

1 Ceres is an Astrobiological Target

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As the largest main belt asteroid, Ceres is a primary target of exploration. Its abundant content in water makes it a parent to outer planet satellites [1, 2]. However, its warm surface temperature – up to 200 K at the equator, more than 100 K greater than icy satellite surface temperatures – implies a strong potential for endogenic activity. Ceres differs from other C-class objects as its surface composition (a mixture of brucite and magnesite) is not matched by any available chondrites [3]. Magnesite and brucite are the most common products of hydrothermal alteration under a partial pressure of carbon dioxide. This assemblage is found on Earth, for example in the Lost City Field [4]. Ceres' surface is also outstandingly uniform in comparison to other C-class objects [5]. It was demonstrated that all conditions were met for mobile-lid convection to take place in Ceres [6], and that its peculiar surface is evidence for the recent occurrence of that mechanism.

More generally, Castillo-Rogez and Lunine [7] evaluated the habitable potential of Ceres per the standards generally used for outer planet satellites and demonstrated that Ceres is an astrobiological target in its own right.

This presentation will report on our state of knowledge of Ceres and discuss possible observations to be performed by the *Dawn* mission in 2015 that will help assess Ceres' past and current habitable potential.

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