

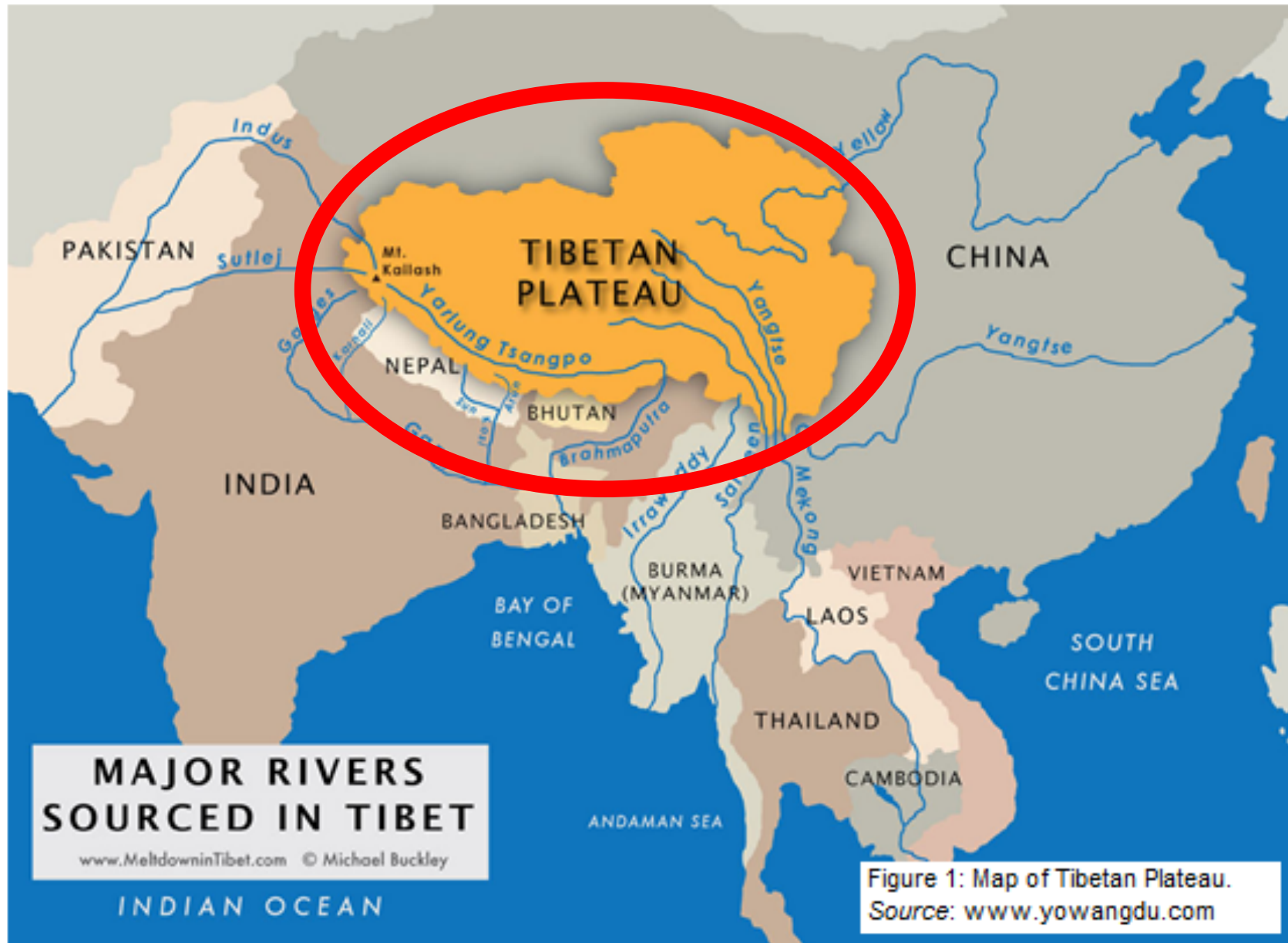
High resolution climate modelling with a focus on mesoscale convective systems and associated precipitation over the Third Pole region

Deliang Chen, PI

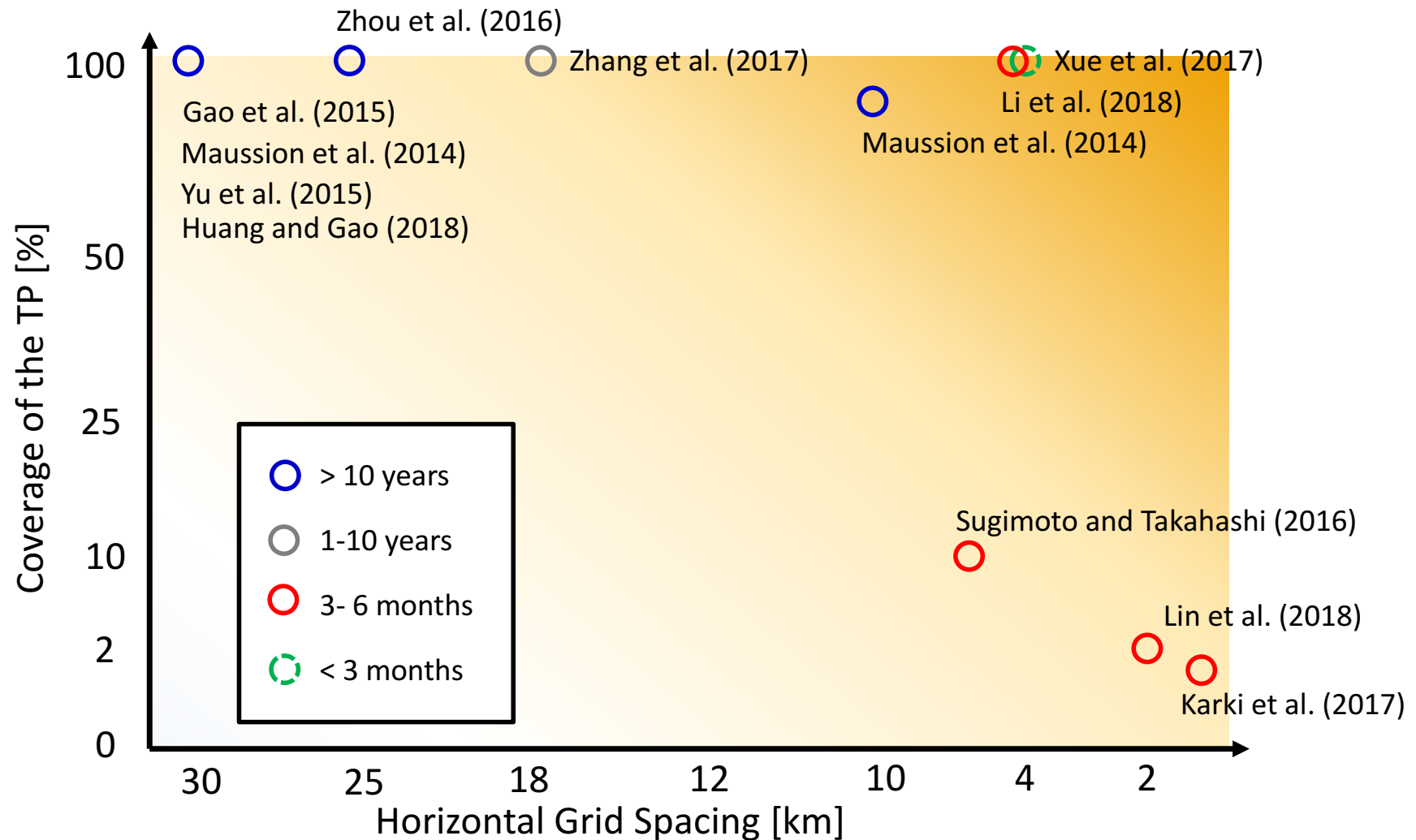
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Tibetan Plateau (Third Pole: TP) and major rivers in Asia



Existing high-resolution regional climate model simulation (partly) covering the TP



Scientific questions

- 1) How different are convection-permitting models compared with models using a coarser resolution with parametrized convection and why?
- 2) What are the added values of convection-permitting models in terms of convection, MCSs and precipitation modeling?
- 3) Can we identify an optimal model and/or model setup to resolve most important features of convection and precipitation variations?
- 4) What physical processes govern the variability of convective precipitation and its contribution to the total precipitation over the TP?

Objectives

- 1) Assess the ability of various RCMs and/or the same RCM with various combinations of model setups (e.g. different combinations of physics schemes and resolutions) in simulating convective and stratiform precipitation over the TP, through an inter-comparison of different models or model setups against in-situ and satellite observations;
- 2) Identify optimal model and/or model setups for realistic modeling of convective processes including MCSs, and associated precipitation over the TP;
- 3) Determine the significance of convective resolving modeling for precipitation;
- 4) Enhance our understanding of physical processes behind the variability of convective precipitation and its contribution to the total precipitation over the TP.

Participants

Lead investigator: Deliang Chen (University of Gothenburg, Sweden)

Country	Name (institution) of participating partners
Austria	Nikolina Ban (University of Innsbruck)
China	Xuejie Gao, Tianjun Zhou, Liwei Zou, and Zhun Guo (Institute of Atmospheric Physics); Yanhong Gao (Fudan University); Shuyu Wang and Jianping Tang (Nanjing University); Kun Yang (Department of Earth System Science, Tsinghua University); Tandong Yao (Institute of Tibetan Plateau Research)
Japan	Shiori Sugimoto (Japan Agency for Marine-Earth Science and Technology)
India	Sanjay Jayanarayanan (Indian Institute of Tropical Meteorology)
Nepal	Madan Lall Shrestha (Nepal Academy of Science and Technology)
Norway	Rasmus Benestad (Norwegian Meteorological Institute); Hans Christian Steen-Larsen (University of Bergen)
Pakistan	Shaukat Ali (Global Change Impact Studies Centre)
Spain	Cesar Azorin-Molina (Spanish National Research Council)
Sweden	Danijel Belusic (Swedish meteorological and hydrological institute)
UK	Julia Curio (University of Reading); Marie Ekström (Cardiff University)
USA	William Gutowski (Iowa State University); L. Ruby Leung (Pacific Northwest National Laboratory); Andreas F. Prein (National Center For Atmospheric Research); Xingcao Chen (Penn State University)