Report of the IAPSO Commission on Mean Sea Level and Tides to the XXV IUGG General Assembly, Melbourne, 28 June – 7 July 2011

The Commission last met at the IUGG in Perugia in 2007 and discussed a number of topics which have since been followed up.

*Plans for the PSMSL 75th Anniversary* – the Permanent Service for Mean Sea Level reports formally to the IAPSO CMSLT in addition to having its own Advisory Group. The PSMSL can date its founding to the IUGG General Assembly in Lisbon in 1933 when a ‘Committee on Mean Sea Level’ was established. During 2008, three large events were organised to celebrate the 75th anniversary, along with a set of promotional material (CD, brochure etc.). The first event was a special session on sea level changes at the EGU’08 in Vienna; the second was the co-sponsorship of the 2008 William Smith meeting at the Geological Society in London; the third was a special session as part of the British Association Festival of Science in Liverpool.

The PSMSL has been a longstanding member of the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) of the International Council for Science (ICSU). During 2008, ICSU decided to merge FAGS with the World Data Centres to form a new World Data System (WDS). Since then, methods of accreditation to the WDS have been established and the PSMSL will apply to become a member of that new System in 2011.

*TIGA Workshop* – the meeting in Perugia expressed a wish that a workshop be held to review progress with the TIGA (GPS at Tide Gauges) project which has the aim of determining rates of vertical land movement at tide gauge locations. A successful workshop was held in 2009 in Paris, alongside the 11th meeting of the GLOSS Group of Experts, with the workshop co-organised by Tilo Schöne, Guy Wöppelmann, Gary Mitchum and others.

One outcome of the workshop was an appreciation of the impact of reference frame errors on global sea level rise estimates from altimetry. These concerns were since shared at the following Seattle meeting of the OSTM/Jason-2 Science Working Team and a variety of international groups have since taken up this issue.

*Bottom Pressure Data Bank* – the Perugia meeting asked that more resources be put into centralised collection of bottom pressure data, for use in studies such as deep ocean tides, and for comparison to data from space gravity. The PSMSL is responsible to the CMSLT for the archiving of such information. However, there has been little scope for further development of this activity in the last few years, in spite of its relevance to GRACE gravity studies. The
status of the topic needs to be reviewed between the CMSLT and PSMSL.

*Future Altimetry Needs* – the Perugia meeting discussed how the CMSLT might input into studies of requirements of future altimetry. This topic has not since been pursued in a CMSLT context, but many of the same individuals were closely involved in preparation of position papers for the Oceanobs’09 Conference in Venice, at which the future needs of altimetry was discussed. In particular, one can note the encouraging developments in coastal altimetry.

*Ocean Tides* – since Perugia, a successful meeting on ocean tides was held at the University of Hamburg which brought many members of the tidal community together. A second meeting was planned, to which the CMSLT would have lent support, but this has so far not taken place. Detlef Stammer has meanwhile offered to lead a new assessment of recent ocean tide models, now that the earlier studies (Andersen et al. 1995, Shum et al. 1997) are many years old.

*Changes in MSL and Extremes* – no separate activity has taken place in these topics within a CMSLT context. However, many of the individuals involved were engaged in completing the book on ‘Understanding Sea-Level Rise and Variability’ which followed from the World Climate Research Programme (WCRP) conference on sea level at UNESCO in Paris in 2006. The book (edited by Church et al.) was published by Wiley-Blackwell in August 2010.

*WCRP and Other Science Conferences* – in February 2011, the WCRP organised a second international meeting at UNESCO, this time focused on regional rather than global variability. No book or other publication is planned following this event, many participants anyway being heavily involved in IPCC AR5 activities. The CMSLT has of course kept in close touch with the WCRP activities, IPCC ones (including a large conference on sea level and cryosphere in Malaysia in 2010), and a workshop at the University of Bern in 2010.

*Scanning of IAPO/IAPSO reports* – NOC Liverpool and PSMSL undertook to Professor Rohde to convert to pdf form as many of the historical IAPO and IAPSO reports that are in the Liverpool library. This work has since been completed and pdf files passed to IAPSO.

*Topics for Consideration in the Next Few Years* – It would be interesting to know the topics which the CMSLT might be able to help to spin up over the next two years. Suggestions should be sent to the new Commission President. For example, there are clearly many overlaps of interest with the observational (e.g. space), palaeo-sea level and impacts communities, aside from the oceanographic and geodetic ones, which could be developed.

*Commission Membership:*

The CMSLT has always had a policy of considering as members any researchers who express interest in the topics of mean sea level and tides. Scientists who were either at the Perugia meeting or who have since corresponded on CMSLT matters have included: Gary Mitchum, Mark Merrifield, Laurent Testut, Guy Woppelmann, John Church, Jonathan Gregory, Steve Nerem, Tilo Schoene, Chris Hughes, Richard D Ray, Florent Lyard, Svetlana Jevrejeva, Simon Holgate, Bruce Douglas, Thorkild Aarup, Alakkat S. Unnikrishnan, Roland Gehrels, Lesley Rickards, Alexander Rabinovich, Afranio Mequita, Detlef Stammer, Philip Woodworth.

Philip L. Woodworth, President IAPSO CMSLT, June 2011