HYODAE SEO

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EDUCATION

2002-2007: Ph.D. Oceanography and Climate Sciences

Scripps Institution of Oceanography, University of California, San Diego Thesis: Mesoscale Coupled Ocean-Atmosphere Interaction Advisors: Dr. Arthur J. Miller and Dr. John O. Roads

2002: B.S. Meteorology

Department of Atmospheric Sciences, Yonsei University, Seoul, South Korea

EMPLOYMENT

- 2010-Present: Assistant Scientist (Tenure-track), Physical Oceanography Department, Woods Hole Oceanographic Institution
- 2009-2010: Visiting Assistant Researcher, International Pacific Research Center (IPRC), University of Hawaii Manoa
- 2008-2009: NOAA Climate and Global Change Postdoc Fellowship, IPRC, University of Hawaii Manoa
- 2007-2008: NOAA Climate and Global Change Postdoc Fellowship, Dept. Atmospheric and Oceanic Sciences, University of California, Los Angeles
- 2007: Visiting Scientist, IPRC, University of Hawaii Manoa

ACADEMIC EXPERIENCES AND AWARDS

• Convener, Trends and Projections in the Coastal Environment." 93rd Annual American Meteorological Society, Austin, Texas, 2013

- Convener: Marine Regional Integrated Assessments: Observations, Predictions, and Uncertainty", WCRP Open Science Conference, 2011
- <u>MIT-WHOI Joint Program Faculty</u>, 2010-Present

• Committee: The American Meteorological Society Committee on Coastal Environment, 2011-2013

• Convener, "Regional and Mesoscale Coupled Air-Sea Modeling", Ocean Sciences Meeting, Portland, 2011

- Physical Oceanography Dissertation Symposium V, Honolulu, HI, 2008
- NOAA Climate and Global Change Postdoctoral Fellowship, Class 17, 2007-2009.
- June-October 2006: NCAR Advanced Study Program Graduate Student Visiting Program
- <u>Scripps Institution of Oceanography Frieman Director's Prize for Excellence in Graduate</u>

Student Research in 2006

• <u>Outstanding Student Paper Award</u> at the Ocean Sciences Meeting 2006

RESEARCH INTEREST

• Air-sea interactions, Climate dynamics, Coupled climate modeling, Global and regional climate change, Impact Assessment Studies

PEER-REVIEWED PUBLIATIONS (http://www.whoi.edu/science/PO/people/hseo)

• Seo, H., S.-P. Xie: Impact of ocean warm layer thickness in ECCO Ocean State Estimates on hurricane intensity change in a regional coupled model. *Journal of Marine Systems, sub judice*

• Seo, H., K. H. Brink, C. E. Dorman, D. Koracin, and C. A. Edwards: What determines the spatial pattern in summer upwelling trends on the U.S. West Coast? *Journal of Geophysical. Research -Oceans, in press.*

• Alexander, M.A., **H. Seo**, S.-P. Xie, J.D. Scott, 2011: ENSO's impact on the gap wind regions of the eastern tropical Pacific Ocean. *Journal of Climate*, *in press*.

• Seo, H. and S.-P. Xie, 2011: Response and Impact of Equatorial Ocean Dynamics and Tropical Instability Waves in the Tropical Atlantic under Global Warming: A regional coupled downscaling study. *J. Geophys. Res.-Oceans*, 116, C03026, doi:10.1029/2010JC006670.

• Seo, H., S.-P. Xie, R. Murtugudde, M. Jochum, and A. J. Miller, 2009: Seasonal effects of Bay of Bengal barrier layer dynamics in a regional coupled model. *Journal of Climate*, 22, 6577-6596

• Seo, H., R. Murtugudde, M. Jochum, A. J. Miller, 2008: Modeling of Mesoscale Coupled Ocean-Atmosphere Interaction and its Feedback to Ocean in the Western Arabian Sea. *Ocean Modelling*, 25, 120-131

• Seo, H., M. Jochum, R. Murtugudde, A. J. Miller, J. O. Roads, 2008: Precipitation from African Easterly Waves in a Coupled Model of the Tropical Atlantic, *Journal of Climate*, 21, 1417-1431

• Small, R. J., S. de Szoeke, S. P. Xie, L. O'Neill, **H. Seo**, Q. Song, P. Cornillon, M. Spall, S. Minobe, 2008: Air-Sea Interaction over Ocean Fronts and Eddies. *Dynamics of Ocean and Atmosphere*, 45, 274-319

• Seo, H., M. Jochum, R. Murtugudde, A. J. Miller, J. O. Roads, 2007: Feedback of Tropical Instability Wave - induced Atmospheric Variability onto the Ocean. *Journal of Climate*, 20(23), 5842-5855

• Seo, H., A. J. Miller J. O. Roads, 2007: The Scripps Coupled Ocean-Atmosphere Regional (SCOAR) model, with applications in the eastern Pacific sector. *Journal of Climate*, 20, No. 3, 381-402

• Seo, H., M. Jochum, R. Murtugudde A. J. Miller, 2006: Effect of Ocean Mesoscale Variability on the Mean State of Tropical Atlantic Climate. *Geophysical Research Letters*, 33, L09606

FUNDED PROPOSALS

• WHOI Arctic Research Initiative (2011-2012): Dynamical analysis of surface wind responses to sea ice and surface temperature variations in the Arctic Ocean: Synthesis of data and model simulation. H. Seo, J. Yang. Total budget: \$140K

• WHOI Independent Study Awards (2011-2012): Trends in coastal upwelling and sea breeze in the California-Oregon Coast: Land-ocean-atmosphere interactions in data and model. H. Seo. Total budget: \$46K

• Office of Naval Research (2010-2013): Coupled Ocean-Atmosphere Dynamics and Predictability of MJO's. Miller, Seo, Murtugudde, Waliser, and Jochum. Total budget: \$133K

• National Aeronautics and Space Administration (F10-2014): Interannual variability of ocean vector winds near ocean fronts and coastal orography. S.-P. Xie, H. Tokinaga, H. Seo (co-I). Total budget: \$556K

PENDING PROPOSALS

• National Science Foundation, Physical Oceanography: Small-Scale Shelf Eddies and Wind-Induced Baroclinicity. K. Brink H. Seo.

• National Science Foundation, Decadal and Regional Climate Prediction using Earth System Models: Improving the predictability of rainfall. R. Schmitt, C. Ummenhofer, H. Seo, F. Landerer, T. Twine

PROPOSALS IN PREPARATION

• National Science Foundation, Climate & Large-Scale Dynamics: Collaborative Research: Coastal Upwelling and Land Heating over the California-Oregon Coast: Dynamics and Climatic Scale Land-Ocean-Atmosphere Interactions. **H. Seo**, and C. Dorman (Scripps)

• National Science Foundation, Climate & Large-Scale Dynamics: Role of the East-Asian marginal Seas in the regional predictability and the North Pacific climate variability. H. Seo, Y.-O. Kwon, J.-J. Park

• National Aeronautics and Space Administration, Physical Oceanography: Coupled Ocean and Atmosphere Dynamics on Meso- to Submeso-Scales. H. Seo, M. Spall, A. Mahadevan, S.-P. Xie

PROFESSIONAL AFFILIAITONS

- Member, American Geophysical Union, 2002-
- Member, American Meteorological Society, 2002-

LITERATURE/PROPOSAL REVIEWER

• **Papers:** Asian Pacific Journal of Atmospheric Science, Atmospheric Science Letters, Bulletin of the American Meteorological Society, Climate Dynamics, Journal of Climate, Journal of Marine Systems, Journal of Physical Oceanography, Journal of Geophysical Research- Atmospheres, Journal of Geophysical Research- Oceans, Ocean Dynamics, Ocean Modelling

• **Proposals**: NOAA CPO/CVP (2009), NSF Physical Oceanography (2010, 2011), French

ANR (2011)

PRESENTATIONS AND INVITED TALKS (http://www.whoi.edu/science/PO/people/hseo/)

• Mesoscale air-sea interactions and regional climate change: the Tropical Instability Waves example. KORDI. May 21, 2012

• Role of the East/Japan Sea SST variability in the atmospheric circulation in the North Pacific. WHOI-KORDI Workshop. Jeju University, May 25, 2012

• Role of the East-Asian marginal sea SST in the regional predictability and the North Pacific climate variability (*Invited*). Japan Geoscience Union Meeting, May 23, 2012.

• Regional modeling of ocean-atmosphere interaction: from tropics to mid-latitude. Kyushu University, May 21 2012

• Effect of Seasonal Freshwater Forcing on the Indian Monsoon: A Regional Coupled Modeling Study. Office of Naval Research Bay of Bengal Monsoon Workshop, WHOI, November 16-18, 2011

• Mesoscale air-sea interactions and regional climate change: Tropical Instability Waves in a regional coupled model. Yonsei University, Seoul, Korea. October 14, 2011.

• Regional coupled downscaling: Role of mesoscale ocean eddies in climate- Tropical Instability Waves (*Invited*). International Workshop Development and Application of Regional Climate Models. Korea. October, 2011.

- Tropical Instability Waves in the Atlantic: Air-sea interactions and climate change, Coupled Ocean-Atmosphere-Land Processes in the Tropical Atlantic. Miami, March 24, 2011.
- Regional coupled-downscaling of climate and weather, WHOI, March 23, 2010.

• Applications of a regional coupled model to studies of global warming and hurricane-ocean interaction. NCAR, March 4, 2010.

- Downscaling Global Warming with a Regional Ocean-Atmosphere Model over the Tropical Atlantic Role of equatorial ocean dynamics. AGU Fall San Francisco, 2009.
- Tropical Atlantic response to global warming: Equatorial upwelling and tropical instability waves. International Regional Spectral Model Workshop, Maui, Aug 4, 2009.

• Seasonal effects of Indian Ocean freshwater forcing in a regional coupled model-Barrier Layers and Indian Monsoon. IPRC Annual Symposium, June 2, 2009.

• Mesoscale air-sea interaction and feedback in the western Arabian Sea. CLIVAR Western Boundary Current Workshop, Phoenix, January 15, 2009.

• Mesoscale air-sea interaction and feedback in the western Arabian Sea. AMS Annual Meeting, Phoenix, January 14, 2009.

• Mesoscale ocean-atmosphere interaction due to the ocean mesoscale eddies. Physical Oceanography Dissertation Symposium (PODS) V, October 6, 2008.

• Coupled modeling of mesoscale ocean-atmosphere interactions: tropical instability waves and ocean eddies. NOAA C&GC Summer Institute, July 14, 2008.

• Mesoscale ocean-atmosphere interaction in the western Arabian Sea: Dynamic and thermodynamic feedback to the ocean. NCAR CGD Seminar, May 23, 2008.

• Mesoscale Coupled Ocean-Atmosphere Interaction; Tropical Instability Waves and Atmospheric Feedback. ESSIC Seminar, University of Maryland. January 18, 2008.

• Ocean-Atmosphere Interaction in a High-Resolution Regional Coupled Model.

Oceanography Seminar, University of Hawaii, Manoa, August 23, 2007.

• Effect of Coupling of Wind and Current on Tropical Instability Waves in the Atlantic Ocean. CLIVAR Tropical Atlantic Variability Meeting, Paris, October 18, 2006.

- Tropical Ocean-Atmosphere Interaction in a Regional Coupled High-Resolution GCM. National Center for Atmospheric Research CGD Seminar, August 23, 2006.
- Regional Ocean-Atmosphere Interactions in the Eastern Pacific: TIWs, Mesoscale Eddies and Gap Winds. Woods Hole Oceanographic Institution Seminar (by Art Miller), April. 2006.

• Air-sea Coupling Associated with the Tropical Instability Waves. A High-Resolution Coupled-Model Study. Ocean Sciences Meeting, Honolulu, February 24, 2006.

• Coupled Modeling of Regional Ocean-Atmosphere Feedback in the Eastern Equatorial Pacific. Tropical Instability Waves. AMS Annual Meeting, Atlanta, February 2, 2006.

• Atmospheric Boundary Layer Response to SST in the Eastern Pacific. AGU Fall Meeting, San Francisco, December 2005.

• Tropical Instability Waves and Ocean-Atmosphere Feedback. ROMS/TOMS User Workshop, San Diego, 2005.

• Regional Ocean-Atmospheric Feedback in the Eastern Pacific; Gap Winds, TIWs, and Mesoscale Eddies. UCLA AOS 270 Seminar, October 12, UCLA, 2005.

• Regional Air-Sea Interaction in the Eastern Pacific. International RSM Workshop, New York, 2005.

• Development of the Regional Coupled Ocean-Atmosphere Model. AMS Annual Meeting, 2005.

• Preliminary Simulation of the Regional Coupled Atmosphere-Ocean Model in the Southern California Coastal Region. International RSM Workshop, Seoul, 2004.