Airborne infrared remote sensing characterization of submesoscale eddies GEOFFREY SMITH, GEORGE MARMORINO, W. DAVID MILLER, Naval Research Laboratory, RYAN NORTH, INGRID ANGEL-BENAVIDES, BURCKARD BASCHEK, Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research — Airborne remote sensing surveys off Santa Catalina Island, CA (33°30′N 118°31′W) were conducted as part of a larger study of the occurrence and behavior of submesoscale phenomena. This builds upon previous work by DiGiacomo and Holt, who utilized SAR imagery to characterize the size and distribution of predominately cyclonic ‘spiral eddies’ in the Southern California Bight. In the present work the thermal surface expression of a single cyclonic eddy captured in February 2013 will be investigated. Advances made in methods to estimate eddy circulation and vorticity directly from the thermal imagery will be discussed and compared with in situ measurements. Inferences about localized mixing and flow instabilities can also be drawn from the imagery, and these too will be discussed in the context of in situ data. A simple model will be offered describing the three dimensional flow in the core of the eddy and how that can be used to explain the surface imagery. Connections between the signatures surrounding the eddy and the core itself will also be discussed in the context of the model.

Geoffrey Smith
Naval Research Laboratory

Date submitted: 08 Aug 2016  Electronic form version 1.4