

SUKANTA BASU

Associate Professor

Department of Marine, Earth, and Atmospheric Sciences
North Carolina State University, Raleigh, NC 27695, USA

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EDUCATION

- 2004 Ph.D. (Civil Engineering)
University of Minnesota, Minnesota, USA
Dissertation: Large-eddy simulation of stably stratified atmospheric boundary layer turbulence: a scale-dependent dynamic modeling approach
- 2000 Master of Applied Science (Environmental Engineering)
University of Windsor, Ontario, Canada
- 1998 Bachelor of Technology (Honors) (Civil Engineering)
Indian Institute of Technology (IIT), Kharagpur, India

PROFESSIONAL EXPERIENCE

- August, 2010 – Present Associate Professor
Department of Marine, Earth, and Atmospheric Sciences
North Carolina State University, North Carolina, USA
- September, 2005 – August, 2010 Assistant Professor
Atmospheric Science Group, Department of Geosciences
Texas Tech University, Texas, USA
- May, 2008 – June, 2008 Visiting Scientist
Meteorology and Air Quality Group,
Wageningen University, The Netherlands
- January, 2005 – June, 2005 Post-doctoral Research Associate
University of Minnesota, Minnesota, USA

RESEARCH INTERESTS

Primary

Wind energy (resource assessments and turbine micro-siting, short-term wind energy forecasting, turbine-turbulence interactions, turbine loads assessment etc.); atmospheric boundary layer processes; turbulence modeling (large-eddy simulation); numerical weather prediction; environmental fluid mechanics.

Other

Antarctic meteorology, dispersion modeling, QPF verification, and nonlinear time series analysis.

SELECTED ACCOMPLISHMENTS

- 2009 Elected member of the American Meteorological Society (AMS) Boundary Layers and Turbulence Committee.
- 2008 Departmental nominee for the Chancellor's Distinguished Research Award.
- 2008 CAREER Award, National Science Foundation.
- 2005 Best Ph.D. dissertation in Civil Engineering, awarded by the Department of Civil Engineering, University of Minnesota.
- 2005 NOAA Climate and Global Change Postdoctoral fellowship awarded by UCAR and NOAA (declined in order to accept a faculty position at Texas Tech University).
- 2003 Doctoral dissertation fellowship awarded by the Graduate School, University of Minnesota.
- 2002 Travel grant awarded by the Grand Combin Summer School on Physics and Predictability of Rainfall and Floods, St. Oyen, Aosta, Italy.
- 2000 Sommerfeld fellowship awarded by the Department of Civil Engineering, University of Minnesota.
- 2000 Ontario graduate scholarship awarded by the selection board of Ministry of Training, Colleges and Universities, Ontario, Canada (declined in order to accept the Sommerfeld fellowship at the University of Minnesota).
- 1998 Best final year project in Civil Engineering, awarded by the Indian Institute of Technology, Kharagpur, India.

SPONSORED RESEARCH

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------|
| U.S. Department of Energy
(lead organization: AWS Truepower)
Enhancing short term wind energy forecasting for improved utility operations | 2010-2012 | \$ 75,631 (NCSU part) |
| NSF: CBET Energy for Sustainability
(lead PI: Lance Manuel, UT-Austin)
On turbine loads assessment for ultimate and fatigue limit states for different atmospheric boundary layer stability conditions | 2010-2012 | \$ 123,140 (NCSU part) |
| NSF: CAREER Award
Towards better representation of the nocturnal low-level jets in new generation large-eddy and mesoscale models | 2008-2013 | \$ 505,060 |
| Norman Hackerman Advanced Research Program (lead PI: Lance Manuel, UT-Austin)
Atmospheric stability considerations in design of wind turbines against fatigue | 2008-2010 | \$ 51,776 (TTU part) |
| NSF: Polar Science Program
Understanding, parameterizing and modeling the strongly stratified atmospheric boundary layer processes over the Antarctic Plateau | 2006-2010 | \$ 173,000 |
| Texas Advance Research Program
(co-PI: Xiaoning Kathleen Gilliam)
Characterization and simulation of turbulence in stably stratified atmospheric boundary layers | 2006-2009 | \$ 86,000 |

Physical Journal B (1); The Open Atmospheric Science Journal (1); Water Resources Research (1); Weather and Forecasting (2); Wind Energy (3).

Proposals reviewed for: National Science Foundation (11); Arizona Science Foundation (1); Innovation and Technology Commission, The Government of Hong Kong (1).

External dissertation examiner: Civil Engineering, The University of Sydney, Australia.

PUBLICATIONS

To Be Submitted

Book

Basu, S. *Wind Power Meteorology*.

Under Review

van de Wiel, B. J. H., Basu, S., Moene, A. F., Jonker, H. J. J., Steeneveld, G.-J., and Holtslag, A. A. M. (2010). Comments on “An extremum solution of the Monin-Obukhov similarity equations”, Journal of the Atmospheric Sciences.

In Peer Reviewed Journals

Basu, S., Ruiz-Columbié, A., Phillipson, J. A., and Harshan, S. (2010). “Local scaling characteristics of atmospheric surface layer turbulence”, The Cryosphere, 4, 325-331.

Storm, B., and Basu, S. (2010). “The WRF model forecast-derived low-level wind shear climatology over the United States Great Plains”, Energies (invited paper), 3, 258-276.

Basu, S. (2009). “Can the dynamic eddy-viscosity class of subgrid-scale models capture inertial-range properties of Burgers turbulence?” Journal of Turbulence, 10, 1-16.

Storm, B., Dudhia, J., Basu, S., Swift, A., and Giammanco, I. (2008). “Evaluation of the Weather Research and Forecasting (WRF) model on forecasting low-level jets: Implications for wind energy.” Wind Energy, 10.1002/we.288.

Basu, S., Vinuesa, J.-F., and Swift, A. (2008). “Dynamic LES modeling of a diurnal cycle.” Journal of Applied Meteorology and Climatology, 47, 1156-1174.

Basu, S., Holtslag, A. A. M., van de Wiel, B. J. H., Moene, A., and Steeneveld, G.-J. (2008). “An inconvenient ‘truth’ about using sensible heat flux as a surface boundary condition in models under stably stratified regimes.” Acta Geophysica (Special Issue: Recent Topics in Boundary-Layer Meteorology - 10.2478/s11600-007-0038-y), 56, 88-99.

Basu, S., Foufoula-Georgiou, E., Lashermes, B., and Arnéodo, A. (2007). “Estimating intermittency exponent in neutrally stratified atmospheric surface layer flows: A robust framework based on magnitude cumulant and surrogate analyses.” Physics of Fluids, 19, 115102.

Vinuesa, J.-F., Basu, S., and Galmarini, S. (2007). “The diurnal evolution of ²²²Rn and its progeny in the atmospheric boundary layer during the Wangara experiment.” Atmospheric Chemistry and Physics, 7, 5003-5019.

Anderson, W., Basu, S., and Letchford, C. (2007). “Comparison of dynamic subgrid-scale models for simulations of neutrally buoyant shear-driven atmospheric boundary layer flows.” Environmental Fluid Mechanics, 7, 195-215.

- Basu, S., and Porté-Agel, F. (2006). “Large-eddy simulation of stably stratified atmospheric boundary layer turbulence: a scale-dependent dynamic modeling approach.” Journal of the Atmospheric Sciences, 63, 2074-2091.
- Vinuesa, J.-F., Porté-Agel, F., Basu, S., and Stoll, R. (2006). “Subgrid-scale modeling of reacting scalar fluxes in large-eddy simulations of atmospheric boundary layers.” Environmental Fluid Mechanics, 6, 115, doi: 10.1007/s10652-005-6020-9.
- Basu, S., Porté-Agel, F., Fofoula-Georgiou, E., Vinuesa, J.-F., and Pahlow, M. (2006). “Revisiting the local scaling hypothesis in stably-stratified atmospheric boundary layer turbulence: an integration of field and laboratory measurements with large-eddy simulations.” Boundary-Layer Meteorology, 119, 473-500.
- Venugopal, V., Basu, S., and Fofoula-Georgiou, E. (2005). “A new metric for comparing precipitation patterns with an application to ensemble forecasts.” Journal of Geophysical Research – Atmospheres, 110, D08111, doi: 10.1029/2004JD005395.
- Basu, S., Fofoula-Georgiou, E., and Porté-Agel, F. (2004). “Synthetic turbulence, fractal interpolation and large-eddy simulation.” Physical Review E, 70, 026310.
- Basu, S., Fofoula-Georgiou, E., and Porté-Agel, F. (2002). “Predictability of atmospheric boundary-layer flows as a function of scale.” Geophysical Research Letters, 29(21), doi:10.1029/2002GL015497.
- Basu, S., and Fofoula-Georgiou, E. (2002). “Detection of nonlinearity and chaoticity in time series using the transportation distance function.” Physics Letters A, 301, 413-423.
- Basu, S., Henshaw, P. F., Biswas, N., and Kwan, H. K. (2002). “Prediction of gas-phase adsorption isotherms using neural nets.” The Canadian Journal of Chemical Engineering, 80(3), 506-512.
- Basu, S., Henshaw, P. F., and Biswas, N. (1999). Discussion on “Equilibrium gaseous adsorption at different temperatures” : by A. R. Khan, R. Atallah, and A. Al-Haddad. Journal of Environmental Engineering, ASCE, 126(11), 1068-1069.

Invited Presentations

Presenters are indicated by an asterisk

- Basu, S. (2010). “Addressing a few emergent challenges in wind power meteorology”, Department of Mechanical Engineering and Engineering Science, University of North Carolina-Charlotte, USA.
- Basu, S. (2009). “Addressing a few emergent challenges in wind power meteorology”, Visher Lecture, Department of Geography, University of Indiana, Bloomington, USA.
- Basu*, S., Ruiz-Columbie, A., and Harshan, S. (2008). “Deriving Monin-Obukhov similarity functions from dynamic large-eddy simulations”, American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Basu, S. (2007). “NEW LES intercomparison case.” Presentation at the GABLS Workshop, Stockholm, Sweden.
- Basu, S. (2007). “Looking beyond dynamic Smagorinsky models for atmospheric boundary layer simulations.” Presentation at the Department of Atmospheric Sciences, University of Washington, Seattle, USA.
- Basu, S. (2004). “Understanding stably stratified atmospheric boundary-layer turbulence: integration of statistical and dynamical approaches with large-eddy simulations.” Invited Presentation at the International Center for Theoretical Physics, April 24, Trieste, Italy.

Conference Papers and Oral Presentations

Presenters are indicated by an asterisk

- Basu*, S., Bosveld, F. C., and Holtslag, A. A. M. (2010). "Stable Boundary Layers with Low-Level Jets: What did we Learn from the LES Intercomparison within GABLS?" 19th Symposium on Boundary Layers and Turbulence, 2-6 August, Keystone, Colorado, USA.
- Basu*, S., Bosveld, F. C., and Holtslag, A. A. M. (2010). "Stable Boundary Layers with Low-Level Jets: What did we Learn from the LES Intercomparison within GABLS?" 5th International Symposium on Computational Wind Engineering, 23-27 May, Chapel Hill, USA.
- Basu*, S., Bosveld, F. C., and Holtslag, A. A. M. (2009). "Stable Boundary Layers with Low-Level Jets: What did we Learn from the LES Intercomparison within GABLS?" American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Gowda*, P. H., Howell, T. A., Hartogensis, O., Basu, S., and Scanlon, B. R. (2009). "Effect of Scintillometer Height on Structure Parameter of the Refractive Index of Air Measurements", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Basu*, S. (2009). "GABLS 3rd LES intercomparison study", GABLS Workshop, 26-27 June, Boulder, USA.
- Basu*, S., and Holtslag, A. A. M. (2009). "Solving the mysteries of decoupling, run-away surface cooling, and crashing in stable atmospheric boundary layer model studies", GABLS Workshop, 26-27 June, Boulder, USA.
- Ruiz Columbie*, A., Basu, S., and Harshan, S. (2009). "How does the WRF model capture the intrinsic features of evening transitional boundary layers?", 10th WRF Users' Workshop, 23-26 June, Boulder, USA.
- Harshan, S., Basu*, S., and Ruiz Columbie, A. (2009). "Evaluating the performance of the WRF model in representing the Antarctic boundary layer", 10th WRF Users' Workshop, 23-26 June, Boulder, USA.
- Sim, C., Basu, S., and Manuel*, L. (2009). "The influence of stable boundary layer flows on wind turbine fatigue loads", 47th AIAA Aerospace Sciences Meeting, 5-8 January, Orlando, Florida, USA.
- Ho, C., Gilliam, X., and Basu*, S. (2009). "Detecting intermittent turbulence using advanced signal processing techniques", 47th AIAA Aerospace Sciences Meeting, 5-8 January, Orlando, Florida, USA.
- Basu*, S., Holtslag, A. A. M., and Bosveld, F. (2008). "Implications of the GABLS LES intercomparison studies for future wind energy projects", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Basu*, S., Holtslag, A. A. M., van de Wiel, B. J. H., Moene, A. F., and Steeneveld, G. J. (2008). "Fundamental limitations of using sensible heat flux as a lower boundary condition in stable boundary layer simulation and modeling", 18th Symposium of Boundary Layers and Turbulence, 9-13 June, Stockholm, Sweden.
- Basu*, S., Steeneveld, G. J., Holtslag, A. A. M., and Bosveld, F. C. (2008). "Large-eddy simulation intercomparison case setup for GABLS3", 18th Symposium of Boundary Layers and Turbulence, 9-13 June, Stockholm, Sweden.
- Phillipson*, J. A., Basu, S., and Gilliam, X. (2008). "Identifying differences in polar and mid-latitude turbulence bursting events", 88th American Meteorological Society Annual Meeting, 20-24 January, New Orleans, USA.
- Anderson*, W. C., Basu, S., and Letchford, C. W. (2007). "Next-generation subgrid-scale closures for large-eddy simulation of turbulent flow in the atmospheric boundary layer", 12th international conference on wind engineering, July 1-6, Cairns, Australia.
- Storm*, B., Dudhia, J., and Basu, S. (2007). "WRF PBL sensitivities and verification in forecasting low-level jet events." 8th Annual WRF user's workshop, June 11-15, Boulder, USA.

- Basu*, S., and Vinuesa, J.-F. (2007). "Dynamic LES modeling of observed diurnal cycles." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Foufoula-Georgiou*, E. and Basu, S. (2007). "Advances in precipitation forecast verification: The forecast quality index and a case study in assessing WRF model performance." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Basu*, S., Foufoula-Georgiou, E., Lashermes, B. and Arnéodo, A. (2007). "Estimating intermittency exponent in neutrally stratified atmospheric surface layer flows: A robust framework based on magnitude cumulant and surrogate analyses." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Basu*, S., and Foufoula-Georgiou, E. (2007). "Spatial forecast verification methods intercomparison project: Forecast Quality Index", Verification Method Intercomparison Meeting, 19-24 February, Boulder, USA.
- Basu*, S., and Vinuesa, J.-F. (2006). "Dynamic LES modeling of a diurnal cycle." American Geophysical Union Fall Meeting, December 11-15, San Francisco, USA.
- Basu*, S., Lashermes, B., Foufoula-Georgiou, E., and Arnéodo, A. (2006). "Does atmospheric stability affect inertial-range properties of boundary layer turbulence?" American Geophysical Union Fall Meeting, December 11-15, San Francisco, USA.
- Basu*, S., Anderson, W., and Vinuesa, J.-F. (2006). "Dynamic LES modeling of diurnal cycles." 17th Symposium on Boundary Layers and Turbulence, May 22-25, San Diego, USA.
- Gilliam, X., and Basu*, S. (2006). "Identifying intermittent structures in stable boundary layer flows." 17th Symposium on Boundary Layers and Turbulence, May 22-25, San Diego, USA.
- Basu*, S. (2006). "Large-eddy simulation of stable boundary layers: a case study." 1st iLEAPS Science Conference, January 21-26, Boulder, USA.
- Mehta, K., Peterson, R., Basu*, S., and Swift, A. (2006). "Doctoral degree in Wind Science and Engineering", 3rd National Conference on Wind Engineering, January 5-7, Calcutta, India.
- Basu*, S. (2006). "Large-eddy simulation of stable boundary layer turbulence." 3rd National Conference on Wind Engineering, January 5-7, Calcutta, India.
- Porté-Agel*, F., Foufoula-Georgiou, E., Stoll, J. R., Basu, S., and Venugopal, V. (2005). "Surface heterogeneity effects on land-atmosphere fluxes from tuning-free large-eddy simulations." 5th International Scientific Conference on the Global Energy and Water Cycle, June 20-24, Orange County, USA.
- Basu*, S., Porté-Agel, F., and Foufoula-Georgiou, E. (2004). "Development of stable boundary layer parameterizations in numerical weather prediction models: a scale-dependent dynamic LES modeling approach." 16th Symposium on Boundary Layers and Turbulence, American Meteorological Society, August 9-13, Portland, USA.
- Basu*, S., Porté-Agel, F., and Foufoula-Georgiou, E. (2004). "Revisiting a few outstanding issues related to the stably stratified atmospheric boundary layer turbulence research." European Geosciences Union General Assembly, April 25-30, Nice, France.
- Basu*, S., and Foufoula-Georgiou, E. (2001). "Information theoretic approach to questions of precipitation predictability." American Geophysical Union Fall Meeting, December 10-14, San Francisco, USA.
- Basu*, S., and Foufoula-Georgiou, E. (2001). "A framework for the detection of nonlinearity and chaoticity: application to high frequency storm rates." 7th International Conference on Precipitation, June 30-July 3, Rockport, USA.
- Basu*, S., Henshaw, P. F., and Biswas, N. (2000). "Perspectives of adsorption in the new millennium." Canadian Society for Civil Engineering, 6th Environmental Engineering Specialty Conference, June 8-10, London, Canada, pp. 408-413.
- Basu*, S., and Henshaw, P. F. (2000). "Correlations of relative adsorbability with physical and structural properties of VOCs - application of an artificial neural network." Canadian Society for Civil Engineering, 6th Environmental Engineering Specialty Conference, June 8-10, London, Canada, student competition paper.

Poster Presentations

Presenters are indicated by an asterisk

- Skinner*, P. S., Basu, S., Ruiz-Columbie, A., and Roy, G. (2010). "Observational and WRF Model Analysis of a Heat Burst in the Texas Panhandle", Lubbock Severe Weather Conference, 17-19 February, Lubbock, USA.
- Skinner*, P. S., and Basu, S. (2009). "Observing the Great Plains Low-Level Jet Using the Aircraft Communications Addressing and Reporting System (ACARS): A Comparison with Boundary Layer Profiler Observations", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Rajan*, N., Gowda, P. H., Maas, S. J., Basu, S., and Nair, S. S. (2009). "Vegetation cover mapping at multiple scales using MODIS, Landsat, RapidEye, and Aircraft imageries in the Texas High Plains", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Sim, C., Manuel, L., and Basu*, S. (2009). "Simulation and Analysis of Wind Turbine Loads for Neutrally Stable Inflow Turbulence", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Ruiz-Columbie*, A., Basu, S., Skinner, P. S., Gowda, P. H., and Harshan, S. (2009). "Observational and Modeling Studies of Evening Transitional Boundary Layers", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Kersh, K. L., Gowda*, P. H., Basu, S., Howell, T. A., O'Shaughnessy, S., Rajan, N., and Akasheh, O. Z. (2009). "Vegetation Fraction Mapping with Artificial Neural Network and High Resolution Multispectral Aerial Imagery Acquired During BEAREX07", American Geophysical Union Fall Meeting, 14-18 December, San Francisco, USA.
- Storm, B., Basu*, S., and Rogers-van Nice, R. (2008). "Dynamic WRF-WaSP downscaling", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Ruiz-Columbie*, A., Basu, S., Chang, C.-B., Gowda, P. H., and Harshan, S. (2008). "Atmospheric boundary layer evening transitions over West Texas", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Gowda*, P. H., Howell, T. A., Scanlon, B. R., Basu, S., and Akasheh, O. Z. (2008). "Sensible heat flux measurements using a large aperture scintillometer over irrigated cotton", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Harshan*, S., and Basu, S. (2008). "Evaluating the performance of a new-generation numerical weather prediction model in representing the Antarctic surface layer", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Fowler*, P., and Basu, S. (2008). "A comparison of synoptic classification methods for application to wind power prediction", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Sim, C., Basu*, S., and Manuel, L. (2008). "The influence of stable boundary layer flows on wind turbine fatigue loads", American Geophysical Union Fall Meeting, 15-19 December, San Francisco, USA.
- Vinuesa*, J.-F., Galmarini, S., and Basu, S. (2008). "Atmospheric stability and secular equilibrium of the 222-Rn decaying family", 18th Symposium of Boundary Layers and Turbulence, 9-13 June, Stockholm, Sweden.
- Vinuesa*, J.-F., Galmarini, S., and Basu, S. (2008). "Secular equilibrium of the 222-Rn decaying family in the atmospheric boundary layer", 13-18 April, EGU General Assembly, Vienna, Austria.
- Vinuesa*, J.-F., Basu, S., and Galmarini, S., (2008). "Turbulent dispersion of the 222-Rn family in atmospheric boundary layers", 13-18 April, EGU General Assembly, Vienna, Austria.

- Rogers*, R., and Basu, S. (2008). "Does the Weather Research and Forecasting (WRF) model reproduce the characteristics of atmospheric surface layers accurately?" 88th American Meteorological Society Annual Meeting, 20-24 January, New Orleans, USA.
- Ho, C., Gilliam, X., Phillipson*, J. A., and Basu, S. (2008). "The empirical mode decomposition and intermittent turbulence", 88th American Meteorological Society Annual Meeting, 20-24 January, New Orleans, USA.
- Storm*, B., Dudhia, J., and Basu, S., (2007). "Sensitivities of the Weather Research and Forecasting (WRF) model in forecasting low-level jet events and the impact on forecasting severe weather." 22nd conference on weather analysis and forecasting/18th conference on numerical weather prediction, June 25-29, Park City, USA.
- Storm*, B., Basu, S., and Dudhia, J. (2007). "Advanced Research WRF (ARW) modeled low-level jet climatology compared to observed climatologies." 22nd conference on weather analysis and forecasting/18th conference on numerical weather prediction, June 25-29, Park City, USA.
- Storm*, B., Basu, S., and Dudhia, J. (2007). "WRF modeled low-level jet climatology compared to observed climatologies: weakness and strengths." 8th Annual WRF user's workshop, June 11-15, Boulder, USA.
- Storm*, B., Basu, S., and Dudhia, J. (2007). "Sensitivities of the WRF model in forecasting low-level jet events." Windpower 2007, June 3-6, Los Angeles, USA.
- Phillipson, J., Basu*, S., and Gilliam, X. (2007). "Identifying differences in polar and mid-latitude turbulent bursting events in the stably stratified atmospheric boundary layer flows." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Gilliam, X., Ho, C., and Basu*, S. (2007). "Detection of intermittent turbulence in stable boundary layer using empirical mode decomposition." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Storm, B., Basu*, S., and Dudhia, J. (2007). "Advanced Research WRF (ARW) modeled low-level jet climatology compared to observed climatologies." American Geophysical Union Joint Assembly, May 22-25, Acapulco, Mexico.
- Fowler*, P., and Basu, S. (2006). "Effects of land-surface heterogeneity on the evolution of low-level jets: A numerical study." International Conference on Water in Arid and Semiarid Lands, November 15-17, Lubbock, USA.
- Anderson*, W. C., and Basu, S. (2006). "Large-eddy simulation of the neutrally buoyant atmospheric boundary layer using two subgrid-scale closures: A comparative assessment." American Geophysical Union Fall Meeting, December 11-15, San Francisco, USA.
- Fowler*, P., and Basu, S. (2006). "Effects of land-surface heterogeneity on the evolution of low-level jets: A numerical study." American Geophysical Union Fall Meeting, December 11-15, San Francisco, USA.
- Basu, S., Porté-Agel*, F., and Fofoula-Georgiou, E. (2005). "Large-eddy simulation of stably stratified atmospheric boundary layer turbulence: a locally-averaged scale-dependent dynamic modeling approach." European Geosciences Union General Assembly, April 24-29, Vienna, Austria.
- Basu, S., Stoll, R., and Porté-Agel*, F. (2005). "Large-eddy simulation of the early evening boundary layer transition." European Geosciences Union General Assembly, April 24-29, Vienna, Austria.
- Stoll*, R., Basu, S., and Porté-Agel, F. (2005). "Surface heterogeneity and atmospheric stability effects on land-atmosphere interactions from large-eddy simulations with dynamic subgrid models." European Geosciences Union General Assembly, April 24-29, Vienna, Austria.
- Basu*, S., Porté-Agel, F., and Fofoula-Georgiou, E. (2004). "Large-eddy simulations of very stable atmospheric boundary layers: a scale-dependent dynamic modeling approach." European Geosciences Union General Assembly, April 25-30, Nice, France.

- Basu*, S., Fofoula-Georgiou, E., and Porté-Agel, F.(2004). “Large-eddy simulations of the stochastic Burgers equation and the chaotic Kuramoto-Sivashinsky equation: a comparative study.” European Geosciences Union General Assembly, April 25-30, Nice, France.
- Basu*, S., and Fofoula-Georgiou, E., Porté-Agel, F., Vuruputur, V., and Dodov, B. (2003). “Synthetic turbulence, fractal interpolation and large-eddy simulation.” American Geophysical Union Fall Meeting, December 8-12, San Francisco, USA.
- Basu*, S., and Fofoula-Georgiou, E., and Porté-Agel, F. (2003). “Statistical characterization of stably stratified atmospheric boundary layer turbulence.” American Geophysical Union Fall Meeting, December 8-12, San Francisco, USA.
- Basu*, S., and Fofoula-Georgiou, E. (2003). “Multiscale noise removal of chaotic geophysical signals.” EGS-AGU-EUG Joint Assembly, April 6-11, Nice, France.

TEACHING EXPERIENCE

North Carolina State University

MEA 707 Planetary boundary layer (Spring 2011)

Texas Tech University

ATMO 1300 Introduction to atmospheric science (Fall 2005, 2006, 2007, 2008, Spring 2009)

ATMO 5301 Atmospheric dispersion modeling (Spring 2006, 2008)

ATMO 5332 Regional-scale numerical weather prediction (Spring 2007)

ATMO 5319 Boundary-Layer Meteorology (Fall 2007, Fall 2009)

ATMO 5301 Wind Power Meteorology (Spring 2009, 2010)

CURRENT VISTING RESEARCH SCHOLAR

Dr. Wei Li

CURRENT GRADUATE ADVISEES

Padriac Fowler (M.S. – Atmospheric Science). Thesis topic: Short-term forecasting of wind energy.

Kiliyanpilakkil Velayudhan Praju (Ph.D. - Atmospheric Science)

Heather Russet (M.S. - Atmospheric Science)

Yao Wang (M.S. - Atmospheric Science)

Elizabeth Wilson (M.S. - Atmospheric Science)

CURRENT UNDERGRADUATE ADVISEES

Michelle Cipullo

Christopher Nunalee

FORMER GRADUATE ADVISEES

William Anderson (M.S. – Civil Engineering, 2007). M.S. Thesis: *A localized dynamic model for large-eddy simulation of the neutrally buoyant atmospheric boundary layer*. Currently doing a Ph.D. in the Department of Mechanical Engineering, Johns Hopkins University;

Suraj Harshan (M.S. – Atmospheric Science, 2009). M.S. Thesis: *Modeling of Antarctic boundary layer*. Currently at the Indian Institute of Science, Bengaluru, India;

Julie Phillipson (M.S. – Atmospheric Science, 2008). M.S. Thesis: *Bursting events in the stable atmospheric boundary layer*. Currently at the National Weather Service, St. Louis, Missouri;

Rachel Rogers (M.S. – Atmospheric Science, 2008). M.S. Thesis: *Forecast verification: A dispersion modeling perspective*. Currently at Alliant Energy, Iowa;

Brandon Storm (Ph.D. – IGERT Wind Science and Engineering Fellow, 2008). Ph.D. Dissertation: *Modeling of low-level jets over the Great Plains: Implications for Wind Energy*. Currently at EAPC Architects Engineering, Grand Forks, North Dakota.

FORMER POST-DOCTORAL RESEARCH ASSOCIATE

Dr. Arquímedes Ruiz-Columbié (Currently at Texas Wind Energy Institute, Texas Tech University)

FORMER VISITING RESEARCH ASSISTANT

Kornel Rozsavolgyi (Currently at Texas Wind Energy Institute, Texas Tech University)

KEY COLLABORATORS

Alain Arnéodo (Ecole Normale Supérieure de Lyon, France); Xiaoning Kathleen Gilliam (Texas Tech University); Prasanna Gowda (USDA-ARS, Bushland, Texas); Bert Holtslag (Wageningen University, The Netherlands); Lance Manuel (University of Texas at Austin); Jean-François Vinuesa (Noveltis, France).

PROFESSIONAL AFFILIATIONS

American Association for Wind Engineering; American Geophysical Union; American Meteorological Society; International Association for Hydrological Sciences (UK).

UNIVERSITY AND OUTREACH SERVICES

2010	Organizer, <i>Run on the Wind: Engineering a Clean Tomorrow</i> summer camp, Texas Tech University.
2009	Co-director, <i>Run on the Wind: Engineering a Clean Tomorrow</i> summer camp, Texas Tech University.
2008-2009	Chair, Numerical Weather Prediction Search Committee, Atmospheric Science Group, Texas Tech University.
2007-2008	Host of Prof. Sangjin Kim, Jeonju University, South Korea.

- 2007 Organizer of Prof. Bert Holtslag's (Wageningen University, the Netherlands) visit to Texas Tech University.
- 2007 Organizer of Dr. Ted Yamada's (YSA Corporation) visit to Texas Tech University.
- 2007 Organizer of Prof. S. Lakshminarayanan's (University of Oklahoma) visit to Texas Tech University.
- 2006-2007 Member, Cloud Physics Search Committee, Atmospheric Science Group, Texas Tech University.