



ITRF2014 GNSS vertical velocities and global Earth figure variations

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We investigate the GNSS station vertical velocities provided by the new solution of the International Terrestrial Reference Frame, the ITRF2014. Constructed from a global network of approximately 1500 stations of the different space geodetic techniques, this new solution provides two times more GNSS station velocities than the ITRF2008, and shows a global pattern of vertical velocities very homogeneous regionally. As in the ITRF2008 solution, large vertical velocities can be seen over North America, Northern Europe, or Antarctica, probably induced predominantly by the Glacial Isostatic Adjustment (GIA) still occurring today since the last deglaciation. But the ITRF2014 solution shows also large vertical velocities over regions such as Greenland and Alaska clearly larger than in the ITRF2008, probably related to last decadal ice melting and its possible acceleration. We investigate different methods to calculate low degree spherical harmonics coefficient from ITRF2014 GNSS vertical velocities. We particularly focus on the components related to the geocenter motion, the ellipticity of the solid Earth, and the J_2 rate, and we present time tendencies with respect to different GIA and recent ice melting models.