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Programme with Abstracts

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Chen, D., Wang, J., Racki, G., Li, H., Wang, C., Ma, X., and Whalen, M. T., 2013, Large sulphur isotopic perturbations and oceanic changes during the Frasnian–Famennian transition of the Late Devonian: Journal of the Geological Society, v. 170, no. 3, p. 465-476.

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Macrofauna, rock magnetism and sedimentology in the Etroeungt Limestone ('Strunian', Uppermost Famennian) at Avesnelles (northern France).

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The "Avesnelles railway trench" section is located near the eponymic village in the Avesnois, (northern France), about 4 kilometers south-east of Avesnes-sur-Helpe city and along the railway line linking Fourmies and Hirson villages. This section belongs to the southwestern part of the allochthonous Ardennes fold-and-thrust belt. The whole Devonian section is composed of two distinct lithostratigraphical units described by CONIL & LYS (1967, 1970, 1980), which are, in stratigraphic order, the Epinette Shale and the Etroeungt Limestone; both have an uppermost Famennian age ('Strunian'). The Epinette Shale and Etroeungt Limestone have a thickness of about respectively 116.5 and 35.5 meters. The Hangenberg Event is located at the boundary between the Etroeungt Limestone and the black-coloured Avesnelles Limestone. This work focused on the last 20 meters of the Etroeungt Limestone and the first meters above the Devonian–Carboniferous boundary.

The section was investigated for brachiopods, stromatoporoids, rugose corals, foraminifera and also for sedimentological purposes. The upper part of the Epinette Shale is composed of an alternation of shale and lenses of crinoidal limestone in which solitary rugose corals and stromatoporoids are common. The Etroeungt Limestone is mainly composed of slightly argillaceous limestones with common solitary rugose corals and stromatoporoids, and crinoidal limestones with interbedded shales. Besides corals and stromatoporoids, the Etroeungt Limestone also includes brachiopods (orthotetides, rhynchonellides and spiriferides). The Avesnelles Limestone (partly basal Tournaisian) is characterized by an impoverished macrofauna, which mainly includes productidine brachiopods.

Rock magnetism analyses have been conducted on the same samples used for sedimentological purposes. Magnetic susceptibility (MS) data were acquired on about 80 samples with a Kappabridge MFK1-A. Hysteresis measurements and

thermomagnetic analyses are in progress on selected samples to determine the magnetic minerals and their grain sizes in order to identify the magnetic mineralogy controlling the MS signal.

Gamma-ray logging realised on the whole section will be compared to MS and microfacies data. K and Th concentrations indicate an increasing trend upwards culminating with the highest values in the latest Famennian beds and a decreasing trend in the basal Tournaisian. U concentrations are apparently following the same evolutions along the section. K and Th concentrations are strongly correlated (r=0.93) suggesting the influx of fine-grained aluminosilicates minerals (detrital) along the section.

Sedimentology and magnetic susceptibility of recent sediments from New Caledonia

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The interpretation of the magnetic susceptibility (MS) signal from ancient rocks is difficult and suffers notably from the scarcity of recent studies. To bring new data, a study of tropical coastal sediments of New Caledonia was launched.

New Caledonia is an island located in the SW Pacific Ocean, close to Australia. This 400 km long and 50 km broad island is surrounded by a nearly uninterrupted reef barrier, isolating a wide lagoon from the open ocean. Depending from the season, the island is influenced by trade winds or by the equatorial low pressure belt. The geological history of New Caledonia is very complex (Cluzel et al., 2012), giving way to extremely varied lithologies, ranging from mantellic rocks to alterites. The erosion of these rocks produces different types of detrital sediments, which are mixed with the indigenous precipitated carbonates. This generates different types of coastal sediments, detritic-, carbonate-dominated or mixed. 22 beaches were sampled (surface sediments and sediments situated at 10-20 cm deep), all around the main island and in the Pin island (S of Grande Terre) and Lifou and Ouvea (Loyalty islands). More than 300 samples were analyzed for granulometry, nature of sediments, MS and geochemistry (major elements). The first results show that:

(1) carbonate sands and silts are characterized by lower MS than detritic sediments;

(2) MS signal of mixed sediments is mostly influenced by the proportion of detritic sediments;

(3) MS signal of carbonate sediments is correlated with granulometry (higher granulometry means higher MS);

(4) if granulometry is constant, MS doesn’t change between 20 cm deep and surface;