

REPORT

SECURE workshop, 7th September, 2017, University of Bristol

Workshop Leader: Dr Ben Swallow

“Modelling data from multi-scale data streams in ecological and environmental sciences”

The main aim of the meeting was to bring together interested parties from across academia and industry to discuss the major issues relating to data from new technologies (e.g. satellites, tracking devices, mobile sensors) and how best to approach them.

There was clearly significant interest across disciplines in the event with around 60 people registering from 21 different institutions.

The invited speakers were:

Dr Francesca Pianosi (University of Bristol), ‘The value of Global Sensitivity Analysis to guide the collection and effective use of data in environmental modelling’

Dr Hartmut Boesch (University of Leicester), ‘Using a Bayesian approach for the Retrieval of Atmospheric Greenhouse Gas Concentrations from Satellite Observations’

Prof Paul Blackwell (University of Sheffield), ‘Bayesian synthesis of ecological information from tagging, imaging and modelling’

Dr Rory Clarkson (Rolls-Royce), ‘Aviation, Jet Engines and Our Imperfect Atmosphere’

Prof Jonty Rougier (University of Bristol), ‘Upscaling and downscaling imperfect digital elevation maps’

Dr Oliver Pescott (Centre for Ecology and Hydrology), ‘Biodiversity data and modelling at the BRC’

The general conclusions that I thought could be taken from the day as a whole are as follows:

- There is a strong need for statistical methodologies in order to take advantage of the plethora of data being collected from new technologies. At the moment this appears to be on a reactionary, case-by-case basis, rather than as a coherent attempt to deal with the common issues.
- Ecologists and earth scientists are attempting to approach the problems as best they can but they are appealing to the statistical/mathematical community to provide them with the tools they need to accurately model the data being collected.

- Many of the data collected are at a higher resolution in space and time than before, and whilst there is some attempt to join data together and take advantage of the added information from combining them, there is little coherent attempt to approach this problem as a research community. Paul and Jonty had some suggestions for this, however it seems that much of it is done as and when it is needed.
- From a measurement perspective, there is a need to plug gaps in the current surface networks; some of this can be achieved through the use of satellite data. However, these data come with many challenges of their own in terms of retrieval of information and subsequent modelling, which will inevitably get more complex as more sophisticated satellites are created.