

JAMES W. HANSEN
AGRICULTURAL SYSTEMS

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RESEARCH INTERESTS

The underlying motivation for my career is a desire to alleviate the suffering associated with poverty and food insecurity in tropical regions, through problem-driven agricultural systems research. Since 1996, my work has focused on managing climate risk in agricultural systems. Climate variability is a major contributor to poverty and food insecurity and an impediment to agricultural development, particularly in rainfed farming systems in the dryer tropics. My current research emphasizes:

- The economics of risk and advance information in agriculture;
- Design and communication of climate information for farmers; and
- Integrating climate and other information with agricultural modeling to forecast agricultural production and inform decisions.

Past research contributions include applications of agricultural systems methods to use of climate information, farm economic risk and sustainability analysis, and land use under conflicting goals; communication of probabilistic climate information; spatial scaling in agroecosystem modeling; stochastic weather modeling; climate-based crop forecasting; tropical soil fertility and intercrop ecology. My work has targeted The Philippines, Colombia, Argentina, India, Kenya, Zambia, Burkina Faso and the Southeast USA.

EDUCATION

Ph.D. in Agricultural and Biological Engineering, University of Florida, 1996. Dissertation title: “A Systems Approach to Characterizing Farm Sustainability.” Minor in Food and Resource Economics.

M.S. in Agronomy and Soil Science, University of Hawaii, Manoa, 1989. Thesis title: “Influence of Decomposing Organic Material on Aluminum Chemistry and Phytotoxicity.”

B.S. in General Tropical Agriculture, University of Hawaii, Manoa, 1985.

PROFESSIONAL EXPERIENCE

2010-present	Theme Leader: <i>Adaptation through Managing Climate Risk</i> , CGIAR research program on Climate Change, Agriculture and Food Security (CCAFS)
2004-present	Research Scientist, International Research Institute for Climate & Society
2002-2010	Joint Editor-In-Chief, <i>Agricultural Systems</i>
1999-2004	Associate Research Scientist, International Research Institute for Climate & Society
1999	Assistant Scientist, Agricultural and Biological Engineering, University of Florida
1997-1998	Visiting Assistant, Agricultural and Biological Engineering, University of Florida
1996-1997	Post-doctoral Associate, Agricultural and Biological Engineering, Univ. of Florida
1988-89 & 90-91	Research Associate, Agronomy and Soil Science, University of Hawaii
1989-1990	Agriculturalist, Mindanao Baptist Rural Life Center, Davao del Sur, Philippines

OTHER PROFESSIONAL CONTRIBUTIONS

Member of the Leadership Group that developed the successful proposal for a CGIAR Global Challenge Program on *Climate Change, Agriculture and Food Security (CCAFS)*, 2007-2008.

Delegate representing the Scientific and Technological Communities Major Group at the 16th and 17th sessions of the *UN Commission on Sustainable Development*, 2008-2009.

Member of the International Review Team for Australia's *Managing Climate Variability R&D Program*, 2006.

Member of the Steering Group for the international *Climate Prediction and Agriculture (CLIMAG)* program of the Earth System Science Partnership (ESSP), 2001-2005.

Agricultural Systems Editorial Review Board member (2010-present).

Journal reviewer: *African Journal of Plant Science; Agricultural Systems; Agriculture, Ecosystems and Environment; Agronomy Journal; Atmosphere-Ocean; Biosystems Engineering; Climate and Development; Climate Research; Climatic Change; Ecological Modeling; Environmental Management; Environmental Science and Policy; Eos; Field Crops Research; Frontiers in Ecology and the Environment; Global Environmental Change; International Journal of Climatology; Journal of Applied Meteorology and Climatology; Journal of Arid Environments; Journal of Climate; Journal of Geophysical Research – Atmospheres; Journal of Soil and Water Conservation; Journal of the American Water Resources Association; Philippine Journal of Development; Transactions of the American Society of Agricultural and Biological Engineers; Weather, Climate and Society.*

Professional Associations: American Society of Agronomy/Soil Science Society of America/Crop Science Society of America; International Consortium for Agricultural Systems Applications, International Association of Agricultural Economists.

REFEREED PUBLICATIONS

Jarvis, A., Lau, C., Cook, S., Wollenberg, E., **Hansen, J.**, Bonilla, O., Challinor, A., In Press. An integrated adaptation and mitigation framework for developing agricultural research: synergies and trade-offs. *Experimental Agriculture*.

Hansen, J.W., Mason, S., Sun, L., Tall, A., In press. Review of seasonal climate forecasting for agriculture in sub-Saharan Africa. *Experimental Agriculture*.

Ericksen, P., Stewart, B., Eriksen, S., Tschakert, P., Sabates-Wheeler, R., **Hansen, J.**, Thornton, P., 2010. Adapting Food Systems. Pp. 115-143 in: Ingram, J.S.I., P.J. Ericksen and D.M. Liverman (Eds.), *Global Environmental Change and Food Security*. Earthscan, London. (Refereed book chapter)

Ines, A.V.M., **Hansen, J.W.**, Robertson, A.W., 2010. Enhancing the utility of daily GCM rainfall for crop yield prediction. *International Journal of Climatology*. DOI: 10.1002/joc.2223

Hansen, J.W., Zebiak, S., Baethgen, W., Ines, A.V.M., Osgood, D., In press. Climate Risk, Information and Market Participation for African Farmers. Proceedings of the Conference, Towards Priority Actions for Market Development for African Farmers, Nairobi, Kenya, 13 May 2009. (Refereed proceeding)

Hansen, J.W., Mishra, A., Rao, K.P.C., Indeje, M., Ngugi, R.K., 2009. Potential value of GCM-based seasonal rainfall forecasts for maize management in semi-arid Kenya. *Agricultural Systems* 101:80-90.

Mishra, A., **Hansen, J.W.**, Dingkuhn, M., Baron, C., Traoré, S.B., Ndiaye, O., Ward, M.N., 2008. Sorghum yield prediction from seasonal rainfall forecasts in Burkina Faso. *Agricultural and Forest Meteorology* 148:1798-1814.

- Meza, F.J., **Hansen, J.W.**, Osgood, D., 2008. Economic value of seasonal climate forecasts for agriculture: review of ex-ante assessments and recommendations for future research. *Journal of Applied Meteorology and Climatology* 47:1269-1286.
- Baigorría, G.A., **Hansen, J.W.**, Ward, M.N., Jones, J.W., O'Brien, J.J., 2008. Regional atmospheric circulation and surface temperatures predicting cotton yields in the southeastern USA. *Journal of Applied Meteorology and Climatology* 47:76-91.
- Peiris, T.S.G., **Hansen, J.W.**, Zubair, L., 2008. Use of seasonal rainfall in forecasting annual national coconut production in Sri Lanka: an integrated approach. *International Journal of Climatology* 28:103-110.
- Hansen, J.W.**, Baethgen, W., Osgood, D., Ceccato, P., Ngugi, R.K., 2007. Innovations in climate risk management: protecting and building rural livelihoods in a variable and changing climate. *Journal of Semi-Arid Tropical Agricultural Research* 4(1). (published online at <http://www.icrisat.org/Journal/specialproject.htm>).
- Robertson, A.W., Ines, A.V.M., **Hansen, J.W.**, 2007. Downscaling of seasonal precipitation for crop simulation. *Journal of Applied Meteorology and Climatology* 46:677-693.
- Ines, A.V.M., **Hansen, J.W.**, 2006. Bias correction of daily GCM rainfall for crop simulation studies. *Agricultural and Forest Meteorology* 138:44-53.
- Hansen, J.W.**, Challinor, A., Ines, A.V.M., Wheeler, T., Moron, V., 2006. Translating climate forecasts into agricultural terms: advances and challenges. *Climate Research* 33:27-41.
- Hansen, J.W.**, 2005. Integrating seasonal climate prediction and agricultural models for insights into agricultural practice. *Philosophical Transactions of the Royal Society B* 360:2037-2047.
- Hansen, J.W.**, Ines, A.V.M., 2005. Stochastic disaggregation of monthly rainfall data for crop simulation studies. *Agricultural and Forest Meteorology* 131:233-246.
- Selvaraju, R., Meinke, H., **Hansen, J.W.**, 2004. Approaches allowing smallholder farmers in India to benefit from seasonal climate forecasting. In New Directions for a Diverse Planet: Proceedings for the 4th International Crop Science Congress, Brisbane, Australia, 26 September - 1 October 2004 (ed. T. Fischer, N. Turner, J. Angus, L. McIntyre, M. Robertson, A. Borrell & D. Lloyd). Gosford, Australia: The Regional Institute Ltd. (published online at <http://www.crops science.org.au/icsc2004/>) (Refereed proceeding)
- Hansen, J.W.**, 2004. Can smallholder farmers benefit from seasonal climate forecasts? In New Directions for a Diverse Planet: Proceedings for the 4th International Crop Science Congress, Brisbane, Australia, 26 September - 1 October 2004 (ed. T. Fischer, N. Turner, J. Angus, L. McIntyre, M. Robertson, A. Borrell & D. Lloyd). Gosford, Australia: The Regional Institute Ltd. (published online at <http://www.crops science.org.au/icsc2004/>) (Refereed proceeding)
- Selvaraju, R., Meinke, H., **Hansen, J.W.**, 2004. Climate information contributes to better water management of irrigated cropping systems in Southern India. In New Directions for a Diverse Planet: Proceedings for the 4th International Crop Science Congress, Brisbane, Australia, 26 September - 1 October 2004 (ed. T. Fischer, N. Turner, J. Angus, L. McIntyre, M. Robertson, A. Borrell & D. Lloyd). Gosford, Australia: The Regional Institute Ltd. (published online at <http://www.crops science.org.au/icsc2004/>) (Refereed proceeding)
- Hansen, J.W.**, Potgieter, A., Tippet, M., 2004. Using a general circulation model to forecast regional wheat yields in Northeast Australia. *Agricultural and Forest Meteorology* 127:77-92.
- Kumar, K.K., Kumar, R.K., Ashrit, R.G., Deshpande, N.R., **Hansen, J.W.**, 2004. Climate impacts on Indian Agriculture. *International Journal of Climatology* 24:1375-1393.

- Hansen, J.W.**, Indeje, M., 2004. Linking dynamic seasonal climate forecasts with crop simulation for maize yield prediction in semi-arid Kenya. *Agricultural and Forest Meteorology* 125:143-157.
- Hansen, J.W.**, 2002. Realizing the potential benefits of climate prediction to agriculture: issues, approaches, challenges. *Agricultural Systems* 74:309-330.
- Podestá, G., Letson, D., Messina, C., Royce, F., Ferreyra, Jones, J., Llovet, I., **Hansen, J.**, Grondona, M., and O'Brien, J. 2002. Use of ENSO-related climate information in agricultural decision making in Argentina: a pilot experience. *Agricultural Systems* 74:371-392.
- Royce, F.S., J.W. Jones, **Hansen, J.W.**, 2001. Model-based optimization of crop management for climate forecast applications. *Transactions of the American Society of Agricultural Engineers* 44:1319-1327.
- Letson, D., **Hansen, J.W.**, Hildebrand, P.E., Jones, J.W., O'Brien, J.J., Podestá, G., Royce, F., Zierden, D., 2001. Florida's agriculture and climatic variability: reducing vulnerability. *Florida Geographer* 32:38-57.
- Hammer, G.L., **Hansen, J.W.**, Phillips, J., Mjelde, J.W., Hill, H.S.J., Love, A., Potgieter, A., 2001. Advances in application of climate prediction in agriculture. *Agricultural Systems* 70:515-553.
- Hansen, J.W.**, Mavromatis, T., 2001. Correcting low-frequency variability bias in stochastic weather generators. *Agricultural and Forest Meteorology* 109:297-310.
- Mavromatis, T., **Hansen, J.W.**, 2001. Interannual variability characteristics and simulated crop response of four stochastic weather generators. *Agricultural and Forest Meteorology* 109:283-296.
- Hansen, J.W.**, Jones, J.W., Irmak, A., Royce, F.S., 2001. ENSO impacts on crop production in the Southeast US. Pp. 55-76 in: Rosenzweig, C., Boote, K.J., Hollinger, S., Iglesias, A., and Phillips, J. (Eds.), *Impacts of El Niño and Climate Variability on Agriculture*. ASA Special Publication no. 63, American Society of Agronomy, Madison, Wis., USA. (Refereed proceeding)
- Hansen, J.W.**, Jones, J.W., 2000. Scaling-up crop models for climate variability applications. *Agricultural Systems* 65:43-72.
- Jones, J.W., **Hansen, J.W.**, Royce, F.S., Messina, C.D., 2000. Potential benefits of climate forecasting to agriculture. *Agriculture, Ecosystems and Environment* 82:169-184.
- Messina, C.D., **Hansen, J.W.**, Hall, A.J., 1999. Land allocation conditioned on El Niño-Southern Oscillation phases in the Pampas of Argentina. *Agricultural Systems* 60:197-212.
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- Irmak, A., Jones, J.W., Stanley, C.D., **Hansen, J.W.**, Irmak, S., Boote, J.K., 1999. Some effects of an antitranspirant (Vapor Gard) on tomato growth and yield. *Soil and Crop Science Society of Florida Proceedings* 58:118-122.
- Hansen, J.W.**, Irmak, A., Jones, J.W., 1998. El Niño - Southern Oscillation influences on Florida crop yields. *Soil and Crop Science Society of Florida Proceedings* 57:12-16.
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- Hansen, J.W.**, Jones, J.W., Beinroth, F.H., 1998. Systems-based land use evaluation in the south coast of Puerto Rico. *Applied Engineering in Agriculture* 14:191-200.

- Hansen, J.W.**, Jones, J.W., Knapp, E.B., 1997. Determinants of sustainability of a Colombian hillside farm. *Experimental Agriculture* 33:425-448.
- Hansen, J.W.**, Thornton, P.K., Jones, J.W., Jacobson, B.M., 1997. Toward data standards for enterprise and farm level analysis. Pp. 229-245 in: Teng, P.S., Kropff, M.J., Ten Berge, H.F.M., Dent, J.B., Lansigan, F.P., Van Laar, H.H. (Eds.), *Applications of Systems Approaches at the Farm and Regional Level*. Kluwer Academic Publishers, Dordrecht, The Netherlands. (Refereed proceeding)
- Jones, J.W., Thornton, P.K., **Hansen, J.W.**, 1997. Opportunities for systems approaches at the farm scale. Pp. 1-29 in: Teng, P.S., Kropff, M.J., Ten Berge, H.F.M., Dent, J.B., Lansigan, F.P., Van Laar, H.H. (Eds.), *Applications of Systems Approaches at the Farm and Regional Level*. Kluwer Academic Publishers, Dordrecht, The Netherlands. (Refereed proceeding)
- Hansen, J.W.**, Jones, J.W., 1996. A systems framework for characterizing farm sustainability. *Agricultural Systems* 51:181-201.
- Hansen, J.W.**, 1996. Is agricultural sustainability a useful concept? *Agricultural Systems* 50:117-144.
- Thornton, P.K., **Hansen, J.W.**, 1996. A note on regressing real-world data on model output. *Agricultural Systems* 50:411-414.
- Thornton, P.K., **Hansen, J.W.**, Knapp, E.B., Jones, J.W., 1995. Designing optimal crop management strategies. Pp. 333-351 in: Bouma, J., Kuyvenhoven, A., Bouman, B.A.M., Luyten, J.C., and Zandstra, H.G. (Eds.), *Ecoregional Approaches for Sustainable Land Use and Food Production*. Kluwer Academic Publishers, Dordrecht, The Netherlands. (Refereed proceeding)
- Pickering, N.B., **Hansen, J.W.**, Jones, J.W., Wells, C.M., Chan, V.K., Godwin, D.C., 1994. WeatherMan: a utility for managing and generating daily weather data. *Agronomy Journal* 86:332-337.
- Caldwell, R.M., **Hansen, J.W.**, 1993. Simulation of multiple cropping systems with CropSys. Pp. 397-412 in: Penning de Vries, F.W.T., Teng, P., and Metselaar, K. (Eds.), *Systems Approaches for Agricultural Development*, Vol. 2. Kluwer Academic Publishers, Dordrecht, The Netherlands. (Refereed proceeding)

SUBMITTED:

- Osgood, D.E., Suarez, P., **Hansen, J.W.**, Carriquiry, M., Mishra, A., Integrating seasonal forecasts and insurance for adaptation among smallholder farmers: the case of Malawi. *World Development*.

BOOKS, REPORTS, EDITED VOLUMES

- Vermeulen, S.J., Aggarwal, P.K., Ainslie, A., Angelone, C., Campbell, B.M., Challinor, A.J., **Hansen, J.**, Ingram, J.S.I., Jarvis, A., Kristjanson, P., Lau, C., Thornton, P.K., and Wollenberg, E. 2010. *Agriculture, Food Security and Climate Change: Outlook for Knowledge, Tools and Action*. CCAFS Report 3. CGIAR-ESSP Program on Climate Change, Agriculture and Food Security. Copenhagen, Denmark. 16 pp. (Background paper prepared for The Hague Conference on Agriculture, Food Security and Climate Change on behalf of the CGIAR. Available online at: http://www.ccafs.cgiar.org/sites/default/files/pdf/ccaafs_report_3-low-res_final.pdf)
- Dinku, T., Giannini, A., **Hansen, J.**, Holthaus, E., Ines, A., Kaheil, Y., Karnauskas, K., Lyon, B., Madajewicz, M., McLaurin, M., Mullally, C., Norton, M., Osgood, D., Peterson, N., Robertson, A., Shirley, K., Small, C., Vicarelli, M. (alphabetical order), 2009. *Designing Index-Based Weather Insurance for Farmers in Adi Ha, Ethiopia*. Report to OXFAM America. IRI Tech. Rep. No. 09-04. International Research Institute for Climate and Society, Palisades, New York, USA. 81 pp. (Available online at <http://iri.columbia.edu/publications/id=908>)

- CCAFS, 2009. Climate Change, Agriculture and Food Security. CCAFS Report No. 1. A CGIAR Challenge Program. The Alliance of the CGIAR Centres and ESSP, Rome and Paris. 51 pp. (authors in alphabetical order: **Hansen, J.W.**, Ingram, J., Jarvis, A. O'Brien, K., Rosegrant, M., Thornton, P.K., Vorosmarty, C., Washington, R., Wassmann, R.)
- Giannini, A., **Hansen, J.W.**, Holthus, E., Ines, A., Kaheil, Y., Karnauskas, K., McLaurin, M., Osgood, D., Robertson, D., Shirley, K., Vicarelli, M. (alphabetical order), 2009. Designing Index-Based Weather Insurance for Farmers in Central America. IRI Tech. Rep. No. 09-01. International Research Institute for Climate and Society, Palisades, New York, USA. 19 pp. (Project report to the World Bank Commodity Risk Management Group. Authors in alphabetical order.)
- Brown, C., **Hansen, J.W.**, 2008. Agricultural Water Management and Climate Risk. IRI Tech. Rep. No. 08-01. International Research Institute for Climate and Society, Palisades, New York, USA. 19 pp. (Commissioned report for the Bill and Melinda Gates Foundation)
- Barrett, C.B., Barnett, B.J. Carter, M.R., Chantarat, S., **Hansen, J.W.**, Mude, A.G., Osgood, D.E., Skees, J.R., Turvey, C.G., Ward, M.N., 2007. Poverty Traps and Climate Risk: Limitations and Opportunities of Index-Based Risk Financing. IRI Tech. Rep. No. 07-03. International Research Institute for Climate and Society, Palisades, New York, USA. (Commissioned background paper for the IRI Policy Roundtable on Climate Risk, Poverty Traps and Index-Based Financing)
- Osgood, D.E, McLaurin, M. Carriquiry, M., Mishra, A., Fiondella, F., **Hansen, J.W.**, Peterson, N., Ward, N., 2007. Designing Weather Insurance Contracts for Farmers in Malawi, Tanzania, and Kenya, Final Report to the Commodity Risk Management Group, ARD, World Bank. IRI Tech. Rep. No. 07-02. International Research Institute for Climate and Society, Palisades, New York, USA.
- Sivakumar, M.V.K., **Hansen, J.W.** (Editors), 2007. Climate Prediction and Agriculture: Advances and Challenges. Springer, New York.
- Hansen, J.W.**, Sivakumar, M.V.K., Bates, B.C. (Guest editors), 2006. Advances in Applying Climate Prediction in Agriculture. Special issue of *Climate Research* 33(1).
- Hansen, J.W.**, Hellmuth, M., Thomson, M., Williams, J. (Editors, alphabetical order), 2006. A Gap Analysis for the Implementation of the Global Climate Observing System Programme in Africa. IRI Technical Report No. 06-01. International Research Institute for Climate and Society, Palisades, New York. 49 pp.
- Hansen, J.W.**, Dilley, M., Goddard, L., Ebrahimian, E., Ericksen, P., 2004. Climate Variability and the Millennium Development Goal Hunger Target. IRI Technical Report No. 04-04. International Research Institute for Climate Prediction, Palisades, New York. (Background paper for the Hunger Task Force, UN Millennium Project)
- Hansen, J.W.**, Marx, S., Weber, E. (alphabetical order), 2004. The Role of Climate Perceptions, Expectations, and Forecasts in Farmer Decision Making: The Argentine Pampas and South Florida. IRI Technical Report 04-1. International Research Institute for Climate Prediction, Palisades, New York.
- Hansen, J.W.**, 2003. Advanced Training Institute on Climate Variability and Food Security: Summary of the Intensive Training Workshop, 8-26 July 2002. IRI Publication CW-03-1. International Research Institute for Climate Prediction, Palisades, New York. 58 pp.
- Hansen, J.W.** (Guest editor), 2002. Applying Seasonal Climate Prediction to Agricultural Production. Special issue of *Agricultural Systems* 74(3), Elsevier, Amsterdam. 172 pp.
- IRI, 2000. Proceedings of the International Forum on Climate Prediction, Agriculture and Development. IRI-CW/00/1. International Research Institute for Climate Prediction, Palisades, New York. (Co-organizer and proceedings co-editor)

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BOOK CHAPTERS (NON-REFEREED)

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Singh, K.K., Reddy, D.R., Kaushik, S., Rathore, L.S., **Hansen, J.W.**, Sreenivas, G., 2007. Application of seasonal climate forecasts for sustainable agricultural production in Telangana subdivision of Andhra Pradesh, India. Pp. 111-127 in: Sivakumar, M.V.K., Hansen, J.W. (Ed.), Climate Prediction and Agriculture: Advances and Challenges. Springer, Berlin.

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Hansen, J.W., Jones, J.W., 2000. Scaling-up crop models for climate prediction applications. Pp. 77-117 in: Sivakumar, M.V.K. (ed.), Climate Prediction and Agriculture. Proceedings of the START/WMO International Workshop held in Geneva, Switzerland, 27-29 September 1999. International START Secretariat, Washington DC, USA.

Manton, M.J., Bindraban, P.S., Gadgil, S., Hammer, G.L., **Hansen, J.W.**, Jones, J.W. 2000. Implementation of a CLIMAG Demonstration Project. Pp. 287-293 in: Sivakumar, M.V.K. (ed.), Climate Prediction and Agriculture. Proceedings of the START/WMO International Workshop held in Geneva, Switzerland, 27-29 September 1999. International START Secretariat, Washington DC, USA.

Hansen, J.W., Pickering, N.B., Jones, J.W., Wells, C.M., Chan, V.K., Godwin, D.C., 1994. WeatherMan. In: Tsuji, G.Y., Uehara, G., and Balas, S. (Eds.), DSSAT Version 3, Vol. 3. International Benchmark Sites Network for Agrotechnology Transfer. Univ. of Hawaii, Honolulu, HI, USA.

Yost, R.S., Itoga, S., Li, Z., Colfer, C., Amien, L.I., Kilham, P., **Hansen, J.W.**, 1992. Expert systems for soil and crop management information transfer in developing countries. In: Mann, C.K. and Ruth, S.R. (Eds.), Expert Systems in Developing Countries: Practice and Promise. Westview Press, Boulder, CO, USA.

MISCELLANEOUS PUBLICATIONS

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Designing Climate-Robust Agriculture. COP-15 side event, Designing a Climate Robust Agriculture, Holland Climate House, Copenhagen, Denmark, 11 December 2009. With Holger Meinke.

Climate Change and Agriculture: A Crisis of Opportunity? Beyond Copenhagen: Scientific Perspectives on Adaptation and Sustainability Water, Agriculture & Terrestrial Resources, Delegation of the European Commission, Washington DC, 1 October 2009. Public seminar series co-organized by American Association for the Advancement of Science, EC Delegation and Sweden Embassy.

Value-Added Climate Information for Food Security Monitoring. WFP Food Security Monitoring Stakeholder Consultation, Rome, Italy 18-19 June 2009.

Climate Risk, Information and Market Participation for African Farmers. AGRA-ILRI conference, Towards Priority Actions for Market Development for African Farmers, Nairobi, Kenya, 13 May 2009. With Stephen Zebiak, Walter Baethgen, Amor Ines, Daniel Osgood.

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Contributions of Agricultural Systems Modeling to Weather Index Insurance. Technical Issues in Index Insurance, IRI, Palisades, New York, 7 October 2008. With Walter Baethgen, Amor Ines, James Jones, Holger Meinke, Pasquale Steduto.

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Innovations in Climate Risk Management: Protecting and Building Rural Livelihoods in a Variable and Changing Climate. ICRISAT & CGIAR 35th Anniversary Symposium, "Climate-Proofing Innovation for Poverty Reduction and Food Security," ICRISAT, Patancheru, India, 24 November 2007. With Walter Baethgen, Dan Osgood, Pietro Ceccato, Robinson Ngugi.

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Managing Climate Risk in South Asia's Rainfed SAT. CGIAR International Centers Week special session, "Can Seasonal Climate Prediction Contribute to Food Security, Poverty Reduction and Sustainable Resource Management?" World Bank, Washington, DC, 29 October 2001.

Linking Agriculture and Climate Prediction through Systems Analysis. Seminar presented to the Center for Soil and Crop Management Studies, Tamil Nadu Agricultural University, Coimbatore, India, 8 September 2000. With H. Meinke.

ENSO Impacts on Crop Production in the Southeast US. Impacts of El Niño and Climate Variability on Agriculture symposium. 92nd ASA-SSSA-CSSA Annual Meeting, Baltimore, 1998.

TEACHING AND MENTORING

Guest lecturer on climate risk management in agriculture, in *Integrative Seminar: Managing Climate Variability and Adapting to Climate Change II* (EESC G4402.001), Columbia University, 2005-2010.

Guest lecturer on use of climate information and analyses that inform decision making in agriculture, in *Regional Dynamics, Climate, and Climate Impacts* (EESC W4404.001), Columbia University, 2005-2006.

Guest lecturer on policy implications of ENSO, *Science and Society* (EESC V1003), Earth and Environmental Science, Columbia University, 2002-2007.

Organized and co-taught *Tailored Climate Forecast Information Workshop* for Zambia Meteorological Department, Livingstone, Zambia, 5-7 September 2005.

Organized and co-taught training workshops on climate applications for agricultural scientists from developing countries, at the International Research Institute for Climate Prediction (9-19 December 2003) and Indian Institute for Tropical Meteorology (12-16 May 2003).

Director and Instructor, *Advanced Training Institute on Climate Variability and Food Security*, IRI, 8-26 July 2002.

Instructor, *Training Institute on Climate and Society in the Asia-Pacific Region*, East-West Center, Honolulu, 5-23 February 2001.

Instructor and Agriculture Mini-project Coordinator, *First IAI/UM Summer Institute on Interdisciplinary Global Change Science in the Americas: Interactions between Seasonal-To-Interannual Climate Variability and Human Systems*, University of Miami, 11-30 July 1999.

Guest lecturer in Simulation of Agricultural and Biological Systems (AGE 5646), University of Florida, 1995 and 1997.

Post-doctoral Associates supervised: Sabine Marx, Amor Ines, Ashok Mishra.

Graduate student committee member: Ayse Irmak, Agricultural and Biological Engineering, University of Florida.

External Ph.D. examiner: N.J. Walker, School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal, Pietermaritzburg, South Africa (2005). G.A. Baigorria, Wageningen University, The Netherlands (2005). N.K. Gontia, Indian Institute of Technology Kharagpur, India (2006).

Visiting scientists mentored: Carlos Messina (Argentina), Roberto Villalobos (Costa Rica), Angel Villalobos (Mexico), Saseendran Anapalli, Kripan Ghosh (India), Francisco Meza (Chile), Ferdinand Mawunya (Ghana), Meshack Malo (FAO, Ethiopia).