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## A new vertebrate fossil in Upper Austria – Preparation, 3D Modelling and Regional Geology

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In Upper Austria a nearly complete skull of a marine vertebrate was discovered in the Vöckla-Formation, enclosed in a solid carbonate concretion. It is a Odontocete skull, most likely belonging to the family of the Eurhinodelphinidae. The deposits belong to the so called Molasse, a set of different stratigraphic units deposited in the North Alpine Foreland Basin from the Oligocene to Miocene. The Vöckla-Formation is deposited in a shallow marine environment with strong tidal influence and an ongoing transgressive sequence. Despite of diverse ichnofossils, these deposits are usually depleted in any other remains. Therefore, are vertebrate fossil of this time interval in the North Alpine Foreland Basin virtually unknown. This makes the present individual invaluable for the study of evolutionary dynamics of Odontocetes in Europe and thus for large scale palaeobiogeographic considerations.

The skull, which was enclosed in about 100 kg of concretion, was donated to the Upper Austria Landes-Kultur GmbH and was prepared by Martin Studeny, using a pressurized air graver. The skull is nearly complete and three-dimensional preserved. Nevertheless, teeth, lower jaw and large parts of the parietal bone are missing due to taphonomical processes. Accompanying finds are gastropods, bivalves, plant material and a nautiloid. For in depth morphological investigation we created a digital high-resolution 3D-Model of the specimen. To achieve that we used a photogrammetry approach, where the specimen is placed on a turntable and numerous photos from various angles are taken. These are subsequently processed with Agisoft Metashape to create a representation of the cranium with submillimetre precision to capture finest details of the visible anatomy.

In this presentation we would like to show the results of the preparation and the 3D-modelling and share this exceptional fossil with the scientific community. The aim is to gain detailed taxonomic insight and to classify evolutionary traits. Moreover, this finding should give motivation to gather more stratigraphic insight into the Vöckla-Formation.

**Session:** *Pangeo workshop: Regional Geology*

**Keywords:** *Vöckla-Formation, Odontocete, North Alpine Foreland Basin, Ottnangian, Miocene*