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**OVERVIEW:**
Dr. Liang Xu is the Branch Head of the Atmospheric Dynamics & Prediction Branch and a meteorologist at the Marine Meteorology Division, Naval Research Laboratory in Monterey, CA. He is responsible for the scientific, technical, and administrative supervision of a group of excellent civilian scientists in three Sections, engaged in basic, applied research, and technology transition to operations. He oversees a fully integrated research and development program encompassing all aspects of Numerical Weather Prediction (NWP) and Data Assimilation. The primary Branch objective is to increase the scientific understanding necessary to improve mesoscale and global NWP, particularly emphasizing on the deterministic and probabilistic aspects of the Earth System Prediction Capability (ESPC.)

**EDUCATION:**
- Ph.D., **Atmospheric Sciences** (major) and **Oceanography** (minor), North Carolina State University (NCSU), 1995
- M. S., **Atmospheric Sciences**, the University of California at Davis, 1991
- M. S., **Tropical Meteorology**, Nanjing University, Nanjing, China, 1986
- B. S., **Physics**, Nanjing Institute of Meteorology, Nanjing, China, 1982

**PUBLICATIONS:**
**Book**
- Park, S. and L. Xu (eds), 2022: Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. IV). Springer-Verlag, New York, 705pp
- Park, S. and L. Xu (eds), 2016: Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. III). Springer-Verlag, New York, 530pp
- Park, S. and L. Xu (eds), 2013: *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. II)*. Springer-Verlag, New York, 730pp
- Park, S. and L. Xu (eds), 2009: *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications*. Springer-Verlag, New York, 475pp

**PhD Dissertation:**
- Xu, L., 1995: A Study of Mesoscale Land-Air-Sea Interaction Processes: Developing/Using the Navy's COAMPS. Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh, NC 27695, 359pp

**Selected Referred Journal Articles and Book Chapters**

- Kang W., K. Sun, and L. Xu 2023: Data-Driven Computational Methods for the Domain of Attraction and Zubov's Equation. IEEE Transactions on Automatic Control, accepted.
- Zaron, E.D., B.S. Chua, P. A. Reinecke, J. Michalakes, J. D. Doyle, and L. Xu, L, 2022: The Tangent-Linear and Adjoint Models of the NEPTUNE Dynamical Core, Core. Tellus A: Dynamic Meteorology and Oceanography, 74(1): 399–411.
- Kang W. and L. Xu, 2022: Sparsity-Based Kalman Filters for Data Assimilation. In: Park, S.K., Xu, L. (eds) Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. IV). Springer.
- Kang W. and L. Xu, 2021: Some quantitative characteristics of error covariance for Kalman filters. Tellus A: Dynamic Meteorology and Oceanography, 73(1): 1-19.
- Chua, B.S., and L. Xu, 2017: Representer-Based Variational Data Assimilation Systems: A Review. In: Park, S., Xu, L. (eds) Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. III). Springer.
- Chua, B. S., E. D. Zaron, L. Xu, N. L. Baker, and T. Rosmond, 2013: Recent Applications in Representer-Based Variational Data Assimilation. In: Park, S.K., Xu, L. (eds) Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. II). Springer.
- Kang, W., A. J. Krener, M. Xiao, and L. Xu, 2013: A Survey of Observers for Nonlinear Dynamical Systems. In: Park, S.K., Xu, L. (eds) Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. II). Springer.
- Kang, W. and L. Xu, 2012: Optimal placement of mobile sensors for data assimilations. *Tellus*, 64A, 1-12.
- Chua, B., L. Xu, T. Rosmond, and E. Zaron, 2009: Preconditioning representer-based variational data assimilation systems: application to NAVDAS-AR. In: Park, S.K., Xu, L. (eds) Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications. Springer.
- Xu, L., T. Rosmond, J. Goerss, and B. Chua, 2007: Toward a weak constraint operational 4D-Var system: application of the Burger's equation. *Meteorologische Zeitschrift,* 16, 767-776.
- Rosmond, T. and L. Xu, 2006: Development of NAVDAS-AR: Non-linear formulation and outer loop tests. *Tellus,* 58A, 45-58.
- Xu, L., T. Rosmond, and R. Daley, 2005: Development of NAVDAS-AR: Formulation and initial tests of the linear problem. *Tellus*, 57A, 546-559.
- Xu, L. and R. Daley, 2002: Data assimilation with a barotropically unstable shallow water system using representer algorithms. *Tellus*, 54A, 125-137.
- Xu, L. and R. Daley, 2000: Towards a true 4-dimensional data assimilation algorithm: application of a cycling representer algorithm to a simple transport problem. *Tellus*, 52A, 109-128.