The hydroclimate–vegetation relationship in the southwestern Amazon during the last 20 years: an analysis focused on the southwestern region

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The southwestern Andean-Amazon basin

- Elevation: 100 – 4000 meters
- Region of high spatio–temporal variability in rainfall regimes
- Significant changes in land cover during the last years
- Forest fires, agriculture, deforestation, etc
- The hydroclimate-vegetation relationship is not clear
- Amazon forests are energy-limited or water-limited?
- What happens during years of extreme droughts?
Seasonality in rainfall and vegetation

- WSE: wet season end
- WSO: wet season onset
- PDS: precipitation dry season
- EOS: end of growing season
- SOS: start of growing season
- VDS: vegetation dry season

Significant correlation
The rainfall and vegetation during the dry season

- 2007, 2010 and 2011: years of extreme drought
- Vegetation depends mainly on water availability, particularly during the vegetation dry season (VDS)

Vegetation seasonality in the land cover types

- 62% Evergreen forest
- 20% Savannas

Differences in the Vegetation Dry Season (VDS)
The relationship by land cover types

- **Water–limited** during dry season (VDS)
- **Energy–limited** during wet season
- The vegetation varies from energy– to water–limited throughout the year
Vegetation is more dependent on the availability of water in the soil during the Vegetation Dry Season (Water-limited)

TWS is a better indicator of NDVI variability in evergreen forests
Role of land-cover change in the rainfall–NDVI relationships

Specific areas do not show significant hydroclimatic-NDVI correlations during the dry season:

- Very wet conditions during most of the year
- Recent deforested areas: break the natural response the hydroclimate-vegetation system
This presentation is a summary of the article "On the Hydroclimate-Vegetation Relationship in the Southwestern Amazon During the 2000–2019 Period"