

Evidence for An Impact Crater in the Ross Sea

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The identification of impact spherules and impact glass in Eltanin cores (ELT 32-03, ELT32-04, and ELT32-46) proximal to the predicted 50 km Bowers Crater in the Ross Sea tenably implies that the major impact event was caused by an extraterrestrial bolide. Uncharacteristic <63 micron tektites with tails were discovered in the three cores closest to the crater. Before this project, most tektites found in nearby cores in the Ross Sea were spherically symmetrical. However, the majority of the tektites found in these three cores had tails attached and were discovered in a size fraction smaller (>63) than the perfectly spherical ones (>150). Our data, nevertheless, does suggest that the closer the tektites are found to the center of the crater the smaller the size of the tektites. Furthermore, there is preliminary evidence that these spherules with tails have a higher carbon content than the spherules without tails. This could be due to the never before seen type of quench texture that resemble embossed polka dots on the surface of half the spherules collected. Bolstering further evidence of the impact event, true impact glass (impact breccias) were more frequently found in the same cores as tektites than ever before. Finally, the minimal thicknesses of the impact ejecta layers in the three aforementioned cores were also determined. The greater than 5 meter layer thickness of the ELT32-46 core is consistent with the proposed source crater being further north than previously believed. Overall, this project has collected data in order to better define the distribution and size of the tektite field of the Bowers Crater in the Ross Sea.