



## Using a Pangeo platform on Azure to tackle global environmental challenges

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  1. My PhD – Indonesian Borneo droughts and fires
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- Lessons learnt and plans ahead



# 'Panzure' managed by the Met Office

**The Alan Turing Institute**

Home + Research + Research projects

## Supporting Pangeo: the community-driven platform for Big Data geoscience

Aligning efforts with the Met Office and Microsoft to support Pangeo, the growing international platform for Big Data geoscience

Project status  
**Ongoing**

Related programmes  
**Data science for science and humanities**

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Name	Last Modified
ClimateData	7 months ago
CoralData	7 months ago
economicd...	7 months ago
results	7 months ago
scripts	7 months ago

### Pre-processing of Hadley SST dataset for Exeter CDT-Met Office Grand Challenge 2021 - Team F

Using Iris for NetCDF data load and processing

Correspondence: Timothy Lam [t.lam@exeter.ac.uk](mailto:t.lam@exeter.ac.uk)

#### Create Caribbean SST

Imports

```
[19]: import matplotlib.pyplot as plt
      %matplotlib inline

      import matplotlib.cm as mpl_cm

      import numpy as np

      import os

      import iris
```

*for illustrative purpose only*

- <https://www.turing.ac.uk/research/research-projects/supporting-pangeo-community-driven-platform-big-data-geoscience>
- We utilised the platform to perform collaborative research to explore and tackle global environmental challenges.





# Detecting drought drivers in Indonesian Borneo



By identifying ocean-atmosphere and land-atmosphere causal links leading to low rainfall anomalies, we seek to develop climate risk assessment and resilience building strategies for droughts and peatland fires in Central Kalimantan Province, Indonesian Borneo.

Source of pictures:  
The Guardian (2015)



Project website: [kali-project.com/](http://kali-project.com/)

Poster: [https://jceei.org/wp-content/uploads/TLam\\_Poster\\_EI2021.pdf](https://jceei.org/wp-content/uploads/TLam_Poster_EI2021.pdf)

Work based on [Kretschmer et al. \(2021\) – Quantifying causal pathways of teleconnections. BAMS](#)

Credits to: *Marlene Kretschmer, Samantha Adams, Rachel Prudden, Elena Saggioro, Anna Harper, Rosa Barciela, Peter Challenor*

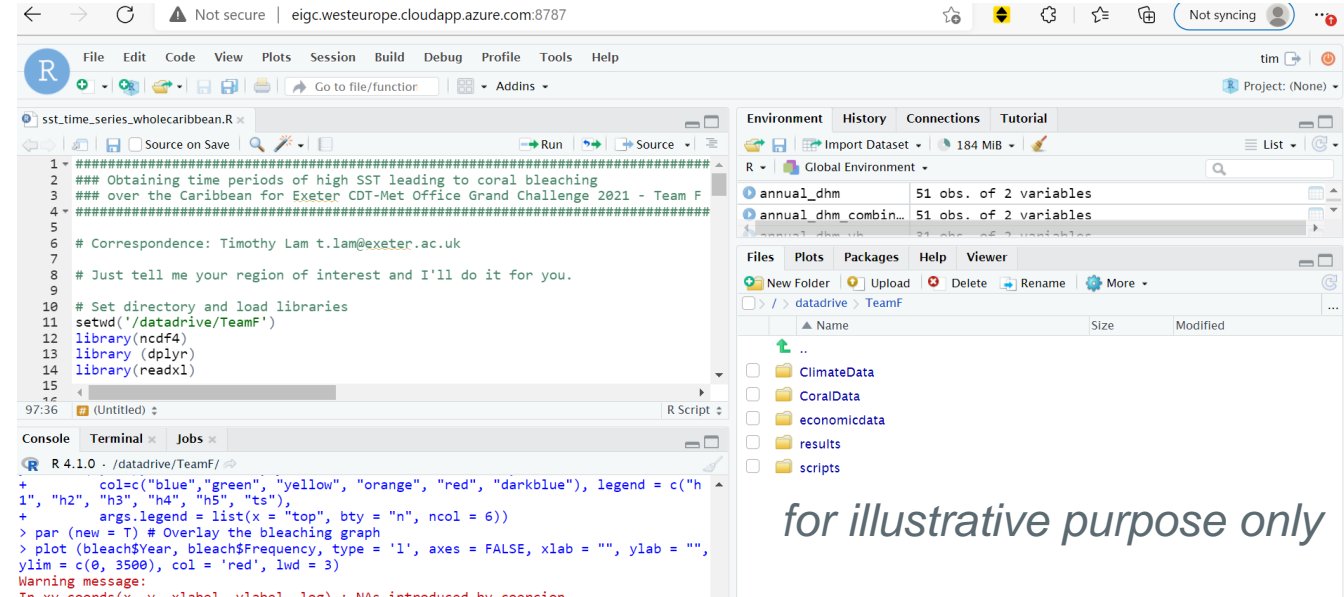
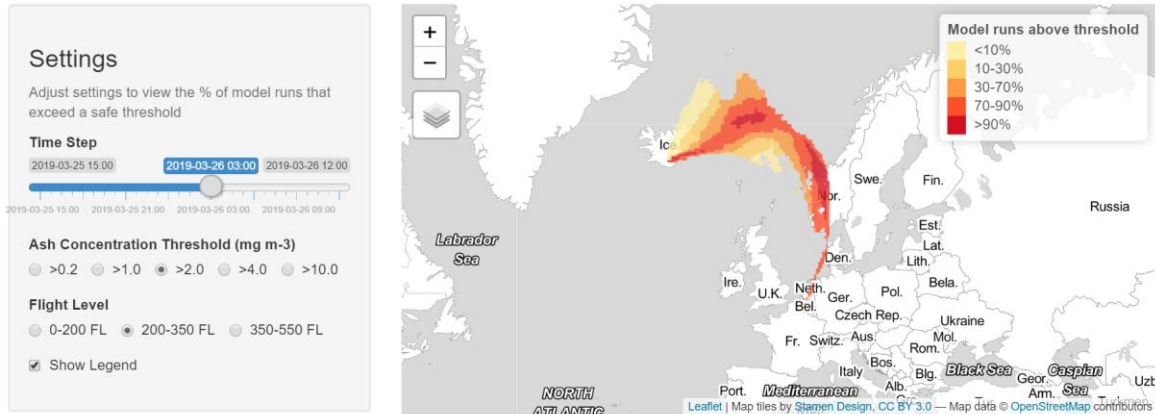


# EICDT Grand Challenges



- Grand Challenge 2020: 4 teams

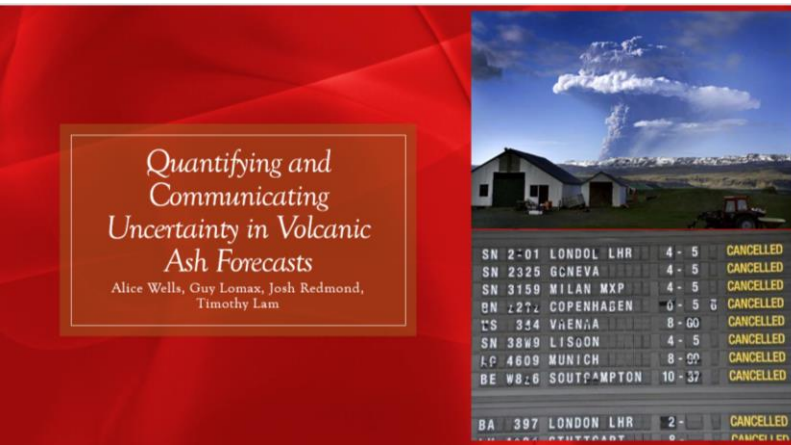
## Probabilistic Forecasts



*for illustrative purpose only*

Credits to:  
*Alice Wells,  
Guy Lomax,  
Josh Redmond*

Other teams worked on COVID-19 lockdown impacts, pollen forecasting and dispersion of radioactive materials following a nuclear accident in Japan.





# Lessons learnt

- The Pangeo project enables interactive, scalable and reproducible research on various environmental challenges across the globe.
- Effectiveness depends on the user-friendliness of software ecosystem, availability of datasets, and durability of the platforms.

# Plans ahead

- Continue to support and improve Pangeo platform on Azure
- Explore possible avenues, e.g. Pangeo on JASMIN  
<https://help.jasmin.ac.uk/article/4797-cluster-as-a-service-pangeo>
- Offer Pangeo Lectures for Environmental Scientists

