Stratigraphie et variations isotopiques du carbone dans le permien supérieur et le trias inférieur de quelques localités de la Néotéthys (Turquie, Oman et Iran)

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The end of Paleozoic era and the beginning of the Mesozoic is a time of crisis and profound changes in ecosystems on Earth. It is the greatest of all extinctions in the Phanerozoic with a mass mortality in the marine environment (up to 96% of species, 83% of genera and 55% of families) and a nearly equally large loss of life on land.

The process of progressive elimination of marine species is punctuated by a final extinction pulse. This pulse is generally correlated with a conspicuous depletion in 13C in particular in marine carbonates (D13 Ccarb), reflecting a dramatic disturbance in the global carbon cycle. There is still abundant discussion on the ultimate cause of the end-Permian crisis. Concepts differ with respect to source (terrestrial or extraterrestrial), rate (rapid or catastrophic) and chronology of event (between mass extinction in ocean, land and disturbance of the global carbon cycle). Among different causes, the most emphasized are oceanic anoxia, Siberian trap volcanism, methane release, meteorite impact and marine regression.

Another important feature of the end-Permian crisis is the particularly long delay of faunal recovery to reach the pre-extinction level. For this time, microbial organisms dominate the marine environment.

Together with sedimentological and paleontological studies, 16 sections were analysed to determine the bulk isotopic ratio of carbonates. Two sections were analysed to obtain isotopic values of the organic carbon. These sections are located in four different geographical area: Turkish Taurus, Oman Moutains, Transcaucasia (North-western Iran) and Central Iran and correspond to the southern and northern margin of the Neotethys. They represent sediments from a continental platform (Arabic-African and Cimmerid), slope, isolated platform and more or less deep basins.

The depletion 13C , which is distinctive for the end-Permian crisis, is divided into two parts. The first on is progressive and precedes the crisis but follows the first anomalies recorded in the benthic fauna. The classical rubber band model (accumulation of constrains before rupture) is favoured. Cause(s) of extinction have to have an influence on the carbon cycle for a certain time before the crisis. The second part of the negative shift occurs after the event and shows strong variations. Is the dominance of the marine environment by microbial organisms a key factor? This study tries to understand the influence of microbial community on the carbon cycle.

An isotopic curve for the carbon has been established for the Early Triassic. It shows the largest shift amplitude of all the Phanerozoic. A first positive shift in D13C values occurs in the Griesbachian, reflecting the beginning of the faunal recovery. A first negative shift happens in the end-Griesbachian, basal Dienerian. A second one occurs in the Upper Dienerian and presents features of methane release induced shift. It is followed by a very positive double peak in the Early Smithian (up to 6%) and by very negatives values in the Middle and Upper Smithian (down to -2%). Another very positive double shift (up to 8%) occurs around the Smithian-Spathian boundary before going back to negative values (down to-2%). A positive shift marks the Olenekian-Anisian boundary. The constitution of such a

curve allows us to correlate sections poorly biostratigraphically constrained, therefore a stratigraphic history of the Oman margin has been reconstructed for the Early Triassic.