2013 Observations Monitoring Workshop

Overview of the requirements for observations monitoring and currently existing observations monitoring infrastructure from the perspective of ET-SBO

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Responsibilities of ET-SBO

- The CBS IOS ET on Surface Based Observations (not space based, not marine based and not aircraft based) has 8 terms of reference, the following terms of reference are relevant to Observations Monitoring:

    - Monitor and assess the status of planned and operational surface-based observing systems and ensure this is adequately described in Volume A and metadata database(s) of members observing system capabilities

    - In collaboration with IPET-OSDE, assess the contribution of current and planned SBO systems to meeting user requirements for all Application Areas

    - Monitor the status of operational networks of SBO systems, promote best practice among WMO members and provide advice on operational matters

Observing Requirements

- OSCAR, the Observing System Capability Analysis and Review Tool, is a resource developed by WMO in support of Earth Observation applications, studies and global coordination

- It contains quantitative user defined requirements for observations of physical variables in application areas of WMO related to weather, water and climate

- The capabilities of the wide range of surface observing systems are not yet captured in OSCAR

- 23 discrete application areas currently registered in OSCAR

Common Requirements

- All observational requirements in OSCAR define:

  - Measurement Uncertainty

  - Horizontal Resolution

  - Vertical Resolution (as appropriate)

  - Observing Cycle

  - Observation Latency

WMO Monitoring Centres & Responsibilities

- Lead Centre Monitoring

  - Lead Centres have been established by CBS for co-ordinating the monitoring results of specific observation types producing six monthly reports of low quality observations.

  - 3 centres: WMC Washington (aircraft and satellite data); RSMC ECMWF (upper-air data) & RSMC Exeter (surface marine data) undertake global monitoring

  - 6 centres: RSMC Nairobi (RAI); RSMC Tokyo (RAII); RSMC Buenos Aires (RAIII); RSMC Montreal (RAIV); WMC Melbourne (RAV) & RSMC Offenbach (RAVI) monitor surface observations.

WMO Monitoring Centres & Responsibilities

- Monthly Monitoring Centres

    - Seven centres: ECMWF; RSMC Exeter; WMC Melbourne; RSMC Montreal; RSMC Offenbach; RSMC Tokyo and RSMC Toulouse produce monthly reports of suspect lists of observations for a range of observing systems.

Future Requirements for Observations Monitoring

- The need to establish Lead Centre(s) for global monitoring of surface land based observations

    - Consideration of the basic surface parameters: Air Pressure; Air Temperature; Humidity; Wind & Precipitation

- Increased level of online access to monitoring reports, via WIGOS Information Resource?

- Monitoring Centres to cross compare results to assess the relative effectiveness of their monitoring function.

Some ambitions from ET-SBO

- Reporting of overall system performance not just suspect lists – let's celebrate all the good work the Members undertake

- Establish more oversight bodies, essentially a global architecture, following the EUCOS model to monitor and co-ordinate the corrective actions

- Establish a wider active group of Points of Contact and technical leads for problem resolution

- Monitoring reports should prompt healthy competition

- Caution should be taken for non continuous variables

- Understanding the degree of freedom between the observation and the field being monitored against.

- Fitness of purpose tests for Monitoring Centres to be established

Maximising the value of monitoring

- Monitoring centres invest significant effort in providing feedback. For example, from the following report was extracted from a 2010 report from JMA:

  - 36982 – Positive bias at 700 hPa level and the station level (Figure 2 and Figure 3). In the JMA's record, latitude of this station is 41°53'N, longitude is 78°14'E, height is 3639 m. But the location of this station seemed to be changed on July 19th, 1999. The correct latitude of this station is 41°52'N, longitude is 79°11'E, height of station from the sea level is 3675 m, and height of the tools with barometer is 3679 m. As RSMC Tokyo has not been informed formally from WMO about the location of the station, the record has not been corrected yet.

- The issue clearly requires resolving but who should take the lead? Clearly now ET-SBO can help.

Marine : healthy competition

Cntry	NShips	Combined		Pressure		Wind Speed		Wind Direction		Temperature	
		Score	NObsTot	Score	NObs_P	Score	NObsSP	Score	NObsDR	Score	NObs_T
'SHIP'	1	0.195	18643	0.269	2859	0.219	2873	0.197	1690	0.152	2869
NO	5	0.252	13617	0.151	2774	0.213	2788	0.259	637	0.181	2788
Ancill.	4	0.452	1196	0.442	186	0.476	185	0.529	98	0.450	186
SE	15	0.518	4233	0.475	731	0.482	732	0.477	419	0.419	733
NL	79	0.561	18448	0.524	2961	0.581	2933	0.552	1771	0.538	2953
IT	3	0.574	1029	0.756	170	0.488	176	0.537	85	0.441	164
GB	225	0.582	51250	0.573	8075	0.596	8077	0.584	4583	0.534	8037
NZ	17	0.602	5434	0.581	914	0.578	918	0.593	532	0.532	919
IS	3	0.630	624	0.544	119	0.576	119	0.511	68	0.478	119
DE	416	0.636	72000	0.617	11471	0.629	11462	0.593	6655	0.603	11457
AU	47	0.662	6445	0.653	999	0.657	1027	0.626	567	0.596	1003
GR	3	0.663	87	0.650	12	0.762	13	0.814	10	0.616	13
JP	13	0.664	3541	0.623	540	0.594	542	0.551	433	0.551	541
US	449	0.687	147111	0.666	25785	0.637	26397	0.609	15159	0.599	25305
IL	5	0.698	426	0.634	80	0.668	80	0.575	57	0.627	80
MY	6	0.699	960	0.759	155	0.761	154	0.765	34	0.622	155
CA	4	0.755	294	0.556	57	0.657	57	0.555	24	0.557	57
RU	54	0.756	8198	0.729	1487	0.700	1481	0.622	962	0.639	1487
HK	24	0.775	2414	0.823	388	0.767	385	0.736	146	0.736	388
Unkno	173	0.835	23584	0.842	3945	0.757	3929	0.709	2164	0.722	3965
IE	2	0.885	118	0.651	29	0.795	29	0.655	5	0.608	26
IN	8	0.910	506	0.875	80	0.825	97	0.800	17	0.783	98
ZA	1	1.047	48	1.029	7	1.324	7	0.956	5	0.959	7
KR	2	1.244	15	1.338	5	1.068	5	MISS	0	1.038	5

Questions