Supplement of A long-term (2005-2016) dataset of integrated land-atmosphere interaction observations on the Tibetan Plateau

Yaoming Ma^{1,3,4}, Zeyong Hu^{2,3}, Zhipeng Xie^{1,2}, Weiqiang Ma^{1,3}, Binbin Wang¹, Xuelong Chen¹, Maoshan Li⁵, Lei Zhong^{6,7}, Fanglin Sun², Lianglei Gu², Cunbo Han¹, Lang Zhang¹, Xin Liu¹, Zhangwei Ding¹, Genhou Sun⁸, Shujin Wang², Yongjie Wang¹, Zhongyan Wang¹

¹Key Laboratory of Tibetan Environment Changes and Land Surface Processes, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, 100101, China.

² Key Laboratory of Land Surface Process and Climate Change in Cold and Arid Regions, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, Lanzhou, 730000, China.

³ CAS Center for Excellence in Tibetan Plateau Earth Sciences, Beijing, 100101, China.

⁴University of Chinese Academy of Sciences, 100049, Beijing, China.

⁵ School of Atmospheric Sciences, Chengdu University of Information Technology, Chengdu, 610025, China.

⁶ School of Earth and Space Sciences, University of Science and Technology of China, Hefei, 230026, China.

⁷CAS Center for Excellence in Comparative Planetology, USTC, Hefei, 230026, China.

⁸ School of Atmospheric Sciences, Sun Yat-sen University, Guangzhou, 510275, China.

Correspondence to: Yaoming Ma (<u>ymma@itpcas.ac.cn</u>), Zhipeng Xie (<u>zp_xie@itpcas.ac.cn</u>) and Binbin Wang (wangbinbin@itpcas.ac.cn)



Figure S1. The annual data integrity of the gradient meteorological observing elements at different level, with value 100 represent no missing data. WS and WD represent wind speed and direction, respectively, followed by heights of each level with the underline symbol as connection; Ta refers to the air temperature; Relative humidity and water vapor pressure are expressed using RH and Vapor, respectively.



Figure S2. Same as Figure S1, but for the surface radiations. Rsd and Rsu represent the incoming and outcoming solar radiation, respectively; Rld and Rlu refer to the downward and upward longwave radiation. The net radiation is expressed using Rn.



Figure S3. Same as Figure S1, but for the soil hydrothermal observations. Ground temperature is represented by Tg, and the soil temperature and soil water content are expressed with Ts and SWC, respectively; SHF refers to the soil heat flux.



Figure S4. Same to the Figure S1, but for the turbulent flux observations. H represents sensible heat flux and LE represents latent heat flux, and the Co2 flux is expressed with Fc.