



Preliminary test of UAV collected vegetation index for estimating Actual Evapotranspiration

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Satellite data has temporally low resolution and sometimes local decision makers should take prompt action to prepare for natural hazard or water resources management. Drought is a reoccurring worldwide natural hazard giving an impact on a variety of aspects and this might be the case when drought is involved with actual evapotranspiration which is calculated with the assistance of satellite data. The procedure for estimating actual evapotranspiration is costly and complicated, and requires the complex field information. Scientists often depend on a simpler model that does not require intensive field measurement. As an alternative this study checks the possibility of utilizing UAV collected vegetation index data on actual evapotranspiration estimation. To do this the normalized difference vegetation index (NDVI) and soil-adjusted vegetation index (SAVI) were collected by UAV. The spatial resolution of hydrologic model rarely matches the spatial scales of the surface vegetation data in need. The UAV collected vegetation data had 1-m spatial resolution and were upscaled to fit the hydrologic model scale firstly to examine how the grid scale of surface vegetation affects the results of actual evapotranspiration. Then the vegetation data collected by UAV were applied to the actual evapotranspiration calculation. The recently developed PT-JPL which is relatively simple and requires five model inputs is selected as the working model. The result shows that the pattern is well reproduced and that UAV based data can be well used for estimating actual evapotranspiration. This study will extend to field measurement of actual evapotranspiration in the near future.

Key words : Actual evapotranspiration, UAV, Drought, Vegetation index

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