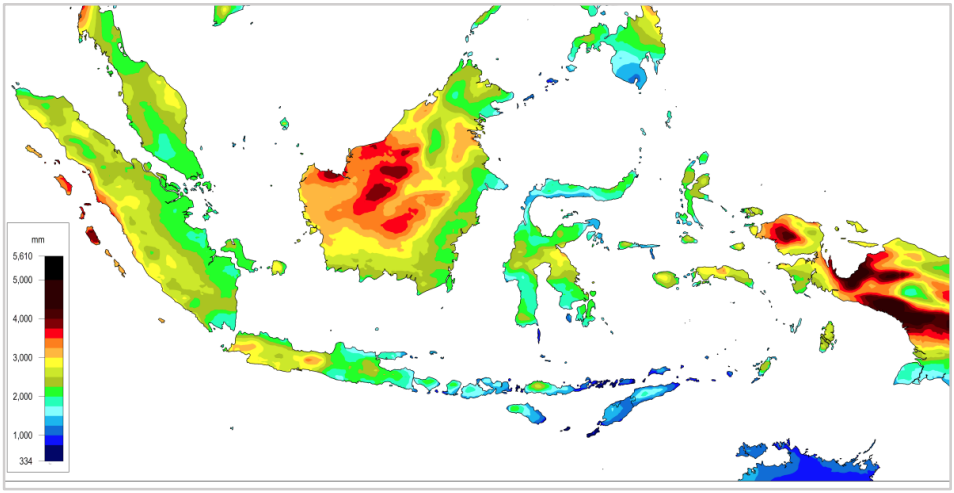
GLOBAL PRECIPITATION MEASUREMENT MISSION APPLICATIONS

Energy Infrastructure and Management

In many areas, energy infrastructure assets, such as power plants and electric grids, can suffer damage or disruption in service due to a variety of climate-related impacts like extreme precipitation, high temperatures, drought, and rising sea levels. For example, warmer temperatures and little rainfall can cause changes in peak streamflow conditions that affect hydropower generation. Heavy precipitation events and flooding can impact a region's energy infrastructure, including electric grid equipment, which has cascading effects on freshwater supplies and emergency services. The Energy Infrastructure and Management applications area promotes the use of GPM satellite precipitation data for key decisions or analyses within the energy sector. This includes the use of climatology data in the prediction of energy demand, development, harvesting, and production of non/renewable energy resources, and load forecasting.

Credit: USAID

CASE STUDY: Driving Hydropower Generation in Indonesia



Average annual rainfall in Indonesia, 2014 – 2017, shown with GPM IMERG data (INDONESIA HYDRO™ CONSULT)

Availability of water flow is an important factor in the planning and development of a hydropower plant to estimate its potential capacity and energy production. To determine flow availability, hydrological modeling is carried out, which relies on multiple inputs including rainfall, discharge, ground slope, vegetation, and evapotranspiration. INDONESIA HYDRO™ CONSULT is using NASA's TRMM and GPM IMERG precipitation data as a variable in the development of hydropower plants throughout Indonesia and it surroundings where rivers are either ungauged or quality of records from the gauging stations are unreliable.

Kincang Hydropower Project in Indonesia was undertaken by INDONESIA HYDRO™ CONSULT to assess water flow for hydropower production.

Have Ideas? Get Involved!
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