



Subseasonal GNSS errors in IGS products

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Global Navigation Satellite System (GNSS) station coordinate errors over seasonal and longer time scales are known to be spatially and temporally correlated with flicker noise spectra. The corresponding orbit errors have generally similar characteristics. Overlaying the background are strong annual and semiannual variations that cannot be explained by any single phenomenon. Next most prominent are harmonics of the GPS draconitic year with periods of $(351.4/N)$ days. It is likely that errors in the standard model for Earth orientation parameter (EOP) tidal variations near 12 and 24 h periods are absorbed into the resonant GPS orbit and daily EOP estimates, resulting mainly in draconitic and fortnightly alias signatures for 24 h product sampling. With the change in International GNSS Service (IGS) station coordinates from weekly to daily resolution in August 2012, it is now possible to study subseasonal performance. And since that time, most IGS Analysis Center (AC) orbits are more nearly independent between days. All ACs show fortnightly signals, but the resolution for station positions will not be sufficient to distinguish direct tide model from aliased subdaily error sources till two more years of data are available. All but one of the ACs that includes GLONASS data have signals at ~ 8 day periods, the ground repeat period for GLONASS orbits. This probably arises from larger geographically correlated orbit errors for GLONASS. Two ACs possess unique short-period features that appear to be caused by unknown peculiarities of their analysis strategies.