



## Tectonic monitoring with low-cost multi-GNSS installations in Greece

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In 2023, we began installing a low-cost tectonic multi-GNSS network in Greece, funded by the European Research Council. We have installed a total of 45 permanent/continuous-mode stations, with another 15-20 to be installed in 2024. Installations so far have been mainly on the Peloponnese peninsula, with the strategy of increasing spatial resolution in between the existing research and privately operated GNSS networks. Station maintenance is funded by the project (ERC StG: TectoVision) until 2027, but it is the intention that as many as possible of these stations can stay installed (as permanent installations).

The scientific purpose of the new stations is to increase spatial resolution of microplate motions in Greece but these data will also be of use to other research fields needing single- or multi-GNSS observables. Accordingly, these data are being released without embargo subject to completion of quality control checks (with the data publication and link to download to be finalized before EGU 2024).

We consider this installation campaign to be a pilot project in affordable, rapid densification of tectonic-grade GNSS stations. Part of our strategy has been to use relatively low-cost monumentation for the geodetic marker onto which the low-cost installations are installed. Most stations are connected to mains electricity supplies of public buildings, with the monumentation being installed on flat roofs of these buildings. In higher altitude areas where flat roofs are rare,

we have made 3 special installations at bedrock sites, with radio telemetry linking to a radio-receiving station in the nearby villages. We use a range of telemetry solutions, with the most common being the transfer of the 30s sampling data via a router containing a Machine-to-Machine (M2M) sim card.

In this presentation, we will show data quality metrics from the initial analysis of 6-11 months of observations and compare to the time series that can be processed from more expensive receiver-antenna combinations. We will also discuss what the team has learned practically (on-site) and logistically about installing low-cost GNSS stations at scale.