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Interaction and Stability of Two Buoyant Currents CLAUDIA CENEDESE, Department of Physical Oceanography, Woods Hole Oceanographic Institution, Woods Hole MA 02543, JAMES LERCZAK, College of Oceanic and Atmospheric Science, Oregon State University, Corvallis, OR 97331, RICCARDO D'ANDREA, Univeristy of Rome La Sapienza, 00184 Rome, Italy — Considerable work is needed to improve our understanding of how buoyant waters transport pollution and sediments along coastlines, in particular, when multiple buoyant sources are present. A combination of analytical calculations and laboratory experiments has been used to investigate the interaction and stability of two surface-trapped buoyant coastal currents having different densities. The possible horizontal and vertical alignment scenarios are obtained by varying the densities and volume transports of the two currents. These scenarios will be presented as a function of dynamically relevant non-dimensional numbers. Laboratory rotating experiments confirmed the analytical prediction of the location of the two currents. Furthermore, the two fronts were observed to go unstable. This coupled frontal instability presents interesting differences from the previously studied instability of a single current.

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