ANTARCTIC CRATER IS MASSIVE

A discovery in 2006 under the Antarctic ice cap may knock the Vredefort Dome off its pedestal as the largest impact structure on Earth. Scientists, however, cannot be sure that the "mass concentration" detected under the ice sheet is, in fact, an impact crater - it could also be explained as a mantle plume or other volcanic feature. More evidence is needed. Like Vredefort itself, the find remains fairly controversial.

The Wilkes Land crater is a proposed name for a 500km (300 mile) wide geological feature, located in Wilkes Land, Antarctica, and centered at 70°′S 120°′E, that has been explained as an impact crater. It was discovered in 2006 by a team of researchers led by Ralph von Frese and Laramie Potts, using the gravity measurements by NASA's GRACE satellites to identify a 200 mile (300 km) -wide mass concentration. This mass anomaly is centered within a larger ring-like structure visible in radar images of the land surface beneath the Antarctic ice cap. This combination suggests that it is the result of a large impact event.

Due to the site's location beneath the Antarctic ice sheet there are no direct samples to test for evidence of impact. There are alternative explanations for this mass concentration, such as formation by a mantle plume or other large-scale volcanic activity. If this feature does indicate an impact event, then, based on the size of the ring structure, it suggests an impactor roughly six times larger than the one that created the Chicxulub Crater that is believed to have caused the Cretaceous-Tertiary extinction event.

Based on the presence of the mass concentration, the authors believe the structure must be less than 500 million years old. The structure also appears to have been disturbed by the rift valley that formed 100 million years ago during the separation of Australia from the Gondwana supercontinent. It is possible that the impact and associated crater contributed to this separation by weakening the crust at this location. These bracketing dates make it possible that the site could be associated with the Permian-Triassic extinction event that occurred 250 million years ago, believed to be the largest extinction event since the origin of complex multicellular life. However, it is currently under debate whether or not an impact played any role in this extinction. Other proposed causes include the possibilities of a different impact site, the leading candidate for which is Bedout off Western Australia, or of non-impact-related disasters.

From Wikipedia.