



TURKISH MARINE GEOLOGY INITIATIVES

Namık Çağatay
Istanbul Technical University, Turkey



ECORD Council – ESSAC Meeting 28-29 October 2015, Naples

Main items:

- ECORD-IODP membership
- IODP Marmara drilling proposal
- EMSO – ERIC membership and Sea of Marmara node
- Marine infrastructure: MTA RV Turkuaz

II. Kıyı ve Deniz Jeolojisi Sempozyumu

IODP-ECORD Toplantısı

15-16 EKİM 2015

İTÜ MADEN FAKÜLTESİ
İHSAN KETİN
KONFERANS SALONU



TÜBİTAK



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IODP-ECORD Meeting (15 October 2015)

ECORD Introductory Talks

- G.CAMOIN** : Illuminating Earth's Past, Present, and Future: The International Ocean Discovery Program Science Plan for 2013-2023
- G. CAMOIN** : ECORD in the IODP: new opportunities in scientific drilling
- D. Mc INROY** : ECORD Mission Specific Platform expeditions
- N. HALLMANN** : ECORD educational activities
- A. STEVENSON** : ECORD Outreach activities
- A. STEVENSON & D. McINROY** : European initiatives and potential links with ECORD

ECORD-IODP Distinguished Lectures

- C. FRANCE-LANORD**: IODP Expedition 354: the Bengal fan record of Himalayan erosion, from Pleistocene through Oligocene
- P. VANNUCCHI**: Understanding megathrust earthquakes through ocean drilling
- J. KALLMEYER**: "What controls abundance and activity of microbial life in subsurface sediments? New insights from scientific drilling"

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Short Presentations Introducing Turkish Marine Geoscience Institutions

ŞÜKRÜ BEŞİKTEPE: Turkish Marine Research Program and Strategies:
with special emphasis on Marine Geology and Geophysics

Turkish ECORD Membership

- MTA General Directorate (Turkish Geological Survey)
- Consortium of universities (e.g., ITU, DEU, IU)





GENERAL DIRECTORATE OF MINERAL RESEARCH AND EXPLORATION (MTA)

R/V MTA TURKUAZ

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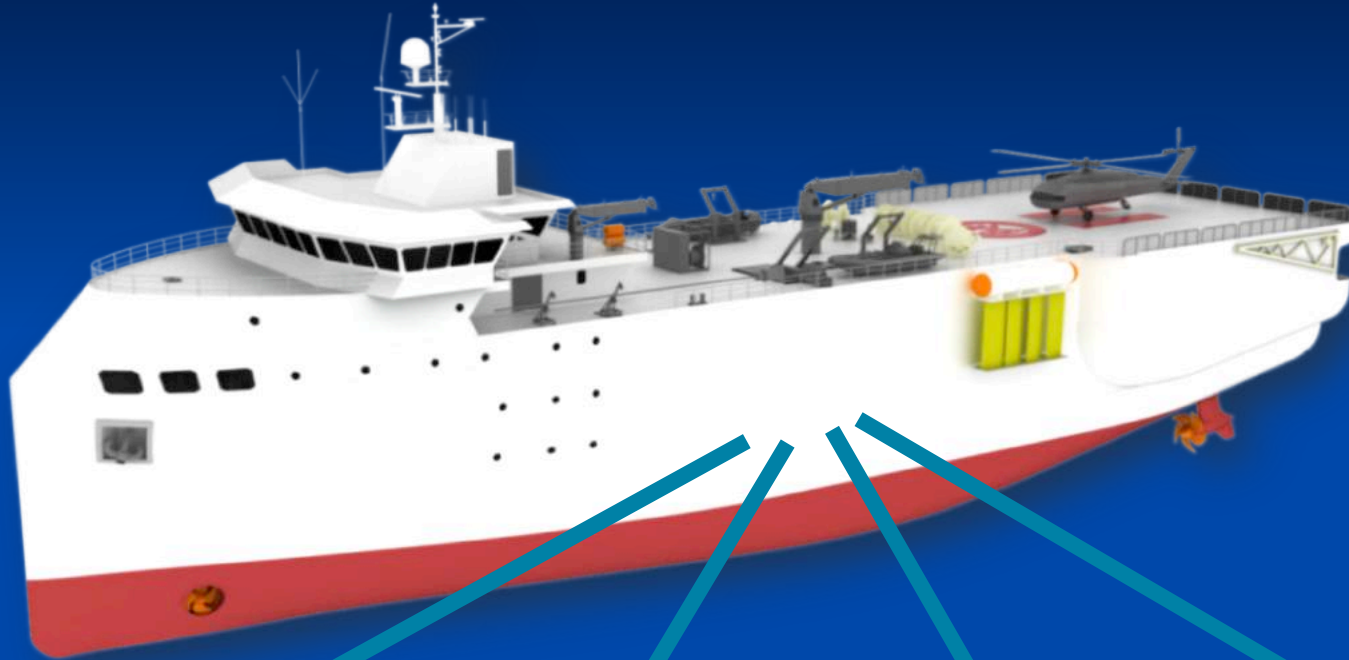
R/V MTA SELEN



Department of Marine Research



MASTER MISSIONS OF R/V MTA TURKUAZ



2D/3D
SEISMIC
DATA
ACQUISITION

SAMPLING
(GEOLOGY)
PISTON
CORER AND
BOX CORER

HYDROGRAPHIC
AND
OCEANOGRAPHY
SURVEY

ROV SURVEY



GENERAL SPECIFICATION

Lenght Overall	86 .66 m
Beam	19m/23m
Draft	6 m
Speed (ECO)	14 knots
Speed (MAX)	17 knots
Gross Tonnage	4575
Deadweight	4867 tons
Personnel Capacity	55
Main Engines	4 x 2520 kW ABC 12V-DZC Diesel Generator
Main Propulsion	2 x 3500 kW Rolls Royce
Bow Thruster	1 X 1050 kW Rolls Royce
Fuel Capacity	~1500 m3
Helideck Capacity	12 tons Sikorsky
Boats	Jemar Seismic workboat and RHIB Boat



RESEARCH EQUIPMENT

SEISMIC RECORDING SYSTEM

SEISMIC NAVIGATION SYSTEM

STREAMER TYPE

STREAMER CAPACITY

STREAMER POSITIONING SYSTEM

STREAMER RECOVERY SYSTEM

AIRGUN CONTROLLER

AIR GUNS

AIR GUN ARRAY

PARAVANE

COMPRESSOR

DATA PROCESSING AND INTERPRETATION

SUB BOTTOM PROFILLER

MARINE GRAVIMETER

MARINE MAGNETOMETER

SINGLE BEAM ECHOSOUNDER

MULTIBEAM ECHOSOUNDER

ROV

ACDP

WATER SAMPLER

CTD AND SENSORS

SAMPLING EQUIPMENT

WINCHES

Sercel Seal Marine System

Sercel SeaPro Nav 3D lite

Sercel Sentinel ® Solid Streamer

4 X 4 km (capacity: 8 x 8 km)

Sercel Nautilus

Geospace HSRD System

ION Digishot

72 x Bolt Technologies 1900-LLXT (8400 cu.inch)

6 @ 12 air gun

Baro 44/46

3 X LMF 48/138-207-E60

2D/3D CGG Geovation/ Petrel Suite

Kongsberg TOPAS PS 18 Full Ocean

MicroG MGS-6 / 193

Geometrics G882

Kongsberg EA600 (18 kHz / 200 kHz)

Kongsberg EM2040-7, Kongsberg EM-302

Gate Gelibolu Workclass 1500 m. depth capacity

Teledyne RDI Ocean Surveyor OSII38

SeaBird SBE55plus

SeaBird SBE25 (CTD, pH, DO, PAR, OPR, CH4, H2S)

Piston Corer and Box Corer (OSIL)

MacArtney Cormac V / Cormac II, Rolls Royce

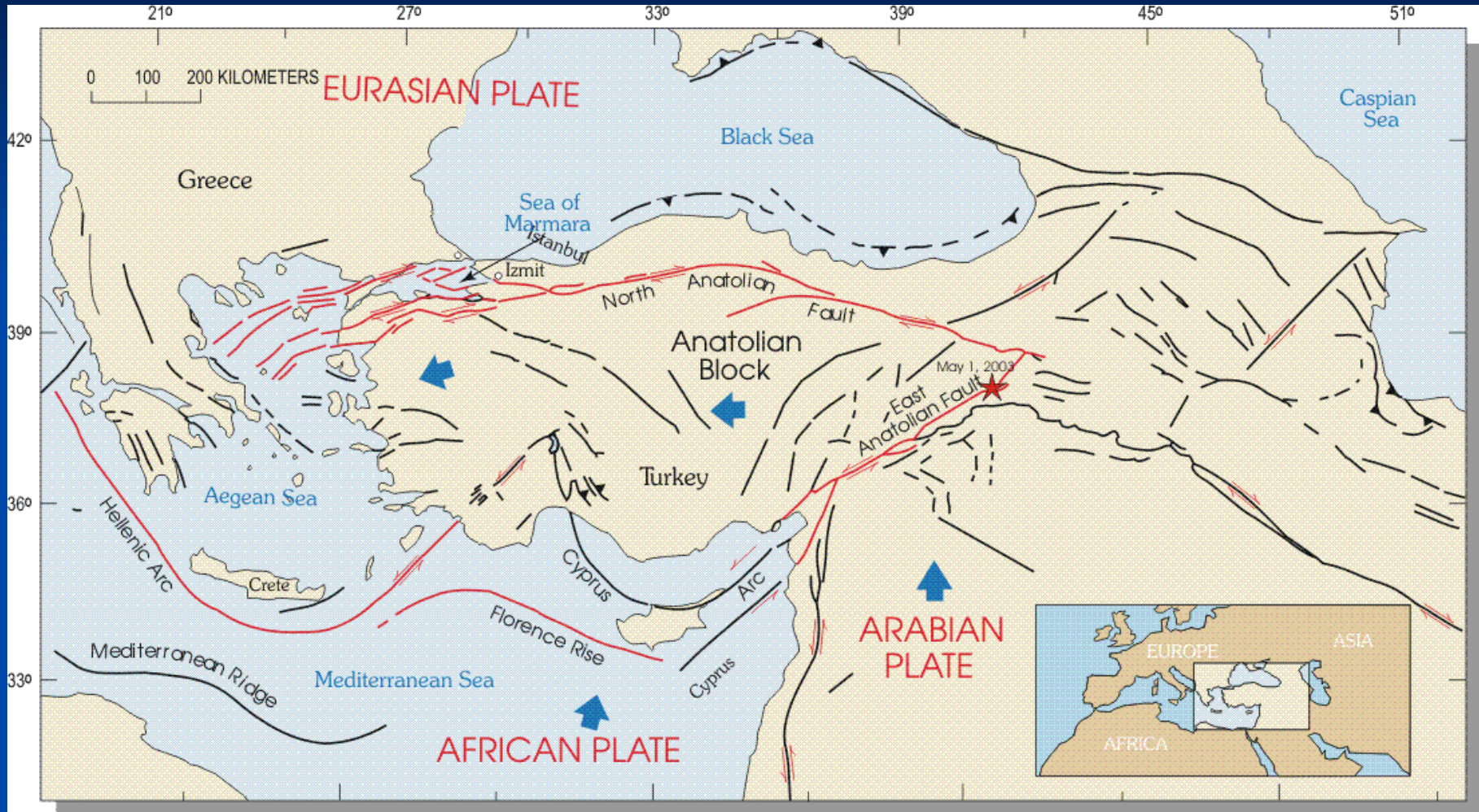


IODP Marmara Drilling proposal

Two workshops:

- **Submerged Continental Transform Boundaries: Tectonic evolution and geohazards, funded by IODP (March 2013)**
- **IODP Drilling in Sea of Marmara: Workshop funded by Flows (Cost Action) project, 19-20 March 2015**

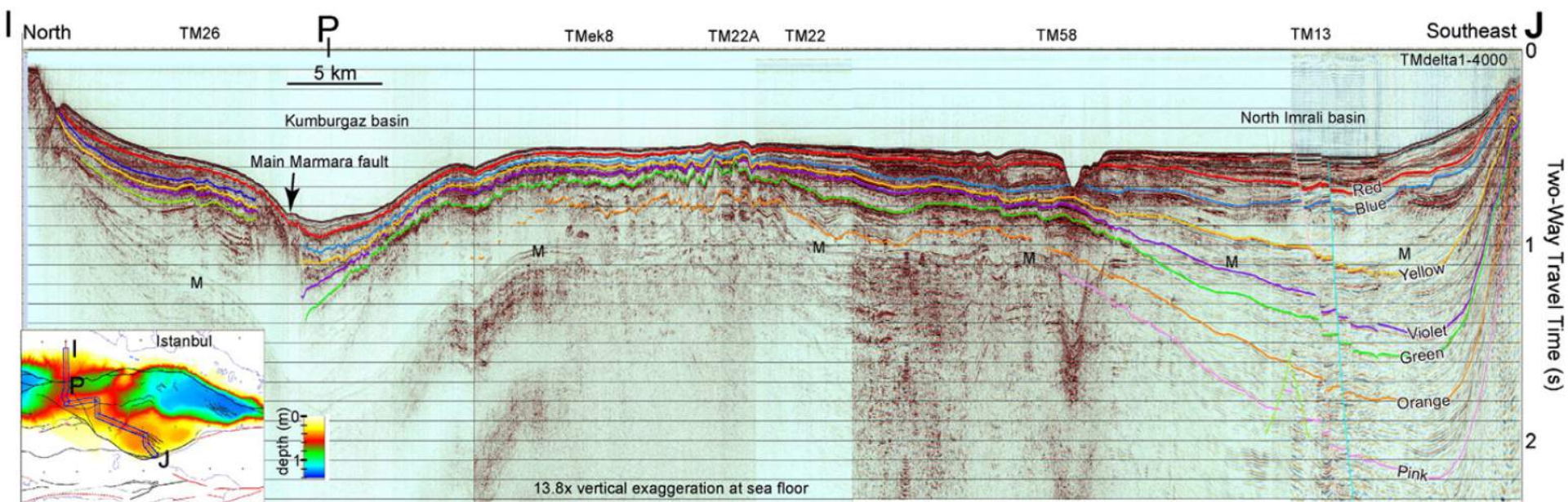
Tectonic setting: Sea of Marmara



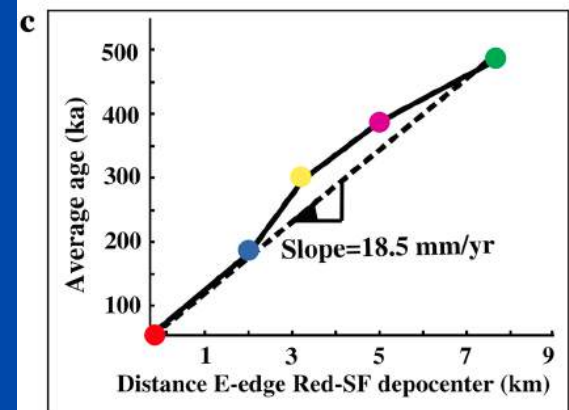
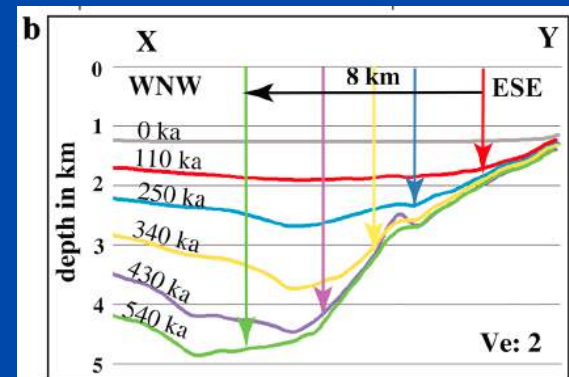
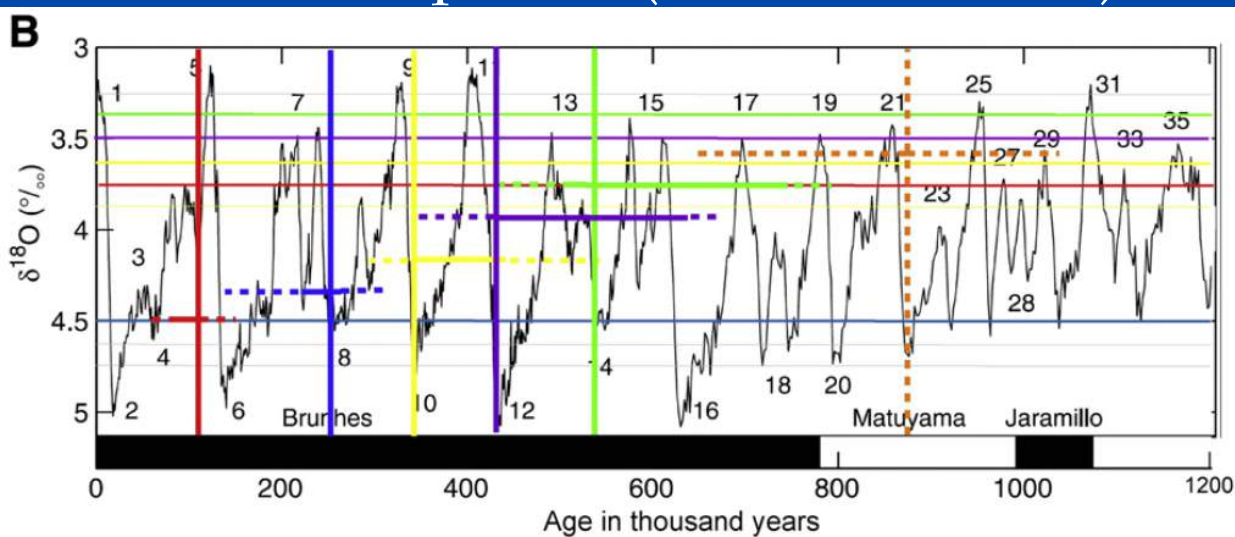


Main objectives of IODP proposal

- Basin growth on a continental transform boundary
- Geohazards: long term earthquake and submarine landslides records, slip rate estimates and seismic risk assesment
- Paleooceanography: Lake/Marine transitions

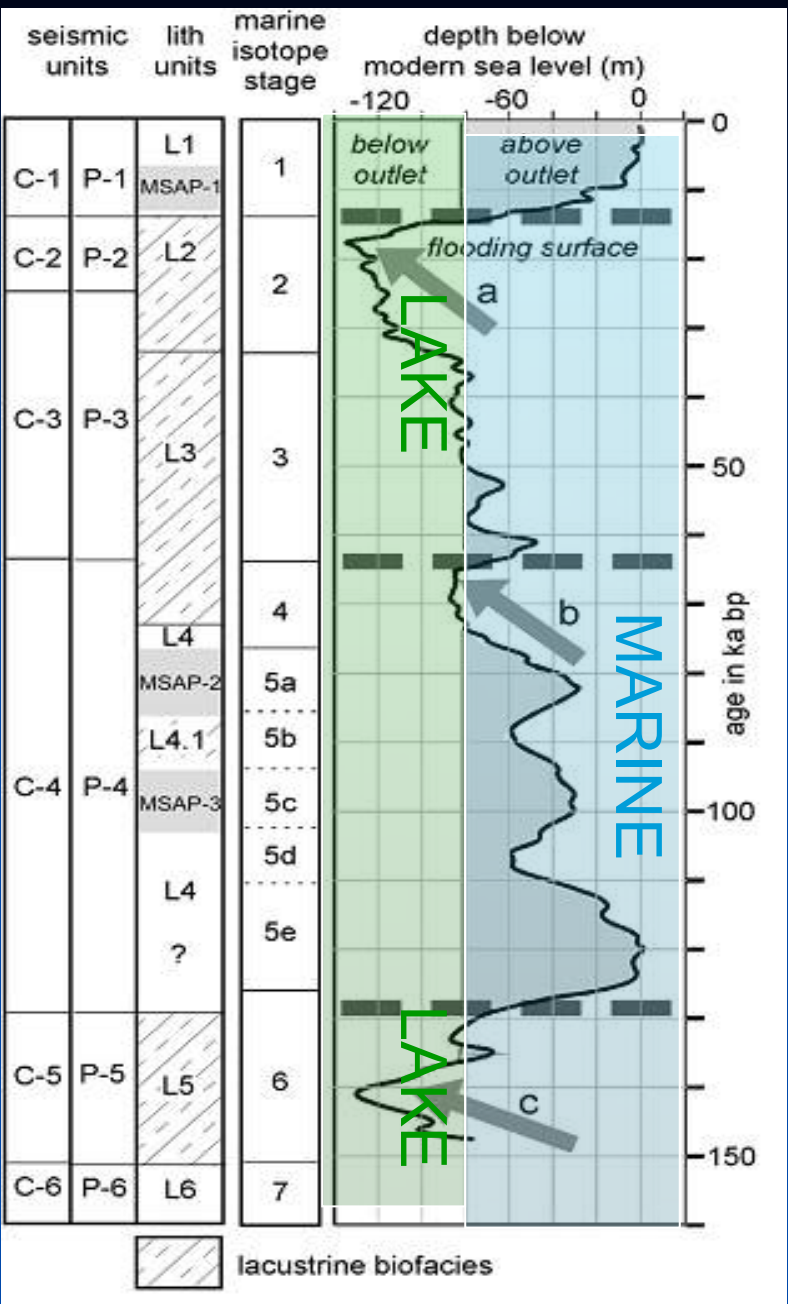


Correlation of reflectors with low stand deltas (Sorlien et al., 2012) and inference of fault slip rates (Kurt et al., 2013)



Sea of Marmara paleoceanography

- Gateway between the Black Sea and the Aegean Sea.
- Alternating lacustrine and marine environments due climatically controlled sea level variations
- Disconnections depends on the depth of the Çanakale sill which is now ≈ 65 m but probably varied with time.





European Strategy Forum
on Research Infrastructures

ESFRI

EMSO

European Multi-disciplinary Seafloor Observatory



EMSO AND ESONET OBSERVATORY NODES



ESONET Marmara-DM project



Le Suroit, Ifremer



Piri Reis (DEU, Izmir)



URANIA (CNR, Italy)

Marnaut Cruise

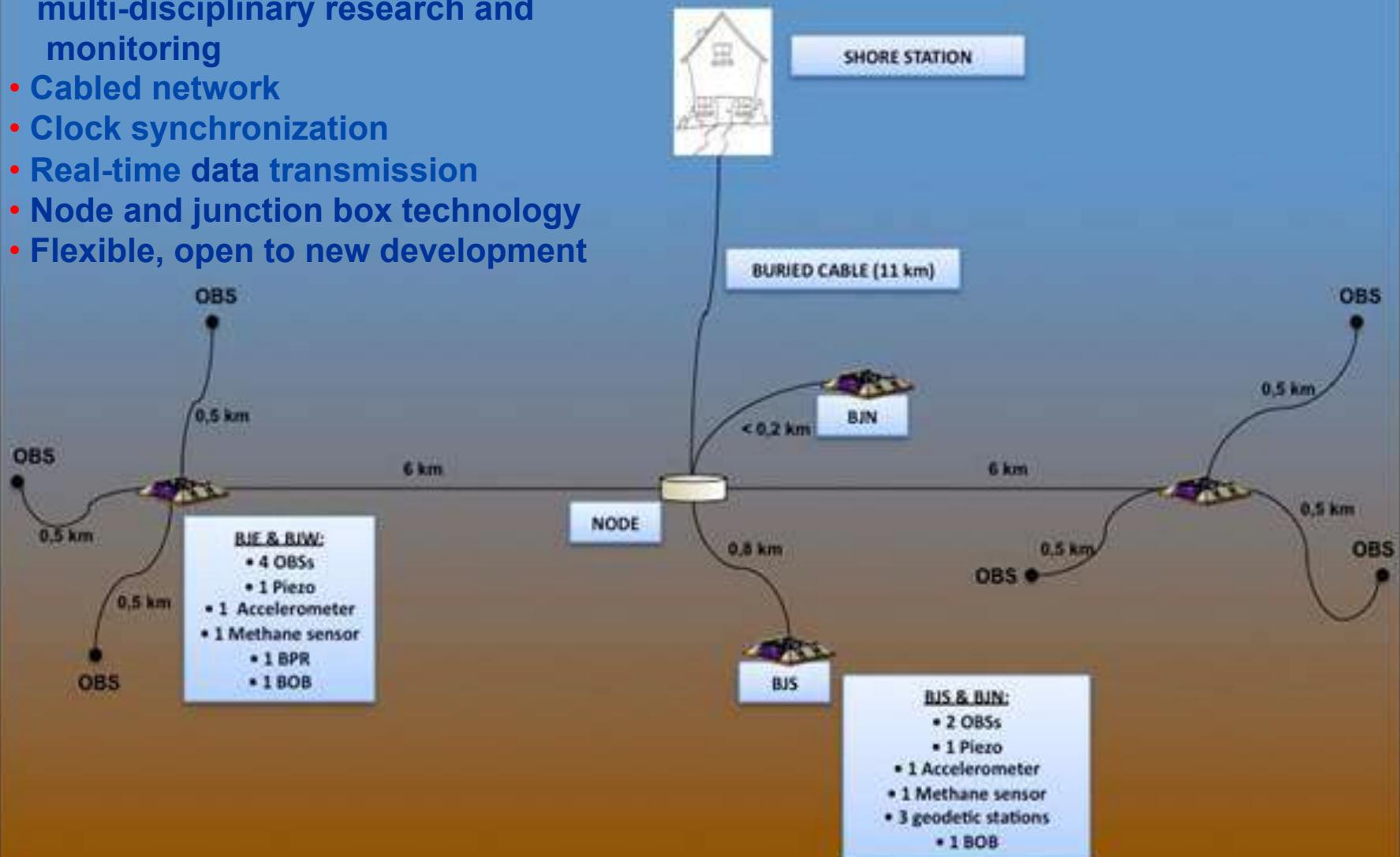
Cruise onboard L'Atalante with Nautille

(12 May-12 June 2007)



MARDEP Observatory Design

- Infrastructure suitable for multi-disciplinary research and monitoring
- Cabled network
- Clock synchronization
- Real-time data transmission
- Node and junction box technology
- Flexible, open to new development



Thank you

