



Forum for Operational
Oceanography

www.foo.org.au

Theme 4 – So what, what next?

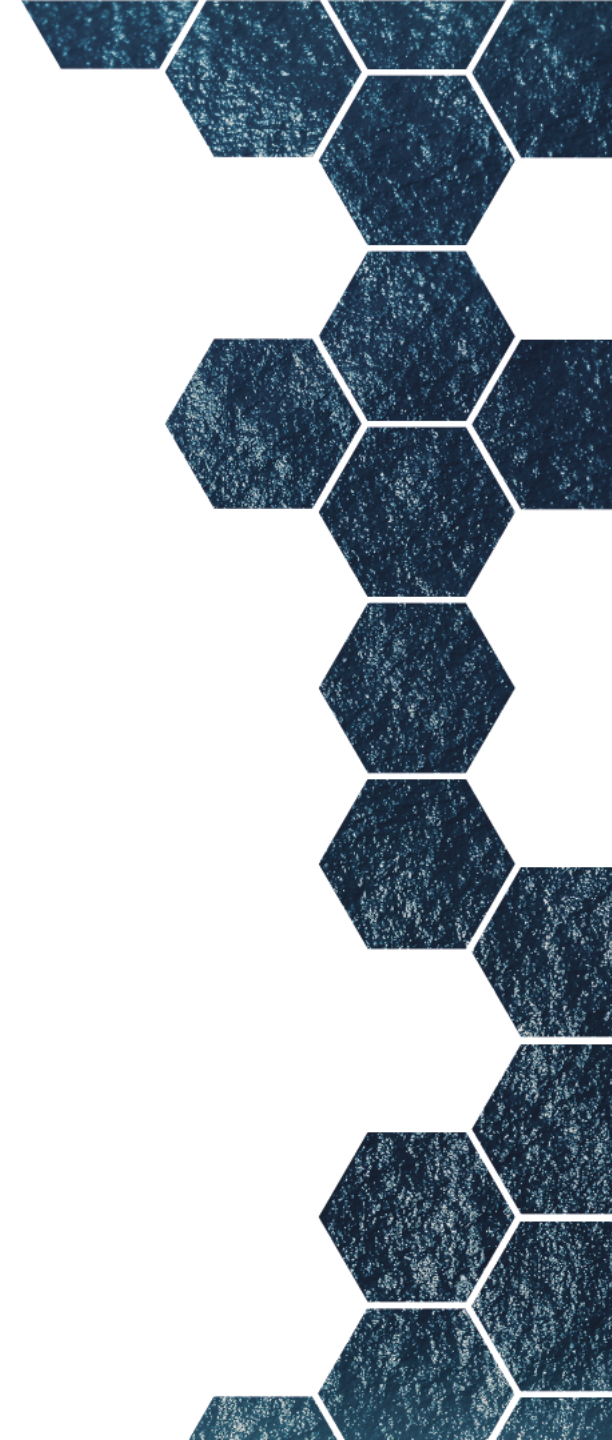
Priorities

FOO 2015	FOO 2017	FOO 2019
Surface Currents*	Surface Currents*	
Surface Waves*	Surface Waves*	
Thermal Structure		
Consensus Forecasting		
Data Products		
Data Stewardship	Data Sharing*	
	Shelf/Coastal Modelling, Forecasting & Analysis	
	Ensemble Prediction	
	Model Verification	

* Working groups

Theme 4 – So what, what next?

- FOO 2021, FOO 2023...
 - Location, Perth vs east coast
- Working Groups
 - Surface Waves and Surface Currents going well, just continue?
 - Data Sharing – should we come back to this, perhaps be more targeted?
 - Other?
- Pathways for recommendations from Working Groups
 - e.g. Surface Waves, some clear, some not - role for SC to help?



Theme 4 – So what, what next?

- What else?
 - UK example of a National Partnership for Ocean Prediction
 - Do we need something like this in Australia?
 - New partnership opportunities
 - NERA
 - Blue Economy CRC
 - North West Shelf monitoring and prediction network (RPS)
 - Collaboration with Defence



Theme 4 – So what, what next?

- FOO 2019 'resources' page - <https://www.foo.org.au/forum/foo2019/>
- Meeting Report will be written and posted on the FOO website
- Program will be put on the FOO website with hyperlinks to talks
 - Please let us know if you do not want your talk to be available
 - The conference website will be turned off when this is done



Theme 4 – So what, what next?

Priorities

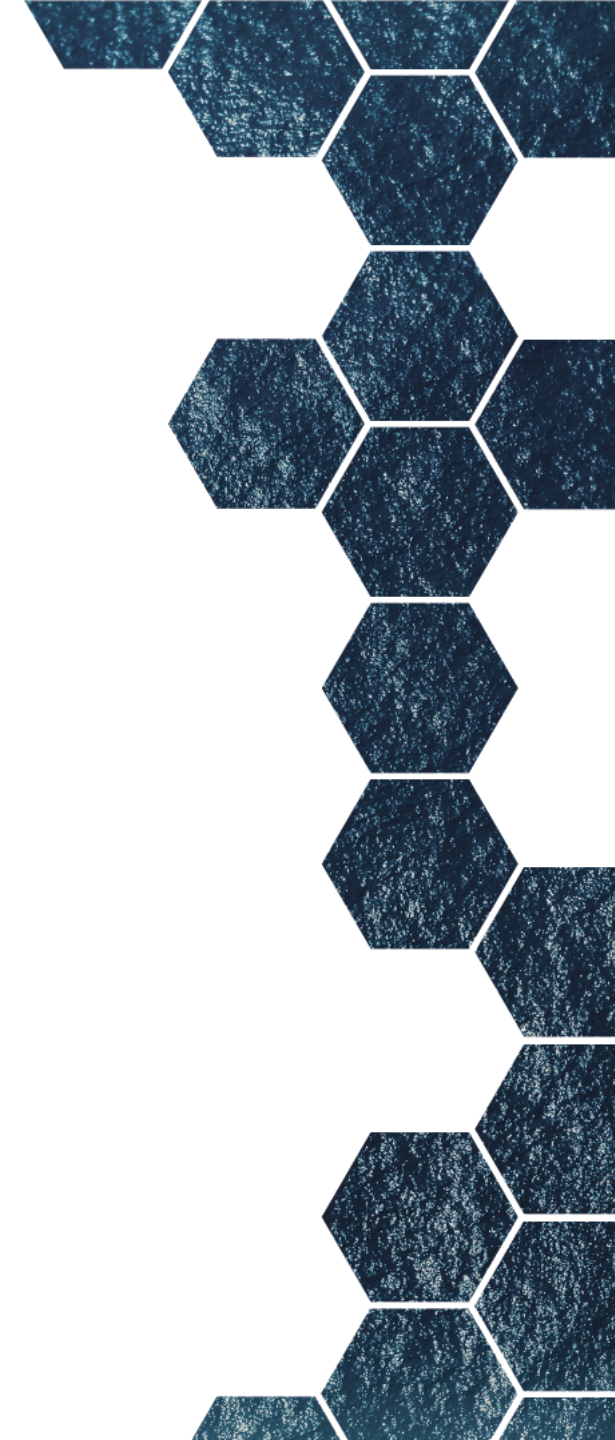
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Theme 1 – The Australian FOO

- Surface Waves Working Group, and priorities for research
 - Obvious mechanisms for considering some recommendations (e.g. research infrastructure to IMOS, data to AODN)
 - What about others? Bathymetry, Modelling priorities?
- Surface Currents Working Group
 - Largely information sharing
 - Nice example of SLDMB deployment (buoys at EOL + training flight)
- Overview of Forum activities
 - Matching Working Groups with priorities
 - Data Sharing Working Group – come back to it, or let it go?

FOO 2019 'resources' page - <https://www.foo.org.au/forum/foo2019/>



Theme 2 - Opportunities

John Siddorn (UKMO) Keynote

- UK National Partnership for Ocean Prediction, including UKMO, NOC, NCEO, PML, CEFAS and Marine Scotland (biophysical)
- 'Evidence Groups' – clean and safe seas, productive seas, Healthy and biologically diverse seas, ocean processes
- Joint Marine Modelling Programme (JMMP) – UKMO, NOC, PML and BAS
- 'Route to operations' for forecast products
- Partnership between observations and modelling



Theme 2 – Opportunities (continued)

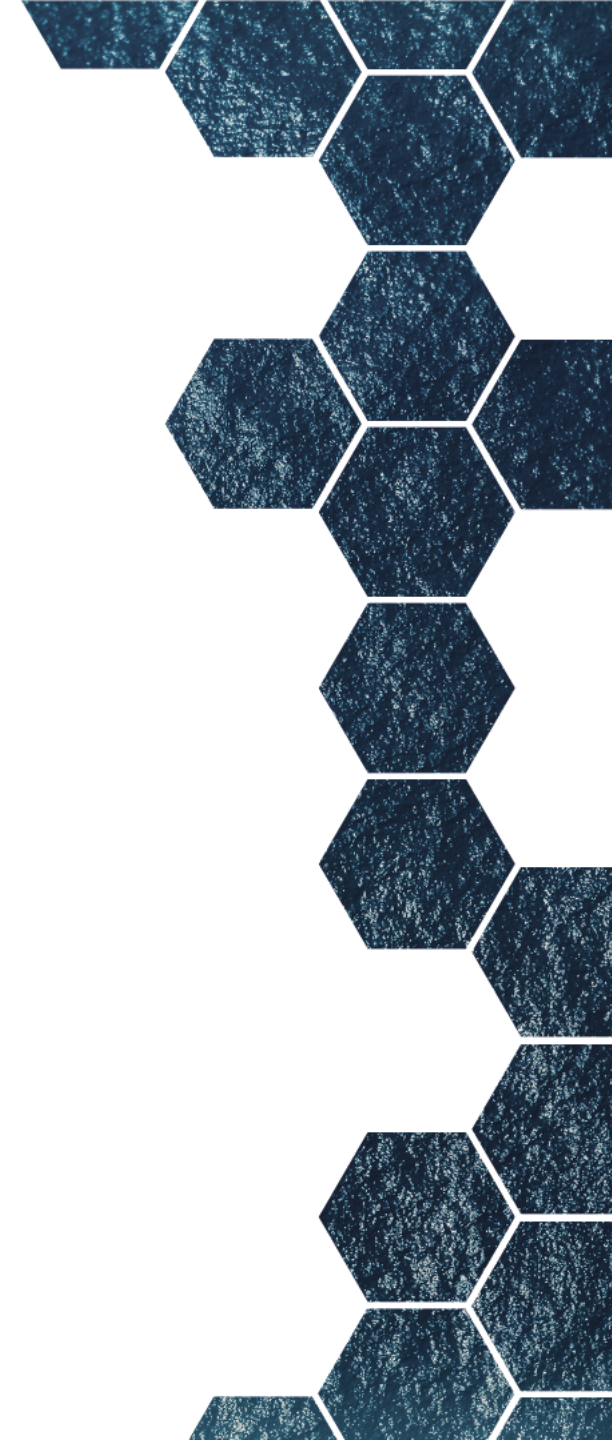
- NERA projects, including support for Australian Ocean Energy Cluster
- New satellite missions e.g. SWOT – mesoscale processes, coastal processes, sub-mesoscale processes
- Adding Sentinel images to IMOS *OceanCurrent* ?
- Positioning Australia program (GA)
- Products and services for shipping and sailing (Tide Tech)



Theme 2 – Opportunities (continued)

Irene Penesis (Blue Economy CRC/UTAS) Keynote

- Large (\$70M), long-term (10 year), research/industry partnership that will have a clear need for operational oceanography if it is to realise its goals
- New technologies (e.g. wave gliders)
- Machine learning approaches (waves)
- RPS - Case for a regional North West Shelf monitoring and prediction network, focus on reanalysis, optimal (realtime) measurement coverage for prediction (five sites)
- Baseline data on tidal resources in Australia



Theme 3 - Risks

Jim Stear (Chevron/IOGP) Keynote

- IOGP Metocean Committee, ~20 metocean specialists
- Limited data sharing, room for improvement in other basins (where data poor)
- Future priorities
 - Synthetic data sets / extended simulations
 - New observation tools – HR radar, ROCIS, Satellite, drifters, gliders etc.
 - New / improved hazard modelling – waves/swell, TRWs, solitons
 - Forecasting enhancements / ensembles; data analytics – DA, ensembles, ML

Industry data sharing / networks – North West Shelf opportunity

Theme 3 – Risks (continued)

- Tropical cyclone winds and waves for offshore and coastal design
- Integration of physics and probability
- Swell forecasting tool development
- Navy oceanography community ~30 personnel, part of Navy warfare community, use of Bluelink ocean modelling to provide tactical analysis
- Some data hard to get e.g. ambient noise, bioluminescence
- Opportunities for collaboration with Defence



Theme 3 – Risks (continued)

- YM Efficiency incident, 66/81 located
- NZ national ocean forecast system
- Bluelink strategic plan 2025
- OceanMAPS operational since 2007, moving to v4.0 over next 3 years
- ROAM, verification of tides
- No prediction of tidal currents (vs sea level), new IMOS *OceanCurrent* product
- Littoral forecasting, developments in high resolution bathymetry using optical remote sensing via drones and satellites



Theme 3 – Risks (continued)

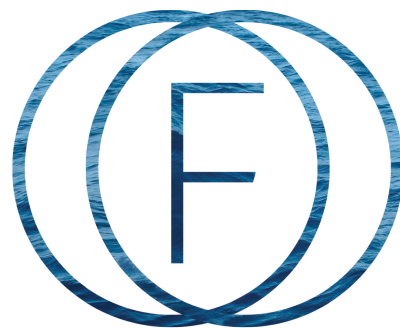
David Karoly (CSIRO/NESP ESCC) Keynote

- Climate variability e.g. difference in TC frequency in el Nino/la Nina years
- Climate change risks
 - Sea level rise
 - Marine heatwaves
 - Ocean wave climate, high confidence in Southern Ocean
 - Tropical Cyclones



Theme 3 – Risks (continued)

- Seasonal forecasting, weeks-months timeframe using ACCESS-S1, includes NEMO ocean model (replaces POAMA SST GBR, now whole of Australia)
- Statistically downscaled for industry applications (salmon, tuna etc.), dynamical downscaling the future
- Operational products supporting management of the GBR
- Managing GBR shipping using ocean modelling, observations and cloud-based analytics



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