

Surface water on energy exchanges of wetlands

Outline

Since energy exchange affects radiative and temperature regimes, water transport, plant growth, and thus productivity, it is important to understand the magnitudes and patterns of evapotranspiration and heat storage in wetland ecosystems. One distinct character of wetland systems is the waterlogged condition in the upper soil profile during at least part of growth period, and thus it is challenging to understand how groundwater dynamic affects the energy exchange of wetland. A potentially productive approach to exploring the linkage between groundwater dynamic and energy flux patterns is to examine the variation in waterlogged conditions from steady inundation to periodically inundation to sporadic event. In this study, we propose to assess the heat storage or exchange with groundwater from diurnal to daily scale and evaluate the response of energy exchange to groundwater dynamics. The method used to calculate water heat storage term will be modified from Burba et al. (1999) concerning the water table variation. The discrete/continuous approach will be determined based on the data availability of different layers of water table and temperature.

Involved sites

We restrict to wetland sites with real-time data of groundwater levels. We would also cite some grassland sites in the same latitudes for comparisons

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