



Operational actual wetland evapotranspiration estimation for the Everglades using MODIS imagery

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Wetlands are one of the most important ecosystems with varied functions and structures. Humans have drained wetlands and altered the structure and functions of wetlands for various uses. Wetland restoration efforts require assessment of the level of ecohydrological restoration for the intended functions. Among the various indicators of success in wetland restoration, achieving the desired water level (hydrology) is the most important, faster to achieve and easier to monitor than the establishment of the hydric soils and wetland vegetation. Monitoring wetland hydrology using remote sensing based evapotranspiration (ET) is a useful tool and approach since point measurements for understanding the temporal (before and after restoration) and spatial (impacted and restored) parts of the wetland are not effective for large areas. Evapotranspiration accounts over 80% of the water budget of the wetlands necessitating the need for spatiotemporal monitoring of ET flux. A study employing remotely sensed data from Moderate Resolution Imaging Spectroradiometer (MODIS) and modeling tools was conducted for a weekly spatial estimation of Everglades ET. Weekly surface temperature data were generated from the MODIS thermal band and evaporative fraction was estimated using the simplified surface energy balance (SSEB) approach. Based on the Simple Method, potential ET (PET) was estimated. Actual weekly wetland ET was computed as the (product of the PET and evaporative fraction). The ET product will be useful information for environmental restoration and wetland hydrology managers. The on-going restoration and monitoring work in the Everglades will benefit from this product and assist in evaluating progress and success in the restoration.