**Title**: Variation in clay compositions of Bengal Fan sediments between glacial and interglacial periods

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| **Duration**: 12 months granted from the ANR Program GI NOAH (Glacial--Interglacial variations of the carbon cycle induced by climatic changes in Himalaya). Starts in January 2023 and takes place in ISTerre (Grenoble). |

**Team and Supervisors**: P. Huyghe (ISTerre Grenoble) and A. Galy (CRPG Nancy) with the expertise of B. Lanson (ISTerre Grenoble)

**Expected profile**: mineralogist, geochemist or sedimentologist with expertise in RX analysis of clay minerals. Expertise in modeling RX spectra, with Sybilla software would be appreciated.

**Expected results**: 1 paper accepted or submitted in an international journal

**Description**

The GI NOAH project aims to clarify the climate sensitivity of the Earth system by recording the carbon burial (organic and inorganic) linked to the erosion of the Himalaya at the glacial-interglacial (G-I) scale. The increase (by ~3) in weathering at the beginning of the Holocene shows that the system is sensitive to climatic forcing and that such a signal is measurable. However, the data available has a very limited temporal coverage and the project aims to use all sedimentary objects available and suitable for such reconstructions, especially those sampled by the IODP 354 expedition in the Bay of Bengal. Mineralogical, pollen and geochemical studies will be carried out on the active levee (0-100 ka) as well as other cored quaternary levees by the team of the GI NOAH team. This work will make it possible to better quantify the importance of the Himalaya at the G-I scale on the C cycle, as well as to establish a state of comparison for the quantification of anthropogenic effects on rivers.

The aim of this post-doctoral contract is, 1) to characterize the clay minerals of the glacial and interglacial periods to detect differences in the composition of clay assemblages using X-ray analysis. The young researcher will pay a particular attention to the determination of pedogenic minerals between the sediments of glacial and those of interglacial periods. He/she will have to prepare the samples selected for the acquisition of RX analyses. 2) The young researcher will also prepare the same samples to perform additional geochemical analyses. This geochemical data will be used to help model selected X-Ray spectra via the Sybilla software (Zeelmaeker et al., 2009).

The final goal of this work will be to discern whether the physico-chemical differences of clay assemblages in glacial and interglacial periods are related to different sources or to weathering conditions varying with the intensity of the Indian monsoon.

The young researcher will work in ISTerre (Institut des Sciences de la Terre), Grenoble