

# EIDA@NOA

## National and Regional data node implementation

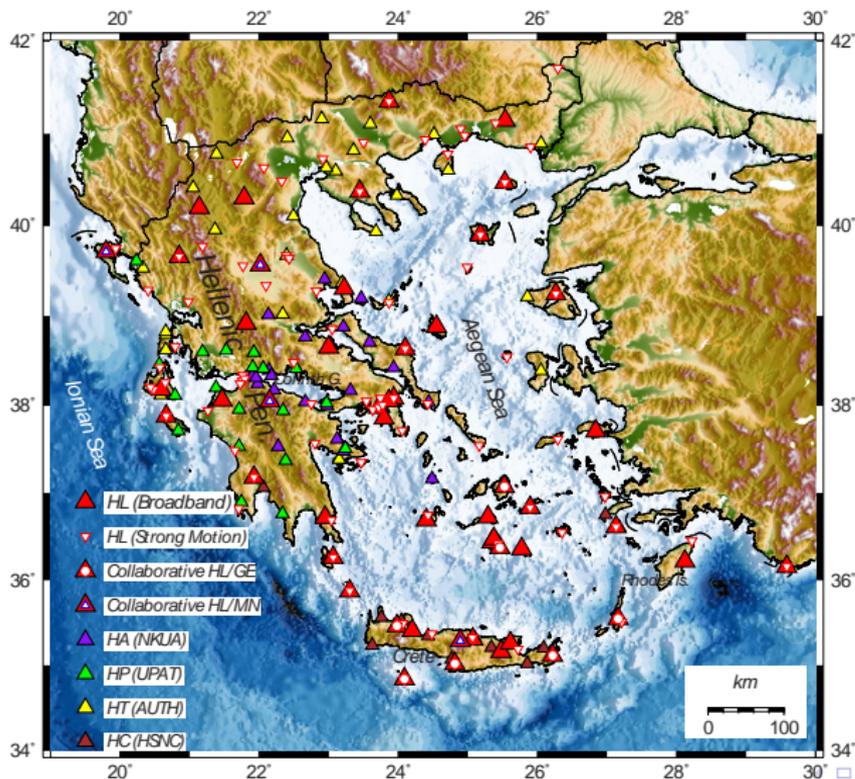
National Observatory of Athens (NOA)  
C.P. Evangelidis

Iberian Coordination meeting, Madrid, 8 March, 2018



# Hellenic Seismic Network (HL)

Hellenic Unified Seismic Network (HUSN)



HELPOS

2017-2020

HL BB : 51(22)

HL SM: 69

HP: 19(+3SP)

HT: 32 (+12SP)

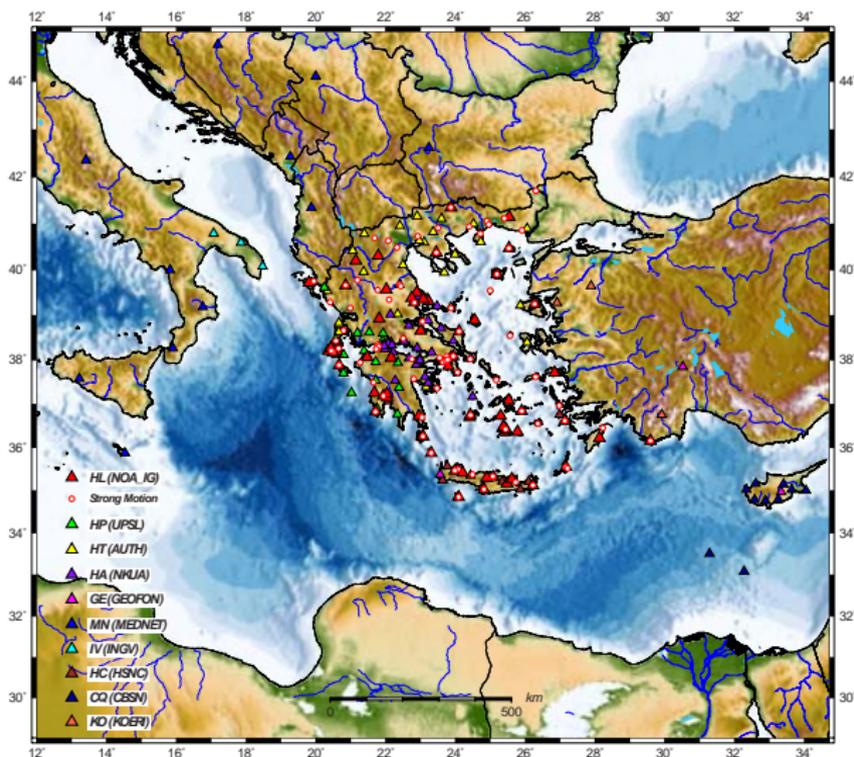
HA: 15

HC: 14



# Monitoring the Southeastern Mediterranean

Realtime acquisition at NOA



# EIDA Regional and National nodes

- 1 KNMI/ODC: European-Mediterranean, Netherlands
- 2 GFZ: European, Global, temporary deployments
- 3 RESIF: France, Global temporary deployments
- 4 INGV: Italy, European-Mediterranean (MedNet)
- 5 ETH: Switzerland
- 6 BGR: Germany
- 7 NIEP: Romania
- 8 KOERI: Turkey
- 9 **NOA: Greece**



# NOA EIDA node

## History

- *05-06-2015* NOA Official Proposal after an **unofficial consensus** with some key networks
- *27-08-2015* **Letters of support** from UPSL(HP), NKUA(HA), TEICrete(HC), AUTH(EG).
- *25-02-2016* Unanimously Approved by the ORFEUS Board of Directors
- *29-02-2016* NOA becomes one of the official federated FDSN data centers
- *01-03-2016* MoU between ORFEUS and NOA signed
- *12-05-2016* Operational and Synchronized with all other EIDA nodes



### Current Networks:

- **HL** (*N.O.A., Hellenic Seismic Network*) -60 stations  
doi:10.7914/SN/HL
- **HP** (*University of Patras, Seismological Laboratory*) -9 stations  
doi:10.7914/SN/HP
- **HC** (*T.E.I. of Crete, Seismological Network of Crete*) -14 stations  
doi:10.7914/SN/HC
- **HA** (*National and Kapodistrian University of Athens, Seismological Laboratory*)  
-2 stations  
doi:10.7914/SN/HA
- **CQ** (*GSD of Cyprus, Cyprus Broadband Seismological Network*) -10 stations  
doi:10.7914/SN/CQ
- **EG** (*SDGEE AUTH, EUROSEISTEST Strong Motion Network*) -4 stations
- **ME** (*Montenegro Seismological Observatory, Montenegrin Seismic Network*)  
doi:10.7914/SN/ME

HH\* and HN\* channels from 2010 onwards. Data availability delayed by 15min to 24 hours.



## EIDA@NOA node address

`eida.gein.noa.gr`

- **FDSN (dataselect + station)**

`http://eida.gein.noa.gr/fdsnws/`

- **ArcLink**

`eida.gein.noa.gr:18001`

- **WebDC3 (+ NOA catalog service via CSV event file)**

`http://eida.gein.noa.gr/webdc3/`

- **Routing**

`http://eida.gein.noa.gr/eidaws/routing/1/`

- **WGCatalog**

`http://eida.gein.noa.gr/eidaws/wfcatalog/1`







**INSTITUTE OF GEODYNAMICS**  
National Observatory of Athens



## Access to EIDA Data Archives

**NOA EIDA node**

The European Integrated Data Archive (EIDA), is a federated European data center that archives and provides access to seismic waveforms and their related metadata from the European research infrastructure. The distributed EIDA nodes contribute data from specific regions and have committed resources for the support, operation and development of EIDA. Seismic data from seismic stations located in Greece and the southeastern Mediterranean are included in the new regional EIDA node (EIDA) hosted by the Institute of Geodynamics of the National Observatory of Athens.

**Node contributors**

  
 National Observatory of Athens

  
 University of Patras

  
 T.S.S. of Crete

  
 National and Kapodistrian University of Athens

  
 Aristotle University of Thessaloniki

  
 Cyprus Geological Survey

  
 CSnet International, Inc.

  
 Institute for Hydrometeorology and Seismology, Hellenic Seismological Observatory

**Current Networks:**

- NE** (NOA, Hellenic Seismic Network), doi:10.7914/IN/NE
- NP** (University of Patras, Seismological Laboratory), doi:10.7914/IN/NP
- NC** (TSS of Crete, Seismological Network of Crete), doi:10.7914/IN/NC
- NA** (National and Kapodistrian University of Athens, Seismological Laboratory), doi:10.7914/IN/NA
- CQ** (CSD of Cyprus, Cyprus Broadband Seismological Network), doi:10.7914/IN/CQ
- KG** (GSD&P AUTH, EUROSEIS/ISIS Strong Motion Network)
- HE** (Hellenic Seismological Observatory, Hellenic Seismic Network), doi:10.7914/IN/HE
- KS** (EPOS-2014) C/F - (Left-side temporary network), doi:10.7914/IN/KS\_2015
- \_NPGRS** (Near Fault Observatory of Corinth RR - virtual network)
- \_RZSN** (Hellenic Unified Seismic Network - virtual network)

**EIDA Web Services**

Retrieve time series data and related metadata within the context of the International Federation of Digital Seismograph Networks (IFDSN) [EIDA\\_2013/2015](#).

**WAGDSEI**

Retrieve time series data, related metadata, event information by interfacing with all EIDA nodes, through Graphical user interface. It uses the [EIDAES](#) Protocol.

**Data Inspector**

View data availability, and data quality statistics.

- Data Availability Calendar:



# Data Storage and Backup

- node is running on Virtual Machines (with backup of the VM images)
- Main data center (Athens-Thissio campus):
  - NOA Network Attached Storage (NAS) - main storage of data acquisition (SDS archive) in NOA
  - EIDA-NAS - copy of NOA-NAS (*at least all data concerning EIDA*)
  - EIDA-NOA VM Server “watches” the EIDA NAS
- Backup data center (Athens-Penteli campus):
  - EIDA NAS2 - copy of the entire NOA NAS
  - EIDA-NOA2 VM Server “watches” the EIDA-NAS2
- ★ *NAS have high availability storage with RAID 6, 70 TB, 2 Power supplies, 4 Gigabit LANs, etc*
- ★ Operated and maintained by NOA IT personnel



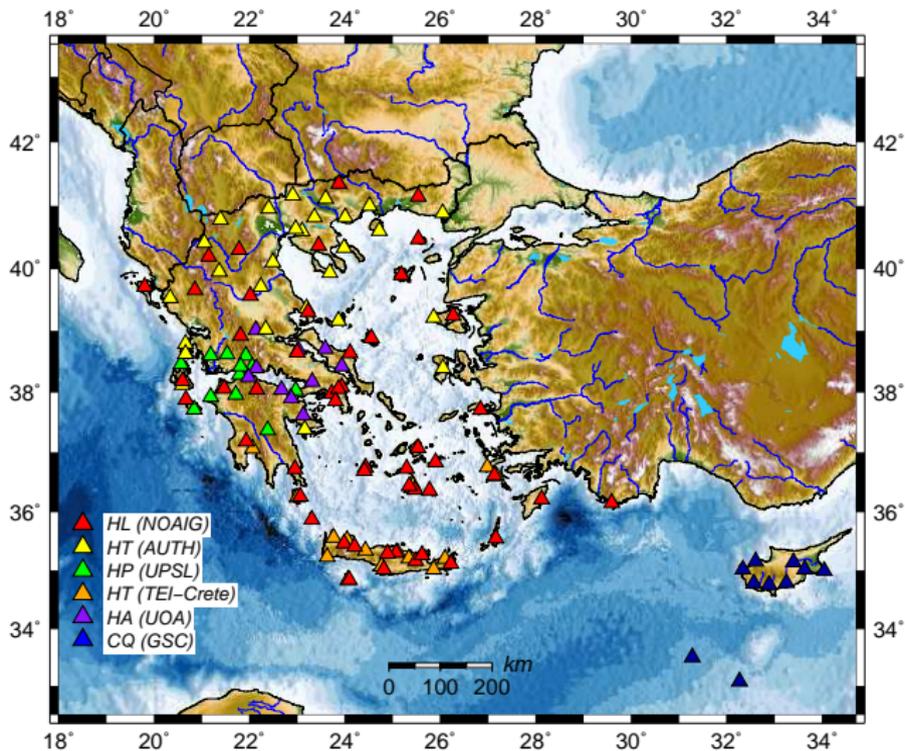
Based on:

- Realization for the LONG TERM COMMITMENT of the node operator
- Allocation of HELPOS NOA budget on HELPOS share towards the EIDA national node
- Critical data mass already loaded. Users experience so far good
- Realization that EPOS-ERIC will NOT assign much (if any) funds on EIDA nodes
- Strong EIDA EMB preference on single national nodes
- National EIDA node coordination from people with neutral point of view accepted by the others
- Ability to run and operate the node from THIRD physical location in Northern Greece
- Establishment of a National management-technical committee for coordination



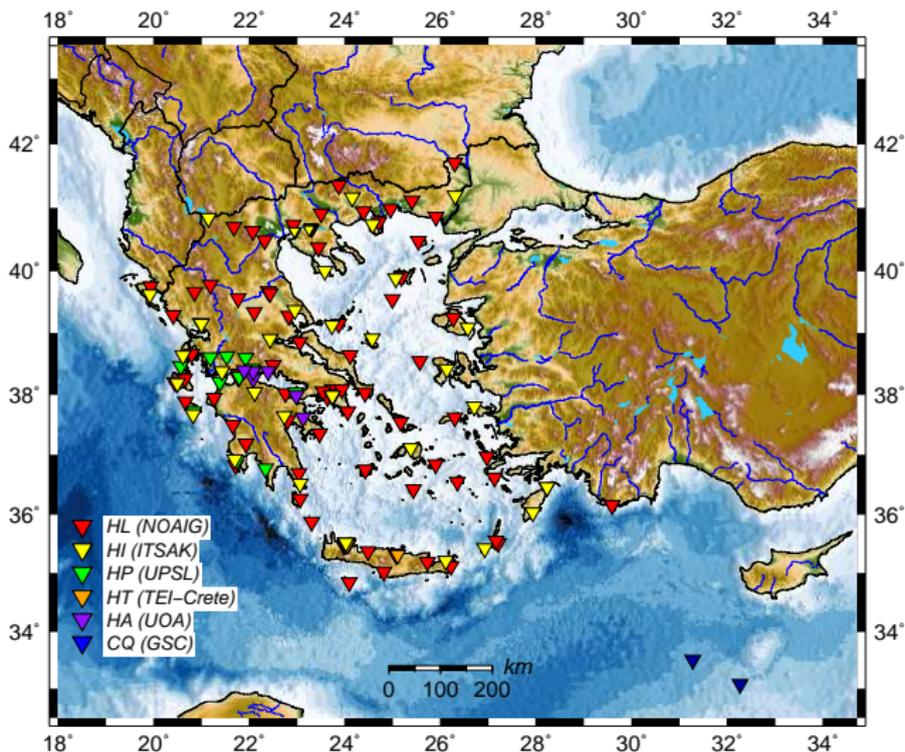
# NOA EIDA node

## HELPOS implementation (Broadband Stations)



# NOA EIDA node

## HELPOS implementation (Strong Motion Stations)



# EIDA@NOA To-do List

*Networks to be added soon:*

- **HT** (*Aristotle University of Thessaloniki Seismological Network* )
- **HI** (*ITSAK Strong Motion Network*)
- **Temporary deployments** (*As many as possible national and international deployments in the area concerning aftershock studies or passive experiments*)



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*Under implementation or testing:*

- Third EIDA@NOA deployment in GRNET Cloud (Virtual storage + server) EOSC-hub EC-H2020 project
- Proxy server implementation for load balancing and fail-over handling (between the 2-3 physical locations)
- Introductory Webpage with Instructions
- HELPOS Ticket-Forum web based for better coordination
- fdsnws-event Service with NOA(or HUSN) catalogue



# To conclude

## At NOA:

- Support a considerable national infrastructure (BB and SM networks, Data and Operational Center)
- Unlimited (but registered) access to seismic waveform data from networks in Greece and the Southeastern Mediterranean
- Securely archive seismic waveform data AND their related metadata
- Provide the appropriate credit and citations to the network operators



# To conclude

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## Personal Piece of advice:

- 1 Cooperate
- 2 Identify/acknowledge each institute/network/operator mission
- 3 Appoint people in management as much neutral as possible
- 4 A single national/regional node is much stronger and viable in the long term



Thank you!

