CLIVAR-GSOP/GODAE Ocean Synthesis Inter-Comparison of Global Air-Sea Fluxes From Ocean and Coupled Reanalyses

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Abstract

The GODAE OceanView and CLIVAR-GSOP ocean synthesis program has been assessing the degree of consistency between global air-sea flux data sets obtained from ocean or coupled reanalyses (Valdivieso et al., 2014). So far, fifteen global air-sea heat flux products obtained from ocean or coupled reanalyses have been examined: seven are from low-resolution ocean reanalyses (BOM PEODAS, ECMWF ORAS4, JMA/MRI MOVEG2, JMA/MRI MOVECORE, Hamburg Univ. GECCO$_2$, JPL ECCOv4, and NCEP GODAS), five are from eddy-permitting ocean reanalyses developed as part of the EU GMES MyOcean program (Mercator GLORYS2v1, Reading Univ. UR025.3, UR025.4, UKMO GloSea5, and CMCC C-GLORS), and the remaining three are couple reanalyses based on coupled climate models (JMA/MRI MOVE-C, GFDL ECDA and NCEP CFSR).

The global heat closure in the products over the period 1993-2009 spanned by all data sets is presented in comparison with observational and atmospheric reanalysis estimates. Then, global maps of ensemble spread in the seasonal cycle, and of the Signal to Noise Ratio of interannual flux variability over the 17-yr common period are shown to illustrate the consistency between the products. We have also studied regional variability in the products, particularly at the OceanSITES project locations (such as, for instance, the TAO/TRITON and PIRATA arrays in the Tropical Pacific and Atlantic, respectively). Comparisons are being made with other products such as OAFlux latent and sensible heat fluxes (Yu et al., 2008) combined with ISCCP satellite-based radiation (Zhang et al., 2004), the ship-based NOC2.0 product (Berry and Kent, 2009), the Large and Yeager (2009) hybrid flux dataset CORE.2, and two atmospheric reanalysis products, the ECMWF ERA-Interim reanalysis (referred to as ERAi, Dee et al., 2011) and the NCEP/DOE reanalysis R2 (referred to as NCEP-R2, Kanamitsu et al., 2002). Preliminary comparisons with the observational flux products from OceanSITES are also underway.

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