



Steric height variability in the North Atlantic on seasonal and interannual scales

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Steric height (SH) variability computed from Argo profiling buoys data for the North Atlantic and period 1999-2006 is analysed and compared to the variability computed from the (TOPEX/Poseidon-Jason) satellite altimetry data. It is demonstrated that although the contribution from halosteric contraction is smaller than that from the thermal expansion it is not negligible in wide areas in the North Atlantic and cannot be discarded (the regression of trends in full steric and thermosteric heights is 0.73). It is found that SH variability is not very much sensitive to increasing the reference level from 1000 to 1500 m with differences in trend reaching several mm/year locally which is estimated to be below of sampling errors (about 3 mm/year). The SH trends are between ± 1 cm/year locally. The comparison of SH and altimetric height variability shows qualitative agreement of their 2D maps both for the amplitude of the annual harmonics and trend, but reveals significant local differences which cannot be explained by bottom pressure variability. The main modes of variability seen in yearly mean patterns of SH and satellite altimetry are different too suggesting that sampling/interpolation errors are in reality still too high to reveal balance between the SH and altimetric height variability at the local level.