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Stability of the Herstmonceux space geodetic site from multi-technique analyses.

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It is very important to monitor and quantify observational precision, local site stability and the quality of inter-technique site-ties at space geodetic observatories that contribute observations that are used to maintain the ITRF. Full geophysical utilization of the data requires separating complicating effects such as highly localized motions from truly global, seasonal effects, for instance. The Space Geodesy Facility (SGF) at Herstmonceux, UK, operates a highly precise and prolific ILRS satellite laser ranging station, two IGS GNSS receivers (GPS and GLONASS) and associated environmental monitors including an automatic ground-water-level measurement system. From November 2006 an absolute gravimeter has been added to the permanent on-site geodetic equipment, in a collaboration between SGF and the Proudman Oceanographic Laboratory and University College London. In this poster we report results of twelve years of laser ranging and global and differential GPS analyses and new preliminary absolute gravimetry analyses, carried out primarily to investigate on site vertical stability and local loading effects. Present in the results are strong correlations between local hydrological variations and vertical seasonal signals whose magnitudes suggest that they are driven by a combination of local loading and global Earth mass-centre variations.