

An assessment of low-cost GNSS equipment for high-precision geophysical geodesy

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Global Navigation Satellite Systems (GNSS) constellations have matured adequately over the last few years to reach minimum design specification with at least 24 satellites broadcasting a second civilian frequency. Small, cheap GNSS receivers that receive these civilian signals are also now readily available and may be useful for large-scale geodetic deployments at minimal cost. Here we present a series of experiments to assess the viability of using low-cost GNSS receivers based upon the u-blox F9P chip with a standard processing software package, GAMIT/GLOBK. We perform a series of equipment comparisons, using a standard geodetic-grade GNSS receiver versus the low-cost receiver and a standard geodetic-grade antenna versus a low-cost antenna. We provide some considerations and recommendations based on these experiments for anyone wishing to purchase and use such low-cost receivers for high-precision geophysical geodesy observations.

