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# iSALE hydrocode simulations for indirect impact hazard analysis

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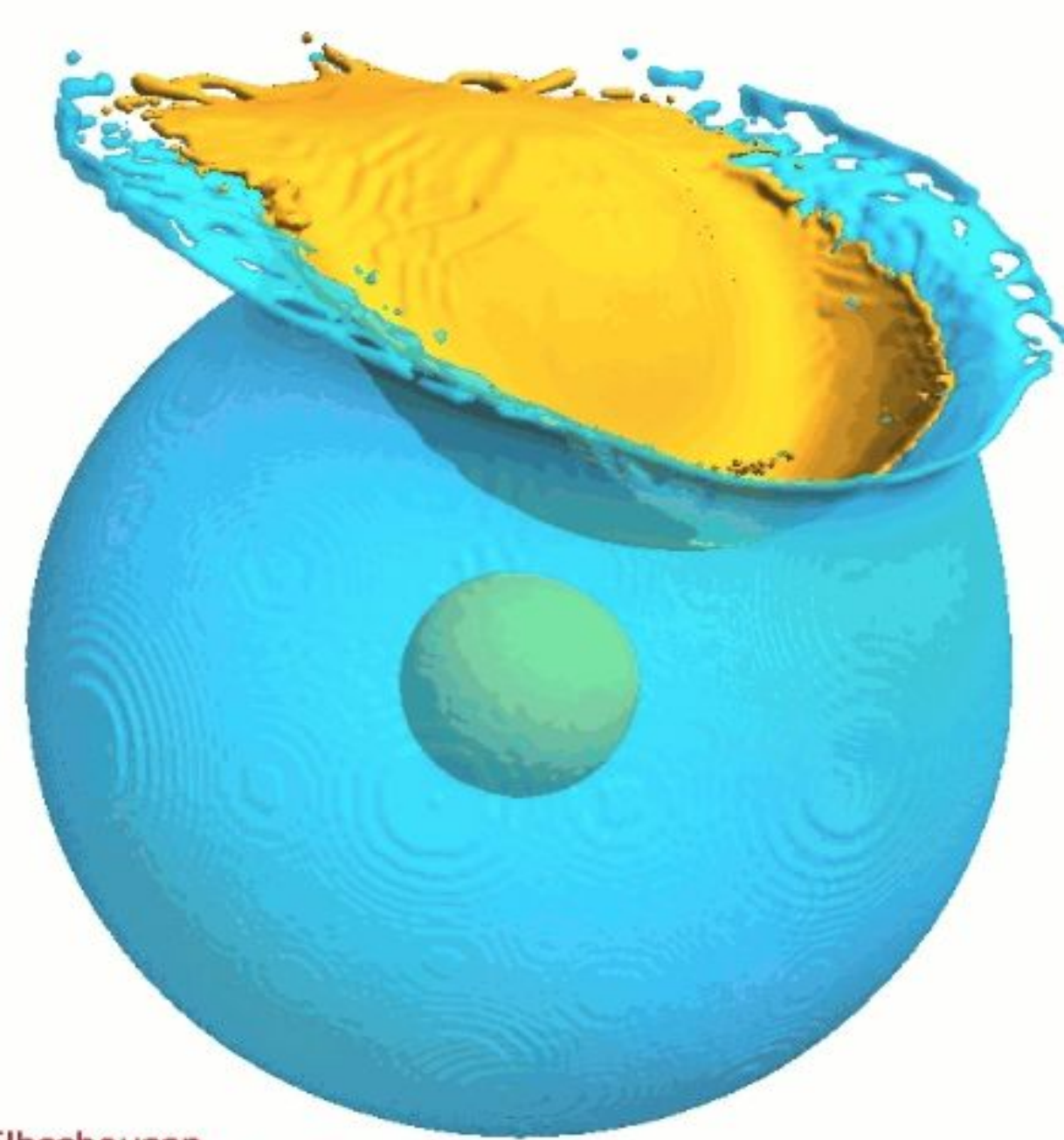
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**15** YEARS OF  
**GIANTLEAPS**  
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**iSALE**

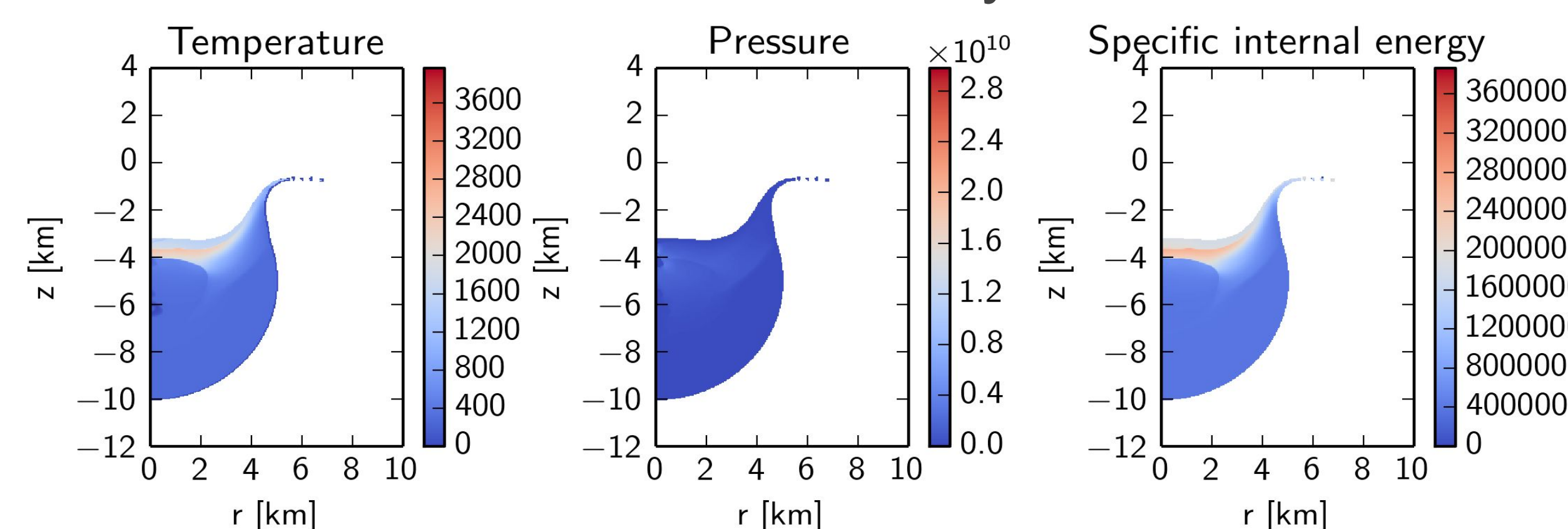


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For our research we are using the iSALE impact modeling software (Amsden et al, 1980; Collins et al., 2004; Wünnemann et al., 2006).

This is a shock physics code which has been extensively used by the planetary science community for modelling meteorite impacts, terrestrial and extraterrestrial.

The capabilities of iSALE which are of particular use to our team are its accuracy in modelling the effects of hyper-velocity impacts into various specific surface materials and conditions in conjunction with the detailed data we can extract from these simulations for analysis.



[http://www.isale-code.de/redmine/projects/isale/wiki/PySALEPlot\\_gallery](http://www.isale-code.de/redmine/projects/isale/wiki/PySALEPlot_gallery)

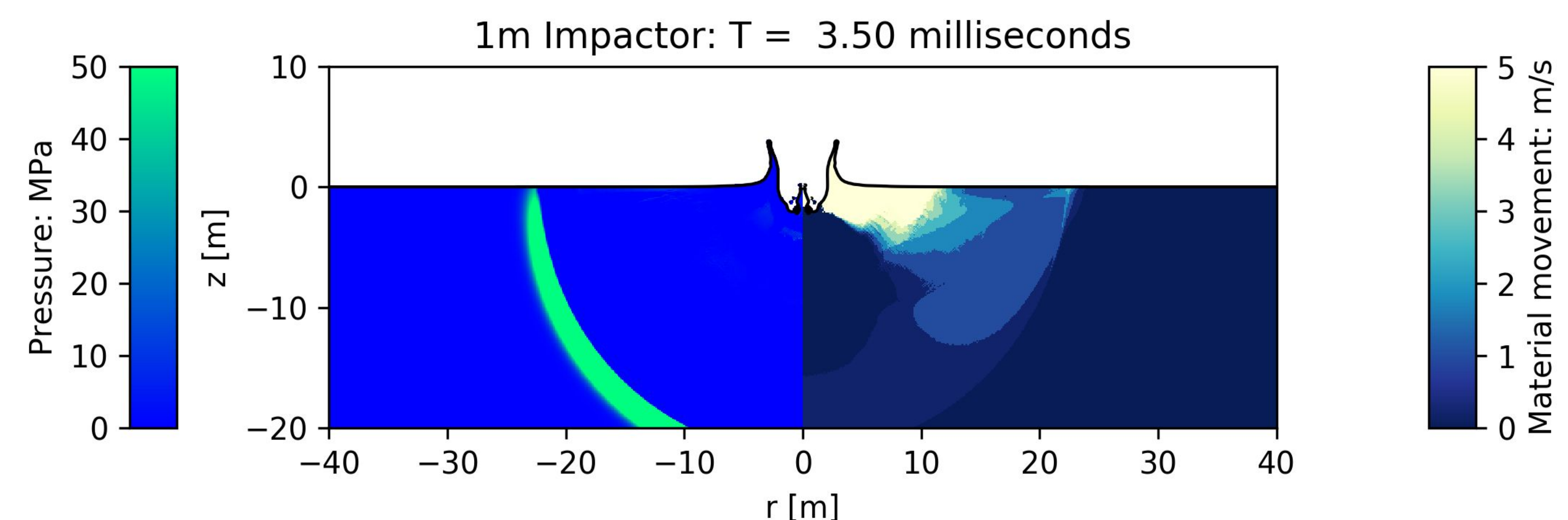
## Research Goals



ESA/Foster + Partners

In analyzing the impact hazards associated with extraterrestrial habitats we need to determine the risk associated not only with a direct strike on a habitat, but also examine the more likely case of a distant impact and its potential effects on our habitats' structures.

We are concerned specifically with the potential for the seismic wave induced by an indirect impact to disrupt, damage, or otherwise threaten the stability and safety of a habitat structure. We are attempting to use iSALE to understand the nature of this wave.



We are using iSALE-2D (Wünnemann et al., 2006) to model impacts into the lunar surface and extracting data on the material displacement caused by the shockwave induced by these impacts to extrapolate the characteristics of this seismic wave.