



Uncertainties in sea level reconstructions due to GIA corrections

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We use 1277 tide gauge records since 1807 to compose a global sea level reconstruction and analyse the evolution of sea level trend and acceleration. There is a good agreement between the rate of sea level rise (3.2 mm/yr) calculated from satellite altimetry and the rate of 3.1 mm/yr from tide gauge based reconstruction for the overlapping time period (1993-2009). The new reconstruction suggests a linear trend of 1.9 mm/yr during the 20th century, with only 1.5 mm/yr since 1960. Regional linear trends for 14 ocean basins since 1960 show the fastest sea level rise for the Arctic (3.8 mm/yr), Antarctica (3.5 mm/yr) and North West Pacific region (3.3 mm/yr).

Choice of GIA correction is critical in the trends for the local and regional sea level, introducing up to 6 mm/yr uncertainties for individual tide gauge records, up to 2 mm/yr for regional curves and up to 0.8 mm/yr in global sea level reconstruction.