Geophysical Research Abstracts
Vol. 15, EGU2013-13449, 2013
EGU General Assembly 2013

Benchmark products for land evapotranspiration: LandFlux-EVAL multi-dataset synthesis

Brigitte Mueller, Martin Hirschi, Sonia Seneviratne, and the LandFlux-EVAL Team
ETH Zurich, Institute for Atmospheric and Climate Science, UWIS, Switzerland

Land evapotranspiration (ET) estimates are available from several global datasets. We have merged a total of 40 individual datasets over the time periods 1989-1995 and 14 datasets over 1989-2005 and present here the resulting monthly global land ET synthesis products. In the individual datasets, ET is derived from satellite and/or in-situ observations (diagnostic datasets) or calculated via land-surface models (LSMs) driven with observations-based forcing and atmospheric reanalyses. Statistics (such as median, mean, interquartile ranges etc.) for four merged synthesis products are provided, one including all datasets and three including only datasets from one category each (diagnostic, LSMs, and reanalyses). The multi-annual variations of ET in the merged synthesis products display realistic responses. They are also consistent with previous findings of a global increase in ET between 1989 and 1997 (1.15 mm/yr^2 in our merged product based on all 14 estimates) followed by a decrease in this trend (-1.40 mm/yr^2), although these trends are small compared to the uncertainty of absolute ET values. The global mean ET from the merged synthesis products (based on all datasets) is 1.35 mm per day for both the 1989-1995 and 1989-2005 products, which is relatively low compared to previously published estimates. We estimate global runoff (precipitation minus ET) to 34'406 km^3 per year for a total land area of 130'922 km^2. The here presented monthly ET data (merged synthesis products) are useful for model validation and climate research in general.