

RELATIVE HEIGHT SURVEYING OF GEODETIC MONUMENTS AT THE SGF HERSTMONCEUX, UK. G. Appleby¹, J. Rodriguez¹, R. Sherwood¹, T. Shoobridge¹, M. Wilkinson¹. ¹NERC Space Geodesy Facility, Herstmonceux, UK, matwi@nerc.ac.uk

Introduction: A regular local site survey, incorporating markers on co-located geodetic monuments, can identify sub-mm height variations and thus enable long-term site-wide monitoring. Instability at the local site level can affect the results from geodetic techniques and directly impacts on the local ties between co-located techniques.

The Space Geodesy Facility (SGF) in Herstmonceux, UK, operates a productive and precise GGOS ‘next generation’ satellite laser ranging station (HERL), two IGS GNSS sites (HERS, HERT) and a permanently situated absolute gravimeter.

A campaign of fortnightly levelling surveys began in 2010 to monitor the relative heights of a series of monuments using a Leica DNA03 bar-code levelling instrument, with instrumental accuracy of 0.3mm. The

monuments include an absolute gravimeter pier, the SLR pillar and points on the GNSS monuments. In total 22 relative heights are measured during an approximately two hour survey run, which involves two members of the SGF team.

The results from four years of data show that the height differences between most of the monuments are highly stable at the sub-mm level and lack systematic variation. However, a well-defined annual height variation of magnitude $\pm 0.5\text{mm}$ has been discovered between certain monuments, in particular the HERS tower.

These on-going levelling surveys lead us to conclude that the inter-technique ties at the Space Geodesy Facility are stable at the millimetre level.