THE AUSTRALIAN IMOS *OCEANCURRENT* GRIDDED SEA LEVEL ANOMALY PRODUCT

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ABSTRACT

The Australian Integrated Marine Observing System (IMOS) is a research infrastructure initiative of the Australian Federal Government. One of the data products of the Satellite Remote Sensing facility is a multi-mission gridded sea level product for the Australasian region known generically as GSLA. Here, we assess DM00, a trial re-analysis of the 2003-2006 period prior to a full 20-year reanalysis. The recent improvements to corrections allow a closer fit without introducing spurious gradients. The standard deviation of the residuals is 4.1cm, while the standard deviation from 3800 Argo steric height anomalies is 4.4cm.

1. INTRODUCTION

The IMOS Gridded Sea Level Anomaly (GSLA) system is similar to the AVISO DUACS system. Here, we assess the performance of DM00, a recent (but pre-GDR-D) trial 4-year (2003-2006) processing of the Geophysical Data Records obtained from RADS.

2. METHOD

- Critical RADS choices were: DTU10 MSS, CLS non-parametric SSB, MOG2D IB, GOT4.8 ocean tide, smoothed dual-frequency ionospheric correction.
- Sea level anomaly editing of tracks with |pass_mean - global_mean| > 12cm, spikes of 35cm, or tropical anomaly of 40cm.
- Coastal sea level anomaly (IB adjusted) is interpolated every 20km along the coast between available tide gauges.
- Ducet *et al.* (2000) spatial covariance. (1+cos) temporal weighting, zero at t+/-15days. Grid resolution 0.2°x0.2°

3. RESULTS

The DM00 maps are a tighter fit to the RADS track data than is the widely-used AVISO global re-analysis, as shown in Tab. 1. This is because of the different input data as well as details of the editing and interpolation. The difference between the mean residuals is because the AVISO data set has a zero mean global sea level anomaly in 1993.

Table 1: *Statistics of the difference between the along-track data from RADS and two multi-mission analyses of sea level anomaly in the Australasian region. Only track data within a 48h time window (centred on the analysis time of each map) contribute to these statistics.*

	mean	Std. dev.	r.m.s
DM00	-0.02cm	4.1cm	4.1cm
AVISO	3.8cm	5.1cm	6.4cm

Argo steric height anomalies provide an independent estimate of the accuracy of sea level anomaly analyses. These data (see Tab. 2) suggest that DM00 has a slightly lower error than the AVISO global product. Note that we have not subtracted an estimate of non-steric sea level rise from the AVISO product, so the mean difference from Argo is greater.

Table 2: *Statistics of the difference between 3800 Argo estimates of surface steric height anomaly (referenced to the CSIRO CARS2009 hydrographic climatology) and two multi-mission analyses of sea level anomaly in the Australasian region.*

	mean	std. dev.	r.m.s
DM00	-0.04cm	4.36cm	4.36cm
AVISO	4.14cm	4.74cm	6.29cm

4. DATA PRODUCT DISTRIBUTION

The various GSLA data products (including a daily-updated near-real-time analysis) are freely available to all users in both graphical and digital format. The

former are at http://oceancurrent.imos.org.au. An example image for the SE quadrant of Australia is shown in Fig. 1. The data are available in digital form at *http://tds.arcs.org.au/thredds/catalog/IMOS/OceanCurrent/GSLA/catalog.html*

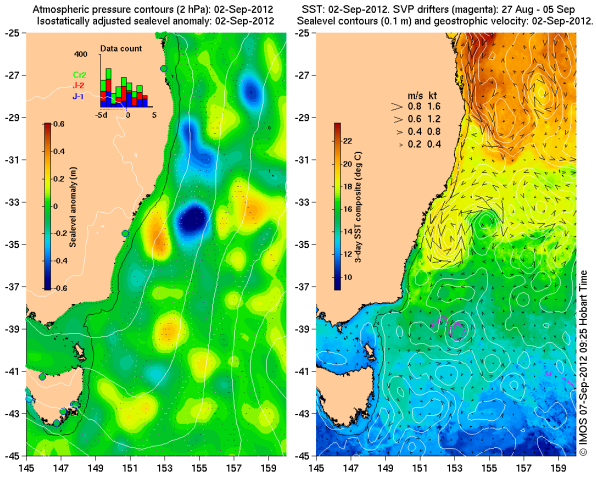

Figure 1. Regional maps of height anomaly and geostrophic current overlain on SST are updated daily at http://oceancurrent.imos.org.au/.

5. REFERENCES

1. Ducet N., P.Y. Le Traon and G. Reverdin, 2000: Global high resolution mapping of ocean circulation from the combination of T/P and ERS-1/2. J. Geophys. Res., 105, 19,477-19,498.

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