

## NSW IMOS May Update SAC Meeting Wednesday 20<sup>th</sup> May 2009

### 1. IMOS

- a. IMOS has received an unexpected Extended-IMOS \$52m out of the recent federal budget to continue IMOS until 2013. IMOS is meeting in Canberra on Wed. 20 May to discuss but concerns northern Australia and Southern Ocean. The amount of EIF permitted for salaries to deploy/operate is unknown. \$8m needs to be paid to IMOS in a few weeks.
- b. Other items in the budget concern \$120m for a new national research vessel, \$48m for UTas oceans institute, and of course SIMS.
- c. In summary the proposed new IMOS Budget is as follows:

Source	To Jun09	2009/10	2010/11	2011/12	2012/13	Total
<b>** NCRIS Funding:</b>						
Capital	14m	6m	2m			22m
Operating	11m	10m	10m			31m
<b>NCRIS Total:</b>	<b>25m</b>	<b>16m</b>	<b>12m</b>			<b>53m</b>
<b>## EIF Funding:</b>		<b>8m</b>	<b>8m</b>	<b>18m</b>	<b>18m</b>	<b>52m</b>
<b>TOTAL FUNDS:</b>	<b>25m</b>	<b>24m</b>	<b>20m</b>	<b>18m</b>	<b>18m</b>	<b>105m</b>

*NOTES:*

- \*\*** *Includes \$50m from NCRIS, interest earnings and UTAS/DEDT invest in IMOS Office. Totals are as per the 2009/10 IMOS Annual Business Plan.*
- ##** *This is the likely expenditure budget as advised by NCRIS, however \$8m likely to be paid by June09, and next \$8m around Jun10.*

### 2. NSW IMOS

- a. Held a node meeting on Thurs 30<sup>th</sup> April 2009 after the 2 day ESCCI meeting. The meeting included updates from all NSW facilities and a brief discussion on ideas for a scoping paper for IMOS 2 which has been requested by the IMOS office (draft attached). In summary:
  - i. maintain the existing IMOS infrastructure (some of which is still being deployed) to reap full science benefits;
  - ii. With Extended-IMOS to deploy coastal radar at the EAC separation (off Newcastle); coastal radar off southern NSW and NE Tasmania; and to upgrade the moorings with ADCP

### 3. NSW Moorings

- a. The NSW-IMOS moorings SYD100 and SYD140 are now entering their ninth month of continued operation.
- b. The contract for the Coffs Harbour is completed, but MHL have only recently ordered equipment such that deployment may not occur until July. .
- c. NSW Moorings has ordered WQM units for the Sydney and Coffs moorings.

### 4. AATAMS Facility



- a. Andrew Boomer has been busy recovering and redeploying the Ningaloo receivers. A returned trip to Ningaloo onboard the AIMS RV Solander is planned for July/August 2009.
- b. The final 50% of the Sydney line will be deployed on Andrews return to Sydney next week.
- c. Coffs harbour is to be deployed following the Sydney line deployment.

**5. AUV Facility**

- a. At the mid-term review, the AUV has secured at further \$300K of operational funding to continue its deployment through the IMOS AUV facility until 2011. AUV has facilitated with the deployment of Gliders. The February deployment of the AUV in Tasmania ended with the research vessel Challenger losing its anchor overnight and washing onto rocks.

**6. Glider Facility**

- a. The second employment of an ocean glider has been successfully deployed off the NSW coast starting at Port Stephens (March-7 April).
- b. 3 other Slocum gliders will be deployed in spring, and the 4-6 month Sea glider will be deployed then as well.
- c.

**DRAFT ESCCI-IMOS2 workshop Thursday 30 April 2009 DRAFT**

**Planning for IMOS-2**

*Preface. Below is a draft summary of the planning document for IMOS-2, but does not prejudge the proposal for a second workshop on a nationally based Coastal Observatory. The Extended IMOS announced on 12 May in the Federal Budget may supersede this paper. Extend-IMOS commences in July through to 2013, and is particularly concerned with plugging the gaps of IMOS in the Southern Ocean and off northern Australia (i.e. outside NSW-IMOS).*

**DRAFT SUMMARY:**

The key questions remain on the effects of the increasing East Australian Current (EAC) as it warms our coast, on local sedimentary erosion, beaches, rocky reefs and the biological communities. Monitoring of key biological communities include zooplankton dynamics; phytoplankton - pigment calibration; kelp distribution and health dynamics; migration by sharks and other large megafauna.

- The effects of the EAC separation as it departs the coast and the role of warm core eddies in stimulating extreme storm events remain the key science questions.
- We do not have any clear evidence based understanding of the far field processes affecting the near coastal (<1 km) processes.

IMOS has largely concerned deployments and operations, with science beginning now for the next 2 years with the impending launch of the data portal eMII. The meeting strongly supported maintenance of existing IMOS infrastructure beyond 2011 as a priority for IMOS-2, to derive the full research benefits initially stipulated during the NCRIS negotiations. Observations of the remarkably narrow NSW continental shelf will supersede any modeled projections of currents for at least the next few years.

Infrastructure should focus on maintenance of long term observations of the EAC separation dynamics with the Oceanographic Moorings (ANMF) but instrumented with new sensors (nutrients, pH,





CO3) and sediment traps; increase HF radar coverage at key locations (Sydney- Newcastle, Stradbroke Island); acoustic tracking of sharks and fish (AATAMS); ocean glider development with new sensors and working with AATAMS; Ships of Opportunity (SOOP); monitoring of specific deep water sites.

With the growth of SIMS, NSW-IMOS must enhance its scientists oceanographic and local climate capabilities, especially with regard to HF radar and glider operations.

#### NOTES FROM MEETING:

- 45 members of NSW-IMOS (including representatives from SE Queensland, Victoria, and the IMOS office) met on 30 April 2009 to prepare a summary of a scoping paper in light of the earlier workshops on;
  - rocky reef processes (Kelp on the Edge),
  - ocean acidification, and
  - Coastal Erosion under the East Coast Lows projects.

The 3 main science questions that NSW IMOS is addressing through IMOS-1 funding are:

- Measure EAC flow upstream of the separation zone, and the subsequent cross-shelf processes along the NSW coast;
- Sustained observations of coastal separation of EAC, eddies, consequences;
- Biological response to oceanographic and climate effects (eddies, upwelling, rainfall, dust storms) from fish movements to phytopl to benthos;

The main achievements of the current IMOS program were summarized on 30 April and the 5 major IMOS facilities operating out of SIMS or being used:

- HF coastal radar (to be deployed off Coffs)
- Ocean Moorings (SYD100, SYD140, PH110, JB70, Coffs70; Coffs100, and Eden?)
- AATAMS (Sydney and Coffs arrays)
- AUV
- Ocean gliders (sustained observations of the EAC eddies)
- SOOP, in particular the Tasman Sea box of XBT, and the new Brisbane to Melbourne CPR

Other IMOS equipment or data streams were noted including Sydney's ORS mooring, the 7 MHL wave rider buoys, the IMOS acoustic mooring, the recently expanded DPI acoustic receiver array of around 200 VR2Ws.

Major evolving science infrastructure needs for the region are:

- EAC separation dynamics 31-33°S under increased regional forcing;
  - **Maintain Coffs WERA**
  - **Needs CODAR facility off Diamond Head to Sydney;**
  - **Maintain existing moorings**
  - **New mooring off Stradbroke Island with SE Queensland**
- Extension of the EAC influence into southern NSW, Tasmania to complement the planned Eden mooring, and CTW forcing from South Australia;
  - NSW-IMOS will re-commence discussions with Victoria and Tasmania for a **long range CODAR facility between Eden, Flinders Island and Maria Island**
- Links of East Coast Lows and extreme weather to warm core eddies and large temperature gradients;
  - **Add BlueLink as an IMOS facility**





- Needs CODAR facility to cover Eddy Field, e.g Diamond Head to Sydney
- Role of far-field forcing in on-shore wave climate;
  - LIDAR, xband radar, cameras
  - Link SIMS WaMOS (to 3 km offshore) with IMOS Radar (to 200 km offshore)
- Sediment transport, wave climate and beach erosion;
  - LIDAR, xband radar, cameras
- Kelp on the edge – southward contraction of *Eklonia radiata* and demise of major macroalgae along urbanized coasts;
- Ocean acidification monitoring, especially pH and CO<sub>3</sub>;
  - Additional NRS stations off Coffs harbour and SE Qld
- Monitoring of marine microbes;
- Development of new optical sensors for nutrients and plankton abundance and condition
- Augmentation to NRS moorings includes addition of ADCP and thermistor strings and sediment traps on NRS moorings. DO<sub>2</sub> sensors on NRS CTDs

**Financial Support for node is needed through a node project leader and 2 technical staff for assistance in deploying instrumentation such as gliders, assisting with HF Radar and processing, and supplying data to both eMII and the community.**