

## TITAN workshop Sept 11-12 (+13)

**Participants:** 20 + 1 via skype + some maybe (+3 dinner only)

|                    |   |
|--------------------|---|
| Edinburgh          | Andrew Schurer, Gabi Hegerl, Massimo Bollasina, Sabine Undorf, Simon Tett, Tim Cowan; probably not: Kasia Tokarska  |
| External           | Carley Iles, Ed Hawkins, Erich Fischer, Friederike Otto, Holly Titchner, Hugues Goosse, Kevin Cowtan, Lukas Brunner, Luke Harrington, Philip Brohan, Robert Vautard, Stefan Broennimann, Tom Delworth, Wolfgang Mueller |
| External maybe     | Rowan Sutton probably not, <a href="#">Rich Allan?</a>  |
| External via skype | Nick Rayner   |
| Dinner only        | Mike Mineter, Debbie Polson, Lucie Luecke   |

### Agenda - Day 1:

#### Topic 1: observed climate changes since 1800

|       |              |  |
|-------|--------------|--|
| 9:00  | Hegerl:      | workshop introduction; The early 20 <sup>th</sup> century warming  |
| 9:30  | Broennimann: | The volcanic end of the Little Ice Age   |
| 10:00 | Delworth:    | The North Atlantic Oscillation as a driver of multidecadal variability of the Atlantic and Northern Hemisphere climate |
| 10:30 |              | Coffee   |
| 11:00 | Mueller:     | On the early 20 <sup>th</sup> century warming of the North Atlantic  |
| 11:30 | Brohan:      | Improving the weather of the last 200 years  |
| 12:00 | Hawkins:     | Rescuing hourly weather data from Ben Nevis (1883-1904)  |
| 12:30 |              | Discussion (open questions/opportunities on observed changes and their physical relationship)                          |

#### 13:00 Lunch

|       |           |   |
|-------|-----------|---|
| 14:00 | Cowtan    | TBA   |
| 14:30 | Titchner: | TBA (Sea ice data and analysis)                       |
| 15:00 | Goosse:   | Changes in the Southern Ocean during the last century |
| 15:30 |           | Coffee  |

#### Topic 2: Causes of large-scale changes over the 19<sup>th</sup> and 20<sup>th</sup> century

|        |            |   |
|--------|------------|---|
| 16:00  | Schurer    | Calculating the transient climate response using a detection and attribution framework                |
| 16:30  | Iles:      | The contribution of atmospheric circulation to decadal variability in Northern Hemisphere temperature |
| 17:00- | Discussion | open questions on causes of climate change; possible papers   |

18:00

Dinner

## **Agenda - Day 2**

### Topic 3: Regional variability

|       |            |   |
|-------|------------|---|
| 9:00  | Undorf:    | Isolating the impact of anthropogenic aerosol emissions from different source regions |
| 9:30  | Bollasina: | Contrasting the impact of aerosols and GHG on the global monsoon system               |
| 10:00 | Tett:      | Contribution of black carbon to Arctic warming  |
| 10:30 |            | Coffee  |
| 11:00 | Schurer:   | Particle filter runs and reproduced variability                                       |
| 11:30 |            | Discussion: unexplained variability; opportunities                                    |

### Topic 4: extreme events

|       |             |   |
|-------|-------------|---|
| 12:00 | Fischer:    | Understanding and quantifying changes in precipitation extremes in northern mid-latitudes                               |
| 12:30 | Cowan:      | The impact of SSTs and land-surface forcing in driving the 1930s Dust Bowl heat waves                                   |
| 13:00 |             | Lunch   |
| 14:00 | Vautard:    | Attribution of extreme weather events: dynamics, thermodynamics and other processes                                     |
| 14:30 | Harrington: | The 1947 Central Europe heatwave: drivers and probabilistic changes through time using the <u>Weather@Home</u> ensemble |
| 15:00 | Brunner:    | Dependence of present and future European heatwaves and cold spells on the location of atmospheric blocking             |
| 15:30 |             | Coffee  |
| 16:00 |             | Discussion: Open topics and opportunities on extreme events   |
|       |             | Discussion on overall followup: forming groups to discuss forthcoming papers and further collaboration                  |

## **Agenda - Wednesday**

Outing: either walk in the hills, e.g. Eildon Hills; or walk along the coast and boat to Bass Rock. TBD also based on weather. Bring sturdy shoes and rainproof gear