



water

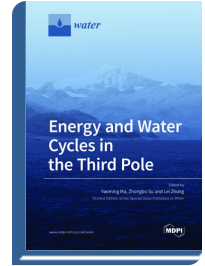


Special Issue Reprint

Energy and Water Cycles in the Third Pole

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As the most prominent and complicated terrain on the globe, the Tibetan Plateau (TP) is often called the “Roof of the World”, “Third Pole” or “Asian Water Tower”. The energy and water cycles in the Third Pole have great impacts on the atmospheric circulation, Asian monsoon system and global climate change. On the other hand, the TP and the surrounding higher elevation area are also experiencing evident and rapid environmental changes under the background of global warming. As the headwater area of major rivers in Asia, the TP’s environmental changes—such as glacial retreat, snow melting, lake expanding and permafrost degradation—pose potential long-term threats to water resources of the local and surrounding regions. To promote quantitative understanding of energy and water cycles of the TP, several field campaigns, including GAME/Tibet, CAMP/Tibet and TORP, have been carried out. A large amount of data have been collected to gain a better understanding of the atmospheric boundary layer structure, turbulent heat fluxes and their coupling with atmospheric circulation and hydrological processes. The focus of this reprint is to present recent advances in quantifying land–atmosphere interactions, the water cycle and its components, energy balance components, climate change and hydrological feedbacks by in situ measurements, remote sensing or numerical modelling approaches in the “Third Pole” region.



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