	0	0	2.6	-1.3	2.9
62128	99	SPEED	SUR	59	1	721	0	0	1.3	0.0	1.3
62129	99	SPEED	SUR	58	0	720	0	0	1.3	-0.6	1.4
62131	99	SPEED	SUR	54	1	718	0	0	1.9	-0.8	2.1
62132	99	SPEED	SUR	56	2	721	0	0	2.9	-2.3	3.7
62133	99	SPEED	SUR	57	1	720	0	0	1.4	-0.3	1.4
62134	99	SPEED	SUR	58	1	721	0	0	1.3	-0.4	1.3
62140	99	SPEED	SUR	57	1	1351	0	0	1.3	-0.1	1.3
62143	99	SPEED	SUR	58	2	713	0	0	1.6	-0.6	1.7
62144	99	SPEED	SUR	53	2	721	0	0	1.8	-0.7	2.0
62145	99	SPEED	SUR	53	3	1437	0	0	1.6	-0.6	1.7
62146	99	SPEED	SUR	57	2	711	0	0	1.6	-0.2	1.7
62148	99	SPEED	SUR	54	2	721	0	0	1.6	-0.4	1.7
62149	99	SPEED	SUR	54	1	717	0	0	1.3	0.2	1.3
62150	99	SPEED	SUR	54	1	717	0	0	2.9	-1.6	3.3
62152	99	SPEED	SUR	57	2	720	0	0	1.5	-0.9	1.7
62153	99	SPEED	SUR	57	2	1138	0	0	2.3	-2.6	3.5

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
62154	99	SPEED	SUR	56	2	721	0	0	1.3	-0.5	1.4
62155	99	SPEED	SUR	58	1	706	0	0	1.3	0.0	1.3
62163	99	SPEED	SUR	48	-8	669	0	0	1.7	-0.2	1.7
62164	99	SPEED	SUR	57	1	721	0	0	1.7	-1.1	2.0
62165	99	SPEED	SUR	54	1	717	0	0	2.2	-1.4	2.6
62170	99	SPEED	SUR	51	2	720	0	0	1.8	1.5	2.3
62198	99	SPEED	SUR	52	2	760	0	0	1.7	1.4	2.2
62301	99	SPEED	SUR	52	-4	85	0	0	1.0	-0.9	1.4
62304	99	SPEED	SUR	51	2	778	1	0	1.8	1.7	2.5
62305	99	SPEED	SUR	50	0	758	0	0	1.7	0.6	1.8
63055	99	SPEED	SUR	61	2	721	0	0	1.4	-1.1	1.7
63056	99	SPEED	SUR	60	2	721	0	0	1.3	-0.3	1.3
63057	99	SPEED	SUR	59	2	721	0	0	1.5	-0.1	1.5
63058	99	SPEED	SUR	53	2	722	0	0	1.4	0.2	1.4
63101	99	SPEED	SUR	61	1	717	0	0	1.6	-1.0	1.9
63104	99	SPEED	SUR	61	2	719	0	0	1.3	-0.6	1.4
63105	99	SPEED	SUR	61	2	721	0	0	1.3	-0.5	1.4
63106	99	SPEED	SUR	61	2	721	0	0	1.2	-0.4	1.3
63107	99	SPEED	SUR	61	2	721	0	0	1.3	-0.5	1.4
63108	99	SPEED	SUR	61	2	721	0	0	1.7	-0.8	1.8
63109	99	SPEED	SUR	60	2	682	0	0	1.4	-0.0	1.5
63110	99	SPEED	SUR	60	2	715	0	0	1.4	-0.7	1.6
63112	99	SPEED	SUR	61	1	695	0	0	1.3	-0.9	1.6
63113	99	SPEED	SUR	61	2	721	0	0	1.2	-0.6	1.3
63115	99	SPEED	SUR	62	1	720	0	0	1.3	-0.7	1.5
63117	99	SPEED	SUR	61	1	1437	0	0	1.4	-0.6	1.5
63119	99	SPEED	SUR	58	-4	81	0	0	2.5	0.4	2.5
64041	99	SPEED	SUR	61	-3	678	0	0	1.3	-0.8	1.5
64046	99	SPEED	SUR	61	-4	720	0	0	1.2	0.2	1.2
66021	99	SPEED	SUR	55	14	647	0	0	1.3	0.2	1.3
87121	99	SPEED	SUR	40	16	1	1	100	0.0	0.0	0.0
87270	99	SPEED	SUR	61	21	1	1	100	0.0	0.0	0.0

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 : APR 2016
 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
13002	99	DIRN	SUR	20	-23	261	0	0	12.2	6.9	14.0
13008	99	DIRN	SUR	15	-38	101	0	0	11.7	3.7	12.3
17239	99	DIRN	SUR	67	0	1	0	0	0.0	49.8	49.8
41001	99	DIRN	SUR	35	-73	259	0	0	19.2	6.9	20.4
41002	99	DIRN	SUR	32	-75	604	0	0	17.0	5.3	17.8
41004	99	DIRN	SUR	33	-79	721	0	0	21.7	8.8	23.4
41008	99	DIRN	SUR	31	-81	24	0	0	10.7	11.4	15.7
41009	99	DIRN	SUR	29	-80	614	0	0	21.3	0.8	21.3
41010	99	DIRN	SUR	29	-79	589	0	0	24.9	8.2	26.2
41013	99	DIRN	SUR	33	-78	1118	0	0	19.2	13.2	23.3
41024	99	DIRN	SUR	34	-79	594	0	0	17.5	-4.5	18.1
41025	99	DIRN	SUR	35	-75	664	0	0	21.8	1.6	21.8
41026	99	DIRN	SUR	12	-38	68	0	0	12.4	-3.0	12.8
41029	99	DIRN	SUR	33	-80	481	0	0	14.8	-4.2	15.4
41033	99	DIRN	SUR	32	-80	555	0	0	20.2	-2.1	20.3
41037	99	DIRN	SUR	34	-77	643	0	0	17.5	-0.8	17.5
41038	99	DIRN	SUR	34	-78	644	0	0	16.1	-5.6	17.0
41040	99	DIRN	SUR	15	-53	695	0	0	10.3	0.7	10.3
41041	99	DIRN	SUR	14	-46	724	0	0	8.6	5.8	10.4
41043	99	DIRN	SUR	21	-65	542	0	0	18.1	6.8	19.3
41044	99	DIRN	SUR	22	-59	591	0	0	16.2	-1.2	16.3
41046	99	DIRN	SUR	24	-68	611	0	0	24.8	-5.0	25.3
41047	99	DIRN	SUR	28	-72	630	0	0	17.7	0.8	17.7
41048	99	DIRN	SUR	32	-70	587	0	0	12.1	14.3	18.7
41049	99	DIRN	SUR	28	-63	621	0	0	14.4	10.0	17.5
41051	99	DIRN	SUR	18	-65	722	0	0	18.0	-12.8	22.1
41052	99	DIRN	SUR	18	-65	750	0	0	20.2	3.4	20.5
41053	99	DIRN	SUR	19	-66	299	0	0	19.5	-3.5	19.8
41056	99	DIRN	SUR	18	-66	341	0	0	22.5	6.0	23.3
41139	99	DIRN	SUR	20	-38	180	0	0	13.2	0.9	13.2
42013	99	DIRN	SUR	27	-83	764	0	0	20.2	-5.6	21.0
42022	99	DIRN	SUR	28	-84	757	0	0	18.9	-0.6	18.9

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42023	99	DIRN	SUR	26	-83	858	0	0	19.4	1.9	19.5
42036	99	DIRN	SUR	29	-85	537	0	0	17.1	2.8	17.4
42056	99	DIRN	SUR	20	-85	657	0	0	10.9	-0.7	10.9
42057	99	DIRN	SUR	17	-82	697	0	0	14.0	1.9	14.1
42058	99	DIRN	SUR	15	-75	714	0	0	8.7	1.8	8.8
42059	99	DIRN	SUR	16	-69	711	0	0	11.1	4.3	11.9
42060	99	DIRN	SUR	16	-63	587	0	0	13.6	5.0	14.5
42085	99	DIRN	SUR	18	-67	1030	0	0	18.2	6.2	19.2
44005	99	DIRN	SUR	43	-69	607	0	0	14.3	6.4	15.7
44007	99	DIRN	SUR	44	-70	571	0	0	18.6	8.1	20.3
44008	99	DIRN	SUR	41	-69	635	0	0	18.3	11.0	21.4
44013	99	DIRN	SUR	42	-71	634	0	0	17.8	8.2	19.6
44014	99	DIRN	SUR	37	-75	597	0	0	15.0	5.0	15.8
44017	99	DIRN	SUR	41	-72	584	0	0	19.2	2.8	19.4
44018	99	DIRN	SUR	42	-70	528	0	0	21.4	10.4	23.8
44020	99	DIRN	SUR	41	-70	615	0	0	15.6	3.8	16.0
44024	99	DIRN	SUR	42	-66	681	0	0	13.4	4.1	14.0
44025	99	DIRN	SUR	40	-73	659	0	0	22.8	2.7	22.9
44027	99	DIRN	SUR	44	-67	672	0	0	21.2	7.8	22.6
44030	99	DIRN	SUR	43	-70	531	0	0	18.7	6.0	19.6
44032	99	DIRN	SUR	44	-69	536	0	0	18.0	10.4	20.8
44033	99	DIRN	SUR	44	-69	517	0	0	20.7	3.8	21.0
44034	99	DIRN	SUR	44	-68	559	0	0	19.3	4.3	19.8
44037	99	DIRN	SUR	44	-68	370	0	0	14.4	6.4	15.7
44039	99	DIRN	SUR	41	-73	475	0	0	21.5	2.0	21.5
44041	99	DIRN	SUR	37	-77	327	0	0	14.8	0.5	14.8
44042	99	DIRN	SUR	38	-76	710	0	0	22.5	-14.3	26.7
44043	99	DIRN	SUR	39	-76	626	0	0	23.8	-11.7	26.6
44057	99	DIRN	SUR	40	-76	535	0	0	25.5	-9.5	27.2
44058	99	DIRN	SUR	38	-76	975	0	0	20.2	-7.8	21.7
44059	99	DIRN	SUR	37	-76	669	0	0	17.2	-24.9	30.3
44060	99	DIRN	SUR	41	-72	545	0	0	20.5	5.0	21.1
44061	99	DIRN	SUR	39	-77	425	0	0	18.4	-9.9	20.9
44062	99	DIRN	SUR	39	-76	666	0	0	18.6	-6.5	19.7
44063	99	DIRN	SUR	39	-76	469	0	0	24.3	-13.1	27.6
44065	99	DIRN	SUR	40	-74	558	0	0	21.4	4.0	21.7
44069	99	DIRN	SUR	41	-73	236	0	0	37.0	37.1	52.3
44137	99	DIRN	SUR	42	-62	910	0	0	15.3	4.3	15.9
44139	99	DIRN	SUR	44	-57	652	0	0	15.5	14.2	21.1
44141	99	DIRN	SUR	43	-58	146	0	0	20.6	7.5	21.9
44150	99	DIRN	SUR	43	-64	609	0	0	15.2	6.0	16.3

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44251	99	DIRN	SUR	46	-53	243	0	0	12.7	13.3	18.4
44255	99	DIRN	SUR	47	-57	767	0	0	17.7	7.0	19.0
45005	99	DIRN	SUR	42	-82	551	0	0	25.1	12.6	28.1
45012	99	DIRN	SUR	44	-77	283	0	0	21.7	9.1	23.5
45135	99	DIRN	SUR	44	-77	248	0	0	21.8	-19.1	29.0
45137	99	DIRN	SUR	46	-81	186	0	0	19.3	-4.9	19.9
45139	99	DIRN	SUR	43	-80	160	0	0	18.5	-16.3	24.6
45143	99	DIRN	SUR	45	-81	486	0	0	16.8	-12.3	20.8
45149	99	DIRN	SUR	44	-82	89	0	0	23.1	-4.5	23.5
45159	99	DIRN	SUR	44	-79	159	0	0	17.4	-9.8	20.0
62001	99	DIRN	SUR	45	-5	756	0	0	21.9	7.1	23.0
62027	99	DIRN	SUR	49	-2	148	0	0	31.5	-0.1	31.5
62029	99	DIRN	SUR	49	-13	96	0	0	12.3	5.4	13.4
62030	99	DIRN	SUR	50	-4	515	0	0	43.3	98.5	107.6
62050	99	DIRN	SUR	50	-4	654	0	0	17.3	2.7	17.5
62081	99	DIRN	SUR	51	-13	647	0	0	15.8	6.9	17.2
62095	99	DIRN	SUR	53	-16	442	0	0	11.0	3.5	11.5
62103	99	DIRN	SUR	50	-3	640	0	0	21.4	1.2	21.4
62105	99	DIRN	SUR	55	-13	560	0	0	13.8	5.2	14.7
62107	99	DIRN	SUR	50	-6	1348	0	0	16.0	0.8	16.0
62111	99	DIRN	SUR	58	0	622	0	0	13.1	4.5	13.8
62112	99	DIRN	SUR	58	0	614	0	0	13.1	3.2	13.5
62114	99	DIRN	SUR	58	0	1308	0	0	11.5	0.7	11.5
62117	99	DIRN	SUR	58	0	648	0	0	12.1	5.7	13.4
62163	99	DIRN	SUR	48	-8	558	0	0	16.1	3.0	16.4
62301	99	DIRN	SUR	52	-4	35	0	0	12.7	-0.0	12.7
62305	99	DIRN	SUR	50	0	646	0	0	18.0	3.6	18.4
63119	99	DIRN	SUR	58	-4	68	0	0	31.1	1.6	31.2
64041	99	DIRN	SUR	61	-3	613	0	0	10.6	18.5	21.3
64046	99	DIRN	SUR	61	-4	675	0	0	12.5	-2.7	12.8

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE02	ASDE04	ASDK01	ASDK02	ASDK03	ASES01	ASEU01	ASEU02	ASEU04
DBLK	01001	01004	01010	01028	01241	01400	01415	01492
02185	02365	02527	02591	02836	02935	02963	03953	06260
08001	08023	08221	08302	08430	10035	10113	10184	10238
10304	10393	10410	10618	10739	10868	10954	10962	60018

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

ASDE01	ASDE02	ASDE03	ASDE04	ASDE09	ASDK01	ASDK02	ASDK03	ASES01
ASEU01	ASEU02	ASEU03	ASEU04	ASEU06	DBLK	01492	06447	43599
47155	93817	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.