



Origin of the ITRF: finding consistency between GPS and GIA models

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The origin of the ITRF changed substantially between ITRF2000 and ITRF2005 (ITRF2008 is essentially the same definition as ITRF2005), with a difference of +1.8 mm/yr translation rate along the Z-axis. This potentially introduces a change in height rate at sites on the surface of the Earth, approximated as $+1.8 \sin\theta$, where θ is the co-latitude of the site location. This presentation will address the question of whether this change in definition between ITRF2000 and the subsequent reference frames has rectified an error in ITRF2000 or has introduced a new problem. We approach this issue through a detailed comparison of uplift rates as predicted by glacial isostatic adjustment models for Fennoscandia and as estimated from GPS and tide gauge observations. We find that the GPS uplift rates (derived in ITRF2005) only match the GIA model predictions if the Z-axis translation rate of the origin of the GPS coordinate system is undone. This suggests that the origin of ITRF2000 may be closer to the true origin than that of the later reference frames.