

## Tropical wetlands - problems and potentials as paleo-monsoon archives - "Thailand Monsoon Project"

Akkaneewut Chabangborn<sup>1</sup>, Sakonvan Chawchai<sup>1</sup>, Sherilyn Fritz<sup>2</sup>, Ludvig Löwemark<sup>3</sup>, Barbara Wohlfarth<sup>1</sup>

**Bolin Centre for** Climate Research

<sup>1</sup>Department of Geological Sciences, Stockholm University, 10961 Stockholm; <sup>2</sup>Department of Earth and Atmospheric Sciences, University of Nebraska-Lincoln, Lincoln, USA; <sup>3</sup>Department of Geosciences, National Taiwan University, Taipei, Taiwan

Paleoenvironmental and paleoclimatic information is still sparse for Southeast Asia, despite the fact that this regions hosts numerous lakes and wetlands that may contain long sedimentary archives. During the past years we have been surveying a large number of natural lakes and wetlands in different parts of Thailand to select the most promising and longest sedimentary sequences for high-resolution multi-proxy studies.

Our survey of more than 30 natural lakes and wetlands shows that only few still contain soft sediments. The sediments in the majority of the sites have been dredged and excavated during the past ten years to provide clear and open water for fishing, aquaculture and recreation. Dredging and excavations using large caterpillars has disturbed and in some cases completely destroyed the sedimentary record. Stiff clays now drape most of the lake bottoms, and many of the lakes harbour a highly impoverished fauna and flora.



Based on our extensive survey, we found five sites from which we successfully obtained intact sediment sequences: (1) Nong Leng Sai in northern Thailand, (2) Sam Roi Yod and (3) Nong Thale Pron in southern Thailand, (4) Lake Kumphawapi and (5) Lake Pa Kho in northwest Thailand.

All of these five lakes/wetlands contain a detailed record covering the past 2000 years; two sites cover parts of or the entire Holocene and two sites have sediments covering the Last Termination and MIS 3, respectively. Geophysical profiling of the bottom topography of the lakes was not possible because of the dense vegetation and the high methane content of the sediments.

The current "management" of natural lakes and wetlands in Southeast Asia progesses rapidly, and not only leads to a complete removal of precious climatic and environmental archives, but also to the irreversible destruction of important ecological habitats.

## Publications related to the Thailand Monsoon Project

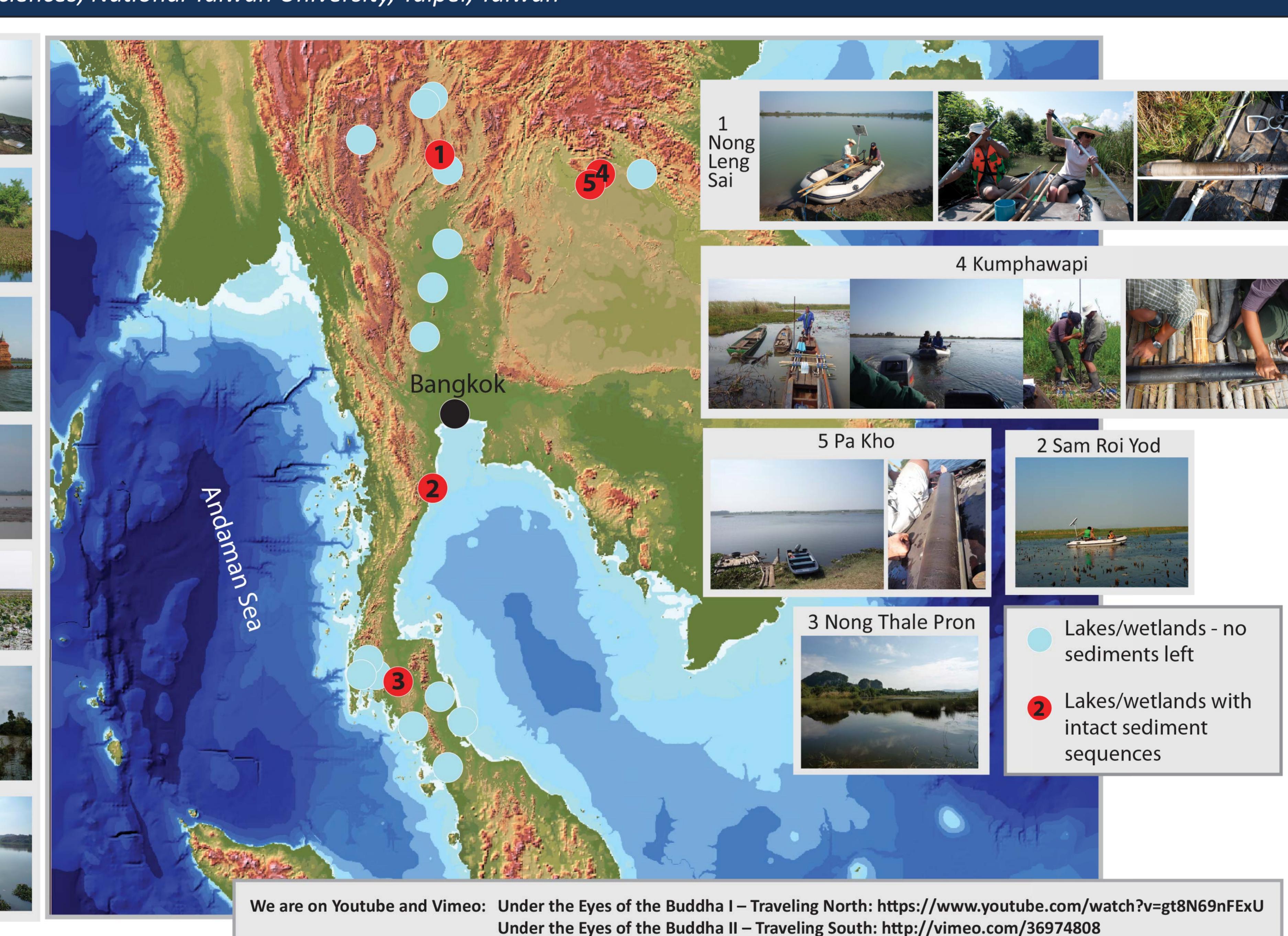
Chabangborn, A. and Wohlfarth, B.: Climate over mainland Southeast Asia 15-5 ka BP. Re-submitted to Journal of Quaternary Science.

Chawchai, S., Kylander, M., Chabangborn, A. and Wohlfarth, B.: An example of XRF core scanning based proxies for organic rich lake sediments. The Holocene

Chabangborn, A., Brandefelt, J. and Wohlfarth, B. (2013): The Asian monsoon climate during the Last Glacial Maximum: palaeo-data – model comparisons. Boreas, 43, 220-242. 10.1111/bor.12032. ISSN 0300-9483.

Chawchai, S., Chabangborn, A., Kylander, M., Löwemark, L., Mörth, C.-M., Blaauw, M., Klubseang, W., Reimer, P. J., Fritz, S. C. and Wohlfarth, B. (2013): Lake Kumphawapi – an archive of Holocene paleoenvironmental and paleoclimatic changes in northeast Thailand. Quaternary Science Reviews, 68, 59-75.

Wohlfarth, B., Klubseang, W., Inthongkaew, S., Fritz, S. C., Blaauw, M., Reimer, P. J., Chabangborn, A., Löwemark, L. and Chawchai, S. (2012): Natural and anthropogenic environmental changes in Northeast Thailand reconstructed from a Holocene tropical wetland. Global Planetary Change, 92-93, 148-161.



Under the Eyes of the Buddha III - In White Coats: https://www.youtube.com/watch?v=Vel9dP\_DXO0

Check also out our other posters at EGU with details on the different sites: Z254, Z255, Z227, Z200