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Estimating Titan's surface age from impact crater count

Lucille LeCorre (1), Cathy Quantin (2), Stephane Le Mouélic (3), and Christophe Sotin (4)

(1) Mullard Space Science Laboratory, Department of Space and Climate Physics, University College London, Holmbury St. Mary, U.K. , (2) Laboratoire des Sciences de la Terre, Université de Lyon, Ecole Normale Supérieure de Lyon, Université Claude Bernard Lyon 1, CNRS, Bât. Géode, 43 bd du 11 Novembre, 69622 Villeurbanne, France, , (3) Laboratoire de Planétologie et Géodynamique, CNRS-UMR 6112, Université de Nantes, 2 rue de la Houssinière, 44322 Nantes, France, , (4) Jet Propulsion Laboratory, Caltech, 4800 Oak Grove Drive, Pasadena, CA 91109, USA.

The Cassini mission has revealed that Titan's surface displays a great variety of geologic features and appears very young relative to the other icy satellites because it has much less impact craters. In this study, we created a catalogue of impact craters and compared the crater size distribution to age models deduced from numerical simulation of Titan impact cratering rate. We used the Cassini Radar swaths in SAR (Synthetic Aperture Radar) mode that have been released in the PDS website, and imported them in a Geographic Information System (GIS) in order to perform a crater count. The identification of 96 craters allowed us to compute the crater size distribution in a Hartmann's incremental diagram. This distribution was then compared with isochrones computed from two different age models. We discuss what model is the most relevant to explain the crater distribution of Titan, and what is the appropriate estimation of the surface age. In addition, comparison with Earth's crater density curve demonstrates that the shapes of the crater size distributions are quite similar and thus, intense resurfacing processes operate on both planetary bodies.