INFN-LNS: Astroparticle Physics Group (CSN2)

Geoinquire - HEU

FOCUS - ERC

Dives - PRIN

Melite -NATO

ITINERIS-PNRR

KM3NeT4RR-PNRR

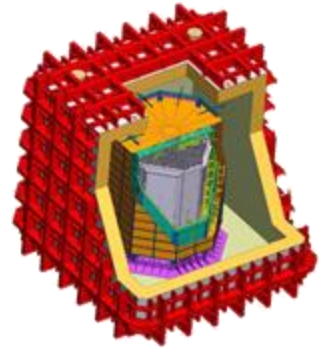
Infradev 2 – HEU

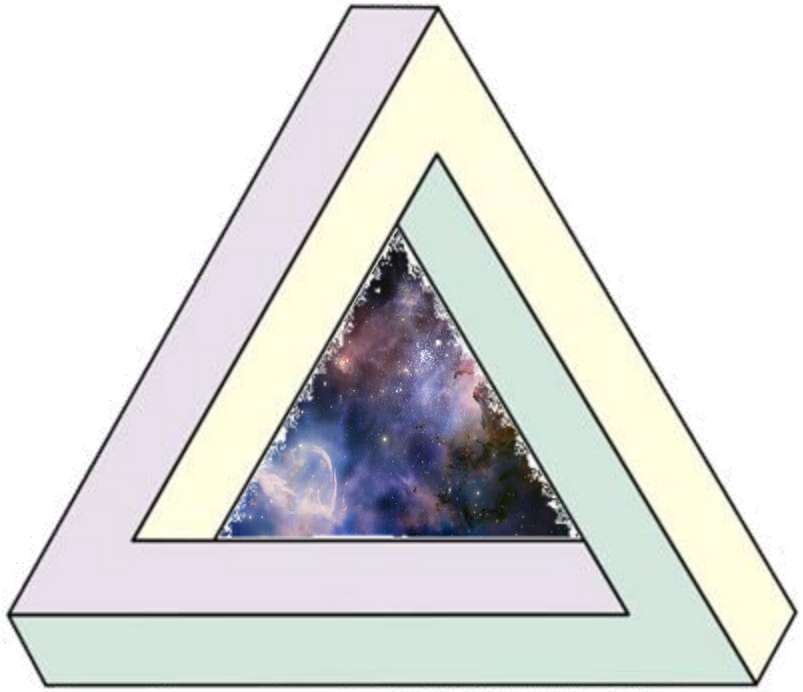
Alica - PRIN

Dark Matter

DarkSide /ReD

ReD+ -PRIN





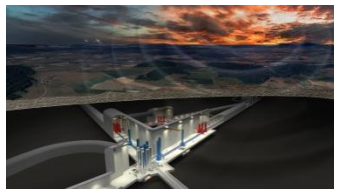
Cosmic Neutrinos

KM3NeT

Gravitational Waves

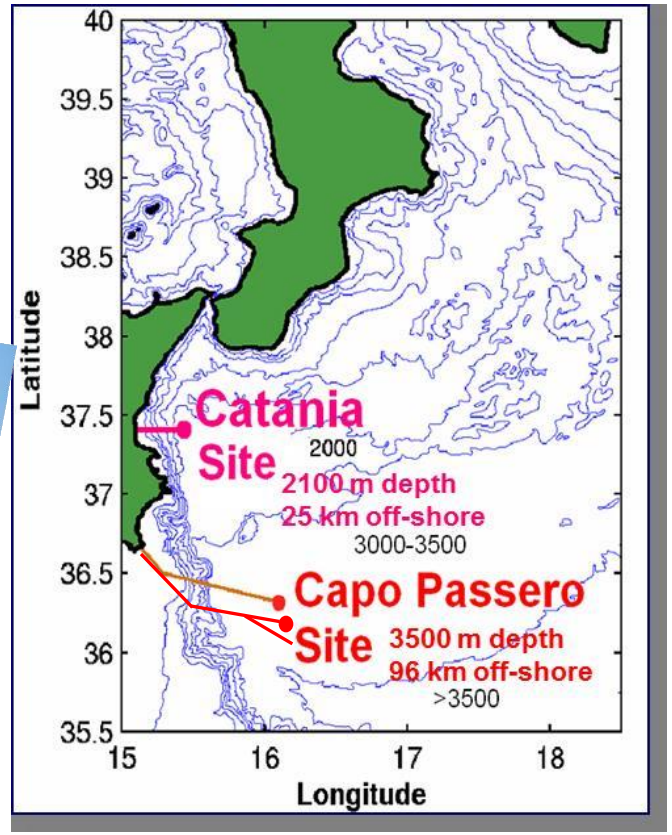
Einstein Telescope

ETIC-PNRR



INFN-LNS: Marine infrastructure in Eastern Sicily

Both shore labs have direct 10Gbit connection to the EU optical network infrastructure for research



Catania (2100 m water depth)

EMSO-ERIC, FOCUS-ERC, IPANEMA-ECCSEL-ERIC, VONGOLA-PNRR

MELITE-NATO, PRIN-DIVES, Geoinquire-Horizon-EU

25 km-long electro-optical cable 10 fibers, 6 conductors divided among 2 CTFs (4 independent e.o. outputs)

Capo Passero (3500 m water depth)

KM3NeT, EMSO-ERIC, LOWNOISER-Horizon-EU

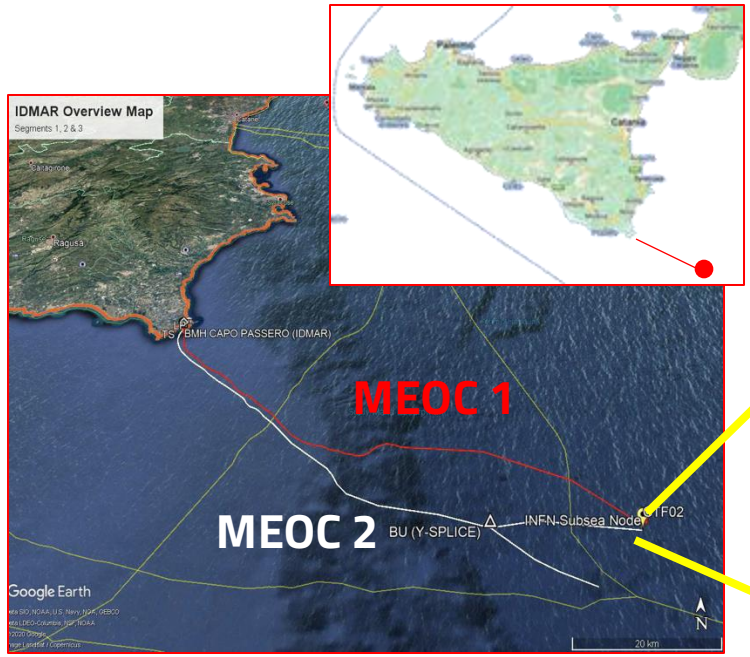
100 km-long electro-optical cable 20 fibers, 1 conductor (DC)

Cable Termination (5 independent e.o. outputs)

100 km-long electro-optical cable 48 fibers, 2 conductors (DC)

Cable Termination (16 independent optical and electrical outputs)

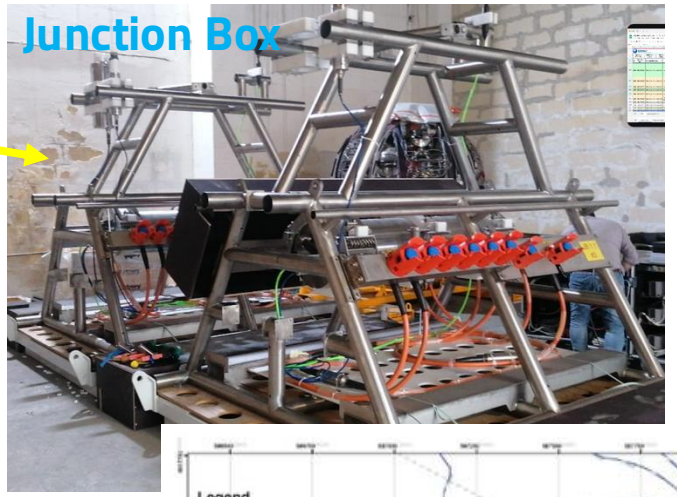
INFN-LNS: Marine infrastructure East Sicily

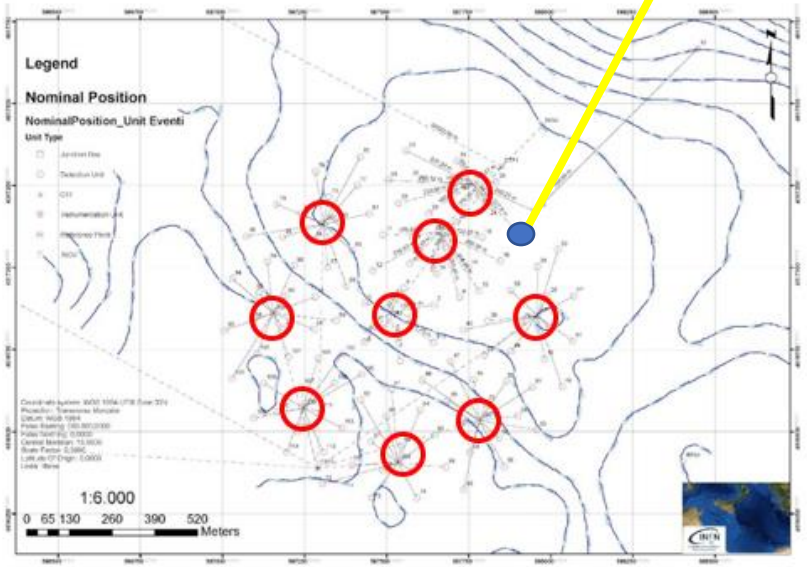


5 electro-optical ports in CTF 1

16 electro-optical ports in CTF 2

9 JBs: 12/14 electro-optical ports per JB





The Capo Passero site

deep-sea infrastructures and observatories offer unprecedented tools to

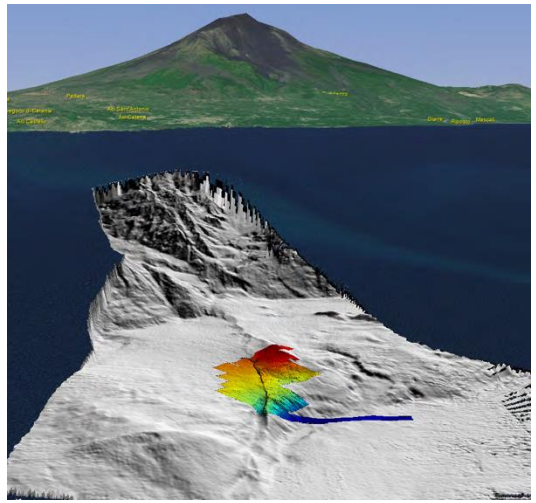
- develop and test novel marine technologies and detectors
- monitor geophysics and biological phenomena and anthropic footprint

Real-time marine data harvesting

Hydrophone Phased arrays and Optical fiber-based acoustic sensors

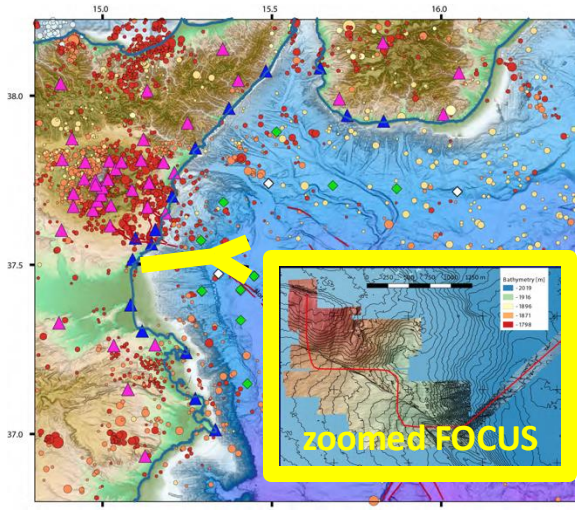
Marine spatial planning

- Anthropogenic (shipping, airguns, …) noise monitoring
- Presence of Cetaceans
- Geophysical Noise monitoring
- Wind/rain (noise) monitoring offshore



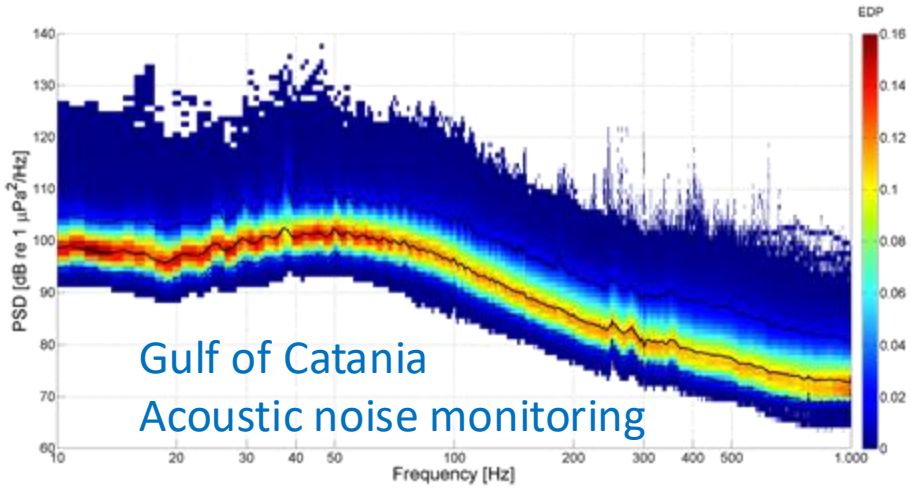
European Research Council
Established by the European Commission

Geophysics and Volcanology, studies and real time alert
Surveillance and Marine Planning



FOCUS ERC

Geo-iNQUIRE



…Towards deep sea exploration and colonisation

ENVIRONMENTAL Science & Technology

Critical Review

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New High-Tech Flexible Networks for the Monitoring of Deep-Sea Ecosystems

Jacopo Aguzzi,[*,†] Damianos Chatzievangelou,[‡] Simone Marini,[§] Emanuela Fanelli,[∥] Roberto Danovaro,[∥,⊥] Sascha Flögel,[#] Nadine Lebris,[▽] Francis Juanes,[●] Fabio C. De Leo,[●,○] Joaquin Del Rio,[¶] Laurenz Thomsen,[‡] Corrado Costa,[⊗] Giorgio Riccobene,[▲] Cristian Tamburini,[Δ] Dominique Lefevre,[Δ] Carl Gojak,[♦] Pierre-Marie Poulain,[◇] Paolo Favali,[£,∞] Annalisa Griffa,[§] Autun Purser,[■] Danelle Cline,[□] Duane Edgington,[□] Joan Navarro,[†] Sergio Stefanni,[⊥] Steve D'Hondt,[★] Imants G. Priede,[☆,@] Rodney Rountree,[●,∀] and Joan B. Company[†]

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Review Artic

Exo-Ocean Exploration with Deep-Sea Sensor and Platform Technologies

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