

## **Met Office Hackathon: Climate Challenge Ideas – Aon**

Pre-meet: 28<sup>th</sup> April; Hackathon: 4<sup>th</sup> & 5<sup>th</sup> May

### **Real-time event return period**

- For a given peril (e.g. drought, freeze), can we use a combination of forecast and observation data to get an estimation of the return period, using re-analysis and climate data to benchmark that return period? The definition of an event to be defined by Aon using industry standard definitions.
- How will that return period vary on the base period chosen? Can we use global climate model data to create a longer base period?
- How do we communicate uncertainty in the return period and the forecasts, specifically how that uncertainty changes with forecast lead time?
- Geographic scope – UK, Europe or global

### **Drivers of uncertainty in future loss projections**

- In a future climate scenario, what is the bigger driver of change – the change in the hazard or the change in the exposure?
- Using a footprint for a known event, how much does varying the population density affect the loss, compared to varying the footprint parameters?
- Aon will provide freely available gridded exposure data that can be used as a baseline, with the idea of adjusting the intensity, using events from catastrophe models.
- How might exposure change in a warmer climate as habitable zones become uninhabitable and vice versa? Will already risk-prone regions have a more favourable climate, and hence exposure and vulnerability will increase? Can we link changes in exposure to the SSPs?
- Aon will run both baseline and the future scenario exposures through a catastrophe model.
- Suggested reading:
  - Flood risk and adaptation strategies under climate change and urban expansion: A probabilistic analysis using global data, <https://doi.org/10.1016/j.scitotenv.2015.08.068>
  - Integrating Climate and Socioeconomic Pathways to Calculate the Future Cost of Catastrophes, <https://doi.org/10.5194/egusphere-egu2020-3058>

### **Identification of Grey Swan events in Climate Model data**

- How can we use climate models, ensemble members and climate projections to identify events that may not have already been observed?
- How can we develop our view of risk of extreme events using climate models?
- What are the limitations to using climate model data to develop our view of risk?
- Will climate models identify grey swan events, or are they too preconditioned on/constrained by the historical climate? Will they model unobserved but physically possible extreme (catastrophic) events?