



A new instrumentation for measuring static pressure fluctuations in the marine atmospheric boundary layer

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The proposed work aims at designing a new instrument for studying the behaviour of static pressure fluctuation (SPFs) in the Surface Marine Atmospheric Boundary Layer (SMABL). SPFs are among the least understood meteorological variable. They play an important role in the production or dissipation of turbulent kinetic energy and in wave generation. In addition, they are key to improving parametrizations of momentum exchanges between the sea and the atmosphere. Very few SPF data are currently available which mainly results from inadequate, see inaccurate instrumentation. The reason is that SPF amplitude is of same order of magnitude as interfering signal, in the range of 1-10 Pa. The unwanted signal during SPF measurement comes from dynamic disturbances such as ship motion, waves and turbulence effects. A new type of instrument for measuring SPFs is under development at CETP. It is specifically designed to work onboard dynamically unstable platforms such as ships or moored buoys, for which dynamic pressure effects are large. The selected design consists in a spherical probe that measure the SPFs and a sonic anemometer. Error analysis, simulations of the aerodynamical transfer function of the instrument, as well as preliminary experimental results will be presented.