METEOROLOGICAL AND OCEANOGRAPHIC MEASUREMENTS FROM OCEAN PLATFORMS DURING YOPP-SH

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Meredith et al. (SCAR, 2013)
Ocean observations needs for ocean predictability out to 2 months

**List (incomplete) of relevant observational efforts**

- Mooring network, including air-sea flux moorings (int’l.)
- Argo (international)
- MEOP (international)
- GO-SHIP hydrography (underway data, carbon data) (int’l.)
- OISO (Kerguelen): France
- Intensive polynya observations (U.S., Japan, etc)
- Weddell Sea, Amundsen Sea (UK, Germany, Korea, many others)
- Drake Passage long-term sustained observations (underway, currents) (US, UK)
- Carbon-focused programs (SOCCOM, ORCHESTRA)

Moored measurements

- Several lower latitude sites have air-sea fluxes
- Most near-continental sites are water properties
- Source of figure: SOOS (updated July 2017)

*Southern Ocean Observing System (2017), Southern Ocean Mooring Sites*
www.soos.aq/activities/soos-at-sea/moorings
Moored measurements: air-sea fluxes

IMOS Australia
Southern Ocean Flux Station (SOFS)

NSF USA
Ocean Observatories Initiative (OOI)
Moored measurements: air-sea fluxes

IMOS Australia
Southern Ocean Flux Station (SOFS)

NSF USA
Ocean Observatories Initiative (OOI)
http://oceanobservatories.org/array/global-argentine-basin/
Argo profiling floats: Broad-scale T/S sampling in the upper 2000 m http://www.jcommops.org
SOCCOM BGC-Argo floats with sea ice capability:
111 active after 4 years, with 3 more years to go → 200 at end, plus new commitments from several countries

https://soccom.princeton.edu/
Southern Ocean Carbon and Climate Observations and Modeling: Floats

Biogeochemical Argo: 2000 m profile, 10 days T, S, O2, NO3, pH, FL, BB

**Current**
2014-present: 111 active

**Planned**
2018-2019 (33 floats):
6 floats on AMT28, JAMSTEC, ANDREXII; 7 floats on PS117

https://soccom.princeton.edu/
Surface to about 2000 m profiling from marine mammals

http://www.meop.net/
GO-SHIP decadal repeat hydrography

- YOPP year 2018-2019 Southern Hemisphere relevant: A17, SR4, SR1 (ANDREXII)
- YOPP year opportunities, not full GO-SHIP: A23, A12 (PS117), SR3
OISO project, repeated cruise on Marion Dufresne II (CO2, CTD, underway atmo and ocean..)

https://caraus.ipsl.jussieu.fr/oiso-campagnes.html
Meteo and Oceanographic underway data from ships

**Need:** contact scientific programs, tourist cruises, coast guard.. with a presence in the Southern Ocean during SOP

- data on the GTS?
- data archived for future assessment?

**So far:** in touch with several countries, which encouraged future collaborations

**Main issue:**

- real time data hard to send to GTS, often due to funding (no internet connection)

**Shared data:** collaborations for sharing data for future model validation have been open with different countries!!
<table>
<thead>
<tr>
<th>Country</th>
<th>Data</th>
<th>GTS?</th>
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</thead>
<tbody>
<tr>
<td>UK</td>
<td>• 3 research cruises (ORCHESTRA, GOSHIP SR1b)</td>
<td>• Meteo data on the GTS via MetOffice</td>
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<tr>
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<td>• Meteorological observations from AWS and manual from the bridge</td>
<td>• CTD and underway oceanographic data NOT YET, but setting this up with the help of CMEMS and MetOffice</td>
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<td>• thermosalinograph (TSG) and Ferrybox data</td>
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<td></td>
<td>• CTD casts</td>
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<td>Australia</td>
<td>• Investigator (research cruise at sea ice zone, 150E to 165E)</td>
<td>both send the atmo and ocean underway data to the GTS</td>
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<td>• Aurora Australis (resupply legs)</td>
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<td>Russia</td>
<td>Planned oceanographic cruise on Akademik Treshnikov and Akademik Fedorov</td>
<td>SYNOP meteorological messages are usually transmitted to the GTS</td>
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<td>Japan</td>
<td>• Kaiyo Maru (CTD, underway meteo and oceanographic data, sea ice state. NO radiosondes)</td>
<td>• Likely underway data on GTS from Kaiyo Maru.</td>
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<tr>
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<td>• Shirase: YES radiosondes</td>
<td>• No underway data on GTS from Shirase</td>
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ANDREX II (ORCHESTRA, full GO-SHIP observations):
RV James Clark Ross, C.S. Andrew Meijers
Australian resupply cruises (from 2017-2018 season)
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| Brazil  | • 3 ships (Navy, research and base supply)  
• SST, meteo parameters and fluxes  
• radiosondes at the Brazil-Malvinas front, and on the transit to Brazilian bases  
• micro-meteo tower (high frequency)                                                                 | • Radiosondes data will be transmitted in real time into the GTS.  
• Waiting to hear if they’ll be able to send also the other parameters |
| Argentina | 4 ships operated by Navy (Drake Passage, Weddell Sea, North Peninsula, Antarctic bases). CTD and underway meteorological and oceanographic data | NO on GTS, but will be shared for future model validation                               |
| Chile   | Several projects, e.g. from IDEAL center: oceanographic and atmospheric research in Yelcho and Maxwell bay.                                                                                   | • Sharing data for future validation  
• Waiting to hear if underway data are sent to GTS in real time |
| US      | • GO-SHIP  
• IAATO  
• coast guard  
• saildrones                                                                                                       | Work in progress                                                                         |
| France  | • OISO on Marion Dufresne II  
• L’Astrolabe                                                                                                               | Work in progress                                                                         |
What to do next?

1. Update list of type of data/cruise/contact
2. Follow-up with existing collaborations/contacts for the real-time data
3. Follow-up with existing collaborations/contacts for future data sharing
4. New contacts???

ACKNOWLEDGMENTS: WMO, ships operators and PIs, SOCCOM