Trends in 15 years (1993-2007) of Satellite Derived Oceanic Evaporation

Frank J. Kelly [(1)], Alberto M. Mestas-Nuñez[(1)], Abderrahim Bentamy[(2)], Kristina B. Katsaros[(3)], Rachel T. Pinker[(4)], William M. Drennan[(3)], and James A. Carton[(4)]

[(1)]Texas A&M University-Corpus Christi, Dept. of Physical and Environmental Sciences, 6300 Ocean Drive, Corpus Christi, TX 78412 USA, fkelly@islander.tamucc.edu, alberto.mestas@tamucc.edu
[(2)]Institut Francais de Recherche pour l'Exploitation de la Mer, B.P. 70, 29280, Plouzane, France, abderrahim.bentamy@ifremer.fr
[(3)]University of Miami, Department of Applied Physics, 4600 Rickenbacker Causeway, Miami, FL 33149 USA, katsaros@whidbey.net, wdrennan@rsmas.miami.edu
[(4)]University of Maryland, Department of Atmospheric and Oceanic Science, College Park, MD 20742 USA, pinker@atmos.umd.edu, carton@atmos.umd.edu

There is an increasing need to estimate recent trends in different climatic variables to investigate possible associations with the rapid climate warming of the last decade. An extended 15-year (1993-2007) version of the IFREMER air-sea flux dataset has been used to estimate temporal trends in oceanic evaporation over the global oceans. In general, the global pattern of trends shows an increase in oceanic evaporation over low and mid-latitudes and a decrease at high latitudes. Exceptions include evaporation decreases in the cold tongue regions of the Pacific and Atlantic and in the mid-latitude South Indian Ocean. We investigate the consistency of this large scale pattern with evaporation trends estimated from other data sets including atmospheric re-analyses and output from several climate models. We focus on the evaporation decrease observed in high latitudes (poleward of 40º) where the estimation of air-sea fluxes is more problematic. These comparisons will give us an uncertainty range in trend of evaporation estimates. Our study may also provide some clues on how to improve the estimation of high-latitude air-sea turbulent fluxes.