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Study on the change of the Tibetan Plateau climate system and the mechanism of its impact on eastern Asia

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As the Third Pole of the earth, the Tibet Plateau is an important water source of Asia. The 10 major rivers in China and abroad developed from the Tibet Plateau and provide living and production water for 1/3 of the world's population in East Asia and South Asia. The powerful dynamic and thermal effects of the Tibet Plateau significantly affect the East Asian climate pattern, the process of the Asian monsoon and Northern Hemisphere atmospheric circulation. Global change influences the processes of hydrosphere and cryosphere on the Tibetan Plateau, changes the ecosystem and environment within the plateau, and affects the socio-economic development and living condition of people in the region. In addition to that, through atmospheric circulation and water cycle, global change directly impacts water security and nature disaster protection in East Asia and surrounding nations. In order to study on the change of the Tibetan Plateau climate system and the mechanism of its impact on eastern Asia, one Chinese national research programme was launched in 2010. The background of the programme and the research progresses in the past two years will be introduced. The research progresses are including five parts: the establishment an integrated network platform for the Tibetan Plateau and its surrounding area "water - cryosphere -atmosphere - biology" observation; the study on the relation between the Tibet Plateau land surface–atmosphere interaction and atmospheric circulation anomalies; the study on the interactions among atmosphere, cryosphere, hydrosphere, and biosphere on the Tibetan Plateau feeding back to climate change; the study on the Tibetan Plateau climate system feeding back to East Asian regional climate change and its mechanism; and the study on the Tibetan Plateau ecological and socio-economic systems responding to climate change and adaptations.