

Title Distinguished Professor of Oceanic and Atmospheric Sciences

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Research Fields

- Atmospheric chemistry
- Biogeochemistry
- Carbon Footprint Analysis
- Climatology
- Community & Disaster Planning
- Data Analysis & Statistical Modeling
- Ecology & Ecosystem Management
- Economics
- Energy policy & technology
- Ethics
- Fire
- Forestry & Forest Management
- Geographic Information Systems
- Horticulture
- Human Impacts - economics
- Human Impacts - health
- Human Impacts - policy
- Hydrology
- Impacts - agriculture & horticulture
- Impacts - ecosystems, populations
- Impacts - physical
- Instrumentation
- Mitigation Policy
- Modeling Climate
- Modeling Ecosystems
- Modeling Socioeconomic Processes
- Natural Resource Policy & Planning
- Outreach & Engagement
- Paleoclimatology
- Paleoecology
- Physical Ecology
- Physiological Ecology
- Urban Ecology
- Water Policy & Planning
- Other...

Ocean Circulation

Specific Research Interests

Investigation of large-scale geophysical wave dynamics, air-sea interaction, wind-forced ocean circulation and mesoscale variability from satellite radar scatterometer measurements of wind stress, altimeter measurements of sea surface height and passive microwave radiometer measurements of sea surface temperature. Geographical areas of interest include the North Pacific Ocean, the equatorial oceans, the Antarctic Circumpolar Current and the California Current System.

Projects

Air-sea interaction over SST fronts

Observations and theory of nonlinear oceanic vortices

Equatorial oceanography

Wind-forced circulation of the California Current System

Selected Recent Publications

Chelton, D. B., M. G. Schlax, M. H. Freilich and R. F. Milliff., 2004: Satellite measurements reveal persistent small-scale features in ocean winds. *Science*, **303**, 978–983.

2005 Chelton, D. B., and M. H. Freilich, 2005: Scatterometer-based assessment of 10-m wind analyses from the operational ECMWF and NCEP numerical weather prediction models. *Mon. Wea. Rev.*, **133**, 409–429.

Chelton, D. B. 2005: The impact of SST specification on ECMWF surface wind stress fields in the eastern tropical Pacific. *J. Climate*, **18**, 530–550.

Perez, R. C., D. B. Chelton and R. N. Miller, 2005: The effects of wind forcing and background mean currents on the latitudinal structure of equatorial Rossby waves. *J. Phys. Oceanogr.*, **35**, 666–682.

O’Neill, L. W., D. B. Chelton, S. K. Esbensen and F. J. Wentz, 2005: High-resolution satellite observations of SST modification of the marine atmospheric boundary layer over the Agulhas Return Current. *J. Climate*, **18**, 2706–2723.

Chelton, D. B., and F. J. Wentz, 2005: Global High-Resolution Satellite Observations of Sea-Surface Temperature for Numerical Weather Prediction and Climate Research. *Bull. Amer. Meteor. Soc.*, **86**, 1097–1115.

Maloney, E. D., and D. B. Chelton, 2006: An assessment of the sea surface temperature influence on surface wind stress in numerical weather prediction and climate models. *J. Climate*, **19**, 2743–2762.

Chelton, D. B., M. H. Freilich, J. M. Sienkiewicz, and J. M. Von Ahn, 2006: On the use of QuikSCAT scatterometer measurements of surface winds for marine weather prediction. *Mon. Wea. Rev.*, **134**, 2055–2071.

Risien, C. M., and D. B. Chelton, 2006: A satellite-derived climatology of global ocean winds. *Rem. Sens. Environ.*, **104**, doi:10.1016/j.rse.2006.06.017.

Chelton, D. B., M. G. Schlax, and R. M. Samelson, 2007: Summertime coupling between sea surface temperature and wind stress in the California Current System. *J. Phys. Oceanogr.*, **37**, 495–517.

Reynolds, R. W., T. M. Smith, C. Liu, D. B. Chelton, K. S. Casey and M. G. Schlax, 2007: Daily high-resolution blended analyses for sea surface temperature. *J. Climate*, in press.

Chelton, D. B., M. G. Schlax, R. M. Samelson, and R. A. de Szoeke, 2007: Global observations of large oceanic eddies. *Geophys. Res. Lett.*, **34**, L15606, doi:10.1029/2007GL030812.

Professional Activities

Member of NASA Ocean Surface Topography Science Working Team for satellite altimetry.

Member of NASA Ocean Vector Winds Science Team for satellite scatterometry.