Earth’s geopotential field, or ‘geoid’ $\Phi$ shown in cylindrical coords $r,z$
contours of the Earth’s geopotential field $\Phi$ (gravity and centrifugal effects), for a point-mass approximation to gravity. The maxima in the plane of the Equator indicate the place where geostationary satellites can sit ... though they are ‘unstable equilibria’ and satellites tend to wander away, and need their position may need to be corrected.
Deviation of the Geoid from the idealized figure of the Earth
(difference between the EGM96 geoid and the WGS84 reference ellipsoid)

Red areas are above the idealized ellipsoid; blue areas are below.

1=ocean, 5=geoid  2=ellipsoid  4 = continent  (Wikipedia)
Smith & Sandwell: topography: Orbiting satellites observe the solid Earth’s shape, both through radar altimetry and through precise observation of their orbits. Here, the sea floor topography is mapped using the sea surface topography, which is strongly shaped by the topography beneath. It gives us remarkable images of the sea floor. The radar altimeter, measuring the sea-surface elevation, also gives us a global measurement of surface ocean circulation and oceanic heat storage. Visit
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