

## **Regional climate projection under the global climate change from perspective of scientific validity and application**

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There is great concern in regional climate change, such as summertime temperature increase and heavy rainfall increase, under the global warming. At the same time, it is important to evaluate adaptation strategy for the future climate change to reduce possible risks by the severe weather event.

The dynamical downscaling method is one of useful tools to estimate regional climate change in the future. The study of future climate projection boils down to the issues how global and regional climate change associated with the increase in the greenhouse gases. The projected climate includes uncertainty due to imperfection of climate models, emission scenarios of greenhouse gases, initial condition, chaotic behavior of atmosphere, and so on. Therefore, the effort to extract significant response is important. My study proposes a new procedure to evaluate the precipitation change due to two mechanisms of climate response to the increase of greenhouse gases. One is the change in climatological atmospheric condition, while the other is the change in perturbation component. The understanding of the regional climate change due to these two mechanisms would lead to deeply understanding the uncertainty in the regional climate projection.