Creating a global sub-daily precipitation dataset

Elizabeth Lewis, Stephen Blenkinsop, and Hayley Fowler

Newcastle University, Newcastle Upon Tyne, United Kingdom (e.a.lewis@newcastle.ac.uk)

Extremes of precipitation can cause flooding and droughts which can lead to substantial damages to infrastructure and ecosystems and can result in loss of life. It is still uncertain how hydrological extremes will change with global warming as we do not fully understand the processes that cause extreme precipitation under current climate variability. The INTENSE project is using a novel and fully-integrated data-modelling approach to provide a step-change in our understanding of the nature and drivers of global precipitation extremes and change on societally relevant timescales, leading to improved high-resolution climate model representation of extreme rainfall processes. The INTENSE project is in conjunction with the World Climate Research Programme (WCRP)'s Grand Challenge on 'Understanding and Predicting Weather and Climate Extremes' and the Global Water and Energy Exchanges Project (GEWEX) Science questions.

The first step towards achieving this is to construct a new global sub-daily precipitation dataset. Data collection is ongoing and already covers North America, Europe, Asia and Australasia. Comprehensive, open source quality control software is being developed to set a new standard for verifying sub-daily precipitation data and a set of global hydroclimatic indices will be produced based upon stakeholder recommendations. This will provide a unique global data resource on sub-daily precipitation whose derived indices, e.g. monthly/annual maxima, will be freely available to the wider scientific community.