

3.5.6 Global Geophysical Fluids Center (GGFC)

The International Earth Rotation and Reference Systems Service's (IERS) Global Geophysical Fluid Center (GGFC) provides the geodetic community with data and models of geodetic effects (rotation, gravity, and deformation) driven by the temporal redistribution of the Earth fluids, as well as information needed for geodetic observations that are reliant on the state of the fluids. These include fluid motions within the Earth, such as the core and mantle, as well as the motions of surface fluids, e.g. oceans, atmospheres, and continental water.

The GGFC is composed of four operational entities: the Special Bureau for the Atmosphere (SBA, Chair, D. Salstein), the Special Bureau for the Oceans (SBO, Chair, R. Gross), the Special Bureau for Hydrology (SBH, Chair, J.-L. Chen), and the Special Bureau for the Combination Products (SBCP, Chair, T. van Dam). The Atmosphere, Hydrology and Oceans SBs have been firmly established since the creation of the GGFC in 1998. A new operational SB, Combination Products, was established in 2009 to house the new data sets that model the mass movement of combined environmental fluids such as oceans+atmosphere. There is a GGFC non-operational component, the GGFC Science and Support Products. This component serves as a repository for models and data used regularly in data processing but that do not change often. The GGFC is actively searching for a Chair for this component.

In 2010, the newly reorganized GGFC website was established, <<http://geophy.uni.lu/>>. Users can now connect to all SB's and download data from this starting location. The SB Atmosphere provides atmospheric angular momentum and related data derived from various analyses produced by the U.S. National Centers for Environmental Prediction, the U.K. Meteorological Office, the Japanese Meteorological Agency, and the European Centre for Medium Range Weather Forecasts (ECMWF). Atmospheric delays of radio signals emitted by satellites or distant astronomic sources and 3-D surface displacements from NCEP reanalysis data can also be accessed from the SBA. SB Oceans provides oceanic angular momentum, oceanic center of mass, and bottom pressure derived from various ocean models. The data used to derive these products can also be accessed from this site. The SB Hydrology provides hydrological data from a number of sources including GRACE, the NASA Global Land Data Assimilation System (GLDAS), and the ECMWF. Surface loading from the GLDAS model can also be found here. Operational and historic atmospheric (AAM), oceanic (OAM), and hydrologic angular momentum (HAM) time series and 3-D loading time series from the combined ocean+atmosphere model used for GRACE dealiasing can also be found here.

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In 2010, the AAM products provided by D. Salstein at Atmospheric and Environmental Research, the Hydrology Products provided by J.-L. Chen at the University of Texas, Austin and the OAM products and excitation functions provided by R. Gross at JPL were evaluated as being reliable and provided to the public with a minimum of delay. These data sets include products from earlier in the history of the special bureaus. As a result, these products were upgraded from provisional to operational by the IERS Directing Board in one year versus the normal 2 year provisional period. Other products at the GGFC will remain provisional until they can be reviewed in 2011.

For information on submitting proposals for GGFC operational products, please go to <<http://geophy.uni.lu/ggfc-about/to-submit-new-proposals-for-products.html>> or contact T. van Dam.

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