SHAPE update: from Mildura to Nagoya

Andrew Lorrey[1], Steven J. Phipps[2] and Helen Bostock[1]

1 National Institute of Water and Atmospheric Research, New Zealand

2 Climate Change Research Centre and ARC Centre of Excellence for Climate System Science, University of New South Wales, Sydney, Australia

The middle of 2014 saw the beginning of a very active period for the SHAPE (Southern Hemisphere Assessment of PalaeoEnvironments) project.

This activity began with a successful session at the biennial AQUA meeting held in Mildura, Australia from 29 June to 4 July 2014. This conference marked the end of the initial data synthesis stage of SHAPE. One of the main efforts of the project participants was to produce posters summarising the published data that is available for subsequent research focused on sub-regions or key time periods of interest. In total, four of the main SHAPE regions were covered: Australia and the tropics, New Zealand, Antarctica and the Southern Hemisphere oceans. Notable additions to many of the regional data compilations for SHAPE included coverage of Oxygen Isotope Stage 3 (24 to 60 ka), new age models for sedimentary data, and an abundance of cosmogenic radionuclide dates on moraines that have not been produced since INTIMATE-II came to a conclusion. There were a wide variety of presentations in the SHAPE oral session, ranging from development of new hydroclimate proxies to palaeoclimate model interrogation. Of significance, presentations included high-quality work from emerging researchers focusing on Australasia, Antarctica and South America, indicate that the Southern Hemisphere Quaternary research community is healthy and growing.

There were also several presentations related to the SHAPE project goals at the Geoscience Society of NZ annual conference in late November 2014 in New Plymouth, New Zealand. One presentation in particular that was led by Dr. Kat Holt (Massey University) reviewed tephrochronology and tephrostratigraphy of New Zealand for the last 60ka. Many of the tephra are widespread and provide critical marker ties between terrestrial and marine proxy records.

The final activity for this phase of SHAPE took place in Sydney, Australia in February 2015. A two-day training workshop was held for early career researchers, with a primary focus on state-of-the-art tools for climate modelling and palaeoclimate synthesis. The training was delivered by up-and-coming researchers within the SHAPE community, and demonstrated how a wide range of models and techniques are being used to investigate late Quaternary environmental and climate change. From the proxy side, Shaun Eaves covered cosmogenic radionuclide dating and the use of mountain glaciers to reconstruct past climatic change, while Michael-Shawn Fletcher covered the use of radioisotopes, charcoal and pollen to reconstruct past environmental changes. Duncan Ackerley demonstrated climate field reconstructions of geopotential height and other variables using the Past Interpretation of Climate Tool (pict.niwa.co.nz). From the modelling side, Laurie Menviel showed us how to simulate millennial-scale changes using the LOVECLIM model. Steven Phipps also gave some hands-on training in the CSIRO Mk3L climate system model, giving some of the participants their first taste of modelling! Finally, in an inspirational presentation, Stuart Browning demonstrated the potential of data assimilation to bring the data and the modelling together.

The next activity of SHAPE will be a session at the 19th INQUA Congress in Nagoya, Japan. Join us for a full day of talks on Saturday 1 August 2015, and view the accompanying posters. Thus far, more than 45 abstracts have been submitted to the SHAPE session, with presentations covering a range of topics from every geographical region of the Southern Hemisphere. There is clear interest from within the SHAPE community to carry on the large-scale collaboration, and discussions of our future direction will take place in Nagoya. A meeting of everyone who is interested in the SHAPE project will be held during the Congress, and will be advertised closer to the event.