

## Postimpact crater sedimentation in marine-target impact structures.

H. DYPVIK<sup>1</sup>

<sup>1</sup>*Department of Geosciences, University of Oslo, P.O. Box 1047, Blindern, NO 0316 Oslo, NORWAY*

*(correspondence: henning.dypvik@geo.uio.no)*

Marine impact craters represent the most common impacts on Earth. In this presentation a general succession of the postimpact subaqueous filling history will be outlined.

The general depositional developments and most likely fill succession in marine impact craters will be explored in the light of new information from the Ritland and the Chesapeake Bay impact structures (Dypvik and Kalleson, 2010; Azad et al., 2015; Dypvik et al., in prep.).

A first depositional stage (late syn- to early postimpact) is dominated by poorly sorted rock avalanche, scree and slump deposits. In most marine postimpact successions these deposits are overlain by sediments of mass flow deposition as debris flows. These are further commonly topped by fluid flow and suspension current deposits. The internal relations and dimensions of these formations are controlled by e.g. crater size, target lithology, and water depth (Azad et al., 2015).

The minor (2.5 km diameter crater) Ritland impact occurred in shallow shelf conditions with a crystalline target rock. Avalanche, scree and mass flow deposits dominate the postimpact succession (Azad et al., 2015).

In the much wider Chesapeake Bay impact structure (about 90 km in diameter) the bolide also impacted into shallow water, but into a thick sequence of sedimentary formations. This resulted in a weak rim development, with crater sedimentation dominated by multiple events of large scale debris flows.

Due to plate tectonics and surface processes on the Earth, only parts of ancient crater fill successions can be expected to have survived; only in rare cases will the complete packaged be found. Knowledge of postimpact succession stratigraphy in addition to classic impact characteristics may help in recognizing new craters and understanding their postimpact history.

### References:

- Azad, A.S., Dypvik, H. and Kalleson, E. 2015. Sedimentation in marine impact craters — Insight from the Ritland impact structure. *Sed. Geol.*, 318, 97-112.
- Dypvik, H. and Kalleson, E. 2010. Mechanisms of late synimpact to early postimpact crater sedimentation in marine-target impact structures. *GSA Spec.Paper* 465, 30-318.
- Dypvik, H., et al in prep., Chesapeake Bay impact structure – Development of brim sedimentation.