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Reading the Magnetic Patterns in Earth complex impact craters to detect similarities and cues from some Nectarian craters of the Moon

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Most of the terrestrial impact craters have been obliterated by other terrestrial geological processes. Some examples however remain. Among them, complex craters such as Chicxculub, Vredefort, or the outsider Bangui structure (proposed but still unconfirmed as a result of an early Precambrian large impact) exert in the total magnetic field anomaly global map (WDMAM-B) circular shapes with positive anomalies which may suggest the circularity of a multiring structure.
A similar pattern is observed from the newest available data (global spherical model of the internal magnetic field by Purucker and Nicolas, 2010) for some Nectarian basins as Moscovienese, Mendel-Rydberg or Crissium. As in the case of Earth's impacts, the positive anomalies appear near the basin center and inside the first ring, this distribution being strongly connected with crater-forming event.
Detailed analysis of largest impact craters from Earth and Moon –using a forward modeling approach by means of the Equivalent Source Dipole method–evaluates the shock impact demagnetization effects–a magnetic low–by reducing the thickness of the pre-magnetized lithosphere due to the excavation process (the impact crater being shaped as a paraboloid of revolution).
The magnetic signature of representative early Nectarian craters, Crissium, as well as Earth's complex craters, defined by stronger magnetic fields near the basin center and/or inside the first ring, might be a consequence of the shock remanent magnetization of the central uplift plus a thermoremanent magnetization of the impact melt in a steady magnetizing field generated by a former active dynamo. In this case, ESD method is not able to obtain a close fit of the forward model to the observation altitude map or model.