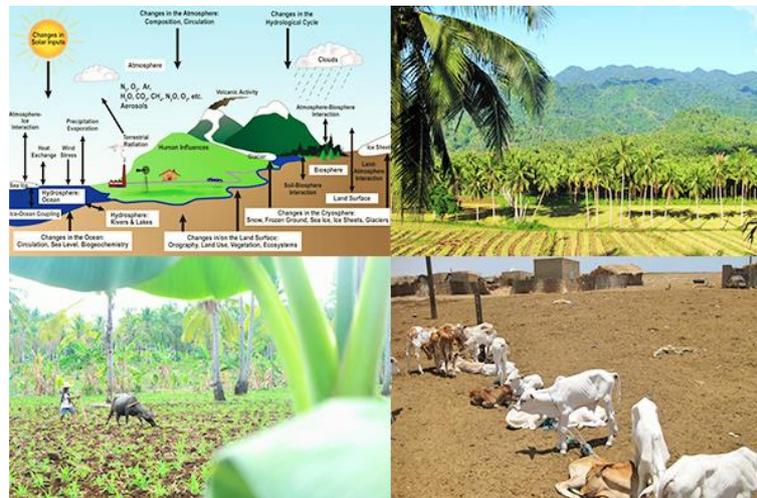


Understanding climate change and vegetation indices for risk reduction, risk adaptation and risk transfer

May 4, 3-4 pm CET, online event



This Expert Forum will focus on the incorporation of weather risks in crop yields, taking into account the changes in sea surface temperatures, wind patterns and rainfall. The online event will be beneficial and of particular interest to microinsurance entities and consultants, but also of relevance to academics and researchers. The event aims to finally shed some light into the “black box” of index insurance models.

Speakers

- **Askar Choudhury**, Professor of Management & Quantitative Methods, Illinois State University
- **James Jones**, Executive Director, Katie School of Insurance and Financial Services at Illinois State University
- **John Kostelnick**, Associate Professor of Geography & Director at GEOMAP, Illinois State University
- **Lena Choudhury**, Academic Scholar & Consultant in Climate Change
- **Aslihan D. Spaulding**, Professor of Agribusiness, Department of Agriculture, Illinois State University

Moderator

- **Annette Houtekamer-van Dam**, Microinsurance Expert, Microinsurance Network

Rationale

Global food security, threatened by climate change, is one of the most important challenges of the 21st Century: How to supply sufficient food for a growing population, while sustaining the already stressed environment? Climate change has already had significant impacts on water resources, food security, hydropower and human health worldwide, and especially within the African continent. Climate models need to be integrated with other modelling approaches to predict climate vulnerability and climate parameters such as rainfall and temperature. The changes in crop production related climatic variables will possibly have major influences on regional as well as global food production. The likely impacts of climate change on crop yield can be determined either by experimental data or by crop growth simulation models. In this Expert Forum we will talk about a GIS and a remote sensing-based approach to modelling using the density of green vegetation known as Normalised Difference Vegetation Index (NDVI). The approach has the potential to increase the reliability of predictions compared to other index-based insurance models, thus limiting the basis risk, which is one of the biggest challenges and sources of disappointment for farmers with agricultural insurance to date.

The impacts of climate change on crop productivity are linked to many uncertain factors, particularly climate variability, but also soil characteristics such as soil water storage and long-term soil fertility, as well as climatic variables with long-term increase of atmospheric CO₂ levels. In addition there are uncertainties in crop growth modelling linked to biophysical interactions. All of these factors affect the estimation of climate change impacts on crop productivity.

If researchers take into account some of the effects of uncertainty in their predictive models, it will be possible to obtain more accurate predictions regarding climate change impacts on crop productivity. This would then, in turn, enable the design of adaptive solutions such as the adoption of more drought resilient crops, improved irrigation techniques (risk reduction), and or the transfer of remaining risks to the insurance industry.

Bios of speakers



Askar Choudhury is a Professor of Management & Quantitative Methods at the College of Business, Illinois State University, USA. He maintains an active research agenda that includes prediction modeling (forecasting), development of statistical methodology for assessing effects of interventions and environmental exposures, and service demand for technology operations and agricultural index insurance.

Dr. Choudhury teaches in the areas of business statistics, forecasting, operations management and graduate quantitative methods. He has published fifty plus (50) articles in referred academic journals including Journal of Insurance Issues, Journal of Econometrics, The American Statistician, Communications in Statistics, Journal of Statistical Computation and Simulation, Archives of Environmental Health, and Academy of Accounting and Financial Studies Journal. He has many scholarly presentations at the national and international conferences.

In the real world application of statistical methods, he has developed a distance-minimising “Vehicle Routing Problem (VRP)” algorithm for the Next Generation Logistics (NGL), Chicago, USA; implemented statistical analysis to assess the effect of structural change in the Chartered Property Casualty Underwriter (CPCU) programme of American Institute of CPCU (AICPCU), Malvern, PA, USA; developed a 'Predictive Model' to estimate resources demand for the Arctic Slope Regional Corporation (ASRC),

Alaska, USA for efficient resource planning; and created a research base for developing an alternative model of financial risk to credit score for Country Insurance, Bloomington, USA.

He holds a PhD in Business Administration (with concentration in business statistics) from Arizona State University and a Masters in mathematical statistics from Simon Fraser University, Canada. Dr. Choudhury has and continues to serve on several thesis committees and supervises graduate students on their Master's projects. He has been a Visiting Scholar at the Graduate School of Business, University of Chicago, and has received the "College of Business Distinguished Research Award" in 2005 and 2012.



James Jones is the Executive Director of the Katie School of Insurance and Financial Services at Illinois State University. He works with the Dean of the College of Business (COB), industry executives, chairs of departments across the university, faculties from multiple disciplines across campus, including the business faculty in risk management and insurance, marketing, sales and management, and the faculty in actuarial science, statistics and economics.

Dr. Jones undertakes and facilitates research on industry issues including employment trends and skills needed to succeed in the risk management and financial services industry, and technical research on issues such as the causes of workers compensation insurer insolvencies. His main area of research is the development of microinsurance and index insurance for farmers in Africa. He has published several articles in this field, including the development of drought index triggers, the drivers of demand for insurance and influence of insurance on the willingness of microfinance institutions to loan money to farmers in Africa. He has also written and edited textbooks for the Institute's AIC programme on workers compensation, liability claims practices and the management of bodily injury claims.

He works directly with students in developing and facilitating undergraduate research projects including topics such as the use of drones in insurance, autonomous vehicles, health insurance, flood insurance for urban areas, pet insurance market development, the factors affecting customer retention, underwriting risks using remote sensing, the use of social media by agents and the impact of fossil fuel prices on automobile claims.

Dr. Jones has been an executive coach for financial service executives from numerous companies in North America, Europe, Africa, and Asia/Pacific. In the present, he serves in a leadership role at the Griffith Insurance Education Foundation, as a Board member at the Loman Foundation, and chairs the Nominating Committee for the CPCU Society.



John Kostelnick is an Associate Professor in the Department of Geography-Geology and Director of the Institute for Geospatial Analysis and Mapping (GEOMAP) at Illinois State University, Normal, IL, U.S.A.

He formerly served as an instructor at Haskell Indians Nations University where he assisted in the development of the GIS programme. His primary research interests are in the broad area of Geographic Information Science (GIScience), including geovisualisation, hazards and risks, crisis mapping, GIS applications in science and society, land use/land cover mapping and cartographic symbolisation.

He holds a PhD from the University of Kansas (Geography), a Master of Arts from the University of Nebraska-Lincoln (Geography) and a Bachelor of Arts (History) from Iowa State University. He currently serves as a corresponding member for the Commission on Education and Training for the International Cartographic Association, Earthzine's Associate Editor for GIS, and as an Executive Board Member for the International Atlas of Peace.

Kostelnick has worked with teams on diverse research projects in GIScience over the course of his career, including the development of a new cartographic symbolisation standard for humanitarian demining, ecological niche modeling with GIS, analyses of impacts of invasive species with aerial imagery, approaches for analysing and visualising global impacts of sea level rise, remote sensing methods for assessing anthropogenic change in Africa, analyses of crop yield potential with NDVI in Illinois, and web mapping for emergency management.



Lena Choudhury is an Academic Scholar and Consultant in Climate Change. Her passion in her professional life lies in understanding the complex relationship between climate change and its effects on different sectors of our lives. She has been working on this endeavor for many years as a teacher, researcher and a consultant. She has taught courses in general ecology, environmental biology and field ecology research, dealing subjects such as the establishment of wetlands to coring of glacier ice for understanding the history of climatic changes.

Choudhury is working on an active research platform that examines the effect of global climate change in the areas of treeline changes, alpine ecosystems, prairie ecosystems, agriculture and wetland establishments.

Choudhury has published numerous articles in the academic journals including Ecoscience, Journal of Human Environment, Canadian Journal of Forestry, North American Association for Environmental Education, Journal of Insurance Issues, Journal of Economics and Economic Education Research. She has received research awards from the Arctic Sciences Institute and North American Association for Environmental Education for her research dealing with the increase of atmospheric carbon dioxide (CO₂) and its effect on alpine ecosystems.

Her educational background includes a MS in Environmental Ecology from University of Alaska Anchorage, a BS in Biological Sciences with concentration in Ecology and a BA in Anthropology from Arizona State University. She is the founding president of a non-profit organisation that helps figure skaters of all ages to advance in the world of figure skating. She also serves on the boards of YWCA, and Citizen's advisory Board of her local school district.



Aslihan Spaulding is a Professor of Agribusiness in the Department of Agriculture at Illinois State University where she teaches courses in strategic agribusiness sales, food industry marketing and strategic management, and computer applications in agriculture. She is coordinator of the graduate and the study abroad programmes.

Dr. Spaulding received her Bachelor's degree in Economics at Bogazici University (Istanbul, Turkey) in 1996, and her M.S. in Agricultural Economics and M.S. in Economics degrees from the University of Kentucky (UK) in 1999. She completed her

Doctorate in Agricultural Economics at University of Kentucky in 2002. She was a post-doctoral scholar in the UK before joining Illinois State University in 2003.

Dr. Spaulding's research expertise includes consumer/farmer behavior and survey research methodologies. She has conducted several surveys on a variety of topics including cybersecurity, training needs of farmers, nutrient management by farmers, crop insurance, risk management, new product development management and marketing.

She has been an advisor to the ISU's award winning student chapter of the National Agri-Marketing Association (NAMA) since 2005. Dr. Spaulding received the John. B. Riley Outstanding Faculty Advisor Award from NAMA, and the College of Applied Science and Technology Outstanding Researcher Award in 2013. She received numerous departmental service and researcher awards. She is also the recipient of the ISU Research Initiative Award and McLean County Emerging Leader in Agriculture Award.