

Walter E. Baethgen

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Profile: Program Manager and Senior Scientist, International and National Environmental Programs

- Over 25 years of demonstrated results in designing, implementing and managing International and National multidisciplinary research and development programs (obtaining funds, strategic planning, strategic alliances and capacity building), monitoring performance, and preparing publications (scientific and for general audiences) and reports.
- Scientific expertise in agricultural systems, natural resources management, risk assessment and risk management (especially associated to climate variability and climate change), and information and decision support systems.

EMPLOYMENT HISTORY

Senior Research Scientist, Director of the Regional and Sectoral Research Program, Leader Latin America/Caribbean, International Research Institute for Climate and Society (IRI), The Earth Institute at Columbia University. Establish, develop and manage IRI's program in climatic related risk assessment and risk management in agriculture/food security, health, water resources and disasters. Lecture in graduate courses (Masters and PhD) on Climate Risk Management in Agriculture, Decision Support Systems in Agriculture. *Columbia University, New York, NY. August 2004 – present*

Senior Research Scientist, Acting Director, Agriculture and Food Security Center, The Earth Institute at Columbia University. Establish research and training activities to advance sustainable agricultural intensification on the ground, with a particular emphasis on developing countries. *Columbia University, New York, NY. September 2016 - present*

Distinguished Lead Scholar, Fulbright Regional Network for Applied Research Program (NEXUS). The program was created to establish a network of experts who would spread learning through academic exchanges, advance policy-oriented research and provide a forum to share best practices. Selected experts engaged in collaborative thinking, analysis, problem-solving and multi-disciplinary research. *Washington, D.C., August 2010 – July 2011.*

Member of CGIAR's Science Council. The main functions included: (i) Enhance and promote the quality, relevance and impact of CGIAR science programs, (ii) help to mobilize the global scientific community around the mission and goals of the CGIAR. *Rome, Italy, June 2006 – July 2008.*

Senior Scientist, Resource Development Division, International Soil Fertility and Agricultural Development Center (IFDC). Design, establish and manage National and International research and development multidisciplinary projects. Activities were concentrated in: Information and Decision Support Systems; Impacts of Climate Variability Change; Risk Assessment and Risk Management in Agriculture and Natural Resources; and Carbon Sequestration in the Agricultural and Forestry Sectors. *Montevideo, Uruguay and M. Shoals, Alabama, EEUU. 1987- January 2004.*

Visiting Scientist, National Environmental Center for Environmental Prediction (NCEP, NOAA) and International Research Center for Climate Prediction (IRI). Application of Tropical Pacific Sea Surface Temperature information in agricultural production of SE USA and the Lower Plains USA. *Camp Springs, Maryland, USA. February 1997-April 1998.*

Scientist, US Environmental Protection Agency/ US Agency for International Development. Project: "*Climate Change and World Food Supply*". *Montevideo, Uruguay, and Washington, D.C., USA. January 1990 - November 1992.*

Regional Project Coordinator for Latin America, IFDC /United Nations Development Program. UNDP/ The World Bank Global Project: "*Fertilizer Strategies for Sustainable Agriculture and Environmental Protection*". Research and Development Division, IFDC, Montevideo, Uruguay, January 1991 - December 1993.

Research Assistant, "Soil and Crop Management" and "Soil Fertility and Soil Chemistry", Department of Crop and Soil Environmental Sciences. Virginia Polytechnic Institute and State University, Blacksburg, VA, March 1983- January 1986

Researcher, Soil and Crop Management, A. Boerger National Agricultural Research Center, Ministry of Agriculture and Fisheries, La Estanzuela, Colonia, Uruguay, March 1979 - December 1982.

Other Activities Related to Climate Variability / Climate Change

- **Lead Author, IPCC**, Intergovernmental Panel on Climate Change, Working Group II. Impacts, Adaptations and Mitigation. Second and Third Assessment Reports (1995 and 2001). **Contributing Author** in the Fourth Assessment Report (2007).
- **Review Editor, IPCC**, Intergovernmental Panel on Climate Change. "Methodological and Technological Issues in Technology Transfer" – Agricultural Sector. (Special Report of Working Group III, IPCC). 2000.
- **Member of the Scientific Advisory Committee, IAI** (Inter-American Institute for Global Change Research). 2010-2014.
- **Member of the Science-Policy Advisory Committee, IAI** (Inter-American Institute for Global Change Research). Present
- **Member of the Scientific Advisory Committee, VAMOS**, Present.
- **Member of the Science Study Group. PLATIN**, WCRP/CLIVAR/VAMOS, Variability and predictability of climate and hydrology, societal impacts of climate change. Present.
- **International Advisory Committee**, International Research Institute for Climate Prediction. Palisades, New York, July 2002
- **Lead National Greenhouse Gas Inventories**, (IPCC methodology). Agriculture and Land Use Change Sectors of Uruguay. Montevideo, 1996, 1998, 2000, 2001, 2002. GEF / UNDP / National Department for the Environment (Uruguay).
- **WMO Expert Team member**, Open Program Area Group - OPAG, "Climate Applications, Information and Prediction Services", ET: "Climate Watches".
- **WMO Expert Team member**, Open Program Area Group-OPAG, "Climate change/climate variability and natural disasters in agriculture". ET: "Impact of climate change/variability on medium to long range prediction for agriculture". Present
- **Advisory Committee Member**, CLIMAG (Research Program for Climate Forecasts Applications in Agriculture) WMO
- **Advisory Committee Member**, International Research Institute for Climate Prediction (IRI), Applications Division.
- **Steering Committee Member**, Inter-American Institute for Global Change Research (IAI). Theme: "*Comparative Studies of Temperate Terrestrial Ecosystems: Developing a Regional Science Plan*". July 1994.
- **Coordinating Committee Member**, "*Trace-Gas Exchange: Mid-Latitude Terrestrial Ecosystems and the Atmosphere*" Activity of the International Global Atmospheric Chemistry Project (TRAGEX/IGAC, IGBP). December 1992 - 2003.

Consultancies in the Public Sector

- **Inter-American Development Bank / Ministry of Agriculture and Fisheries of Uruguay**. Explore the feasibility for establishing an Agricultural Insurance Program. Montevideo, March-June 2000.
- **US AID/Government of Guatemala**. Development of an Information and Decision Support System for the agricultural sector of Guatemala. Guatemala City, April 1997; August 1998; February 2000.
- **Inter-American Development Bank/IICA/CNPAB (EMBRAPA), Brazil**, Assist scientists in the analysis of long-term databases, calibrate and apply simulation models for studying nutrient dynamics and for assessing sustainability in pasture-based systems. Train scientist in simulation modeling. Seropedica, Brazil, May 1996 - June 1996.
- **United Nations Industrial Development Program (UNIDO) - Ministry of Industry of Paraguay**. Perform National and regional fertilizer demand projections for a fertilizer plant to be established in Paraguay. Asuncion, 1996.
- **International Atomic Energy Agency (IAEA, United Nations)**. Elaborate work plans and supervise research activities in a 5-year International Coordinated Research Program (research conducted in Latin America, Asia, Africa and Europe): "*The use of nuclear techniques for optimizing nitrogen fertilization of irrigated wheat for optimizing fertilizer application and consequently reduce environmental contamination*". Vienna, November 1993 – November 1997.
- **National Commission for Global Change of Uruguay**. Provide technical advice in agricultural and environmental issues, elaborate research plans and prepare proposals. Montevideo, Uruguay. September 1994 - May 1997.
- **GEF/World Bank - UNDP Project: "Conservation of Biodiversity and Sustainable Development of the Wetlands of Eastern Uruguay (PROBIDES)"**. Provide technical advice to staff members in the area: "Sustainable Development". Rocha, Uruguay. September 1994 - August 1995.
- **Food and Agriculture Organization (FAO/ United Nations)**. Project: "*Barley Production Improvement in Uruguay*", FAO/UNDP URU 88/001. Montevideo, Uruguay, May 1989 - January 1991.

Consultancies in the Private Sector

- **Advisor**, MOSA, a barley grain and malt producing/exporting company, owned by an International corporation. Provide technical advice and training for the Marketing and Agronomy Divisions. Uruguay, September 1994 - March 1999.
- **Consultant**, AgrEvo (Hoescht/Schering Argentina). Provide technical advice for the Fertilizer Division; Give technical presentations on fertilizer use for agronomists and farmers. Buenos Aires, Argentina. July 1996 and September 1997.
- **Consultant**, PEQUIVEN Fertilizer Business Unit, subsidiary of Petróleos de Venezuela S.A. Consultancy for adapting PEQUIVEN to non-subsidized market conditions. Maracay and Morón, Venezuela, October 1993 - March 1994.

Editor, Reviewer

- **Editorial Board Member**, *Agricultural Systems*. Elsevier Science. Amsterdam The Netherlands.
- **Editorial Council Member**, Journal of the International Hydrological Programme for Latin America and the Caribbean United Nations Educational, Scientific and Cultural Organization (UNESCO)
- **Proposal Review Panelist**, Inter-American Institute for Global Change Research (IAI), *Initial Science Program (ISP)*, and *Research Planning/Start-up Grants*.
- **Program Reviewer**, NOAA OGP, *Environment, Science and Development (ESD) Program*.
- **Research Proposal Reviewer**, National Science Foundation (NSF), USA, Program: *Regional Inst. - Global Change*.
- **Research Proposal Reviewer**, Environmental Research and Technology, DLR, Bonn, Germany.
- **Member of the International Evaluation Committee**, Evaluation of the Paraná Research Center, of INTA (National Agricultural Research Institute of Argentina). Paraná, Argentina.
- **Reviewer of research articles** in *Agronomy J.*, *Soil Sci. Soc. Am. J.*, *Climatic Change*, *J. Climate Change*, *Int. J. Climatology*, *Nature Climate Change*, *PNAS*, Scientific peer-reviewed journals in Argentina, Brazil, Chile and Uruguay

Instructor

- **Lecturer**, *International Research Institute for Climate and Society (IRI)*, *Columbia University*. Lectures on Climate Risk Management, Adaptation to Climate Variability and Change, in Columbia's graduate programs. M.A. in "Climate and Society", PhD in "Sustainable Development", MPA in "Development Practice" (New York, 2004 – present).
- **Instructor**, *International Research Institute for Climate and Society (IRI)*. Training programs on "Climate Risk Management in Agriculture". Several locations, 2004 - Present
- **Instructor**, *IFDC - ICASA*. Training programs on "Information and Decision Support Systems and Simulation Models". Brazil, Argentina, Uruguay, Ecuador, Guatemala, USA (Several locations, 1995-Present)
- **Instructor**, *International Geosphere Biosphere Program (IGBP)* – Global Analysis, Interpretation and Modelling (GAIM). GAIM-LBA Modeling Workshop. Training on "Applications of the Century model to study carbon dynamics" in LBA research activities. Cachoeira Paulista, SP, Brazil.
- **Instructor**, *International Research Institute for Climate Prediction (IRI)*. Training program on: "Agricultural Applications of Seasonal to Interannual Climate Predictions", Lamont-Doherty Earth Observatory, New York, March 1995.
- **Instructor**, *National Center for Agro-Biological Research (EMBRAPA)*, Brazil. Training program for Latin American researchers and graduate students. "The Use of Simulation Models in Research on Sustainable Agriculture". July 1994.
- **Teaching Assistant**. *Department of Crop and Soil Environmental Sciences, Virginia Polytechnic Institute and State University*. Courses: "Computer Applications to Agriculture"; "Soil Fertility and Fertilizers"; "Introductory Soils", Blacksburg, Virginia, September 1984, 1985, and 1986.

EDUCATION

Ph.D., Crop and Soil Environmental Sciences, June 1987.
Virginia Polytechnic Institute and State University.

M.Sc., Crop and Soil Environmental Sciences, (Minor: Statistics), December 1984
Virginia Polytechnic Institute and State University.

B.Sc., Agricultural Engineering, December 1978
Universidad de la Republica, Uruguay.

LANGUAGE SKILLS

Fluent in English, Spanish and Portuguese. Conversant in French.

SELECTED MENTORING

- Advisor to Earth Institute Post Doctoral Fellows: Dr. Brenda Lin (2007), Dr. Chao Chen (2009), Dr. Jonathan Hickman, (2010), Gordon McCord (2012), Dr. David Kanter (2014)
- Member of Columbia University PhD Committees: Weston Anderson (present), Angel Muñoz (present), Daniel Ruiz (2012). PhD Committees in Uruguay: Gabriela Cruz, Guadalupe Tiscornia
- M.A. Candidate advisor to Eric Holthaus, IRI, Columbia University
- Line management and supervision of +20 professional researchers and support staff at IRI since 2004.

SAMPLE of PUBLICATIONS (complete list of +150 available upon request)

- Capa-Morocho, M; A.V.M. Ines; W. E. Baethgen; B. Rodríguez-Fonseca, E. Han; M. Ruiz-Ramos. 2016. Crop yield outlooks in the Iberian Peninsula: connecting seasonal climate forecasts with crop simulation models. *Agric. Systems* (149):75–87
- David R. Kanter, M.H Schwoob, W. E. Baethgen, J.E. Bervejillo, M.Carriquiry, A.Dobermann, B.Ferraro, B Lanfranco, M. Mondelli, C.Penengo, R.Saldias, M. E. Silva, J.M.Soaes de Lima. 2016. Translating the Sustainable Development Goals into action: A participatory backcasting approach for developing national agricultural transformation pathways. *Global Food Security* (10):71–79
- Lizarralde, C.; V. Ciganda; W. E. Baethgen; A. Quincke. 2016. Nutrient losses in runoff water from contrasting crop rotations. *INIA* 46:43-45 (in Spanish)
- Fernandes, K.; A. Giannini, L. Verchot, W. Baethgen, M. Pinedo-Vasquez. 2015. Decadal co-variability of Atlantic SSTs and western Amazon dry-season hydroclimate in observations and CMIP5 simulations. *Geophysical Research Letters*. Published online: <http://onlinelibrary.wiley.com/doi/10.1002/2015GL063911/full>
- Muñoz, A., L. Goddard, A. W. Robertson, Y. Kushnir, and W. E. Baethgen, 2015: Cross–time scale interactions and rainfall extreme events in southeastern South America for the austral summer. Part I: Potential predictors. *J. Climate*, 28, 7894–7913, doi:10.1175/JCLI-D-14-00693.1
- Lovino, M.; N. O. García; W.E. Baethgen. 2014. Spatiotemporal analysis of extreme precipitation events in the Northeast region of Argentina (NEA) *J. Hydrol: Regional Studies*. 2:140–158
- Robertson, A.W.; W.E. Baethgen, P. Block, U. Lall, A. Sankarasubramanian, de Assis de Souza Filho, K. M. J. Verbist. 2014. Climate risk management for water in semi–arid regions. *Earth Perspectives* 2014, 1:12
- Goddard, L., W. E. Baethgen, H. Bhojwani, A. W. Robertson. 2014. The International Research Institute for Climate & Society: why, what and how. *Earth Perspectives* 2014, 1:10
- Gutierrez-Velez, V., Uriarte, M., DeFries, R., Pinedo-Vasquez, M., Fernandes, K., Ceccato, P., Baethgen, W., Padoch, C. 2014. Land cover changes interact with climate to change fire regimes in Western Amazonia. *Ecological Applications* 24:1323–1340
- Cruz, G., W.E. Baethgen, V. Picasso, R. Terra. 2014. Analysis of agronomic droughts in two livestock producing regions of Uruguay. *Versión. Agrociencia*. 18:1 (In Spanish) ISSN 2301-1548
- Vancutsem, C., Pekel, J.-F., Kayitakire, F., Duveiller, G., Baethgen, W., Ceccato, P. 2013. Mapping winter and summer crops in Uruguay using MODIS time series. *Agro-Geoinformatics* 6621924, pp 292-295.
- Baethgen, W.E. and L. Goddard. 2013. Latin American Perspectives on Adaptation of Agricultural Systems to Climate Variability and Change. IN: D. Hillel and C. Rosenzweig (Eds.): *Handbook of Climate Change and Agroecosystems: Global and Regional Aspects and Implications*. pp 57-72. ICP Series on Climate Change Impacts, Adaptation, and Mitigation Vol. 2. Imperial College Press.
- Chen, C; A. Greene; A. Robertson; W.E. Baethgen; D. Eamus. 2013. Scenario Development for Estimating Potential Climate Change Impacts on Crop Production in the North China Plain. *Int. J. Clim.* Volume 33(15):3124–3140
- Valero, S., Ceccato, P., Baethgen, W., Chanussot, J. 2013. Identification of agricultural crops in early stages using hyperspectral remote sensing images. *International Geoscience and Remote Sensing Symposium (IGARSS)*
- Uriarte, M; M. Pinedo-Vasquez, RS DeFries, K Fernandes, V Gutierrez-Velez, W.E. Baethgen, C. Padoch. 2012. Depopulation of rural landscapes exacerbates fire activity in the western Amazon. *Proceedings of the National Academy of Sciences* 109 (52):21546-21550

- Baethgen, W.E. 2012. Climate Information for Improving Adaptation to Climate Variability and Change. CLIVAR Exchanges VAMOS No. 58(17):16-20
- Chen, C.; W. E. Baethgen; A. Robertson. 2012. Contributions of individual variation in temperature, solar radiation and precipitation to crop yield in the North China Plain, 1961–2003. *J. Climatic Change* 116(3-4):767-788
- Del Ponte, E.; A. de Holanda Nunes Maia; T. Veloso Santos; E. J. Martins; W. E. Baethgen. 2011. Early-season warning of soybean rust regional epidemics using El Niño/Southern Oscillation information. *J. Biometeorology*. 55(4):575-583
- Gutiérrez-Vélez, V.; R. DeFries, M. Pinedo-Vásquez, M. Uriarte, C. Padoch, W.E. Baethgen, K. Fernandes, Y. Lim. 2011. High-yield oil palm expansion spares land at the expense of forests in the Peruvian Amazon. *Environ. Res. Lett.* 6(4):1-5
- Fernandes, F.; W. Baethgen, S. Bernardes, R. DeFries, D. G. DeWitt, L. Goddard, W. Lavado, D. Eun Lee, C. Padoch, M. Pinedo-Vasquez, M Uriarte. 2011. North Tropical Atlantic influence on western Amazon fire season variability. *Geoph. Res. Lett.* 38(12):12701
- Chen, C.; W E Baethgen, E. Wang, Q. Yu. 2011. Characterizing spatial and temporal variability of crop yield caused by climate and irrigation in the North China Plain. *Theoretical and applied climatology* 106(3):365-381
- Seager, R., N. Naik, W.E. Baethgen, A. Robertson, Y. Kushnir, J. Nakamura, S. Jurburg, 2010: Tropical Oceanic Causes of Interannual to Multidecadal Precipitation Variability in Southeast South America over the Past Century. *J. Climate*, 23: 5517–5539.
- Aggarwal, P. K., W. E. Baethgen, P. Cooper, R. Gomme, B. Lee, H. Meinke, L. S. Rathore, and M. V. K. Sivakumar, 2010: Managing Climatic Risks to Combat Land Degradation and Enhance Food security: Key Information Needs. *Procedia Environmental Sciences*, 1:305-312, doi: 10.1016/j.proenv.2010.09.01
- Goddard, L., Y. Aitchellouche, W.E. Baethgen, M. Dettinger, R. Graham, P. Hayman, M. Kadi, R. Martínez, and H. Meinke, 2010: Providing Seasonal-to-Interannual Climate Information for Risk Management and Decision-making. *Procedia Environmental Sciences*, 1:81-101, doi: 10.1016/j.proenv.2010.09.007.
- Baethgen, W.E. 2010. Climate Risk Management for Adaptation to Climate Variability and Change. *Crop Sci.* 50(2):70–76
- Vaughan, C. and W. E. Baethgen. 2010. Researching Adaptation: An Overview of Climate Change Adaptation Research in the Gulf of Mexico and Caribbean Basin. IN: “Fighting for Survival: The Vulnerability of America’s Gulf Coast and the Caribbean Basin”, invited paper, The Earth Institute, New Orleans, August 2010.
- Baethgen, W.E.; M. Carriquiry and C. Ropelewski. 2009. Tilting the odds in maize yields: how climate information can help manage risks. *Bull. Am. Met. Soc.* 90(2):179-183
- Baethgen, W.E.; Giménez, A. 2009. Seasonal climate forecasts and satellite information: improving decisions in the Uruguayan agricultural sector. pp:92-94. In: J.Dodd, R.Lambert, A.Lawrence, S.Townsend (Eds.), *Climate Sense*. WMO, Geneva.
- Baethgen, W.E. 2009. Challenges for Incorporating Climate Change in Decision-making and Public Policies for the Agricultural Sector. *IICA Coyuntura*. (In Spanish) http://www.iica.org.uy/online/coyuntura_58_doc.asp
- A. Giménez; J.P. Castaño; W. Baethgen; B. Lanfranco. 2009. Climate Change in Uruguay: impacts and adaptive measures in the agricultural sector. (In Spanish). *INIA Tech Ser 178*, Estanzuela, Uruguay
- Del Ponte, E., J. M. C. Fernandes, W. Pavan and W. E. Baethgen . 2009. A Model-based Assessment of the Impacts of Climate Variability on Fusarium Head Blight Seasonal Risk in Southern Brazil. *J Phytopathol* 157:675–681.
- Alley, M.A., P. Scharf, D.E. Brann, W.E. Baethgen, and J.L. Hammons. 2009. Nitrogen Management for Winter Wheat: Principles and Recommendations. Ext. Pub. 424- 026. VA Coop. Ext., Virginia Tech, Blacksburg. Available at: <http://pubs.ext.vt.edu/424/424-026/424-026.html>