

# Have We Found an Underwater Extraterrestrial Impact Tsunami Layer in The Indian Ocean?

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Extraterrestrial oceanic impact craters are key to understanding Earth's geological and biological evolution, yet they remain under-documented due to low core coverage, tectonic activity, and limited access to deep-sea data. Given that over 70% of the Earth's surface is covered by seawater, many impacts likely occurred underwater. This study evaluates and applies a range of detection methods, including magnetic susceptibility profiling, X-ray fluorescence (XRF) analysis, and petrographic and electron microscopy, to investigate a potential impact site near the Indian Ocean Ridge Triple Junction. On an analog seismic line, the prospective impact crater floor appears as a flat, transparent sediment layer with disturbed acoustic basement beneath it. Marine core RC17-95 was selected for analysis based on its proximity to the crater candidate, its high topographic elevation, relatively high magnetic susceptibility and high coarse fraction- features suggestive of or promoting deposition by an impact-related tsunami. The core was processed by sieving and grain-size separation, revealing Fe and Al rich spherules with quench textures, spherule aggregates, flow-textured and micro-vesicular impact glass at multiple depths. At 282 cm depth, both the base of this layer and the core, there are cemented angular breccias and meteorite fragment candidates. ITRAX XRF scans confirmed the presence of significant amounts of Palladium, a Platinum Group Element (PGE) from 0-282 cm sub bottom depth, further supporting the hypothesis of extraterrestrial origin. These markers are consistent with impact ejecta and tsunami deposits. By integrating geophysical, geochemical, and mineralogical analyses, this research provides preliminary evidence for an extraterrestrial impact tsunami layer in the Indian Ocean. It contributes to improved methods for identifying oceanic impact craters in the future.