

**HYDROGEOCHEMISTRY AND SEDIMENT GEOCHEMISTRY OF CHILIKA LAKE, INDIA:
ASSESSMENT OF ANTHROPOGENIC IMPACTS ON THE BIOGEOCHEMISTRY OF THIS
LAGOON**

Contact persons

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Context

Chilika Lake is the biggest lagoon on the Asian continent situated on the East coast of India. It is considered a natural heritage site as it has a unique biodiversity, represents an important wintering site for migrating birds but is also important for the local fish and shrimp industry. Its size fluctuates within the course of a year, with a maximum area of 1,165 km² during the monsoon season and a minimum of 906 km² during the dry season. Freshwater runoff from the drainage basin, combined strong evaporative effects but also possible mixing with open ocean waters, result in a wide range of fresh, brackish and saline water environments within the lagoon that supports an exceptionally productive ecosystem (*Ghosh, 2005*). Results from two previous sampling campaigns conducted in collaboration with the Chilika Development Authority (CDA) have shed some light on water dynamics and the biogeochemical cycle. These campaigns covered two of the normally three recognized seasons in this region: the monsoon season as well as the dry season. However, the summer season (May to July) is still outstanding.

Objectives and Methods

In order to characterize and evaluate the impacts of the relatively fast changes in environmental conditions on the biogeochemistry and ecology of this lagoon, it is necessary to complement existing data with new data of the last season not yet covered. In addition, this will allow for a longer term evaluation of changes in the environmental conditions and the increasing anthropogenic pressures on this sensitive environment. A sampling campaign during June/July is hence planned in order to sample waters from the three different catchments to the lagoon, as well as riverine and lagoon sediments within the routine sampling sites distributed over the entire lagoon. The study will be based on a geochemical and isotopic approach that aims at unravelling the hydrodynamics, biogeochemistry, and nutrient cycling in the lagoon and the importance of mixing with the adjacent seawater that connects to the sea with a man-made canal.

Literature

Ghosh KA and Pattnaik AK. Chilika lagoon: experience and lessons learned in brief. http://www.iwlearn.net/publications/II/chilikalagoon_2005.pdf.
Khandelwal A. et al. Vegetation history and sea level variations during the last glacial 13,500 years inferred from pollen record at Chilika Lake, Orissa, India *Veget Hist Archaeobot*, 17, 335-344 (2008).



Site WEB

www.chilika.com

www.unil.ch/idyst/en/home/menuinst/lab-facilities/stable-isotope-laboratory.html

Choice of orientation

Geochemistry, Isotopes, Carbon-Nitrogen-Phosphate cycles, Water cycle, Sedimentology