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Observation of water and heat fluxes in the Badain Jaran desert, China

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Badain Jaran Desert lie in the northwest of the Alashan plateau in western Inner Mongolia of China, between39o20'N to 41o30'N and 100oE to 104oE. It is the 4th largest desert in the world and the second largest desert in China, with an area of 49000 square kilometers and an altitude between 900 and 1600m above sea level. The desert landscape primarily consists of sparsely vegetated aeolian sand dune fields as a core, surrounded by desert plains, with pediments on the margin. The unique environment leads to a very lack understanding for surface energy partitioning and characteristics of water and energy, which are however very important for investigating the climate and water sources over the region. In addition, water and energy fluxes are the two most important components in land surface process. Climate simulations are especially sensitive to the variations in surface partitioning of available energy into sensible and latent heat fluxes. In order to know the characteristic of water and energy fluxes in Badain Jaran Desert, an observational experiment was conducted during the period of 31 May to 24 July, 2008. Results show that all radiation components changed diurnally and daily, resulting in diurnally and daily variation in net radiation. Sensible heat flux is the main consumer of available energy for the total experimental period due to the lack of water. Soil heat flux is the secondary important components to partition the net radiation, which distributes net radiation to the soil in the form of soil heat flux.