



Observation on internal waves propagation during Land breeze event in Northern Tyrrhenian coast

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Internal wave propagation and water column mixing phenomena play an important role in many marine ecosystem coastal process.

In Northern Tyrrhenian coast the experimental proposed approach is aimed to identify these type of oscillation in presence of breeze circulation. Along the Tyrrhenian coast summer period climate conditions allow the generations of high frequency land-sea breeze events. This local circulation, land-sea breeze indeed, may generate significant modifications of the sea waters physical parameters.

They often appear as internal gravity waves especially in presence of stratified water and stable thermocline. Since the whole investigated process evolves on diurnal scale and in the space of a few miles the sampling plan was operated with a series of oceanographic surveys at 40 meters depth with 20 minutes interval one from another between 5 a.m. and 11 a.m. and they were repeated during each summers between 2012 - 2014.

Coupled with the acquisition of physical parameters current data were collected with 500 kHz ADCP every 20s, the resolution of vertical profiles of CTD matches the ADCP 1 meter magnitude vertical resolution.

in order to investigate the water column layers dynamics behavior, Brunt-Vaisala and Richardson number were computed using the sampled physical parameters.

Coastal surveys analysis highlights the presence of temperature oscillation in proximity of the thermocline and bottom

layers; these oscillations have been observed during all measure surveys, when the land breeze was over.

Indeed the land breeze tends to generate an offshore transport causing bottom layers to lift. At the same time solar radiation heating causes

a sink of the surface layers which flatten the layers in proximity of the thermocline.

Therefore the oscillations of temperature observed during the oceanographic surveys have to considered as internal waves, as during

earlier studies conducted in the Tyrrhenian Sea has been observed.