FocusX temporary land-network (FXland), seismic data and preliminary analysis

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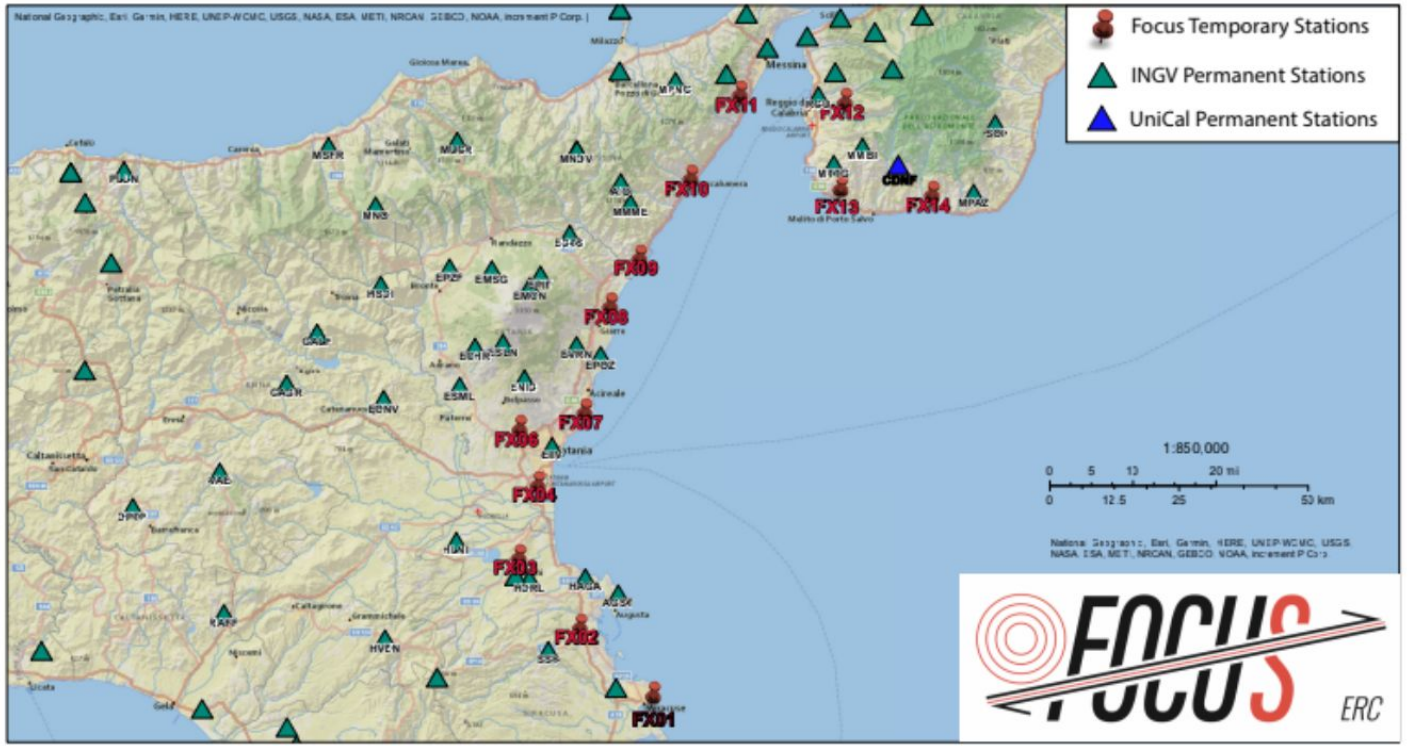
In the frame of FocusX2 project INGV (Osservatorio Nazionale Terremoti and Osservatorio Etneo) and UniCal (Laboratorio di Sismologia) are deploying, from the end of 2021 to January 2023, a **temporary seismic network.**

Temporary seismic network FXland FDNS code 1J integrated with permanent seismic stations (INGV network codes: **IV**, **MN** and Unical network code: **IY**) to record regional and global seismicity in the Ionian Sea. The deployment consists of **13 temporary land stations** and of the acquisition of **one new station IY**; in the same period OBS stations are deployed at sea: FocusX temporary OBS-network (network code **XH**).



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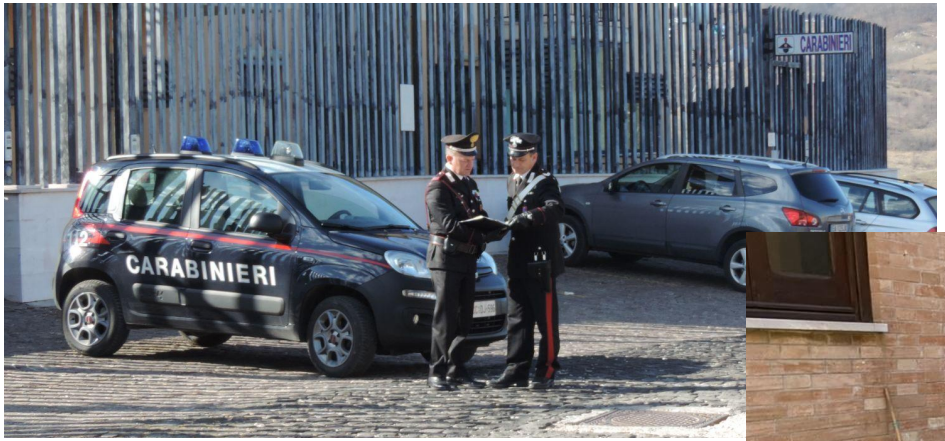
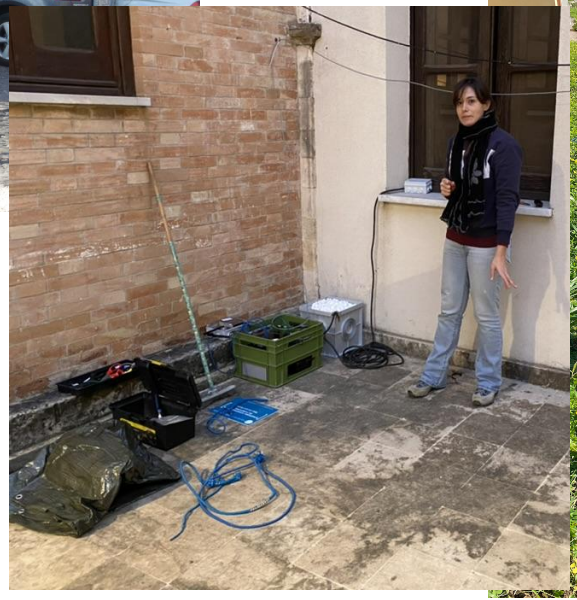
Installing inside and outside the Carabinieri Barracks



The sensors are buried or covered with insulating materials.

The stations are powered by solar panels or connected to the electricity grid.



The stations are equipped mainly with digitizers Reftek 130 (12) and with velocimeters Trillium 120C (10), but we have also velocimetres Le 5s (2). Two stations have digitizers Sara SL06 (2) and velocimeter ss08 60s (2).

DOI and DATA archiving

Continuous data are transmitted in real time at the INGV Rome acquisition system, used in the seismic surveillance, archived and distributed in EIDA.

Seismic Network 1J FocusX temporary land-network

Start Date: 2021-12-01T11:12:00
End Date: 2023-12-31T23:59:59
Data Restriction: open
Number of Stations: 13

DOI (Digital Object Identifier): 10.13127/sd/o5qwm6wjcd
Metadata (DataCite): JSON , XML
Size: 0.5 Gb per day

Download StationXML (*) level station

Download Dataset

Bibliographic citation:

Moretti, M., Margheriti, L., Alparone, S. C., Costanzo, A., La Rocca, M., Murphy, S., Gutscher, M.-A., & Focus Working Group. (2021). *Seismic Data acquired by FocusX temporary land-network (FXland), Southern Italy* [Data set]. Istituto Nazionale di Geofisica e Vulcanologia (INGV). https://doi.org/10.13127/SD/O5QWM6WJCD

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Relations to other data and publications [more]

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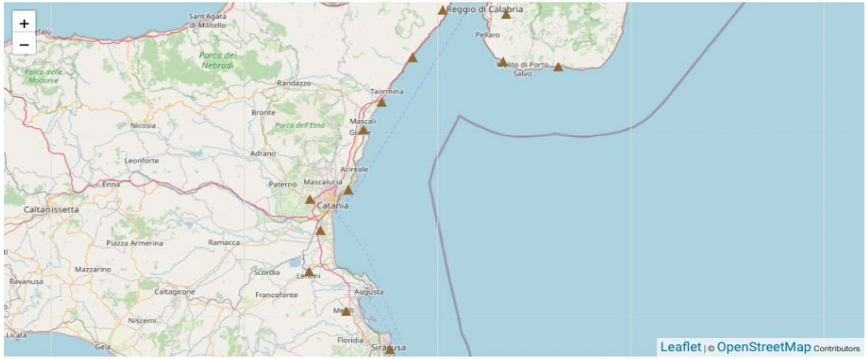
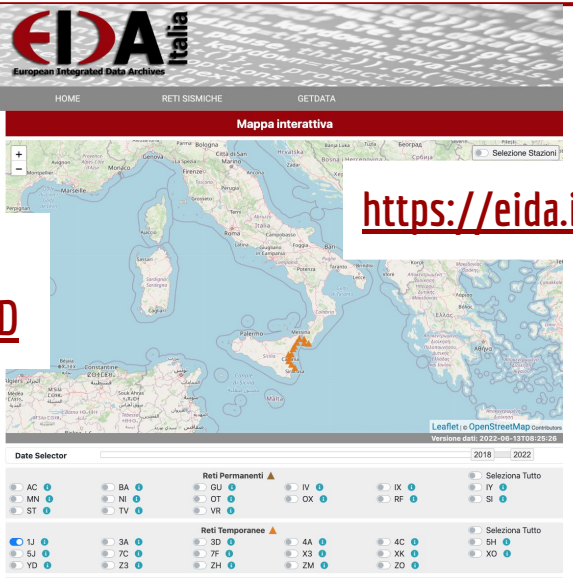
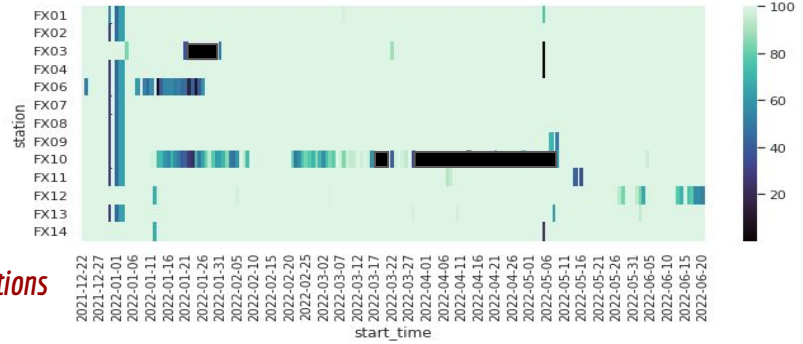
FocusX temporary land (network code 1J)
https://doi.org/10.13127/SD/O5QWM6WJCD



Stations List

https://eida.ingv.it/





DATA archiving percentage per day: *we have had few malfunctions*

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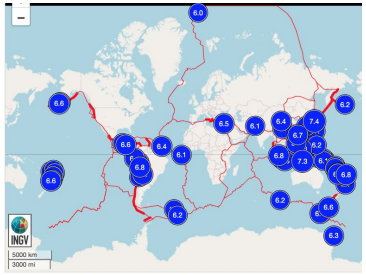
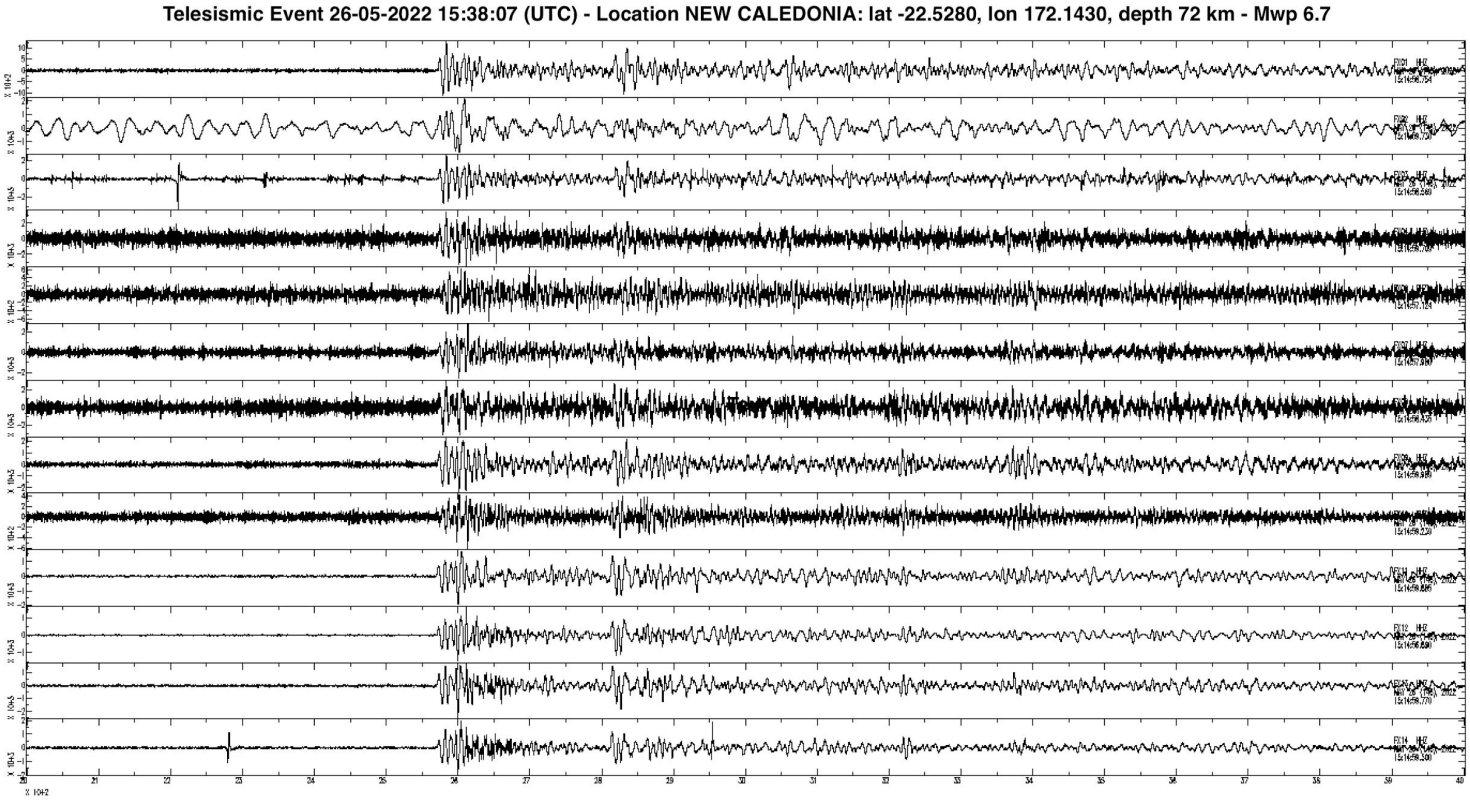
Teleseismic events



In the deployment period 23rd December 2021 - 23rd June 2022 77 teleseismic earthquakes with magnitude larger than magnitude 6.0 were registered.



Examples are shown of the waveforms recorded by the 1J network for telesismic events.

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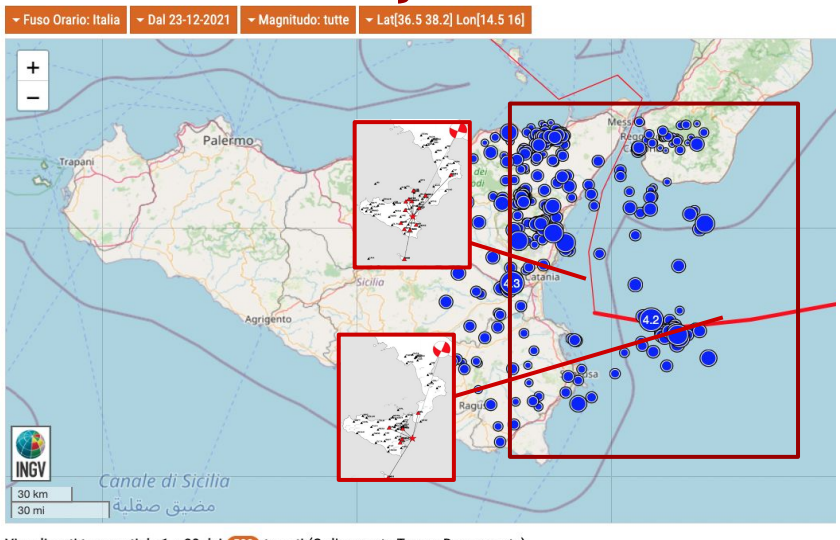
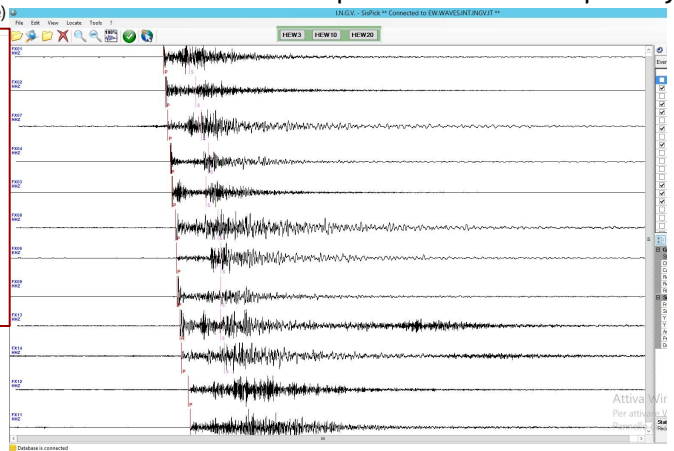
Local seismicity



The two local events with M › 4.0 and some other events larger than 3.0, were analyzed by the analysts of the Italian Seismic Bulletin including all the stations of the FXland 1J network.



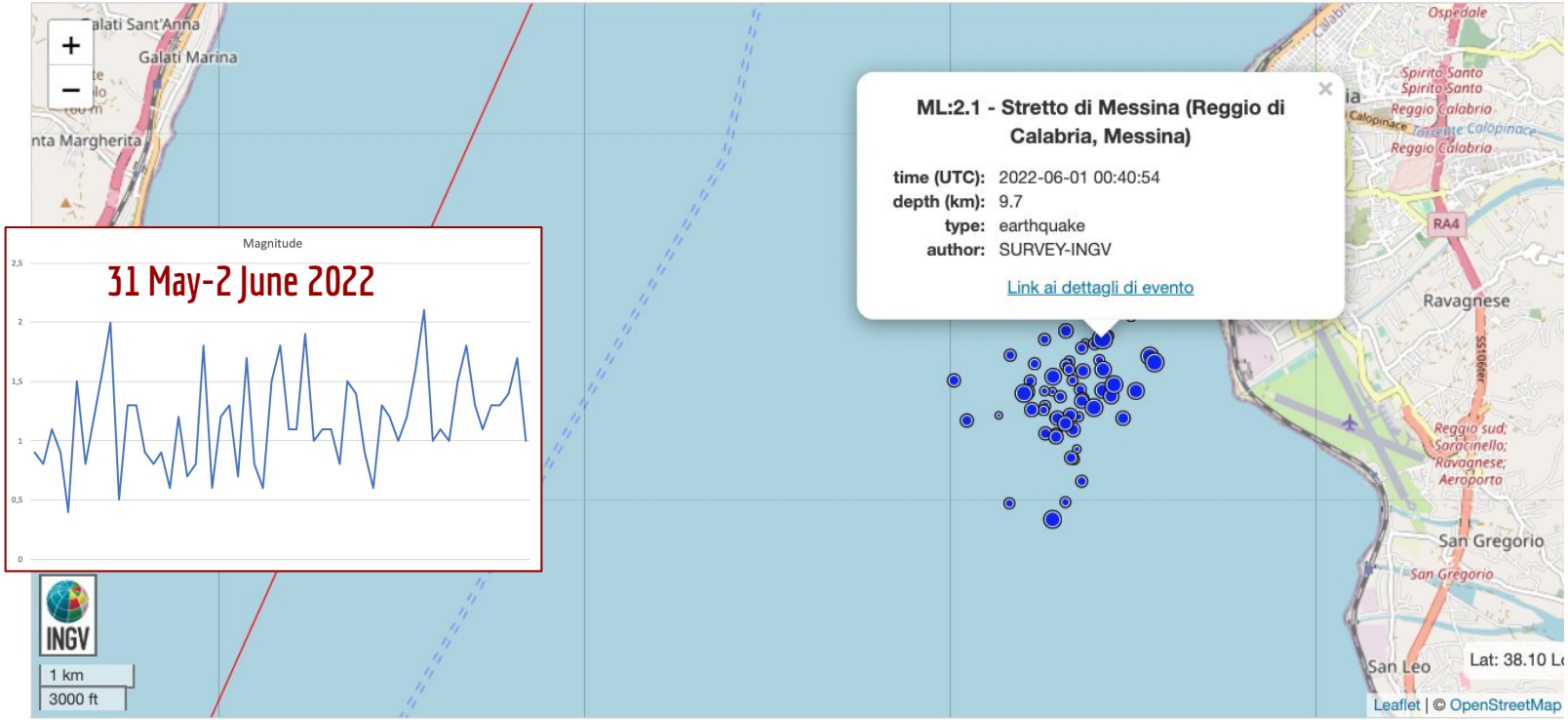
Location improvements using FXland 1J network

The goal of this experiment is to improve the accuracy of the locations in the Ionian Sea area; to better define the crustal structure of the region and find patterns related to fault systems.

In the deployment period 23rd December 2021 - 23rd June 2022 regional seismicity (area between Lat 36.5-38.2 Lon 14.5-16.0) include **528 events** located by the INGV seismic surveillance system, two of them with magnitude larger than 4.0 as well as 77 teleseismic earthquakes with magnitude larger than magnitude 6.0. The seismicity in the Ionian area is possibly the result of two types of tectonic activity at different depths: a gently NW dipping subduction interface of the Calabrian subduction zone, and the strike-slip fault systems in the Ionian Sea, well expressed in the morpho-bathymetry and observed in previous seismic profiles.

Detection improvements using FXland 1J network

The goal of this experiment is to improve the detection of seismicity in the Ionian Sea area and the accuracy of the locations; to better define the crustal structure of the region and find patterns related to fault systems.



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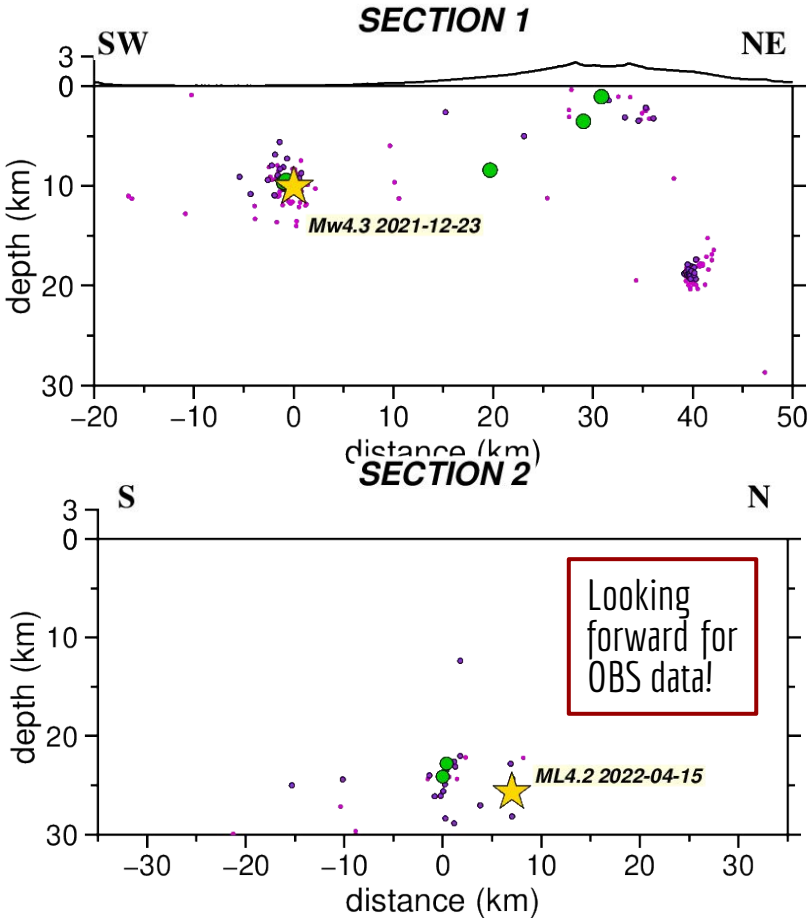
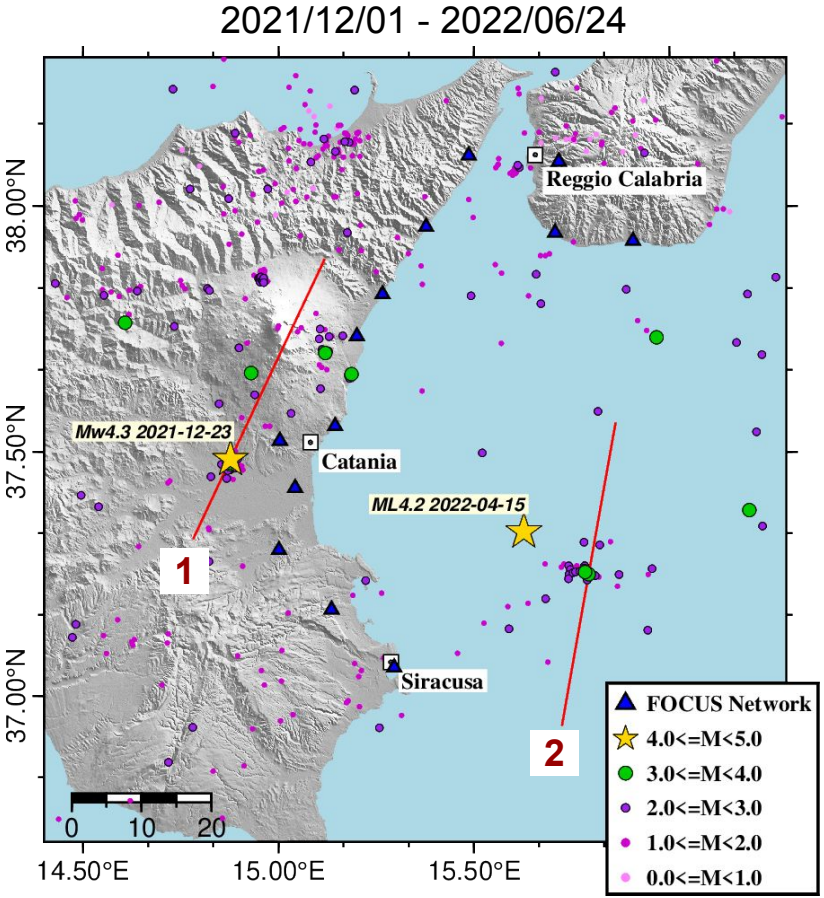
Relocated seismicity using NLL





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Acknowledgements

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- the *Commissione Rete Mobile* - **COREMO** - borrowed 12 temporary stations to the project.
- **UniCal** borrowed two temporary stations.
- *The* **EIDA Italia group** *supported the archiving of the data: in Particular Alfonso Mandiello, Massimo Fares and Peter Danececk.*

The **Focus project** (ERC Advanced Grant 786304) supported the deployment by buying batteries and routers for real time transmission.

Plan

A PhD student is expected to start working on data starting next fall