

Geoid Animation

Animated globes of the Geoid height, which is the difference of an imaginary sea-level surface that in fact has a wavy surface over all of the Earth, to a perfect ellipsoid. This wavy surface, here displayed radially exaggerated, exists because the Earth's mass is not spread out evenly. Mountain ranges, ocean trenches, and even subtle density differences deep underground slightly alter gravitational pull. This causes sea level to dip and bulge by up to a 100 metres depending on location, though these changes are imperceptible from a beach. The geoid is crucial as it provides the true physical reference for measuring elevation and depth, rather than the simplified mathematical ellipsoid commonly used on maps and GPS.

The rendered data is based on EGM2008 (Pavlis et al., 2012) and plotted using an equal-area Mollweide map projection to preserve the relative sizes of land- and ocean areas (other projections are included in the download package). The Scientific colour map 'vik' is used to represent data accurately and to all readers.

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- Related reference: Nikolaos K. Pavlis, Simon A. Holmes, Steve C. Kenyon, John K. Factor; 2012, EGM2008: The development and evaluation of the Earth Gravitational Model 2008 (EGM2008) -Journal of Geophysical Research: Solid Earth (1978-2012) Volume 117, Issue B4, April 2012. <https://doi.org/10.1029/2011JB008916>

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