



Increase in high frequency (2-14 years) variability in sea level records

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

(1) Proudman Oceanographic Laboratory, Liverpool, UK, sveta@pol.ac.uk, (2) Arctic Centre, University of Lapland, Rovaniemi, FINLAND, (3) Department of Geophysics, University of Oulu, Oulu, FINLAND

We analyze 1000 sea level records from the Permanent Service for Mean Sea Level (PSMSL) database. Using advanced statistical methods we separate nonlinear trends and statistically significance oscillations for 12 large ocean basins. We demonstrate that oscillations in the 2.2-14 year band contribute from 5 to 20 % of variability in time series. We also show that variability in sea level records in the 2-14 year period band has increased during the past 50 years in most ocean basins. We provide evidence that this increase in 2-13.9 year variability is associated with the greater influence of large scale atmospheric circulation patterns represented by the Southern Oscillation, North Atlantic Oscillation, Arctic Oscillation and Pacific Decadal Oscillation indices. This behavior is consistent with increasing global temperatures and warmer oceans leading to more large scale teleconnections, while also tending to introduce more variability at any particular place.