



Magnetostratigraphy of the Neogene Siwalik Group of far eastern Himalaya, Kameng section, Arunashal Pradesh, India

Francois Chirouze (1), Pascale Huyghe (1), and Guillaume Dupont-Nivet (2)

(1) Université Joseph Fourier, Laboratoire de Géodynamique Alpine, Grenoble, France (francois.chirouze@bvra.ujf-grenoble.fr), (2) Paleomagnetic Laboratory Fort Hoofddijk; Faculty of Geosciences; Utrecht University; Budapestlaan 17; 3584 CD Utrecht; The Netherlands

Foreland basins act as receptacles for synorogenic sediments and store materials eroded off a convergent mountain belt (DeCelles and Giles, 1996, DeCelles and Giles, 1996). Their infill records tectonic, climatic and erosional processes that govern the development of the mountain belt and the foreland basin. Consequently, studying the infill of foreland basins can give clues as to the reconstruction of the orogen tectonic growth and the interaction with global or regional climate (e.g. Molnar & England, 1990).

The Himalaya, the highest range in the world, is used as a natural laboratory to test the interactions between these processes, in particular because of the effect of the Tibetan Plateau uplift on the intensity and variability of the Asian monsoon (Kutzbach et al., 1993; Fluteau et al., 1999). Exhumation, erosion and climate events affecting the Himalaya are recorded in the Neogene Siwalik foreland basin deposits (e.g. DeCelles et al., 1998, 2000; Galy et al., 1999; Huyghe et al., 2001, 2005; Najman, 2005). Dating these deposits is a key element to reconstruct the Himalaya's evolution.

Despite a wealth of studies in the central and western Himalayan foreland, very few studies have been carried out in the eastern part (Yin et al., 2006, Cina et al 2009). Understanding the evolution of this eastern part is essential for reconstructing the regional migration of the Himalayan deformation. In addition, the eastern Himalayan foreland potentially records the evolution of processes associated to the eastern syntaxis drainage networks (Singh and France-Lanord, 2002) and the Shillong plateau uplift (Grujic et al., 2006). Therefore, accurate dating of the sediments of the Eastern part of the Siwalik foreland basin using magnetostratigraphy is a crucial initial step for further investigations such as sedimentological and structural field studies, fission tracks, provenance and isotopic stable laboratory analysis. These investigations aim at constraining the exhumation and climate of this part of the chain.

The purpose of this communication is to report new paleomagnetic results from the Siwalik Group in the remote far eastern district of Arunachal Pradesh, where no previous studies have been conducted. We performed a magnetostratigraphic study along the Kameng river section where a thick series of Siwalik sediments is well exposed and accessible.

On the section we studied, several magnetostratigraphic correlations are possible but results show that the age of the deposits ranges between 18 My and 3 My. The main facies transitions occur at the same time as those of the central part of the range (Ojha et al 2008, Gautam et al 2000). Analysing the paleostreams of the oldest part of the section reveals that the transport direction of sediments was North-East South-West. Their origin is thus very likely the Himalayan syntaxis.

Thermochronological analyses, which are currently in progress, will enable us to choose between the various possible correlations, and the isotopic analysis will help us to determine the exact provenance of the sediments.