Joint EUSTACE and GlobTemperature User Workshop

Lisbon, Portugal, 27 – 29 November 2017

Session: Case studies on extreme events

Questions for Sjoukje Philip:
- What effective resolution do you need?
    Depends on the event we are looking at for attribution.
- How important is timeliness of data?
    In an ideal situation availability of the data 1 day after the event would be good.
- Do you pre-analyse data, so that they have the best knowledge of the current state?
    Yes, but they can't do this for the whole globe as there is a need to validate models.

General discussion:
- J. Remedios noted that there is lots of work to consider about scale and extremes. When we do the analysis, are we changing what we see? Can we put what we have in context? E.g. if we have high resolution data is our gridded observational data close to what we see?
- J. Bessembinder noted that the resolution (and number of stations) needed depends on the environment e.g. topography. Satellite data could have added value in heterogeneous areas and where there are few observational stations available.
- How well can we translate skin temperature to air temperature in e.g. heterogeneous urban areas, e.g. where skin temperatures vary a lot, but air temperatures vary less?
- Isn't there a risk of smoothing extremes with downscaling or homogenization?
- L. Good noted that she hadn't seen much effort yet on using satellite data to inform on inhomogeneities in station data.
- In relation to the attributions of extremes to climate change, there was a question as to whether the probability of extremes with and without global warming had been considered.
    They use different types of models with different climates, and compare all different types of models, as well as the observational data. If the models and observational data all show similar results, than there is more trust in the observational and model data. However, if they don't agree, then it is difficult to draw conclusions about the influence of climate change on an extreme event.
- There was a question whether it was not possible to make clearer statements on climate change than just give changes in probabilities.
    One extreme event cannot be considered caused by climate change, due to the natural variability. Therefore, questions about attribution can only be translated into questions about the change in probabilities and whether there is a clear link with especially the change in temperature.
- Sjoukje Philip noted it was also important to have information about how much of the data came from satellites and how many stations are available at a given time step to judge the quality and resolution of the EUSTACE dataset. For the use in attribution work there needs to be consistency over time. She also mentioned that information on the climatology fraction is useful for her to judge the quality of the data for attribution.

- N. Rayner asked if looking into climatology fractions and exploring a frequency spectrum diagnostic which would give information on what the actual spatial resolution was at a particular point would be a useful diagnostic.

  Yes, but it would also be helpful to have 10 year or so averaged values.

- Does anyone have an idea on how to validate the quality of extreme events in the datasets or what metrics to use to indicate the quality of the extremes in a dataset?

  MetOffice produces HadEX. For EUSTACE, it might be worth producing the same indices as present in HadEX and comparing them. Countries are more willing to share indices than station data (e.g. in ECA&D), so there will be more data to validate against.

  It was noted that metrics should ideally be relevant for the users of the data. E.g. one of the end users at the workshop is a wine producer. For him a valid metric would be number of hours above a specific temperature. In the Portuguese wine industry they see evidence of climate change already (also beneficial changes were observed for port production in some areas of Portugal), the average temperature in the growing season is increasing. Information on the number of days above 35 degrees could still be useful, but doesn't give as much information as the number of hours.

- Would it be useful to check if some extreme events from the past are well represented in the datasets? Would that give more confidence?

  It was agreed this would be useful and if there is good agreement it would give more confidence. It would be good to have examples form different continents.