LARES-2 – initial results from NSGF Space Geodesy Facility, Herstmonceux

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An initial priority at SGF, Herstmonceux following the launch of LARES-2 was to obtain ranging data as soon as possible. The difficultly at this post-launch stage is very high due to the lack of accurate predictions that are required to aid acquisition. Nevertheless within a few days SGF was one of 5 stations that had managed to obtain precise data to the new satellite, using publicly available radar-based predictions with km-level accuracy. To enable the rest of the global network to join in making routine observations, especially during daytime, regular accurate predictions are required, based on recent data. Without this service the science benefits of the new target cannot be unlocked.

The SGF Analysis Centre has a long-term commitment to the global community to compute predictions for the geodetic spherical satellites and, using this first data obtained after the launch, provided the first very accurate predictions for LARES-2. The predictions, which are generated automatically every day, are based on fits to four days of range measurements to determine accurate orbital elements, which are then propagated a few days into the future.

In this study we present the impact of adding the new target into the observing schedule and evaluate the quality of the predictions. From the analysis point of view, we present the initial impact of adding observations from LARES-2 into our7-day orbital fits, including estimating range biases to mitigate our use of an approximate LARES-2 Centre of Mass value.