IDENTIFYING AN OCEANIC IMPACT CRATER THROUGH SEDIMENTOLOGY.

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Currently there are no confirmed impact craters on the oceanic crust [1]. The fundamental reason for this lack of subaqueous impacts is that unlike their terrestrial counterparts, marine impact structures are not easily recognizable [1]. Deep ocean impact craters have been simulated by Gault and Sonnett and are found to be cylindrically shaped [2]. The formation of the crater and uplift of the central peak create mega turbidite/gravity flows and mega tsunami that scour the ocean floor, losing energy as it moves outward from the impact site [2,3,4,5].The resurgence of water into the transient crater erode the crater walls and rims leaving a topographically subdued crater [6]. A large enough impact will excavate into the oceanic crust which, if mixing with a bolide, can create an iron enriched impact ejecta layer. Seventy percent of the impact ejecta is located within 1.5x the crater radius [4]. The ejecta layer may extend further from the impact site than would be expected for a terrestrial impact of equal size, due to the oscillations of the tsunami [3]. A plausible sedimentation pattern for an abyssal ocean impact crater would show an overabundance of sediment at the site of impact extending well past the rim transitioning into partial and/or complete denudation of the oceanic crust.

We have found a site which fits this pattern of sedimentation. The site also has topographic features consistent with models of deep ocean impact craters. A high susceptibility layer is present which contains impact related ejecta. If this crater is confirmed then the sedimentological pattern listed above may be used to find other abyssal ocean impact craters.

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