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The *Hirnantia* fauna and the stratigraphic assessment of the uppermost Ordovician in the central Anti-Atlas (Morocco)

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The pandemic brachiopod *Hirnantia* fauna characterizes the lower part of the Hirnantian (Hi1 Stage Slice of the uppermost Ordovician Global Stage). In the Moroccan Anti-Atlas, its occurrence in glacially-related successions allowed contrasting the onset of several Late Ordovician glacial events. In the Central Anti-Atlas, the Hirnantian is lithostratigraphically represented by the Second Bani Group, a sandstone-dominated succession. In the region immediately west of Tagounite (in the vicinity of Zagora), the group is subdivided into two formations, the basal Lower Second Bani Formation and the overlying Upper Second Bani Formation, separated by a major erosive (glaciogenic) unconformity. The Lower Second Bani Formation is composed of two members, the lower mostly made of clayey sandstones and the upper consisting of thick-bedded quartzitic sandstones (Fig. 1).

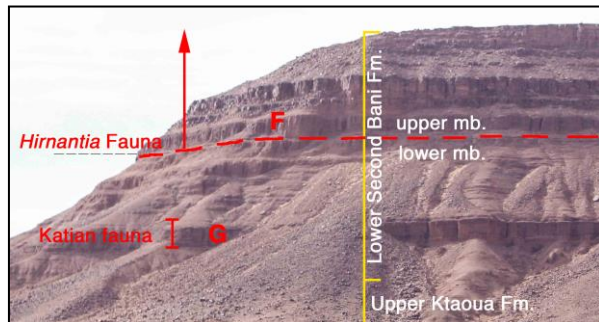


Figure 1: Aït-Isioul section, west of Tagounite (Morocco). Upper Ordovician formations with the situation of the sampled levels in the Lower Second Bani Formation.

We have revisited the stratotype of the Lower Formation of the Second Bani Group, west of Tagounite, and sampled brachiopods from its uppermost quartzitic horizons (from Destombes' horizon F upsection). In addition to those brachiopods listed by Destombes [1] from the region, we have found *Plectothyrella* sp. and *Kinnella* sp. Both genera are exclusive of the pandemic *Hirnantia* fauna, which allows confirmation of a Hirnantian age for the upper member of the Lower Second Bani Fm. By contrast, the lower member of the Lower Second Bani (concretely, Destombes' G bryozoan limestone horizon, rich in the echinoderms *Maghreboecystis* and *Herpetocystis*, and horizons slightly above it), has yielded Katian brachiopods and trilobites, such as *Eostropheodonta intermedia*, *Destombesium* sp., *Hirnantia* sp. (species different than *H. sagittifera*), *Actinopeltis* aff. *insocialis*, *Mucronaspis termieri* and *Cekovia* aff. *loredensis*. Thus, following the present-day lithostratigraphic framework, in the vicinity of Tagounite the Katian/Hirnantian boundary lies in the Lower Formation of the Bani Group and lithostratigraphically correlative horizons, such as those reported in Bou Ingarf [2]. The latter were there mainly dated as a result of lithostratigraphic and sequential correlations and, based on correlation with the Tagounite area, are in need of revision. The age of the lower part of the chitinozoan *Tanuchinita elongata* Biozone should be re-evaluated, and the suggested delayed onset of the Hirnantian glaciation [2] reconsidered.

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References:

- [1] Destombes J et al. (1985) In: *Lower Palaeozoic of North-western and West Central Africa*, 91-336.
- [2] Loi A et al. (2010) *Palaeogeog Palaeoclim Palaeoecol* 296: 332-358.

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