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Third Pole Environment (TPE) program: a new base for the study of atmosphere–land interaction over the heterogeneous landscape of the Tibetan Plateau and surrounding areas

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Abstract As a unique geological and geographical unit, the Third Pole area (the Tibetan Plateau and surrounding areas) dramatically impacts the world's environment and especially controls climatic and environmental changes in China, Asia and even in the Northern Hemisphere. Supported by the Chinese Academy of Sciences, various agencies in the People's Republic of China and some international organizations, the Third Pole Environment (TPE) Program is now being implemented. The TPE Program is focusing on the land-surface processes and environment over the plateau and surrounding areas, with an emphasis on atmosphere–land interaction. Firstly, the backgrounds of the TPE establishment and the establishing and monitoring plan and long-term scale of the TPE are introduced. Then the preliminary observational analysis results, such as the characteristics of land surface fluxes partitioning (diurnal variation, inter-monthly variation and inter-annual variation), the structure of the Atmospheric Boundary Layer (ABL), and the parameters of land–atmospheric interaction, are shown in this paper. The regional distribution of surface heat fluxes (net radiation, soil heat flux, sensible heat flux and latent heat flux) and surface heating field derived from satellite remote sensing data and field observations are also described.

Key words Third Pole; TPE; *in situ* and satellite data; atmosphere–land interaction; surface heat fluxes