HELLENiQ UPSTREAM
IONIO

BLOCK IONIAN

LEASE AREA

ENVIRONMENTAL REPORT 2025 - 2026

Contents

Figures

BLOCK IONIAN LEASE AGREEMENT AREA

ENVIRONMENTAL REPORT 2025

HSE Policies & System, Environmental Studies and Implementation

1. Introduction

HELLENiQ UPSTREAM Ionian Single Member S.A. (HELLENiQ UPSTREAM Ionian), 100% subsidiary of HELLENiQ UPSTREAM S.A., owns all the rights to explore and produce hydrocarbons deriving from the Lease Agreement with the Greek State in the offshore area of Ionian Sea (Block Ionian), total area 3.420,6 sq. km. HELLENiQ UPSTREAM Ionian S.A. (100%, Operator) officially signed the Lease Agreement with the Minister of Environment & Energy on April 9, 2019 and on October 10, 2019, the Greek Parliament ratified (Law 4630/10.10.2019). HELLENiQ UPSTREAM Ionian, acting as Operator, is fulfilling its commitments and planning of the first phase of the exploration work program by implementing the most up-to-date, safe and environmentally friendly technological methods and practices with the outmost respect to local societies and socioeconomic activities. According to the Provisions of Article 12 for «Environmental Protection», «...The Lessee shall include in each Annual Work Program and Budget to be submitted to the Lessor, an environmental report on the work to be undertaken as provided in that document, as well as on the work undertaken in accordance with the preceding Annual Work Program and Budget».

2. Seismicity Monitoring 2025 results

2.1. Introduction

HELLENiQ UPSTREAM Ionian S.A. continued during 2025 the Seismicity Monitoring of the Block Ionian lease area, in collaboration with the Geodynamic Institute of the National Observatory of Athens (CONTRACT AGREEMENT 2022014/06.05.2022), to monitor the existing seismic activity in real time. To this end, a local network and a local seismic array were installed in 2022. The National Observatory of Athens (NOA), headed by its President, Prof. Emmanouel Plionis, and the Principal Investigator Dr. George Drakatos (Emmer. Researcher IG/NOA) undertook the installation of a local network consisting of twelve (12) portable seismographs, as well as a local seismic array.

The aforementioned took place for the purpose of increasing the density of the already existing national seismograph network, used by the Institute of Geodynamics of NOA for the continuous monitoring of the daily seismic activity of the Greek area. In addition to the already existing stations that are operated by the National Seismographic Network, twelve (12) new stations were installed that are in continuous operation with real-time data transmission to the Institute of Geodynamics.

The placement of the stations was done in such a way as to achieve the maximum density of the network utilising, where possible, every island in the area. Because the survey area was offshore, towards the Ionian, it was quite difficult to have a sufficiently adequate azimuthal coverage. Therefore, in order to better cover the area, a seismic array was installed on the island of Ithaca and a nearby station on the Italian coast was also used in the analysis.

The coordinates of the local network positions are described in Fig 1 below:

No	Station Code	Installation Site	Latitude (N)	Longitude (E)
1	OTHN	Othonoi Overseas Islands	39.84	19.41
2	ALTS	Avliotes, Corfu	39.78	19.67
3	PLKS	Pelekas, Corfu	39.59	19.82
4	VRAG	Vraganiotika, Corfu	39.47	19.91
5	KAVS	Kavos, Corfu	39.39	20.11
6	PAXO	Paxoi	39.19	20.18
7	AGKR	Ag Kyriaki, Parga	39.28	20.45
8	LYGI	Lygia, Preveza	39.15	20.57
9	MTKS	Mytikas, Preveza	39.00	20.71
10	IRAS	Ag Nicholaos Iras monastery, Leukada	38.59	20.56
11	ATHR	Atheras, Cephalonia	38.30	20.41
12	KMNR	Kaminarata, Cephalonia	38.22	20.38

Fig. 1: The new stations installed by the IG-NOA around the Ionian

2.2. Geological background of the local network installation

The broader North Ionian Sea region is located on the External Hellenides, which are divided to the following geotectonic zones (from east to west): Pindos, Gavrovo-Tripolis, Ionian and Paxoi-Kastelorizo (or else Apulia/Preapulia):

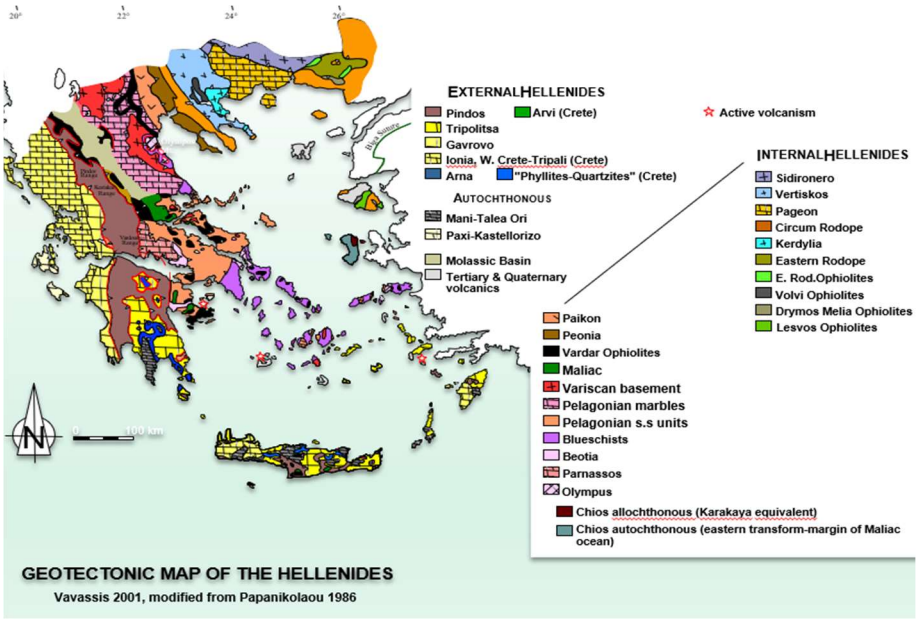

Fig. 2: Geotectonic Map of the Hellenides (Vavassis 2001)

2.3. Data analysis

For the acquisition, analysis and archiving of the data, the SeisComP3 software was used, which was developed by the GEOFON project in Helmholtz Centre Potsdam in GFZ German Research Centre for Geosciences and Gempa GmbH. The software was installed on an independent server and the huge amounts of data, which are obtained by the local network, are stored on special disk arrays.

The SeisComP3 software performs, after appropriate parameterization, automatic picking of seismic phases for the recorded seismic waves and makes an initial automatic determination of the local earthquakes.

In the figure 6 below, we can see an example of the analysis and the re-evaluated solution of the ML4.7 earthquake of 22/03/2024 05:20:41 GMT in the region of the Ionian Sea, within the area of interest as recorded of the local network and the automatic system. It can be seen that the waveforms recorded by all stations of the local network were perfectly clear.

An SMS paging system was also built, with automatic alerts, with the automatic solutions for important earthquakes that are sent to the relevant scientists of G.I. and HELLENiQ UPSTREAM within 1-3 minutes.

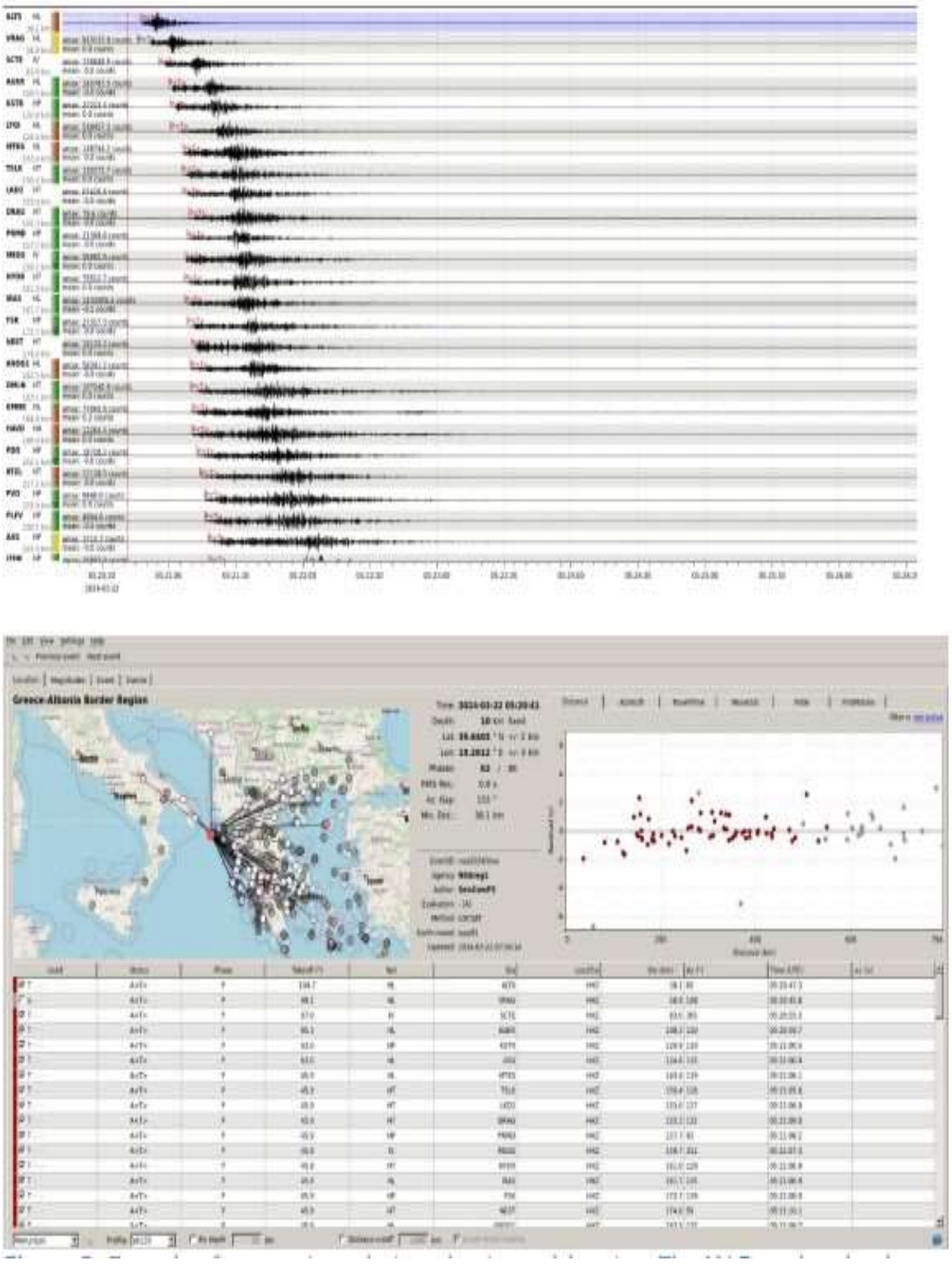

Fig. 3: Example of automatic analysis and epicentral location. The M4.7 earthquake that occurred on the 22nd of March 2024 at 05:20:41 GMT, as recorded by the stations of the local network and the automatic system.

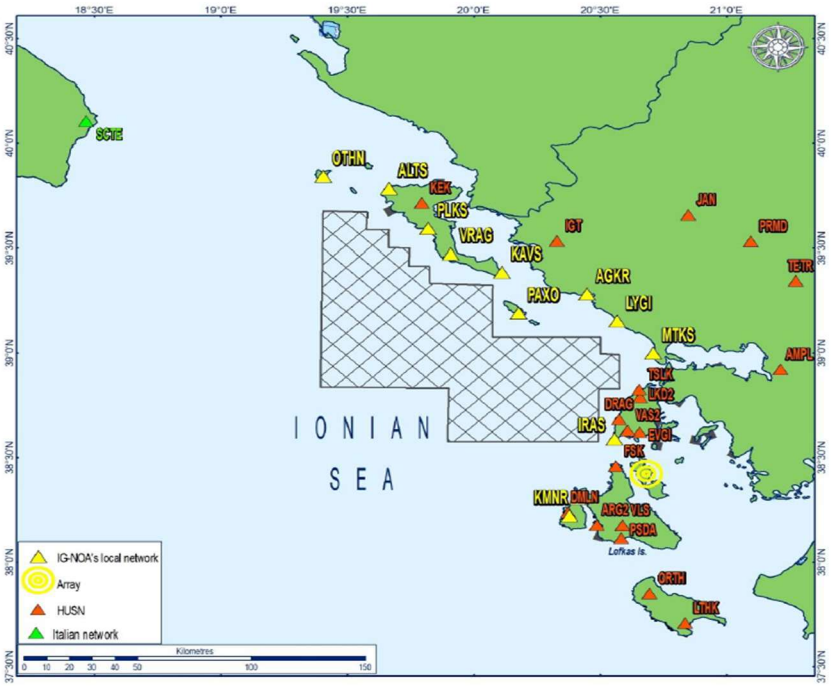

Fig. 4: The locations of the stations of the local network (in yellow) that were installed as part of the project, as well as the permanent stations that are currently in operation in the broader area (in red)

The portable stations of the Institute of Geodynamics are shown in yellow color. A detailed description per installation site, have been provided to HELLENiQ UPSTREAM Ionian S.A. in Deliverable A: Report: Portable local network installation – Maintenance of existing stations in the concession area "IONIO" (June 2023).

2.4. Recorded seismicity from the local network

Although the installation and operation of the local network started on May 2022, it was completed at the end of July 2022 and therefore seismicity monitoring under the same conditions practically started from August 2022.

From the start of the recording period up to the end of May 2025, a total number of 10.974 earthquakes were recorded, with most of them being concentrated in the Cephalonia transform fault zone, as well as the broader region of Parga. It should be noted that for all the above seismic events, their hypocenters were recalculated based on an optimal minimum 1D velocity model which was calculated for the broader region. This model was derived after 1D inversion of the obtained travel-times from the best identified events. Details of the process are presented in the final 3rd year report (Final Report – results - suggestions). During the same period the national network of NOA recorded a significantly lower number of earthquakes (5,637 events) for the same region, i.e. equal to approximately 52% of the ones identified by the local network.

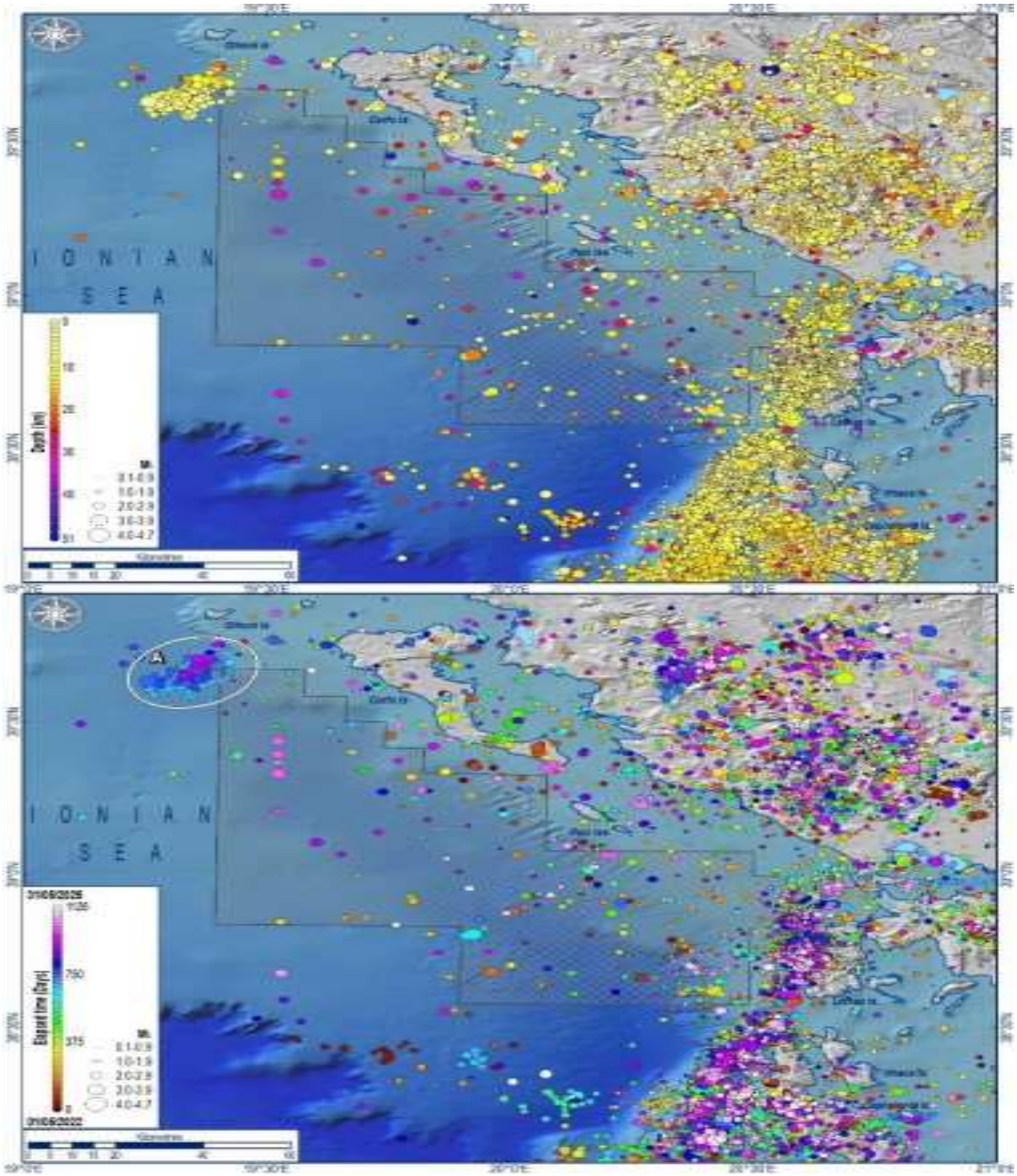

Fig. 5: Recorded seismicity for the period between June 2022 - May 2025. Top map: epicenters with coloring according to depth. Bottom map: epicenters with coloring according to time. The white ellipse marks the epicentral cluster A.

Of all the seismic events, 3,722 were recording and analyzed during the first year of monitoring between May 2022 – May 2023, 4,665 during the second year, between June 2023 – May 2024 (Figure 6) and 3,379 during the third year, between June 2024 - May 2025 (Figure 7). During the second year a noteworthy activity SSW of Othoni is observed which initiated in 20/3/2024 with a foreshock sequence of 10 events and resulted to a main event of magnitude MW4.5 (calculated at ML4.7 by the local network) in the same day. A focal mechanism related to normal fault was calculated for this event. The fault that was activated appears to have a NW-SE trend and a NE dip. The fault length did not exceed 35 km on the horizontal plane. From a geodynamic perspective this region is located to the west of the collision front between the Aegean

and the Apulian continental plates with the former being thrusted over the latter. This activity took place on the upper Apulian crust.

More than 120 events were recorded in this sequence while at the same time the national network recorded less than half of these. The events with magnitudes larger or equal to M3.0 are shown in Figure 8. The strongest earthquakes are arranged on a pattern compatible with the main axis of the focal mechanism of the stronger earthquake.

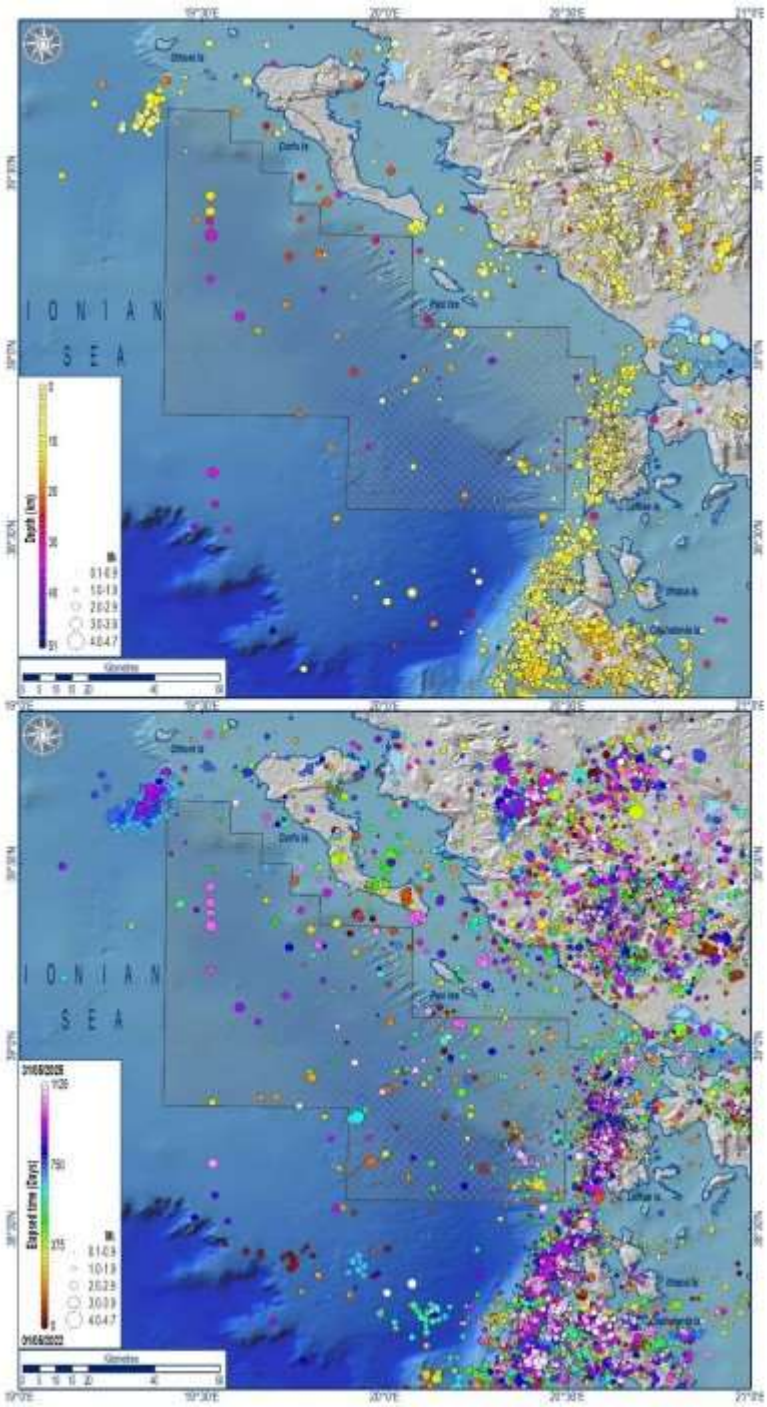

Fig. 6: Top: Recorded seismicity during the second monitoring period (June 2023– May 2024). Bottom: Recorded seismicity from the start of the monitoring period and up to the second period.

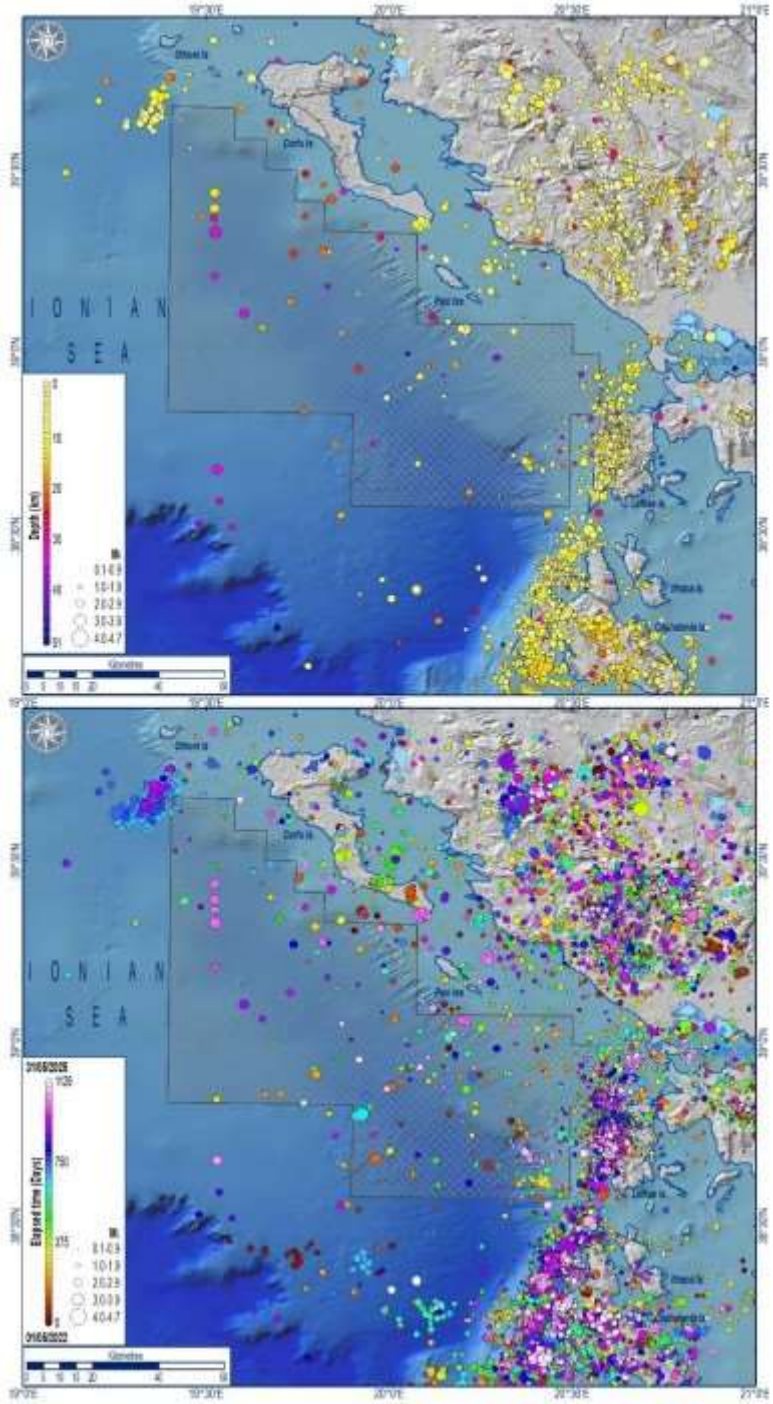

Fig. 7: Top: Recorded seismicity during the third monitoring period (June 2024 – May 2025). Bottom: Recorded seismicity from the start of the monitoring period and up to the third period.

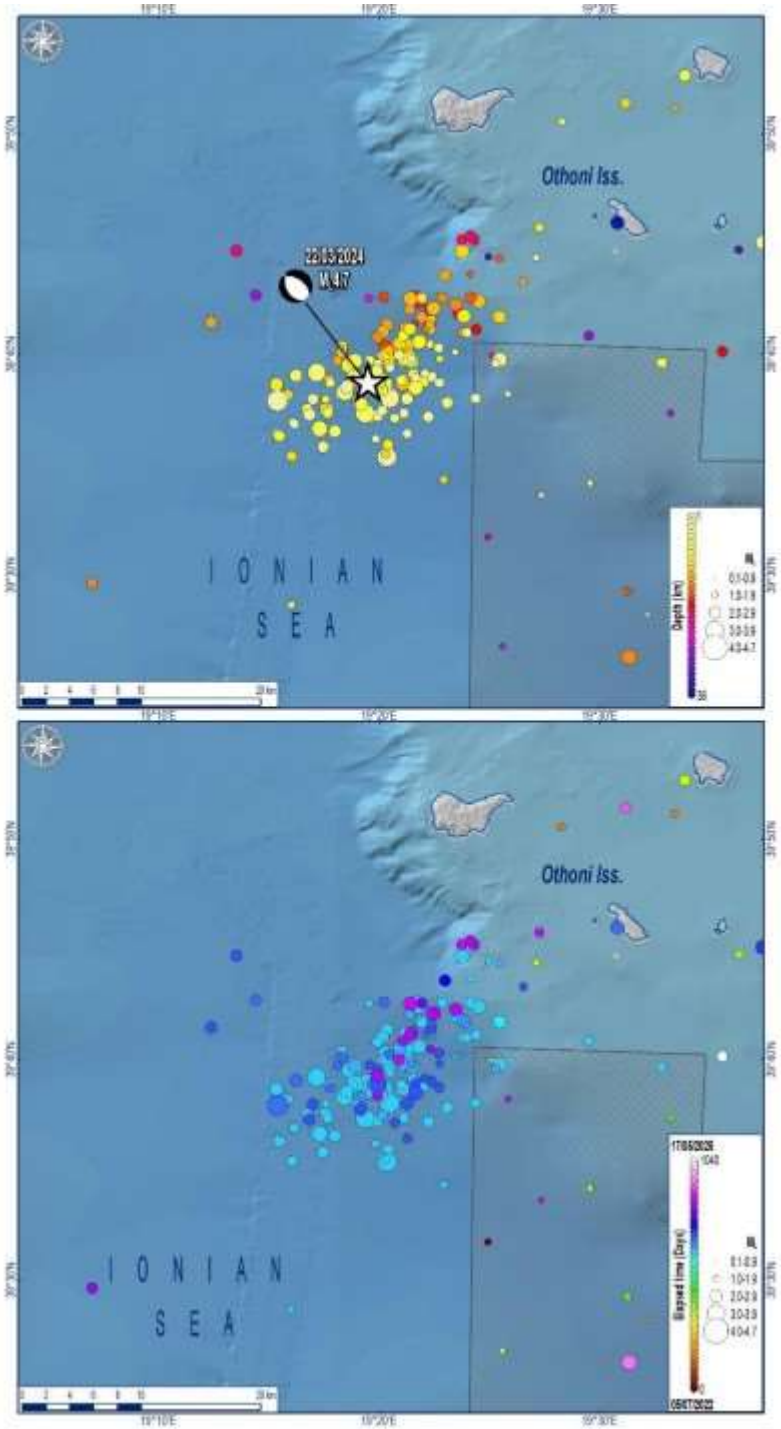

Fig. 8: The M4.7 Othonoi earthquake of 22/03/2024 05:20 was followed by 11 events with magnitudes larger than or equal to M3.0.

The greatly increased number of events recorded by the local network compared to the national network shows the high seismicity monitoring capabilities that were achieved. A more general estimate of the total seismicity of the area with the local network shows that the magnitude of completeness in the broader area improves by about half a degree on the Richter scale (Figure 9). However, the area also includes the Cephalonia transform fault which is adequately covered by the national network. More specifically,

for the area of interest, the very limited seismicity makes it particularly difficult to determine the magnitude of completeness. Based on the enriched catalogue obtained during the present monitoring phase, it is possible to make an initial estimate of the magnitude of completeness at MC1.2. (Figure 10)
Throughout the whole monitoring period, the study area shows evidence of very low seismicity with a very small number of events and with small magnitudes. The only noteworthy event is the ML4.7 earthquake in the Othoni region that occurred on the 22nd of March 2024.

It is noted that during the 3rd monitoring period, between June 2024 and May 2025, no particular change in seismicity rates is observed within the study area (Figure 11).

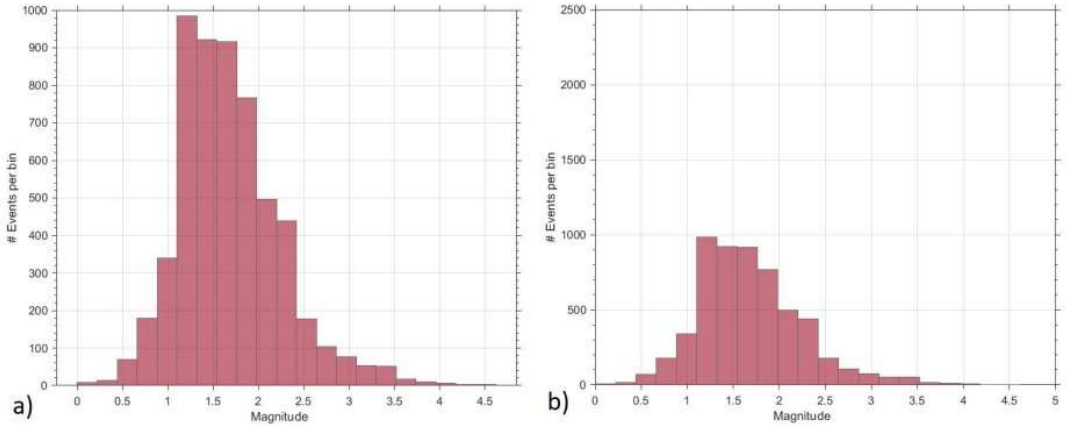

Fig. 9: Magnitude distribution histogram for the seismic events that were analyzed by the local network b) by the routine daily analysis of NOA.

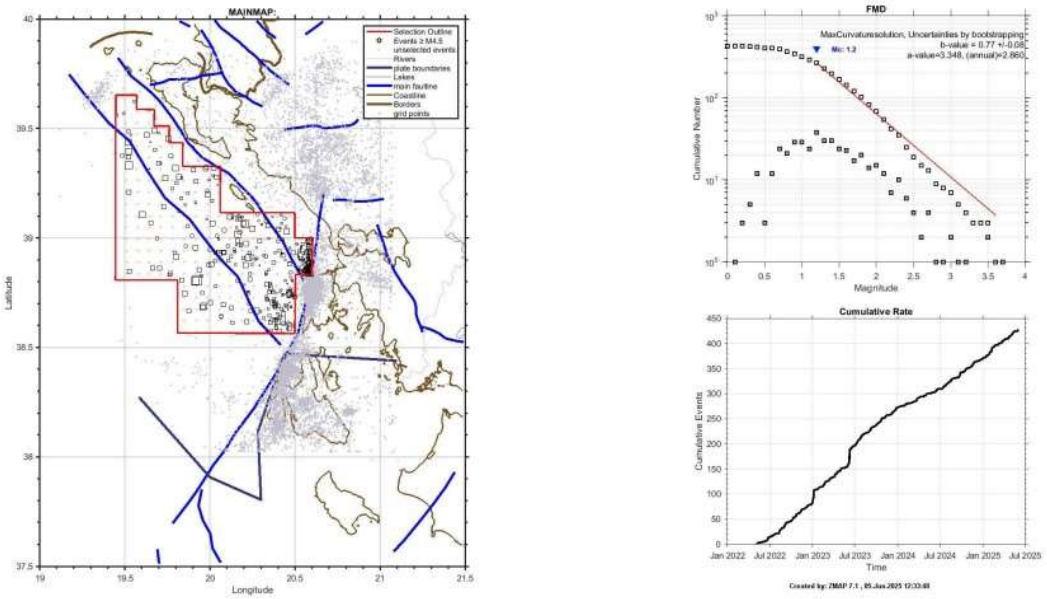

Fig. 10: Earthquakes recorded by the local network in the study region and corresponding Gutenberg-Richter curve throughout the whole recording period.

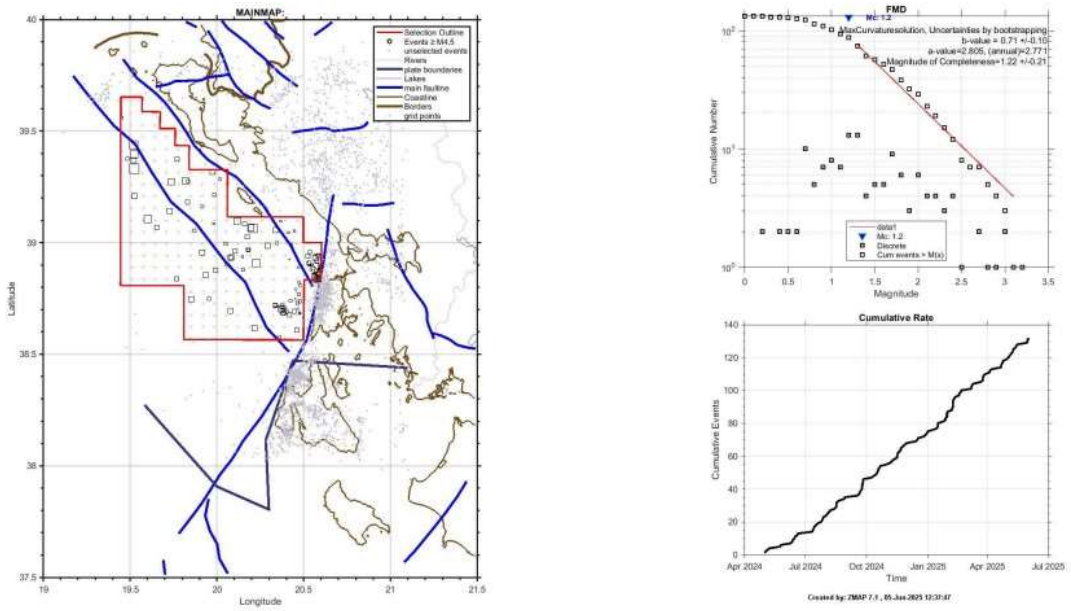

Fig. 11: Earthquakes recorded by the local network in the study region and corresponding Gutenberg-Richter curve for the 3rd recording period between 6/2024 and 6/2025.

2.4.1. Conclusions

During the operation of the local seismographic network and until 31/05/2025, the micro seismic monitoring was carried out smoothly, without technical problems, recording more than 8 thousand earthquakes in total in the broader study area. Even though, within the narrow area of interest and specifically within the Block 3 area no significant seismicity is observed, a magnitude M4.7 earthquake occured on the NW margin of the region. The zone that was probably activated the same hat gave the M5.5 and M5.7 earthquakes in 1919 and 1920 respectively. The accuracy of the calculations at that time was not satisfactory, however by combining the regional tectonics with the recorded seismicity this relation seems possible. Even the magnitudes from these events from the previous century do not have the required accuracy in order to draw safe conclusions. Nevertheless, activity in this area appears to have declined significantly over the last year of monitoring. In general, this particular region is characterized by particularly low seismicity without significant active zones. In the neighboring area of Lefkada, along the Cephalonia-Lefkada transform fault, there is intense seismicity, as expected, which only locally concerns this area.