The Nidar Ophiolite and its surrounding units in the Indus Suture Zone (NW Himalaya, India): new field data and interpretations

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The Nidar Ophiolite is located between the North Himalayan nappes and the Indus Suture Zone in NW Himalaya in eastern Ladakh (India). Based mainly on geochemical argument, this ophiolite is classically interpreted as a relic of an intra-oceanic arc (Mahéo et al. 2000; Mahéo et al. 2004), which developed at around 140 Ma, prior to the collision between the Indian and Eurasian plates (Ahmad et al. 2008).

From top to bottom, this ophiolite is composed of various sedimentary rocks (radiolarites, polygenic conglomerates and carbonates), volcanic rocks (pillow lavas, basaltic to andesitic in composition), gabbros (Fe- and layered gabbros, pegmatites and minor troctolites), serpentinites, dunes, pyroxenites and peridotites (mainly harzburgites). The Nidar Ophiolite underwent an anchizonal metamorphism with preservation of primaries structures (layering) and volcanic textures (pillow lavas). This study is mainly focused on new field observations across the ophiolite and the surrounding units. A new detailed geologic map of the ophiolite between the Nidar village and Kyun Tso area is presented.

The upper part of the ophiolitic complex is an alternation of volcanic and sedimentary rocks (500-1000 m thick) and the lower part consists of large outcrops of gabbros (3000m thick). These mafic rocks are separated from the serpentined ultramafic rocks by a 200m thick ophiolitic breccia and continental Indus Molasse slices. The Nidar Ophiolite is made up of the classical rock type succession (ultramafites, gabbros, pillow basalts, radiolarites), but the internal structure is far more complex than previously suggested. New field data (geologic and structural maps, lithologic sections, etc.) coupled with new geochemical analysis will help to constrain the geodynamic context and deformation history.

