

EGU2020-8692

<https://doi.org/10.5194/egusphere-egu2020-8692>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Traces of the Rochechouart Asteroid Impact in the uppermost Triassic sediments of the NE Paris-, Aquitanian- and Lodève Basin

Natascha Kuhlmann¹, Jean Thein¹, Thorsten Nagel², and Robert Colbach³

¹Institute for Geosciences, University of Bonn, Bonn, Germany (nkuhlmann@uni-bonn.de)

²Department of Geoscience, Aarhus University, Aarhus, Denmark (thorsten.nagel@geo.au.dk)

³Service Géologique de l'Etat, Bertrange, Luxembourg

The end-Triassic extinction event just below the Triassic/Jurassic boundary and its dramatic paleoenvironmental and paleogeographical variations are well documented by rapid changes in the sedimentological and geochemical composition of the uppermost Triassic and lowest Jurassic sequence in the NE Paris Basin.

An outstanding horizon in the Middle Rhaetian of the Paris Basin is the result of the effects generated by the asteroid impact of Rochechouart (~50 km large crater, ~201 Ma old). The asteroid hit the variscan basement at the southern margin of the Paris Basin, near the town of Limoges (France). This horizon starts at its base with seismically deformed alternation of siltstones and quartzites (*seismite*), which represent the result of a mega earthquake, generated during the initial impact phase. The seismite is overlain by a completely unsorted conglomerate, fining upwards into a strongly folded and sheared silt/clay with numerous vertebrate bones and ends at the top with a thick red clay formation of the Upper Rhaetian.

The horizon above the seismite obviously represents the deposits of a large tsunami (called *tsunamite*), triggered when the enormous ejecta masses of the impact entered the waterbody of the southern Paris Basin. Indicators for this event are not only the remains of the reworked vertebrates and exotic sedimentological structures. Additionally the enrichment of platinum group elements which was found in the sequence, clearly points to an impact with cosmic material being involved. The layer can be observed from the Eifel (Germany) over Luxembourg to Lorraine (France). Thickness, sedimentological structures and the lithological composition differ locally, mainly depending on the former geomorphological situation.

Here we present similar impact horizons in two other sites from France: in the northern Aquitanian Basin near Brive-la-Gaillarde (which is in a close distance to the crater) and in the southern Lodève Basin (at a larger distance and in carbonatic rocks). Intensive research in these areas is still in progress.

The excellently conserved Rochechouart impactite in the Rhaetian of the Paris Basin and surrounding regions offers a unique chance to study in all detail the processes of a large impact with their effects on the adjacent marine sedimentation areas and to compare the results to

similar events worldwide.