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# Investigating the performance of a coupled SVAT model/remote sensing method to derive spatially explicit maps of land atmosphere energy fluxes

**G. P. Petropoulos**, M. J. Wooster and N. J. Drake

Department of Geography, King's College London, UK, Strand Campus, WC2R 2LS
(george.petropoulos@kcl.ac.uk / Fax: +442078482287, Phone: +442078482239)

The growth of more sophisticated satellite remote sensing systems, along with the parallel development of soil vegetation atmospheric transfer (SVAT) models, has lead to the development of a diverse array of approaches using data from spaceborne sensors to provide space/time explicit information on the variability of land-atmosphere surface fluxes. One such modelling approach is the so-called 'triangle' method where remote sensing observations of fractional vegetation cover and surface temperature are matched with simulations from a SVAT model parameterised for the test site conditions under investigation. A variation of this approach is being considered for the derivation of soil moisture in the NPP/NPOESS VIIRS land surface product suite, VIIRS being the imaging radiometer that will follow on from the MODIS sensor on EOS Terra and Aqua. Here we present results from a new implementation of this "triangle" method, using remote sensing data from ASTER imaging radiometer onboard the EOS Terra satellite. The study represents the first comprehensive evaluation of the performance of this particular methodological implementation, and is evaluated against in situ data originating from the CARBOEUROPE flux measurement network. Analysis is focused on the statistical comparisons of key surface energy balance parameters, primarily net radiation, latent and sensible heat fluxes and air temperature. The SVAT model shows a reasonable ability to reproduce the trends and magnitudes of the fluxes measured by the flux measurement network, most notably on days showing moderate diurnal variations in energy flux magnitudes. Point by point comparisons between the model-derived fluxes and those measured by the flux tower network showed standard errors of a magnitude comparable with that obtained in prior experiments based on high spatial resolution airborne imagery.