

DSEBRA GOES TO GREECE AND NORTHERN MACEDONIA AS PART OF ADRIAARRAY

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Introduction

The AdriaArray project addresses fundamental questions related to the geodynamics and the deformation and stress field of the Adriatic plate in south-eastern Europe. The observational basis of AdriaArray is a recently formed seismic broadband array that joins newly deployed temporary and existing permanent stations all over the entire Adriatic plate.

Deployment

The contribution of the Ruhr University Bochum (RUB) in Greece and Northern Macedonia enhances the local networks by **35 temporary stations (GR01 – GR33, LFKM and MK01A – MK04A on the map)** and upgrades the instruments at **17 permanent sites (other labeled stations)**. Most of these sites are equipped with broadband instruments from the German DSEBRA array which were previously installed within the scope of the AlpArray project. Deployment started with **39 stations in Greece** at the end of **September 2022**. Local partners are the universities of Thessaloniki, Athens and Patras, as well as the National Observatory of Athens (NOA). The deployment of **13 stations in North Macedonia** is planned for **March 2023** in cooperation with the Seismological Observatory of the University of Skopje.

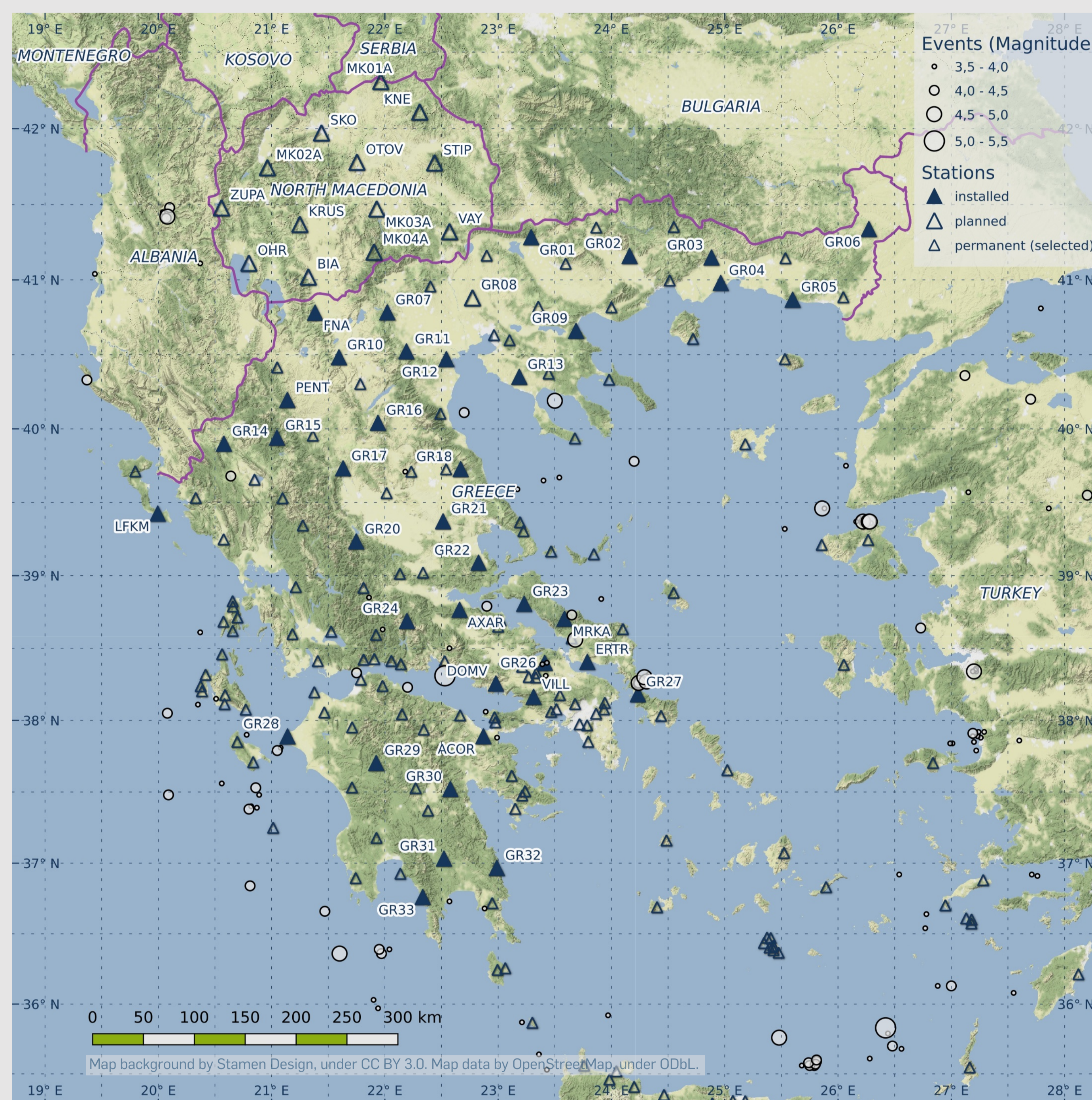
All stations have mobile routers for **live-streaming of waveform and state-of-health data** to servers of the Seismological Observatory of the RUB and to the EIDA node of NOA. The **FDSN network code 1Y** has been assigned to the temporary stations, while the upgraded permanent stations keep the original network code. Access to the **waveform data is restricted** to members of the AdriaArray project.

Data Quality

The data quality of the stations has been estimated by pseudo power spectral density (PPSD) plots. Some examples for one week of data is shown for a selection of bad, average and good stations. The produced **day plots** of the stations also give an overview of the high frequency noise and the variation over time of the background noise.

Monitoring

The **streamed state-of-health (SOH) channels are permanently monitored**. The monitoring system evaluates the SOH channels for the external power (230V), battery power (12V), charger status, router status, datalogger temperature, mass centering, clock quality and data gaps. The **output is summarized on a web page**. From there plots of the SOH channels and waveform plots (**dayplots**) are accessible. Links to the seedlink monitoring are also present. The seedlink monitoring uses the tool *slmon* of the SeiscompP software. **Most frequent problems are power outages and router problems**. But other failures like **broken charger, batteries or GPS antennas** could also be detected. In most cases **local contact persons** could help to fix problems if it wasn't possible remotely.



Recorded Seismicity

The newly deployed stations in Greece recorded many events right from the start of the seismic series of Evia which started in **November 2022** and lasted at least to **February 2023**. Especially the station GR27 in the vicinity of the active region could provide valuable data to get precise locations of small events. The **map shows the events of magnitude 3.5 and larger** but the network was also able to **automatically detect and locate** much smaller events down to **magnitude 1.4**. The regional seismicity is monitored in more detail by the partners in Greece and Northern Macedonia. Nevertheless some example seismograms are shown below.

