Lund-Potsdam-Jena managed Land Historical

The model LPJmL ('Lund-Potsdam-Jena managed Land') is designed to simulate vegetation composition and distribution as well as stocks and land-atmosphere exchange flows of carbon, nitrogen, and water, for both natural and agricultural ecosystems. Using a combination of plant physiological relations, generalized empirically established functions and plant trait parameters, it simulates processes such as photosynthesis, plant growth, maintenance and regeneration losses, fire disturbance, soil moisture, runoff, evapotranspiration, irrigation and vegetation structure. LPJmL is currently the only DGVM that has dynamic land use fully incorporated at the global scale. The specific setup used here combines LPJmL 5.1 with historical weather data from NASA Power, dynamic historical land use patterns derived from LUH2 v2h, and dynamic historical nitrogen application rates derived from LUH v2h and Zhang et al. 2017. Changes in yields between years may be caused by changes in all three factors: weather, nitrogen application rates, and land use patterns.

* Model ID: lpjml\_historic
* Model Maintainer: Bernhard Schauberger, schauber@pik-potsdam.de
* Model Category: Agriculture

# Outputs

**production:**

* Description: Harvested weight at harvest (kg dry matter/ha)
* Units: kg [dm]/ha

# Parameters

**precipitation:**

* Description: below average, average, or above average rainfall
* Type: ChoiceParameter
* Choices: below average, average, above average
* Default: average

**temperature:**

* Description: below average, average, or above average temperature
* Type: ChoiceParameter
* Choices: below average, average, above average
* Default: average

**crop:**

* Description: crop of interest
* Type: ChoiceParameter
* Choices: Wheat, Rice, Maize, Millet, Pulses, Sugar beet, Cassava, Sunflower, Soybean, Groundnuts, Rapeseed, Sugarcane
* Default: Wheat

**management\_practice:**

* Description: irrigation type (either rainfed or irrigated)
* Type: ChoiceParameter
* Choices: rainfed, irrigated
* Default: rainfed