

Home

Online Library HESS

- Recent Final Revised Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

Online Library HESSD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper



- Volumes and Issues
- Contents of Issue 6
- Special Issue

Hydrol. Earth Syst. Sci., 13, 749-758, 2009
www.hydrol-earth-syst-sci.net/13/749/2009/

© Author(s) 2009. This work is distributed under the Creative Commons Attribution 3.0 License.

A Bayesian approach to estimate sensible and latent heat over vegetated land surface

C. van der Tol¹, S. van der Tol², A. Verhoef³, B. Su¹, J. Timmermans¹, C. Houldcroft³, and A. Gieske¹

¹ITC International Institute for Geo-Information Science and Earth Observation Hengelosestraat 99, P. O. Box 6, 7500 AA Enschede, The Netherlands

²Delft University of Technology, Faculty of Electrical Engineering, Mekelweg 4, 2628 CD Delft, The Netherlands

³The University of Reading, Department of Soil Science, School of Human and Environmental Sciences, Reading RG6 6DW, UK

Abstract. Sensible and latent heat fluxes are often calculated from bulk transfer equations combined with the energy balance. For spatial estimates of these fluxes, a combination of remotely sensed and standard meteorological data from weather stations is used. The success of this approach depends on the accuracy of the input data and on the accuracy of two variables in particular: aerodynamic and surface conductance. This paper presents a Bayesian approach to improve estimates of sensible and latent heat fluxes by using a priori estimates of aerodynamic and surface conductance alongside remote measurements of surface temperature. The method is validated for time series of half-hourly measurements in a fully grown maize field, a vineyard and a forest. It is shown that the Bayesian approach yields more accurate estimates of sensible and latent heat flux than traditional methods.

- [Final Revised Paper](#) (PDF, 657 KB)
- [Discussion Paper](#) (HESSD)

Citation: van der Tol, C., van der Tol, S., Verhoef, A., Su, B., Timmermans, J., Houldcroft, C., and Gieske, A.: A Bayesian approach to estimate sensible and latent heat over vegetated land surface, Hydrol. Earth Syst. Sci., 13, 749-758, 2009. [Bibtex](#) [EndNote](#) [Reference Manager](#)



Search HESS

Library Search

Author Search

News

- New Alert Service available
- New Service Charges
- Financial Support for Authors

Recent Papers

01 | HESS, 21 Jul 2009:
The hydrological response of baseflow in fractured mountain areas

02 | HESSD, 21 Jul 2009:
Less rain, more water in ponds: a remote sensing study of the dynamics of surface waters from 1950 to present in pastoral Sahel (Gourma region, Mali)

03 | HESSD, 21 Jul 2009:
Deriving a global river network map at flexible resolutions from a fine-resolution flow direction map with explicit representation of