**Minutes of S2S-extremes teleconference**

**Wednesday 22nd February 2017**

Were present: Charles Jones, Joanne Robbins, Frederic Vitart, Laura Ferranti, Hai Lin, Arun Kumar, Yuhei Takaya, Christophe Lavaysse and Brian Golding.

1. The telecon started with a presentation by Joanne Robbins on the Global hazard Map (GHM) at the UK Met Office. The global hazard map aims to summarize the risk of high impact weather events across the globe in the next 7 days using multi-model ensemble forecasts from UKMO and ECMWF. It shows risks of extreme precipitation/wind/snow, tropical cyclones, heat and cold waves. The maps can overlay vulnerability and exposure layers, like for example, population density, to give information on likely impacts. This product is currently an internal product at the UK Met Office but will soon be available to outside partners (password protected). Excess heat factor which is a heat wave index combining the effects of excess heat and heat stress is currently under test and produced only from the ECMWF model. Joanne showed the example of GHM heatwave layer during the Pakistan heat wave in June 2015. The evaluation of heatwave and cold wave prediction showed that there was some over-forecasting in tropical regions and also a rippling heat-wave and cold-wave banding over some regions like the Andes which were due to a mismatch between the topography in ERA Interim topography and in the models. Therefore a mask has been applied in the tropical regions. An evaluation using observations from a heat wave/cold wave impact database has been produced for the time range day 1 to 7. This evaluation shows the percentage of hits as a function of lead time. Future works include continuing producing socio-economic impact databases, extending the verification to false alarm rates and also assessing approaches for including information on vulnerability and exposure associated with heat wave and cold wave events and extending the collaboration with BoM. Joanne concluded with the example of the recent Australian heat wave in February 2017. Brian Golding recommended that WHO and other health agencies could be a useful resource for information on the societal impact of past events. Joanne also mentioned that the GMH which are currently produced only up to day 7 could in principle be extended to the sub-seasonal time range and work is currently ongoing at BoM to produce prediction of heat waves. Finally, a comparison with the Extreme Forecast Index (EFI) is underway and shows that the two products do not always agree.

Link to this presentation:

http://s2sprediction.net/xwiki/bin/download/Main/Extremes/GHM\_HeatwaveColdwave\_S2SExtremesTelecon\_22022017.pdf

1. Frederic Vitart showed some slides on the 2010 Russian heat wave prediction from the S2S models. This heat wave is considered as one of the strongest on record with an estimated 55,000 deaths. This study focused on a specific week, rather than on the life of the heat wave and on 2-metre temperature anomaly prediction. The weekly period chosen was 1-7 August 2010 which was by far the warmest during the event with 2-metre temperature weekly anomalies during this period within the 1 percentile of climatology. The re-forecasts from ECMWF predicted a high probability of an extreme 2-metre temperature weekly anomaly up to 3 weeks in advance. The S2S re-forecasts captured all very well the patterns of the warm anomalies 2 to 3 weeks in advance with at least 5 models (JMA, ECMWF, ECCC, BoM and CNRM) predicting a high probability of an extreme event (within the top 1 percentile) 3 weeks in advance. These results suggest that there was some sub-seasonal predictability in the prediction of the extreme 1-metre temperature anomalies. Christophe Lavaysse mentioned that he did a similar study on the Russian heat Wave but found a predictive skill of about 2 weeks, and that the models predicted well this heat wave only when it was present in the initial conditions. However his study is based on a different set of ECMWF re-forecasts with a lower resolution.

Link to this presentation:

http://s2sprediction.net/xwiki/bin/download/Main/Extremes/Russian\_HW.pdf

1. S2S chapter: the deadline for contribution is still end of March, although this could be extended slightly if needed. A first draft containing inputs from Brian Golding and Frederic Vitart has been circulated to everyone. Joanne’s work on GHM could be an important input for the last section.
2. 2-year plan. There has been a request from the S2S SG to provide an input on the next 2-year plan. Members of the S2S-extreme sub-project are invited to provide their inputs by mid-March.