



Muon and Neutrino Radiography Workshop (MNR2012)
Clermont-Ferrand, April 17-20, 2012

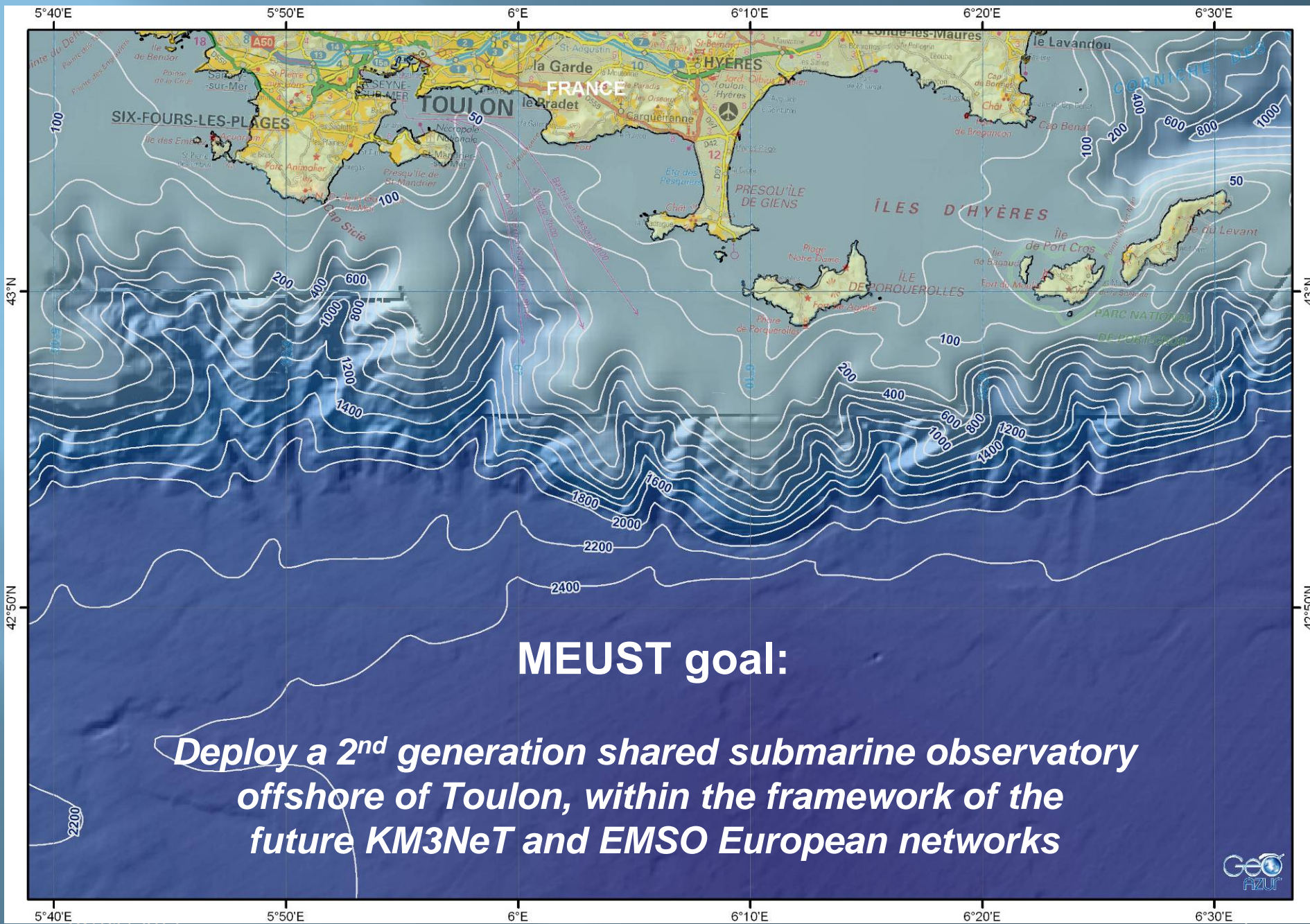


THE MEUST PROJECT

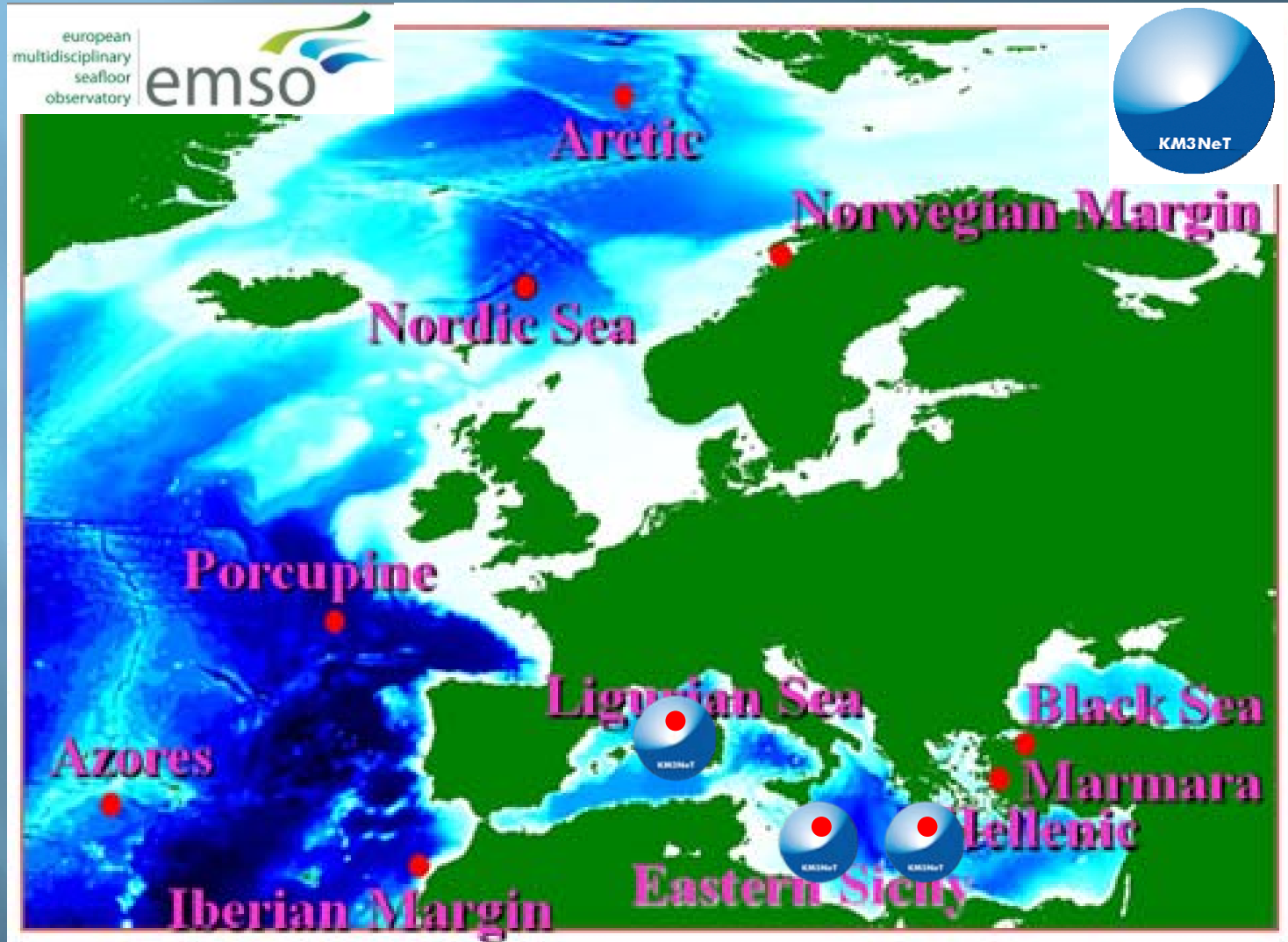
Mediterranean Eurocentre for Underwater Sciences and Technologies

Claude Vallée
Centre de Physique des Particules de Marseille

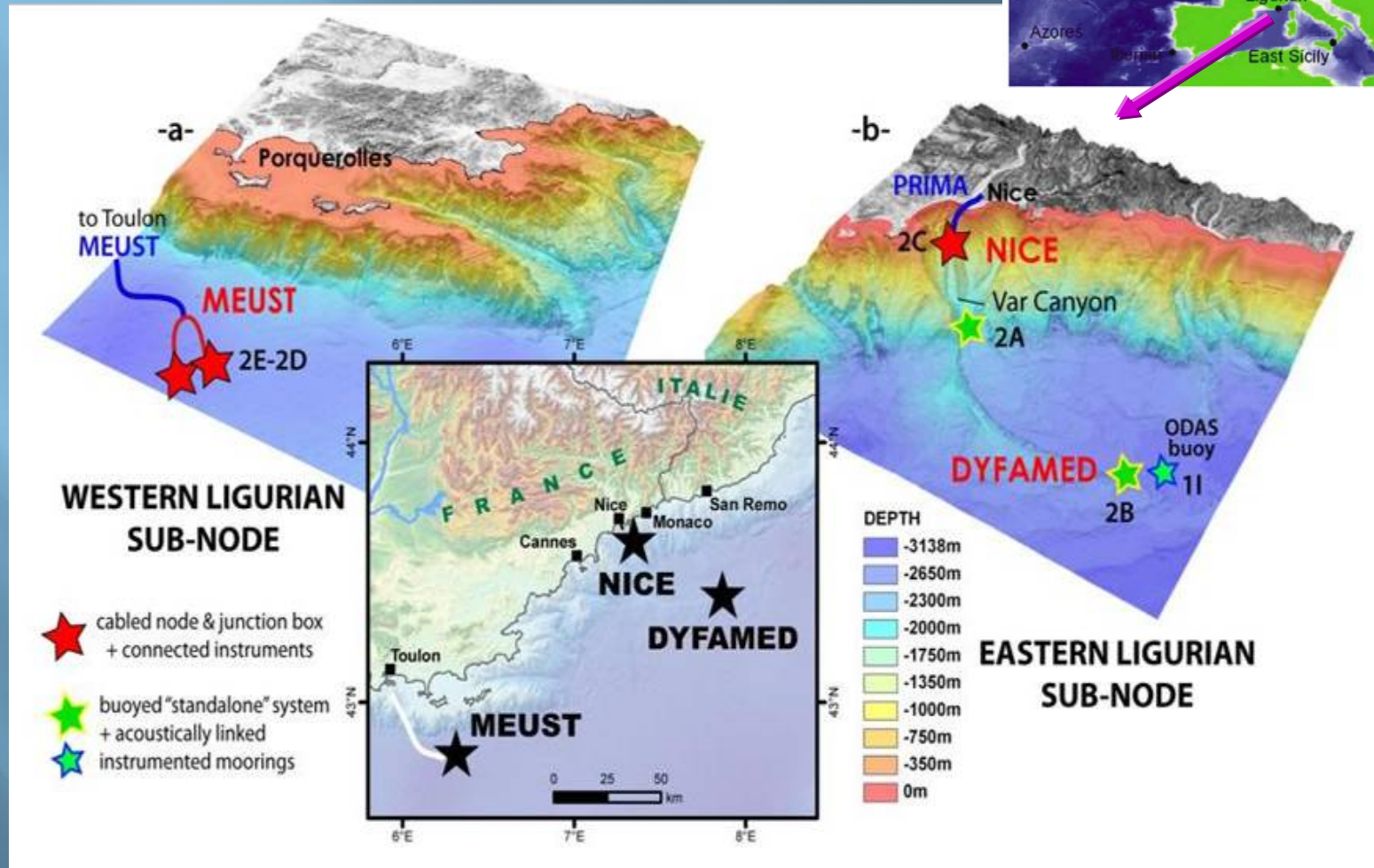




EMSO, future european network of 11 permanent deep sea observatories



The French EMSO-Ligurian node

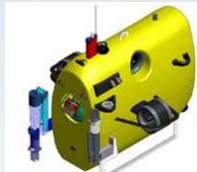
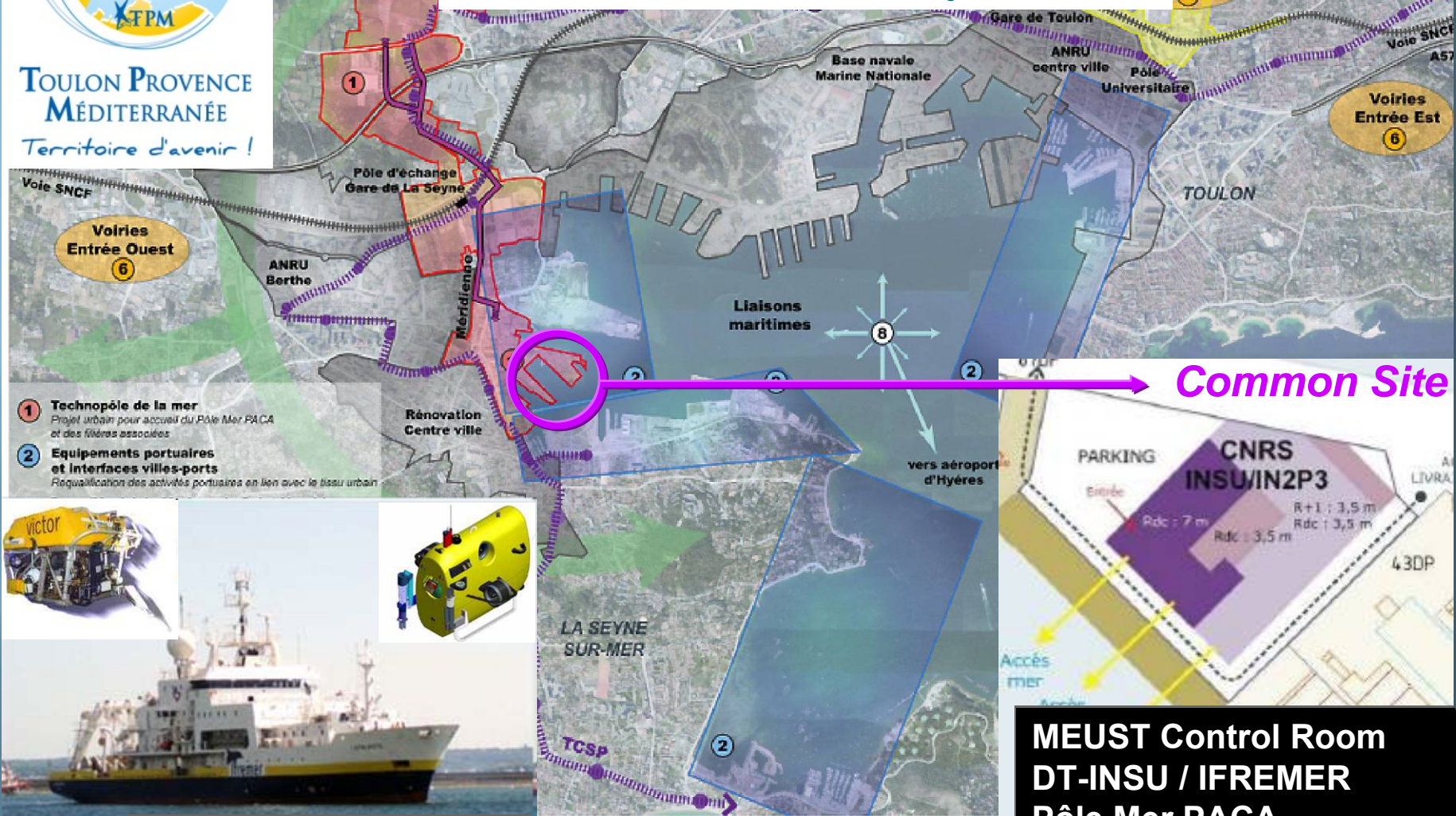




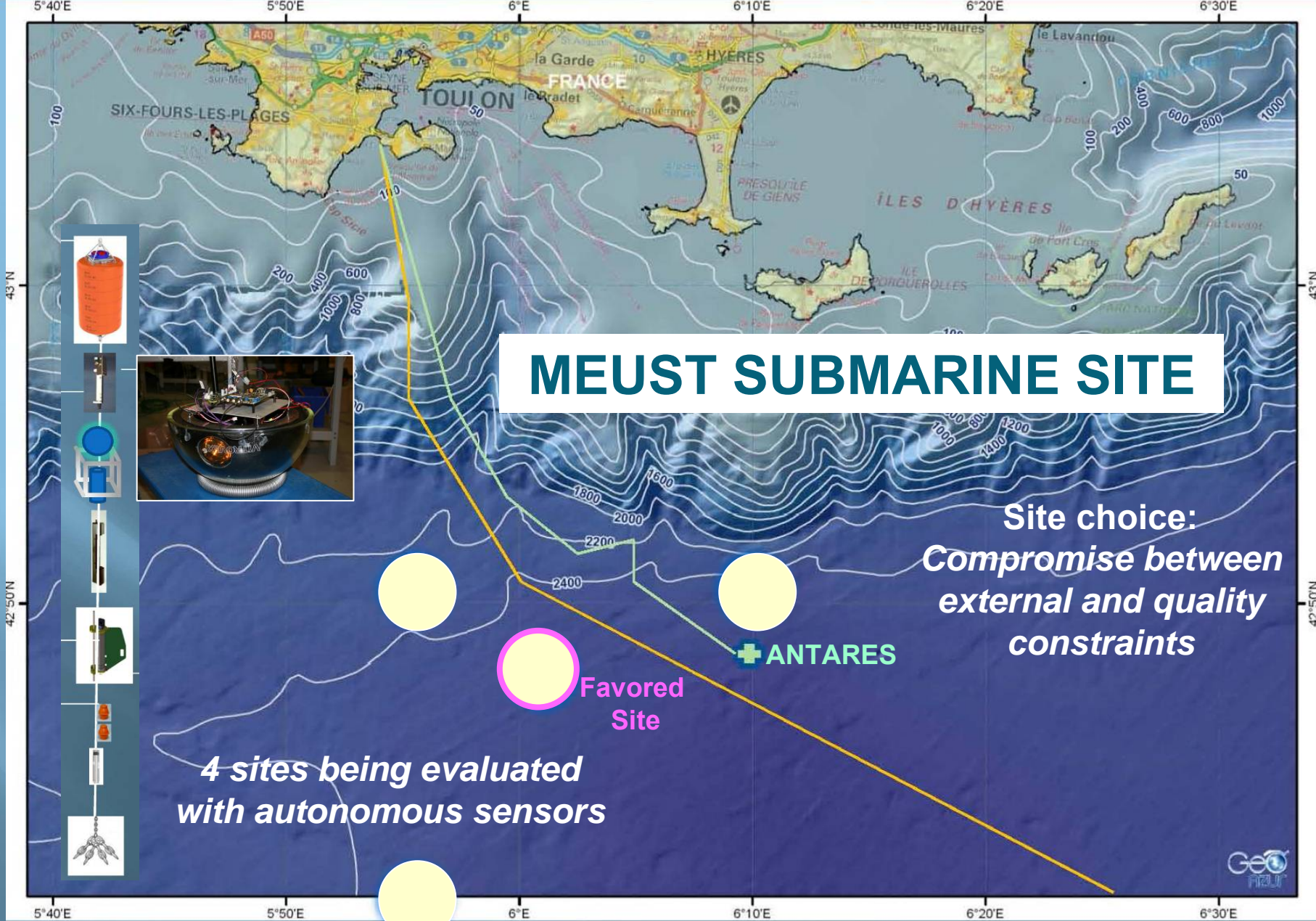
TOULON PROVENCE
MÉDITERRANÉE
Territoire d'avenir !

MEUST LOGISTICS

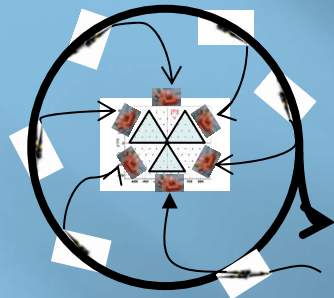
*Integrated in the current restructuring
of the Toulon Bay*



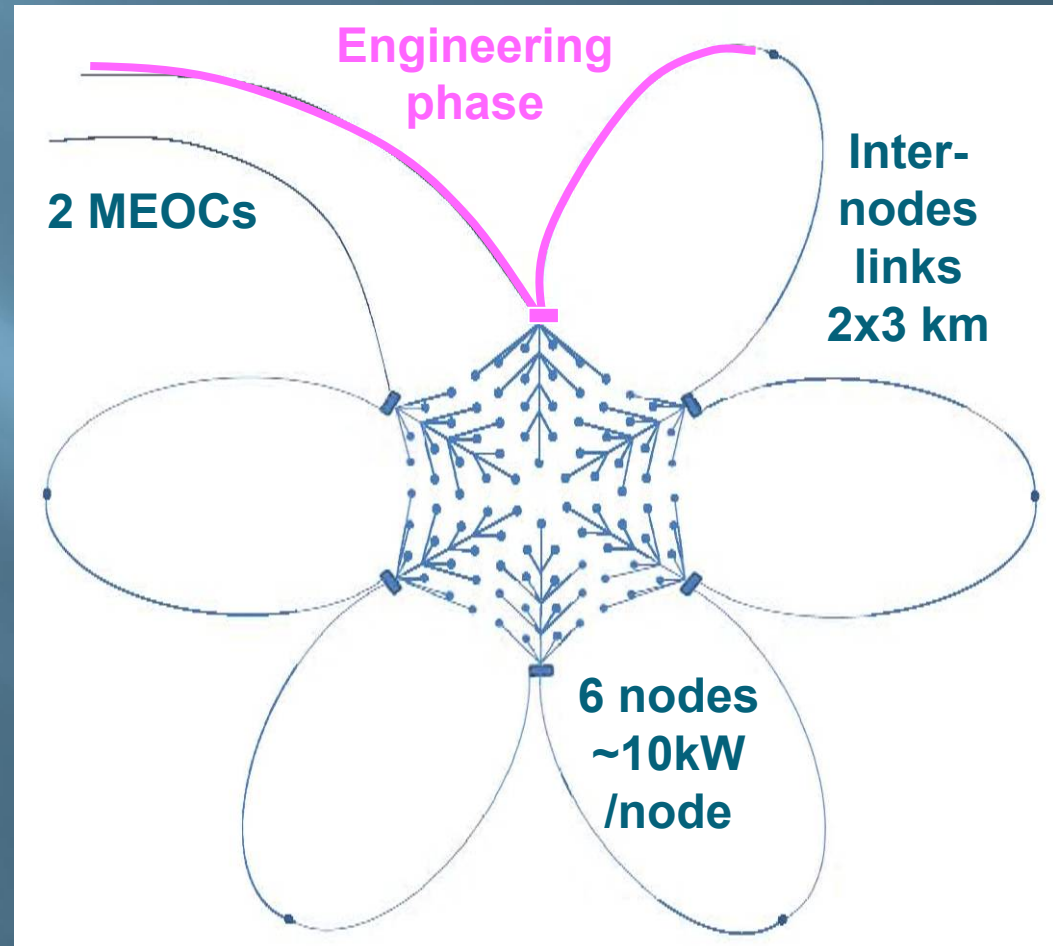
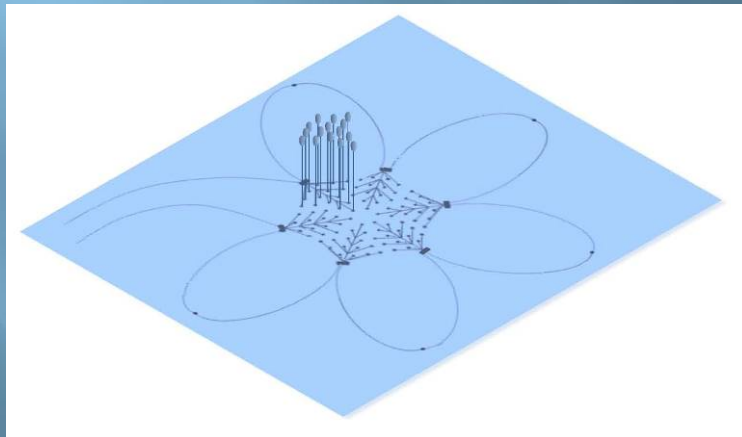
+ boats and submarine
operation tools



SUBMARINE NETWORK TOPOLOGY



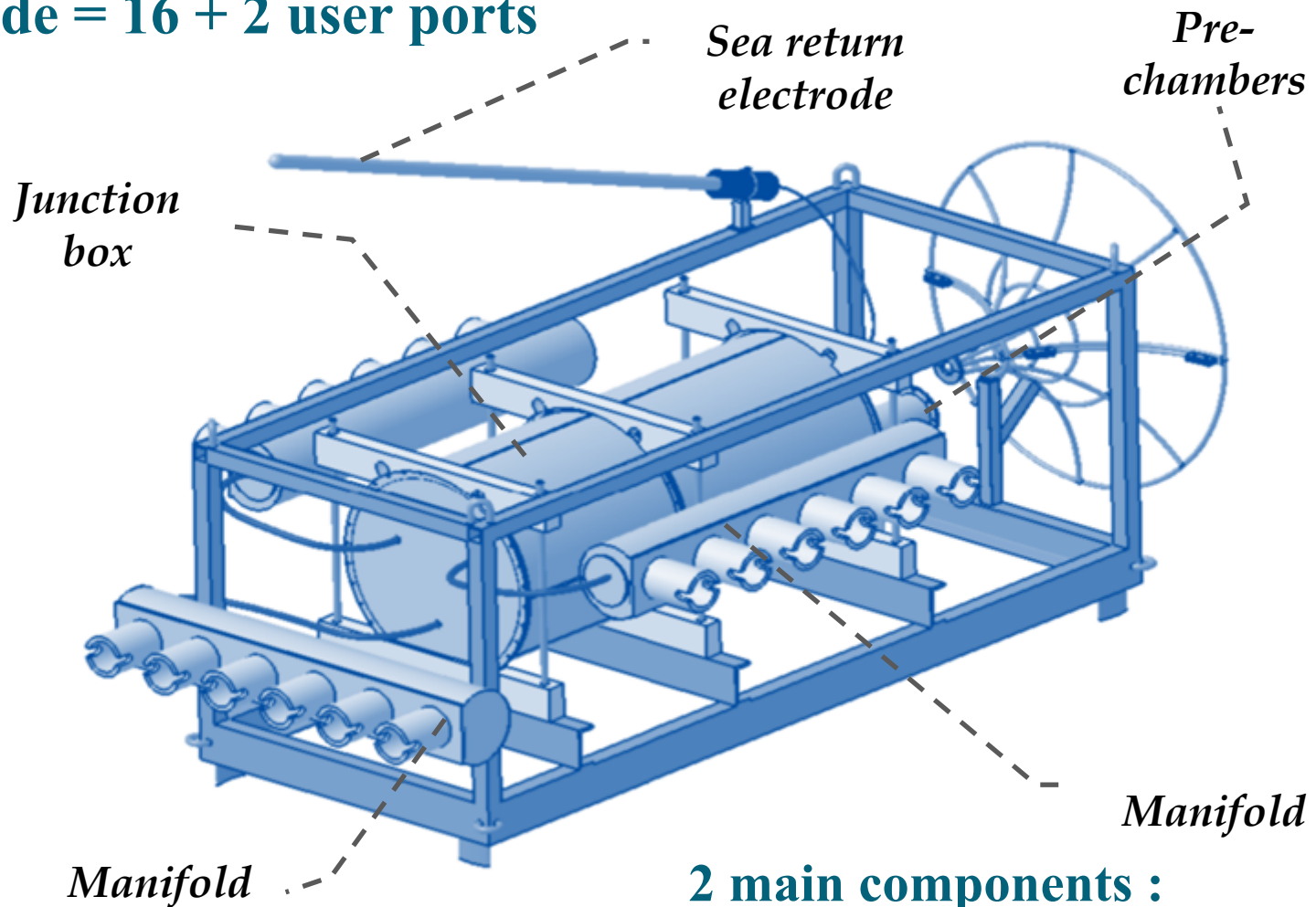
TDR
KM3NeT



***Modular, extendable to ~100 lines (~1 KM3NeT Building Block),
industrial components for cables and connectors***

NODE LAYOUT

1 Node = 16 + 2 user ports



2 main components :

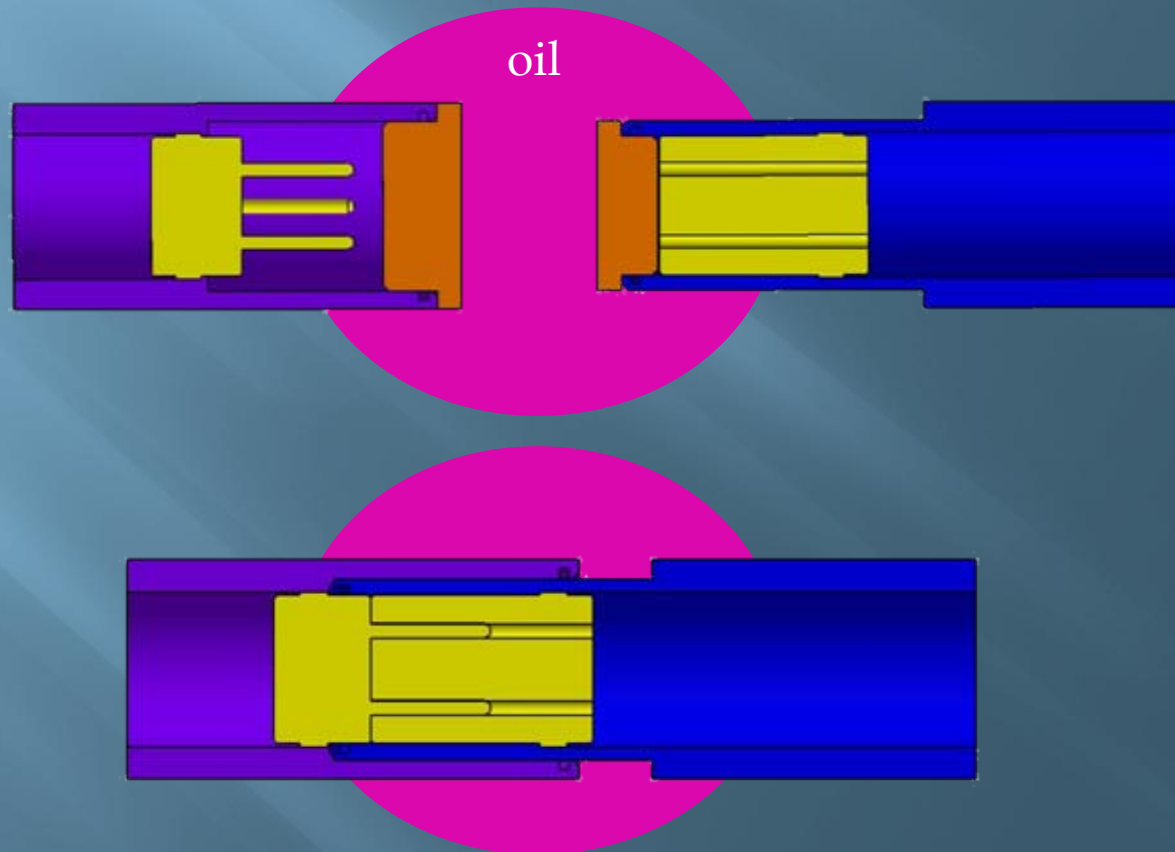
Node = Junction Box + Manifolds

R&D on CONNECTORS

FUI POWERMATE (EDF+COMEX+CNRS)

based on CPPM patent

Standard connectors (“marinised”) connected in oil



Some Node Components

Mockup for deployment tests

Input
Contactor



Transformer
HV/LV



AC/DC



Breaker



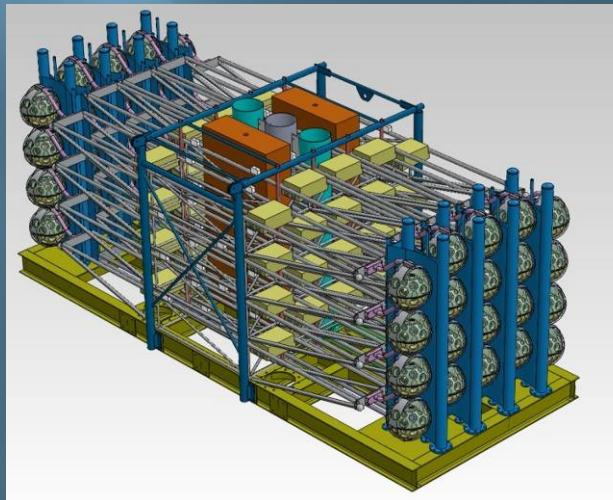
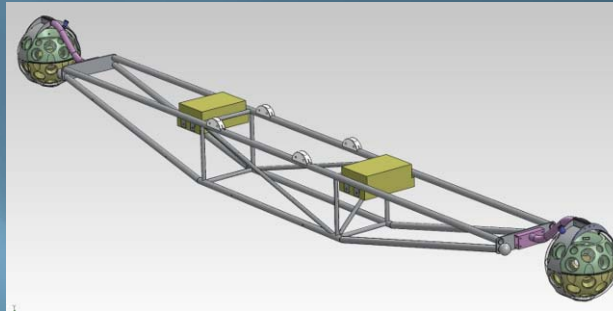
Resistance
for tests



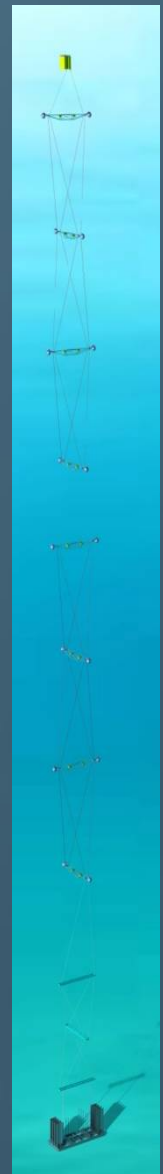
MEUST/KM3NeT NEUTRINO DETECTION LINES



LINE ANTARES



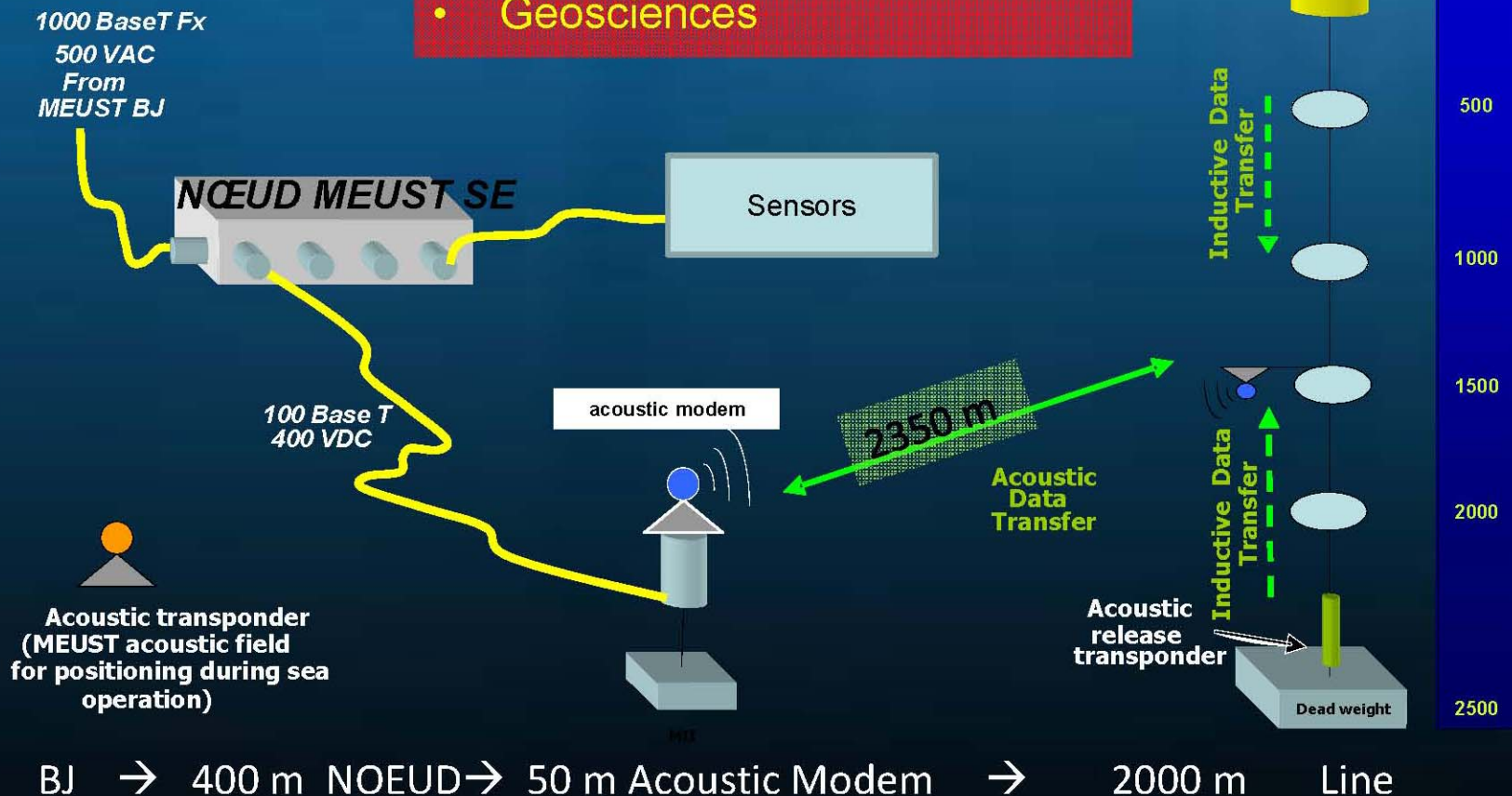
LINE KM3NeT



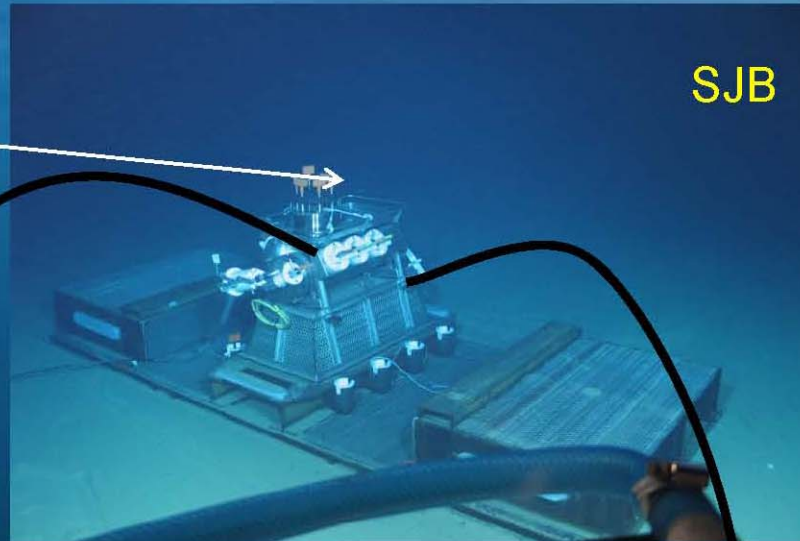
MEUST/EMSO INSTRUMENTED LINES

ALBATROS: autonomous mooring lines
with acoustic data transmission

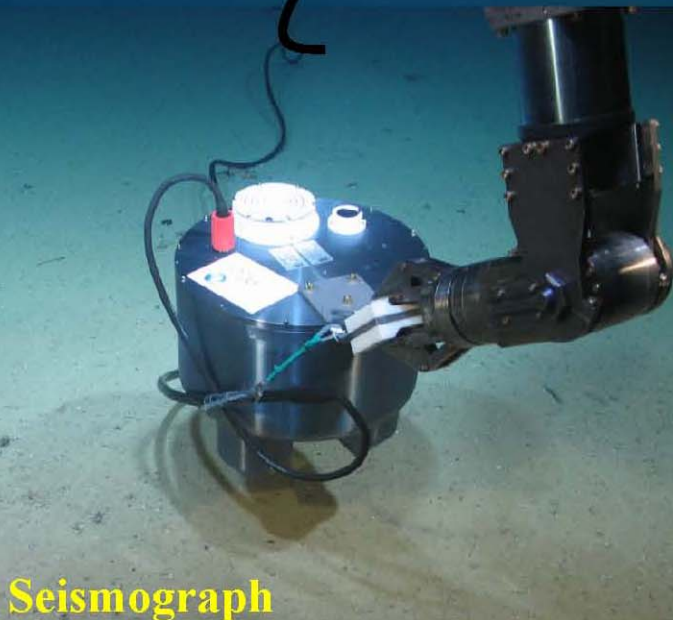
- Hydrodynamique – Circulation
- Biogeochimie
- Ecologie Marine
- Geosciences



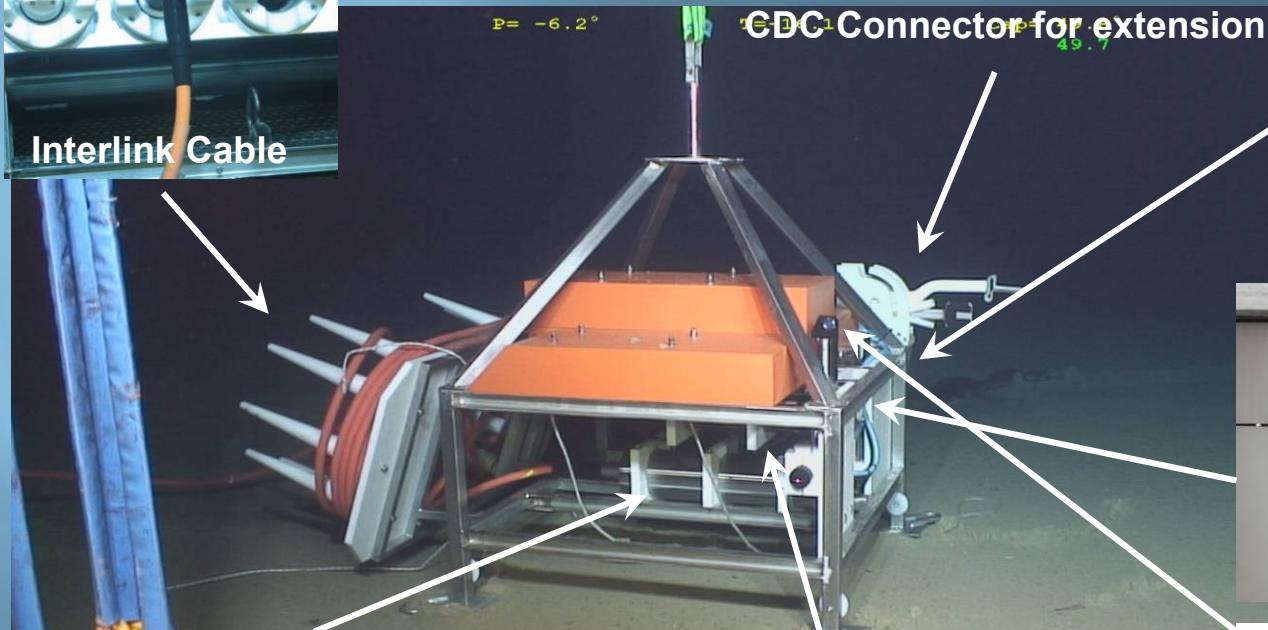
Current developments ongoing around the ANTARES Secondary Junction Box (deployed end 2010)



Connected
30 oct 2010

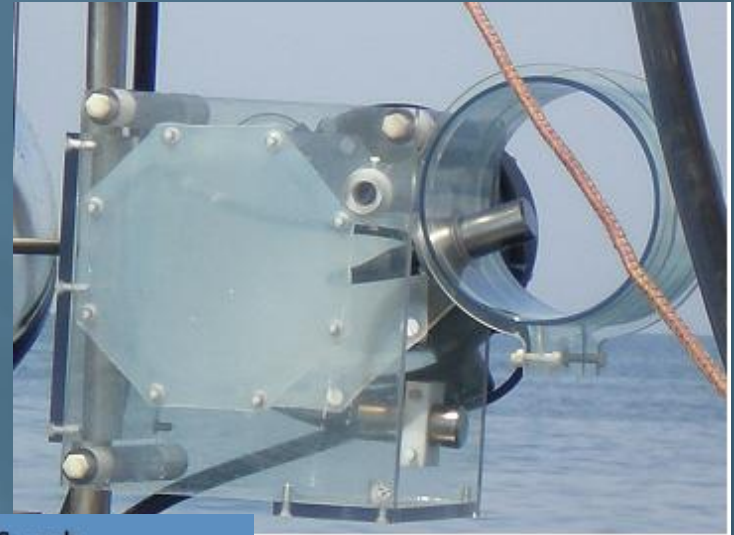


The Instrumentation Module

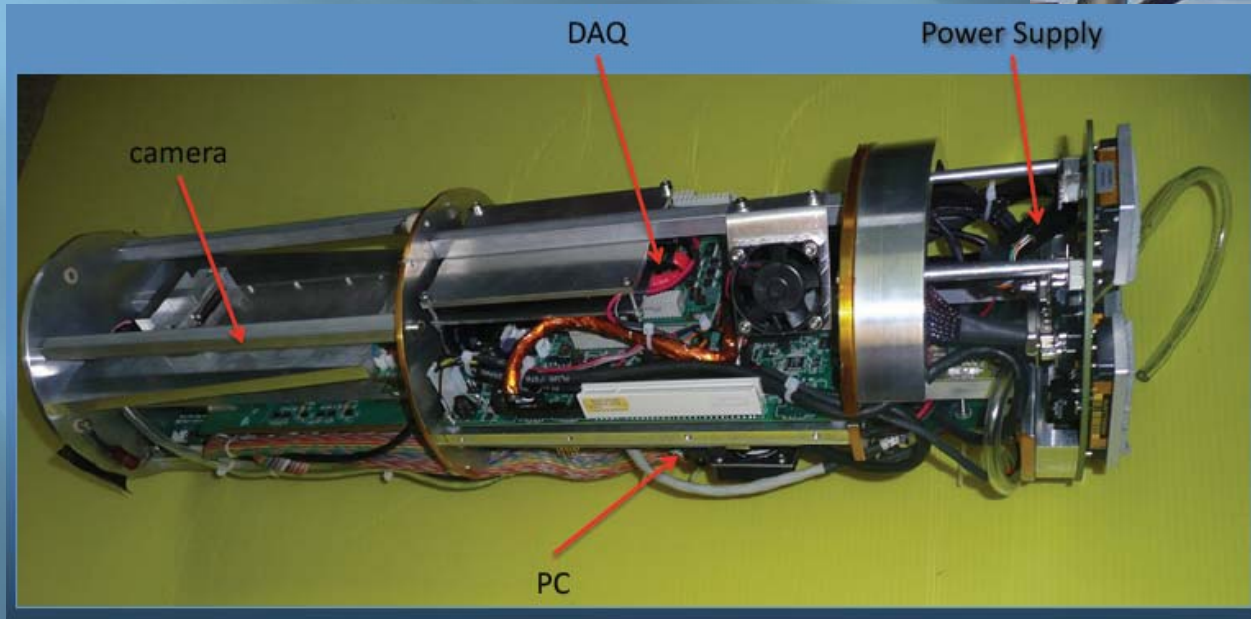


Exemples of joint IN2P3-INSU developments

IODA (CPPM-MIO)
Oxygen Dynamics Autosampler



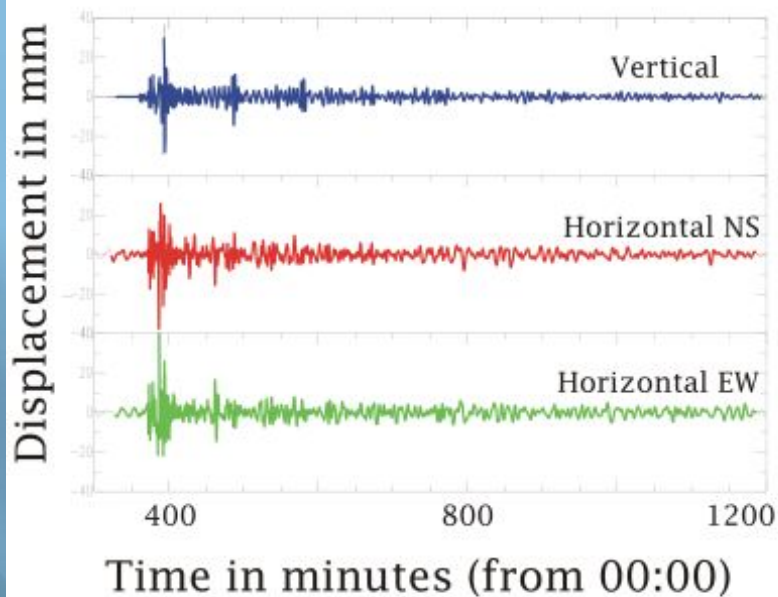
1 photon ebcmos bio-camera
(IPNL - DT-INSU)



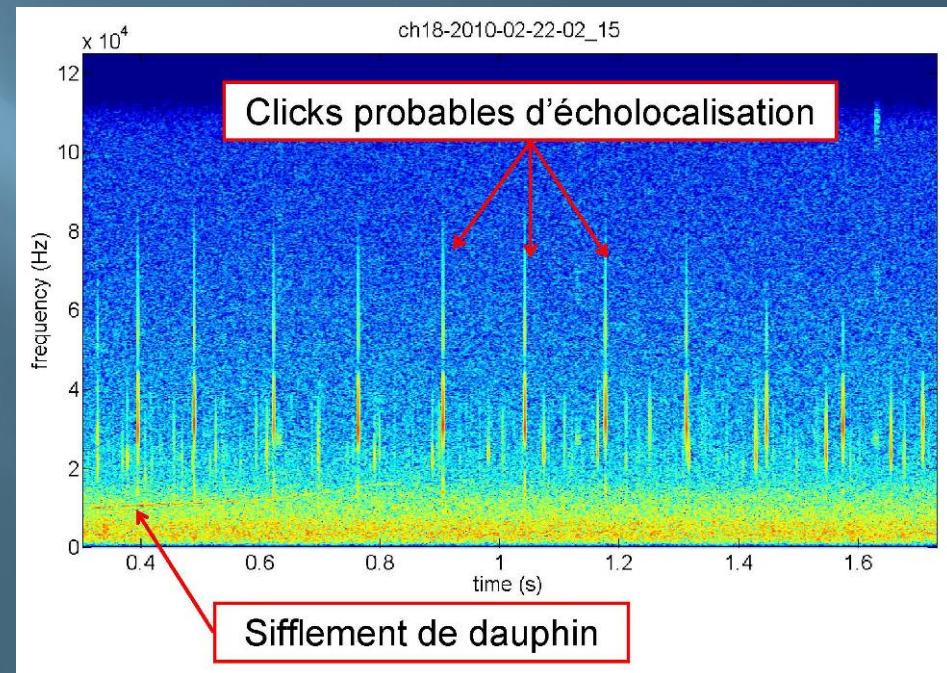
TWO EXAMPLES OF MEASUREMENTS

Earth quake detection

Japan earthquake 2011 March 11
at Antares site

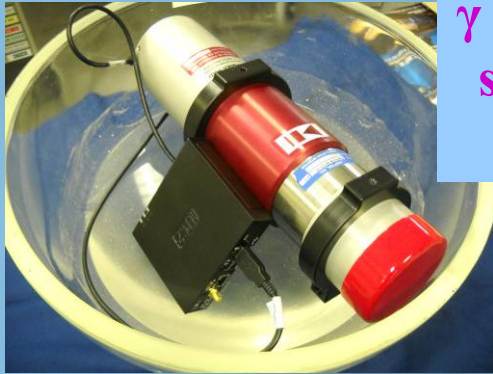


Listening to marine mammals in real time



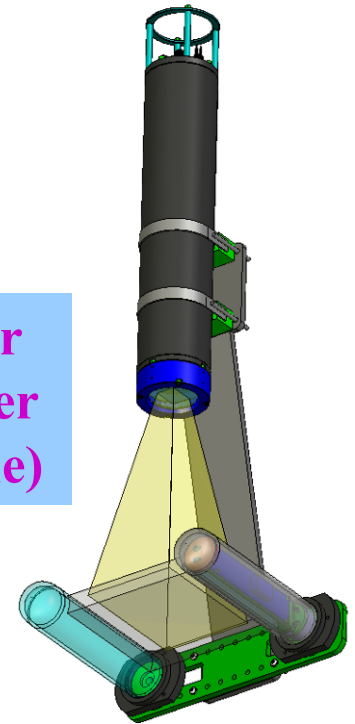
AMONG POSSIBLE NEW PROJECTS

from Nov. 2010 MEUST pluri-disciplinary workshop:
<http://indico.in2p3.fr/conferenceDisplay.py?confId=4132>

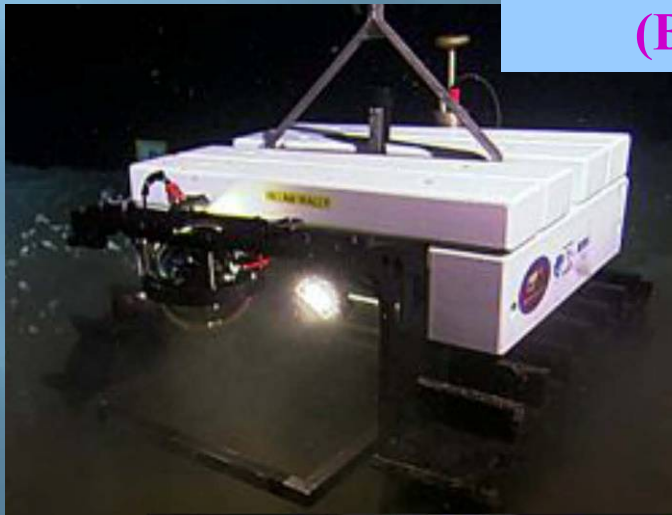


γ radioactivity
spectrometer
(CPPM)

Underwater
Vision Profiler
(Villefranche)



Sea bottom crawler
(Bremen)



Benthic Sensor
(CEA)



SUMMARY AND OUTLOOK

The MEUST submarine infrastructure

- is close to be deployed offshore of Toulon
- will offer a unique opportunity to the KM3NeT neutrino telescope and to marine sciences within EMSO