

Jan Kleissl

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Education

PhD. Johns Hopkins University, Department of Geography and Environmental Engineering, Baltimore, MD, 2004, Advisors: Marc B. Parlange, Charles Meneveau,

M.Sc. University of Stuttgart, Stuttgart, Germany, 2001, Water Resources Engineering and Management, Advisor: Prof. Dr.-Ing. Habil. Dr. rer. nat. A. Bardossy

Dipl. Ing. ('Diplom Ingenieur' = graduate engineer), University of Stuttgart, Stuttgart, Germany, 2000, Environmental Engineering (Umweltschutztechnik), Advisor: Prof. Dr. h.c. Dr.-Ing. Helmut Kobus, PhD.

Employment

Postdoctoral Fellow, Michigan Technological University, Advisor: Richard Honrath, 2004 – October 2005, Objectives: Field-experimental and numerical study of upslope and downslope flow for source attribution of ground-based trace-gas measurements in the remote North Atlantic free troposphere.

Postdoctoral Fellow, New Mexico Tech, Advisor: Jan Hendrickx, October 2005 – October 2006, Objectives: Use of satellite imagery with scintillometer measurements on the ground to estimate evapotranspiration in New Mexico.

Awards and Fellowships

- **2008 Hellman Fellow** for tenure-track faculty of great promise
- **2008 UCSD Sustainability Award**
- **2004 UCAR Award for Outstanding Publication:**
Horst T.W., J. Kleissl et al: Field observations to obtain spatially filtered turbulence fields from crosswind arrays of sonic anemometers in the atmospheric surface layer, *J. Atmos. Sci.*, 61, 1566-1581, 2004
- **Student Paper Award:** 15th Symposium on boundary layers and turbulence, American Meteorological Society, Wageningen, The Netherlands, July 2002
- **Research Assistantship:** Johns Hopkins University; Department of Geography and Environmental Engineering, 2000-2003

Grants

- J. Kleissl and J. Hendrickx, *Validation and improvement of remote sensing ET algorithms in mountainous regions*, USGS National Institute of Water Resources (NIWR), 2006-2008, \$149,589
- J. Kleissl (PI) and P.F. Linden, *Decision-Making using real-time observations for environmental sustainability (DEMROES)*, UCSD Facilities Management and Environment & Sustainability Initiative, 2007-2008, \$46,200

- J. Kleissl (PI) et al, *Solar Power Initiative*, 2007-2008, UCSD Jacobs School of Engineering, \$50,000
- J. Kleissl (PI), *Coupling Between Skin Temperature and Evapotranspiration*, **National Science Foundation**, 2007-2008, \$48,000
- M., P.F. Linden, and J. Kleissl (co-PI), *Personal perception of air pollution in the urban environment*, Set2 UK University consortium, 2008, \$40,000
- J. Kleissl (PI) and N. Lieven, *Optimizing sustainable resource use in minigrids using wireless sensor networks and decision algorithms*, Set2 UK University consortium, 2008, \$40,000
- J. Kleissl (PI) and C. Watts, *Testing models for Evapotranspiration using Large Aperture Scintillometers*, University of California Mexico-US program, 2008-2009, \$25,000
- Delson, J. Kleissl (co-PI) et al., *Microprocessor Upgrade for Mechanical and Environmental Engineering Courses*, UCSD, 2008, \$7,500
- J. Kleissl, *Radiative Modeling of Urban Heat Islands Using Wireless Sensor Network Data*, Hellman Foundation, 2008-2009, \$59,643

Publications

- **Kleissl, J.**, C. Meneveau, and M.B. Parlange, 'On the magnitude and variability of subgrid-scale eddy-diffusion coefficients in the atmospheric boundary layer,' *J. of the Atmospheric Sciences*, 60, 2372-2388, 2003
- **Kleissl, J.**, M.B. Parlange, and C. Meneveau, 'Field experimental study of dynamic Smagorinsky models in the atmospheric surface layer,' *J. Atmos. Sci.*, 61, 2296-2307, 2004
- Horst, T.W., **J. Kleissl**, D.H. Lenschow, C. Meneveau, C.-H. Moeng, M.B. Parlange, P.P. Sullivan, and J.C. Weil, 'Field observations to obtain spatially-filtered turbulence fields from transverse arrays of sonic anemometers in the atmospheric surface layer,' *J. Atmos. Sci.*, 61, 1566-1581, 2004
- Pahlow, M, **J. Kleissl**, M.B. Parlange, J.M. Ondov, and D. Harrison, 'Atmospheric boundary layer dynamics as observed during a haze event due to forest fire smoke,' *Boundary Layer Meteorology*, 114 (1), 53-70, 2005
- A. Sapkota, J. M. Symons, **J. Kleissl**, L. Wang, M.B. Parlange, J. Ondov, P.A. Eggleston, T.J. Buckley, 'Impact of the 2002 forest fires on PM air quality in Baltimore City,' *Environmental Science and Technology*, 39 (1): 24-32, 2005
- R.E. Honrath, R.C. Owen, M. Val Martin, J.S. Reid, K. Lapina, P. Fialho, M.P. Dziobak, **J. Kleissl**, D.L. Westphal, 'Regional and hemispheric impacts of anthropogenic and biomass burning emissions on summertime CO and O₃ in the North Atlantic lower free troposphere,' *J. Geophysical Res.—Atmospheres*, 109, D24310, 2005
- **Kleissl, J.**, V. Kumar, M.B. Parlange, and C. Meneveau, 'Numerical study of dynamic Smagorinsky models in Large Eddy Simulation of the atmospheric boundary layer: Validation in stable and unstable conditions,' *Water Resources Research*, 42 (6), W06D10, 2006

- Kumar, V., **J. Kleissl**, M.B. Parlange, and C. Meneveau, 'Large-Eddy Simulation of the diurnal cycle of the turbulent Atmospheric Boundary Layer: Atmospheric stability and scaling issues,' *Water Resources Res.*, 42(6), W06D09, 2006
- **Kleissl, J.**, R.E. Honrath, D.V. Henriques, 'Analysis and application of Sheppard's airflow model to predict mechanical orographic lifting and the occurrence of mountain clouds,' *J. Applied Meteorology*, 45(10), pp. 1376–1387, 2006
- Park, S.S., **J. Kleissl**, D. Harrison, N.P. Nair, V. Kumar, J. Ondov, 'Investigation of PM_{2.5} Episodes Using Semi-Continuous instruments at the Baltimore Supersite,' *Aerosol Sci. Tech.*, 40 (10): 845-860, 2006
- **Kleissl, J.**, R.E. Honrath, M.P. Dziobak, D. Tanner, M. Val-Martin, R.C. Owen, D. Helmig, 'The occurrence of upslope flows at the Pico mountaintop atmospheric observatory: a case study of orographic flows on small, volcanic islands,' *J. of Geophysical Research – Atmospheres*, 112, D10S35, doi:10.1029/2006JD007565, 2007
- Van Hout, R., W. Zhu, L. Luznik, J. Katz, **J. Kleissl**, M.B. Parlange: PIV measurements in the atmospheric boundary layer within and above a mature corn canopy. Part A: statistics and small scale isotropy,' *J. Atmos. Sci.*, 64(8), 2805-2824, 2007
- **Kleissl, J.**, J. Gomez, S.-H. Hong, J.M.H. Hendrickx, T. Rahn, W.L. Defoor, 'Large Aperture Scintillometer Intercomparison Study', *Bound.-Layer Meteorol.*, 128(1), 133-150, 2008
- **Kleissl, J.**, S.-H. Hong, J.M.H. Hendrickx, 'New Mexico Scintillometer Network in Support of Remote Sensing, and Hydrologic and Meteorological Models', *Bull. Amer. Meteorol. Society*, to appear Jan. 2009
- Gomez, J.D., **J. Kleissl**, J.M.H. Hendrickx, O. Hartogensis, 'Large Aperture Scintillometers for Hydrology', submitted to Water Resources Research
- **Kleissl, J.**, C. Watts, J. Conrod, S. Naif, 'Large Aperture Scintillometer Intercomparison Study - continued', *submitted to Bound.-Layer Meteorol*

Published Abstracts

- **Kleissl, J.**, C. Meneveau, and M.B. Parlange, 'A priori study of the scale-dependent dynamic model from HATS field data,' *Bulletin of the American Physical Society*, 56th Annual Meeting of the Division of Fluid Dynamics, Vol. 48, No. 10, Meadowlands, NJ, Nov 2003, p. 195
- **Kleissl, J.**, C. Meneveau, and M.B. Parlange, 'Statistical analysis of subfilter-scale model coefficients from measurements in the atmospheric surface layer,' *Bulletin of the American Physical Society*, 55th Annual Meeting of the Division of Fluid Dynamics, Vol. 47, No. 10, Dallas, TX, Nov 2002, p. 165
- **Kleissl, J.**, C. Meneveau, and M.B. Parlange, 'Effects of stability and filter size on model coefficients and intermittency of subfilter fluxes in the atmospheric boundary layer,' *AMS 15th Symposium on Boundary Layers and Turbulence*, July 2002, Wageningen, The Netherlands, pp. 467-468
- **Kleissl, J.**, C. Meneveau and M.B. Parlange, 'Field measurements for subgrid-scale modeling in the atmospheric boundary layer,' *Extended abstract CD of 3rd International Symposium on Environmental Hydraulics*, 2001, Tempe, AZ

Presentations in Conferences and Congresses

- 'The influence of orographic flows on PICO-NARE trace-gas measurement,' Fall Meeting of the American Geophysical Union (AGU), San Francisco, CA, 2005
- 'Application of wireless sensor networks to study flow over heterogeneous surfaces: flow over an isolated mountain in the marine atmosphere,' Fall Meeting of the American Geophysical Union (AGU), San Francisco, CA, 2004
- 'A priori study of the scale-dependent dynamic model from HATS field data,' 56th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Meadowlands, NJ, Nov 2003
- 'Meteorological conditions during long term PM events in June – October 2002 at the Baltimore PM Supersite', Baltimore PM Supersite Data Meeting, University of Maryland at College Park, June 2003
- 'On the magnitude and variability of subgrid-scale eddy diffusion coefficients in the atmospheric boundary layer,' Spring Meeting of the American Geophysical Union (AGU) and European Geophysical Society, Nice, France, 2003
- 'Entrainment of forest fire smoke into the atmospheric boundary layer,' Gallery of Fluid Motion, 55th Meeting of the American Physical Society (APS), Division of Fluid Dynamics, Dallas, TX, 2002
- 'Statistical Analysis of subfilter-scale model coefficients from field-experimental data,' Symposium on Boundary Layers and Turbulence, American Meteorological Society (AMS), Wageningen, The Netherlands, 2002
- 'New observations on subgrid-scale modeling from field experiments,' Fall Meeting of the American Geophysical Union (AGU), San Francisco, CA, 2001
- 'Field measurements for subgrid-scale modeling in the atmospheric boundary layer,' 3rd International Symposium on Environmental Hydraulics, Tempe, AZ, 2001
- 'Applicability of Taylor's hypothesis to atmospheric boundary layer field measurements of subgrid-scale stresses,' Fall Meeting of the American Geophysical Union (AGU), San Francisco, CA, 2000

Teaching Experience

- **Instructor:**
 - Applied Boundary Layer Meteorology, S2005, Michigan Technol. Univ.
 - Environmental Physics for Evapotranspiration, S2006, New Mexico Tech
 - MAE125A Environmental Flows and Transport, F2007, F2008, UCSD
 - MAE126B Environmental Engineering Research, S2007, S2008, UCSD
 - MAE199: independent research
- **Co-Instructor:** Applied Mathematics for Engineering (total 15 lectures S2001-F2002), The Johns Hopkins University (JHU)
- **Teaching Assistant:** Applied Mathematics for Engineering (graduate, F2002, F2001, S2001), Hydrology (graduate, F2000), JHU

Field Measurement Campaigns

- **Scintillometers:** New Mexico, 2005: Sensible heat flux measurements over dry and humid transects as ground-truth for satellite estimates using SEBAL

- **Mountain Meteorology:** Azores, Summer 2004: Wireless sensors, meteorological measurements, and MODIS satellite data are collected to study upslope and down-slope flow on the slope of a mountain in the North Atlantic.
- **Evapotranspiration over vineyards:** February 2003 & October 2005, Eddy correlation studies of evaporation over vineyards in collaboration with Universidad de Talca, Chile.
- **Biocomplexity in the Environment:** Instrumentation to measure the emission and transport of biological aerosols (pollen) in the atmosphere, July 2003, Hurlock, MD.
- **SGS2002** (SubGrid-Scale experiment), Salt Flats, UT, June 2002: Deployment of sixteen 3D-sonic anemometers to study subgrid-scale physics for large eddy simulation. Other collaborators examine turbulence at high Reynolds numbers.
- **Baltimore Supersite Study**, May 2001 – February 2003: Conducted lidar measurements to determine atmospheric boundary layer height, entrainment dynamics and plume characteristics. Meteorological measurements support source attribution of highly time and size resolved concentrations of PM_{2.5}.
- **HATS** (Horizontal Array Turbulence Study), Kettleman City, CA, September 2000, in collaboration with NCAR-ATD and MMM: Deployment of fourteen 3D-sonic anemometers in the central valley of CA to study subgrid-scale physics for large eddy simulation.

Professional Affiliations

American Meteorological Society
American Geophysical Union, Hydrology Section
American Physical Society, Division of Fluid Dynamics
European Geophysical Society
International Association for Hydraulic Research (IAHR)
American Society of Civil Engineers

Special Skills

- **Private Pilot Certificate:** working towards Commercial Pilot Certificate
- **Languages:** Fluent in German, English, Spanish, French.
- **Webpage Designer and Administrator** for Department of Geography and Environmental Engineering, The Johns Hopkins University, www.jhu.edu/dogee, 2000-2003