

Legal aspects of the marine science on climate change

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Two topics

- International Law and the Arctic Region
- International law and new technologies at areas beyond national jurisdiction

L'ARTICO

elsa
The European Law Students' Association
PISA



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Le sfide indotte dal
cambiamento climatico nello
scenario internazionale

THE UNIVERSE

...ly interacting and neutral, are a study the high-energy Universe. ...ge from the farthest reaches of Earth, they are unabsorbed by ...undeviated by magnetic fields. ...le to escape from the heart of ...phenomena thus revealing ...and how they are accelerated to

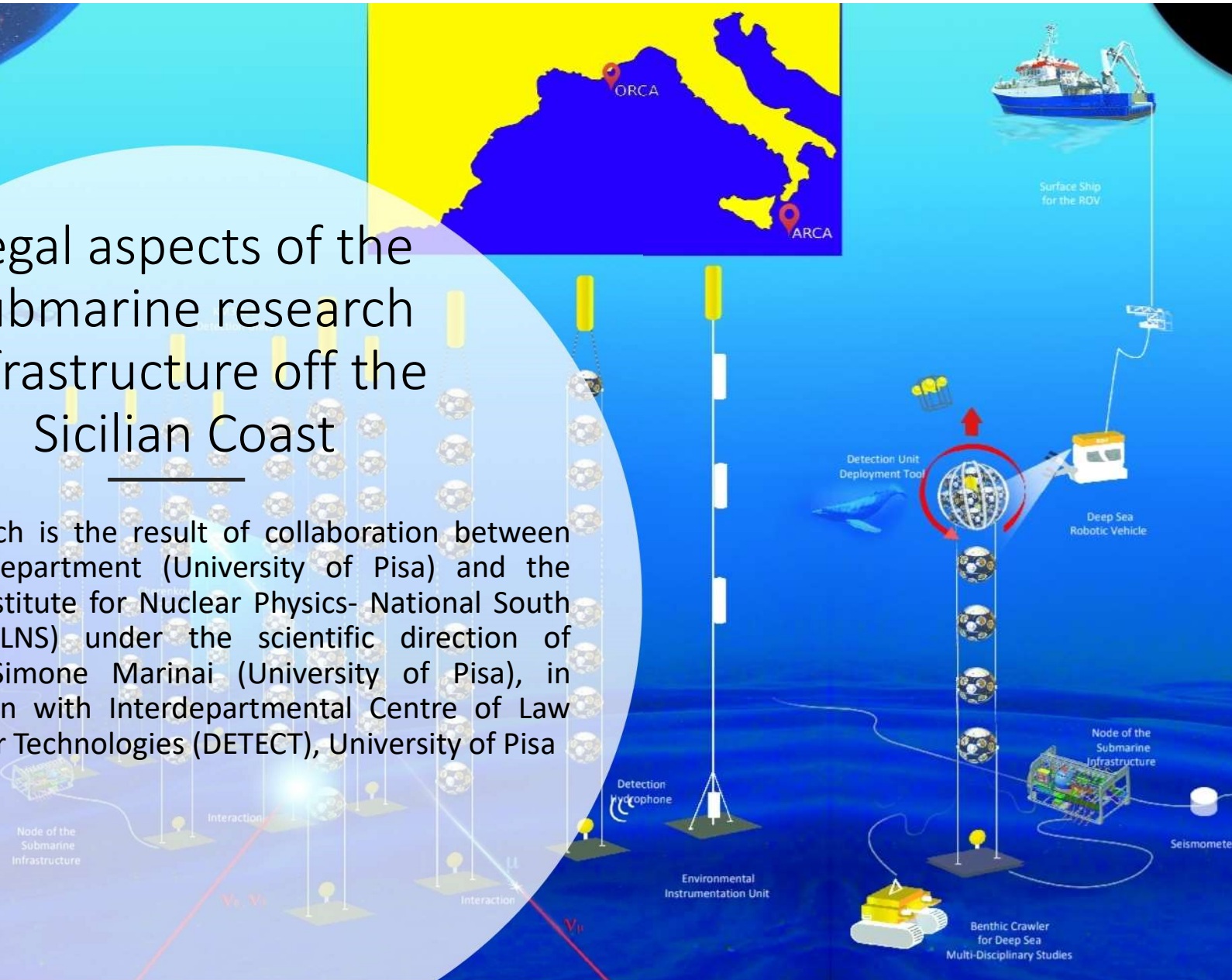
ount of matter is necessary. ...NeT uses the Earth as a target ...coming from the skies above the ...while, these neutrinos do not ...vert to a charged particle, ...ion, which will then emit a wake ...en travelling through sea water. ...sh of light that the thousands of ...ect to pin-point the enigmatic ...y neutrinos in the Universe.

OS
...ideal detector to study the ...ies of the ...By exploiting the abundant flux ...rinos created in the ...Earth's atmosphere by cosmic ...udy the 'ghost' particles ...form from one type of neutrino ...rticular, it will be possible to ...no mass ordering i.e. whether ...neutrino is heavier or lighter

utitise its data for signs of new ...le' neutrinos, the existence of ...orm neutrino tomography of the

Legal aspects of the submarine research infrastructure off the Sicilian Coast

- This research is the result of collaboration between the Law Department (University of Pisa) and the National Institute for Nuclear Physics- National South Lab (INFN-LNS) under the scientific direction of Professor Simone Marinai (University of Pisa), in collaboration with Interdepartmental Centre of Law and Frontier Technologies (DETECT), University of Pisa



A NEW WAY TO STUDY THE ABYSS

KM3NeT is also a permanently cabled observatory that enables the real-time acquisition of continuous, high-frequency, time series data for the study of the marine environment.

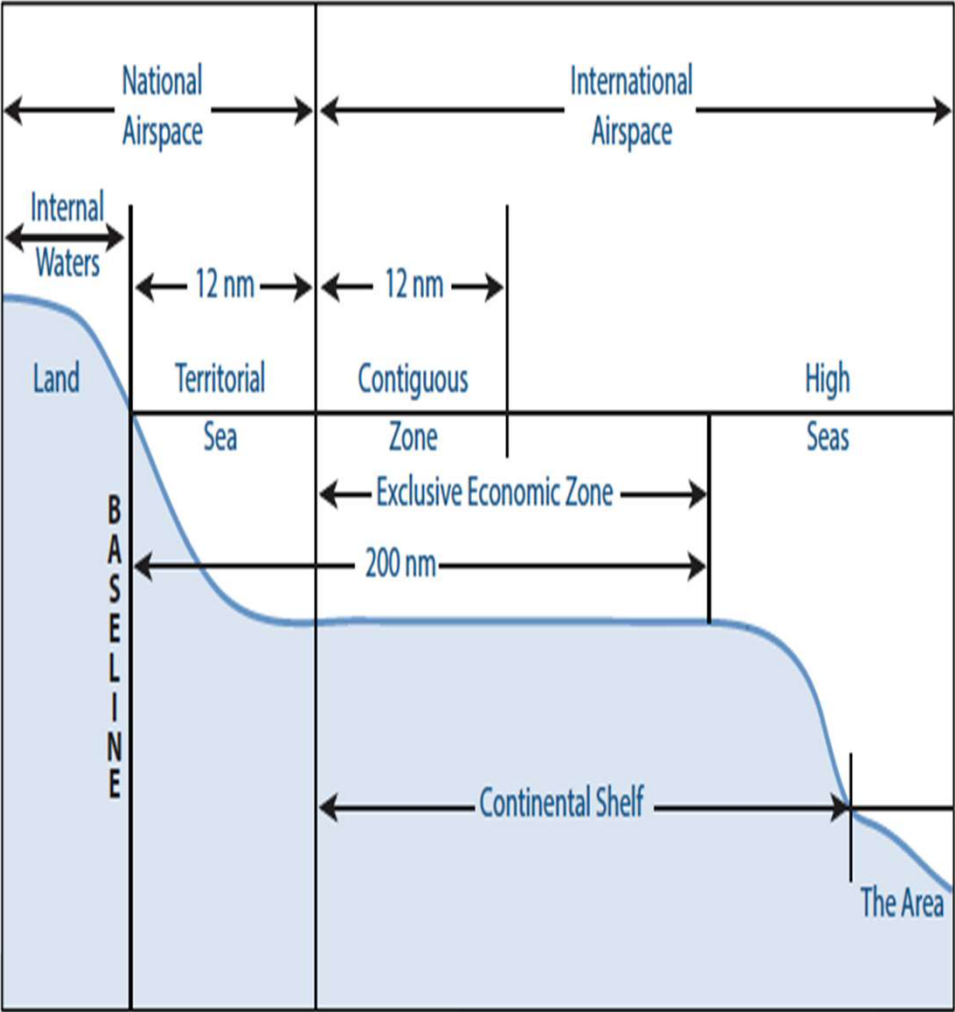
The synergetic science that can be achieved includes; climate change, ocean current circulation, biodiversity, bioluminescence, bioacoustics, cetacean population studies, monitoring of seismicity and Tsunami hazards, etc..

INNOVATIVE TECHNOLOGY

The eyes of the KM3NeT telescopes are the detector modules. They are pressure resistant glass spheres which comprise 31 three inch photomultiplier tubes and ultra-sensitive light sensors that efficiently register the presence of a single photon of light with nanosecond time precision. The modules also incorporate piezo sensors for their autonomous positioning, a tiltmeter/compass and an LED emitting diode for time and energy calibration.

High-bandwidth data transmission is performed over distances of up to 100 km, via optical fibers using a dense wavelength multiplexing technology. Precision time synchronisation is ensured using the White Rabbit protocol.

KM3NeT works in close partnership with technology companies for the deep sea cabling and for the deployment and underwater connection of the detection units.



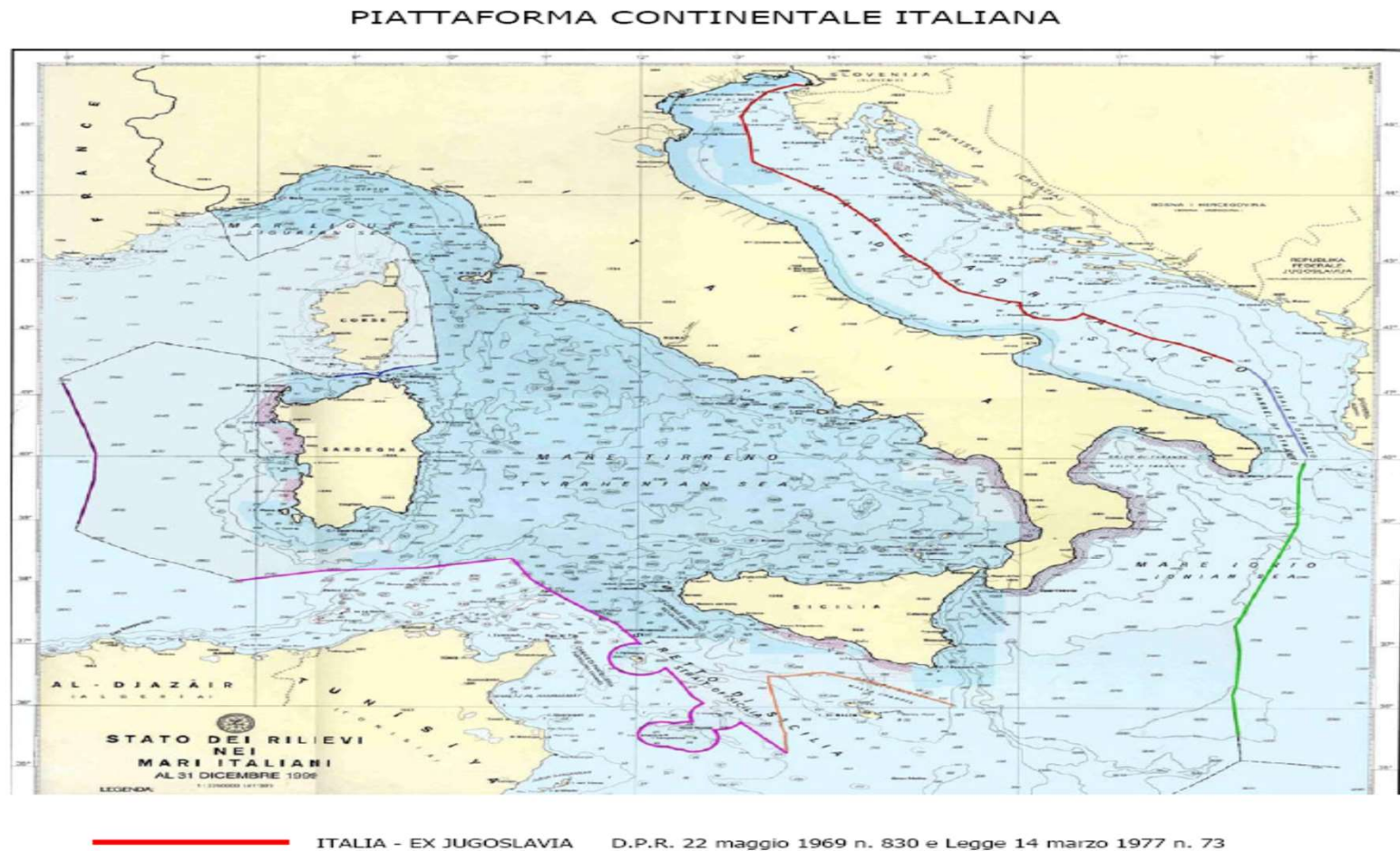
nm – nautical mile

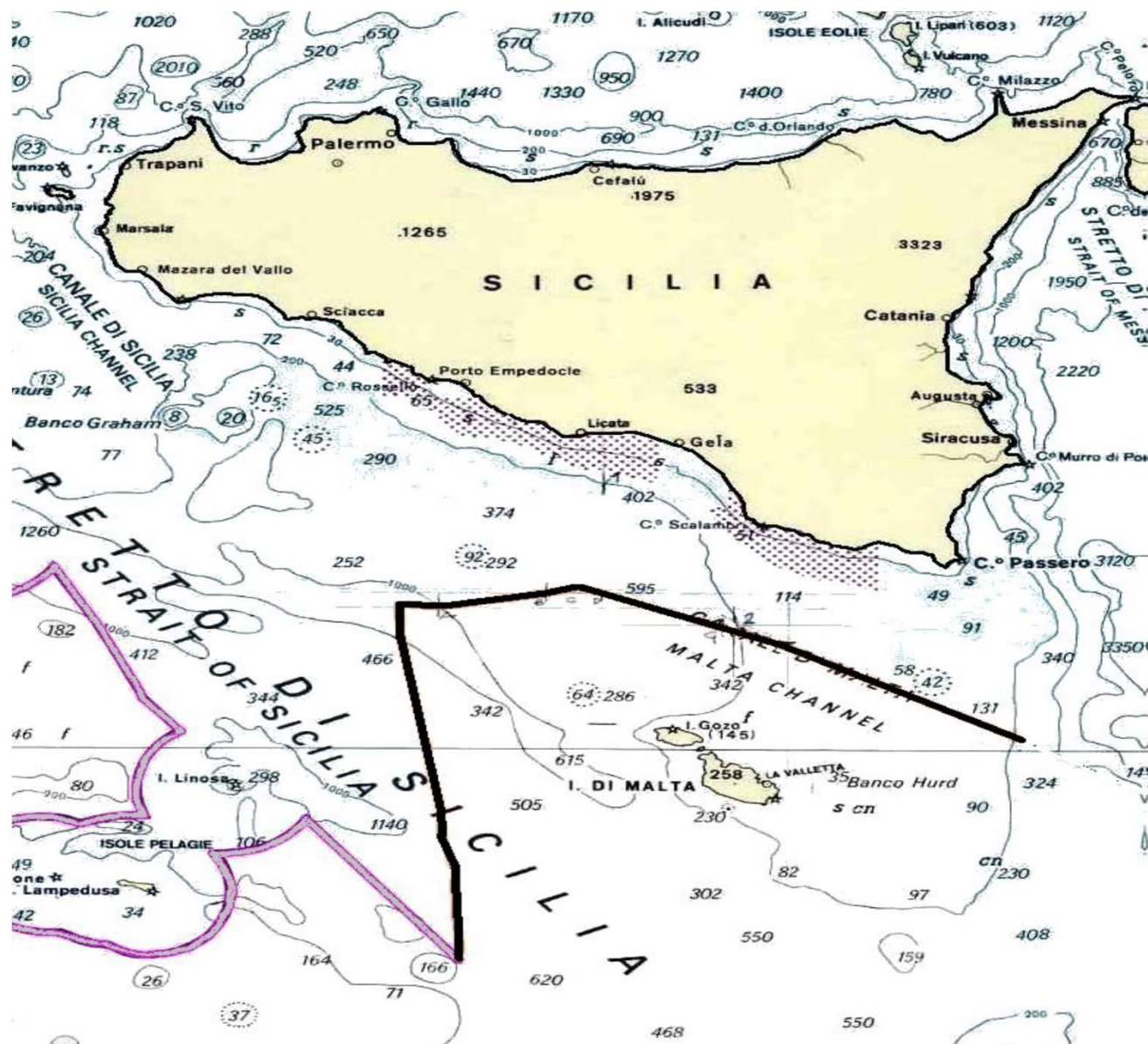
| | Marine scientific research | Non-marine scientific research |
|----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|
| Internal waters, archipelagic waters and territorial sea | Absolute coastal State sovereignty and jurisdiction | Absolute coastal State sovereignty and jurisdiction |
| Economic exclusive zone and Continental shelf | Coastal State consent-regime under 'normal circumstances' | Freedom-regime under UNCLOS limitations |
| High Seas | Freedom-regime under UNCLOS limitations | Freedom-regime under UNCLOS limitations |
| The Area | ISA competence for research activities on minerals | Freedom-regime under UNCLOS limitations |

Research questions related to legal aspects of the marine science on climate change

- What are the legal obligations before, during and after a research sea-campaigns?
- What are the legal obligations with respect to the equipment deployed?
- What are the legal obligations with respect to safety and security of research structures?
- What are the legal obligations with respect to end of life of equipment?

The I.N.F.N. reserach infrastructure off the Sicilian Coast







Forthcoming events

Department of Law- University of Pisa

23 April 2020, La Sapienza, University of Pisa

International law and Research at Sea:
New Technologies and Competing Interests

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