



## The state of American lakes and lagoons

Sensing the Americas' Freshwater Ecosystem Risk (SAFER) from climate change

Budget: US\$ 902,100

Main agency: Argentine Institute of Oceanography.

PI: Gerardo M. E. Perillo

Countries: Argentina, Canada, Chile, Colombia, United States and Uruguay



<https://www.facebook.com/SAFER.IAI/>

### Abstract:

*A project developed by an interdisciplinary group of natural and social scientists that studies the state of river basins, lakes and lagoons on the American continent has delivered advice and guidance on the management of these bodies of water to aid policymaking, and has generated awareness among other groups, such as children and young people.*

Because they want children to value water, two researchers from different countries, supported by the Inter-American Institute for Global Change Research (IAI), asked their daughters to write a novel for high school students and a story for younger children. The first one, *Water thieves*, tells of the adventures of two sisters who steal water to survive, after bacteria contaminated all the fresh water of South America. Their adventures take them into the past where they must escape the bacteria. The second one, *The pink brush*, recounts the search of little Alejandra for her lost brush, found by another girl, Luisa, pressed between the algae of a big wetland. Luisa's determination to find Ale, and the support of her sister to succeed, conclude in a rich conversation between the two families about the value of preserving precious water.

The messages of the two publications also reached decision-makers and inhabitants of the towns and villages surrounding the lakes and lagoons that were studied.

How are lakes and their basins related to the settlers who use them? The La Salada lake and Senguer river in Argentina; lakes Muskoka in Canada and La Paloma in Chile; the big swamp of Santa Marta in Colombia; San Joaquin River in the United States, and Rocha lagoon in Uruguay, were the guinea pigs in a study on the effects of climate variability and anthropic activities. Global changes and human activities lead to floods or droughts, damage flora and fauna, increase pollution and acidify waters, promote the arrival of invasive species and, in general, destroy the original ecosystem. They affect what scientists call “ecosystem services”, which are benefits offered to communities by nature such as fishing, water consumption or tourism.

What do these water bodies “feel” when they are affected by climate or human action? This was the question that the team from the project *Sensing the America's Freshwater Ecosystem Risk (SAFER) from climate change*, supported by IAI, studied for six years.

Using new scientific methods, researchers took samples, measured and calculated the state of each basin. Through social methods, anthropologists, economists and sociologists involved the users as well as the decision makers of the populations to help them understand the situation and generate solutions.

The inclusion of paleolimnologists who studied historical changes in the evolution of the environments helped “set the thresholds and the resilience pattern of each hydrological system”, according to oceanographer Gerardo Perillo, the main researcher of the project. He helped to show how these environments have changed over time and how they have responded to natural pressures, such as rising sea levels.

The results? The studies in the six countries supported decision-making based on scientific evidence, designing management strategies and mitigation policies for each particular case which were “technically and economically feasible, as well as culturally acceptable”, according to the project website.

The case of La Salada lagoon, a tourist attraction, is symbolic, according to Perillo. “We took samples and saw that it had pollution problems,” he says. “And with them we worked on the idea of establishing green filters in the lagoon.”

The novel and the story have reached children and young people, there are almost 120 scientific publications, and the advice to decision makers is relatively frequent.