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Local surface deformation from SLR and GPS analyses

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In the context of the operational phase of the Global Geodetic Observing System (GGOS), a network of observing stations hosting a variety of very accurate space geodetic techniques is essential. At such stations, it also is very important to monitor and quantify local stability since the geodetic observations 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 UK Natural Environment Research Council Space Geodesy Facility (SGF) at Herstmonceux, UK, operates a highly accurate satellite laser ranging station, two IGS GNSS receivers (GPS and GLONASS) as well as associated environmental monitors including a ground-water-level monitor. During early 2006 an absolute gravimeter will be added to the permanent on-site geodetic equipment. In this poster we report results of long-term global laser ranging and GPS analyses, carried out primarily to investigate on-site vertical stability and local loading effects. Present in the results are strong correlations between local hydrological and atmospheric variations and vertical seasonal signals whose magnitudes suggest that they are driven by a combination of local loading and global Earth mass-centre variations.