

# High impact drilling: Chicxulub, petrophysics and cluster analysis.

IODP – ICDP Expedition 364.

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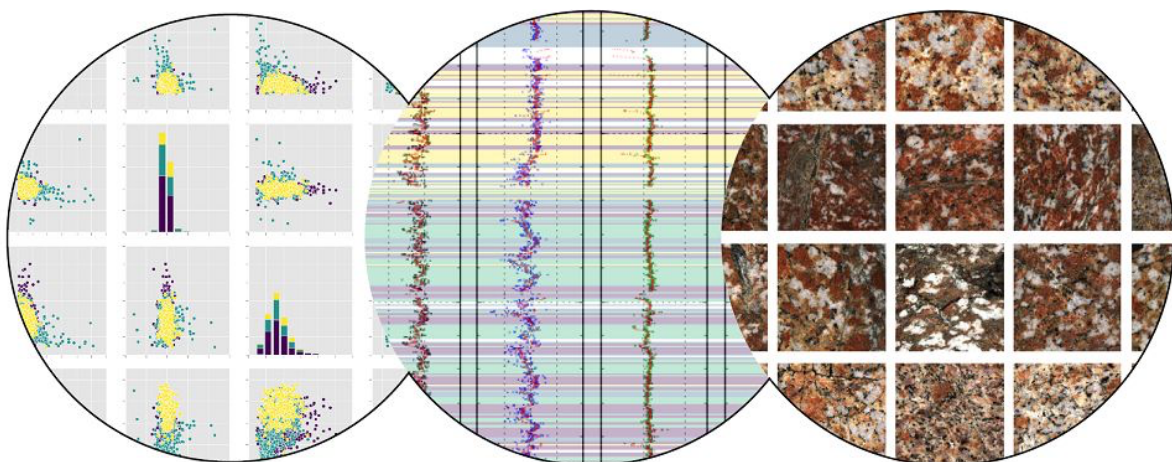
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## ABSTRACT

In 2016, IODP - ICDP expedition 364 drilled the Chicxulub impact crater, offshore Mexico. Recovered target rocks, collected from the peak ring of the crater, moved more than 20 km in 10 minutes during the impact. Exciting multidisciplinary research is ongoing: scientists study the physics of the impact, how it compares with analogues on other planets, how life was affected on Earth, how it recovered, and more. The research presented focuses on unsupervised and semi-supervised clustering performed on petrophysical data collected on the cores from the expedition.

Original physical properties and textures of the target rocks (granitoid basement) have been affected by the impact. In this study, a cluster analysis approach is used to identify subunits in the >500 m thick recovered felsic section. Cluster analyses were performed on two datasets: 1) textures (digital line scans from split cores), and 2) petrophysical data (density, magnetic susceptibility, resistivity and natural gamma ray). This approach aims at helping to classify the different textures observed, and see how they compare with changes in physical properties.



## ABOUT THE AUTHOR

Erwan Le Ber completed his PhD in sedimentology at the Royal Holloway University of London in 2013, working on Neoproterozoic microbial carbonates from Namibia. In 2015, he joined the University of Leicester as an IODP Research Associate and has since then been involved in three IODP Expeditions (357, 364 and 381).