

EGU2020-9612

<https://doi.org/10.5194/egusphere-egu2020-9612>

EGU General Assembly 2020

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## Revealing the impact of deforestation on hydrology using remote sensing and land surface modeling

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This study aims at better understanding the impact of deforestation on the local hydrology over the Argentinian Chaco, using land surface modeling and remote sensing data. The Chaco is an ecoregion characterized by unprecedented deforestation since the 1980s, mainly for cattle ranging and soybean production. More specifically, default climatological vegetation parameters (LAI, GVF) and static land cover in state-of-the-art land surface models (LSM), grouped within the NASA Land Information System (LIS), are updated using satellite-based dynamic vegetation parameters and yearly land use maps to feed the models with deforestation.

The presentation will show a spatio-temporal analysis of long-term water budget simulations using a range of LSMs (Noah, CLM, CLSM) in which dynamically updated vegetation and land cover parameters are included. Our simulations indicate that different LSMs result in a different partitioning of the total water budget, but all indicate an increase in soil moisture and percolation over the deforested areas. Model output is evaluated using in situ soil moisture data, and various soil moisture retrieval products from SMOS (operational Level 2 and SMOS-IC) and SMAP (operational Level 2) and evapotranspiration data from GLEAM.