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IAG, gravity fields of planets

Gravity strike angles as admirable tool to study gravity fields of planets

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The gravity strike angle is one of the gravity aspects (descriptors), functions like the gravity anomaly, derived from the disturbing gravitational potential, from the global gravity field model, developed in terms of harmonic geopotential coefficients (Stokes parameters) of the respective celestial body. All the aspects together describe the causative body beneath the surface (the density anomaly) in a much greater completeness and detail than the traditional gravity anomalies can do themselves. But as always with the gravity field, this inverse task is not unique and advices from geoscientists of various specializations are needed for applications intended to the particular regions.

The strike angles react on changes in porosity of the ground material. They have mathematical as well as geophysical meaning; their physical meaning is still “providing surprises”. The strike angles are usually of diverse directions, but sometimes are aligned into one prevailing direction (linearly combed) or have a special geometry (a halo around the impact craters, on the Earth, the Moon and Mars as well). The reasons for the strike angles to be aligned, we already know, are the following: water, river valley, trench, ground water, paleolakes, permafrost, regolith, subglacial lakes and rivers, oil&gas deposits, coal, hydrocarbons occurrences in general, all located shallowly beneath the surface.