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## Evidence of coastal trapped waves propagating along a Southern Tyrrhenian coastal zone: modeling results and validation with currentmeter measurements

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The circulation along a Tyrrhenian coastal zone of the Southern Italian peninsula modeled by an oceanic circulation model shows episodes of energetic coastal trapped waves, and in situ currentmeter measurements provide a significant validation of the numerical results. An oceanic layer model is implemented in a domain that includes the Gulf of Naples, a portion of the Tyrrhenian deep sea and adjacent coastal areas. The horizontal spatial resolution is 1 km and the model is forced by ECMWF winds. Several transient episodes of energetic current oscillations emerge from the numerical results in different seasons. The corresponding signals have a phase that propagates northward and yield a cross-shore extension that is limited to few kilometers. These dynamical features are interpreted in terms of Kelvin waves generated by the relaxation of upwelling/downwelling events produced by strong transient winds. A mooring that includes currentmeters and a sediment trap was installed in the so-called Bocca Piccola (the strait between the island of Capri and the Sorrento peninsula) in order to monitor and analyze the physical-ecological interactions in the marine protected area of Punta Campanella. We took advantage of these currentmeter measurements to search for an experimental confirmation of coastal trapped wave episodes. We indeed found significant agreement between measured currents and modeled currents taken in the same location and depth of the instrumentation