



# ECMWF Global Data Monitoring Report

**November 2014**

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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 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:

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Shinfield Park  
Reading, Berkshire, RG2 9AX  
United Kingdom

## 2 Data summary - History of events

### 2.1 Radiosondes

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

Ident	Time	Oct	Nov	Ident	Time	Oct	Nov
40990	(00)	13	0	02185	(00)	1	25
40990	(12)	12	0	03882	(12)	8	21
42492	(00)	23	0	25428	(12)	0	30
43369	(00)	25	0	28225	(00)	18	30
43371	(00)	22	0	28225	(12)	18	30
48568	(00)	24	4	30554	(00)	5	30
68424	(00)	17	0	30554	(12)	6	30
76256	(12)	18	0	31538	(00)	18	30
78583	(00)	28	0	33837	(00)	11	24
78866	(00)	12	0	38507	(00)	14	30
78866	(12)	14	0	40375	(00)	4	18
78954	(00)	30	0	40394	(00)	13	29
78970	(00)	30	0	40394	(12)	14	29
78988	(00)	31	0	40417	(00)	10	27
83612	(00)	24	0	40417	(12)	11	27
83612	(12)	25	0	40430	(00)	15	30
87344	(12)	15	0	40430	(12)	16	30
87623	(12)	23	0	40437	(00)	9	20
-	-	-	-	40437	(12)	11	24
-	-	-	-	41112	(00)	13	24
-	-	-	-	41112	(12)	14	26
-	-	-	-	43150	(00)	1	19
-	-	-	-	48698	(12)	0	21
-	-	-	-	48820	(12)	0	23
-	-	-	-	48839	(00)	0	15
-	-	-	-	48845	(00)	0	25
-	-	-	-	48855	(00)	0	20
-	-	-	-	48855	(12)	0	21
-	-	-	-	48900	(00)	0	19
-	-	-	-	48900	(12)	0	19
-	-	-	-	61024	(12)	10	29
-	-	-	-	61052	(00)	10	29
-	-	-	-	61052	(12)	10	27
-	-	-	-	64650	(00)	7	23
-	-	-	-	64650	(12)	6	22
-	-	-	-	64910	(00)	12	26
-	-	-	-	64910	(12)	15	26
-	-	-	-	68098	(12)	0	14
-	-	-	-	68312	(12)	13	26
-	-	-	-	71603	(12)	19	30
-	-	-	-	81729	(00)	19	30
-	-	-	-	82107	(00)	0	25
-	-	-	-	82281	(12)	3	16
-	-	-	-	82599	(00)	11	30
-	-	-	-	82599	(12)	14	30
-	-	-	-	83554	(00)	14	30
-	-	-	-	83554	(12)	16	30
-	-	-	-	83650	(12)	16	28
-	-	-	-	89625	(12)	0	16
-	-	-	-	89662	(00)	0	14
-	-	-	-	89662	(12)	0	14

## 2.2 Drifting Buoys

Surface pressure observations from **1500** 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.

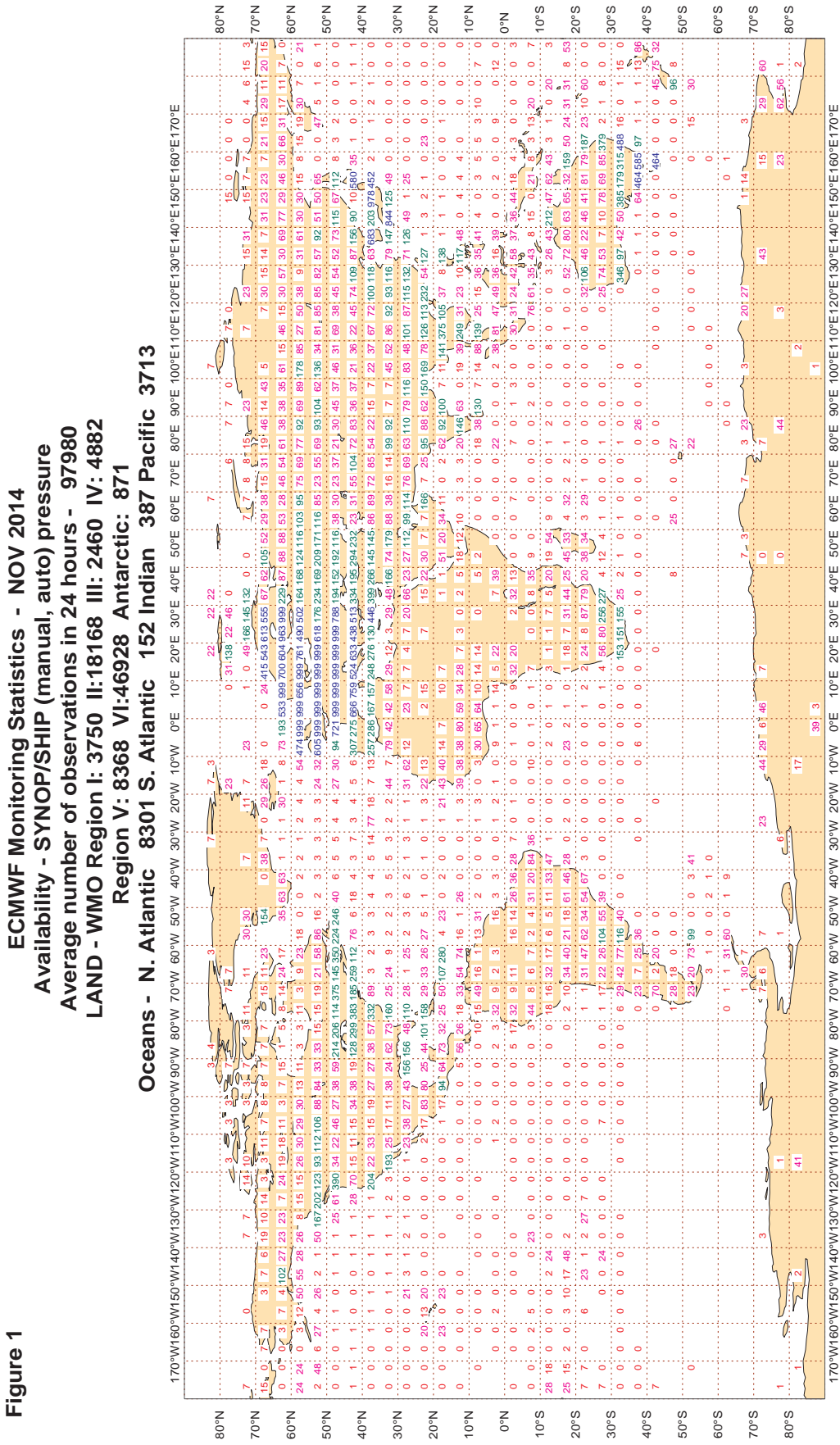
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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



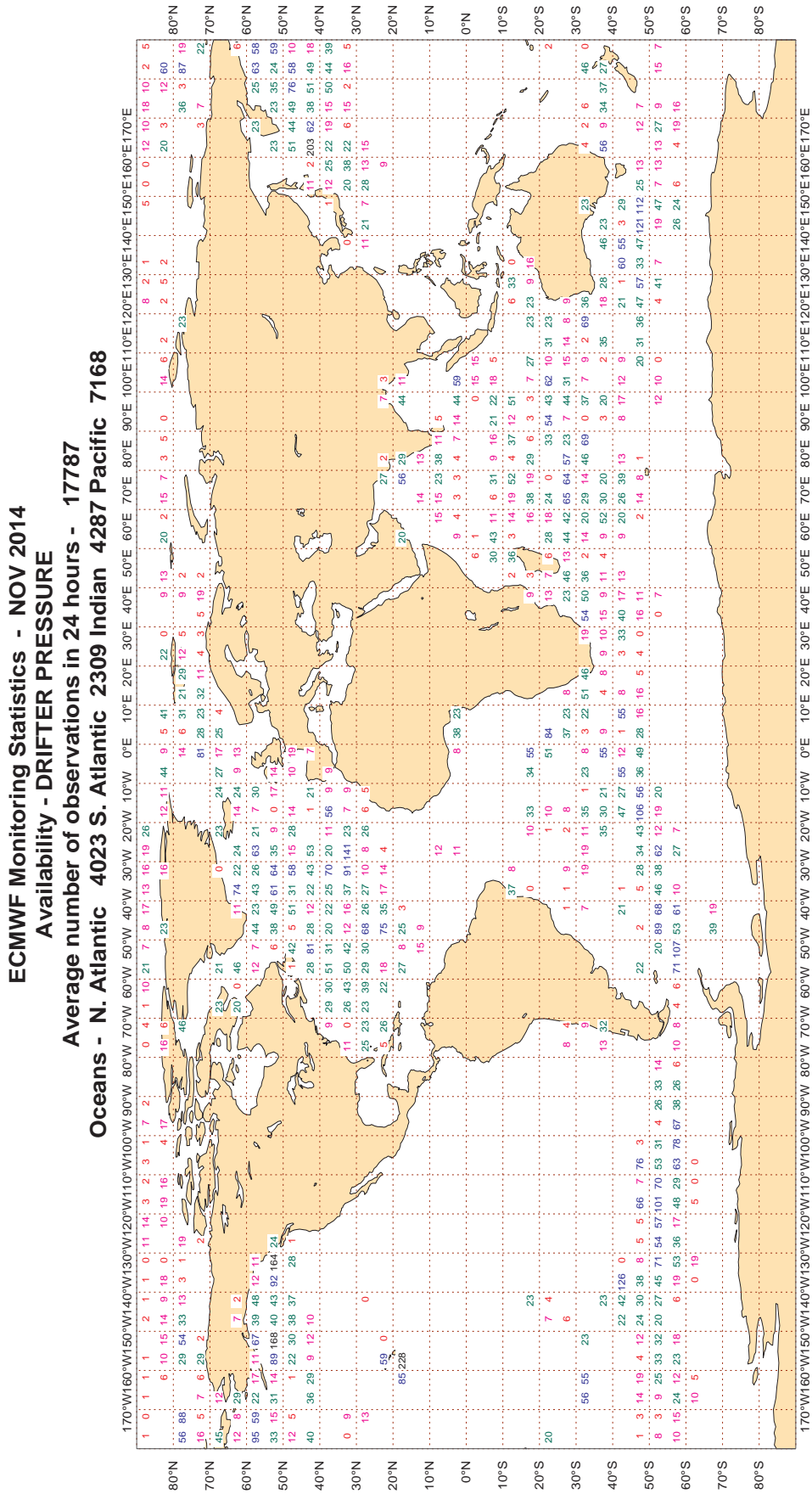
3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1



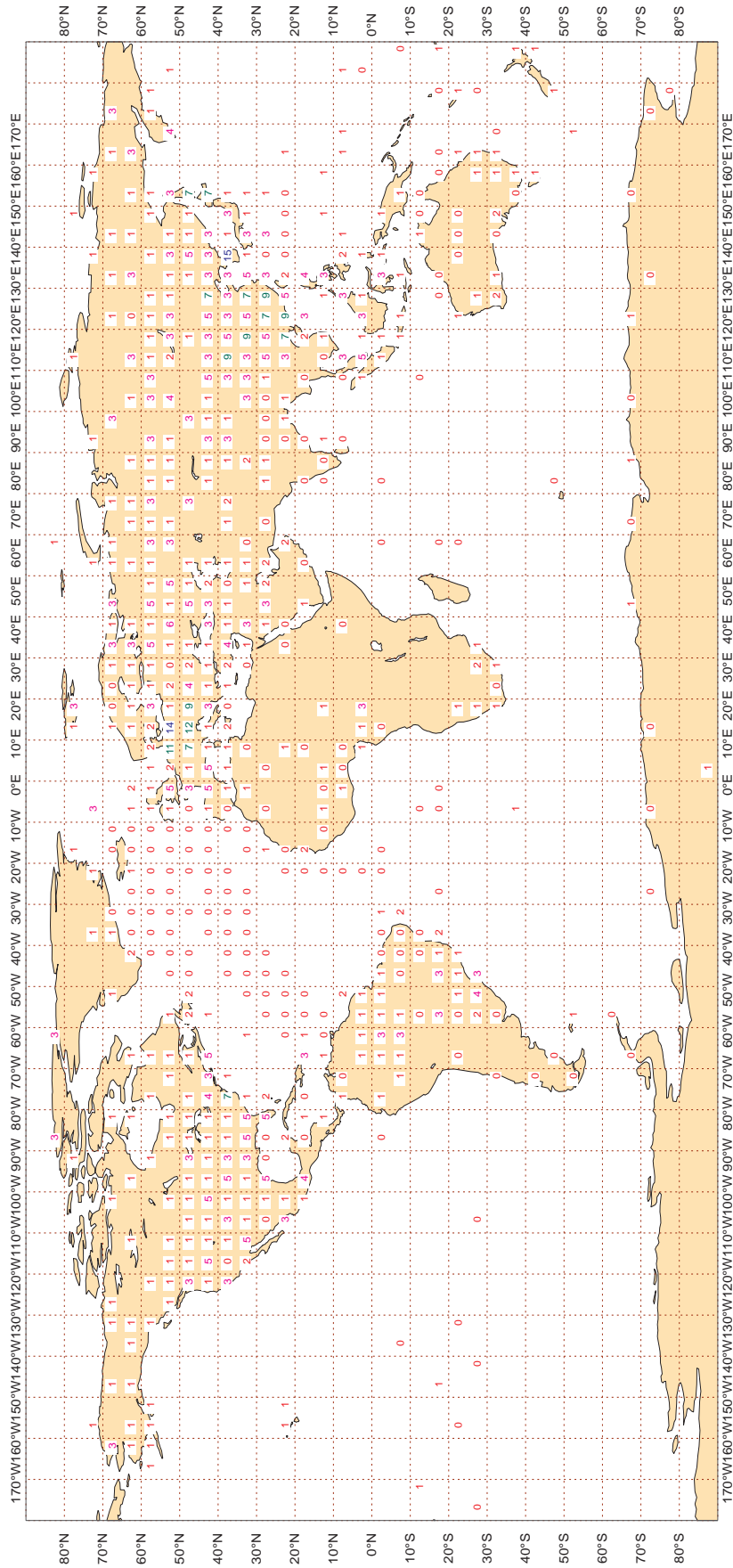
3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

**Figure 3** ECMWF Monitoring Statistics - NOV 2014  
 Availability - TEMP 500 hPa Geopotential  
 Average number of observations in 24 hours - 1264  
 LAND - WMO Region I: 26 II: 238 III: 40 IV: 127  
 Region V: 63 VI: 127 Antarctic: 7  
 Oceans - N. Atlantic 174 S. Atlantic 38 Indian 54 Pacific 369



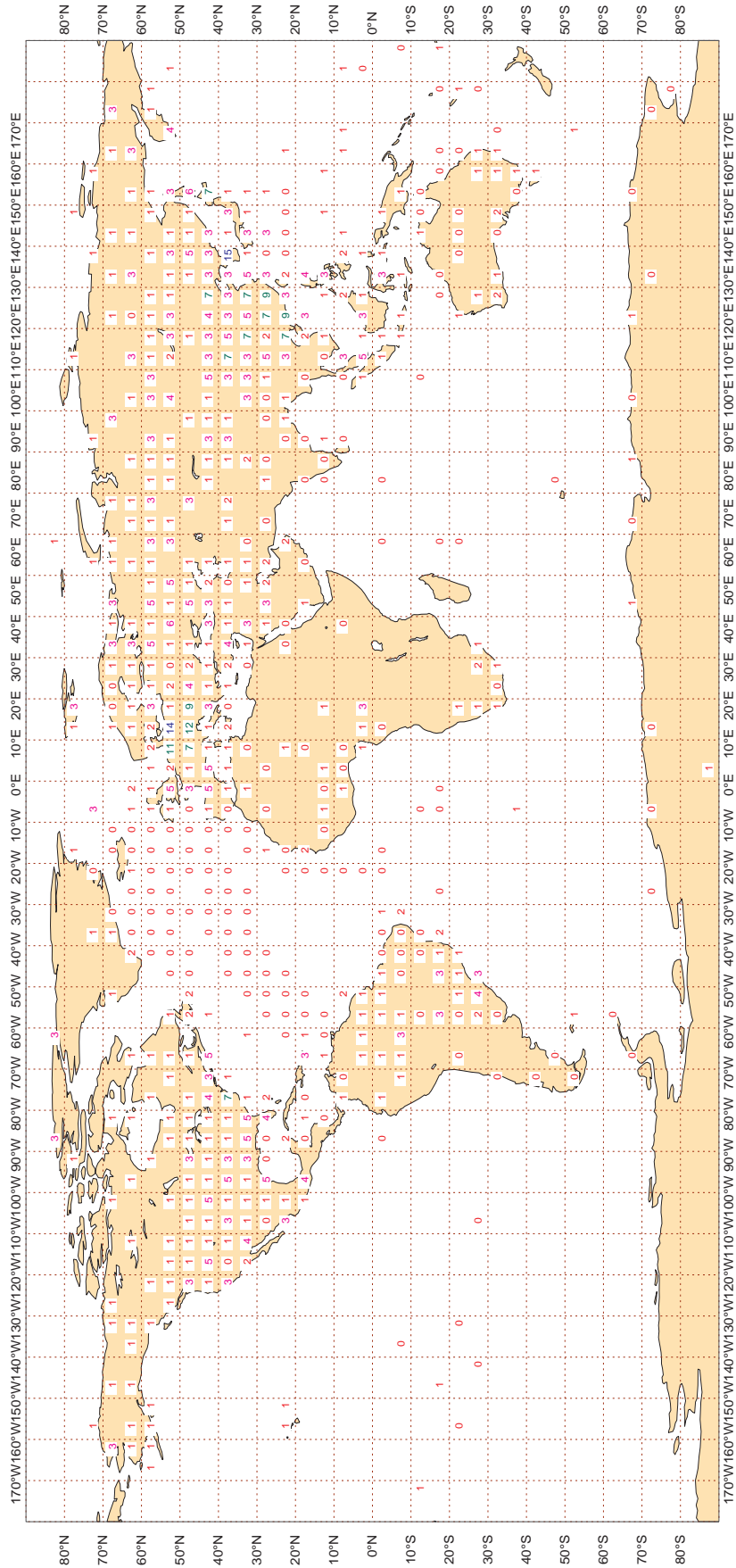
Magics 2.22.7 (64 bit)



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

Figure 4

ECMWF Monitoring Statistics - NOV 2014  
 Availability - TEMP/PILOT 300 hPa wind  
 Average number of observations in 24 hours - 1220  
 LAND - WMO Region I: 26 II: 225 III: 38 IV: 125  
 Region V: 59 VI: 126 Antarctic: 7  
 Oceans - N. Atlantic 172 S. Atlantic 36 Indian 50 Pacific 356



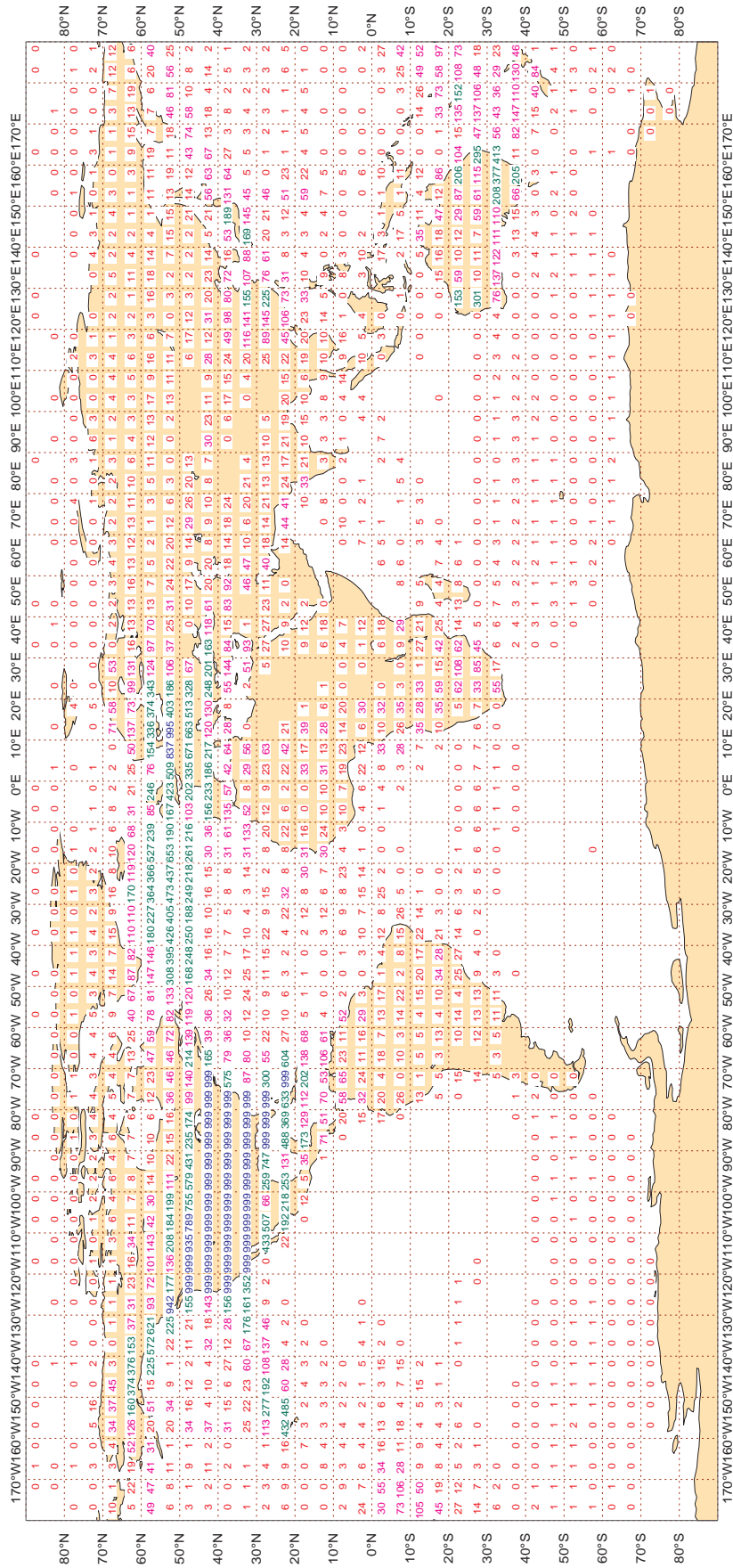
Magics 2.22.7 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - NOV 2014  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 211377

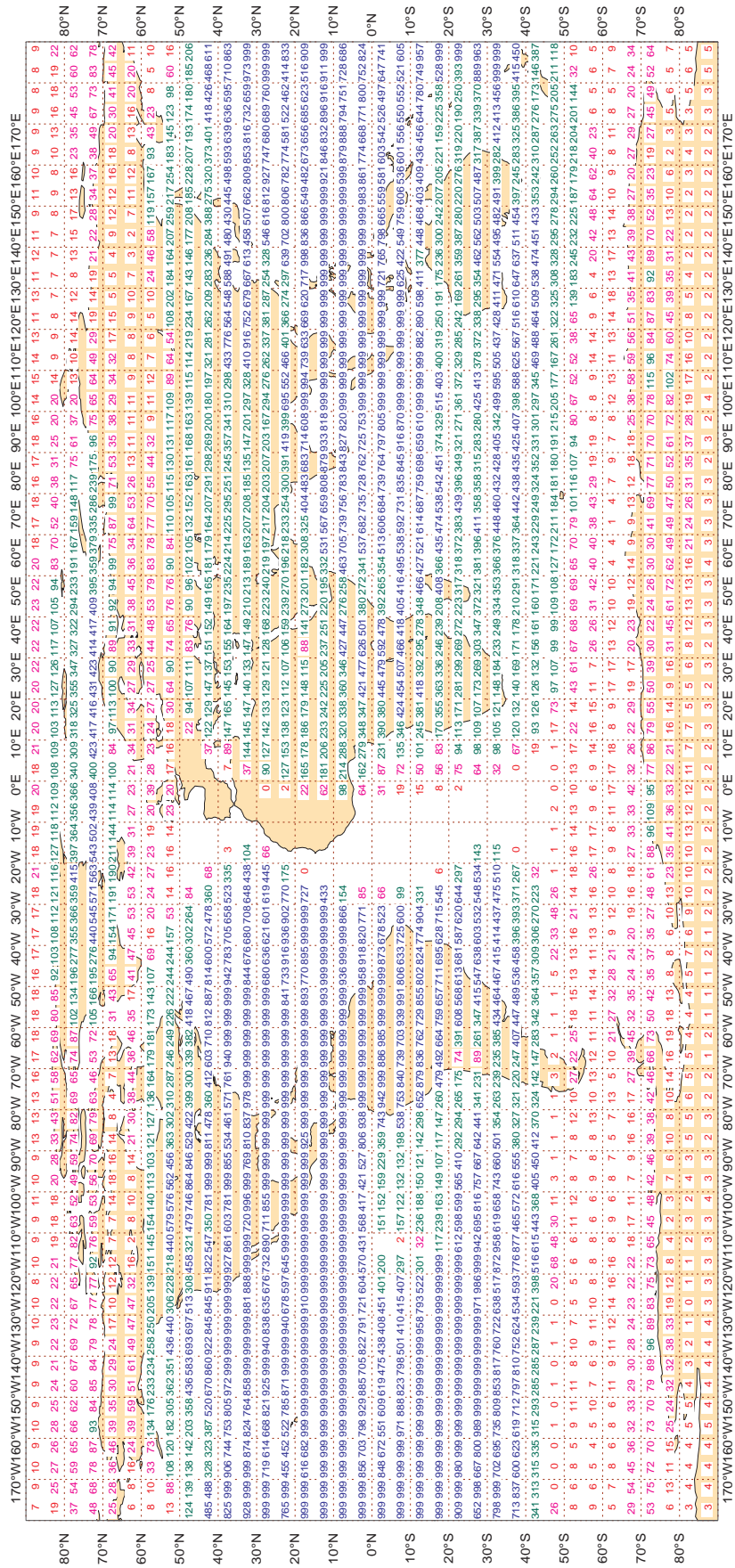




3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6

ECMWF Monitoring Statistics - NOV 2014  
 Availability - AMV winds 400-150 hPa  
 Average number of observations in 24 hours - 898425



Magics 2.22.7 (64 bit)





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

Figure 8

ECMWF Monitoring Statistics - NOV 2014  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 334030

Table with 180 columns (representing 5-degree longitude bins from 170°W to 170°E) and 18 rows (representing 5-degree latitude bins from 80°N to 80°S). The table contains numerical data representing the average number of observations per 5-degree bin.

Magic's 2.2.7 (64 bit)







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

Figure 9.2

ECMWF Monitoring Statistics - NOV 2014  
Availability - AQUA ATOVS : AMSU-A  
Average number of observations in 24 hours - 303402

Table with 180 columns (representing 24-hour intervals) and 18 rows (representing latitudes from 80°N to 70°S). The table contains numerical data for each cell, representing the average number of observations.

Magics 2.22.7 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - NOV 2014  
 Availability - METOP ATOVS : AMSU-A  
 Average number of observations in 24 hours - 452801

170°W	160°W	150°W	140°W	130°W	120°W	110°W	100°W	90°W	80°W	70°W	60°W	50°W	40°W	30°W	20°W	10°W	0°E	10°E	20°E	30°E	40°E	50°E	60°E	70°E	80°E	90°E	100°E	110°E	120°E	130°E	140°E	150°E	160°E	170°E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
43	46	47	44	44	43	42	40	39	38	37	35	35	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000



Magics 2.22.7 (64 bit)

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 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 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
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**3.2.13 Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)**

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 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 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
46181	99	SPEED	SUR	30	0	0	3.6	5.0	6.2

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20 (WIND SPEEDS > 3M/S), AND ,  
 ABSOLUTE BIAS >= 30 DEGREES, OR,  
 STANDARD DEVIATION >= 80 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
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**3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 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
23991	99	P	SUR	1	88	140	138	0.1	-1.0	1.0
25524	99	P	SUR	79	105	210	210	0.0	0.0	0.0
26535	99	P	SUR	79	26	168	64	8.6	-0.4	8.6
33960	99	P	SUR	-28	98	41	34	0.2	-0.1	0.2
44767	99	P	SUR	29	-57	20	0	1.1	-4.4	4.6
47579	99	P	SUR	64	-37	209	52	5.9	-5.8	8.3
48593	99	P	SUR	71	179	188	62	6.7	0.0	6.7
62147	99	P	SUR	58	-4	93	23	8.1	4.4	9.3

**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 : NOV 2014  
 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
46181	99	SPEED	SUR	54	-129	209	0	0	3.7	5.1	6.3



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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : NOV 2014  
 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	45	0	0	18.2	22.5	28.9
23095	99	DIRN	SUR	11	94	56	0	0	22.6	21.4	31.2
23098	99	DIRN	SUR	14	80	24	0	54	9.2	87.1	87.6
23460	99	DIRN	SUR	7	88	61	0	0	19.7	21.8	29.3
31053	99	DIRN	SUR	-32	-50	75	0	12	29.3	59.2	66.0
31375	99	DIRN	SUR	-28	-48	65	0	3	10.8	-74.9	75.7
32303	99	DIRN	SUR	5	-95	151	0	0	13.3	35.0	37.4
42361	99	DIRN	SUR	28	-93	161	0	0	11.1	25.3	27.7
42365	99	DIRN	SUR	28	-89	44	0	0	21.1	-27.3	34.5
44059	99	DIRN	SUR	37	-76	60	0	0	12.0	-21.4	24.6

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

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	12	Z	1000	57	3	29	0	23.0	18.3	29.4
04417	12	Z	1000	73	-38	29	27	0.0	-91.6	91.6
14240	00	Z	500	46	16	30	0	5.1	130.0	130.1
14240	12	Z	500	46	16	28	0	15.0	124.7	125.6
33393	00	Z	150	50	24	14	0	55.6	105.1	118.9
35229	00	Z	300	50	57	25	3	65.4	-48.5	81.4
35229	12	Z	200	50	57	19	0	96.3	-41.7	104.9
40800	00	Z	1000	33	52	21	1	41.0	12.6	42.9
42182	00	Z	500	29	77	28	3	51.7	-50.8	72.5
42369	00	Z	200	27	81	10	1	86.9	64.9	108.5
42379	00	Z	700	27	83	13	1	22.2	-49.9	54.6
42410	00	Z	250	26	92	13	0	92.6	27.7	96.7
43003	00	Z	100	19	73	14	3	101.2	123.8	159.9
48615	00	Z	50	6	102	11	1	123.2	108.4	164.1
60760	12	Z	1000	34	8	21	0	38.9	28.8	48.4
76394	12	Z	1000	26	-100	26	0	24.4	-27.8	37.0
83566	12	Z	1000	-20	-44	29	0	18.7	-45.4	49.1
83566	00	Z	1000	-20	-44	28	0	8.2	-55.7	56.3

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

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 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
42410	00	V	300	26	92	10	0	-16.1	2.2	17.0

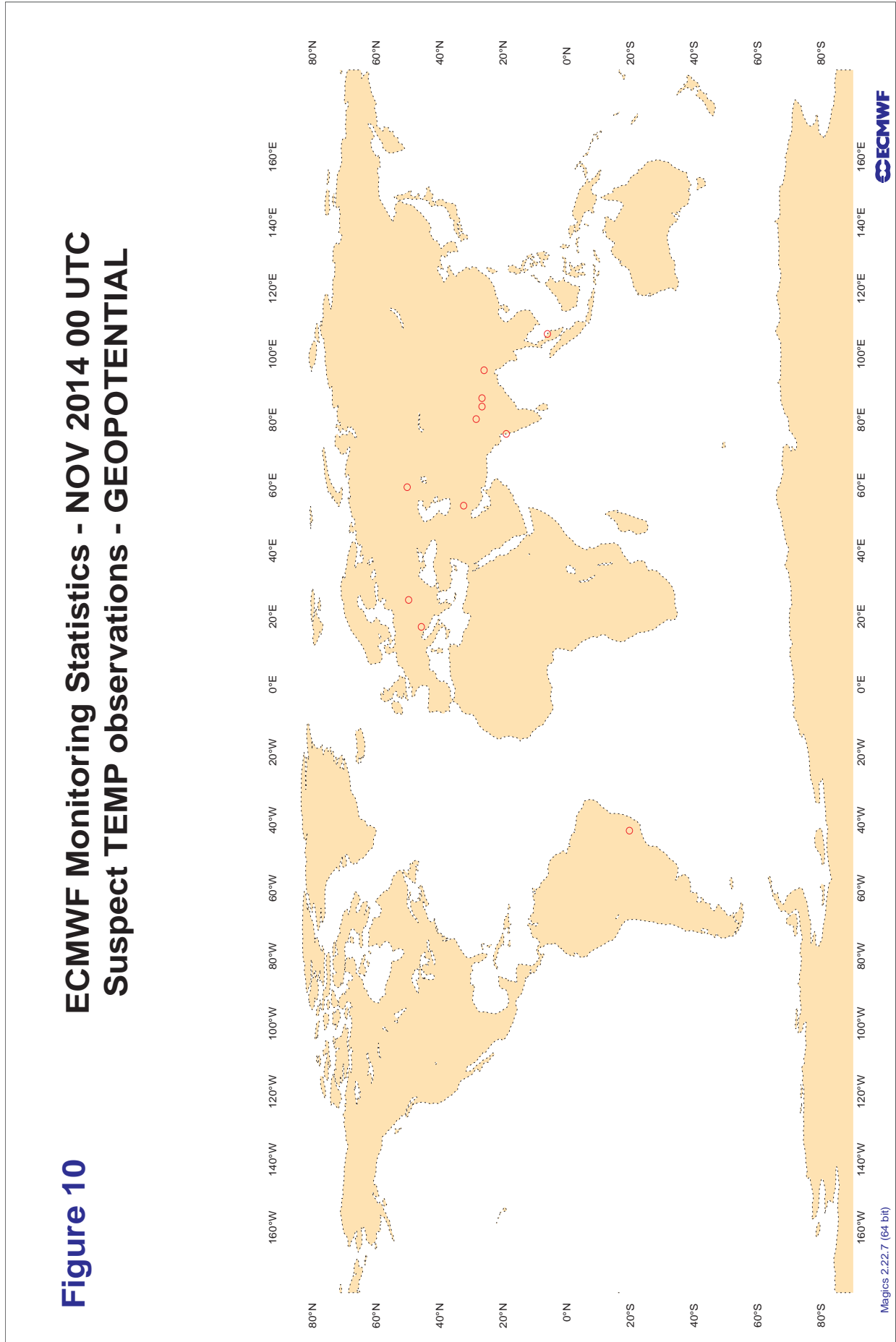
**3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

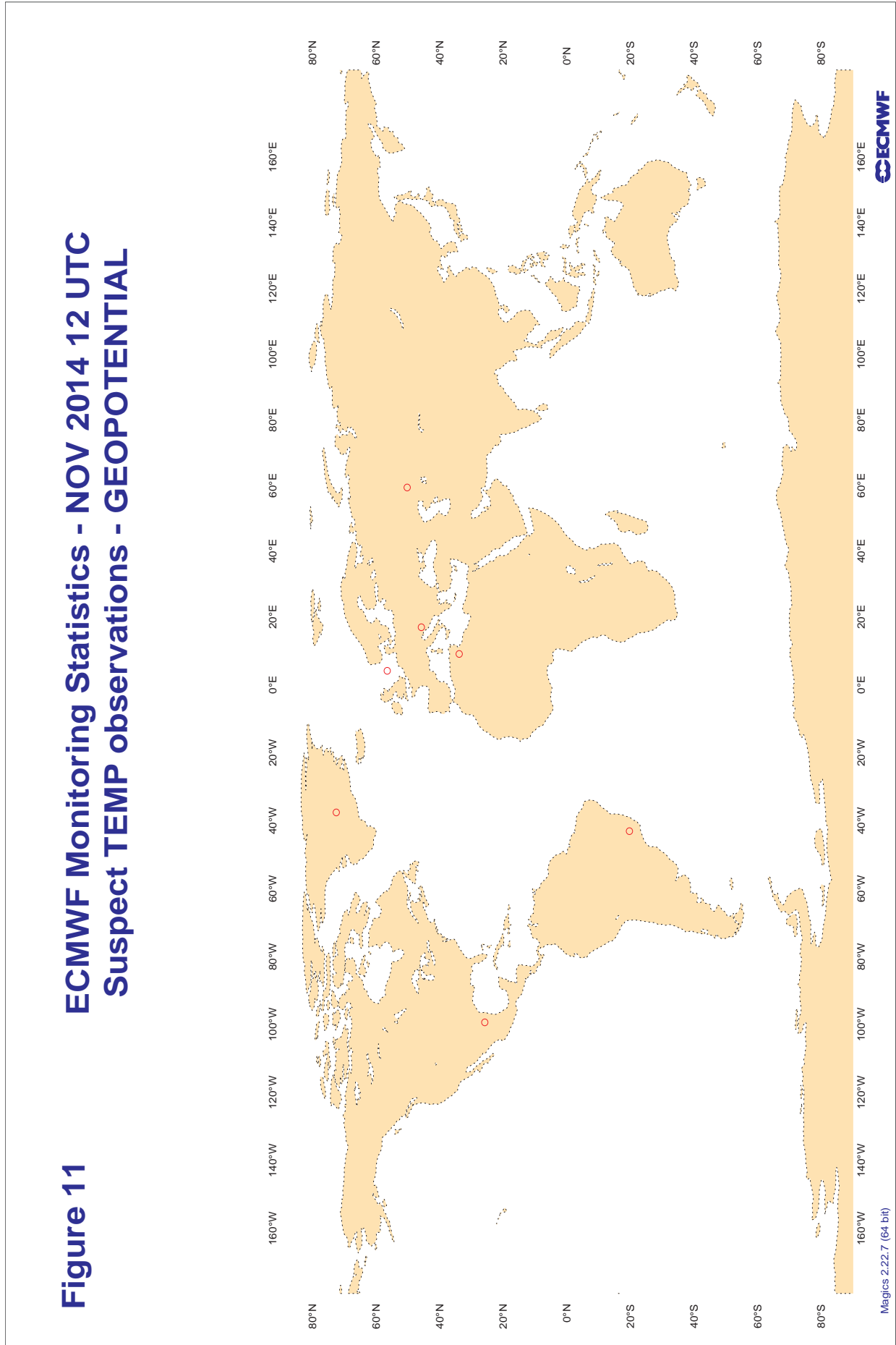
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

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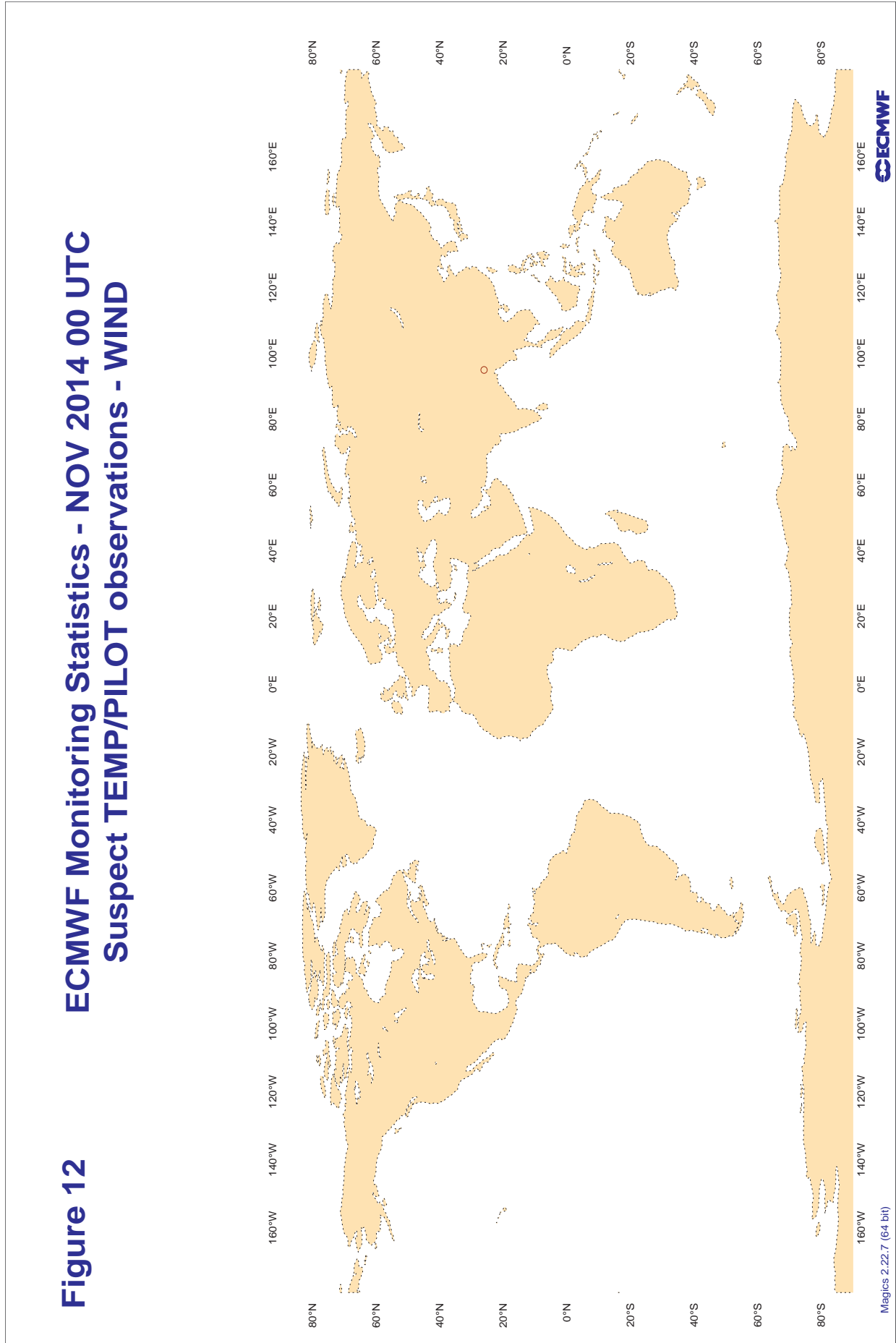
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



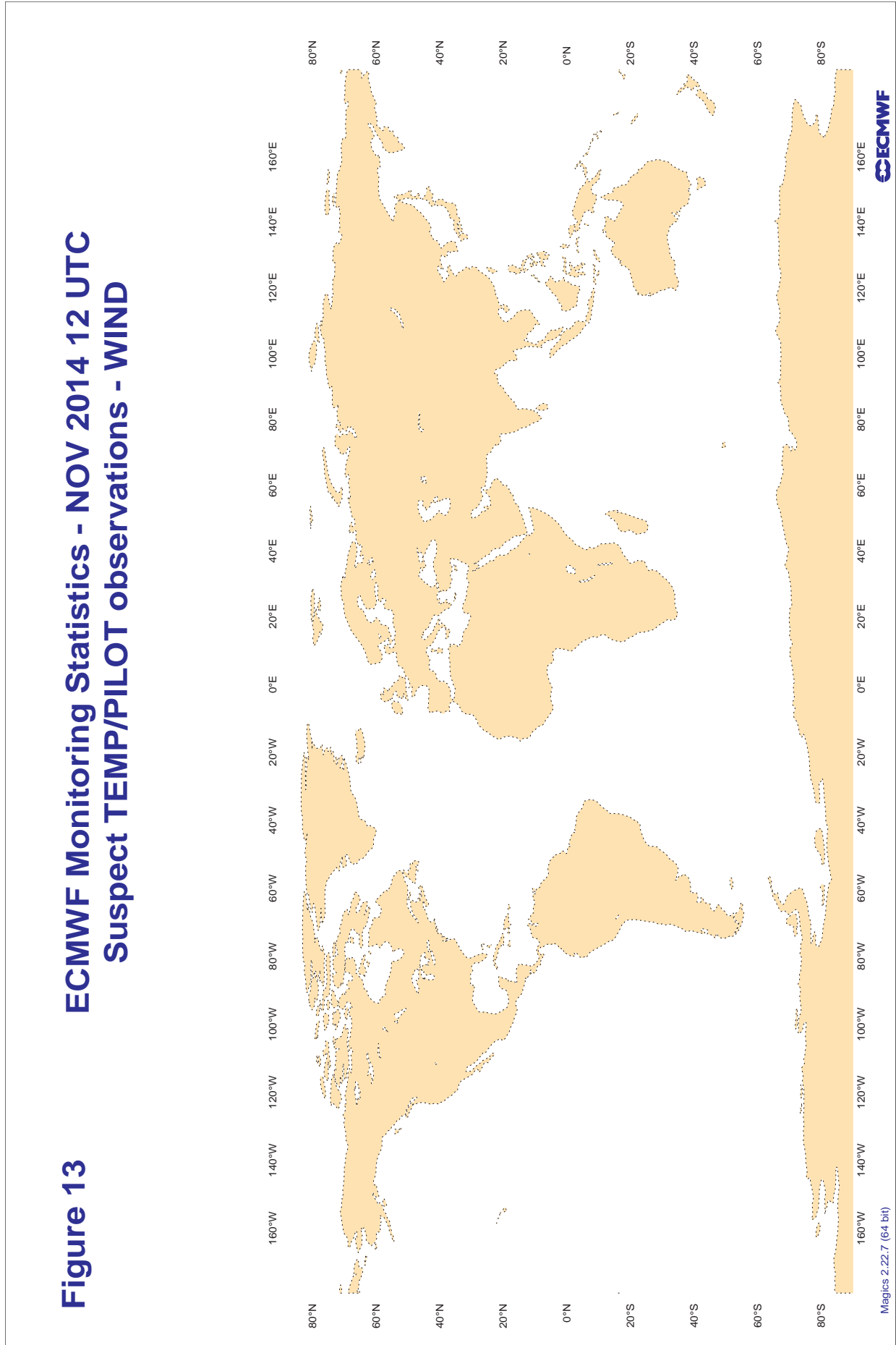
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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



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





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

#### RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDE01	12	Z	100	6	63.7	63.2
ASDE01	00	Z	100	4	59.6	58.7
ASDE02	12	Z	100	6	26.2	24.0
ASDE03	12	Z	100	4	40.6	37.9
ASDE03	00	Z	100	5	36.3	31.9
ASDK1	12	Z	100	3	30.8	29.8
ASDK1	00	Z	100	4	25.6	25.3
ASDK2	12	Z	100	10	23.9	22.1
ASDK2	00	Z	100	11	26.7	18.3
ASDK3	12	Z	100	2	58.3	55.5
ASDK3	00	Z	100	9	27.9	26.4
ASES1	12	Z	100	3	40.6	40.3
ASEU02	12	Z	100	9	51.0	48.6
ASEU02	00	Z	100	6	43.6	42.6
ASEU03	12	Z	100	5	40.4	35.4
ASEU03	00	Z	100	5	40.5	39.9
ASEU04	12	Z	100	5	13.8	4.8
ASEU04	00	Z	100	3	13.0	-8.1
ASEU05	12	Z	100	3	23.4	22.1
ASEU05	00	Z	100	2	19.4	15.2
ASEU06	00	Z	100	5	38.5	34.9
ASEU06	12	Z	100	3	49.3	47.1
ASFR1	12	Z	100	7	15.8	8.8
ASFR1	00	Z	100	10	18.1	9.0
ASFR2	12	Z	100	7	18.7	16.9
ASFR2	00	Z	100	5	16.1	14.2
ASFR3	12	Z	100	10	10.5	5.4
ASFR3	00	Z	100	9	17.4	15.1
ASFR4	12	Z	100	11	23.0	21.8
ASFR4	00	Z	100	13	18.7	13.6
DBLK	12	Z	100	18	17.5	15.3
JGQH	12	Z	100	3	18.4	18.3
JGQH	00	Z	100	3	17.6	9.2

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

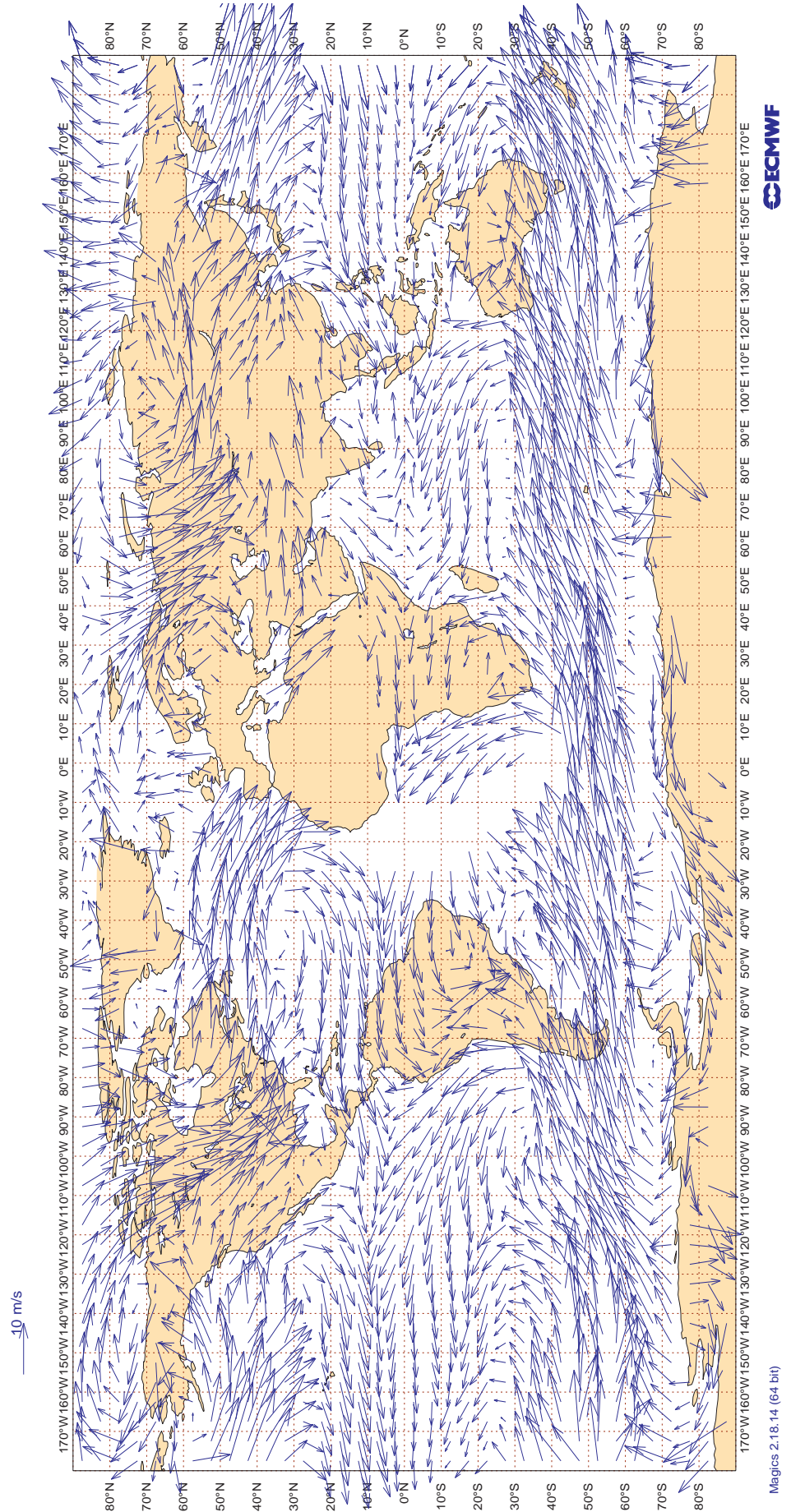
## RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDE01	12	V	100	6	3.8	-0.3	0.8
ASDE01	00	V	100	4	5.1	-0.8	-1.1
ASDE02	12	V	100	6	6.7	-3.3	0.4
ASDE03	12	V	100	4	2.6	0.7	0.7
ASDE03	00	V	100	5	4.4	2.6	-1.3
ASDK1	12	V	100	3	2.7	2.1	-0.9
ASDK1	00	V	100	4	2.1	0.9	-0.2
ASDK2	12	V	100	10	2.6	1.0	-0.3
ASDK2	00	V	100	11	3.2	0.6	-0.4
ASDK3	12	V	100	2	2.0	-0.5	-1.2
ASDK3	00	V	100	9	3.8	-0.2	0.2
ASES1	12	V	100	3	6.2	1.5	-2.2
ASEU02	12	V	100	9	6.0	-0.2	0.6
ASEU02	00	V	100	4	6.3	-2.8	-1.0
ASEU03	12	V	100	4	5.4	1.4	-2.8
ASEU03	00	V	100	4	4.2	1.9	1.5
ASEU04	12	V	100	5	4.2	-0.4	2.8
ASEU04	00	V	100	3	3.6	-0.7	1.6
ASEU05	12	V	100	3	2.8	0.3	1.9
ASEU05	00	V	100	1	2.9	2.9	-0.4
ASEU06	00	V	100	3	2.8	0.6	-1.3
ASEU06	12	V	100	3	8.4	-3.8	-1.3
ASFR1	12	V	100	7	3.5	-0.1	0.8
ASFR1	00	V	100	9	4.2	0.4	1.3
ASFR2	12	V	100	7	3.6	-0.6	1.1
ASFR2	00	V	100	5	3.0	0.1	0.5
ASFR3	12	V	100	9	3.8	-0.4	-0.4
ASFR3	00	V	100	9	3.6	-1.3	0.5
ASFR4	12	V	100	11	3.5	-0.1	-0.6
ASFR4	00	V	100	12	2.6	-0.4	0.4
DBLK	12	V	100	18	5.1	-0.4	-0.3
JGQH	12	V	100	3	4.8	1.3	4.2
JGQH	00	V	100	3	3.5	1.6	0.9

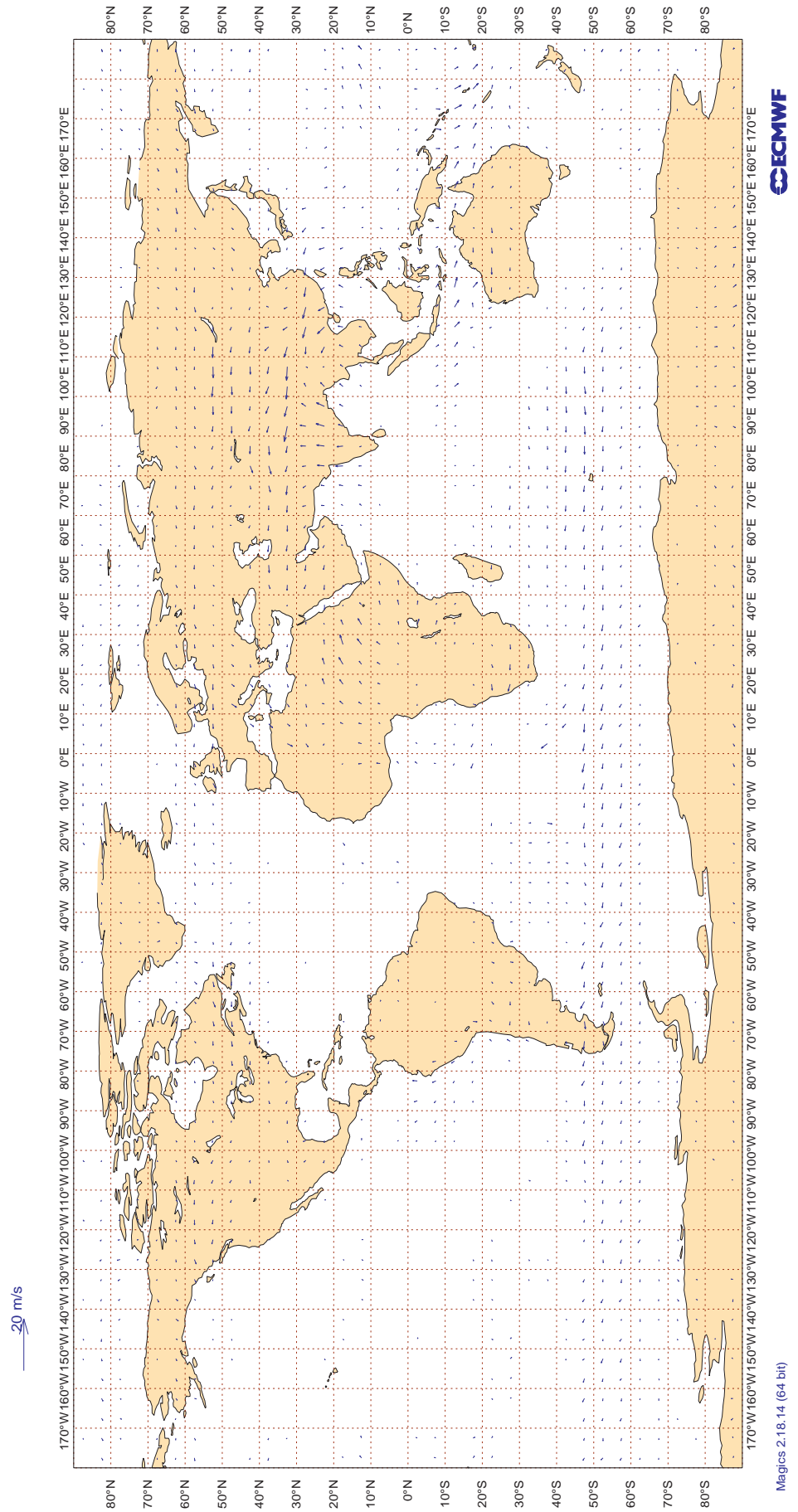
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: Nov 2014**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**



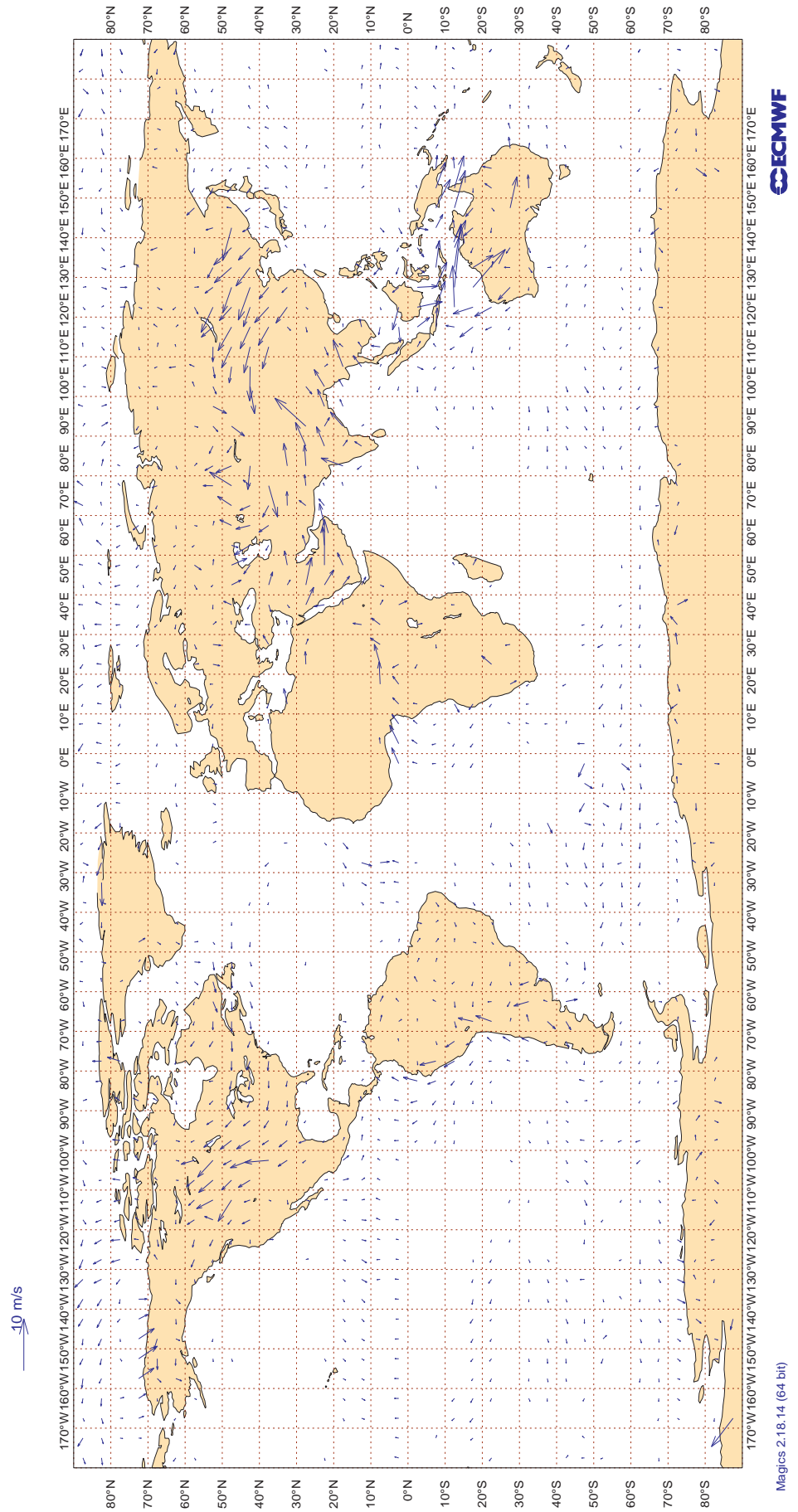
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

**Figure 15**  
**ECMWF Monitoring Statistics: Nov 2014**  
**AMV Winds: 150- 400hPa**  
**Wind bias: Observation - FG**



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

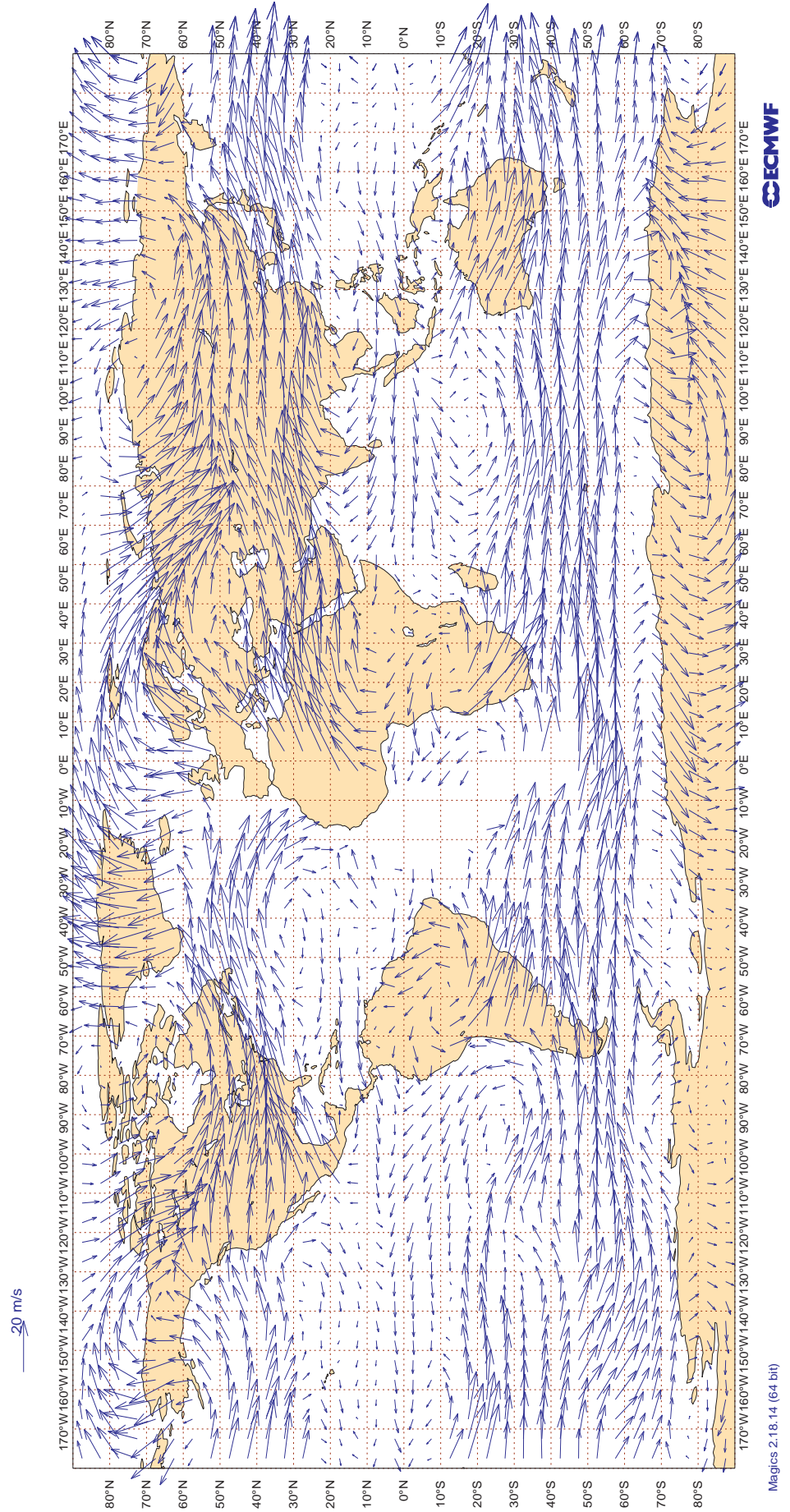
**Figure 16**  
**ECMWF Monitoring Statistics: Nov 2014**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**





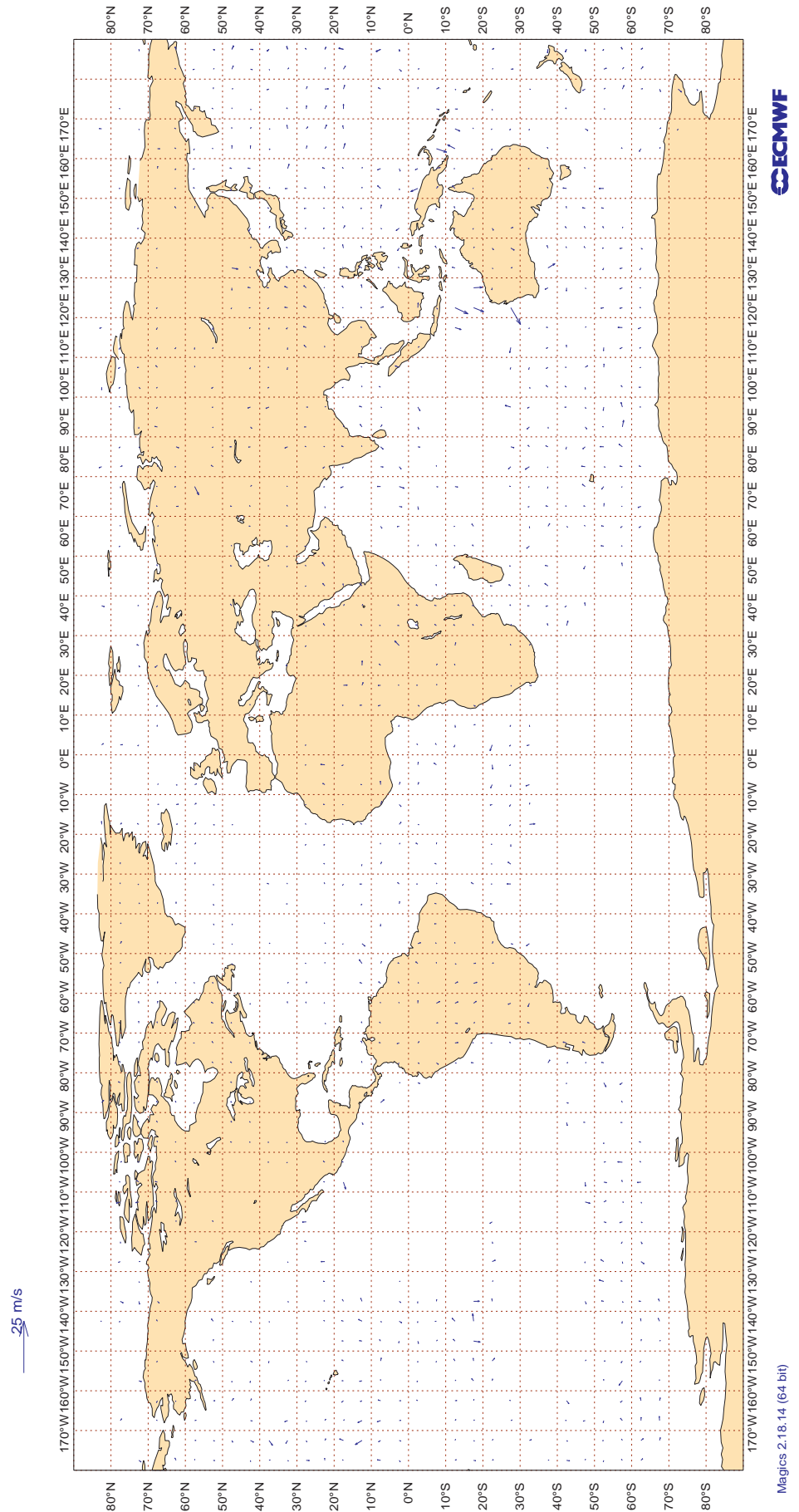
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

**Figure 17** ECMWF Monitoring Statistics: Nov 2014  
AMV Winds: 150- 400hPa  
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: Nov 2014**  
**Aircraft Winds: 150- 300hPa**  
**Wind bias: Observation - FG**



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

## AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : VECTOR WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	2212	0	0	4.7	-0.8
AAY	99	V	300-150	212	0	0	5.6	-0.9
ABW	99	V	300-150	61	0	0	3.3	-0.5
ABX	99	V	300-150	35	0	0	4.3	-0.2
ACA	99	V	300-150	1652	1	0	4.3	-0.5
ACI	99	V	300-150	658	0	0	4.6	0.4
AFL	99	V	300-150	423	0	0	3.4	0.6
AFR	99	V	300-150	2159	0	0	4.2	0.1
AHY	99	V	300-150	22	0	0	3.2	0.1
AIC	99	V	300-150	510	0	0	3.9	0.1
AMX	99	V	300-150	295	16	0	13.6	0.3
ANZ	99	V	300-150	3228	1	0	4.7	0.5
ASA	99	V	300-150	2854	0	0	5.6	0.1
ASY	99	V	300-150	197	0	0	7.1	1.8
AUA	99	V	300-150	849	0	0	4.8	-0.9
AVN	99	V	300-150	64	0	0	4.8	0.6
AWE	99	V	300-150	1380	0	0	4.5	0.8
AXM	99	V	300-150	37	0	0	5.8	2.0
AZA	99	V	300-150	536	0	0	4.3	1.1
BAW	99	V	300-150	3119	1	0	4.4	-0.2
BEL	99	V	300-150	221	0	0	3.9	-0.7
BER	99	V	300-150	1660	0	0	4.4	1.0
BOX	99	V	300-150	112	0	0	3.4	0.4
CAL	99	V	300-150	54	0	0	5.2	0.5
CCA	99	V	300-150	25	0	0	4.8	0.5
CFC	99	V	300-150	36	0	0	3.7	0.9
CFG	99	V	300-150	346	0	0	4.5	-0.5
CKS	99	V	300-150	372	0	0	5.0	0.1
CLX	99	V	300-150	309	0	0	4.1	-0.4
CMB	99	V	300-150	33	0	0	3.8	-1.2
CNV	99	V	300-150	62	0	0	4.7	1.1
CPA	99	V	300-150	62	0	0	4.3	-0.6



AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CSN	99	V	300-150	245	14	0	12.4	0.1
DAH	99	V	300-150	130	0	0	3.9	0.5
DAL	99	V	300-150	6466	0	0	4.5	-0.5
DHK	99	V	300-150	201	0	0	4.6	-0.1
DLH	99	V	300-150	3644	0	0	4.1	-0.2
EIN	99	V	300-150	945	0	0	4.1	-0.7
EJM	99	V	300-150	38	21	0	11.5	-1.3
ELY	99	V	300-150	295	0	0	3.9	-0.2
ETD	99	V	300-150	64	0	0	3.5	0.0
ETH	99	V	300-150	51	6	0	9.8	0.3
FDX	99	V	300-150	1290	0	0	3.8	0.0
FIN	99	V	300-150	146	0	0	3.5	0.1
FJI	99	V	300-150	1463	0	0	4.3	0.2
FWI	99	V	300-150	42	2	0	4.6	0.9
GEC	99	V	300-150	311	0	0	3.7	-0.2
GTI	99	V	300-150	327	0	0	4.2	-0.2
GZP	99	V	300-150	26	0	0	3.1	-1.5
HAL	99	V	300-150	1122	0	0	4.7	1.0
IBE	99	V	300-150	181	0	0	4.2	0.5
ICV	99	V	300-150	34	0	0	3.8	-0.2
JAF	99	V	300-150	57	5	0	3.8	-0.6
JAI	99	V	300-150	378	0	0	4.0	0.6
JST	99	V	300-150	1168	0	0	4.3	0.4
KAI	99	V	300-150	56	0	0	5.8	0.2
KAL	99	V	300-150	792	0	0	4.7	0.1
KLM	99	V	300-150	1686	0	0	4.2	-0.4
LAN	99	V	300-150	100	0	0	3.9	-0.1
LOT	99	V	300-150	97	12	0	12.7	-0.2
MAS	99	V	300-150	79	0	0	4.4	0.1
MMN	99	V	300-150	60	0	0	4.8	-1.2
MSR	99	V	300-150	197	0	0	4.5	0.1
NAX	99	V	300-150	112	19	0	13.5	1.1
NCA	99	V	300-150	43	0	0	4.3	-1.9
NJE	99	V	300-150	53	32	0	13.7	0.3
NWS	99	V	300-150	88	0	0	4.1	0.6
OAE	99	V	300-150	76	0	0	4.6	0.0
PAC	99	V	300-150	36	0	3	3.2	0.1
PAL	99	V	300-150	25	4	0	7.2	-1.1
PIA	99	V	300-150	27	0	0	3.3	0.0
QFA	99	V	300-150	1586	0	0	4.2	-0.4
QTR	99	V	300-150	216	0	0	4.0	-0.2
RCH	99	V	300-150	540	0	0	5.4	-0.4
RJA	99	V	300-150	69	0	0	4.1	0.9

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SAM	99	V	300-150	99	7	0	5.8	-0.5
SAS	99	V	300-150	819	0	0	3.7	0.2
SIA	99	V	300-150	265	0	0	4.1	0.1
SIO	99	V	300-150	32	0	0	3.7	-0.5
SQC	99	V	300-150	37	0	0	3.5	-0.2
SVA	99	V	300-150	331	0	0	4.3	0.0
SWR	99	V	300-150	838	0	0	4.1	0.2
TAM	99	V	300-150	68	1	0	5.3	1.0
TAP	99	V	300-150	64	0	0	4.9	0.7
TAY	99	V	300-150	21	0	0	3.2	-0.2
TCV	99	V	300-150	20	0	0	4.7	-1.3
TCX	99	V	300-150	87	1	0	5.1	1.4
TFL	99	V	300-150	65	5	0	4.1	-1.1
THA	99	V	300-150	98	0	0	4.5	0.4
THT	99	V	300-150	150	0	0	5.4	0.3
THY	99	V	300-150	306	0	0	4.4	0.7
TOM	99	V	300-150	484	5	0	5.9	-0.4
TSC	99	V	300-150	34	0	0	4.3	0.1
TSO	99	V	300-150	154	0	0	4.1	0.3
UAE	99	V	300-150	793	0	0	4.1	-0.2
UAL	99	V	300-150	8782	0	0	5.1	-0.6
UPS	99	V	300-150	946	0	0	4.4	0.1
VHL	99	V	300-150	26	69	0	16.3	-0.7
VIR	99	V	300-150	1235	1	0	4.4	0.0
VJT	99	V	300-150	42	83	0	25.6	-0.6
VKG	99	V	300-150	45	0	0	4.4	-0.6
VOZ	99	V	300-150	858	0	0	3.6	-0.2
VPB	99	V	300-150	20	0	0	3.7	0.4
WJA	99	V	300-150	323	1	0	6.5	0.0

## 4 EUCOS Area Monitoring Statistics

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

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

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

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	30	15.5	10.0
01001	12	Z	50	28	12.5	9.9
01028	00	Z	50	30	12.9	7.8
01028	12	Z	50	30	11.6	6.2
01152	00	Z	50	25	13.3	10.8
01152	12	Z	50	25	19.3	16.1
01400	12	Z	50	26	40.2	30.9
01400	00	Z	50	25	37.0	33.7
01415	12	Z	50	30	19.1	15.3
01415	00	Z	50	30	12.6	5.2
02365	12	Z	50	29	16.2	11.0
02365	00	Z	50	28	15.7	7.9
02591	00	Z	50	28	17.9	14.9
02591	12	Z	50	27	23.5	22.3
02836	00	Z	50	28	13.5	7.5
02836	12	Z	50	28	14.3	11.0
02963	00	Z	50	30	12.7	10.1
02963	12	Z	50	30	15.5	12.9
03005	00	Z	50	28	13.2	8.0
03005	12	Z	50	30	14.0	7.2
03238	00	Z	50	28	15.8	13.2
03238	12	Z	50	11	18.9	17.7
03808	12	Z	50	30	11.8	9.6
03808	00	Z	50	29	15.7	7.5
03918	00	Z	50	25	16.6	13.3
03918	12	Z	50	10	17.4	15.2
03953	12	Z	50	30	47.4	8.4
03953	00	Z	50	30	17.3	13.3
04018	12	Z	50	23	19.0	13.1
04018	00	Z	50	21	14.8	11.7
04220	12	Z	50	26	18.5	-10.3
04220	00	Z	50	28	26.7	-11.1
04270	00	Z	50	28	29.5	-0.8
04270	12	Z	50	27	18.2	-0.5
04320	00	Z	50	30	18.2	-10.4
04320	12	Z	50	27	21.9	-15.5
04339	12	Z	50	16	17.0	13.0
04339	00	Z	50	18	18.0	14.3
04360	12	Z	50	18	12.1	5.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	50	20	14.1	4.2
06011	12	Z	50	26	21.9	-13.3
06011	00	Z	50	23	19.6	-8.2
06260	12	Z	50	4	16.0	14.1
06260	00	Z	50	29	11.0	9.3
06610	00	Z	50	30	19.2	4.7
06610	12	Z	50	30	35.7	10.9
07110	00	Z	50	27	21.1	17.7
07110	12	Z	50	27	25.6	19.2
07510	12	Z	50	28	12.1	0.5
07510	00	Z	50	28	15.7	0.5
07645	00	Z	50	20	20.0	15.7
07645	12	Z	50	22	21.8	17.2
07761	12	Z	50	20	24.3	14.7
07761	00	Z	50	16	12.4	4.8
08001	12	Z	50	24	32.7	29.1
08001	00	Z	50	26	18.3	14.3
08221	12	Z	50	29	23.0	20.0
08221	00	Z	50	30	15.4	11.9
08302	00	Z	50	30	12.5	6.1
08302	12	Z	50	30	11.1	5.1
08508	12	Z	50	28	36.3	32.8
08522	12	Z	50	29	21.9	19.7
08579	12	Z	50	28	25.5	23.5
10035	00	Z	50	28	10.3	5.0
10035	12	Z	50	30	15.6	12.4
10393	00	Z	50	28	8.9	3.2
10393	12	Z	50	29	10.2	6.1
10410	00	Z	50	30	9.0	-2.0
10410	12	Z	50	29	12.7	6.4
10739	00	Z	50	29	14.1	10.9
10739	12	Z	50	30	19.2	16.9
11035	12	Z	50	30	14.6	6.2
11035	00	Z	50	30	17.8	6.1
12982	12	Z	50	1	33.4	33.4
12982	00	Z	50	25	8.6	3.4
16044	12	Z	50	30	17.6	9.2
16044	00	Z	50	30	11.7	5.1
16080	00	Z	50	26	9.8	2.3
16080	12	Z	50	26	10.6	6.4
16245	12	Z	50	27	9.3	-2.6
16245	00	Z	50	25	10.2	-0.4
16320	00	Z	50	29	11.3	2.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	12	Z	50	25	11.5	2.0
16429	00	Z	50	29	12.0	3.2
16429	12	Z	50	30	10.4	2.8
16622	00	Z	50	19	26.8	24.2
16754	00	Z	50	27	17.1	15.1
17607	12	Z	50	18	18.9	-16.9
26435	00	Z	50	14	12.8	11.1
60018	12	Z	50	25	16.1	13.7
60018	00	Z	50	27	15.1	12.1
ASDE01	12	Z	50	5	75.8	75.0
ASDE01	00	Z	50	4	64.9	64.5
ASDE02	12	Z	50	6	36.6	33.8
ASDE03	12	Z	50	5	53.5	51.0
ASDE03	00	Z	50	5	41.3	36.3
ASDK1	12	Z	50	3	41.4	41.2
ASDK1	00	Z	50	4	28.9	27.6
ASDK2	12	Z	50	10	31.7	29.9
ASDK2	00	Z	50	10	33.2	27.4
ASDK3	12	Z	50	9	68.4	66.0
ASDK3	00	Z	50	9	33.4	30.5
ASES1	12	Z	50	4	58.6	57.0
ASEU02	12	Z	50	9	59.6	56.8
ASEU02	00	Z	50	5	46.5	45.9
ASEU03	12	Z	50	5	50.2	46.6
ASEU03	00	Z	50	3	49.0	48.1
ASEU04	12	Z	50	5	27.3	24.1
ASEU04	00	Z	50	3	13.2	-7.2
ASEU05	12	Z	50	1	19.6	19.6
ASEU05	00	Z	50	1	29.5	29.5
ASEU06	00	Z	50	4	37.8	35.4
ASEU06	12	Z	50	3	45.1	44.1
ASFR1	12	Z	50	7	18.9	15.4
ASFR1	00	Z	50	9	17.9	12.1
ASFR2	12	Z	50	2	27.2	27.1
ASFR2	00	Z	50	0	0.0	0.0
ASFR3	12	Z	50	9	17.9	12.0
ASFR3	00	Z	50	8	24.5	23.2
ASFR4	12	Z	50	11	33.5	32.0
ASFR4	00	Z	50	13	32.1	26.9
DBLK	12	Z	50	9	20.7	19.1

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	30	3.7	0.6	-0.5
01001	12	V	50	28	4.2	-0.1	0.5
01028	00	V	50	30	4.4	-0.4	-0.5
01028	12	V	50	30	4.0	0.4	-1.4
01152	00	V	50	25	2.9	1.2	-0.4
01152	12	V	50	25	3.2	0.2	-0.8
01400	12	V	50	23	2.9	-0.6	-0.4
01400	00	V	50	21	3.8	-0.4	-0.4
01415	12	V	50	30	3.7	1.0	-0.9
01415	00	V	50	29	4.6	0.4	-0.4
02365	12	V	50	27	3.8	0.8	-1.2
02365	00	V	50	27	3.3	0.8	-0.1
02591	00	V	50	28	3.8	-1.0	-0.9
02591	12	V	50	24	3.8	1.4	0.4
02836	00	V	50	28	3.4	0.2	0.6
02836	12	V	50	28	3.8	0.6	-0.8
02963	00	V	50	29	3.4	-0.4	-0.1
02963	12	V	50	29	3.3	0.8	-0.1
03005	00	V	50	26	3.8	-0.3	0.1
03005	12	V	50	30	3.9	-0.8	0.0
03238	00	V	50	27	4.0	0.6	0.3
03238	12	V	50	11	3.8	0.3	-0.2
03808	12	V	50	30	3.7	1.5	0.8
03808	00	V	50	26	3.7	0.6	0.0
03918	00	V	50	25	4.5	0.6	0.8
03918	12	V	50	10	4.9	1.8	-0.6
03953	12	V	50	29	4.3	0.7	-0.4
03953	00	V	50	30	3.8	-0.2	0.1
04018	12	V	50	19	3.1	0.0	0.3
04018	00	V	50	17	3.5	-0.4	0.0
04220	12	V	50	26	4.0	-0.3	0.3
04220	00	V	50	28	3.3	-0.2	0.4
04270	00	V	50	28	4.1	-0.5	0.5
04270	12	V	50	27	4.2	-0.2	0.3
04320	00	V	50	30	4.3	0.6	-0.7
04320	12	V	50	27	4.8	-0.2	-1.5
04339	12	V	50	3	6.8	-1.2	4.5
04339	00	V	50	3	4.0	0.3	1.5
04360	12	V	50	18	3.9	-0.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	50	20	4.6	-2.1	1.3
06011	12	V	50	26	3.7	0.5	-0.5
06011	00	V	50	23	4.0	-0.4	0.8
06260	12	V	50	4	2.3	0.7	1.0
06260	00	V	50	28	3.8	0.3	-1.0
06610	00	V	50	30	4.2	0.1	-0.5
06610	12	V	50	30	3.8	1.1	0.4
07110	00	V	50	26	3.1	0.4	0.7
07110	12	V	50	27	3.7	1.6	0.6
07510	12	V	50	28	4.2	0.4	0.4
07510	00	V	50	27	4.4	1.0	0.6
07645	00	V	50	18	4.3	2.2	1.1
07645	12	V	50	21	3.9	0.9	0.0
07761	12	V	50	19	6.2	-0.5	1.3
07761	00	V	50	14	4.9	1.9	-0.1
08001	12	V	50	22	4.0	1.3	-0.4
08001	00	V	50	23	4.4	1.0	-1.3
08221	12	V	50	29	3.5	0.1	0.2
08221	00	V	50	29	3.8	-0.5	-0.8
08302	00	V	50	29	4.1	0.2	-0.2
08302	12	V	50	30	4.5	1.4	-0.2
08508	12	V	50	28	3.5	0.0	0.2
08522	12	V	50	29	3.9	0.7	0.7
08579	12	V	50	25	3.4	0.4	0.9
10035	00	V	50	25	3.9	0.1	-0.5
10035	12	V	50	30	3.6	1.3	-0.6
10393	00	V	50	28	4.0	1.2	0.0
10393	12	V	50	29	3.0	1.3	-0.4
10410	00	V	50	30	3.6	1.0	-0.8
10410	12	V	50	29	3.1	0.9	-0.6
10739	00	V	50	28	3.7	0.1	-0.2
10739	12	V	50	30	3.6	1.7	0.3
11035	12	V	50	30	4.0	1.2	-0.8
11035	00	V	50	30	4.2	0.7	-0.9
12982	12	V	50	1	1.7	1.3	-1.1
12982	00	V	50	25	3.5	-0.3	-0.7
16044	12	V	50	30	4.0	0.9	-0.4
16044	00	V	50	28	4.5	-0.3	0.1
16080	00	V	50	25	4.3	0.1	-0.5
16080	12	V	50	26	4.7	0.6	-0.6
16245	12	V	50	27	4.5	1.1	-0.3
16245	00	V	50	25	5.0	0.0	-0.8
16320	00	V	50	27	4.1	0.7	-0.5



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	12	V	50	25	4.0	1.4	0.3
16429	00	V	50	29	4.4	1.1	-0.6
16429	12	V	50	30	4.7	0.6	-0.4
16622	00	V	50	12	2.7	-0.2	1.0
16754	00	V	50	27	4.5	0.2	-0.5
17607	12	V	50	17	3.5	1.0	-0.1
26435	00	V	50	14	3.3	1.2	-0.7
60018	12	V	50	25	3.6	0.5	-0.2
60018	00	V	50	27	4.4	-0.1	2.0
ASDE01	12	V	50	5	5.8	3.5	-3.0
ASDE01	00	V	50	3	7.8	-1.0	-5.7
ASDE02	12	V	50	5	5.5	0.6	-0.1
ASDE03	12	V	50	5	6.6	-1.3	-1.6
ASDE03	00	V	50	5	3.6	1.5	1.6
ASDK1	12	V	50	3	6.3	-5.0	-0.1
ASDK1	00	V	50	4	2.8	-1.3	1.3
ASDK2	12	V	50	10	3.6	1.2	0.4
ASDK2	00	V	50	8	4.0	0.5	1.5
ASDK3	12	V	50	8	3.1	-0.1	0.5
ASDK3	00	V	50	9	4.2	1.6	-0.4
ASES1	12	V	50	4	3.6	-0.4	0.1
ASEU02	12	V	50	8	3.5	-0.5	1.4
ASEU02	00	V	50	4	4.2	-1.4	-0.4
ASEU03	12	V	50	2	2.3	-0.2	-2.1
ASEU03	00	V	50	1	2.2	2.0	-0.9
ASEU04	12	V	50	5	2.8	0.6	-1.0
ASEU04	00	V	50	3	2.7	-0.2	1.8
ASEU05	12	V	50	0	0.0	0.0	0.0
ASEU05	00	V	50	1	2.9	0.7	2.8
ASEU06	00	V	50	3	3.0	1.5	1.2
ASEU06	12	V	50	3	3.8	1.6	-1.2
ASFR1	12	V	50	7	3.3	-1.2	-0.7
ASFR1	00	V	50	9	4.4	0.2	0.7
ASFR2	12	V	50	2	6.7	-3.1	2.0
ASFR2	00	V	50	0	0.0	0.0	0.0
ASFR3	12	V	50	9	4.6	0.5	-2.7
ASFR3	00	V	50	8	5.1	-0.7	-2.2
ASFR4	12	V	50	11	4.0	-0.3	-0.9
ASFR4	00	V	50	13	4.9	-1.3	-0.7
DBLK	12	V	50	9	4.0	0.4	-0.6

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	9.9	4.9
01001	12	Z	100	29	10.4	4.8
01028	00	Z	100	30	7.5	3.2
01028	12	Z	100	30	8.2	2.3
01152	00	Z	100	25	6.7	4.5
01152	12	Z	100	25	13.1	9.0
01400	12	Z	100	27	37.3	26.7
01400	00	Z	100	26	33.6	30.8
01415	12	Z	100	30	13.3	10.5
01415	00	Z	100	30	11.3	4.4
02365	12	Z	100	30	13.6	8.4
02365	00	Z	100	30	11.5	4.6
02591	00	Z	100	28	14.1	12.8
02591	12	Z	100	30	19.0	18.0
02836	00	Z	100	28	9.1	3.7
02836	12	Z	100	28	9.3	5.0
02963	00	Z	100	30	8.3	6.1
02963	12	Z	100	30	10.0	7.4
03005	00	Z	100	30	9.3	4.0
03005	12	Z	100	30	8.9	1.8
03238	00	Z	100	29	13.1	11.1
03238	12	Z	100	11	12.6	11.6
03808	12	Z	100	30	7.5	4.3
03808	00	Z	100	30	15.2	5.4
03918	00	Z	100	27	12.9	10.5
03918	12	Z	100	11	13.0	11.3
03953	12	Z	100	30	47.0	0.9
03953	00	Z	100	30	12.6	8.6
04018	12	Z	100	23	12.1	6.5
04018	00	Z	100	26	10.8	4.9
04220	12	Z	100	28	16.6	-12.9
04220	00	Z	100	28	19.2	-11.6
04270	00	Z	100	29	24.7	-1.0
04270	12	Z	100	28	15.2	-3.4
04320	00	Z	100	30	13.2	-8.4
04320	12	Z	100	29	19.2	-13.1
04339	12	Z	100	16	10.4	7.0
04339	00	Z	100	18	8.5	6.6
04360	12	Z	100	21	9.3	4.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	100	21	9.3	4.2
06011	12	Z	100	29	18.6	-14.3
06011	00	Z	100	27	19.2	-8.4
06260	12	Z	100	4	14.3	13.4
06260	00	Z	100	29	9.4	6.8
06610	00	Z	100	30	13.2	5.0
06610	12	Z	100	30	18.7	5.8
07110	00	Z	100	29	12.5	10.1
07110	12	Z	100	29	17.1	12.8
07510	12	Z	100	29	9.0	-4.7
07510	00	Z	100	29	15.6	-3.7
07645	00	Z	100	27	14.1	10.4
07645	12	Z	100	29	13.7	11.8
07761	12	Z	100	24	12.6	6.8
07761	00	Z	100	24	10.7	3.4
08001	12	Z	100	29	21.5	17.6
08001	00	Z	100	29	15.9	9.7
08221	12	Z	100	28	17.7	12.7
08221	00	Z	100	30	13.0	9.8
08302	00	Z	100	30	8.4	1.4
08302	12	Z	100	29	7.6	1.6
08508	12	Z	100	28	28.3	24.4
08522	12	Z	100	29	17.4	13.7
08579	12	Z	100	28	17.0	14.5
10035	00	Z	100	30	8.0	2.2
10035	12	Z	100	30	9.4	6.3
10393	00	Z	100	30	7.0	1.4
10393	12	Z	100	31	6.7	1.5
10410	00	Z	100	30	8.3	-2.5
10410	12	Z	100	29	8.1	2.0
10739	00	Z	100	30	10.7	7.3
10739	12	Z	100	30	11.6	9.7
11035	12	Z	100	30	9.2	0.6
11035	00	Z	100	30	19.1	5.0
12982	12	Z	100	2	17.0	16.8
12982	00	Z	100	28	6.5	3.4
16044	12	Z	100	30	13.6	6.2
16044	00	Z	100	30	8.4	4.1
16080	00	Z	100	26	7.0	0.6
16080	12	Z	100	26	7.2	2.4
16245	12	Z	100	28	11.3	-6.9
16245	00	Z	100	26	9.2	-4.0
16320	00	Z	100	30	9.3	4.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	12	Z	100	28	9.2	-1.3
16429	00	Z	100	29	11.1	-0.2
16429	12	Z	100	30	9.3	-3.3
16622	00	Z	100	23	20.6	19.0
16754	00	Z	100	28	12.1	9.8
17607	12	Z	100	38	12.3	-10.4
26435	00	Z	100	15	7.9	6.5
60018	12	Z	100	25	13.7	11.2
60018	00	Z	100	27	12.7	9.4
ASDE01	12	Z	100	6	63.7	63.2
ASDE01	00	Z	100	4	59.6	58.7
ASDE02	12	Z	100	6	26.2	24.0
ASDE03	12	Z	100	4	40.6	37.9
ASDE03	00	Z	100	5	36.3	31.9
ASDK1	12	Z	100	3	30.8	29.8
ASDK1	00	Z	100	4	25.6	25.3
ASDK2	12	Z	100	10	23.9	22.1
ASDK2	00	Z	100	11	26.7	18.3
ASDK3	12	Z	100	2	58.3	55.5
ASDK3	00	Z	100	9	27.9	26.4
ASES1	12	Z	100	3	40.6	40.3
ASEU02	12	Z	100	9	51.0	48.6
ASEU02	00	Z	100	6	43.6	42.6
ASEU03	12	Z	100	5	40.4	35.4
ASEU03	00	Z	100	5	40.5	39.9
ASEU04	12	Z	100	5	13.8	4.8
ASEU04	00	Z	100	3	13.0	-8.1
ASEU05	12	Z	100	3	23.4	22.1
ASEU05	00	Z	100	2	19.4	15.2
ASEU06	00	Z	100	5	38.5	34.9
ASEU06	12	Z	100	3	49.3	47.1
ASFR1	12	Z	100	7	15.8	8.8
ASFR1	00	Z	100	10	18.1	9.0
ASFR2	12	Z	100	7	18.7	16.9
ASFR2	00	Z	100	5	16.1	14.2
ASFR3	12	Z	100	10	10.5	5.4
ASFR3	00	Z	100	9	17.4	15.1
ASFR4	12	Z	100	11	23.0	21.8
ASFR4	00	Z	100	13	18.7	13.6
DBLK	12	Z	100	18	17.5	15.3

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	30	3.9	0.5	0.0
01001	12	V	100	29	3.6	-0.3	-0.6
01028	00	V	100	30	3.5	-0.3	-1.6
01028	12	V	100	30	3.5	0.0	-0.8
01152	00	V	100	25	3.2	-0.1	0.0
01152	12	V	100	25	3.2	0.8	-0.1
01400	12	V	100	26	3.7	0.2	-0.4
01400	00	V	100	24	3.5	0.3	-0.4
01415	12	V	100	30	3.4	0.8	1.0
01415	00	V	100	29	3.7	0.8	0.4
02365	12	V	100	30	2.9	0.6	-0.3
02365	00	V	100	30	4.2	-0.1	-1.0
02591	00	V	100	28	2.7	-0.1	-0.8
02591	12	V	100	30	2.7	0.0	0.2
02836	00	V	100	28	3.0	-0.5	0.2
02836	12	V	100	28	3.4	0.7	-0.8
02963	00	V	100	30	2.6	0.4	-0.1
02963	12	V	100	30	3.0	0.4	-0.7
03005	00	V	100	28	3.8	0.8	0.2
03005	12	V	100	30	2.9	0.2	0.3
03238	00	V	100	28	3.3	0.2	0.1
03238	12	V	100	11	3.8	-0.3	0.6
03808	12	V	100	30	3.7	0.8	0.1
03808	00	V	100	27	4.1	-0.3	0.1
03918	00	V	100	27	3.4	-0.7	0.0
03918	12	V	100	11	3.1	0.6	-0.9
03953	12	V	100	30	3.9	0.7	-0.2
03953	00	V	100	30	4.0	0.2	0.5
04018	12	V	100	23	3.5	0.3	0.1
04018	00	V	100	22	3.8	1.3	0.8
04220	12	V	100	28	2.9	0.2	0.0
04220	00	V	100	28	3.3	0.6	0.9
04270	00	V	100	29	4.3	0.3	0.2
04270	12	V	100	28	4.5	-0.8	-0.1
04320	00	V	100	30	5.1	-0.3	-0.4
04320	12	V	100	29	3.9	0.3	0.5
04339	12	V	100	3	5.2	0.8	2.8
04339	00	V	100	3	2.5	0.3	0.0
04360	12	V	100	20	3.7	-0.2	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	100	21	3.1	0.0	0.5
06011	12	V	100	29	4.0	1.2	0.4
06011	00	V	100	27	3.4	0.2	-0.3
06260	12	V	100	4	2.5	0.2	0.5
06260	00	V	100	29	3.4	-0.5	-0.7
06610	00	V	100	30	3.3	0.8	0.3
06610	12	V	100	30	3.9	0.6	0.0
07110	00	V	100	27	4.2	-0.3	0.4
07110	12	V	100	29	2.9	0.6	-0.2
07510	12	V	100	28	3.6	0.2	0.8
07510	00	V	100	24	3.5	-0.7	-0.2
07645	00	V	100	25	4.0	0.3	0.0
07645	12	V	100	25	3.7	0.7	0.3
07761	12	V	100	21	4.7	-0.7	-0.4
07761	00	V	100	21	4.3	-0.1	-0.1
08001	12	V	100	28	3.8	0.9	0.6
08001	00	V	100	29	4.3	1.0	0.2
08221	12	V	100	28	4.1	-0.6	0.0
08221	00	V	100	30	4.0	0.7	0.9
08302	00	V	100	30	4.1	0.9	0.1
08302	12	V	100	29	4.8	-0.4	0.6
08508	12	V	100	28	4.0	-0.9	0.3
08522	12	V	100	29	4.5	0.9	-0.1
08579	12	V	100	28	4.1	-0.7	-0.5
10035	00	V	100	28	3.4	-0.3	0.3
10035	12	V	100	30	2.8	0.1	0.1
10393	00	V	100	30	3.3	-0.8	-0.4
10393	12	V	100	30	3.3	1.1	0.0
10410	00	V	100	30	3.7	-0.2	-0.2
10410	12	V	100	29	3.8	-0.3	0.0
10739	00	V	100	30	3.5	-0.3	-0.3
10739	12	V	100	30	3.5	0.2	0.3
11035	12	V	100	30	3.0	0.6	0.4
11035	00	V	100	30	3.8	0.8	0.5
12982	12	V	100	2	5.3	-0.8	2.2
12982	00	V	100	27	2.8	0.3	0.2
16044	12	V	100	30	3.2	0.2	-0.3
16044	00	V	100	29	3.7	0.8	-1.2
16080	00	V	100	26	5.1	-0.4	0.2
16080	12	V	100	26	5.1	0.2	-0.2
16245	12	V	100	27	4.0	1.4	-0.7
16245	00	V	100	26	4.0	1.3	-0.4
16320	00	V	100	27	4.3	1.0	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	12	V	100	27	3.3	0.1	-0.1
16429	00	V	100	29	3.7	0.1	-1.0
16429	12	V	100	30	4.2	0.5	-1.0
16622	00	V	100	15	4.2	0.1	-1.6
16754	00	V	100	28	4.7	0.6	1.6
17607	12	V	100	20	3.9	0.0	-0.7
26435	00	V	100	15	3.1	-0.6	-1.2
60018	12	V	100	25	4.3	0.4	0.0
60018	00	V	100	27	4.6	-1.0	0.7
ASDE01	12	V	100	6	3.8	-0.3	0.8
ASDE01	00	V	100	4	5.1	-0.8	-1.1
ASDE02	12	V	100	6	6.7	-3.3	0.4
ASDE03	12	V	100	4	2.6	0.7	0.7
ASDE03	00	V	100	5	4.4	2.6	-1.3
ASDK1	12	V	100	3	2.7	2.1	-0.9
ASDK1	00	V	100	4	2.1	0.9	-0.2
ASDK2	12	V	100	10	2.6	1.0	-0.3
ASDK2	00	V	100	11	3.2	0.6	-0.4
ASDK3	12	V	100	2	2.0	-0.5	-1.2
ASDK3	00	V	100	9	3.8	-0.2	0.2
ASES1	12	V	100	3	6.2	1.5	-2.2
ASEU02	12	V	100	9	6.0	-0.2	0.6
ASEU02	00	V	100	4	6.3	-2.8	-1.0
ASEU03	12	V	100	4	5.4	1.4	-2.8
ASEU03	00	V	100	4	4.2	1.9	1.5
ASEU04	12	V	100	5	4.2	-0.4	2.8
ASEU04	00	V	100	3	3.6	-0.7	1.6
ASEU05	12	V	100	3	2.8	0.3	1.9
ASEU05	00	V	100	1	2.9	2.9	-0.4
ASEU06	00	V	100	3	2.8	0.6	-1.3
ASEU06	12	V	100	3	8.4	-3.8	-1.3
ASFR1	12	V	100	7	3.5	-0.1	0.8
ASFR1	00	V	100	9	4.2	0.4	1.3
ASFR2	12	V	100	7	3.6	-0.6	1.1
ASFR2	00	V	100	5	3.0	0.1	0.5
ASFR3	12	V	100	9	3.8	-0.4	-0.4
ASFR3	00	V	100	9	3.6	-1.3	0.5
ASFR4	12	V	100	11	3.5	-0.1	-0.6
ASFR4	00	V	100	12	2.6	-0.4	0.4
DBLK	12	V	100	18	5.1	-0.4	-0.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	30	8.1	5.0
01001	12	Z	500	30	9.0	4.9
01028	00	Z	500	30	8.2	5.6
01028	12	Z	500	30	5.9	3.7
01152	00	Z	500	25	6.3	3.4
01152	12	Z	500	25	6.8	5.3
01400	12	Z	500	28	31.7	22.0
01400	00	Z	500	26	28.7	27.3
01415	12	Z	500	30	7.8	6.6
01415	00	Z	500	30	7.1	4.4
02365	12	Z	500	30	6.3	4.4
02365	00	Z	500	30	5.7	4.3
02591	00	Z	500	28	13.3	12.0
02591	12	Z	500	30	14.4	13.4
02836	00	Z	500	28	6.6	4.5
02836	12	Z	500	28	6.4	4.8
02963	00	Z	500	30	6.6	4.9
02963	12	Z	500	30	5.4	3.2
03005	00	Z	500	30	4.6	0.9
03005	12	Z	500	30	5.6	0.8
03238	00	Z	500	29	9.8	8.7
03238	12	Z	500	11	11.4	10.4
03808	12	Z	500	31	5.1	3.3
03808	00	Z	500	31	15.3	7.1
03918	00	Z	500	27	12.2	10.6
03918	12	Z	500	11	11.4	9.2
03953	12	Z	500	30	7.3	4.7
03953	00	Z	500	30	7.9	6.0
04018	12	Z	500	28	6.9	5.2
04018	00	Z	500	28	7.6	4.6
04220	12	Z	500	29	6.2	-1.9
04220	00	Z	500	30	7.7	-0.7
04270	00	Z	500	30	23.2	3.9
04270	12	Z	500	29	7.1	-0.6
04320	00	Z	500	30	6.1	2.4
04320	12	Z	500	30	6.0	1.1
04339	12	Z	500	16	6.8	3.2
04339	00	Z	500	18	5.6	2.5
04360	12	Z	500	23	7.6	5.1



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	500	26	7.4	4.5
06011	12	Z	500	30	28.8	8.4
06011	00	Z	500	29	17.0	3.0
06260	12	Z	500	4	4.0	3.3
06260	00	Z	500	30	6.8	4.5
06610	00	Z	500	30	6.0	4.6
06610	12	Z	500	30	6.7	5.7
07110	00	Z	500	29	5.8	3.3
07110	12	Z	500	30	7.9	4.7
07510	12	Z	500	29	5.5	-1.5
07510	00	Z	500	29	12.3	-0.7
07645	00	Z	500	29	6.1	2.2
07645	12	Z	500	32	27.1	8.4
07761	12	Z	500	29	8.2	4.9
07761	00	Z	500	28	6.5	-0.6
08001	12	Z	500	30	13.5	8.1
08001	00	Z	500	30	12.3	7.4
08221	12	Z	500	28	12.4	11.7
08221	00	Z	500	30	10.5	9.7
08302	00	Z	500	30	6.4	3.7
08302	12	Z	500	29	5.5	3.0
08508	12	Z	500	28	21.0	17.1
08522	12	Z	500	30	13.0	10.9
08579	12	Z	500	28	8.3	6.7
10035	00	Z	500	31	6.8	2.6
10035	12	Z	500	30	7.0	3.8
10393	00	Z	500	30	4.1	-1.1
10393	12	Z	500	31	3.1	-1.0
10410	00	Z	500	30	4.7	-0.4
10410	12	Z	500	30	4.4	1.2
10739	00	Z	500	30	10.8	9.5
10739	12	Z	500	30	11.3	10.7
11035	12	Z	500	30	5.0	-0.4
11035	00	Z	500	30	15.9	2.8
12982	12	Z	500	2	8.2	7.8
12982	00	Z	500	29	5.6	4.3
16044	12	Z	500	30	8.5	3.4
16044	00	Z	500	30	5.3	2.5
16080	00	Z	500	26	4.4	0.5
16080	12	Z	500	26	5.2	1.2
16245	12	Z	500	28	9.6	-6.2
16245	00	Z	500	26	7.7	-4.5
16320	00	Z	500	30	7.0	4.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	12	Z	500	28	6.2	0.4
16429	00	Z	500	30	5.5	-0.3
16429	12	Z	500	30	8.7	-3.2
16622	00	Z	500	29	16.2	15.4
16754	00	Z	500	29	9.0	6.6
17607	12	Z	500	38	5.7	1.9
26435	00	Z	500	15	6.5	5.1
60018	12	Z	500	25	8.9	6.3
60018	00	Z	500	27	10.2	7.9
ASDE01	12	Z	500	6	42.3	41.9
ASDE01	00	Z	500	4	49.9	48.9
ASDE02	12	Z	500	7	14.9	14.8
ASDE03	12	Z	500	7	27.0	19.5
ASDE03	00	Z	500	6	29.4	24.0
ASDK1	12	Z	500	3	18.8	18.0
ASDK1	00	Z	500	4	24.1	22.1
ASDK2	12	Z	500	10	21.4	16.5
ASDK2	00	Z	500	11	23.5	16.6
ASDK3	12	Z	500	2	30.2	30.1
ASDK3	00	Z	500	10	24.4	23.0
ASES1	12	Z	500	3	21.9	21.8
ASEU02	12	Z	500	9	38.0	36.4
ASEU02	00	Z	500	6	39.5	38.7
ASEU03	12	Z	500	7	30.7	25.1
ASEU03	00	Z	500	6	39.2	37.3
ASEU04	12	Z	500	5	9.4	-6.0
ASEU04	00	Z	500	4	10.0	-4.2
ASEU05	12	Z	500	8	13.2	12.0
ASEU05	00	Z	500	4	13.2	10.2
ASEU06	00	Z	500	6	32.8	29.1
ASEU06	12	Z	500	3	35.5	34.2
ASFR1	12	Z	500	11	6.9	1.9
ASFR1	00	Z	500	10	11.1	-4.1
ASFR2	12	Z	500	10	15.1	6.5
ASFR2	00	Z	500	8	7.2	-1.8
ASFR3	12	Z	500	12	9.2	-3.2
ASFR3	00	Z	500	10	8.6	5.4
ASFR4	12	Z	500	11	6.4	4.4
ASFR4	00	Z	500	14	6.8	-0.5
DBLK	12	Z	500	18	16.8	14.5

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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	2.7	-0.1	0.0
01001	12	V	500	30	3.1	0.3	-0.9
01028	00	V	500	30	3.2	-0.4	-1.0
01028	12	V	500	30	2.5	-0.2	-0.6
01152	00	V	500	25	2.7	0.3	0.1
01152	12	V	500	25	3.3	-0.4	0.2
01400	12	V	500	28	3.4	-0.2	-0.4
01400	00	V	500	26	3.6	-0.4	1.1
01415	12	V	500	30	3.1	0.9	-0.2
01415	00	V	500	29	4.1	0.5	0.6
02365	12	V	500	30	2.8	-0.4	0.1
02365	00	V	500	29	2.3	0.0	-0.1
02591	00	V	500	28	2.8	0.0	0.5
02591	12	V	500	30	2.9	-0.5	-0.2
02836	00	V	500	28	3.0	1.0	0.0
02836	12	V	500	28	3.3	0.6	-0.5
02963	00	V	500	30	2.5	0.0	-0.1
02963	12	V	500	30	2.3	0.1	0.0
03005	00	V	500	28	3.4	0.6	0.1
03005	12	V	500	30	3.0	0.0	0.2
03238	00	V	500	28	2.8	-0.4	0.0
03238	12	V	500	11	3.6	0.3	-1.0
03808	12	V	500	30	3.7	0.6	0.4
03808	00	V	500	28	4.1	-0.1	0.9
03918	00	V	500	27	3.2	-0.2	0.9
03918	12	V	500	11	3.1	0.8	-0.9
03953	12	V	500	30	3.5	0.0	-0.1
03953	00	V	500	30	3.2	0.6	-0.4
04018	12	V	500	28	3.8	-0.3	1.1
04018	00	V	500	26	3.7	0.8	-0.3
04220	12	V	500	29	3.5	0.0	0.5
04220	00	V	500	30	3.1	-0.1	0.4
04270	00	V	500	30	4.7	0.0	0.5
04270	12	V	500	29	3.6	-0.6	1.3
04320	00	V	500	30	3.3	0.9	0.0
04320	12	V	500	30	3.5	0.7	0.8
04339	12	V	500	3	4.2	-1.7	-2.3
04339	00	V	500	3	4.3	0.8	3.4
04360	12	V	500	23	4.1	0.6	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	500	26	3.3	0.5	0.3
06011	12	V	500	30	3.4	0.4	-0.7
06011	00	V	500	29	2.3	-0.1	0.3
06260	12	V	500	4	2.6	-1.2	1.2
06260	00	V	500	30	2.8	0.8	0.2
06610	00	V	500	30	3.4	0.4	0.1
06610	12	V	500	30	3.1	-0.6	0.0
07110	00	V	500	27	4.3	0.2	0.8
07110	12	V	500	30	3.6	-0.3	0.1
07510	12	V	500	29	4.2	0.8	-0.2
07510	00	V	500	29	3.2	0.5	-0.4
07645	00	V	500	27	4.1	-0.4	-0.1
07645	12	V	500	30	3.9	-0.1	-1.0
07761	12	V	500	27	3.3	0.4	-1.2
07761	00	V	500	27	3.4	-0.7	0.3
08001	12	V	500	30	4.0	0.6	0.6
08001	00	V	500	30	3.1	0.2	0.7
08221	12	V	500	28	3.6	0.1	-0.9
08221	00	V	500	30	3.8	-0.2	-0.8
08302	00	V	500	30	3.2	-0.3	0.4
08302	12	V	500	29	3.5	-0.1	-0.8
08508	12	V	500	28	3.7	1.1	-0.2
08522	12	V	500	30	3.4	-0.1	-0.1
08579	12	V	500	28	4.0	0.7	-1.0
10035	00	V	500	29	2.6	1.0	0.2
10035	12	V	500	30	3.0	0.1	0.2
10393	00	V	500	30	2.5	0.4	-0.5
10393	12	V	500	30	2.2	-0.1	0.2
10410	00	V	500	30	2.3	-0.1	-0.3
10410	12	V	500	30	3.2	0.2	0.5
10739	00	V	500	30	3.0	0.4	0.5
10739	12	V	500	30	4.5	1.5	-0.4
11035	12	V	500	30	2.7	0.2	0.2
11035	00	V	500	30	2.9	1.0	-0.3
12982	12	V	500	2	4.3	-1.0	-2.3
12982	00	V	500	29	2.3	0.3	-0.2
16044	12	V	500	30	2.8	0.7	-0.6
16044	00	V	500	29	2.4	0.0	-0.3
16080	00	V	500	26	3.7	0.2	1.2
16080	12	V	500	26	2.3	0.3	0.0
16245	12	V	500	28	2.4	0.6	0.2
16245	00	V	500	26	4.3	0.7	-0.1
16320	00	V	500	27	2.9	0.5	-0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	12	V	500	28	2.9	0.8	-0.7
16429	00	V	500	30	3.0	1.1	-0.1
16429	12	V	500	30	3.8	0.2	-0.3
16622	00	V	500	19	4.5	0.1	0.8
16754	00	V	500	29	3.0	-0.1	0.7
17607	12	V	500	20	2.5	0.3	0.3
26435	00	V	500	15	2.1	0.9	0.7
60018	12	V	500	25	3.0	0.5	1.0
60018	00	V	500	27	2.5	0.3	0.6
ASDE01	12	V	500	6	4.1	0.3	-2.6
ASDE01	00	V	500	4	3.1	1.0	1.4
ASDE02	12	V	500	7	2.7	-0.6	-0.4
ASDE03	12	V	500	6	4.3	2.9	-0.7
ASDE03	00	V	500	6	3.5	2.1	-0.1
ASDK1	12	V	500	3	6.7	-2.2	-4.7
ASDK1	00	V	500	4	3.4	-1.5	1.6
ASDK2	12	V	500	10	4.3	-0.2	-0.1
ASDK2	00	V	500	11	4.8	-3.0	0.4
ASDK3	12	V	500	2	2.6	2.2	-0.9
ASDK3	00	V	500	10	5.0	-1.4	1.3
ASES1	12	V	500	3	4.0	-0.3	-1.8
ASEU02	12	V	500	9	6.6	-1.8	-1.4
ASEU02	00	V	500	5	5.0	0.3	-3.1
ASEU03	12	V	500	7	2.6	-0.2	0.6
ASEU03	00	V	500	6	3.2	0.6	-0.6
ASEU04	12	V	500	5	2.6	0.9	0.9
ASEU04	00	V	500	3	4.2	0.5	2.5
ASEU05	12	V	500	8	5.5	0.3	-1.6
ASEU05	00	V	500	4	3.9	-1.8	-1.3
ASEU06	00	V	500	5	5.4	3.3	-0.7
ASEU06	12	V	500	3	2.7	0.7	-0.9
ASFR1	12	V	500	11	3.9	-1.4	-0.8
ASFR1	00	V	500	10	3.7	0.2	-0.7
ASFR2	12	V	500	10	2.8	0.7	-0.5
ASFR2	00	V	500	8	2.9	0.9	-0.2
ASFR3	12	V	500	12	3.8	-0.3	-0.5
ASFR3	00	V	500	10	3.6	-0.8	-0.2
ASFR4	12	V	500	11	5.0	0.3	1.3
ASFR4	00	V	500	14	2.8	-0.3	0.2
DBLK	12	V	500	18	4.0	-0.2	0.6

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	30	4.2	0.3
01001	12	Z	850	30	3.6	0.0
01028	00	Z	850	30	4.1	2.3
01028	12	Z	850	30	2.7	0.8
01152	00	Z	850	25	4.0	1.7
01152	12	Z	850	25	3.9	1.8
01400	12	Z	850	29	30.2	19.4
01400	00	Z	850	26	25.3	24.4
01415	12	Z	850	30	3.4	2.1
01415	00	Z	850	30	3.0	1.8
02365	12	Z	850	30	2.4	0.2
02365	00	Z	850	30	2.2	0.2
02591	00	Z	850	28	10.3	10.0
02591	12	Z	850	30	10.9	10.6
02836	00	Z	850	28	3.2	1.3
02836	12	Z	850	28	2.9	2.0
02963	00	Z	850	30	3.0	1.6
02963	12	Z	850	30	2.9	1.4
03005	00	Z	850	30	3.1	-0.5
03005	12	Z	850	30	2.6	-0.4
03238	00	Z	850	29	7.0	6.6
03238	12	Z	850	11	7.3	6.8
03808	12	Z	850	31	3.3	1.2
03808	00	Z	850	31	14.8	3.2
03918	00	Z	850	27	7.8	7.4
03918	12	Z	850	11	8.0	7.4
03953	12	Z	850	30	5.5	4.3
03953	00	Z	850	30	5.4	3.8
04018	12	Z	850	29	3.9	2.7
04018	00	Z	850	28	3.7	2.7
04220	12	Z	850	29	3.7	-0.4
04220	00	Z	850	30	7.2	-0.6
04270	00	Z	850	30	3.1	-0.8
04270	12	Z	850	29	5.6	1.0
04320	00	Z	850	30	5.2	4.1
04320	12	Z	850	30	4.8	3.6
04339	12	Z	850	16	4.0	-1.9
04339	00	Z	850	19	5.2	-2.3
04360	12	Z	850	24	4.9	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
04360	00	Z	850	27	5.4	0.1
06011	12	Z	850	30	7.2	4.7
06011	00	Z	850	29	18.1	6.9
06260	12	Z	850	4	1.8	0.5
06260	00	Z	850	30	3.7	2.2
06610	00	Z	850	30	3.0	0.5
06610	12	Z	850	30	2.8	0.9
07110	00	Z	850	29	3.8	2.4
07110	12	Z	850	30	5.7	4.2
07510	12	Z	850	29	3.9	-2.4
07510	00	Z	850	29	4.6	-3.0
07645	00	Z	850	29	3.7	-2.3
07645	12	Z	850	32	3.4	-1.8
07761	12	Z	850	29	3.3	0.9
07761	00	Z	850	28	3.6	-0.7
08001	12	Z	850	30	10.8	5.7
08001	00	Z	850	30	8.2	2.8
08221	12	Z	850	28	8.2	7.7
08221	00	Z	850	30	7.1	6.4
08302	00	Z	850	30	3.8	0.3
08302	12	Z	850	29	3.6	1.5
08508	12	Z	850	28	16.7	12.0
08522	12	Z	850	30	6.4	5.8
08579	12	Z	850	28	5.9	4.8
10035	00	Z	850	31	4.4	0.2
10035	12	Z	850	30	4.9	1.3
10393	00	Z	850	30	3.8	-3.1
10393	12	Z	850	31	3.6	-3.2
10410	00	Z	850	30	2.6	-1.7
10410	12	Z	850	30	2.1	-0.6
10739	00	Z	850	30	7.2	6.7
10739	12	Z	850	30	9.1	8.7
11035	12	Z	850	30	5.2	-4.5
11035	00	Z	850	30	14.4	-1.2
12982	12	Z	850	2	6.8	6.3
12982	00	Z	850	29	2.5	-0.6
16044	12	Z	850	30	3.3	-0.2
16044	00	Z	850	30	3.5	-0.6
16080	00	Z	850	26	3.7	-1.0
16080	12	Z	850	27	3.9	-0.7
16245	12	Z	850	28	11.8	-10.0
16245	00	Z	850	26	8.9	-6.9
16320	00	Z	850	30	5.7	2.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16320	12	Z	850	29	5.4	-2.3
16429	00	Z	850	30	4.7	-1.8
16429	12	Z	850	30	8.1	-5.4
16622	00	Z	850	29	9.7	8.9
16754	00	Z	850	29	4.5	2.2
17607	12	Z	850	38	4.1	2.6
26435	00	Z	850	15	2.5	1.5
60018	12	Z	850	27	5.3	0.6
60018	00	Z	850	28	3.7	0.7
ASDE01	12	Z	850	6	39.1	38.5
ASDE01	00	Z	850	5	47.9	47.0
ASDE02	12	Z	850	7	11.8	11.2
ASDE03	12	Z	850	7	21.9	13.8
ASDE03	00	Z	850	6	24.2	19.0
ASDK1	12	Z	850	3	13.2	12.8
ASDK1	00	Z	850	4	17.2	15.4
ASDK2	12	Z	850	11	14.6	8.9
ASDK2	00	Z	850	11	19.2	12.3
ASDK3	12	Z	850	2	26.7	26.6
ASDK3	00	Z	850	10	21.1	20.1
ASES1	12	Z	850	3	18.7	17.8
ASEU02	12	Z	850	9	30.8	29.3
ASEU02	00	Z	850	6	31.6	30.7
ASEU03	12	Z	850	7	30.4	24.7
ASEU03	00	Z	850	6	35.2	34.0
ASEU04	12	Z	850	5	10.7	-8.8
ASEU04	00	Z	850	4	7.5	-5.3
ASEU05	12	Z	850	8	8.1	5.3
ASEU05	00	Z	850	4	8.8	5.2
ASEU06	00	Z	850	6	30.8	27.2
ASEU06	12	Z	850	4	35.8	35.4
ASFR1	12	Z	850	11	6.9	-5.7
ASFR1	00	Z	850	10	11.1	-9.1
ASFR2	12	Z	850	10	6.1	-4.2
ASFR2	00	Z	850	8	8.0	-7.0
ASFR3	12	Z	850	12	7.4	-5.9
ASFR3	00	Z	850	10	4.2	-0.5
ASFR4	12	Z	850	11	3.7	-2.7
ASFR4	00	Z	850	14	6.6	-5.3
DBLK	12	Z	850	18	12.7	8.6



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

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : NOV 2014  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.4	-0.1	-0.6
01001	12	V	850	30	4.2	0.3	-0.9
01028	00	V	850	30	3.5	0.1	0.5
01028	12	V	850	30	2.8	0.4	-0.4
01152	00	V	850	25	3.3	-1.1	-1.1
01152	12	V	850	25	5.0	-1.0	0.1
01400	12	V	850	28	3.0	0.8	0.0
01400	00	V	850	26	2.6	0.3	-0.1
01415	12	V	850	30	3.9	-0.9	0.1
01415	00	V	850	29	2.9	0.2	-0.1
02365	12	V	850	30	2.6	0.0	-0.3
02365	00	V	850	29	2.1	0.5	0.2
02591	00	V	850	28	2.4	-0.7	-0.3
02591	12	V	850	30	3.1	0.0	-0.3
02836	00	V	850	28	2.5	0.1	0.0
02836	12	V	850	28	2.5	0.5	-0.4
02963	00	V	850	30	2.8	0.1	0.6
02963	12	V	850	30	2.5	0.6	0.1
03005	00	V	850	28	3.0	-0.1	0.8
03005	12	V	850	30	2.6	-0.3	0.0
03238	00	V	850	28	2.8	-0.2	-0.1
03238	12	V	850	11	1.5	0.3	-0.2
03808	12	V	850	30	3.8	0.6	-0.2
03808	00	V	850	28	2.8	0.1	0.5
03918	00	V	850	27	2.9	-0.6	-0.5
03918	12	V	850	11	3.3	-0.7	-0.3
03953	12	V	850	29	4.0	0.4	0.7
03953	00	V	850	30	2.5	0.0	0.2
04018	12	V	850	29	3.0	0.1	0.3
04018	00	V	850	26	2.9	-0.4	0.0
04220	12	V	850	29	2.8	0.2	-0.3
04220	00	V	850	30	2.9	-0.3	0.1
04270	00	V	850	30	5.7	0.9	0.8
04270	12	V	850	29	4.8	1.1	0.8
04320	00	V	850	30	3.2	-0.1	1.1
04320	12	V	850	30	3.0	-0.5	0.6
04339	12	V	850	3	2.4	-1.0	1.6
04339	00	V	850	3	4.4	2.0	0.9
04360	12	V	850	24	3.8	1.0	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
04360	00	V	850	27	5.0	1.0	0.8
06011	12	V	850	30	2.8	0.1	-0.2
06011	00	V	850	29	2.3	0.6	-0.8
06260	12	V	850	4	2.9	0.6	0.4
06260	00	V	850	30	3.0	0.7	-0.6
06610	00	V	850	30	3.5	0.7	0.4
06610	12	V	850	30	2.8	0.0	-0.3
07110	00	V	850	27	3.6	0.0	-0.1
07110	12	V	850	30	3.3	0.3	0.0
07510	12	V	850	29	3.8	1.2	-0.2
07510	00	V	850	29	4.1	-0.1	0.2
07645	00	V	850	27	3.6	-0.4	0.1
07645	12	V	850	30	3.9	-0.4	0.6
07761	12	V	850	27	4.1	-1.0	0.1
07761	00	V	850	27	3.7	-0.5	0.2
08001	12	V	850	30	5.1	1.1	-1.3
08001	00	V	850	30	2.8	-0.3	0.5
08221	12	V	850	28	2.5	1.0	-0.5
08221	00	V	850	29	3.0	0.5	-0.6
08302	00	V	850	30	2.6	-0.2	0.4
08302	12	V	850	29	3.9	0.5	-0.7
08508	12	V	850	28	4.2	-0.3	0.4
08522	12	V	850	30	5.2	0.2	1.1
08579	12	V	850	28	4.2	0.7	-0.8
10035	00	V	850	29	2.3	0.0	0.0
10035	12	V	850	30	3.1	0.3	-0.8
10393	00	V	850	30	2.4	-0.6	0.4
10393	12	V	850	30	2.5	0.2	-0.1
10410	00	V	850	30	3.2	-0.2	-0.1
10410	12	V	850	30	3.0	0.2	0.9
10739	00	V	850	30	2.8	0.1	-0.5
10739	12	V	850	30	3.4	0.3	-0.5
11035	12	V	850	30	3.8	-0.7	-0.3
11035	00	V	850	30	2.6	-0.2	0.8
12982	12	V	850	2	2.9	2.1	0.0
12982	00	V	850	29	2.8	0.9	-0.8
16044	12	V	850	30	3.3	0.2	0.2
16044	00	V	850	29	3.4	0.8	-0.6
16080	00	V	850	26	3.0	1.0	-0.1
16080	12	V	850	27	3.2	0.3	-0.2
16245	12	V	850	28	2.8	0.6	-0.2
16245	00	V	850	26	3.3	0.0	-0.7
16320	00	V	850	27	3.3	0.1	-1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16320	12	V	850	29	2.9	0.7	-0.2
16429	00	V	850	30	2.7	0.7	0.0
16429	12	V	850	30	2.9	-0.3	0.5
16622	00	V	850	19	3.0	0.1	-0.3
16754	00	V	850	29	3.1	-0.1	0.3
17607	12	V	850	20	3.1	1.2	-0.3
26435	00	V	850	15	3.2	-0.7	0.3
60018	12	V	850	27	2.8	-0.6	0.7
60018	00	V	850	28	4.7	-0.9	-0.3
ASDE01	12	V	850	6	1.8	0.8	0.1
ASDE01	00	V	850	5	5.1	2.4	-0.7
ASDE02	12	V	850	7	4.0	0.7	-0.2
ASDE03	12	V	850	7	2.0	0.3	0.0
ASDE03	00	V	850	6	2.4	0.0	0.1
ASDK1	12	V	850	3	2.6	-0.3	-1.3
ASDK1	00	V	850	4	5.1	1.0	1.2
ASDK2	12	V	850	11	2.7	-0.6	0.3
ASDK2	00	V	850	11	2.4	-0.3	0.1
ASDK3	12	V	850	2	3.8	2.9	0.4
ASDK3	00	V	850	10	3.7	-0.4	0.1
ASES1	12	V	850	3	2.2	1.4	1.4
ASEU02	12	V	850	9	4.1	1.0	1.4
ASEU02	00	V	850	5	1.9	-0.1	-0.5
ASEU03	12	V	850	7	3.4	-1.5	-0.5
ASEU03	00	V	850	6	1.7	-0.2	0.8
ASEU04	12	V	850	5	3.1	1.5	0.9
ASEU04	00	V	850	4	2.0	-0.1	1.2
ASEU05	12	V	850	8	3.2	0.1	-0.5
ASEU05	00	V	850	4	4.2	-1.4	0.6
ASEU06	00	V	850	6	2.0	0.6	-0.4
ASEU06	12	V	850	4	1.3	0.4	-0.6
ASFR1	12	V	850	11	2.0	-0.1	0.3
ASFR1	00	V	850	10	2.5	-0.3	-0.4
ASFR2	12	V	850	10	2.7	0.2	0.0
ASFR2	00	V	850	8	4.1	0.4	-1.8
ASFR3	12	V	850	12	3.3	0.8	0.3
ASFR3	00	V	850	10	3.9	0.6	0.9
ASFR4	12	V	850	11	2.0	-0.3	-0.4
ASFR4	00	V	850	14	3.1	0.1	0.3
DBLK	12	V	850	18	3.3	-0.3	0.0

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

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2014  
 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	210	0	0.3	-0.2	0.3
1234	99	P	SUR	34	-28	4	0	0.8	-1.1	1.4
13001	99	P	SUR	11	-23	129	0	0.4	-0.1	0.4
13008	99	P	SUR	15	-38	89	0	0.3	0.0	0.3
13569	99	P	SUR	34	-30	185	0	0.3	0.1	0.3
13570	99	P	SUR	34	-30	206	0	0.3	0.7	0.7
13572	99	P	SUR	34	-30	203	0	0.3	0.1	0.3
13590	99	P	SUR	34	-30	199	0	0.3	0.5	0.5
13633	99	P	SUR	33	-34	199	0	0.3	-0.4	0.5
13659	99	P	SUR	25	-46	210	0	0.3	-0.1	0.3
13660	99	P	SUR	30	-57	210	0	0.5	-0.2	0.5
13662	99	P	SUR	24	-37	210	0	0.2	-0.1	0.3
13664	99	P	SUR	24	-43	210	0	0.4	0.3	0.5
13868	99	P	SUR	35	-13	64	0	0.5	0.4	0.7
13869	99	P	SUR	26	-16	51	0	0.3	0.1	0.3
21942	99	P	SUR	33	-28	204	0	0.3	0.3	0.5
25624	99	P	SUR	83	7	210	0	0.5	-0.2	0.5
25648	99	P	SUR	84	24	210	0	0.4	-0.3	0.5
26535	99	P	SUR	79	26	168	64	8.6	-0.4	8.6
31717	99	P	SUR	14	-47	210	0	0.3	0.0	0.3
31863	99	P	SUR	18	-45	210	0	0.4	0.7	0.8
41040	99	P	SUR	15	-53	212	0	0.3	0.1	0.3
41041	99	P	SUR	14	-46	208	0	0.3	0.1	0.3
41043	99	P	SUR	21	-65	207	0	0.5	0.2	0.6
41044	99	P	SUR	22	-59	211	0	0.4	-0.3	0.5
41046	99	P	SUR	24	-68	213	0	0.5	-0.6	0.8
41048	99	P	SUR	32	-70	210	0	0.6	-0.5	0.8
41049	99	P	SUR	28	-63	211	0	0.5	-0.5	0.7
41051	99	P	SUR	18	-65	396	0	0.5	-0.4	0.6
41052	99	P	SUR	18	-65	555	0	0.5	0.1	0.5
41053	99	P	SUR	19	-66	513	0	0.5	-0.5	0.7
41056	99	P	SUR	18	-66	492	0	0.7	-0.3	0.7
41139	99	P	SUR	20	-38	133	0	0.3	-0.2	0.3
41560	99	P	SUR	38	-23	209	0	0.4	0.6	0.7
41564	99	P	SUR	31	-40	200	0	0.3	0.3	0.4
41596	99	P	SUR	19	-56	210	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41597	99	P	SUR	20	-48	210	0	0.3	0.4	0.5
41598	99	P	SUR	22	-46	210	0	0.5	0.1	0.5
41599	99	P	SUR	15	-56	210	0	0.3	0.4	0.5
41600	99	P	SUR	13	-52	210	0	0.4	0.6	0.7
41612	99	P	SUR	31	-69	209	0	0.4	-0.1	0.4
41632	99	P	SUR	24	-62	210	0	0.3	-0.1	0.4
41705	99	P	SUR	31	-50	210	0	0.3	-0.2	0.4
41706	99	P	SUR	29	-67	210	0	0.3	-0.3	0.4
41709	99	P	SUR	30	-63	208	0	0.3	0.1	0.3
41711	99	P	SUR	29	-53	210	0	0.3	-0.1	0.3
41737	99	P	SUR	26	-53	210	0	0.5	0.4	0.6
41800	99	P	SUR	24	-44	195	0	0.3	0.3	0.5
41933	99	P	SUR	35	-68	210	0	1.1	-0.5	1.3
41936	99	P	SUR	29	-63	166	1	0.3	-0.6	0.7
41938	99	P	SUR	36	-68	205	0	0.5	-0.6	0.8
41969	99	P	SUR	27	-25	160	0	0.3	-0.4	0.5
41970	99	P	SUR	29	-60	208	0	0.3	0.3	0.4
41971	99	P	SUR	32	-30	210	0	0.2	0.1	0.3
41972	99	P	SUR	26	-34	210	0	0.3	0.1	0.3
41975	99	P	SUR	40	-58	175	0	0.5	-0.3	0.6
42059	99	P	SUR	14	-68	208	0	0.4	-0.2	0.4
42060	99	P	SUR	16	-63	209	0	0.4	-0.5	0.6
42085	99	P	SUR	18	-67	75	0	0.5	-0.5	0.7
44005	99	P	SUR	43	-69	222	0	0.7	-0.6	0.9
44024	99	P	SUR	42	-66	219	0	1.0	-0.4	1.1
44027	99	P	SUR	44	-67	211	0	0.8	-0.7	1.0
44032	99	P	SUR	44	-69	210	0	0.7	-0.4	0.8
44033	99	P	SUR	44	-69	197	0	0.7	-0.3	0.8
44034	99	P	SUR	44	-68	208	0	0.7	-0.3	0.8
44037	99	P	SUR	44	-68	131	0	0.5	-0.6	0.8
44137	99	P	SUR	42	-62	206	0	0.6	-0.1	0.6
44139	99	P	SUR	44	-57	207	0	0.5	-0.1	0.5
44141	99	P	SUR	43	-58	195	0	0.5	-0.1	0.5
44150	99	P	SUR	43	-64	199	0	0.6	-0.3	0.7
44175	99	P	SUR	47	-62	35	0	1.1	0.3	1.1
44176	99	P	SUR	48	-65	181	0	1.0	-0.3	1.0
44251	99	P	SUR	46	-53	202	0	0.6	0.2	0.6
44255	99	P	SUR	47	-57	282	0	0.5	0.0	0.5
44258	99	P	SUR	45	-63	168	0	0.6	-0.3	0.7
44505	99	P	SUR	46	-40	378	0	1.5	0.6	1.6
44516	99	P	SUR	28	-56	175	0	0.3	0.2	0.4
44546	99	P	SUR	34	-23	210	0	0.3	-0.1	0.3
44547	99	P	SUR	53	-48	210	0	1.0	-0.1	1.0

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44548	99	P	SUR	55	-47	210	0	0.5	0.2	0.5
44549	99	P	SUR	51	-38	210	0	0.4	-0.3	0.5
44550	99	P	SUR	54	-40	210	0	0.5	-0.2	0.5
44551	99	P	SUR	53	-43	210	0	0.4	0.2	0.5
44554	99	P	SUR	30	-39	202	1	0.3	0.0	0.3
44558	99	P	SUR	33	-60	210	0	0.4	0.4	0.6
44560	99	P	SUR	44	-56	205	0	0.7	0.2	0.7
44562	99	P	SUR	30	-58	51	0	0.5	0.8	0.9
44601	99	P	SUR	44	-49	210	0	0.6	-0.3	0.7
44602	99	P	SUR	54	-37	210	0	0.5	-0.3	0.6
44603	99	P	SUR	45	-59	210	0	0.5	0.0	0.5
44604	99	P	SUR	46	-51	210	0	0.5	0.1	0.5
44605	99	P	SUR	45	-7	210	0	0.4	-0.4	0.5
44606	99	P	SUR	47	-35	210	0	0.4	-0.2	0.5
44608	99	P	SUR	46	-33	201	0	0.5	-0.1	0.5
44610	99	P	SUR	55	-17	210	0	0.5	0.1	0.5
44612	99	P	SUR	51	-41	203	0	0.6	-0.4	0.7
44613	99	P	SUR	39	-18	203	0	0.4	-0.2	0.4
44614	99	P	SUR	50	-28	208	0	0.6	-0.1	0.6
44615	99	P	SUR	61	-34	210	0	0.6	-0.3	0.7
44620	99	P	SUR	55	-38	210	0	0.5	0.1	0.5
44621	99	P	SUR	55	-38	198	0	0.5	0.3	0.5
44622	99	P	SUR	54	-16	210	0	0.4	0.1	0.4
44624	99	P	SUR	32	-14	210	0	0.3	0.0	0.3
44625	99	P	SUR	55	-28	183	0	0.5	0.0	0.5
44690	99	P	SUR	51	-10	13	0	0.2	-0.3	0.4
44725	99	P	SUR	27	-62	196	0	1.0	0.0	1.0
44739	99	P	SUR	43	-52	210	0	0.5	0.5	0.7
44740	99	P	SUR	27	-42	125	0	0.3	-0.2	0.4
44747	99	P	SUR	65	-33	200	0	0.6	-0.1	0.6
44765	99	P	SUR	44	-16	209	0	0.8	0.0	0.8
44767	99	P	SUR	29	-57	20	0	1.1	-4.4	4.6
44773	99	P	SUR	23	-32	182	0	0.3	0.2	0.3
44774	99	P	SUR	38	-69	92	0	0.5	0.0	0.5
44775	99	P	SUR	38	-64	92	0	0.5	-0.2	0.5
44776	99	P	SUR	38	-60	92	0	0.8	0.0	0.8
44777	99	P	SUR	39	-53	78	0	0.5	-0.4	0.6
44778	99	P	SUR	40	-50	85	0	0.4	0.0	0.4
44779	99	P	SUR	40	-45	78	0	0.6	0.0	0.6
44835	99	P	SUR	38	-33	210	0	0.3	-0.3	0.5
44836	99	P	SUR	51	-34	210	0	0.5	-0.2	0.6
44837	99	P	SUR	48	-32	210	0	0.5	-0.2	0.6
44839	99	P	SUR	41	-33	210	0	0.4	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44840	99	P	SUR	51	-12	210	0	0.5	0.1	0.5
44846	99	P	SUR	34	-31	210	0	0.2	0.5	0.6
44847	99	P	SUR	45	-45	210	0	0.6	0.1	0.6
44848	99	P	SUR	38	-40	210	0	0.4	0.1	0.4
44850	99	P	SUR	39	-28	36	0	0.5	-0.6	0.8
44863	99	P	SUR	31	-30	196	0	0.2	0.1	0.3
44866	99	P	SUR	57	-45	209	0	0.5	-0.5	0.6
44867	99	P	SUR	53	-51	210	0	0.5	-0.1	0.5
44868	99	P	SUR	28	-47	209	0	0.3	-0.2	0.4
44871	99	P	SUR	49	-45	210	0	0.5	-0.1	0.5
44872	99	P	SUR	44	-52	210	0	0.5	-0.3	0.6
44874	99	P	SUR	39	-10	87	0	0.4	0.0	0.4
44876	99	P	SUR	34	-52	210	0	0.4	0.5	0.6
44877	99	P	SUR	42	-29	210	0	0.4	-0.2	0.4
44878	99	P	SUR	43	-32	210	0	0.4	-0.1	0.4
44879	99	P	SUR	44	-4	131	0	0.4	-0.3	0.5
44880	99	P	SUR	45	-53	210	0	0.5	-0.2	0.5
44885	99	P	SUR	45	-37	210	0	0.4	-0.3	0.5
44887	99	P	SUR	38	-58	210	0	0.6	-0.3	0.7
44888	99	P	SUR	39	-33	210	0	0.4	-0.2	0.4
44889	99	P	SUR	34	-45	182	0	0.4	-0.2	0.4
44890	99	P	SUR	36	-58	189	0	0.5	-0.4	0.6
44891	99	P	SUR	33	-30	199	0	0.2	0.0	0.3
44892	99	P	SUR	43	-56	197	0	0.6	-0.3	0.6
44896	99	P	SUR	39	-43	200	0	0.4	-0.3	0.5
45138	99	P	SUR	50	-66	21	0	0.4	-0.5	0.6
47503	99	P	SUR	88	-45	210	0	0.6	-0.1	0.6
47577	99	P	SUR	84	-48	210	0	0.5	-0.1	0.5
47578	99	P	SUR	84	-31	152	0	0.6	0.0	0.6
47579	99	P	SUR	64	-37	209	52	5.9	-5.8	8.3
47585	99	P	SUR	69	-67	209	0	0.8	-0.2	0.8
47586	99	P	SUR	67	-59	210	14	4.2	0.8	4.3
48568	99	P	SUR	82	-9	210	0	0.5	0.1	0.5
48597	99	P	SUR	86	-65	210	0	0.6	0.0	0.6
48778	99	P	SUR	88	-58	209	0	0.7	-0.4	0.8
48779	99	P	SUR	87	-31	209	0	0.4	-0.4	0.6
61001	99	P	SUR	43	8	209	0	0.5	-0.4	0.6
61002	99	P	SUR	42	5	209	0	0.4	0.2	0.4
62001	99	P	SUR	45	-5	214	0	0.5	0.0	0.5
62023	99	P	SUR	51	-8	210	0	0.4	0.4	0.6
62027	99	P	SUR	49	-2	90	1	0.5	0.0	0.5
62029	99	P	SUR	49	-12	219	0	0.5	0.1	0.5
62030	99	P	SUR	50	-4	205	0	0.4	0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62050	99	P	SUR	50	-4	41	0	0.3	0.3	0.4
62081	99	P	SUR	51	-13	210	0	0.4	0.1	0.4
62086	99	P	SUR	55	6	7	0	1.0	-1.1	1.5
62091	99	P	SUR	53	-5	210	0	0.5	-0.2	0.5
62092	99	P	SUR	51	-11	41	0	0.5	-0.2	0.5
62093	99	P	SUR	55	-10	210	0	0.5	0.1	0.5
62094	99	P	SUR	52	-7	43	0	0.4	-0.1	0.4
62095	99	P	SUR	53	-16	207	4	1.4	-0.1	1.4
62102	99	P	SUR	58	2	204	0	0.7	0.6	0.9
62103	99	P	SUR	50	-3	210	0	0.5	0.4	0.6
62104	99	P	SUR	57	1	196	0	0.4	0.4	0.6
62105	99	P	SUR	55	-13	223	0	0.3	0.2	0.4
62107	99	P	SUR	50	-6	222	0	0.4	0.4	0.6
62111	99	P	SUR	58	0	209	0	0.4	0.0	0.4
62112	99	P	SUR	58	0	210	0	0.3	0.5	0.6
62113	99	P	SUR	58	0	210	0	0.5	0.1	0.5
62114	99	P	SUR	58	0	408	0	0.4	0.2	0.4
62115	99	P	SUR	58	-3	209	0	0.4	0.3	0.5
62116	99	P	SUR	58	1	209	0	0.5	0.6	0.8
62117	99	P	SUR	58	0	210	0	0.4	0.5	0.6
62118	99	P	SUR	58	1	210	0	0.4	-0.4	0.5
62119	99	P	SUR	57	2	209	0	0.3	0.1	0.3
62120	99	P	SUR	56	2	202	0	0.3	0.1	0.3
62121	99	P	SUR	54	3	209	0	0.5	0.5	0.8
62122	99	P	SUR	57	2	402	0	0.3	0.1	0.3
62123	99	P	SUR	56	2	403	0	0.3	0.3	0.4
62124	99	P	SUR	54	-4	210	0	0.4	0.1	0.4
62127	99	P	SUR	54	1	198	0	0.3	0.5	0.6
62128	99	P	SUR	59	1	207	0	0.4	0.1	0.4
62129	99	P	SUR	58	0	203	0	0.4	0.0	0.4
62130	99	P	SUR	59	1	210	0	0.4	-0.2	0.5
62131	99	P	SUR	54	1	195	0	0.4	0.6	0.8
62132	99	P	SUR	56	2	210	0	0.3	0.2	0.4
62133	99	P	SUR	57	1	209	0	0.7	0.5	0.8
62134	99	P	SUR	58	1	207	0	0.3	0.3	0.4
62135	99	P	SUR	54	2	210	0	0.4	0.3	0.5
62137	99	P	SUR	57	2	201	0	0.3	-0.1	0.3
62139	99	P	SUR	53	2	408	0	0.3	0.3	0.4
62140	99	P	SUR	57	1	408	0	0.3	0.4	0.5
62143	99	P	SUR	58	2	204	0	0.3	0.3	0.4
62144	99	P	SUR	53	2	209	0	0.3	0.4	0.5
62145	99	P	SUR	53	3	406	0	0.3	0.3	0.4
62146	99	P	SUR	57	2	210	0	0.3	0.0	0.3



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62147	99	P	SUR	58	-4	93	23	8.1	4.4	9.3
62148	99	P	SUR	54	2	209	0	0.6	0.5	0.8
62149	99	P	SUR	54	1	198	0	0.3	0.6	0.7
62150	99	P	SUR	54	1	198	0	0.5	0.1	0.5
62151	99	P	SUR	57	2	408	0	0.3	0.4	0.5
62152	99	P	SUR	57	2	210	0	0.3	0.4	0.5
62153	99	P	SUR	57	2	402	0	0.4	0.3	0.5
62154	99	P	SUR	56	2	210	0	0.3	0.0	0.3
62155	99	P	SUR	58	1	207	0	0.3	0.3	0.4
62156	99	P	SUR	57	1	200	0	0.3	0.2	0.4
62157	99	P	SUR	58	0	209	0	0.3	0.1	0.3
62159	99	P	SUR	57	2	196	0	0.3	-0.2	0.3
62160	99	P	SUR	57	2	266	0	0.5	-0.2	0.6
62161	99	P	SUR	58	1	210	0	0.4	-0.2	0.5
62162	99	P	SUR	57	1	192	0	0.4	0.3	0.5
62163	99	P	SUR	48	-8	210	0	0.4	0.0	0.4
62164	99	P	SUR	57	1	209	0	0.3	0.3	0.5
62165	99	P	SUR	54	1	191	0	0.4	0.4	0.5
62167	99	P	SUR	53	2	408	0	0.3	0.2	0.4
62168	99	P	SUR	58	1	205	0	0.4	-0.1	0.4
62170	99	P	SUR	51	2	158	0	0.6	-0.5	0.8
62296	99	P	SUR	53	2	209	0	0.3	0.1	0.3
62297	99	P	SUR	59	2	408	0	0.4	0.0	0.4
62298	99	P	SUR	49	-9	210	0	0.5	0.3	0.5
62301	99	P	SUR	52	-5	210	0	0.4	0.0	0.4
62304	99	P	SUR	51	2	278	0	0.7	0.3	0.8
62305	99	P	SUR	50	0	249	1	0.5	0.2	0.5
62442	99	P	SUR	49	-16	210	0	0.5	0.0	0.5
62514	99	P	SUR	66	-8	210	0	0.3	-0.1	0.3
62516	99	P	SUR	38	-18	210	0	0.4	0.3	0.5
62536	99	P	SUR	54	-31	210	0	0.4	0.0	0.4
62537	99	P	SUR	54	-32	210	0	0.5	-0.2	0.6
62538	99	P	SUR	63	-37	167	0	2.1	0.3	2.2
62539	99	P	SUR	55	-27	210	0	0.5	0.0	0.5
62551	99	P	SUR	56	-29	210	0	0.5	-0.3	0.6
62552	99	P	SUR	52	-29	209	0	0.6	0.2	0.6
62553	99	P	SUR	70	-3	210	0	0.4	0.1	0.4
62681	99	P	SUR	47	-22	210	0	0.5	-0.3	0.6
62687	99	P	SUR	77	6	210	0	0.8	-0.4	0.9
62695	99	P	SUR	28	-23	210	0	0.3	0.3	0.4
62713	99	P	SUR	26	-45	206	0	0.3	-0.2	0.3
62714	99	P	SUR	24	-43	210	0	0.3	-0.2	0.4
62940	99	P	SUR	32	-27	210	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62941	99	P	SUR	33	-37	196	0	0.3	-0.1	0.3
63055	99	P	SUR	61	2	210	0	0.4	-0.3	0.5
63056	99	P	SUR	60	2	207	0	0.8	0.5	0.9
63057	99	P	SUR	59	2	210	0	0.3	0.0	0.3
63058	99	P	SUR	53	2	619	0	0.3	0.4	0.5
63059	99	P	SUR	58	-1	210	0	0.3	0.3	0.5
63101	99	P	SUR	61	1	210	0	0.6	0.4	0.7
63102	99	P	SUR	61	1	210	0	0.4	-0.2	0.4
63103	99	P	SUR	61	1	210	0	0.3	0.0	0.3
63104	99	P	SUR	61	2	210	0	0.3	0.1	0.3
63105	99	P	SUR	61	2	209	0	0.3	0.0	0.3
63107	99	P	SUR	61	2	209	0	0.3	-0.1	0.3
63108	99	P	SUR	61	2	210	0	0.3	-0.3	0.5
63109	99	P	SUR	60	2	210	0	0.4	-0.3	0.5
63110	99	P	SUR	60	2	210	0	0.5	0.3	0.5
63111	99	P	SUR	61	2	401	0	0.4	-0.3	0.5
63112	99	P	SUR	61	1	210	0	0.3	-0.3	0.4
63114	99	P	SUR	61	2	386	0	0.3	-0.1	0.3
63115	99	P	SUR	62	1	207	0	0.3	-0.2	0.4
63116	99	P	SUR	61	1	205	0	0.3	-0.1	0.3
63117	99	P	SUR	61	1	408	0	0.7	0.5	0.8
63118	99	P	SUR	61	-3	200	0	0.4	-0.3	0.5
63119	99	P	SUR	58	-1	22	0	0.4	0.5	0.7
63120	99	P	SUR	54	2	210	0	0.4	0.3	0.5
63546	99	P	SUR	82	7	210	0	0.8	-0.1	0.8
63640	99	P	SUR	75	36	210	0	2.4	-0.9	2.6
63641	99	P	SUR	78	37	83	1	2.6	-0.7	2.7
63644	99	P	SUR	74	19	161	1	2.9	-0.4	2.9
64041	99	P	SUR	61	-3	207	0	0.3	0.1	0.3
64045	99	P	SUR	59	-12	229	0	0.3	0.2	0.4
64046	99	P	SUR	61	-4	210	0	0.5	0.3	0.6
64049	99	P	SUR	57	2	202	0	0.3	0.0	0.3
64516	99	P	SUR	76	5	175	14	0.9	-0.4	1.0
64517	99	P	SUR	59	-26	117	0	0.4	0.1	0.4
64518	99	P	SUR	59	-22	114	0	0.5	-0.1	0.5
64520	99	P	SUR	71	-4	210	0	0.3	-0.3	0.4
64521	99	P	SUR	74	-1	210	0	0.9	-0.2	0.9
64522	99	P	SUR	63	-11	159	0	0.4	0.1	0.4
64523	99	P	SUR	63	-18	133	0	0.3	0.3	0.4
64524	99	P	SUR	62	-13	133	0	0.3	0.1	0.3
64525	99	P	SUR	69	-4	210	0	0.3	0.0	0.3
64526	99	P	SUR	59	-34	126	0	0.4	-0.2	0.5
64527	99	P	SUR	59	-30	119	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64532	99	P	SUR	81	-3	210	0	0.5	-0.4	0.6
64533	99	P	SUR	84	-20	210	0	0.9	0.3	0.9
64534	99	P	SUR	82	-11	211	0	0.5	0.2	0.6
64535	99	P	SUR	86	-33	210	0	1.3	0.7	1.5
64607	99	P	SUR	75	10	210	0	0.7	-0.3	0.8
64613	99	P	SUR	70	8	210	0	0.3	-0.1	0.3
64614	99	P	SUR	58	-47	205	0	0.5	-0.2	0.5
64615	99	P	SUR	73	7	210	0	0.4	0.3	0.5
64622	99	P	SUR	64	-4	210	0	0.3	0.0	0.3
64623	99	P	SUR	76	16	210	0	0.7	0.0	0.7
64664	99	P	SUR	67	-13	83	0	0.4	-0.1	0.4
64665	99	P	SUR	70	-4	210	0	0.4	0.2	0.4
64666	99	P	SUR	70	4	210	0	0.4	0.3	0.5
64667	99	P	SUR	62	-27	184	0	0.5	-0.2	0.5
64668	99	P	SUR	74	7	210	0	0.6	0.0	0.6
64669	99	P	SUR	65	-23	210	0	0.5	0.3	0.6
64670	99	P	SUR	61	-66	189	0	1.3	0.4	1.4
64691	99	P	SUR	62	-59	210	0	0.4	0.4	0.6
64692	99	P	SUR	65	2	210	0	0.3	0.3	0.4
65595	99	P	SUR	63	-58	210	0	0.4	-0.4	0.6
65596	99	P	SUR	57	-57	210	0	0.5	0.2	0.6
65597	99	P	SUR	60	-37	210	0	0.4	-0.1	0.4
65598	99	P	SUR	48	-43	174	2	2.9	-0.4	3.0

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

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2014  
 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
1234	99	SPEED	SUR	34	-28	4	0	0	2.0	-0.5	2.0
13001	99	SPEED	SUR	11	-23	129	0	0	1.0	0.6	1.2
13002	99	SPEED	SUR	20	-23	134	0	0	0.9	0.2	0.9
13008	99	SPEED	SUR	15	-38	89	0	0	0.9	0.3	1.0
41026	99	SPEED	SUR	12	-38	78	0	0	1.0	0.3	1.0
41040	99	SPEED	SUR	15	-53	212	0	0	1.0	0.3	1.1
41041	99	SPEED	SUR	14	-46	208	0	0	0.9	0.0	0.9
41043	99	SPEED	SUR	21	-65	207	0	0	1.6	0.4	1.6
41044	99	SPEED	SUR	22	-59	211	0	0	0.9	-0.2	0.9
41046	99	SPEED	SUR	24	-68	213	0	0	1.3	0.1	1.3
41048	99	SPEED	SUR	32	-70	210	0	0	1.4	-0.5	1.5
41049	99	SPEED	SUR	28	-63	211	0	0	1.3	-0.3	1.4
41051	99	SPEED	SUR	18	-65	396	0	0	1.5	0.0	1.5
41052	99	SPEED	SUR	18	-65	555	0	0	1.1	0.3	1.2
41053	99	SPEED	SUR	19	-66	513	0	0	1.5	0.0	1.5
41056	99	SPEED	SUR	18	-66	492	0	0	1.4	0.1	1.4
41139	99	SPEED	SUR	20	-38	133	0	0	0.9	0.0	0.9
42059	99	SPEED	SUR	14	-68	208	0	0	1.6	0.1	1.6
42060	99	SPEED	SUR	16	-63	209	0	0	1.3	0.2	1.3
42085	99	SPEED	SUR	18	-67	75	0	0	1.3	0.8	1.6
44005	99	SPEED	SUR	43	-69	225	0	0	1.2	0.3	1.2
44024	99	SPEED	SUR	42	-66	219	0	0	1.5	-0.2	1.5
44027	99	SPEED	SUR	44	-67	211	0	0	1.6	0.0	1.6
44032	99	SPEED	SUR	44	-69	211	0	0	1.4	0.1	1.4
44033	99	SPEED	SUR	44	-69	197	0	0	1.8	0.5	1.8
44034	99	SPEED	SUR	44	-68	209	0	0	1.3	0.0	1.3
44037	99	SPEED	SUR	44	-68	132	0	0	1.1	0.2	1.1
44137	99	SPEED	SUR	42	-62	206	0	0	1.6	-0.1	1.6
44139	99	SPEED	SUR	44	-57	207	0	0	1.5	-0.5	1.6
44141	99	SPEED	SUR	43	-58	200	0	0	1.6	-0.2	1.6
44150	99	SPEED	SUR	43	-64	201	0	0	1.9	-0.1	1.9
44175	99	SPEED	SUR	47	-62	35	0	0	2.2	-0.9	2.3
44251	99	SPEED	SUR	46	-53	202	0	0	1.4	-0.6	1.5
44255	99	SPEED	SUR	47	-57	285	0	0	1.4	0.5	1.5

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44258	99	SPEED	SUR	45	-63	180	0	0	1.7	0.2	1.7
45138	99	SPEED	SUR	50	-66	21	0	0	1.6	-0.4	1.6
61001	99	SPEED	SUR	43	8	209	0	0	2.0	0.0	2.0
61002	99	SPEED	SUR	42	5	209	0	0	1.7	-0.2	1.7
62001	99	SPEED	SUR	45	-5	214	0	0	1.3	-0.1	1.3
62023	99	SPEED	SUR	51	-8	206	0	0	1.8	-0.1	1.8
62027	99	SPEED	SUR	49	-2	80	0	0	1.1	0.5	1.3
62029	99	SPEED	SUR	49	-12	219	0	0	1.2	0.6	1.3
62030	99	SPEED	SUR	50	-4	143	0	0	1.7	1.8	2.4
62050	99	SPEED	SUR	50	-4	41	0	0	1.2	0.3	1.2
62081	99	SPEED	SUR	51	-13	210	0	0	1.0	0.6	1.1
62086	99	SPEED	SUR	55	6	8	0	0	0.8	2.5	2.6
62091	99	SPEED	SUR	53	-5	210	0	0	1.5	0.1	1.5
62092	99	SPEED	SUR	51	-11	41	0	0	2.1	-1.6	2.6
62093	99	SPEED	SUR	55	-10	210	0	0	1.1	0.1	1.1
62094	99	SPEED	SUR	52	-7	43	0	0	1.1	0.1	1.1
62102	99	SPEED	SUR	58	2	204	0	0	1.4	0.3	1.4
62103	99	SPEED	SUR	50	-3	210	0	0	1.5	1.7	2.3
62104	99	SPEED	SUR	57	1	196	0	0	1.1	-0.7	1.3
62105	99	SPEED	SUR	55	-13	224	0	0	1.1	0.2	1.1
62107	99	SPEED	SUR	50	-6	221	0	0	1.4	0.9	1.7
62111	99	SPEED	SUR	58	0	209	0	0	1.9	-0.7	2.0
62112	99	SPEED	SUR	58	0	210	0	0	2.2	-1.5	2.7
62113	99	SPEED	SUR	58	0	210	0	0	1.9	0.1	1.9
62114	99	SPEED	SUR	58	0	408	0	0	1.5	0.2	1.5
62117	99	SPEED	SUR	58	0	210	0	0	1.2	-0.1	1.2
62118	99	SPEED	SUR	58	1	210	0	0	2.0	-0.6	2.1
62119	99	SPEED	SUR	57	2	209	0	0	1.5	-0.9	1.8
62120	99	SPEED	SUR	56	2	202	0	0	1.2	-0.1	1.2
62121	99	SPEED	SUR	54	3	34	0	0	1.3	-0.9	1.6
62122	99	SPEED	SUR	57	2	402	0	0	1.3	-0.3	1.4
62123	99	SPEED	SUR	56	2	403	0	0	1.2	-0.5	1.3
62127	99	SPEED	SUR	54	1	170	0	0	1.3	0.2	1.3
62128	99	SPEED	SUR	59	1	207	0	0	1.7	0.2	1.7
62129	99	SPEED	SUR	58	0	116	0	0	1.7	-0.5	1.8
62131	99	SPEED	SUR	54	1	195	0	0	2.4	-2.9	3.8
62132	99	SPEED	SUR	56	2	210	0	0	1.4	-1.4	2.0
62133	99	SPEED	SUR	57	1	209	0	0	1.3	0.0	1.3
62134	99	SPEED	SUR	58	1	207	0	0	1.4	-0.1	1.4
62140	99	SPEED	SUR	57	1	382	0	0	1.8	-0.7	1.9
62143	99	SPEED	SUR	58	2	204	0	0	1.5	-0.3	1.6

## 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
62144	99	SPEED	SUR	53	2	209	0	0	2.3	-1.0	2.6
62145	99	SPEED	SUR	53	3	406	0	0	1.8	-1.4	2.3
62146	99	SPEED	SUR	57	2	210	0	0	3.0	-3.3	4.4
62148	99	SPEED	SUR	54	2	209	0	0	1.1	-0.3	1.1
62149	99	SPEED	SUR	54	1	198	0	0	1.4	0.0	1.4
62150	99	SPEED	SUR	54	1	198	0	0	1.3	-0.7	1.5
62152	99	SPEED	SUR	57	2	210	0	0	2.0	-1.5	2.5
62153	99	SPEED	SUR	57	2	402	0	0	1.4	-0.3	1.5
62154	99	SPEED	SUR	56	2	210	0	0	1.4	-0.3	1.5
62155	99	SPEED	SUR	58	1	207	0	0	1.4	0.2	1.4
62163	99	SPEED	SUR	48	-8	210	0	0	1.3	0.5	1.4
62164	99	SPEED	SUR	57	1	209	0	0	1.3	-1.5	2.0
62165	99	SPEED	SUR	54	1	191	0	0	1.3	-1.3	1.8
62170	99	SPEED	SUR	51	2	136	0	0	1.8	1.7	2.5
62298	99	SPEED	SUR	49	-9	210	0	0	1.3	-0.6	1.4
62301	99	SPEED	SUR	52	-5	206	0	0	1.7	1.1	2.0
62304	99	SPEED	SUR	51	2	225	0	0	1.7	1.7	2.4
62305	99	SPEED	SUR	50	0	251	1	0	1.7	1.5	2.3
62442	99	SPEED	SUR	49	-16	210	0	0	1.5	0.2	1.5
63055	99	SPEED	SUR	61	2	210	0	0	1.6	-1.0	1.9
63056	99	SPEED	SUR	60	2	207	0	0	1.5	-0.5	1.5
63057	99	SPEED	SUR	59	2	210	0	0	1.9	0.3	2.0
63058	99	SPEED	SUR	53	2	209	0	0	1.3	-0.8	1.5
63101	99	SPEED	SUR	61	1	204	0	0	1.4	-0.4	1.4
63103	99	SPEED	SUR	61	1	210	0	0	1.3	-0.5	1.4
63104	99	SPEED	SUR	61	2	210	0	0	1.2	-0.2	1.3
63105	99	SPEED	SUR	61	2	209	0	0	1.6	-0.1	1.6
63106	99	SPEED	SUR	61	2	209	0	0	1.3	-0.5	1.4
63108	99	SPEED	SUR	61	2	210	0	0	1.8	-0.2	1.8
63109	99	SPEED	SUR	60	2	210	0	0	1.5	-0.4	1.6
63110	99	SPEED	SUR	60	2	210	0	0	1.7	-0.1	1.7
63112	99	SPEED	SUR	61	1	210	0	0	1.3	-0.6	1.5
63113	99	SPEED	SUR	61	2	209	0	0	1.2	-0.6	1.3
63114	99	SPEED	SUR	61	2	386	0	0	1.6	0.0	1.6
63115	99	SPEED	SUR	62	1	207	0	0	1.5	-0.8	1.7
63117	99	SPEED	SUR	61	1	408	0	0	1.2	0.0	1.2
63119	99	SPEED	SUR	58	-1	22	0	0	3.1	0.6	3.1
64041	99	SPEED	SUR	61	-3	207	0	0	1.2	-0.5	1.3
64045	99	SPEED	SUR	59	-12	229	0	0	1.0	0.4	1.1
64046	99	SPEED	SUR	61	-4	210	0	0	1.0	0.8	1.3
66021	99	SPEED	SUR	55	14	209	0	0	1.1	0.5	1.2

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
66022	99	SPEED	SUR	54	14	386	0	0	1.3	0.4	1.3
66024	99	SPEED	SUR	55	13	207	0	0	1.4	0.4	1.4

**4.11 Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction**

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : NOV 2014  
 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
1234	99	DIRN	SUR	34	-28	4	0	0	39.1	-0.4	39.1
13001	99	DIRN	SUR	11	-23	123	0	0	10.5	8.6	13.6
13002	99	DIRN	SUR	20	-23	129	0	0	12.1	7.1	14.0
13008	99	DIRN	SUR	15	-38	89	0	0	12.5	-0.5	12.5
41002	99	DIRN	SUR	32	-75	171	0	1	15.2	4.4	15.8
41004	99	DIRN	SUR	33	-79	159	0	0	17.3	9.3	19.6
41008	99	DIRN	SUR	31	-81	139	0	0	16.6	8.2	18.5
41009	99	DIRN	SUR	29	-80	209	0	1	16.3	3.1	16.6
41010	99	DIRN	SUR	29	-79	208	0	0	13.6	1.3	13.6
41013	99	DIRN	SUR	33	-78	183	0	1	19.7	5.6	20.5
41024	99	DIRN	SUR	34	-79	136	0	0	18.1	-0.2	18.1
41025	99	DIRN	SUR	35	-75	190	0	1	21.4	9.8	23.5
41026	99	DIRN	SUR	12	-38	77	0	0	15.8	8.2	17.8
41029	99	DIRN	SUR	33	-80	147	0	0	22.9	1.9	22.9
41036	99	DIRN	SUR	34	-77	203	0	0	17.4	2.1	17.5
41037	99	DIRN	SUR	34	-77	175	0	1	18.6	-11.1	21.6
41038	99	DIRN	SUR	34	-78	169	0	2	22.8	-3.5	23.1
41040	99	DIRN	SUR	15	-53	212	0	0	11.1	-9.2	14.4
41041	99	DIRN	SUR	14	-46	208	0	0	9.8	3.3	10.3
41043	99	DIRN	SUR	21	-65	169	0	0	16.6	4.3	17.1
41044	99	DIRN	SUR	22	-59	190	0	0	11.5	-3.5	12.1
41046	99	DIRN	SUR	24	-68	174	0	1	13.2	1.5	13.3
41047	99	DIRN	SUR	28	-72	176	0	0	17.7	1.8	17.8
41048	99	DIRN	SUR	32	-70	185	0	1	12.3	11.1	16.6
41049	99	DIRN	SUR	28	-63	174	0	0	18.6	8.9	20.6
41051	99	DIRN	SUR	18	-65	359	0	2	14.5	-17.1	22.4
41052	99	DIRN	SUR	18	-65	522	0	3	14.3	-2.5	14.5
41053	99	DIRN	SUR	19	-66	375	0	2	19.9	-9.8	22.2
41056	99	DIRN	SUR	18	-66	410	0	3	18.8	-6.5	19.9
41139	99	DIRN	SUR	20	-38	133	0	0	10.1	5.5	11.5
42036	99	DIRN	SUR	29	-85	195	0	0	16.6	4.7	17.3
42056	99	DIRN	SUR	20	-85	190	0	0	10.9	5.4	12.1



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
42057	99	DIRN	SUR	17	-82	190	0	1	13.4	-4.4	14.1
42058	99	DIRN	SUR	15	-75	194	0	0	13.6	2.0	13.8
42059	99	DIRN	SUR	14	-68	203	0	0	17.8	6.7	19.0
42060	99	DIRN	SUR	16	-63	197	0	0	13.4	-3.7	13.9
42085	99	DIRN	SUR	18	-67	49	0	4	32.2	6.0	32.8
42089	99	DIRN	SUR	20	-80	471	0	0	10.3	-13.3	16.8
44005	99	DIRN	SUR	43	-69	212	0	0	13.8	5.9	15.0
44007	99	DIRN	SUR	44	-70	191	0	1	18.2	3.8	18.6
44013	99	DIRN	SUR	42	-71	175	0	1	15.0	-2.3	15.2
44014	99	DIRN	SUR	37	-75	187	0	0	13.1	5.3	14.1
44020	99	DIRN	SUR	41	-70	168	0	0	11.4	4.7	12.3
44022	99	DIRN	SUR	41	-74	69	0	0	11.4	0.4	11.4
44024	99	DIRN	SUR	42	-66	176	0	0	14.4	-0.2	14.4
44025	99	DIRN	SUR	40	-73	195	0	0	10.6	-0.1	10.6
44027	99	DIRN	SUR	44	-67	183	0	0	14.6	2.4	14.8
44029	99	DIRN	SUR	43	-71	262	0	0	14.5	7.5	16.3
44030	99	DIRN	SUR	43	-70	187	0	1	14.2	2.3	14.3
44032	99	DIRN	SUR	44	-69	187	0	1	11.3	1.7	11.4
44033	99	DIRN	SUR	44	-69	151	0	1	19.6	0.5	19.6
44034	99	DIRN	SUR	44	-68	184	0	0	12.5	3.0	12.9
44037	99	DIRN	SUR	44	-68	110	0	0	15.3	5.5	16.2
44039	99	DIRN	SUR	41	-73	247	0	0	17.9	2.9	18.2
44040	99	DIRN	SUR	41	-74	134	0	0	15.2	1.3	15.3
44041	99	DIRN	SUR	37	-77	10	0	0	5.6	-15.0	16.0
44042	99	DIRN	SUR	38	-76	229	0	0	15.6	-12.5	20.0
44043	99	DIRN	SUR	39	-76	179	0	0	13.6	-13.9	19.4
44057	99	DIRN	SUR	40	-76	95	0	0	16.6	-11.7	20.3
44058	99	DIRN	SUR	38	-76	233	0	0	16.1	-3.6	16.5
44059	99	DIRN	SUR	37	-76	60	0	0	12.0	-21.4	24.6
44060	99	DIRN	SUR	41	-72	203	0	0	11.9	3.2	12.3
44061	99	DIRN	SUR	39	-77	8	0	0	2.0	-16.4	16.5
44062	99	DIRN	SUR	39	-76	233	0	0	16.7	-8.6	18.8
44063	99	DIRN	SUR	39	-76	224	0	0	14.1	-7.2	15.8
44064	99	DIRN	SUR	37	-76	273	0	0	17.6	4.0	18.1
44065	99	DIRN	SUR	40	-74	218	0	0	12.9	2.3	13.1
44066	99	DIRN	SUR	40	-73	203	0	0	14.2	-1.0	14.2
44068	99	DIRN	SUR	37	-77	57	0	0	13.8	-7.3	15.7
44137	99	DIRN	SUR	42	-62	201	0	0	14.7	10.1	17.8
44139	99	DIRN	SUR	44	-57	190	0	0	13.7	14.0	19.6
44141	99	DIRN	SUR	43	-58	197	0	0	16.7	8.6	18.8
44150	99	DIRN	SUR	43	-64	188	0	0	17.8	1.2	17.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44175	99	DIRN	SUR	47	-62	29	0	0	18.9	2.0	19.0
44251	99	DIRN	SUR	46	-53	188	0	1	15.3	10.4	18.5
44255	99	DIRN	SUR	47	-57	271	0	0	11.4	10.1	15.3
44258	99	DIRN	SUR	45	-63	152	0	0	15.1	-0.9	15.1
45003	99	DIRN	SUR	45	-83	206	0	0	20.5	6.0	21.4
45005	99	DIRN	SUR	42	-82	179	0	0	11.2	9.0	14.4
45008	99	DIRN	SUR	44	-82	298	0	0	14.2	11.8	18.5
45012	99	DIRN	SUR	44	-77	162	0	0	14.1	7.2	15.8
45132	99	DIRN	SUR	43	-81	182	0	0	13.4	2.5	13.6
45135	99	DIRN	SUR	44	-77	186	0	0	14.7	-0.4	14.7
45137	99	DIRN	SUR	46	-81	178	0	1	16.2	11.6	19.9
45138	99	DIRN	SUR	50	-66	18	0	0	14.7	-12.3	19.2
45139	99	DIRN	SUR	43	-80	140	0	0	20.4	1.9	20.5
45142	99	DIRN	SUR	43	-79	172	0	0	17.6	-11.2	20.8
45143	99	DIRN	SUR	45	-81	230	0	0	14.2	1.3	14.3
45147	99	DIRN	SUR	42	-83	117	0	0	12.9	11.5	17.3
45149	99	DIRN	SUR	44	-82	191	0	0	10.1	-1.0	10.1
45151	99	DIRN	SUR	45	-79	112	0	0	11.2	9.2	14.5
45159	99	DIRN	SUR	44	-79	158	0	1	12.9	9.5	16.0
45167	99	DIRN	SUR	42	-80	19	0	0	22.8	-20.9	30.9
62001	99	DIRN	SUR	45	-5	192	0	0	14.1	3.7	14.6
62023	99	DIRN	SUR	51	-8	183	0	0	19.2	-6.3	20.2
62027	99	DIRN	SUR	49	-2	67	0	1	23.7	3.2	23.9
62029	99	DIRN	SUR	49	-12	213	0	0	12.0	-0.5	12.0
62030	99	DIRN	SUR	50	-4	117	0	0	15.4	-7.9	17.3
62050	99	DIRN	SUR	50	-4	30	0	0	10.2	3.9	10.9
62081	99	DIRN	SUR	51	-13	192	0	0	11.8	6.1	13.3
62091	99	DIRN	SUR	53	-5	187	0	0	14.9	-1.7	15.0
62092	99	DIRN	SUR	51	-11	29	0	0	7.2	-3.1	7.8
62093	99	DIRN	SUR	55	-10	188	0	0	11.5	-4.1	12.2
62094	99	DIRN	SUR	52	-7	26	0	0	14.8	-6.4	16.1
62103	99	DIRN	SUR	50	-3	194	0	0	14.4	3.5	14.8
62105	99	DIRN	SUR	55	-13	213	0	0	11.1	3.9	11.8
62107	99	DIRN	SUR	50	-6	198	0	0	13.8	1.6	13.9
62111	99	DIRN	SUR	58	0	188	0	0	14.8	-3.3	15.2
62112	99	DIRN	SUR	58	0	189	0	0	11.0	1.5	11.1
62114	99	DIRN	SUR	58	0	371	0	0	9.5	12.0	15.3
62117	99	DIRN	SUR	58	0	196	0	0	13.3	6.4	14.7
62163	99	DIRN	SUR	48	-8	197	0	0	11.4	2.6	11.7
62298	99	DIRN	SUR	49	-9	186	0	1	13.3	3.5	13.7
62301	99	DIRN	SUR	52	-5	195	0	0	13.9	3.9	14.4

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62305	99	DIRN	SUR	50	0	239	1	0	15.8	0.7	15.8
62442	99	DIRN	SUR	49	-16	186	0	1	12.6	0.6	12.6
63119	99	DIRN	SUR	58	-1	21	0	0	11.4	2.6	11.7
64041	99	DIRN	SUR	61	-3	190	0	0	7.8	15.6	17.5
64045	99	DIRN	SUR	59	-12	219	0	0	10.1	13.0	16.5
64046	99	DIRN	SUR	61	-4	194	0	0	13.2	-5.3	14.2

## 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  $\text{ms}^{-1}$  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	$35\text{ms}^{-1}$
925	$35\text{ms}^{-1}$
850	$35\text{ms}^{-1}$
700	$40\text{ms}^{-1}$
500	$45\text{ms}^{-1}$
400	$50\text{ms}^{-1}$
300	$60\text{ms}^{-1}$
250	$60\text{ms}^{-1}$
200	$50\text{ms}^{-1}$
150	$50\text{ms}^{-1}$
100	$45\text{ms}^{-1}$

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.