

Royal Meteorological Society

Impact of Science Conference 2017 for Student & Early Career Scientists

Tuesday 11th to Wednesday 12th July 2017

Met Office, Exeter.

Trip Report

David Hiba Hiriasia



INTRODUCTION

The Royal Meteorological Society (RMetS) is the United Kingdom's society for weather and climate with a mission to promote meteorology as science, profession and interest with members ranging from scientists/professionals to people who are just passionate about the weather. Membership is not only for UK nationals but also available international members.

One of their key functions is the production of academic journals and align with this is the hosting of conferences and meetings organized every year and the Impact of Science Conference for Students was part of the society's annual conferences.

This conference was organized by the Royal Meteorological Society and supported by the UK Met Office.

The conference provides an opportunity for students especially PhD students to present their work and get feedback from other professionals. Not only that but it also offers an excellent chance for networking among aspiring scientists and the possibility for future collaborations.

The two main programs include oral and poster presentations and this report is a brief summary of the oral presentations I attended during the 2 day conference.

Oral Sessions.

Day 1: Tuesday 11th July 2017

Session 1: Data Impacts

Seminar 1: Why Good Data Curation is Essential for Doing Impactful

Presenter: Poppy Townsend, Data Scientist,

Organization: Centre for Environmental Data Analysis (CEDA) of Natural Environment Research Council (NERC)

Seminar 1 summary

- A lot of data are been produced within the atmospheric and climate sciences and there is urgent need for efficient data management.
- Different standards and formats can lead to many variations and differences in the same data at different data centres.
- Use of good data management practices can make it easy for others to understand any research work.

Seminar 2: Provision of Standardized Model Data within the New Met Office Post-Processing System

Presenter: Fiona Rust, Post-Processing Foundation Scientist

Organization: UK Met Office

Seminar 2 summary

- New Met office project on post processing of raw model data using physical and statistical methods.
- First step is the standardized meteorological diagnostics of model data and interpolation onto a standard grid.
- Standard diagnostics is used as input into the post processing system and is also made available for interested customers
- First set of results are used for Met Office's Public Weather Media Service.

Seminar 3: Estimating Wind Driven Rain loads within Local Climate Zones

Presenter: Roelandus Tersteeg, PhD Student,

Organization: Loughborough University

Seminar summary

- Use of a new method to use current synoptic weather data and local climate zone (LCZ) classification for microclimates to calculate a free field wind driven rain (WDR).
- Parameters that are used to describe LCZ microclimates are surface roughness, building height, canyon aspect ratio and sky view factor.
- 3 methods are used to estimate the amount of WDR on a building.

- A new and more accurate method is using numerical modelling and can be used for designing of building surfaces.

Session 2: Arctic

Seminar 1: Polar Vortex Displacements and Mid-Latitude Responses

Presenter: Bethany Jackson, Meteorologist

Organization: Lake Street Consulting Ltd

Seminar summary

- Split or displacement of the Northern Hemisphere polar vortex varies and can have impacts on mid-latitude temperatures.
- Study investigates the correlation between winter cold breaks and the polar vortex displacements and regions of cold outbreaks.

Seminar 2: How Well do Climate Models Represent the Atmospheric Heat, Moisture and Mass Transports into the Arctic?

Presenter: Sally Woodhouse, PhD Student,

Organization: University of Reading

Seminar summary

- Recent trends in summer sea ice loss and surface in the Arctic region are sensitive to climate change and may affect the climate system especially the northern extratropical weather systems.
- Climate change projections needs to be evaluated against observations.
- The study investigates large atmospheric transports of moisture and heat in and out from Arctic using the Met Offices coupled climate model (HadGEM2-GC2)
- Climatological model biases are compared with ERA-Interim reanalysis data.
- Model generally shows good agreement with reanalysis data but small differences in winds (jet streams) leads to differences in the heat and moisture transported into the Arctic region.
- The interannual variability of the North Atlantic Oscillation (NAO) was also explored in the study.

Seminar 3: Sea Ice and Seasonal Weather Prediction

Presenter: James Warner, PhD Student,

Organization: University of Exeter Session:

Seminar summary:

- Socioeconomic benefits of seasonal weather prediction are vast.
- One of the benefits is longer lead times provides ample time for planning and preparation and thus building a more resilient society.
- Study explores how the Arctic sea interacts with the North Atlantic Oscillation and the potential of using the correlations to improve seasonal forecasts.

Day 2 – Wednesday 12th July 2017

Session 3: Tropical

Seminar 1: Relating El Niño-Southern Oscillation and Global Warming Shifts in Tropical Precipitation

Presenter: Alexander Todd, PhD Student

Organization: University of Exeter

Seminar summary:

- Future projections in tropical precipitation under a warming climate still exists despite the huge improvements in climate modelling.
- The study examines the ENSO shifts and assess the predictions in associated precipitation continuing from previous work on Weak Temperature Gradient(WTG) and surface temperature and relative humidity changes
- Ensemble coupled climate models performs well in predicting ENSO precipitation shifts.
- A significant relationship is determined when examining intermodal variability and ENSO precipitation shifts over land in a warming climate scenario.

Seminar 2: Changes of Extreme Precipitation over Indonesia related to Medium and Strong ENSO Events

Presenter: Desak Putu Okta Veanti, MSc Student and Climatologist,

Organisation: University of Hamburg and Indonesian Agency of Meteorology
Climatology and Geophysics Session

Seminar summary:

- The impacts of El Nino/La Nina ranges from droughts, bush fires to floods over the maritime continent.
- The study explores the influence of ENSO on extreme precipitations and variability over Indonesia by looking at the 5th and the 95th percentile as thresholds.
- The study found that El Nino have a more pronounce impact than La Nina reducing precipitation below the 5th percentile by up to 100% at most locations.
- La Nina increases precipitation above the 95th percentile over most of the islands by 50%

Seminar 3: Large-Scale Drivers of the Seasonal to Decadal Variability in Mesoamerica's Hydrological Cycle

Presenter: Armenia Franco-Diaz, PhD student

Organisation: University of Reading

Seminar Summary

- Short to long term extreme events governed by natural climate variability and change can cause huge impacts on the hydrological cycle of Mesoamerica. This can lead to other disruptions to the human and ecosystems.
- The study investigates interannual to decadal teleconnections between large scale drivers of hydrological variability and precipitation over Mexico.
- It aims to establish precipitations that can be attributed to large scale systems such as Tropical cyclones/ENSO and African easterly waves and how they influence rainfall over the study region using satellite TRMM precipitation and ECMWF interim reanalysis data.

Seminar 4: What Determined the Track of Typhoon Hagupit (2014)?

Presenter: John Ashcroft, PhD Student

Organization: University of Leeds.

Seminar summary

- Impacts from Tropical cyclones can be costly in terms of the economic loss and loss of lives.
- The study is a case study on Typhoon Hagupit that kills 18 people and caused damage worth £71 million
- With improving NWP, storm track forecast has improved significantly but there are still some cases where the models perform poorly in forecasting the motion of the storm.
- Ensemble forecasts for the storm shows large uncertainties in the track in more than 3-day lead time
- The study investigates TC Hagupit's forecasted tracks with the Met Office's Unified Models (global and 4km model) and explore the causes of uncertainties in the forecasted tracks.
- At those lead time (more than 3-days), the result shows the storm entering an area between two high pressure systems.
- Results show that it is critical for models to capture the interactions of the storm with its environment to do a better track forecast.

Seminar 5: The Future of Coastal Upwelling in the Humboldt Current

Presenter: Damian Oyarzun V, PhD Research Student,

Organization: Environmental Change Research Centre (ECRC), University College London (UCL)

Seminar Summary

- The study investigates Upward Ocean Mass Transport in 14 coupled Atmosphere-Ocean General Circulation Models (AOGCM)
- Results shows different historical and future trends in wind stress for Northern and Southern regions of the study area.
- Changes in the upwelling were observed for all regions investigated.
- Apart from the main driver for coastal upwelling like the wind stress, the study finds that other ocean-atmosphere processes may also have significant effect on upwelling from the 20th to 21st century.

Session 4: Climate Change - Lessons from the Past, learning for Future Impact.

Seminar 1: Out and about in Public - Communicating without slides

Presenter: Prof Ellie Highwood,

Organization: University of Reading Professor and 81st President of the Royal Meteorological Society

Seminar 2: Making science matter in Trump's post-truth world

Presenter: Chris Huhne

Organisation: Co-chair, ET Index and former Secretary of State for Energy and Climate Change

Seminar 3: Climate Change and the UK media

Presenter: Leo Hickman, Editor,

Organisation: Carbon Brief

Seminar 4: A Brief History of Scientific Celebrity: From Humphrey Davy to Brian Cox.

Presenter: Dr Amanda Maycock, NERC Independent Research Fellow and Associate Professor in the Institute for Atmospheric and Climate Science (ICAS)

Organisation: University of Leeds

Seminars and panel summary

- The most important discussion is on how to communicating the complex science to the public and policy.
- As highlighted by most speakers, it is one of the challenges encountered by the scientific community.
- Use of other means apart from the conventional methods of communicating the science can help in simplifying the issues.

Conclusion.

I would like to acknowledge the financial support from WMO that enables me to attend this conference. Not only that but also thank University of Readings MSc Program Director for the support in-terms of the arrangement with the Royal Met Society and the Met Office.

Overall, session 2 on the Tropics was the most relevant topic as a forecaster from a tropical climate. In particular seminar 2 on Changes of Extreme Precipitation over Indonesia related to Medium and Strong ENSO Events is very similar to my dissertation topic. The other sessions which I found very useful and beneficial includes the importance of data for both research and operation which was presented in session 1 and the challenges discussed during the Panel in the session on communicating the science. This is a very appropriate session especially in my case where literacy rate is very low and simplifying the language is essential in-order to make the information useful to the users.

In general, the conference was a good learning experience for me despite the fact that our MSc presentations at the University took place a week earlier. Knowledge shared from the presentations definitely helped me with my final dissertation project.

Once again, this report is only a brief summary of the oral sessions I attended and for that reason, no summary on the poster presentations was included.