HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

Under the auspices of ECOSOC

Modelling, Mapping and Monitoring vulnerability to climate change through big data: the case of flooding

Tuesday 30th June **ROOM F** 3:00 pm - 6:00 pm

Course Objectives

The SD Learning Session will provide an overview of the role of "big data" in the Global Sustainable Development Report and in particular what has been learnt from big data applications for flooding risk assessment/management and response.

Following this overview, the session will focus on a particular project on modelling, mapping and monitoring of vulnerability to flooding, led by Data-Pop Alliance Research Affiliates Bessie Schwarz, Communications Director of the Yale Climate Change Project, and Beth Tellman, PhD Student in Geography at Arizona State University. The project has received financial support from Google and the World Bank.

The main objective of the project that will be the basis or the proposed Session is to predict and visualization physical and social vulnerability to flooding in near real time using satellite imagery and socio-demographic data—either official or derived from cell-phone activity when official statistics may not be available. A key feature of the project is to 'turn the Big Data model on its head' by getting more data and capacities to people rather than just extracting and crunching data from people. The localized science and analysis will help individuals understand the climate crisis and take control when preparing and responding to hazards. We believe a communities or local government's ability to understand, analyze, and contribute its vulnerability assessments not only improve the resilience of that community but improve the science. The proposed session will be a small step towards that objective—by raising awareness, interest and providing introductory skills to participants to get more involved in and support this and similar initiatives that may benefit local at-risk communities.

The starting point of the overall project was the recognition that as the magnitude and frequency of flooding increased in both the US and other regions, including the Global South, there was a need, an and opportunity with Big Data, for developing faster, more precise, and more reliable flood vulnerability mapping that would account for social and physical factors, predict who is at risk from oncoming storms, and projects scenarios for a changing climate. Through the state of the art online geo-technology platform Google Earth Engine, the algorithm that will be part of the Session uses publicly available physical and social data to show governments, businesses and the public the science behind their vulnerability to disaster. We will also discuss how estimates of population density derived from cell-phone activity may help refine the model.

Modalities of the proposed SD Learning Session

This workshop will train participants in the Google Earth Engine Platform, basic remote sensing, and the science of social vulnerability. The session might include the following elements:

1. Overview of the role of "big data" in the Global Sustainable Development Report (15 min)
2. An introduction to the conceptual and technical frameworks behind vulnerability and resilience and the model (30 min)
3. Hands-on training and tutorial in the computational and scientific tools in small teams, including an intro to Javascript, focusing on the US and Senegal (1.45 min)
4. Group discussion on how to adjust social vulnerability to different communities and how to build practical capacity on the ground through Big Data tools like this (30 min)

NOTE TO PARTICIPANTS: Please bring your laptops as some of the tools which will be showcased will require hands-on participation.

Organizer

Data-Pop Alliance and UNDESA

Instructors

Ms. Bessie Schwarz

Bessie Schwarz is a Data-Pop Alliance Research Affiliate. She is a political and communications strategist developing innovative methods for engaging and mobilizing citizens on environmental issues. She is currently the Communications and Outreach Director for the Yale Project on Climate Change Communication. As a researcher, technologist, and campaigner, her work and opinions have been covered by the Associated Press, NPR, CNN, and The Hill. Bessie holds a Master's of Environmental Science from The Yale School of Forestry and Environmental Studies and, although she is still hiding out in academia, she is a grassroots organizer at heart.

Mr. Richard A. Roerhl

Richard Alexander Roehrl is a policy analyst with expertise in energy and transport. In 2000, he joined the United Nations and has been posted to ESCAP, IAEA and DESA. At present, he is part of the Division for Sustainable Development at the UN Department of Economic and Social Affairs, where he leads analytical work on sustainable development scenarios, clean energy technology and the Global Sustainable Development Report (GSDR). In the 1990s, he worked for IIASA and the EU, as well as served as Lead Author to the IPCC. Alexander has advanced degrees in both physics and economics, from the Universities of Erlangen, Munich, Oxford, and the London School of Economics. He has co-authored several books and many articles on a wide range of policy issues.