

Gary A. Wick
Supervisory Research Physicist
NOAA Physical Sciences Laboratory
325 Broadway
R/PSD2
Boulder, Colorado 80305
gary.a.wick@noaa.gov

Education:

- 1995 Ph.D., University of Colorado at Boulder (Aerospace Engineering Sciences)
- 1990 M.S., University of Colorado at Boulder (Aerospace Engineering Sciences)
- 1988 B.S., with Special Honors, University of Colorado (Aerospace Engineering Sciences)

Employment:

- 2022-date Chief, Boundary Layer Observations and Processes Division,
Supervisory Research Physicist, NOAA Physical Sciences Laboratory, Boulder, Colorado
- 2005-2022 Research Physicist, NOAA Physical Sciences Laboratory
Boulder, Colorado
- 2000-2005 Physicist, NOAA Environmental Technology Laboratory
Boulder, Colorado
- 1997-2000 Research Scientist, Cooperative Institute for Research in Environmental Sciences
University of Colorado, Boulder, Colorado
- 1995-1997 Postdoctoral Research Associate, Applied Physics Laboratory,
University of Washington, Seattle, Washington.
- 1989-1995 Research Assistant, Colorado Center for Astrodynamics Research,
University of Colorado, Boulder, Colorado.
- 1992-1993 Graduate Part Time Instructor, Department of Aerospace Engineering Sciences,
University of Colorado, Boulder, Colorado.

Special Assignments:

- 2020-2021 Served 7-month detail as Acting Director of the NOAA OAR Uncrewed Systems Research
Transition Office, Silver Spring, MD
- 2020 Served 8-month detail (50% effort) as Acting Deputy Director of the NOAA OAR Unmanned
Aircraft Systems Program Office, Silver Spring, MD
- 2003 Performed 3-month NOAA Rotational Assignment with the National Weather Service Office of
Hydrologic Development, Silver Spring, MD

Publications:

- Wick**, G. A., S. L. Castro, A. Harris, and J. Mittaz, Evaluation of modeled diurnal warming estimates for application to producing SST analyses, *Earth and Space Science*, 11, e2024EA003619.
<https://doi.org/10.1029/2024EA003619>, 2024.
- Chen, X., J. Dias, B. Wolding, R. Pincus, C. DeMott, G. **Wick**, and E. J. Thompson, Ubiquitous sea surface temperature anomalies increase spatial heterogeneity of trade-wind cloudiness on daily timescale, *J. Atmos. Sci.*, 80, 2969-2987, https://doi.org/JAS-D-23_0075.1, 2023.

- Castro, S. L., G. A. **Wick**, S. Eastwood, M. A. Steele, and R. T. Tonboe, Examining the consistency of sea surface temperature and sea ice concentration in Arctic satellite products, *Remote Sensing*, 15, 2908, <https://doi.org/10.3390/rs15112908>, 2023.
- Wick**, G. A., D. L. Jackson, and S. L. Castro, Assessing the ability of satellite sea surface temperature analyses to resolve spatial variability – the Northwest Tropical Atlantic ATOMIC region, *Remote Sensing of Environment*, <https://doi.org/10.1016/j.rse.2022.113377>, 2022.
- Wick**, G. A., and S. L. Castro, Assessment of extreme diurnal warming in operational geosynchronous satellite sea surface temperature products, *Remote Sensing*, 12, 3771; doi:10.3390/rs12223771, 2020.
- Wick**, G. A., et al., NOAA's Sensing Hazards with Operational Unmanned Technology (SHOUT) Experiment: Observations and forecast impacts, *Bull. Amer. Meteor. Soc.*, 101, E968-E987, <https://doi.org/10.1175/BAMS-D-18-0257.1>, 2020.
- Rutz, J. J., et al., The atmospheric river tracking method intercomparison project (ARTMIP): Quantifying uncertainties in atmospheric climatology, *J. Geophys. Res.*, 124, 13777-13802, <https://doi.org/10.1029/2019JD030936>, 2019.
- de Boer, G., B. Argrow, J. Cassano, J. Cione, E. Frew, D. Lawrence, G. **Wick**, C. Wolff, Advancing unmanned aerial capabilities for atmospheric research, *Bull. Amer. Meteor. Soc.*, 100, ES105-ES108, <https://doi.org/10.1175/BAMS-D-18-0254.1>, 2019.
- Ralph, F. M., et al., Comparison of atmospheric river detection tools: How many atmospheric rivers hit northern California's Russian River watershed?, *Climate Dynamics*, 22 p., <https://doi.org/10.1007/s00382-018-4427-5>, 2018.
- Castro, S. L., L. A. Monzon, G. A. **Wick**, R. D. Lewis, and G. Beylkin: Subpixel variability and quality assessment of satellite sea surface temperature data using a novel High Resolution Multistage Spectral Interpolation (HRMSI) Technique, *Remote Sensing of Environment*, 217, 292-308, <https://doi.org/10.1016/j.rse.2018.08.019>, 2018.
- Wick**, G. A., T. F. Hock, P. J. Neiman, H. Vömel, M. L. Black, and J. R. Spackman, The NCAR/NOAA Global Hawk dropsonde system, *J. Atmos. Oceanic Tech.*, 35, 1585-1604, <https://doi.org/10.1175/JTECH-D-17-0225.1>, 2018.
- Shields, C., et al., Atmospheric river tracking method intercomparison project (ARTMIP): Project goals and experimental design, *Geosci. Model Dev.*, 11, 2455-2474, <https://doi.org/10.5194/gmd-11-2455-2018>, 2018.
- Dole, R. M., et al., Advancing Science and Services during the 2015-16 El Niño: The NOAA El Niño Rapid Response Field Campaign, *Bull. Amer. Meteor. Soc.*, 99, 975-1001, 2018.
- Castro, S. L., W.J. Emery, G. A. **Wick**, and W. Tandy, Jr.: Submesoscale sea surface temperature variability from UAV and satellite measurements, *Remote Sensing*, 9, 1089, doi:10.3390/rs.9111089, 2017.
- Ralph, F. M. et al., Dropsonde Observations of total integrated water vapor transport within North Pacific atmospheric rivers, *J. Hydrometeor.*, 18, 2577-2596, 2017.
- Maturi, E., A. Harris, J. Miltaz, J. Sapper, G. **Wick**, X. Zhu, P. Dash, and P. Koner, A new high resolution sea surface temperature blended analysis, *Bull. Amer. Meteor. Soc.*, 98, 1015-1026, 2017.
- Castro, S. L., G. A. **Wick**, and M. Steele, Validation of satellite sea surface temperature analyses in the Beaufort sea using UpTempO buoys, *Remote Sens. Environ.*, 187, 458-475, <http://dx.doi.org/10.1016/j.rse.2016.10.035>, 2016.
- Jackson, D. L., M. Hughes, and G. A. **Wick**, Evaluation of landfalling atmospheric rivers along the U.S. West Coast in reanalysis data sets, *J. Geophys. Res.*, 121 (6), 2705-2718, 2016.
- Mahoney, K., D. L. Jackson, P. Neiman, M. Hughes, L. Darby, G. **Wick**, A. White, E. Sukovich, and R. Cifelli, Understanding the role of atmospheric rivers in heavy precipitation in the Southeast US, *Mon. Wea. Rev.*, 144, 1617-1632, 2016.

- Neiman, P.J., B.J. Moore, A.B. White, G.A. **Wick**, J. Aikins, D.L. Jackson, J.R. Spackman, and F.M. Ralph, An airborne and ground-based study of a long-lived and intense atmospheric river with mesoscale frontal waves impacting California during CalWater2-2014, *Mon. Wea. Rev.*, 144, 1115-1144, 2016.
- Jin, X., L. Yu, D. Jackson, and G. **Wick**, An improved near-surface specific humidity and air temperature climatology for the satellite period, *J. Atm. Oceanic Technol.*, 32, 412-433, 2015.
- Neiman, P. J., G. A. **Wick**, B. J. Moore, F. M. Ralph, J. R. Spackman, and B. Ward, An airborne study of an atmospheric river over the subtropical Pacific during WISPAR: Dropsonde budget-box diagnostics, and precipitation impacts in Hawaii, *Mon. Wea. Rev.*, 142, 3199-3223, 2014.
- Intrieri, J. M. et al., Global Hawk dropsonde observations of the Arctic atmosphere during the Winter Storms and Pacific Atmospheric Rivers (WISPAR) field campaign, *Atmospheric Measurement Techniques*, 7, 3917-3926, 2014.
- Jackson, D. L., and G. A. **Wick**, Propagation of uncertainty analysis of CO₂ transfer velocities derived from the COARE gas transfer model using satellite inputs, *J. Geophys. Res.*, 119, 1828-1842, 2014.
- Ralph, F. M. et al., A vision for future observations for Western U.S. extreme precipitation and flooding, *Journal of Contemporary Water Research and Education*, 153, 16-32, 2014.
- Castro, S. L., G. A. **Wick**, and J. J. H. Buck, Comparison of diurnal warming estimates from unpumped Argo data and SEVIRI satellite observations, *Remote Sensing of Environment*, 140, 789-799, 2014.
- Scanlon, B., G. A. **Wick**, and B. Ward, Near-surface diurnal warming simulations: validation with high resolution profile measurements, *Ocean Science*, 9, 977-986, 2013.
- Wick**, G. A., P. J. Neiman, F. M. Ralph, and T. M. Hamill, Evaluation of forecasts of the water vapor signature of atmospheric rivers in operational numerical weather prediction models, *Weather and Forecasting*, 28, 1337-1352, 2013.
- Wick**, G. A., P. J. Neiman, and F. M. Ralph, Description and validation of an automated objective technique for identification and characterization of atmospheric river events, *IEEE Trans. Geosci. Remote Sensing*, 51, 2166-2176, 2013.
- Bourassa, M. A. et al., High-latitude ocean and sea ice surface fluxes: Challenges for climate research, *Bull. Amer. Meteor. Soc.*, 94, 403-423, 2013.
- Kim, J., D. E. Waliser, P. J. Neiman, B. Guan, J.-M. Ryoo, and G. A. **Wick**, Effects of atmospheric river landfalls on the cold season precipitation in California, *Climate Dynamics*, 40, 465-474, 2013.
- Jackson, D. L., G. A. **Wick**, and J. E. Hare, A comparison of satellite-derived carbon dioxide transfer velocities with GasEx cruise observations using a physically-based model, *J. Geophys. Res.*, 117, C00F13, doi:10.1029/2011JC007329, 2012.
- Castro, S. L., G. A. **Wick**, and W. J. Emery, Evaluation of the relative performance of sea surface temperature measurements from different types of drifting and moored buoys using satellite-derived reference products *J. Geophys. Res.*, 117, C02029, doi:10.1029/2011JC007472, 2012.
- Neiman, P. J., L. J. Schick, F. M. Ralph, M. Hughes, and G. A. **Wick**, Flooding in Western Washington: The connection to atmospheric rivers, *J. Hydrometeorology*, 12, 1337-1358, 2011.
- Ma, Z., Y.-H. Kuo, F. M. Ralph, P. J. Neiman, G. A. **Wick**, E. Sukovich, and B. Wang, Assimilation of GPS radio occultation data for an intense atmospheric river with the NCEP regional GSI system, *Mon. Wea. Rev.*, 139, 2170-2183, 2011.
- Jackson, D. L., and G. A. **Wick**, Improved near-surface temperature retrieval derived from AMSU-A and sea surface temperature observations, *J. Atm. Oceanic Technol.*, 27, 1769-1776, 2010.
- Bourassa, M. A., S. T. Gille, D. L. Jackson, J. B. Roberts, and G. A. **Wick**, Ocean winds and turbulent air-sea fluxes inferred from remote sensing, *Oceanography*, 23, 36-51, 2010.

- Castro, S. L., G. A. **Wick**, P. J. Minnett, A. T. Jessup, and W. J. Emery, The impact of measurement uncertainty and spatial variability on the accuracy of skin and subsurface regression-based sea surface temperature algorithms, *Remote Sensing of Environment*, 114, 2666-2678, doi:10.1016/j.rse.2010.06.003, 2010.
- Godin, O. A., V. G. Irisov, R. R. Leben, B. D. Hamlington, and G. A. **Wick**, Variations in sea surface roughness induced by the 2004 Sumatra-Andaman tsunami, *Nat. Hazards Earth Syst. Sci.*, 9, 1135-1147, 2009.
- Jackson, D. L., G. A. **Wick**, and F. R. Robertson, Improved Multisensor Approach to Satellite-retrieved Near-surface Specific Humidity Observations, *J. Geophys. Res.*, 114, D16303, doi:10.1029/2008JD011341, 2009.
- Wick**, G. A., Y.-H. Kuo, F. M. Ralph, T.-K. Wee, and P. J. Neiman, Intercomparison of integrated water vapor retrievals from SSM/I and COSMIC, *Geophys. Res. Lett.*, 35, L21805, doi:10.1029/2008GL035126, 2008.
- Neiman, P. J. F. M. Ralph, G. A. **Wick**, Y.-H. Kuo, T.-K. Wee, Z. Ma, G. H. Taylor, and M. D. Dettinger, Diagnosis of an intense atmospheric river impacting the Pacific Northwest: Storm summary and offshore vertical structure observed with COSMIC satellite retrievals, *Mon. Wea. Rev.*, 136, 4398-4420, 2008.
- Stankov, B. B., A. J. Gasiewski, D. Cline, B. L. Weber, G. A. **Wick**, and M. Klein, High-resolution airborne polarimetric microwave imaging of snow cover during the NASA Cold Lands Processes Experiment (CLPX), *IEEE Trans. Geosci. Remote Sensing*, 46, 3672-3693, 2008.
- Castro, S. L., G. A. **Wick**, D. L. Jackson, and W. J. Emery, Error characterization of infrared and microwave satellite sea surface temperature products for merging and analysis, *J. Geophys. Res.*, 113, C03010, doi:10.1029/2006JC003829, 2008.
- Neiman, P. J., F. M. Ralph, G. A. **Wick**, J. D. Lundquist, and M. D. Dettinger, Meteorological Characteristics and Overland Precipitation Impacts of Atmospheric Rivers Affecting the West Coast of North America based on Eight Years of SSM/I Satellite Observations, *J. Hydrometeorology*, 9, 22-47, 2008.
- Donlon, C. J. et al., The Global Ocean Data Assimilation Project (GODAE) High Resolution Sea Surface Temperature Pilot Project (GHRSS-PP), *Bull. Amer. Meteor. Soc.*, 88, 1197-1213, 2007.
- Zuidema, P., B. Mapes, J. Lin, C. Fairall, and G. **Wick**, The interaction of clouds and dry air in the eastern tropical Pacific, *J. Climate*, 19, 4531-4544, 2006.
- Ralph, F. M., P. J. Neiman, G. A. **Wick**, S. I. Gutman, M. D. Dettinger, D. R. Cayan, and A. B. White, Flooding on California's Russian River: The role of atmospheric rivers, *Geophys. Res. Lett.*, 33, L13801, doi:10.1029/2006GL026689, 2006.
- Jackson, D. L., G. A. **Wick**, and J. J. Bates, Near-surface retrieval of air temperature and specific humidity using multi-sensor microwave satellite observations, *J. Geophys. Res.*, D10306, doi:10.1029/2005JD006431, 2006.
- Wick**, G. A., J. C. Ohlmann, C. W. Fairall, and A. T. Jessup, Improved oceanic cool skin corrections using a refined solar penetration model, *J. Phys. Oceanogr.*, 35, 1986-1996, 2005.
- Neiman, P. J., B. E. Martner, A. B. White, G. A. **Wick**, F. M. Ralph, and D. E. Kingsmill, Wintertime nonbrightband rain in California and Oregon during CALJET and PACJET: Geographic, interannual, and synoptic variability, *Monthly Weather Review*, 133, 1199-1223, 2005.
- Smith, D. F., A. J. Gasiewski, D. L. Jackson, and G. A. **Wick**, Spatial scales of tropical precipitation inferred from TRMM Microwave Imager data, *IEEE Trans. Geosci. Remote Sensing*, 43, 1542-1551, 2005.
- Ralph, F. M., P. J. Neiman, and G. A. **Wick**, Satellite and CALJET aircraft observations of atmospheric rivers over the eastern north Pacific Ocean during the winter of 1997/98, *Monthly Weather Review*, 132, 1721-1745, 2004.
- Kollias, P. C. W. Fairall, P. Zuidema, J. Tomlinson, and G. A. **Wick**, Observations of Marine Stratocumulus in SE Pacific during the PACS 2003 cruise, *Geophysical Research Letters*, 31, doi:10.1029/2004GL020751, 2004.
- Curry, J. A., et al., SEAFLUX, *Bull. Amer. Meteor. Soc.*, 85, 409-424, 2004.

- Castro, S. L., G. A. **Wick**, and W. J. Emery, Further refinements to models for the bulk-skin sea surface temperature difference, *J. Geophys. Res.*, 108(C12), 3377, doi:10.1029/2002JC001641, 2003.
- Wick**, G. A., J. J. Bates, and D. J. Scott, Satellite and Skin Layer Effects on the Accuracy of Sea Surface Temperature Measurements from the GOES Satellites, *J. Atm. Oceanic Technol.*, 19, 1834-1848, 2002.
- Emery, W. J., S. L. Castro, G. A. **Wick**, P. Schlüssel, C. J. Donlon, Estimating Sea Surface Temperature from Infrared Satellite and In Situ Temperature Data, *Bull. Amer. Meteor. Soc.*, 82, 2773-2785, 2001.
- Wick**, G. A., J. J. Bates, and C. C. Gottschall, Observational evidence of a wind direction signal in SSM/I passive microwave data, *IEEE Trans. Geosci. Remote Sensing*, 38, 823-837, 2000.
- Wick**, G. A., and A. T. Jessup, Simulation of ocean skin temperature modulation by swell waves, *J. Geophys. Res.*, 103, 3149-3161, 1998.
- Suarez, M. J., W. J. Emery, and G. A. **Wick**, The multi-channel infrared sea truth radiometric calibrator (MISTRIC), *J. Atm. Oceanic Technol.*, 14, 243, 1997.
- Wick**, G. A., W. J. Emery, L. H. Kantha, and P. Schlüssel, The behavior of the bulk-skin sea surface temperature difference under varying wind speed and heat flux, *J. Phys. Oceanogr.*, 26, 1969-1988, 1996.
- Fairall, C. W., E. F. Bradley, J. S. Godfrey, G. A. **Wick**, J. B. Edson, and G. S. Young, Cool-skin and warm-layer effects on sea surface temperature, *J. Geophys. Res.*, 101, 1295-1308, 1996.
- Privette, J. L., C. Fowler, G. A. **Wick**, D. Baldwin, and W. J. Emery, Effects of orbital drift on advanced very high resolution radiometer products: Normalized difference vegetation index and sea surface temperature, *Remote Sens. Environ.*, 53, 164-171, 1995.
- Emery, W. J., Y. Yu, G. A. **Wick**, P. Schlüssel, and R. W. Reynolds, Correcting infrared satellite estimates of sea surface temperature for atmospheric water vapor attenuation, *J. Geophys. Res.*, 99, 5219-5236, 1994.
- Wick**, G. A., W. J. Emery, and P. Schlüssel, A comprehensive comparison between satellite-measured skin and multichannel sea surface temperature, *J. Geophys. Res.*, 97, 5569-5595, 1992.

Book Chapters:

- Ralph, F. M., A. B. White, G. A. Wick, M. L. Anderson, and J. J. Rutz, Observing and detecting atmospheric rivers, in *Atmospheric Rivers*, pp. 45-89, Springer, 2020.
- Emery, W. J., G. A. Wick, and P. Schlüssel, Skin and bulk sea surface temperatures: Satellite measurement and corrections, in *Oceanographic Applications of Remote Sensing*, pp. 145-165, CRC Press, 1995.
- Emery, W. J., L. Kantha, G. A. Wick, and P. Schlüssel, The relationship between skin and bulk sea surface temperatures, in *Satellite Remote Sensing of the Oceanic Environment*, pp. 25-40, Seibutsu Kenkyusha, 1993.

Technical Reports:

- Dunion, J. P., G. A. **Wick**, P. G. Black, J. Walker, Sensing Hazards with Operational Unmanned Technology: 2015-2016 Campaign Summary, Final Report, NOAA Unmanned Aircraft Systems Program, <https://doi.org/10.7289/V5/TM-OAR-UAS-001>, 39 pp., 2018.
- Wick**, G. A., J. P. Dunion, Sensing Hazards with Operational Unmanned Technology: Impact Study of Global Hawk Unmanned Aircraft System Observations for Hurricane Forecasting, Final Report, NOAA Unmanned Aircraft Systems Program, <https://doi.org/10.7289/V5/TM-OAR-UAS-002>, 73 pp., 2018.

Community White Papers:

- Fairall, C. W., M. A. Bourassa, M. F. Cronin, S. R. Smith, R. A. Weller, G. **Wick**, S. Woodruff, L. Yu, H.-M. Zhang, Observations to quantify air-sea fluxes and their role in global variability and predictability, *Integrated Ocean Observing System (IOOS) Summit*, November 13-16, 2012.

Donlon C. J. et al., Successes and challenges for the modern sea surface temperature observing system, *Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Vol. 2)*, Venice, Italy, 21-25 September 2009, doi:10.5270/OceanObs09.cwp.24, 2009.

Smith, S. R. et al., Automated underway oceanic and atmospheric measurements from ships, *Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Vol. 2)*, Venice, Italy, 21-25 September 2009, doi:10.5270/OceanObs09.cwp.82, 2009

Highlighted Accomplishments:

Led the Uncrewed Systems Research Transition Office during detail as Acting Director, planning, and monitoring all office activities. Presented with cash and time-off awards for performance. 2020-2021.

Led the evaluation and refinement of a research model for prediction of the diurnal warming of the near-surface ocean and collaborated with the NOAA NESDIS Center for Satellite Applications and Research (STAR) to transition the model into use within their operational system for producing a polar-geostationary satellite blended SST analysis

Planned, coordinated, and managed the Sensing Hazards with Operational Unmanned Technology project, leading three field campaigns (including coordination with the NOAA El Niño Rapid Response Mission), conducting flight operations, coordinating data impact studies across multiple laboratories and Line Offices, and preparing reporting documenting the forecast improvement possible through inclusions of observations from UAS. Awarded 2017 OAR Employee of the Year award for leadership. 2015-2018.

Managed development, operation, and evaluation for NOAA (in partnership with the National Center for Atmospheric Research) of a new dropsonde system for the Global Hawk UAS and oversaw efforts leading to acceptance and assimilation of the resulting data in NOAA operational numerical weather prediction models.

Led the NOAA Winter Storms and Pacific Atmospheric Rivers (WISPAR) Experiment resulting in the first successful collection of dropsonde data from the Global Hawk UAS, 2011.

Developed a technique for the automated identification and characterization of atmospheric rivers (the Atmospheric River Detection Tool, ARDT) within satellite and reanalysis data sets. The tool was utilized in multiple subsequent scientific studies examining the characteristics and impacts of atmospheric rivers.

Developed web-based resources for the monitoring of atmospheric rivers incorporating satellite-based and reanalysis products and the ARDT, and shared the resources with scientific collaborators including the National Weather Service Weather Prediction Center.

Led the satellite-based component of pioneering work on the identification and characterization of atmospheric rivers, culminating in two OAR Outstanding Scientific Paper awards.

Invited Talks:

Evaluation of modeled diurnal warming estimates for application to producing SST analyses, EUMETSAT, 2023.

Highlights of Marine Applications of UAS Within NOAA, *Marine Technology Society, The Marine Applications of Unmanned Aerial Systems*, 2020.

NOAA's Sensing Hazards with Operational Unmanned Technology (SHOUT) Experiment: Observations and Forecast Impacts, University of Colorado, 2019.

Recent updates to objective atmospheric detection techniques and resulting implications for atmospheric river climatologies, *International Atmospheric Rivers Conference*, La Jolla, CA, 2016.

The Future of Hurricane Monitoring, *National Hurricane Conference*, Austin, TX, 2015.

Satellite-Derived Estimates of the CO₂ Gas Transfer Velocity Between the Ocean and Atmosphere, Florida State University, 2009.

Evaluation of water vapor retrievals from COSMIC, SSM/I and AMSU, Electrical and Computer Engineering Department, Colorado State University, November 2007.

Satellite-Derived Heat Flux: Issues with Near-surface Specific Humidity and Air Temperature, University of Colorado Department of Aerospace Engineering Sciences Remote Sensing Seminar, April 2007.

Application of in situ Observations to Current Satellite-Derived Sea Surface Temperature Products, *1st Joint Global Ocean Surface Underway Data (GOSUD)/Shipboard Automated Meteorological and Oceanographic System (SAMOS) Workshop*, Boulder, Colorado, May 2006.

Near-Surface Retrieval of Air Temperature and Specific Humidity Using Multi-Sensor Observations, *SEAFLUX Workshop*, Tallahassee, FL, March 2006.

Infrared and Microwave Remote Sensing of Sea Surface Temperature, University of Colorado Department of Aerospace Engineering Sciences Remote Sensing Seminar, 2002, 2004, 2005.

Summary of Results from the High-Resolution SST Workshop and the GODAE High-Resolution Sea Surface Temperature Pilot Project, Workshop on Advances in the Use of Historical Marine Climate Data, Boulder, CO, 2002.

Modeling the Warm Layer and Cool Skin: Status and Effects on Satellite SST, Kyoto Japan, 1999.

Remote Sensing of Sea Surface Temperature, PAOS, University of Colorado, 1998.

Effects of the bulk-skin temperature difference and diurnal warming on satellite measured sea surface temperature, 1998 Spring AGU Meeting, Boston, MA.

Remote Sensing of Sea Surface Temperature, Los Alamos National Laboratory, 1993.

Professional Affiliations/Activities/Service:

Member – Group for High-Resolution Sea Surface Temperature (GHR SST) Science Team

Chair – GHR SST Diurnal Variability Working Group, 2012-2016

Member – American Geophysical Union

Member – American Meteorological Society

Diurnal variability and skin effect lead scientist – EUMETSAT-NOAA Joint SST product development cooperation project, 2020-present

Visiting Scientist – EUMETSAT for evaluation of the use of diurnal warming models in SST product development, June 2023

Member – NOAA Ocean Color Coordinating Group, 2014-2022

Voting Member – NOAA Low Earth Orbiting Requirements Working Group, 2012-2022

Voting Member – NOAA Geostationary Orbiting Requirements Working Group, 2012-2022

Member – NOAA Physical Sciences Laboratory Science Board, 2021-2022

OAR Representative – UAS Working Group, 2020-2022

Acting OAR Representative – NOAA UxS Executive Oversight Board, 2020-2021

Participating Scientist – Long Wave Infrared Instrument for SST Measurements by CubeSats, Team led by Sierra Lobo, Inc. under support from the National Ocean Partnership Project, 2019-20.

Invited “Shark” – NOAA OAR/NWS Shark Tank events, 2017-8.

Invited Participant – NASA Coupled Ocean Variables Workshop, Seattle, WA, April 2016

Member – NOAA Steering Group for Precipitation Measurements from Space, 2014-2015

Member – NASA Sea Surface Temperature Science Team, 2009-2014

Visiting Scientist – Australian Government Bureau of Meteorology for the development of satellite diurnal warming SST products in the Tropical Warm Pool, March 2012

Invited Participant – Generation of Climate Data Records of Sea-Surface Temperature from Current and Future Satellite Radiometers Workshop, International Space Science Institute, Bern, Switzerland, March 26-30 and October 1-5, 2012

Member – NOAA UAS Science Definition Team, 2011-2012

Member – US CLIVAR Working Group on High Latitude Surface Fluxes, 2009-2010

Member - GOES-R Independent Validation and Verification Activity, 2009-2010

Advisor, NOAA/NASA/DoD Joint Agency Requirements Group (for satellites), 2008-2010

Co-Lead – NOAA Pacific Testbed for Unmanned Aircraft Systems (UAS), 2007-2010.

Invited Participant – Workshop on Scatterometry and Climate, Washington, DC, August 2009.

Host and Local Organizer – Global Ocean Data Assimilation Experiment (GODAE) High-Resolution Sea Surface Temperature Pilot Project 7th Science Team Meeting, Boulder, CO, March 2006.

Technical Program Committee Co-Chair – 2006 International Geoscience and Remote Sensing Symposium, Denver, CO.

Member – IEEE Geoscience and Remote Sensing Society, 2005-2012

Invited Participant – Reconciling Vertical Temperature Trends Workshop, Asheville, NC, October 2003.

Reviewer for Journal of Geophysical Research, Journal of Physical Oceanography, Journal of Fluid Mechanics, Remote Sensing of the Environment, Remote Sensing, Journal of Atmospheric and Oceanic Technology, Weather and Forecasting, Geophysical Research Letters, IEEE Transactions on Geoscience and Remote Sensing, Deep Sea Research, NOAA, and NASA

Major Experiments:

Project Scientist: NOAA Sensing Hazards with Operational Unmanned Technology (SHOUT), 2014-2017.

Lead Author: Impact Study of Global Hawk Unmanned Aircraft System (UAS) Observations for Hurricane Forecasting – Final Report, June 2017.

NASA Eastern Pacific Origins and Characteristics of Hurricanes (EPOCH), Co-I, instrument PI for dropsonde system, and project scientist for NOAA collaboration, 2017.

NASA Hurricane and Severe Storm Sentinel (HS3) Experiment, Instrument PI for dropsonde system on NASA Global Hawk unmanned aircraft, Summers 2011-2014.

NASA Marginal Ice Zone Processes Experiment (MIZOPEX), Science Team Member, Summer 2013.

Mission Scientist: NOAA Winter Storms and Pacific Atmospheric Rivers (WISPAR) Experiment. NASA Global Hawk unmanned aircraft, Feb-Mar 2011.

NASA Genesis and Rapid Intensification Processes (GRIP) Experiment, Instrument PI for dropsonde system on NASA Global Hawk unmanned aircraft, Aug-Sep, 2010.

NOAA Unmanned Aircraft Systems Boundary Layer Moisture Flux Demonstration, Vandenberg AFB, Oct-Nov, 2008.

NOAA Hydrometeorological Testbed, Satellite data processing, Winters 2004-2013.

NOAA Atmospheric Rivers Experiment, Satellite data processing and forecasting, March-April 2005.

NOAA Tropical Atmosphere Ocean (TAO) buoy servicing cruise, Measurements of air-sea fluxes, clouds, balloon launches, R/V *Ronald H. Brown*, Puerto Rico–Panama–Chile, October-December, 2004.

Polarimetric Scanning Radiometer Studies of the Sea Surface, Airborne microwave measurements of ocean roughness, Navy P-3, 2004, 2003, 2001, 2000.

AMSR Precipitation Validation, Airborne microwave measurements, NASA P-3, Yakota, Japan, January-February, 2003.

Fluxes, Air-Sea Interaction, and Remote Sensing Experiment (FAIRS), Measurements of the ocean skin layer and gas transfer, R/P *Flip*, Monterey–San Diego, September 2000.

NASA Wallops Flight Facility Wind-Wave Tank, Measurements of gas transfer and skin temperature modulation by waves, November 1998.

NOAA Gas Exchange Experiment (GASEX98), Measurements of ocean skin layer, R/V *Ronald H. Brown*, Miami – Lisbon, May 1998.

Pan American Climate Study (PACS), Satellite data processing, 1997-1998.

Coastal Oceans Probing Experiment (COPE), Measurements of ocean skin layer, surface roughness and wave breaking, R/P *Flip*, Oregon Coast, September 1996.

Central Equatorial Pacific Experiment (CEPEX), Measurements of ocean skin layer, R/V *John V. Vickers*, Solomon Islands – Los Angeles, March-April 1993.

Tropical Oceans Global Atmosphere Coupled Ocean-Atmosphere Response Experiment (TOGA COARE), Satellite data processing and Air-Sea flux group, Nov. 1992 – Feb. 1993.

NOAA Climate and Global Change Cruise, Measurements of ocean skin layer, R/V *Malcolm Baldrige*, American Samoa – New Zealand – Honolulu, March-May 1990.

Honors:

University of Colorado, Department of Aerospace Engineering, Distinguished Alumni Award, 2023.

NOAA Oceanic and Atmospheric Research Employee of the Year, 2017.

NASA Group Achievement Award, 2015.

NASA Group Achievement Award, 2011.

NOAA Oceanic and Atmospheric Research Outstanding Scientific Paper Award, 2009.

National Ocean Partnership Project Excellence in Partnering Award, 2008

NOAA Oceanic and Atmospheric Research Outstanding Scientific Paper Award, 2007.

Tau Beta Pi Engineering Honor Society

Sigma Gamma Tau Aerospace Honor Society

Golden Key National Honor Society

Century XXI Fellowship, University of Colorado – 1989-1991

Golden Key National Honor Society Scholarship – Fall 1986

Dean's Engineering Scholarship, University of Colorado – 1985-1987

Teaching/Mentoring:

Mentored NOAA Experiential Research and Training Opportunities (NERTO) student Maria Novoa-Garcia, 2022

Mentored NOAA Experiential Research and Training Opportunities (NERTO) student Carlos Wah Gonzalez, 2018

Mentored Hollings summer intern, Rachel Norris, 2015

Infrared and Microwave Remote Sensing of Sea Surface Temperature, American Meteorological Society Short Course on Remote Sensing Methods and Applications in Air-Sea Interaction, AMS 83rd Annual Meeting, February 9, 2003.

Co-developer of Matlab-based interactive tutorials on Satellite Measured Sea Surface Temperature and Oceanic Diurnal Warming, 2003.

Thermodynamics, Aerospace Engineering, University of Colorado, Summers 1992-1993.

Guest lectures in Oceanography, Remote Sensing, Radiative Transfer, Data Analysis, and Computer Programming, University of Colorado and University of Washington.

Thesis Committees:

Chong Jia, Ph.D. Dissertation, University of Miami, 2024.

Martin Yapur, Master's Thesis, City College of the City University of New York, 2004.

Sandra Castro, Ph.D. Dissertation, University of Colorado, 2001.

Alan Di Vittorio, Master's Thesis, University of Colorado, 2000.

Roy Schiff, Master's Thesis, University of Washington, 1996.