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**Hypervelocity impacts on dry and wet sandstone:
Observations of ejecta dynamics and crater
growth.**

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Cratering experiments in the laboratory are of particular importance for the investigation of the highly dynamic and complex processes associated with hypervelocity impacts on planetary surfaces. Many of the natural target materials are porous and contain pore fluids. To investigate the influence of water saturation on crater formation and ejecta behavior, several hypervelocity impact experiments on dry and wet sandstone were conducted in the framework of the research project MEMIN ("Multidisciplinary Experimental and Modeling Impact Research Network") [1], [2].

Our results show a significant dependence of crater size, crater growth and ejecta dynamics on the level of water saturation of the target. Larger craters and steeper ejecta cone angles are observed if the target is water-saturated. The transient crater grows at a faster rate in the wet target. The scaling exponent as a function of water saturation level was determined by means of fitting a scaling law to our data.

[1] Schäfer, F. et al. (2006) Proceedings, 40th ESLAB Symposium. [2] Kenkmann, T. et al. (2011) Meteoritics and Planetary Science 46, 890–902.

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