21st October 2015: Taking a global view

Aims

As the first in the series, we laid the foundations for the rest of the term by raising questions related to ways in which new technologies could be applied to look at environmental risks and resilience, data ownership, open data sources, and the need to scale data in both time and in space to provide the information that policy makers and businesses need to make decisions.

Witnesses

Professor Alan O'Niell, Emeritus Professor of Meteorology at the University of Reading and the founding Director of the NERC National Centre for Earth Observation, joined **Dr Mukesh Kumar**, a Research Associate in the International Manufacturing group at the Institute for Manufacturing and **Steve Peedell**, a Senior Scientific Officer in the Land Resource Management Unit at the Joint Research Centre.

Research gaps

In his introduction, Steve highlighted research gaps related to the **collection and processing of data to measure resilience, risk and vulnerability**. Although satellite images can provide comprehensive information on a global scale, there are many very important questions related to ground-truthing those data and bringing them together with economic, social and biological information to build up a comprehensive picture. Focusing on protected areas, he argued that there is a need to look beyond the area-based Aichi targets to concentrate on the effectiveness and vulnerability of protected areas, now and in the long term.

Mukesh focused on three areas of resilience in food chains: crop failure, product failure and supply chain failure. When discussing questions of scale during the round table, he argued that **there is an inherent danger that both assessments of resilience and risk are both used to make short term focused decisions when long term vision is needed** to increase the resilience of a system (e.g. water use in agriculture). Danny Ralph agreed that resilience in the short term and the long term requires different ways of thinking and different approaches to both asking and answering the same questions.

Alan opened by saying that the most interesting questions we can ask relate to **the new kinds of datasets that are available and the ability they give us to ask data-driven questions** and to carry out 'uncontrolled' experiments. He argued that we are in a transformative time where a constellation of satellites are generating massive, openly available datasets, very rapidly and on a global scale. There are also new datasets that can be applied to questions related to land use, resources and food. For example, phone tracking data can be used to look at congestion in cities and to track the movements of illegal loggers or hunters in tropical forests. Often commercial or privately funded, there is a risk that people will be charged to use them in the future.

Wicked problems and questions generated by the open discussion included:

- It was agreed that ultimately, **it is not the data in itself that holds value, but the information it contains**
- Danny Ralph argued that *"As researchers, part of our job is to equip others to do their job better"*. Bearing this in mind, **what kinds of questions should we be asking?** Should questions drive our search for data or do should the data available drive the questions we ask?
- **'Big data' doesn't just refer to data volume, it is also becoming increasingly complex and heterogeneous**, and is being drawn from a wide variety of sources which presents challenges in itself.
- **How do we collect and analyze data given the pace of change?** Turning raw data into information products to feed into policy processes and create responsive policies is particularly challenging. How can we trace the signature of certain information through to policy decisions?
- **How will we meet the next generation of reporting challenges** presented by the Sustainable Development Goals and other national, regional and international level agreements?
- How can we **move from tracking historical trends into identifying emerging risks and project past information forwards into the future?**
- We touched briefly on **data security, especially when using open data**. Could trusted secure systems encourage people to allow their data to be used in ways that would otherwise not be acceptable?

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