

CEOP HYDROLOGY REFERENCE SITES: Igarapê Asu, Central Amazonia (drainage area ~4.7 km²)

Site summary: The Asu catchment is located at approximated 40 km NNW of Manaus, at 3° 08S, 60° 07 W (Figure 1). The catchment, with a drainage area of a 6.37 km², collects the discharge of five first order streams, encompassing the most common landscape forms that occur in the region. The regional basal geology are Precambrian cristaline rocks. The plateaus are usually gentle, generally flat, with altitude varying between 90 to 120 m. The plateaus are surrounded by broad flat valleys at an altitude ranging from 45-55 m, which are periodically flooded during the wet season. Vegetation at the Asu Catchment is a dense humid evergreen tropical forest, with marked spatial variability depending on the position on the landscape. The canopy height of this forest types varies between 12 to 15 m. Over the slopes, where the “podzólicos” occur, the forest is classified as “Mata arenicola”, with canopy height up to 25 m. The tree density is high, about 2500 trees with diameter greater than 5 cm. The climate of the region is Af according to Koppen classification, with average annual temperature of 26C (minimum 19C and maximum 39C). Annual rainfall varies from 1800 to 2800 mm, with a rainy season going from December to May. In March and April, the monthly rain exceeds, on average, 300 mm.

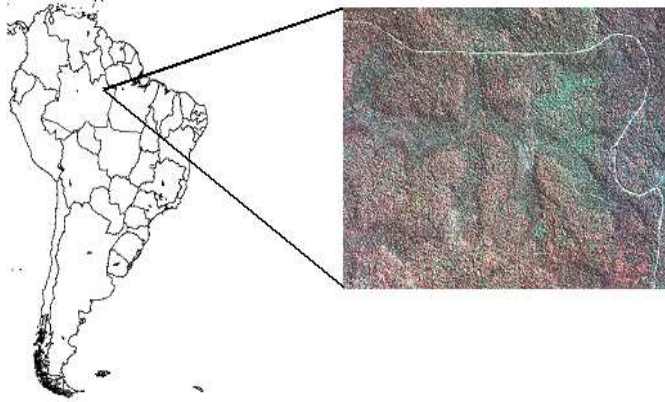


Figure 1: location of the Asu catchment in central Amazonia

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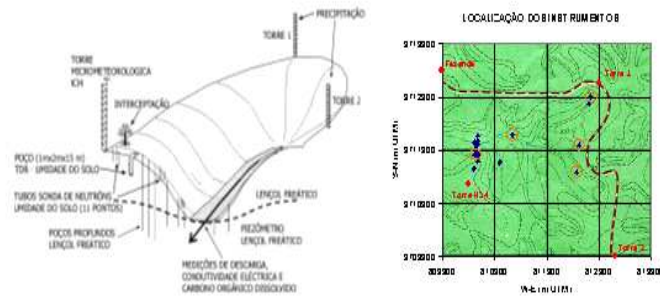


Figure 2. Observation network. Red circles indicate raingauge locations, open red circles indicate groundwater monitoring access tubes; blue points indicate neutron probe access tubes.

Data Summary:

Drainage area to outlet: 6.37 km²

Basin outlet latitude-longitude: 2° 36' 6.8" S, 60° 12' 26.7" W

Stream gauge/water level recorder period of record: December 2001 to present (half-hourly).

Precipitation gauges: Apart from the fluxtower raingauge, rainfall is monitored at four locations: 2° 36' 32.68" S; 60° 11' 8.42" W; 2° 37' 45.36" S, 60° 10' 51.93" W; 2° 35' 19.17" S; -60° 13' 17.63" W; and 2° 35' 32.58" S; 60° 12' 51.13" W. Rainfall is recorded on half an hour interval,

and records began in February, 2002. The record has several interruptions due to rain gauges malfunctions.

Water level gages: About 13 dipwells are used to monitoring the water table, most of which are located on the hydrological transect, with four located on the headwater of first order streams. Weekly manual readings are taken at most locations (although a few have recording devices which record on half-hour intervals).

Micrometeorological data (LBA tower): Downward and upward shortwave and longwave radiation, air temperature, relative humidity, pressure, wind speed and direction, and precipitation are measured at the LBA flux tower, located near the center of the catchment (2° 36' 32.68" S; 60° 12' 31.56" S). These data are recorded at half-hour intervals, period of record July 1999 to date..

Turbulent flux measurements: An eddy correlation system (IRGA Licor 6262 closed path) consisting of latent, sensible, and CO₂ flux is collocated with the LBA micrometeorological tower. The three turbulent fluxes are sampled at 10Hz frequency; fluxes are calculated and stored at half-hour minutes intervals, with period of record July 1999 to present.

Soil moisture: Soil moisture is measured on a weekly basis along a hydrological transect. Nine neutron probe access tubes, with depths varying between 5 m on the plateau to 1.5 m on the valley bottom, have been installed on a characteristic slope.

Other measurements: Soil heat flux is observed at the micromet/eddy correlation tower.

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