

## **Hydrology of *el Gran Lago de Nicaragua* and *el Río San Juan*: Potential Impact Area of the Proposed Nicaragua Canal**

The United States proposed the construction of an inter-ocean canal in Nicaragua throughout the 1800s but eventually built the canal in Panama. Four months after the Panama Canal's centenary, the Chinese firm Hong Kong Nicaragua Canal Development Investment Company (HKND) broke ground on the proposed USD \$50 billion Nicaragua Grand Canal project on December 22, 2014. The project responds to trends of increasing growth of Asia-U.S. East Coast trade, increasing shipping volumes beyond the capacity of an expanded Panama Canal, and decreasing transportation costs.

The Nicaragua Grand Canal will stretch 276 kilometers (171.2 miles), reach a depth of 28 meters (91.9 feet), and span a width of 83 meters (272 feet) upon completion. The canal will pass through Lake Nicaragua five kilometers south of Ometepe Island, an area of volcanic and seismic activity. Though the canal is designed to have no net use of Lake Nicaragua's freshwater supply, 715 million m<sup>3</sup> freshwater dredging will occur in the lake to allow for the necessary canal depth in the lakebed. The Association for Tropical Biology and Conservation, the International Union for Conservation of Nature, and the Humboldt Center of Nicaragua have warned against negative impacts to wildlife and freshwater supply from the Lake due to construction activities.

The purpose of this project will be to study the hydrology of the area surround Lake Nicaragua, especially the San Juan River, to outline the potential impact area if the canal's construction activities negatively affect the quality of the water in the lake. The drainage basin of Lake Nicaragua (highlight in yellow) covers 41,214 km<sup>2</sup>, stretching from Nicaragua to Costa Rica. Available data sets for Central America from Data Basin and HydroSHED for analysis include nested watersheds, global annual precipitation, drainage basins, river networks, drainage directions, and precipitation changes predictions. This hydrological information combined with population, consumption, and allocation information from the six departments in the San Juan River basin will provide the scale of effect the canal could have on the region.

