



Improved forecasts using high-resolution modelling

CSSP China is building a body of evidence which demonstrates the added value and benefits of using convective-permitting models (CPMs) for accurately simulating extreme weather. [Li et al \(2018\)](#) shows that CPMs are better able to simulate many characteristics of the East Asian Summer Monsoon compared to regional scale models, including the daily cycle of rainfall across many regions of China.

[Li et al \(2019\)](#) focussed on an event in 2016 where 600mm of rainfall fell over parts of eastern China in just 6 days leading to catastrophic flooding and causing hundreds of deaths and over \$22 billion in damage. This paper demonstrates that CPMs are better able to capture the intensity and pattern of the rainfall associated with the flooding, compared to lower resolution models. However, CPMs are by no means perfect and still have a tendency for overestimating the intensity of the rainfall.

Work currently under review, demonstrates the added value of high resolution over the Tibetan Plateau in summer climate simulations. Currently climate models overestimate the amount of rainfall that falls over the Tibetan Plateau during summer. CPMs significantly reduce this wet bias which suggests they could be useful tools for more reliable climate projections over the Tibetan Plateau.

The collaboration under CSSP China has significantly enhanced the profile of Chinese research in convective-permitting climate modelling. It is noteworthy that the use of convective-scale models for climate modelling was a previously underdeveloped area of research in China. Hence, the collaborations enabled by CSSP China in this area have led directly to new opportunities for future climate research in China.