

3.5.6.2 Special Bureau for the Oceans

Introduction

The oceans have a major impact on global geophysical processes of the Earth. Nontidal changes in oceanic currents and ocean-bottom pressure have been shown to be a major source of polar motion excitation and also measurably change the length of the day. The changing mass distribution of the oceans causes the Earth's gravitational field to change and causes the centre-of-mass of the oceans to change which in turn causes the centre-of-mass of the solid Earth to change. The changing mass distribution of the oceans also changes the load on the oceanic crust, thereby affecting both the vertical and horizontal position of observing stations located near the oceans. As part of the IERS Global Geophysical Fluids Centre, the Special Bureau for the Oceans (SBO) is responsible for collecting, calculating, analyzing, archiving, and distributing data relating to nontidal changes in oceanic processes affecting the Earth's rotation, deformation, gravitational field, and geocentre. The oceanic products available through the IERS SBO web site at <http://euler.jpl.nasa.gov/sbo> are produced primarily by general circulation models of the oceans that are operated by participating modeling groups and include oceanic angular momentum, centre-of-mass, and bottom pressure.

Data Products

The data sets currently available through the IERS SBO web site are: (1) two different oceanic angular momentum (OAM) series, namely, `ponte98.oam` which spans 1985–1996 at 5 day intervals, and `johnson01.oam` which spans 1988–1997 at 3 day intervals; and (2) two different oceanic centre-of-mass (COM) series, namely, `dong97_mom.com` and `dong97_micom.com`, both of which span 1992–1994 at 3 day intervals but which are produced by different ocean models. In addition, a link is provided to the Estimating the Circulation and Climate of the Ocean (ECCO) web site at <http://ecco.jpl.nasa.gov> from which two different ocean-bottom pressure data sets can be obtained, both of which are given at 12-hour intervals but with one spanning 1993 to the present produced by a data-assimilating ocean model and the other spanning 1980 to the present produced by an ocean model that does not assimilate any data. A link is also provided to the GLObal Undersea Pressure (GLOUP) data bank of ocean-bottom pressure measurements at <http://www.pol.ac.uk/pmslh/gloup/gloup.html>. A subroutine to compute oceanic angular momentum, centre-of-mass, and bottom pressure from the output of general circulation models can also be downloaded from the IERS SBO web site along with a bibliography of related articles.

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