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Understanding the interannual variability of hydrological processes in forest dominated landscape in SW France: Integrating RS data, modeling and observations

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Terrestrial ecosystems exhibit large spatio-temporal variability in the manner in which mass and energy are cycled across the soil-plant-atmospheric continuum. This can be attributed to their large spatial n/r temporal variability in biophysical, edaphic, and hydroclimatic characteristics of a landscape. Natural disturbances and man-induced management factors render additional controls. The Landes de Gascogne (LDG) region is one of the largest forested landscapes in France. Unlike many other forest ecosystems in the world, this region mostly consists of managed forest stands with some portions used for crop husbandry, mainly maize. The Leyre watershed that dominates the LDG flows to the Bassin d'Arcachon, a lagoon fed with substantial volume freshwater inflow by the Leyre River. The interannual variability in hydrological processes is seminal to the regional biogeochemical cycling both in the watershed as well as the lagoon. It is hence pertinent to understand the components of the local hydrological cycle and analyse their interannual variability that affects the nature of the water balance. In this spirit, we analyse the interannual variability in 1) Evapotranspiration using the satellite-derived (MODIS12A product) and eddy-covariance-based approaches, 2) Precipitation from the SAFRAN-a high resolution reanalysis product produced by MeteoFrance, 3) Runoff measured at the Leyre River outlet and 4) Water Table dynamics observed at various locations in the LDG. We present a synthesis of the integrated use of RS data, reanalysis product, a spatially-explicit ecohydrological model and measurements to explain the interannual variability and ecohydrological complexity in this landscape in the LDG.

Biography

Ajit Govind is a Senior Research Scientist working at the French National Agricultural Research Institute. His research interests are geared towards better understanding the terrestrial biogeochemical processes (especially the C Water and N cycles) using the tandem use of remotely sensed data, ground-based biophysical observations and modeling approaches. Before INRA, he worked in the Canadian Carbon Program, the US-AmeriFlux network and in India.

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