



Impact of SST on the atmospheric vertical structure in the Senegalo-Mauritanian Upwelling Zone

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Abstract

Huge quantities of aerosols are transported from Northern Africa to the Eastern Tropical Atlantic Ocean all year round. These aerosols can be used as tracers of the vertical structure of the Atmospheric Boundary Layer (ABL). This vertical distribution is closely related to the deposition of inorganic material to the ocean. In this study, we will present the diurnal cycle of the Marine Atmospheric Boundary Layer (MABL) and the influence of SST Fronts on the MABL have been analysed with data from a Wind Lidar embarked during the UPSEN-2 survey (21th February-03th March 2013) complemented with in situ observations of Sea Surface Temperature (SST) and meteorological variables (Relative Humidity and Air Temperature) collected on board the ship. Measurements indicate a strong diurnal cycle of wind speed and direction at the surface, upper atmospheric layers showing a more complex behaviour. More convection was observed at nighttime than at daytime in agreement with the variability of SST. This diurnal variability was partly related to the observation strategy of the survey. The atmospheric response across a SST front of ~ 1 °C - has been studied and shows patterns in agreement with previous observations although the presence of the continent nearby superimposes the effect of thermal breeze on the effect of SST heterogeneity on the atmospheric boundary layer.



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