

New Impact Craters Discovered Using Landsat Imagery: Abstract

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ABSTRACT

A debris filled basin, 12 kilometers in diameter exists on the south margin of the Chukotskiy Poluostrov, 50 kilometers east of Zaliv Kresta, in Eastern Siberia. This feature is drained by the Limgytynot River and is herein designated as the Limgytynot Impact Structure. It is similar in size and structure to the Ames, Oklahoma, impact structure.

A sharply defined basin, 1,300 meters in diameter, 35 meters deep, and with internal drainage, is located 35 miles south of Dodge city, Kansas. This feature is named Big Basin on topographic maps of the region. Remote sensing data indicate prominent radial fracture sets and a polygonal shape that reflects the regional fractures. Subsequent field work revealed that the strata on the rim of the feature dip radially away from the center of the feature. The rim and wall materials are intensely fractured.

Primary impact structures can range in size from pits a few meters across to multi-ring basins 800+ kilometers in diameter. Close examination of the geometry of primary impact features reveals that they often exhibit a polygonal shape related to the preexisting regional structure. The forces of impact superimpose radial and concentric fractures onto the preexisting regional structure. Associated fractures and size related features, such as central uplift zones, interior rings and slump blocks, are good diagnostic characteristics of primary impact structures.

The above physical features can be located on remote sensing data that specifically enhances such characteristics regardless of their subtleness. The bands of Landsat imagery, both MSS and TM, acquired in the near-IR at low angles of illumination are excellent tools to use in a search for primary impact structures.

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