Geophysical Research Abstracts
Vol. 13, EGU2011-3780, 2011
EGU General Assembly 2011

A South America Land Surface Hydrological Reanalisys

Luis Gustavo de Goncalves and Joao Gerd Zell de Mattos

Center for Weather Forecast and Climate Studies(CPTEC),National Institute for Space Research(INPE),Cachoeira Paulista, Brazil (gustavo.goncalves@cptec.inpe.br/+55 12 31012835)

Land surface states are among the most important variables that define the memory for climate systems. In the same fashion reservoirs of momentum and heat in the oceans drive seasonal to climate predictions, surface variables such as soil moisture also play an important role. While many initiatives look towards understanding land surface-atmosphere interactions for improving weather and climate prediction in data-rich regions of the world such as Europe and North America, South America is still in need of more attention due to the lack of proper land surface observations network. Thus, the goal of this work is to produce a long-term land surface retrospective "reanalysis" (specifically from 1948-2006) over South America with the goal to produce a continuous and homogeneous time series of land surface states. The Noah Land Surface Model (LSM) is forced by Climatology Research Unit (CRU) derived atmospheric variables named air temperature, air humidity, wind speed, surface pressure, shortwave and longwave downward radiation and precipitation at 1/10 of degree spatial resolution and every 3 hours. The forcing datasets are adjusted for terrain height and soil, vegetation and orography parameters are derived from high resolution datasets. A total of 25 output variables are generated including those related to water and energy balance and the results discussed in this work include the historical evolution of soil moisture over the entire continent and the analysis of some of the main drought events in the past 50 years. This work provides important information that can be used for modeling studies over South America, including initialization for seasonal forecast, land surface-atmosphere interactions and model predictability.