Geophysical Research Abstracts,
Vol. 11, EGU2009-7782, 2009
EGU General Assembly 2009

Unexplained Sea Level Rise Component (1955-2003)

S. Jevrejeva (1), J.C. Moore (2,3), and A. Grinsted ()

(1) Proudman Oceanographic Laboratory, PSMSL, Liverpool, United Kingdom (sveta@pol.ac.uk), (2) Arctic Centre, University of Lapland, Rovaniemi, Finland, (3) Thule Institute, University of Oulu, Finland

We examine the relationship between 50 year long records of global sea level (GSL) calculated from 1023 tide gauge stations and global ocean heat content (GOHC), glacier and ice sheet melting. The sea level contributions calculated from continental glacier volume changes and ice sheet melting in Greenland and Antarctica make up the leading component (47% contribution to sea level trend) compared with 25% contribution from thermal expansion.
We find a large unexplained sea level rise (about 25% of GSL) with substantial variability that is likely caused by combination of underestimating the contribution from melting ice masses as the linear trend component of about 0.4 mm/yr, and decadal variability associated with the hydrological cycle and climate –driven changes in continental water storage contribution.