



Smithsonian Tropical Research Institute

THE PANAMA CANAL AND THE SMITHSONIAN TROPICAL RESEARCH INSTITUTE

AN OVERVIEW

- **The Panama Canal, a crucial channel for world commerce:** 68 percent of the cargo going to and from the United States passes through the Panama Canal. The Canal, which shortens the trip from New York to San Francisco by 5,200 miles (8,370 km), is operating close to maximum capacity.
- **New development plans:** In October 2006, a national referendum held in Panama supported plans to widen the Canal to accommodate the world's biggest ships, at an estimated cost to the country of US\$5.25 billion. Currently the Panama Canal transits more than 275 million metric tons of cargo each year, and each ship transit requires 200,000 cubic meters of fresh water generated by the surrounding Watershed. Since the amplified Canal will host the world's largest ships and greater numbers of transits, accurate management and forecasting of water availability will be critical to shippers and insurers.
- **The need for scientific evidence:** Even the scientific community is yet to understand the role of forests in regulating the quality and quantity of water flows in the tropics and the potential impact of deforestation. A debate rages between hydrologists, who point out that tropical trees pump 50kg of water or more out of the ground into the atmosphere each day thereby depleting watersheds and others, who propose that forested land acts as a sponge, holding groundwater during dry periods. There is currently insufficient experimental data from tropical ecosystems to support either claim.
- **Climate change and the impact on tropical forests:** Global atmospheric carbon dioxide has not reached current levels in the past 800,000 years, according to data from Antarctic ice cores and measurements taken at the Mauna Loa observatory in Hawaii. We do not know exactly how tropical forests can change as a result and we need to better understand the role tropical forests play in carbon storage.
- **CTFS conducting research in the Canal Watershed:** In 1923 the first biological reserve and research stations were established on Barro Colorado Island, the largest island in Gatun Lake, the fresh water reservoir upon which Panama Canal operations depend. This is the best-studied piece of tropical forest in the world and it will be the first testing ground where CTFS experiments will evaluate the effects of land cover on water quality and availability, carbon storage and biological diversity.
- **The relevance of tropical forest diversity:** Some three million tropical trees representing approximately 8,000 species are now under study. HSBC's funding will help to increase the number of species studied so that tropical forest diversity can be monitored and its relevance to climate change assessed.