Geophysical Research Abstracts
Vol. 15, EGU2013-809, 2013
EGU General Assembly 2013

High frequency study of correlations of temperatures measurements in the English Channel, for two stations in the eastern and the western area

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We consider in this study temperature time series from two automatic measurement systems in the English Channel, which are geographically in the Western and Eastern parts. The first device is located at the exit of the harbor of Boulogne-sur-Mer (France) in the eastern basin; this recorder is a buoy, for which the data are recorded at the constant depth of -1.5m, with a periodicity of 20 minutes. The second device is a Seabird SBE39 located in the bay of Morlaix (Roscoff, France) in the Western Channel; this is a mooring installed at the sea bottom, so depending on the depth of tidal range recording varies around an average -5.8 m, with a periodicity of 10 minutes. We consider the "climatology" (annual variation) in both locations, and also power spectra and co-spectra. This shows that there is a quite different dynamics in each location: the western part is cooler is summer and warmer in winter, while the amplitude range in the eastern part is much larger. We also detect a change in the correlation between each series at about 20 days, and scaling properties, with different slopes.