Atmos. Chem. Phys. Discuss., 10, C5559–C5560, 2010
www.atmos-chem-phys-discuss.net/10/C5559/2010/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Components of near-surface energy balance derived from satellite soundings – Part 2: Latent heat flux" *by* K. Mallick et al.

Anonymous Referee #2

Received and published: 20 July 2010

Background

It is stated that a new methods is introduced for estimating latent heat flux at global scale. Used is information on net available energy as estimated in a companion paper (acp-2010-224). The methodology used is based on the Bowen ratio formulation using information on air temperature and vapour pressure from the Atmospheric Infrared Sounder. The surface latent heat flux is derived at 1° resolution and evaluated against data from tower flux sites. Monthly averages at 13:30 pm for 2003 revealed a relatively good agreement between the satellite and tower measurements of latent heat flux. It is claimed that the results show promise under warm moist conditions, but weaknesses

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under arid or semi-arid conditions.

Comments

It is claimed that a new method is introduced to estimate latent heat flux at global scale. The Bowen Ratio concept has been around since 1926 and as such, is not new. It has been used by various investigators both over land and oceans (due to its simplicity) utilizing information on temperature and humidity from a variety of sources. AIRS information is more current and available at global scale; yet, using it does not make the approach new. Moreover, only one observation per day from AIRS is used which raises questions about the daily values and also bias towards clear sky conditions. In the age of ongoing sophisticated land/atmosphere modeling efforts, the approach exercised in this paper seems to be far behind the state of the art, ignoring the complexity of various surface types, limitations of soil moisture, stability effects, to name just few. I have a difficulty to see a new contribution to the advancement of our knowledge on this topic.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 14417, 2010.