



Global mean sea level over 2002-2007 from tide gauges and satellite altimetry, and ocean mass from GRACE

W. Llovel (1), A. Cazenave (1), A. Lombard (2), M. Ablain (3), J. Dorandeu (3) and G. Ramillien (1)

(1) LEGOS-CNES, Toulouse, France, (2) CNES, Toulouse, France, (3) CLS, Ramonville, France

Recent studies have shown that ocean thermal expansion did not increase since 2003, unlike during the previous decade (1993-2003). In this study, we analyse tide gauge data from the University of Hawaii Sea level Center to estimate average sea level change over 2002-2007. Selection of tide gauge records includes, among others, quasi continuity of data over the 6 years time span. Glacial isostatic adjustment (GIA) is corrected using the ICE-5G model. The resulting tide gauge-based mean sea level shows a clear positive trend at the beginning of the period but as of mid-2004, the sea level curve becomes almost flat, with a rate close to zero. The global mean sea level curve based on Jason-1 altimetry also show some flattening by the end of the period, although much less pronounced, and with a few months delay compared to the tide gauge-based curve. We also computed the mean ocean mass contribution over 2002-2007 using two GRACE data sets. Although the GRACE-derived ocean mass component suffers from large uncertainty due to the GIA correction, we compute the difference between total sea level (from tide gauges and altimetry) and ocean mass for further comparison with in situ-based ocean thermal expansion. A discussion is proposed in the light of most recent results on thermal expansion and land ice contributions to sea level.