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- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

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Review

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- Contents of Issue 10
- Special Issue

Hydrol. Earth Syst. Sci., 13, 1775-1787, 2009  
www.hydrol-earth-syst-sci.net/13/1775/2009/

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## Regional estimation of daily to annual regional evapotranspiration with MODIS data in the Yellow River Delta wetland

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**Abstract.** Evapotranspiration (ET) from the wetland of the Yellow River Delta (YRD) is one of the important components in the water cycle, which represents the water consumption by the plants and evaporation from the water and the non-vegetated surfaces. Reliable estimates of the total evapotranspiration from the wetland is useful information both for understanding the hydrological process and for water management to protect this natural environment. Due to the heterogeneity of the vegetation types and canopy density and of soil water content over the wetland (specifically over the natural reserve areas), it is difficult to estimate the regional evapotranspiration extrapolating measurements or calculations usually done locally for a specific land cover type. Remote sensing can provide observations of land surface conditions with high spatial and temporal resolution and coverage. In this study, a model based on the Energy Balance method was used to calculate daily evapotranspiration (ET) using instantaneous observations of land surface reflectance and temperature from MODIS when the data were available on clouds-free days. A time series analysis algorithm was then applied to generate a time series of daily ET over a year period by filling the gaps in the observation series due to clouds. A detailed vegetation classification map was used to help identifying areas of various wetland vegetation types in the YRD wetland. Such information was also used to improve the parameterizations in the energy balance model to improve the accuracy of ET estimates.

This study showed that spatial variation of ET was significant over the same vegetation class at a given time and over different vegetation types in different seasons in the YRD wetland.

- [Final Revised Paper](#) (PDF, 1849 KB)
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Citation: Jia, L., Xi, G., Liu, S., Huang, C., Yan, Y., and Liu, G.: Regional estimation of daily to annual regional evapotranspiration with MODIS data in the Yellow River Delta wetland, *Hydrol. Earth Syst. Sci.*, 13, 1775-1787,



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