

Applications of data from NASA and JAXA-NASA space missions for scientific studies in physical oceanography in Japan

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Applications of data obtained by several NASA and JAXA-NASA missions for scientific studies in physical oceanography in Japan are reviewed in this paper. The NASA and JAXA-NASA missions carried various sensors to observe the Earth's surface, including visible/infrared and microwave radiometers, radar altimeters, microwave scatterometers, and synthetic aperture radars. The observed data have been widely utilized by the research community in Japan to explore ocean circulation and air-sea interactions including mechanisms of Kuroshio meanders, mesoscale eddies, El Nino-Southern Oscillation (ENSO) and related tropical ocean-atmosphere systems. The data have been also utilized to drive general ocean circulation models with various spatial and temporal scales. Highlights of these studies are revelation of ocean-driven air-sea interaction mechanism over the western boundary currents, such as the Gulf Stream and Kuroshio (e.g., Nonaka and Xie, *J. Climate*, 2003; Minobe et al., *Nature*, 2008; Tokinaga et al., *J. Climate*, 2009), and composition of a dataset of the ocean-atmosphere momentum, heat, and fresh water fluxes (e.g. Kubota et al., *J. Oceanogr.*, 2002).

Keywords: NASA mission, JAXA-NASA mission, physical oceanography, ocean circulation, air-sea interactions