

PRELIMINARY REPORT ON THE FREQUENT OCCURRENCE OF SPHERULES IN SEDIMENTARY LAYERS RELATED TO THE ELTANIN IMPACT EVENT. D. Kettrup¹, R. Gersonde² and A. Deutsch^{1, 1} Inst. f. Planetologie (IfP) Univ. Münster, Wilhelm-Klemm-Str. 10, D-48149 Münster, Germany (dirk.kettrup@uni-muenster.de) ² Alfred Wegener Institute for Polar and Marine Research, PB 120161, D-27515 Bremerhaven, Germany, (rgersonde@awi-bremerhaven).

Introduction: Approximately 170 terrestrial impact structures have been discovered on planet Earth so far [1]. The only known impact in a deep ocean basin occurred 2.2 Ma ago, in the Bellingshausen Sea (Fig 1), eastern Pacific sector of the Southern Ocean [2]. Evidence for this so-called Eltanin impact event was first provided by the discovery of an Iridium anomaly [3,4] in sediment cores. Subsequent surveys by research vessel *RS "Polarstern"* during expeditions ANT-XII/4 (spring 1995) and ANT-XIII/5a (spring 2001) revealed a more detailed picture on the impact-related perturbations and sedimentation, including the distribution of ejecta (Ir as well as impact melt debris). Unmelted fragments of the projectile, up to 2 cm in size, have been identified to represent polymict breccia, similar in mineralogy and chemistry to howardites or the silicate fraction of mesosiderites [5]. The more recent ANT-XVIII/5a expedition documented the distribution of ejecta in an area of ca. 90000 km² and gathered sediments cores that will allow more accurate determination of the impact age. The new material and seismic data will also help to determine whether the impactor reached the ocean floor and basement or not. The latter information sets constraints for the development of impact models (e.g., [6]).

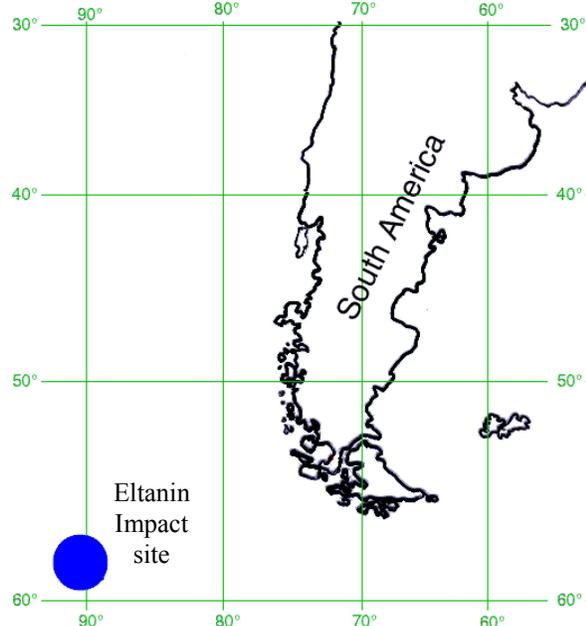


Fig 1: Schematic sketch of the Eltanin impact site, Bellings-

hausen Sea, eastern Pacific sector of Southern Ocean.

One new interesting phenomena of sediments related to the Eltanin impact is their high amount of sub-millimeter sized spherules. They are highly concentrated in the reworked fine grained sediment unit above the ejecta layer. The spherules are opaque and display a metallic shine under reflected light. Similar in shape and size to common micrometeorites, these spherules are probably ablation products of the impacting projectile during the earth atmosphere entry, comparable to those related to the K/T impact [7].

First detailed lithological and mineralogical investigations for the Eltanin spherules will be presented at the meeting.

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Acknowledgements. This work is supported by AWI-Bremerhaven, which will supply samples and technical assistance.