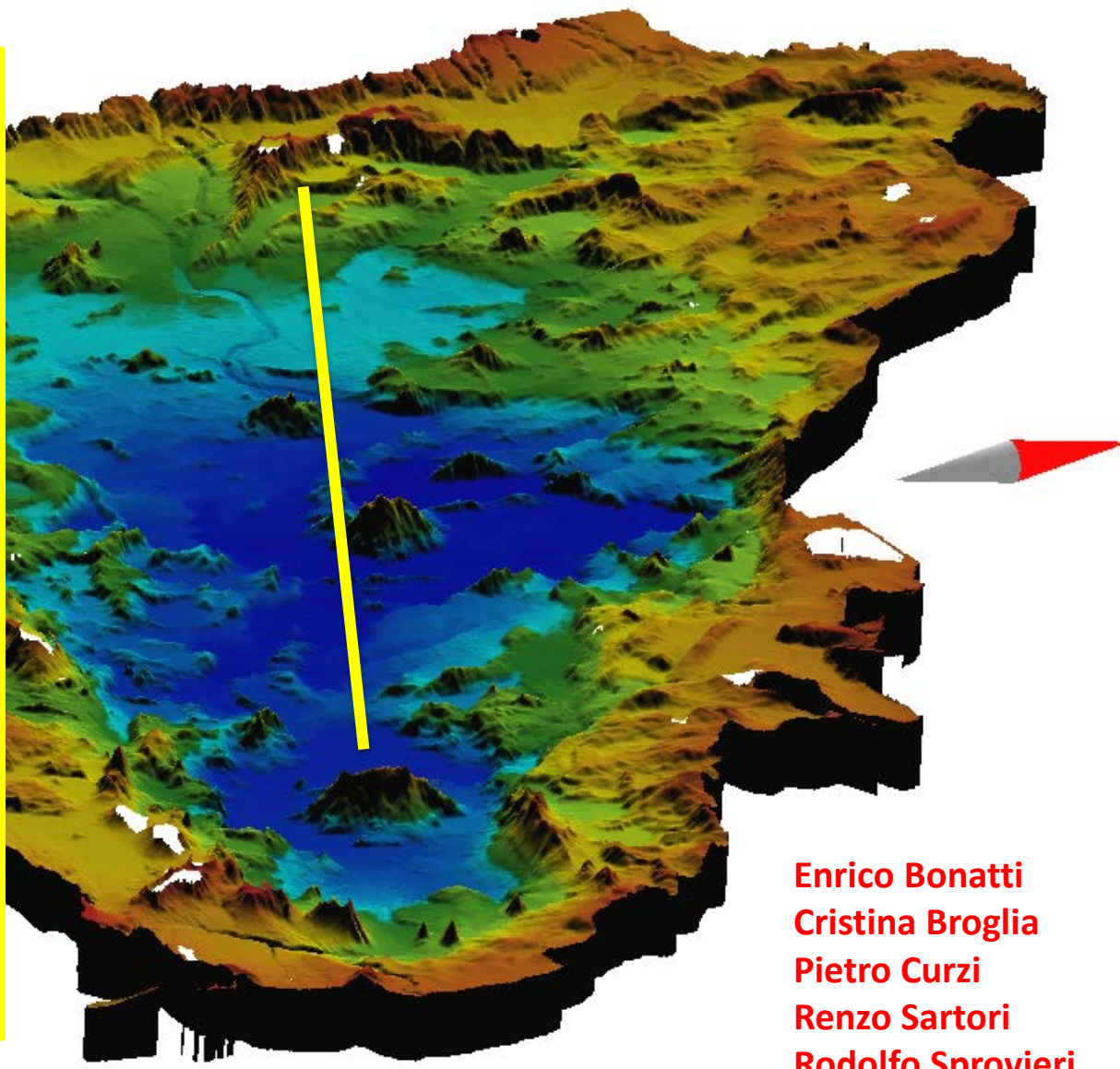


Enrico Bonatti
Cristina Broglia
Pietro Curzi
Renzo Sartori
Rodolfo Sprovieri

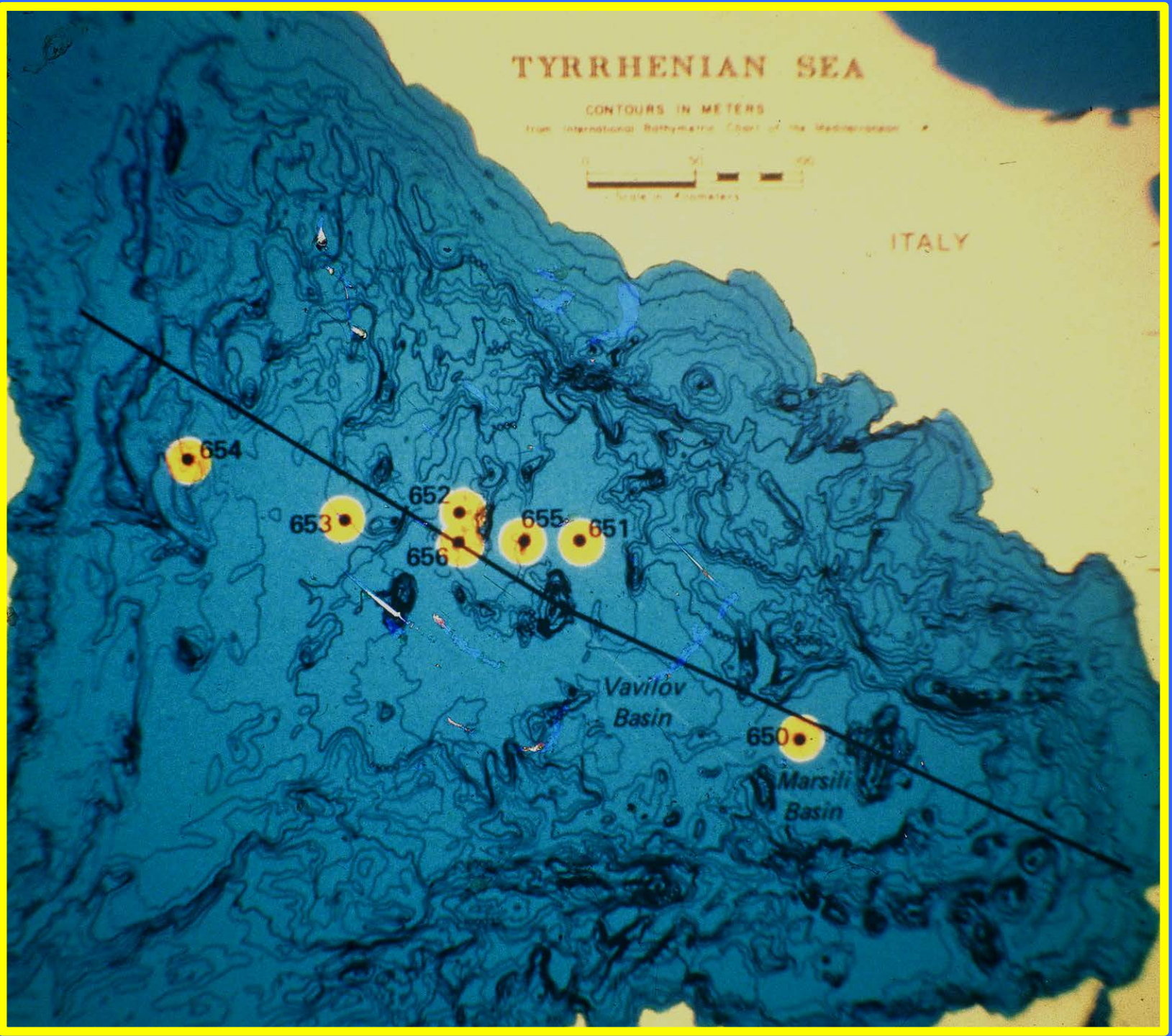
ODP 107: a Transect across the Tyrrhenian Sea

(26/12/85 – 18/02/86)

Jean Mascle** (Dr CNRS emeritus) **Observatoire Océanologique de Villefranche-sur-Mer

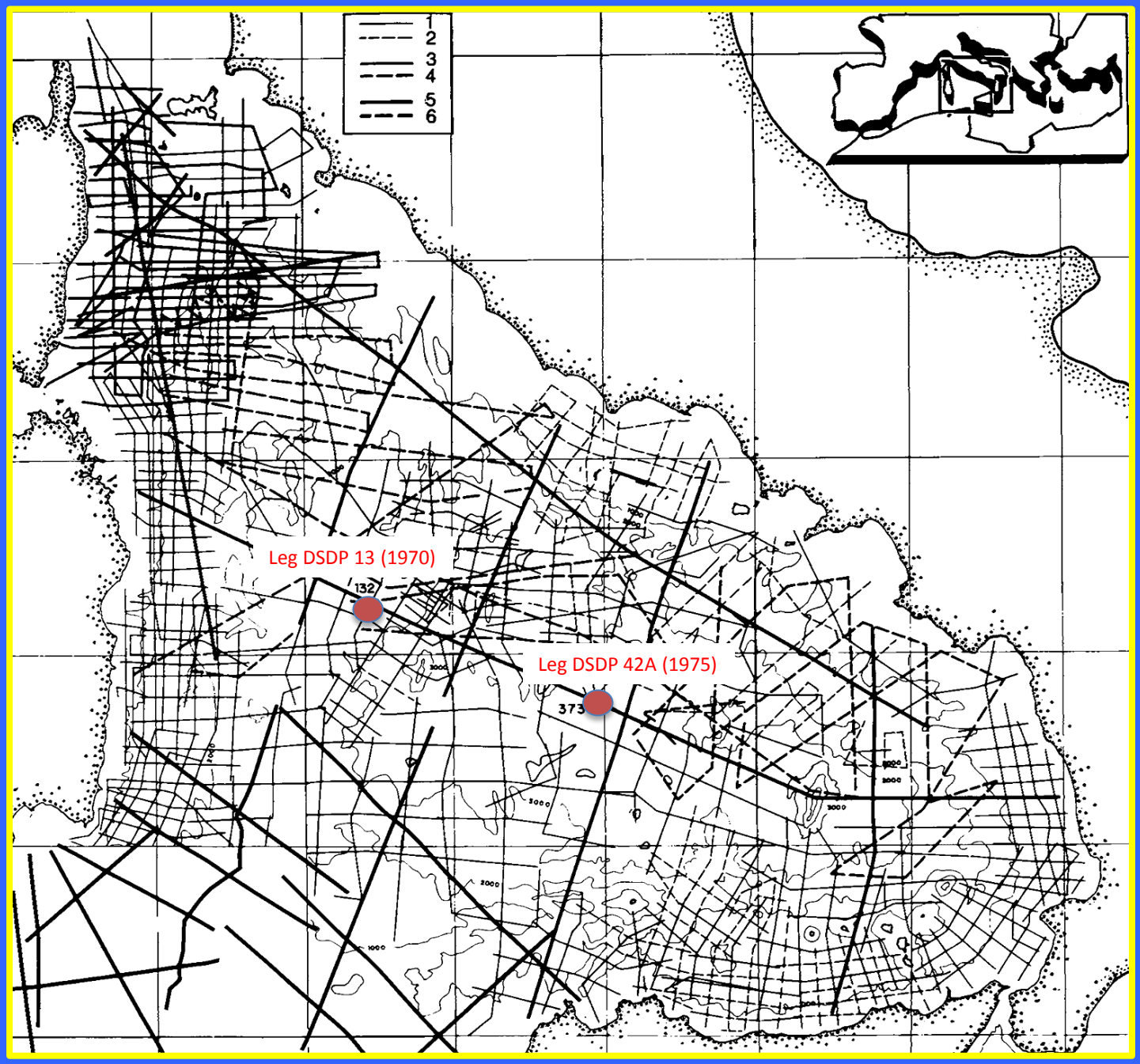
ODP 107

Sites Location & Number

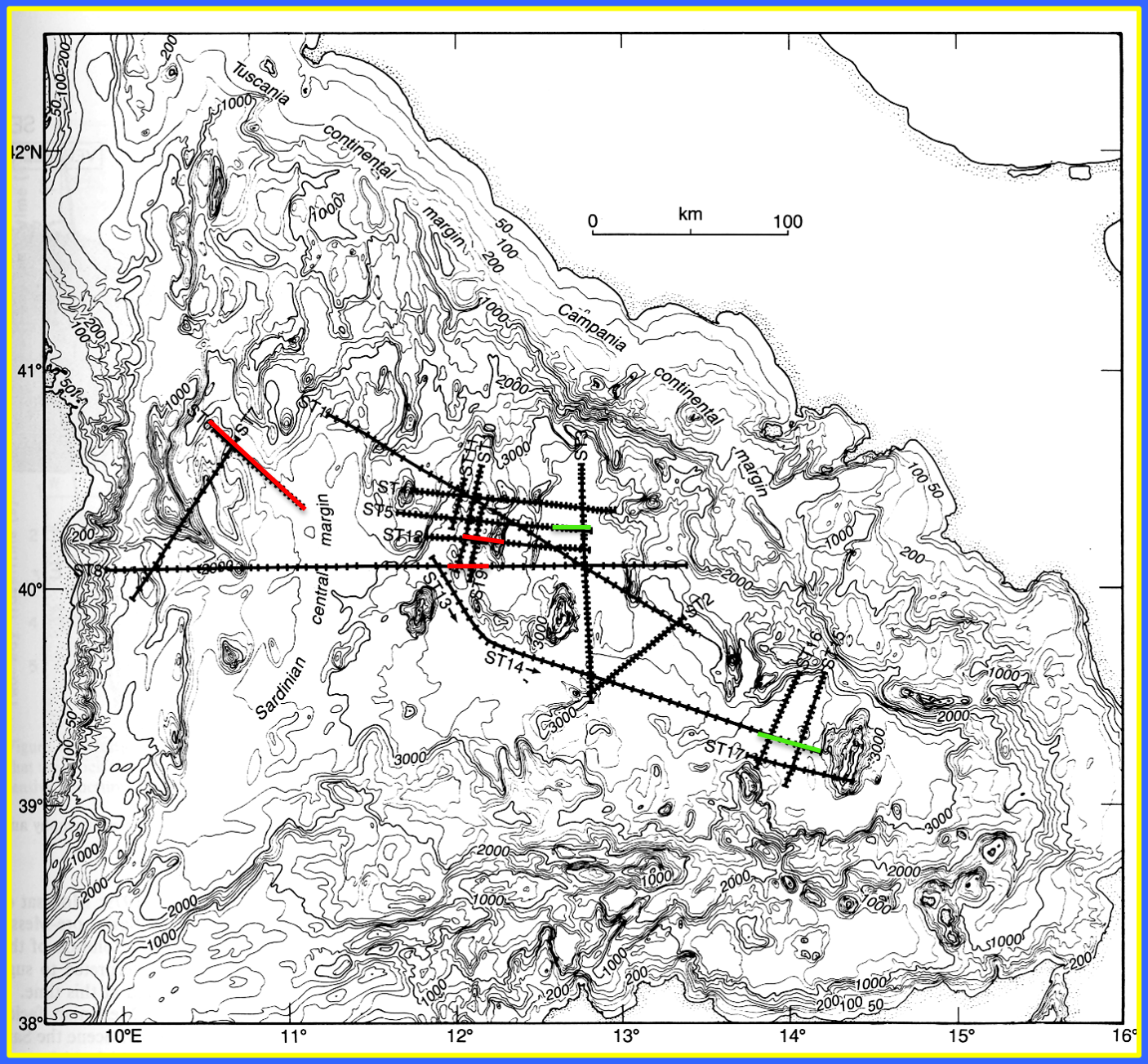


ODP 107

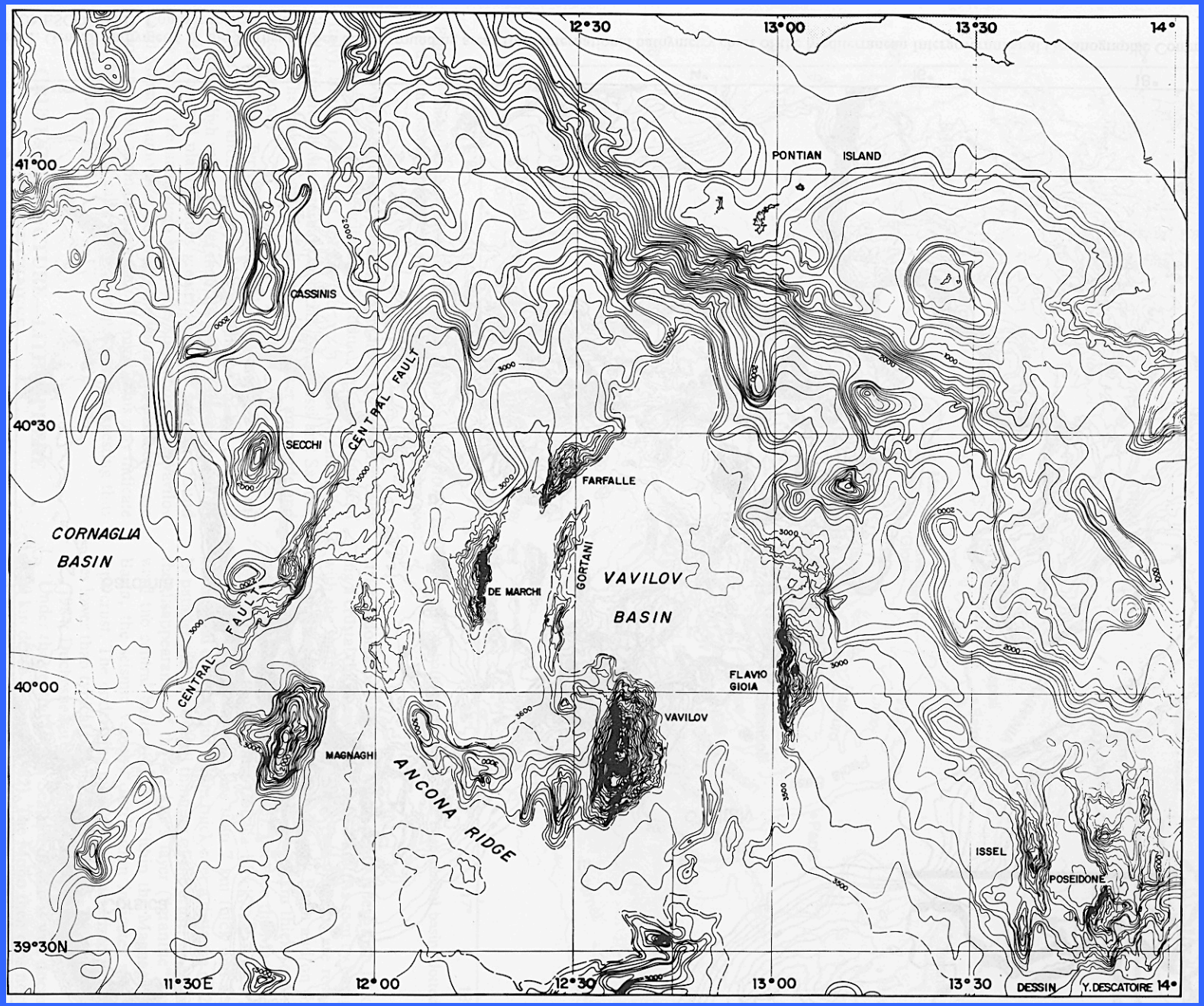
Seismic data available before 1985 And location of previous sites

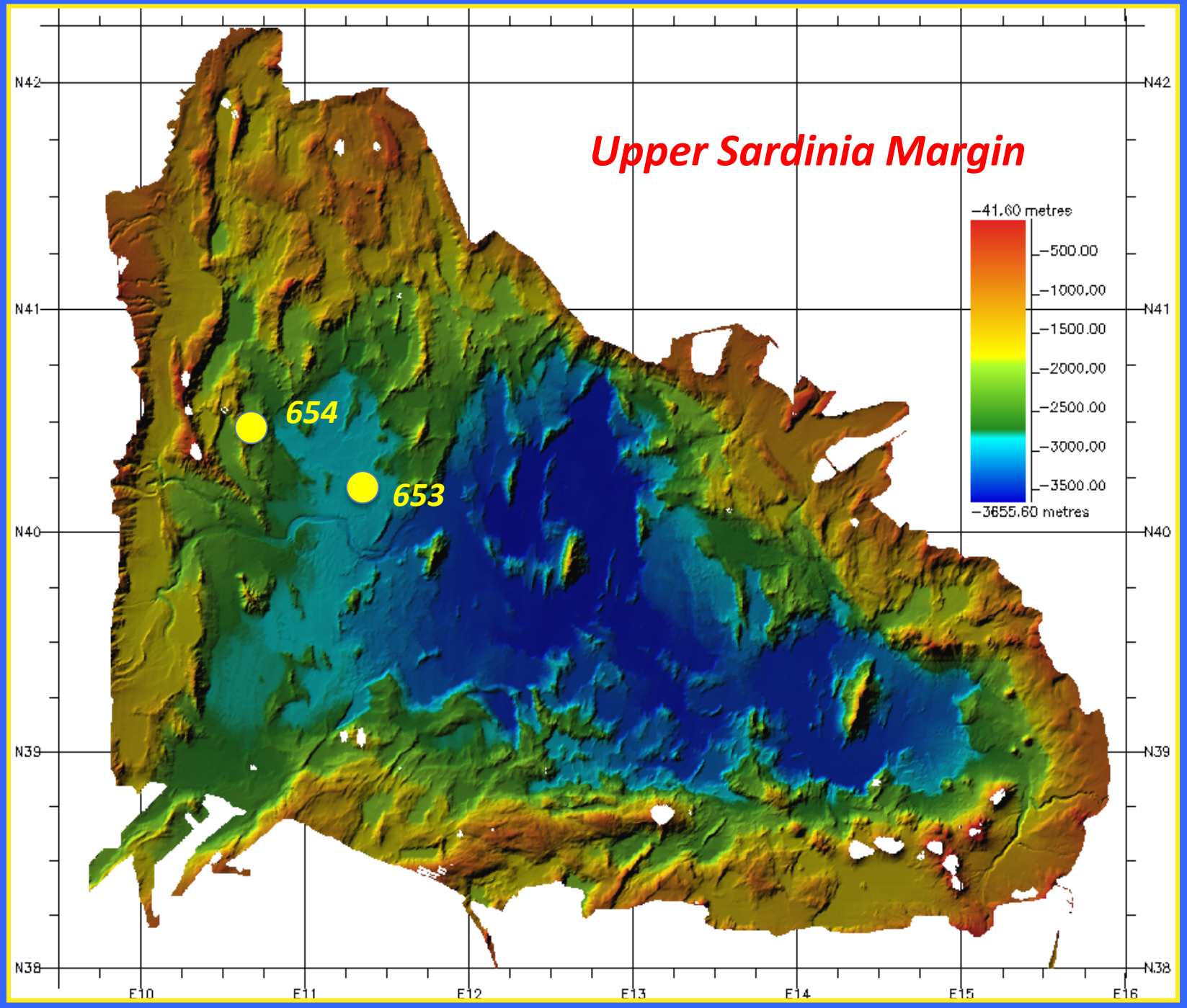


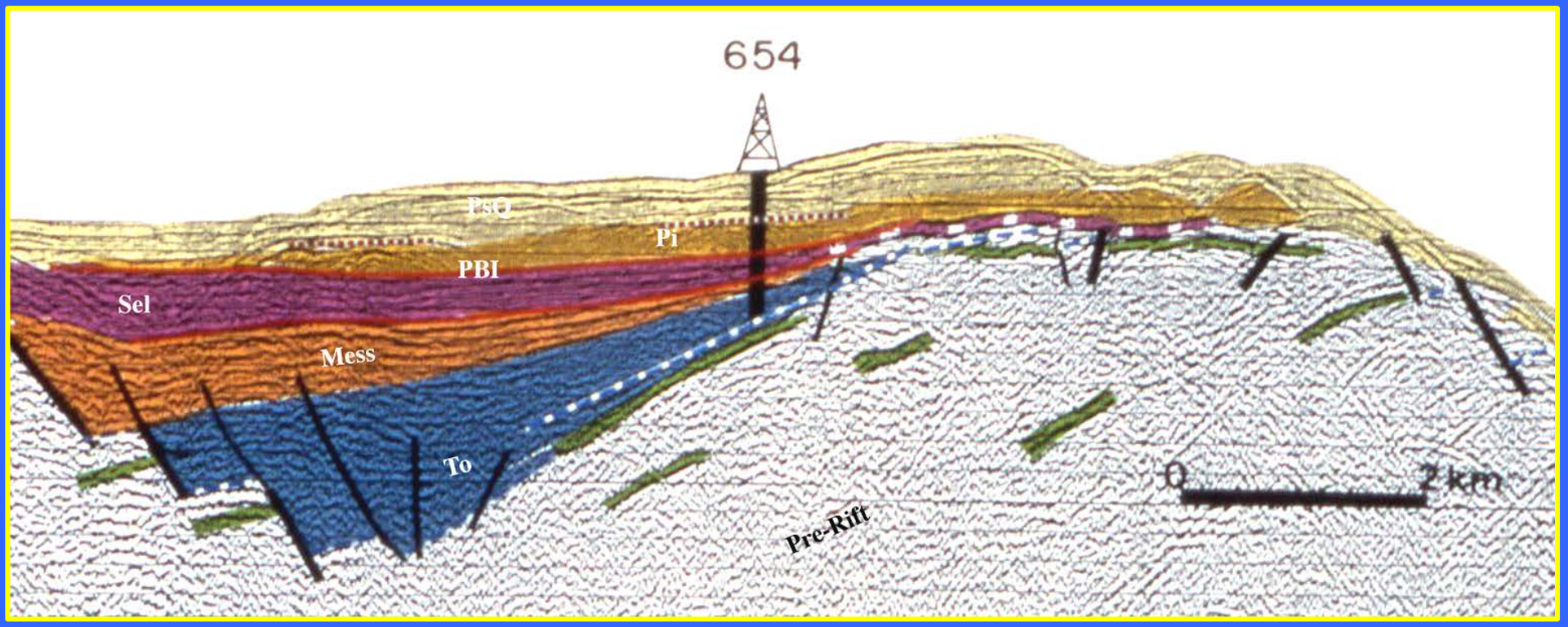
MCS seismic survey collected in early 1985 for leg ODP 107



Bathymetric Map available In 1985




Upper Sardinia Margin
−41.60 metres
−500.00
−1000.00
−1500.00
−2000.00
−2500.00
−3000.00
−3500.00
−3655.60 metres
654
653
N42
N41
N40
N39
N38
E10
E11
E12
E13
E14
E15
E16

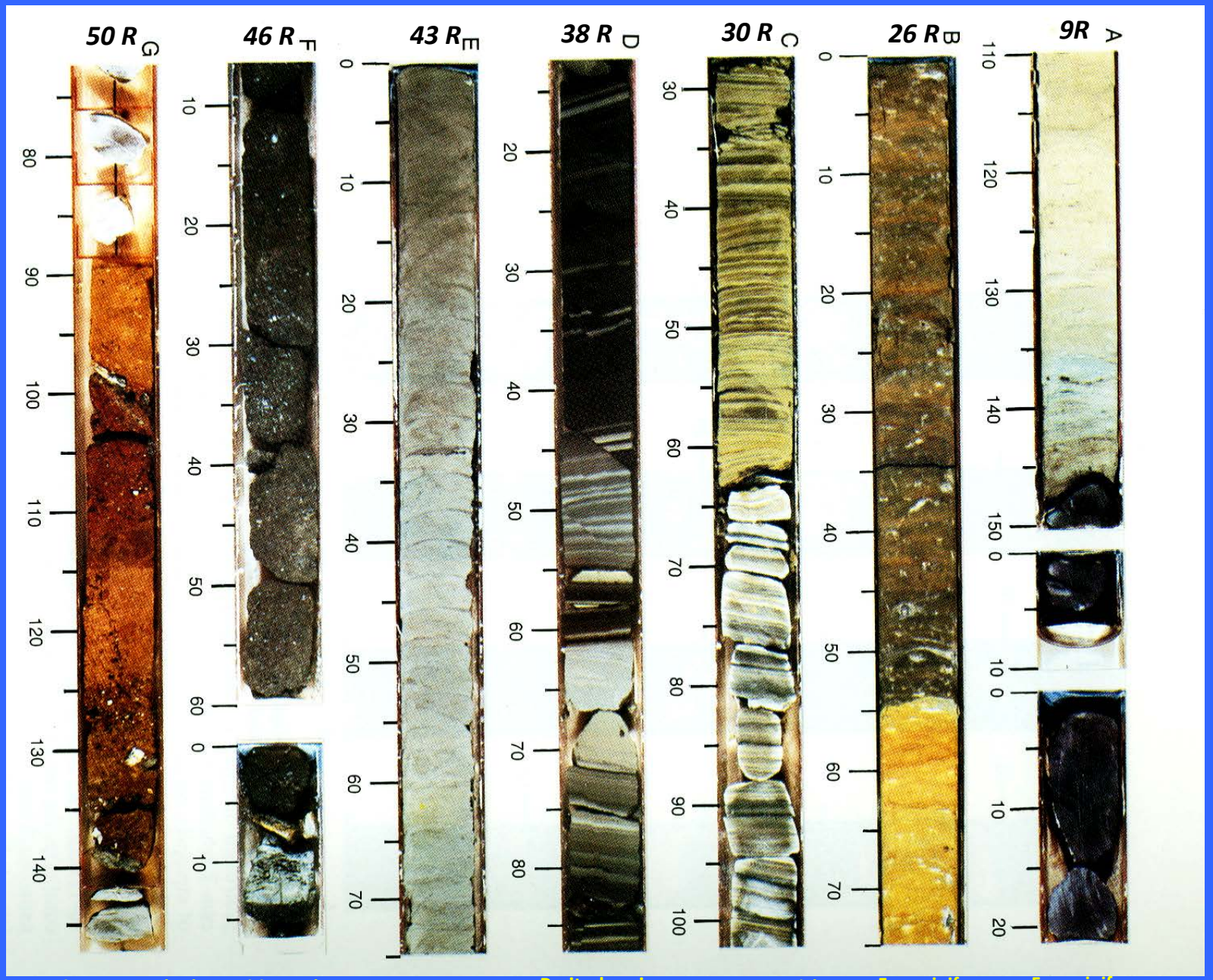


MCS line ST06 across the upper Sardinia continental Margin

- Postrift sequences: Lower Pliocene (Pi) and Plioquaternary (Pq), respectively in light and dark yellow, iluding basalt layers (dotted purple)

-Synrift sequences: Tortonian (11.6-7.3 My) (To) and Messinian (7.3- 5.3 My)(Mess), -respectively in blue , orange and purple; continental conglomerate (white dots)

SITE 654

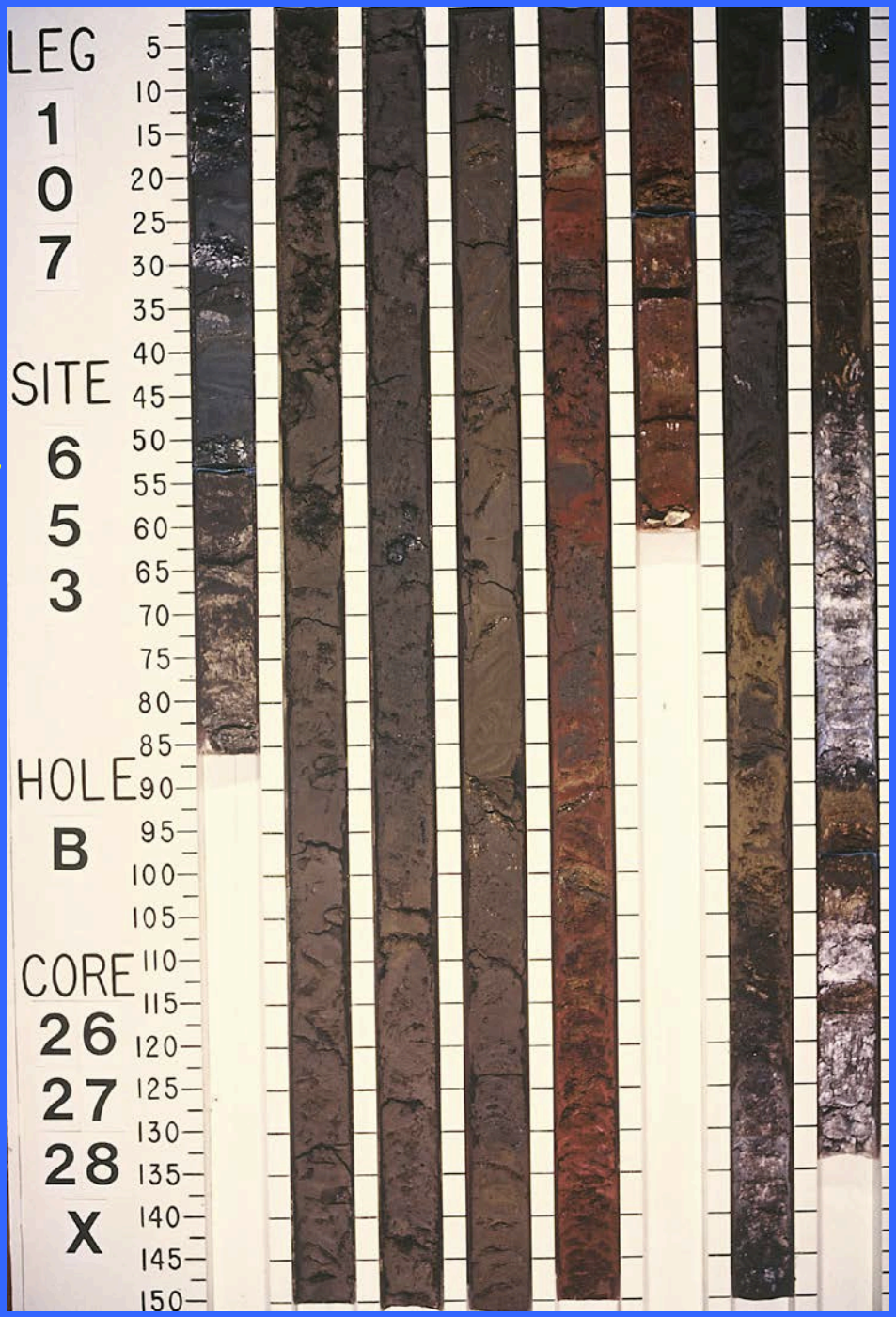


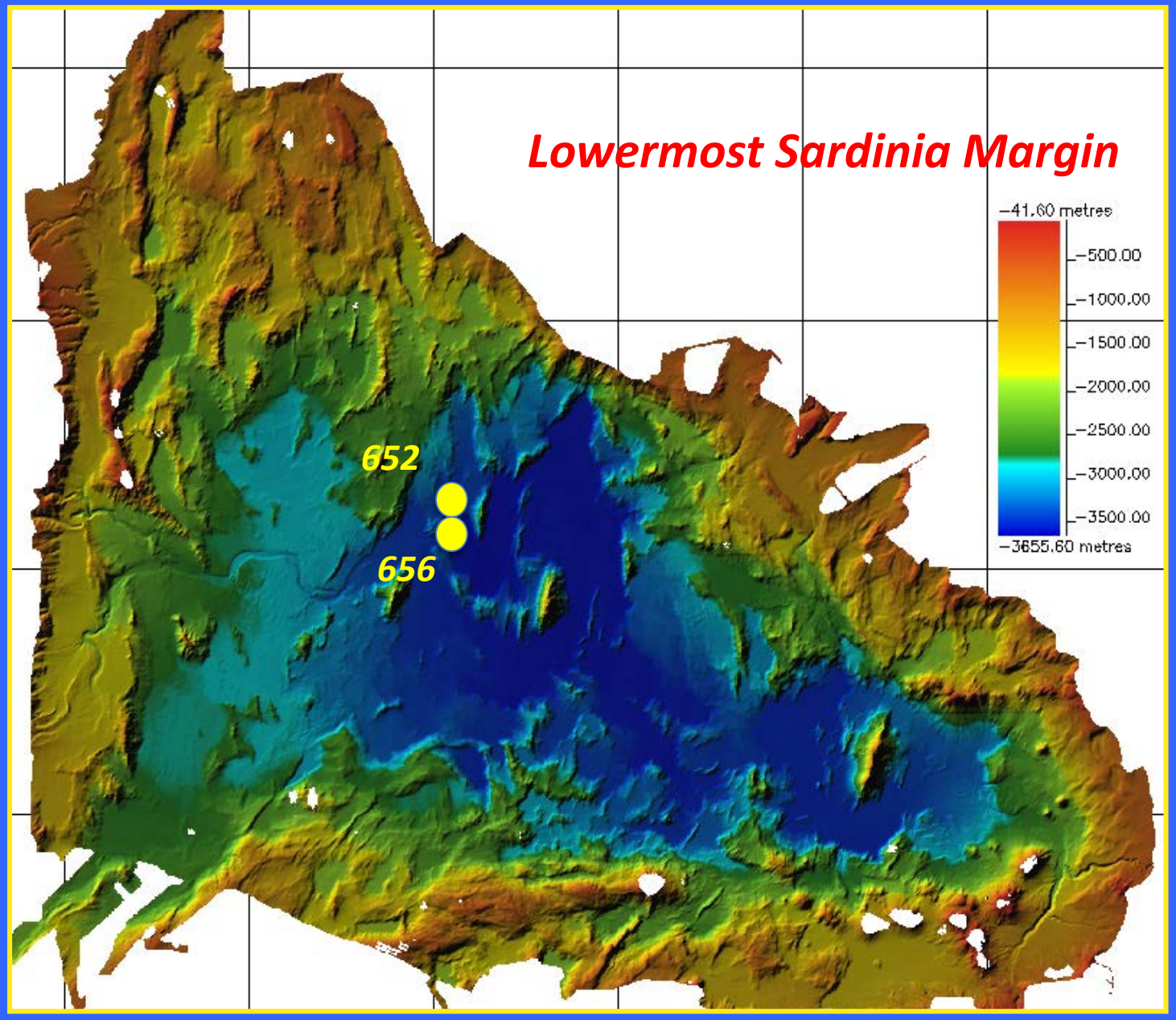
Matrix supported Conglomerate - 450m Alluvial Fan	Glauconitic Sandstones Chalk -410m Near Shore	Calcareous Ooze -380m Open Marine	Pyrite-bearing claystone,dolomitic mustone -335m Open Marine	Gypsum-rich mudstone, pure Gypsum - 275m Stratified Sea	Foraminifer Ooze -240m Open Marine	Foraminifer ooze on basalt -75m Open Marine

At site 653 B Messinian sediments drilled on about 50m

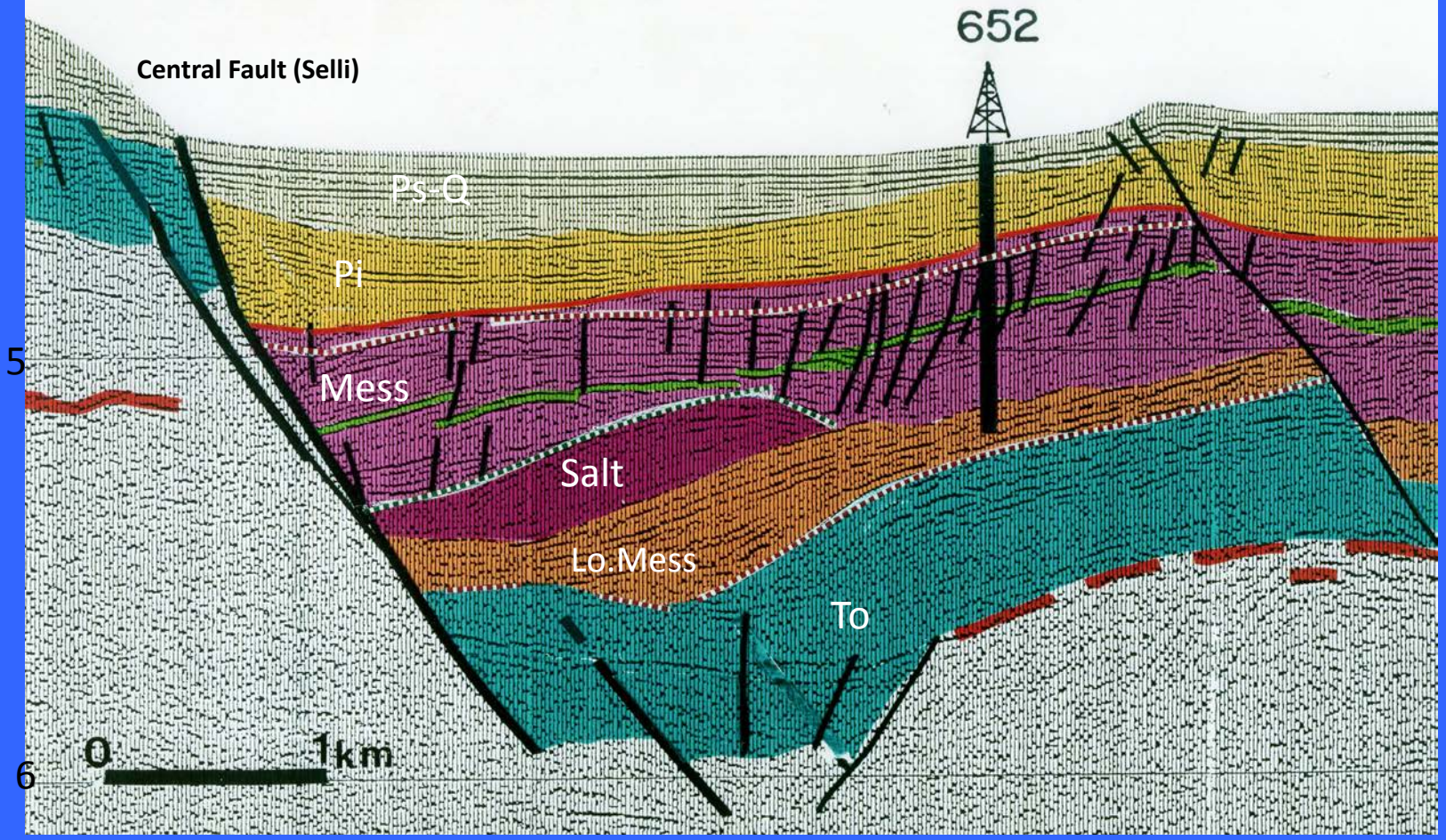
Here on cores 26, 27,28 between 235 and 264 mbsf

Calcareous gypsiferous mud, selenite gypsum mud, silt and varicolor clays




Lowermost Sardinia Margin
−41.60 metres
−500.00
−1000.00
−1500.00
−2000.00
−2500.00
−3000.00
−3500.00
−3655.60 metres
652
656

MCS line ST12 across the lower Sardinia continental Margin

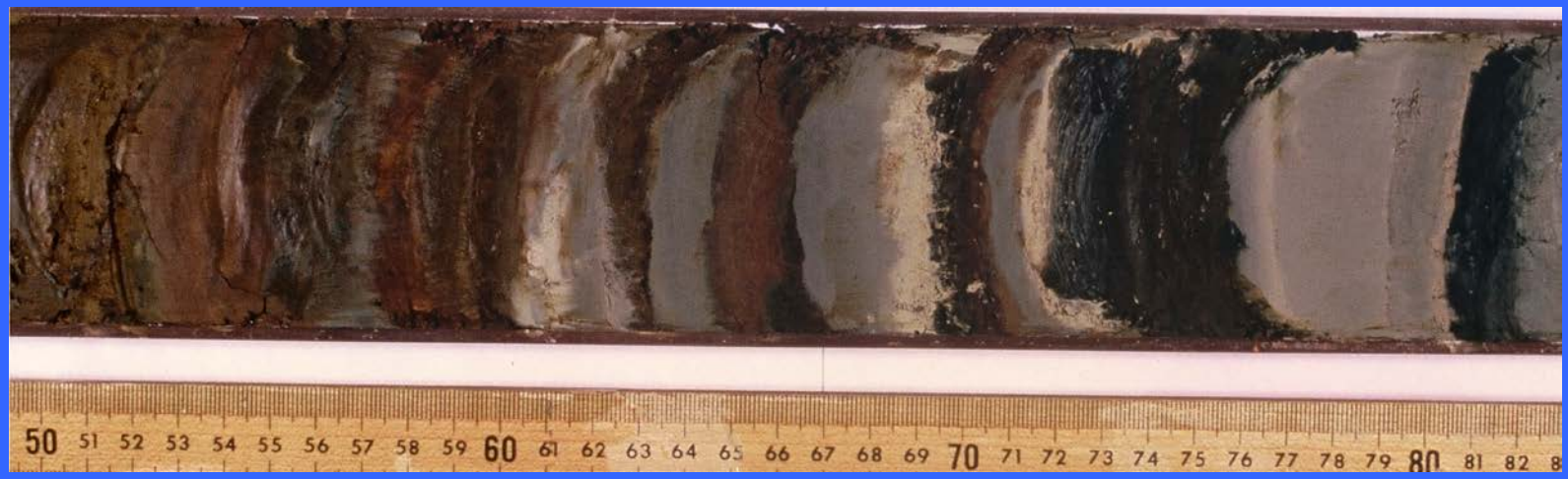


- Postrift sequences: Lower Pliocene (Pi) and Plioquaternary (Pq), respectively in light and dark yellow

-Synrift sequences: Tortonian (11.6-7.3 My) (To) and Messinian (7.3- 5.3 My)(Mess), respectively in blue , orange, dark purple and purple

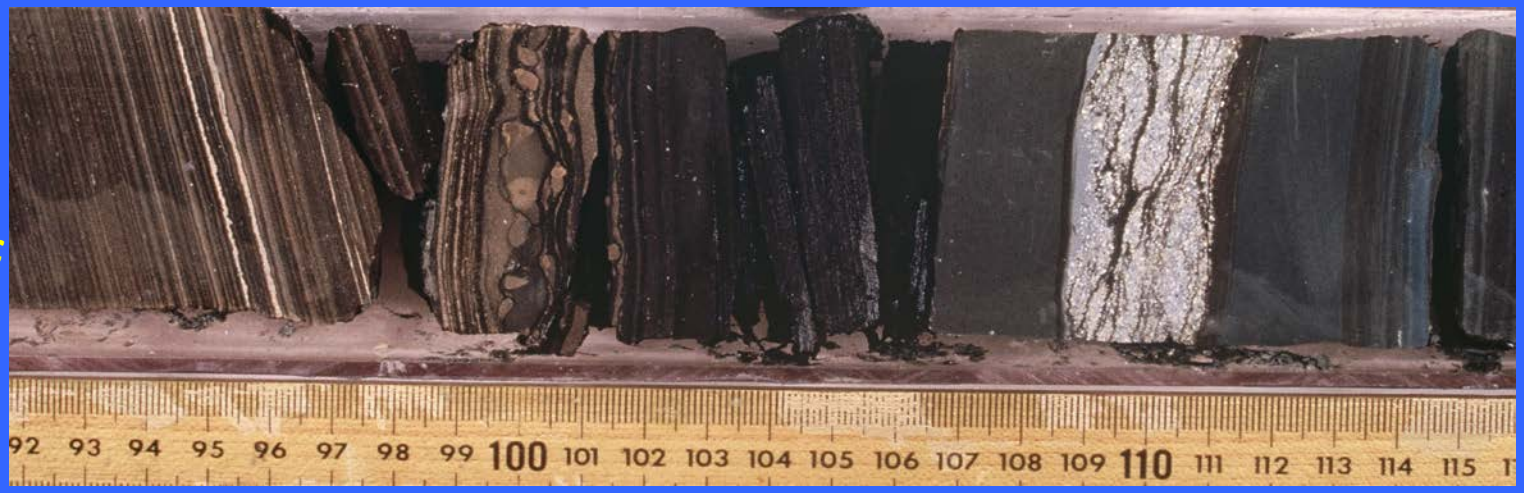
-The break up unconformity occurs during lower Pliocene

107 652 A
20 R 6
Messinian
Pliocene
Transition
(-188m)

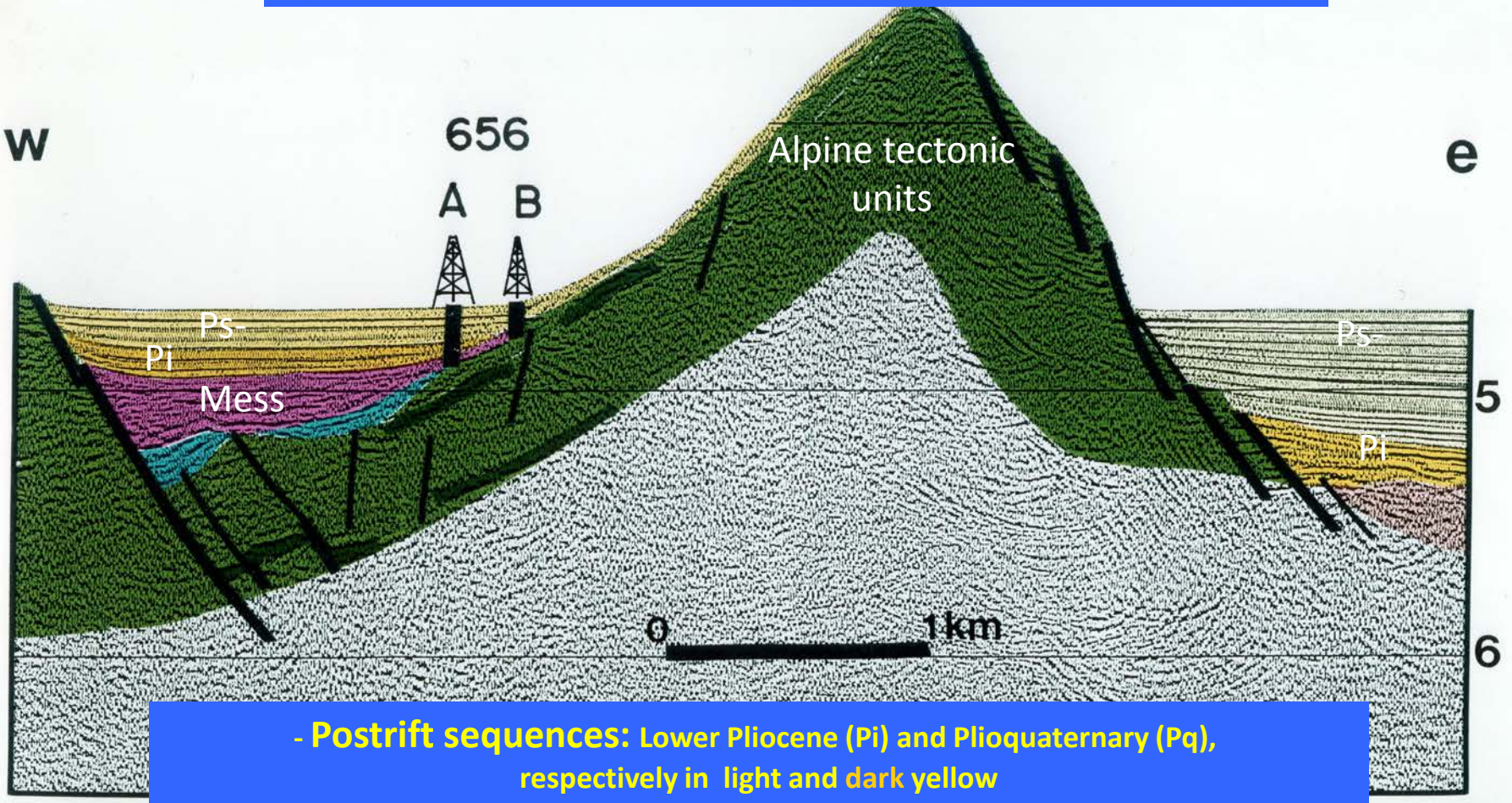


107 652 A
38 R 3
Nodular
Anhydrite
(- 359m)

107 652 A
64 R 1
Layered organic
matter-rich
Mudstone
(- 605m)

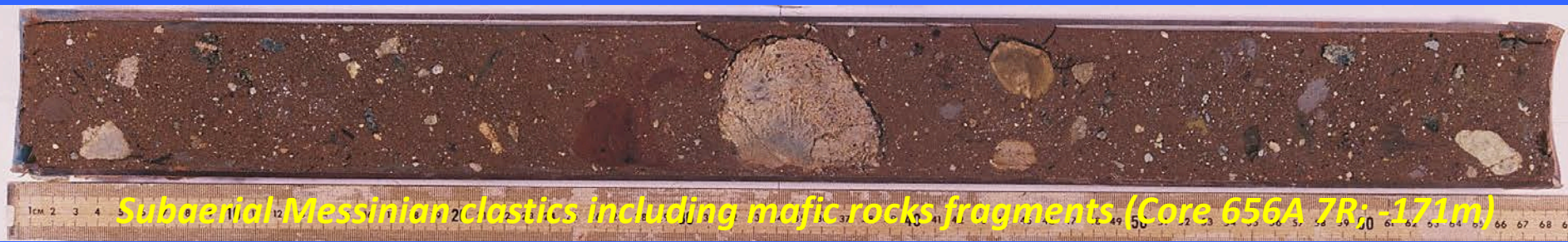


MCS line ST04 across the lower Sardinia continental Margin

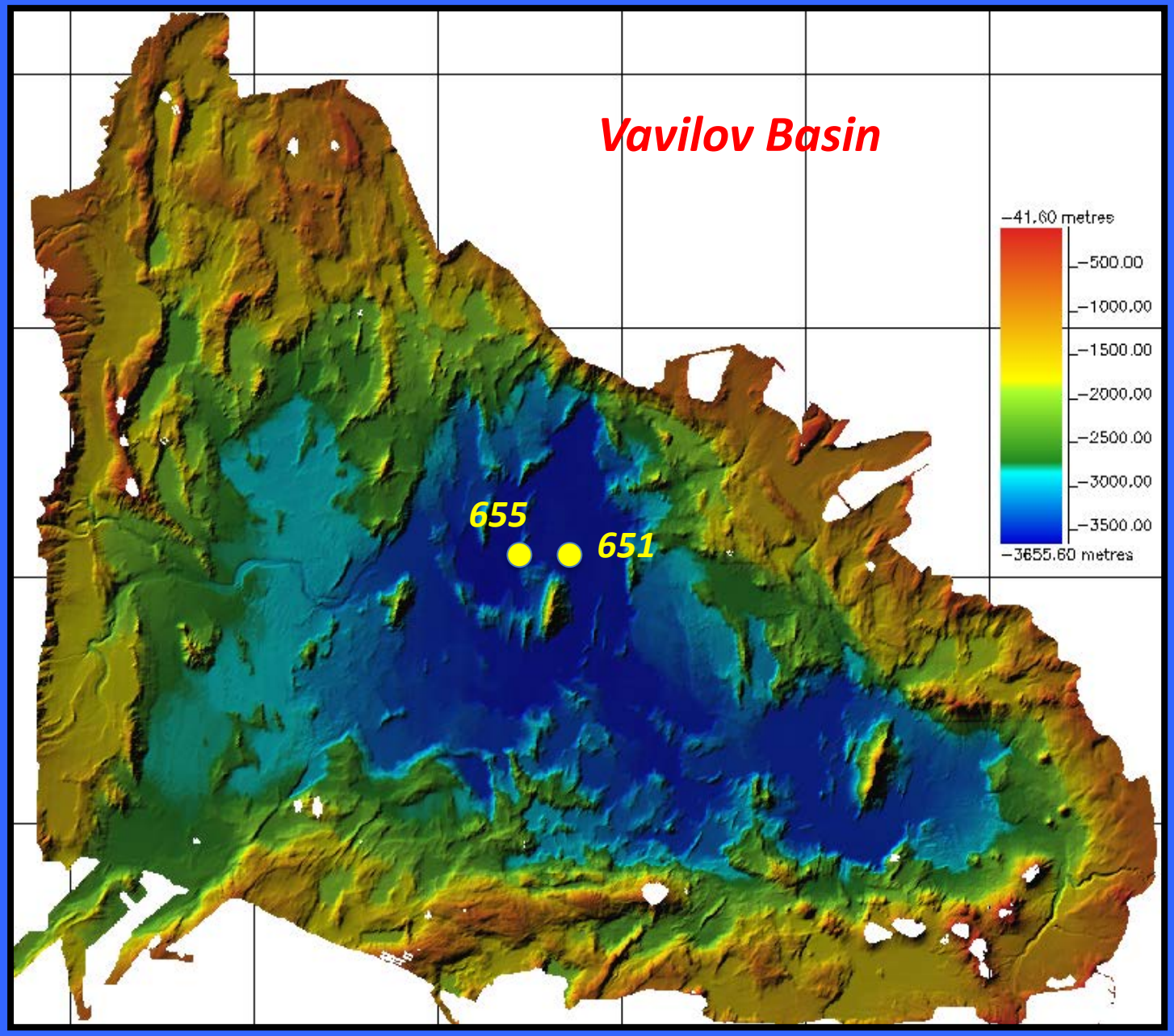


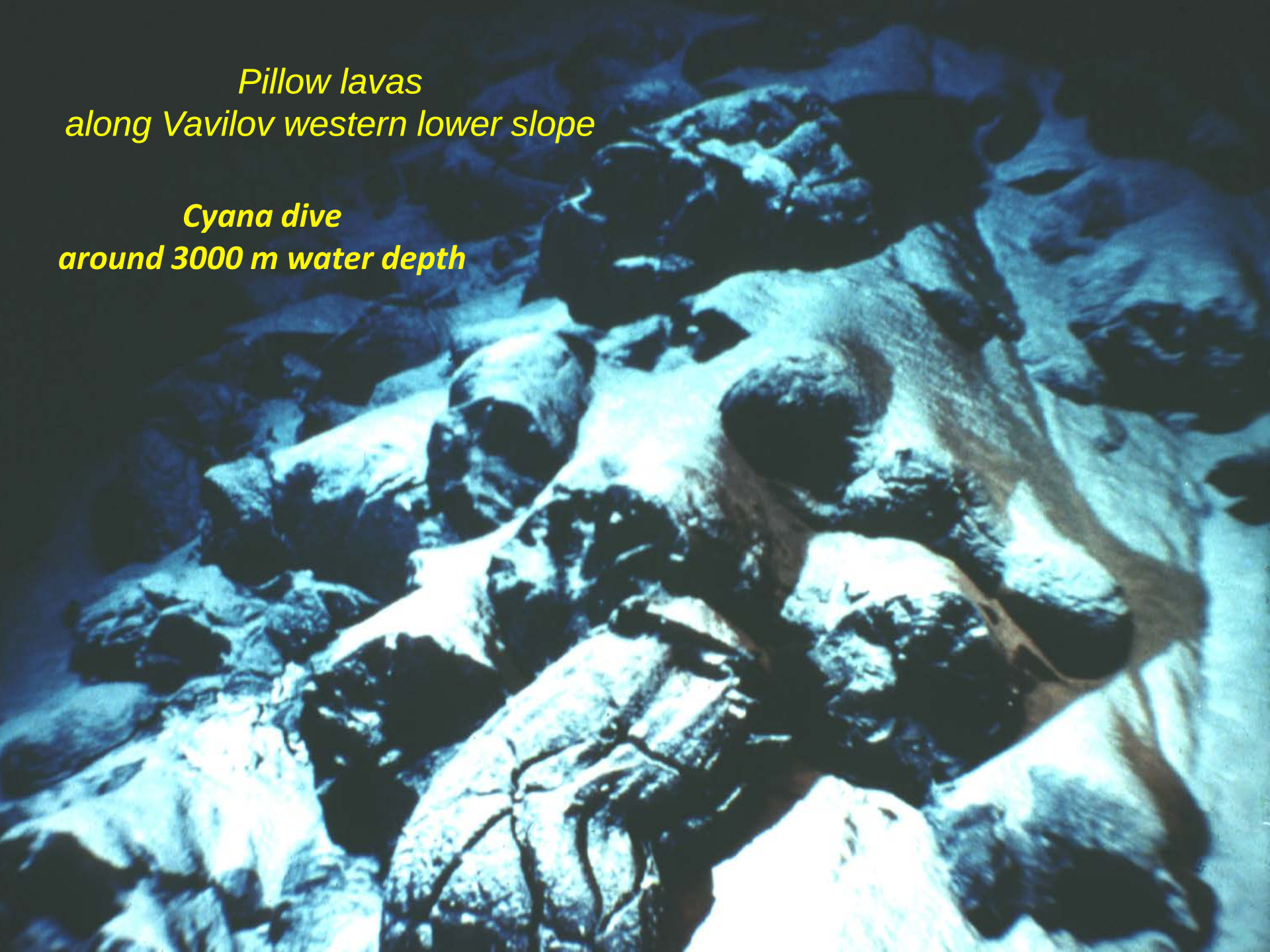
- **Postrift sequences:** Lower Pliocene (Pi) and Plioquaternary (Pq), respectively in light and dark yellow

-**Synrift sequences:** Tortonian (11.6-7.3 My) (To) and Messinian (7.3- 5.3 My) (Mess), respectively in blue and purple



Subaerial Messinian clastics including mafic rocks fragments (Core 656A 7R; -171m)

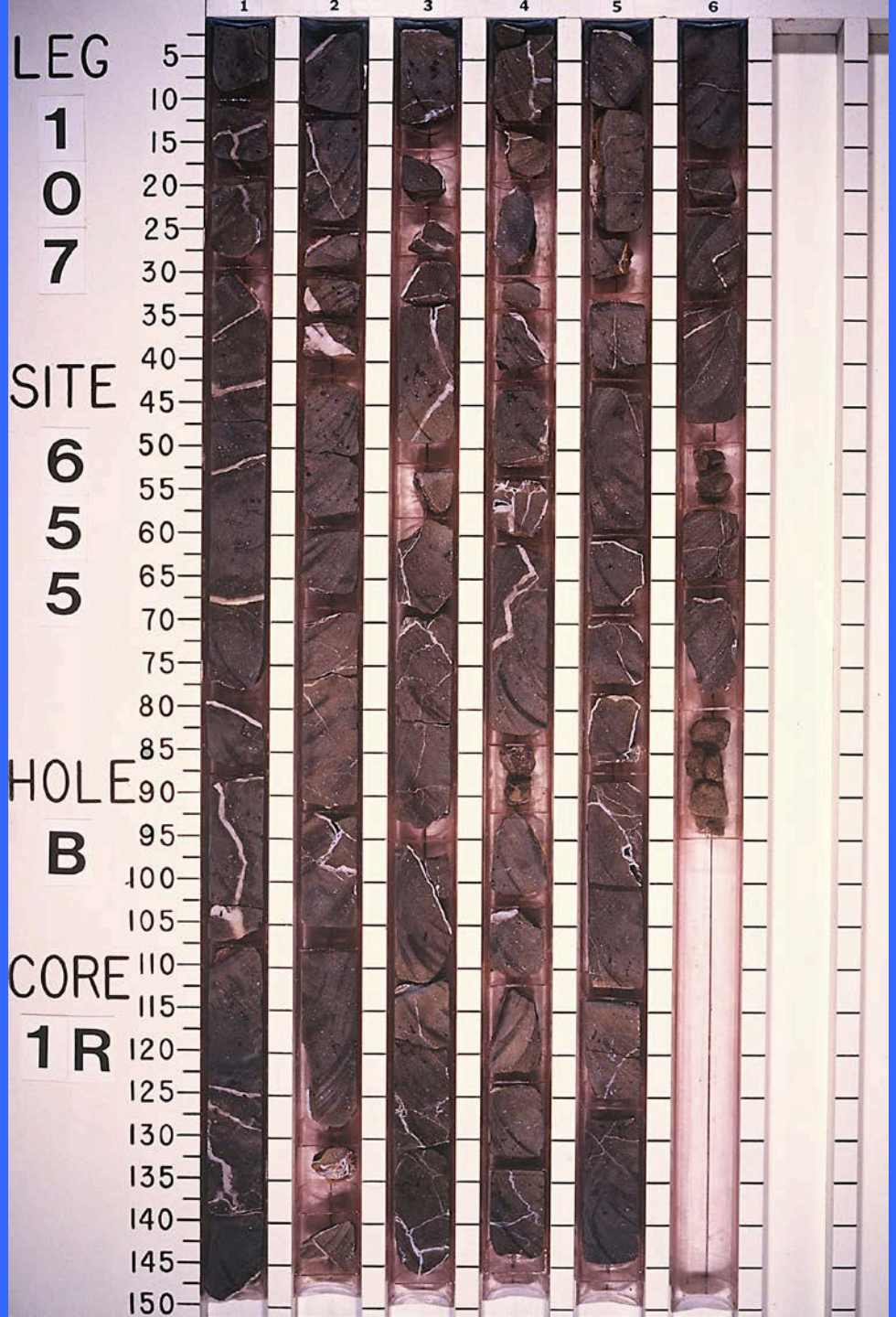

Vavilov Basin
−41.60 metres
−500.00
−1000.00
−1500.00
−2000.00
−2500.00
−3000.00
−3500.00
−3655.60 metres
655
651

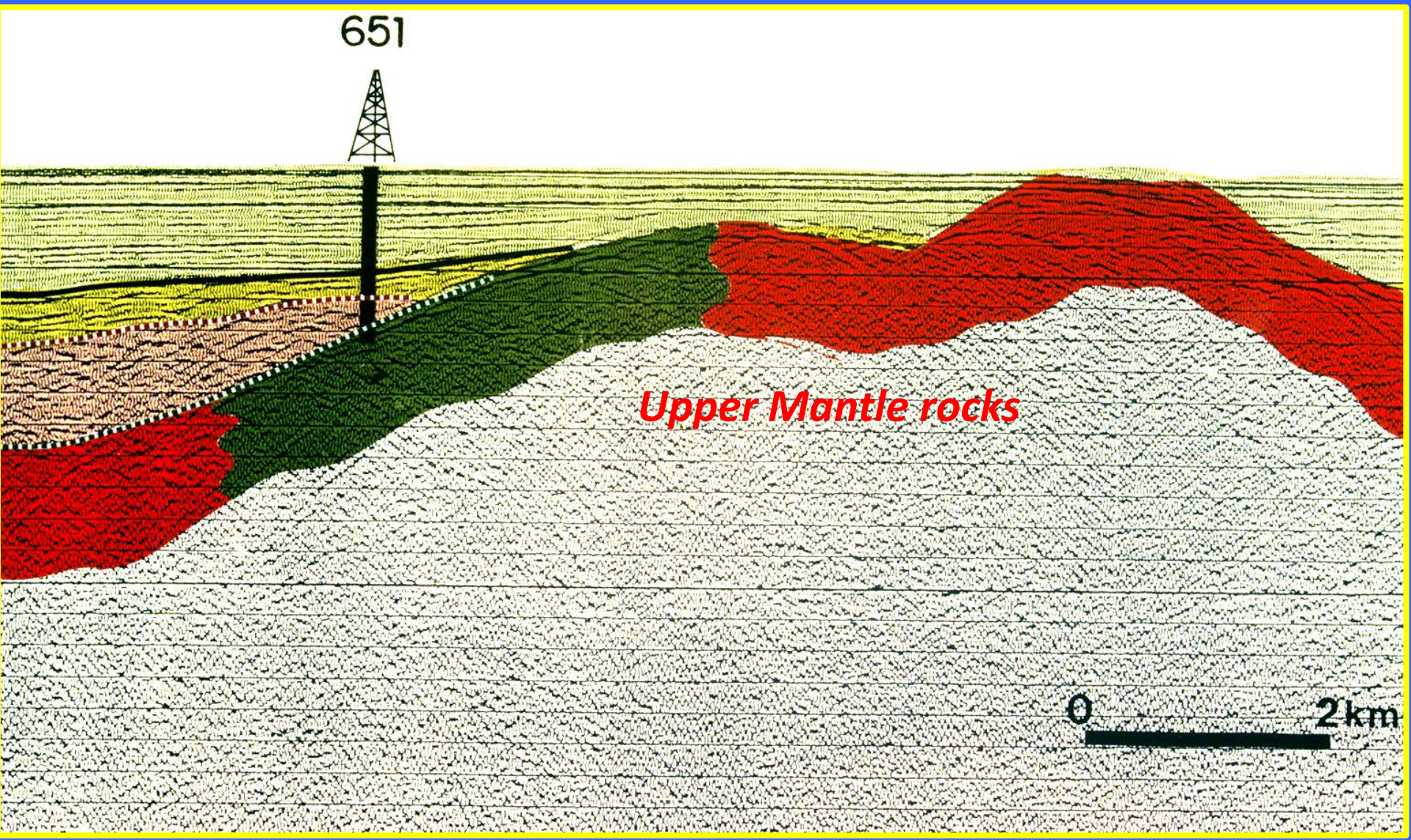

Pillow lavas
along Vavilov western lower slope
Cyana dive
around 3000 m water depth

At site 655 B altered vesicular basalt of lower Pliocene age and carbonate veins

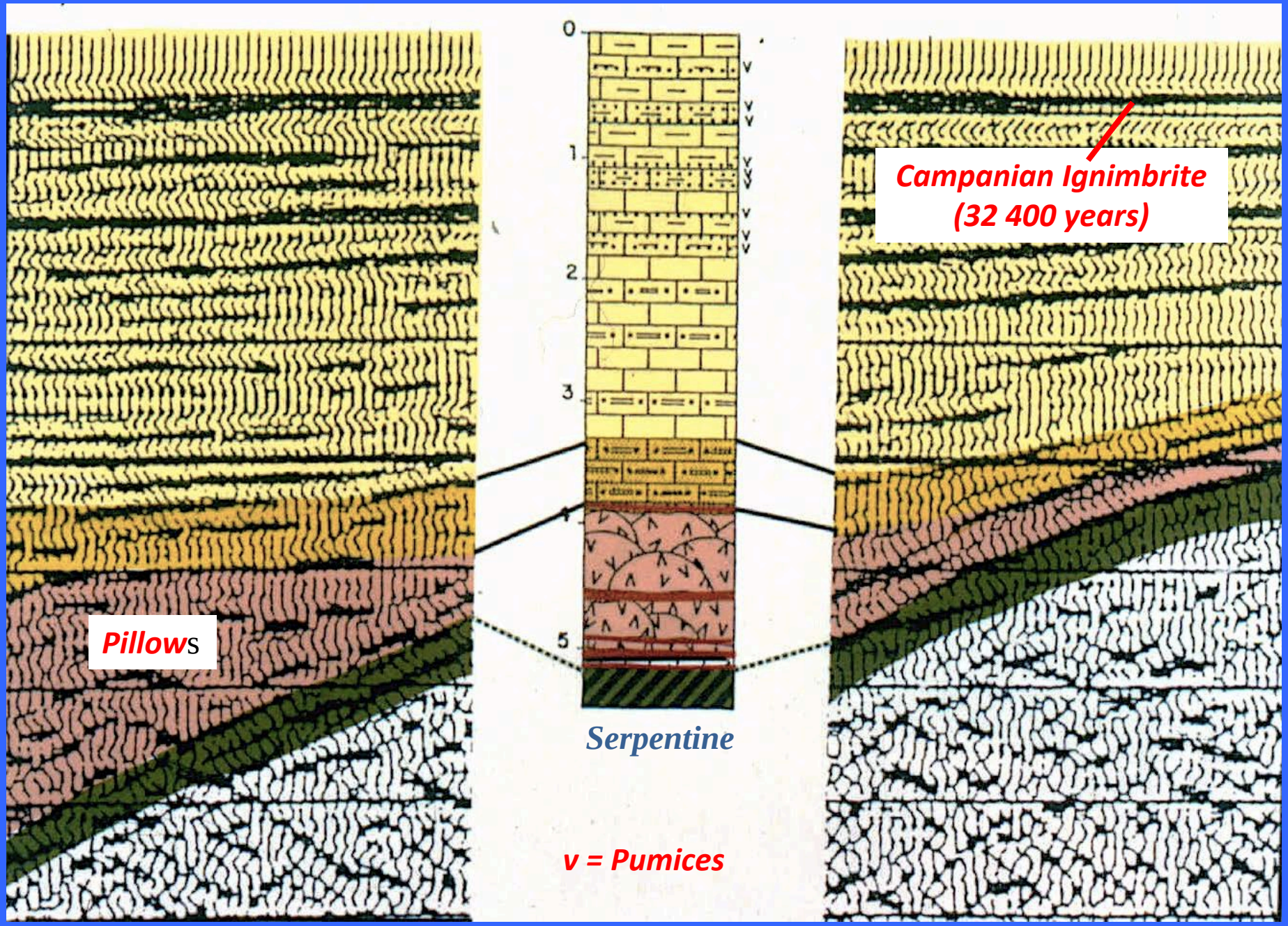
Continuously drilled between 81 and 196 mbsf

Here on core 1R





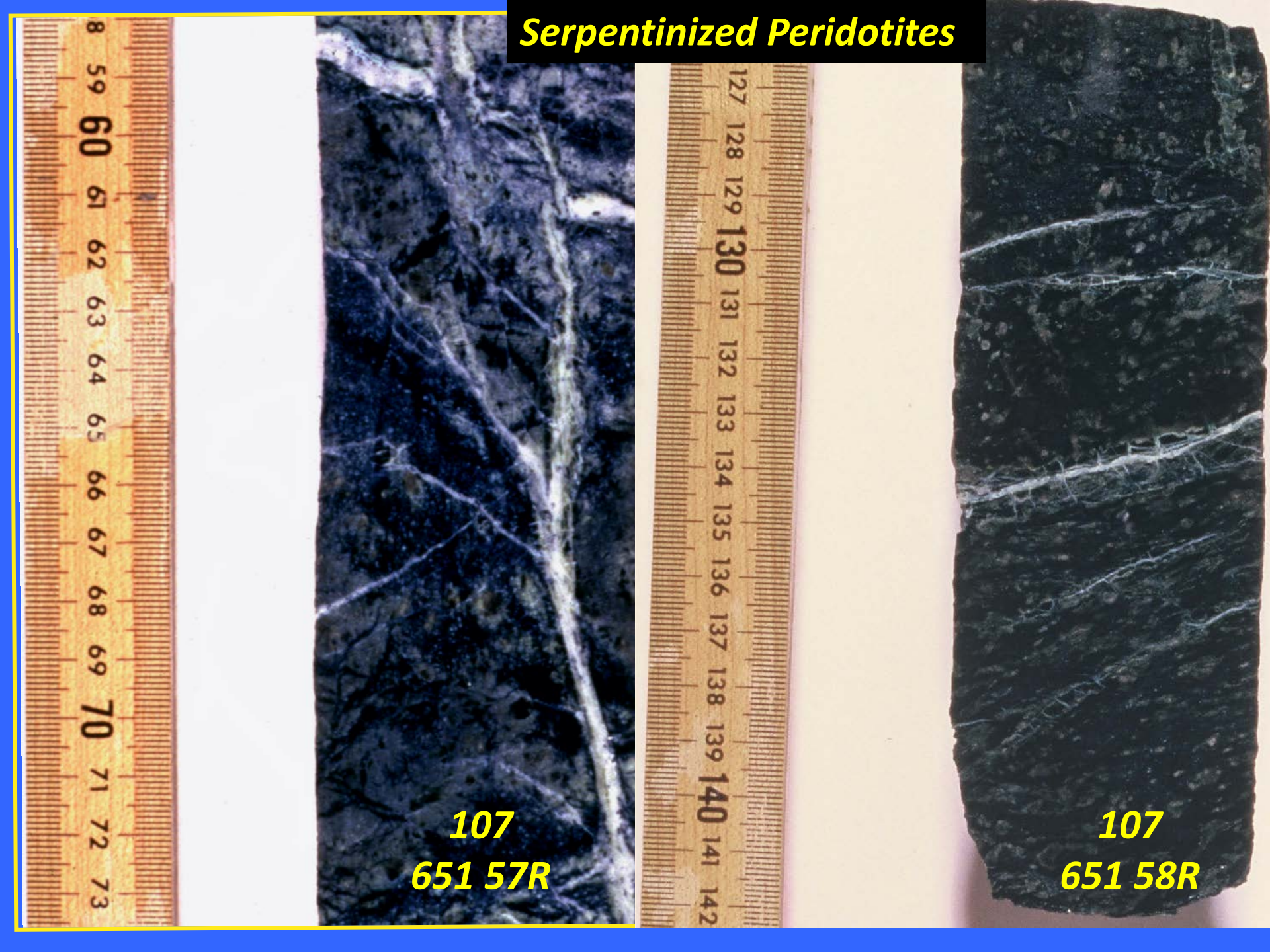
MCS line ST05 accros Vavilov Basin at site 651

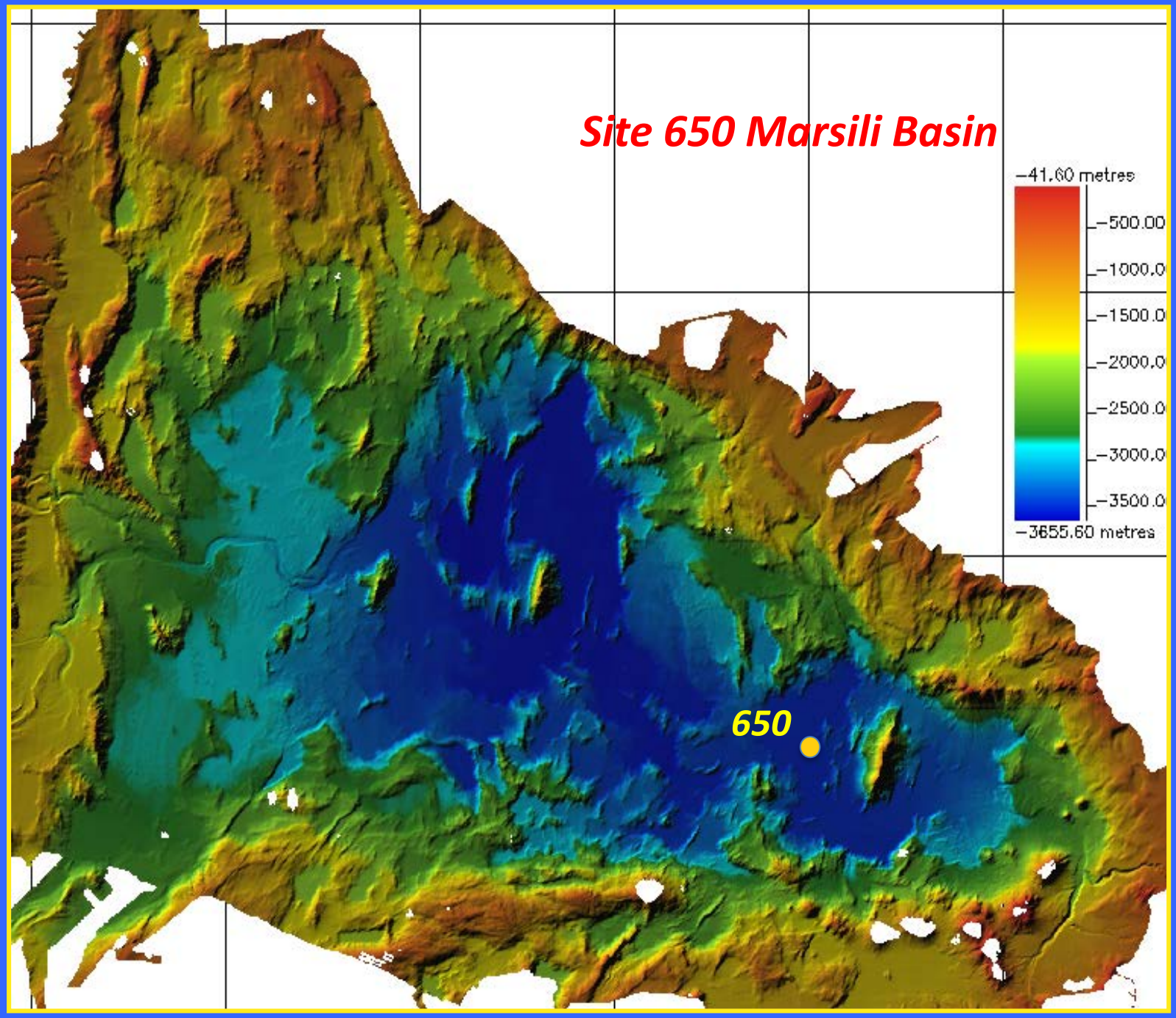


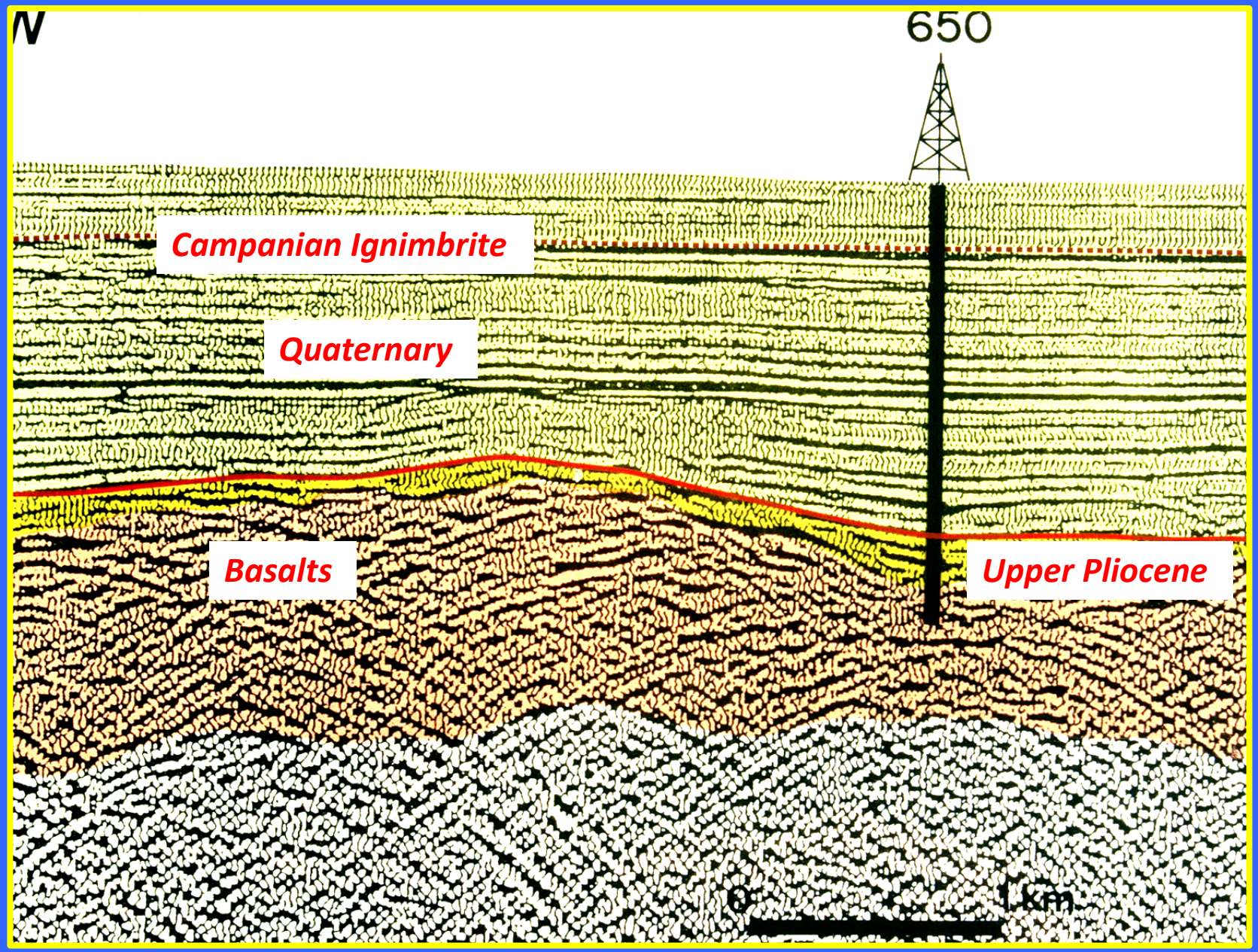
Summary of Site 651 and comparison with the seismic record


The two last cores at site 651: 57 and 58 R (-533 to-551 mbsf)
SITE
651
HOLE
A
ORE
The two last cores at site 651 between 502 and 512 mbsf

Serpentinized Peridotites

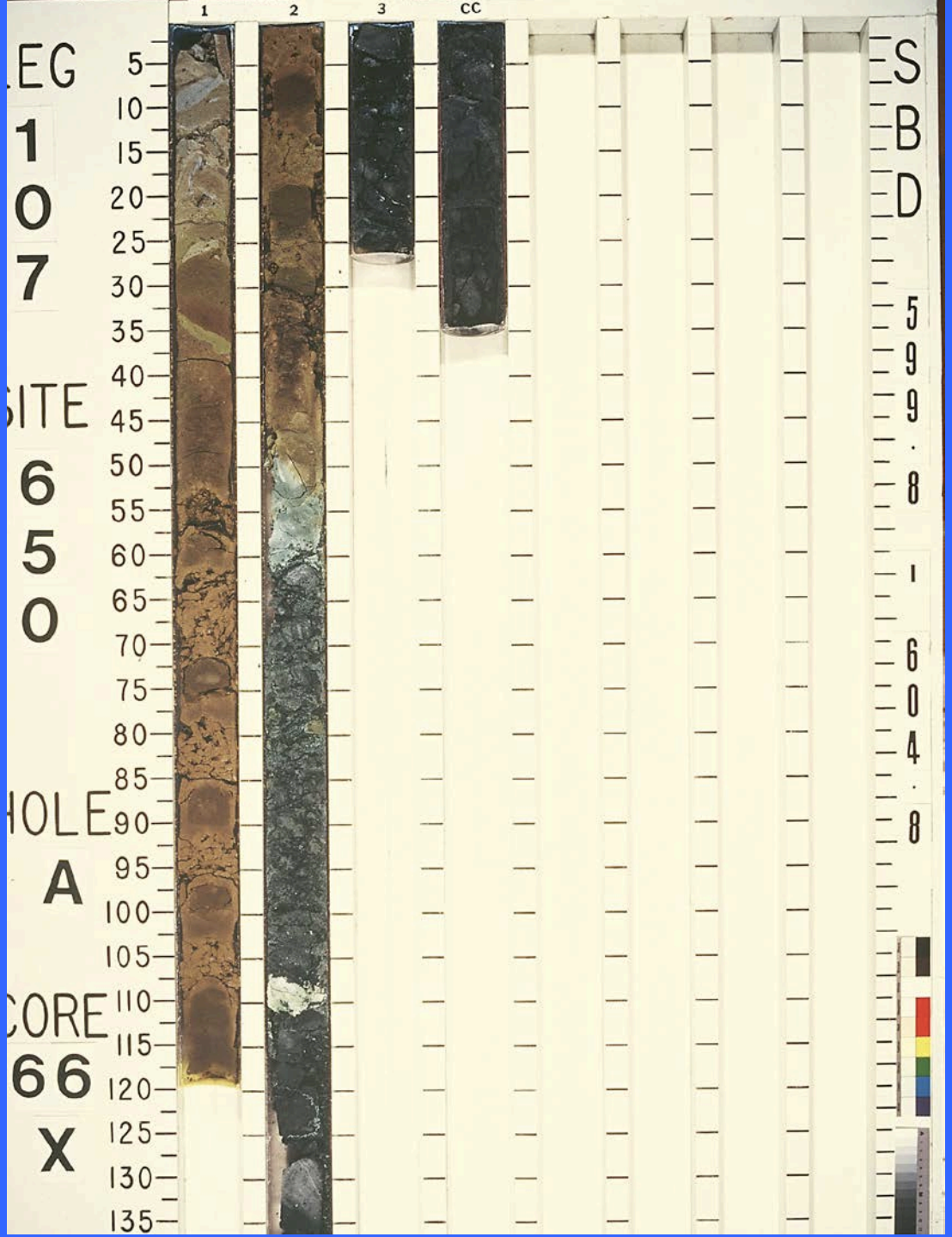


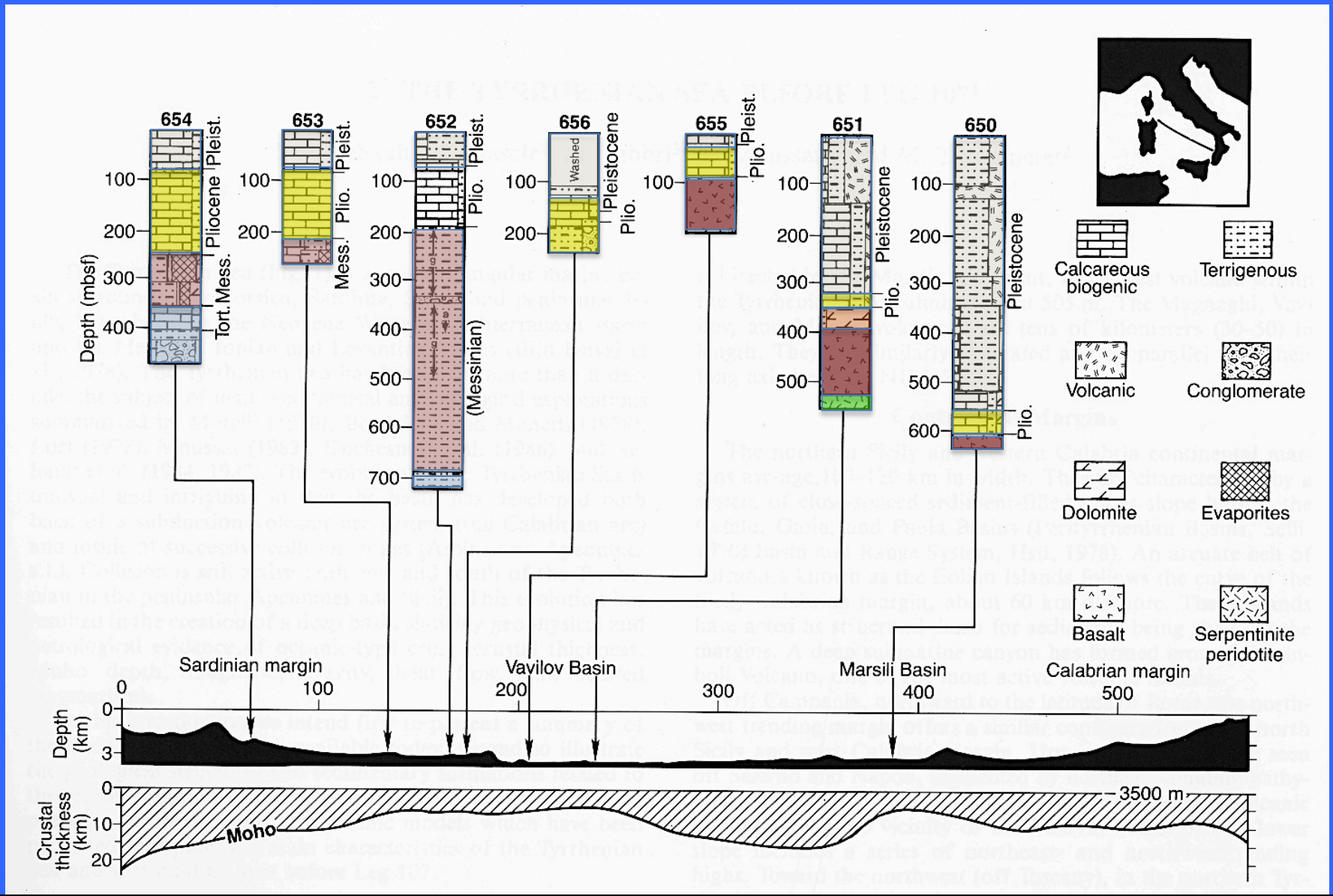

Site 650 Marsili Basin
−41.60 metres
−500.00
−1000.0
−1500.0
−2000.0
−2500.0
−3000.0
−3500.0
−3655.60 metres
650



MCS seismic line ST 14 across Marsili basin

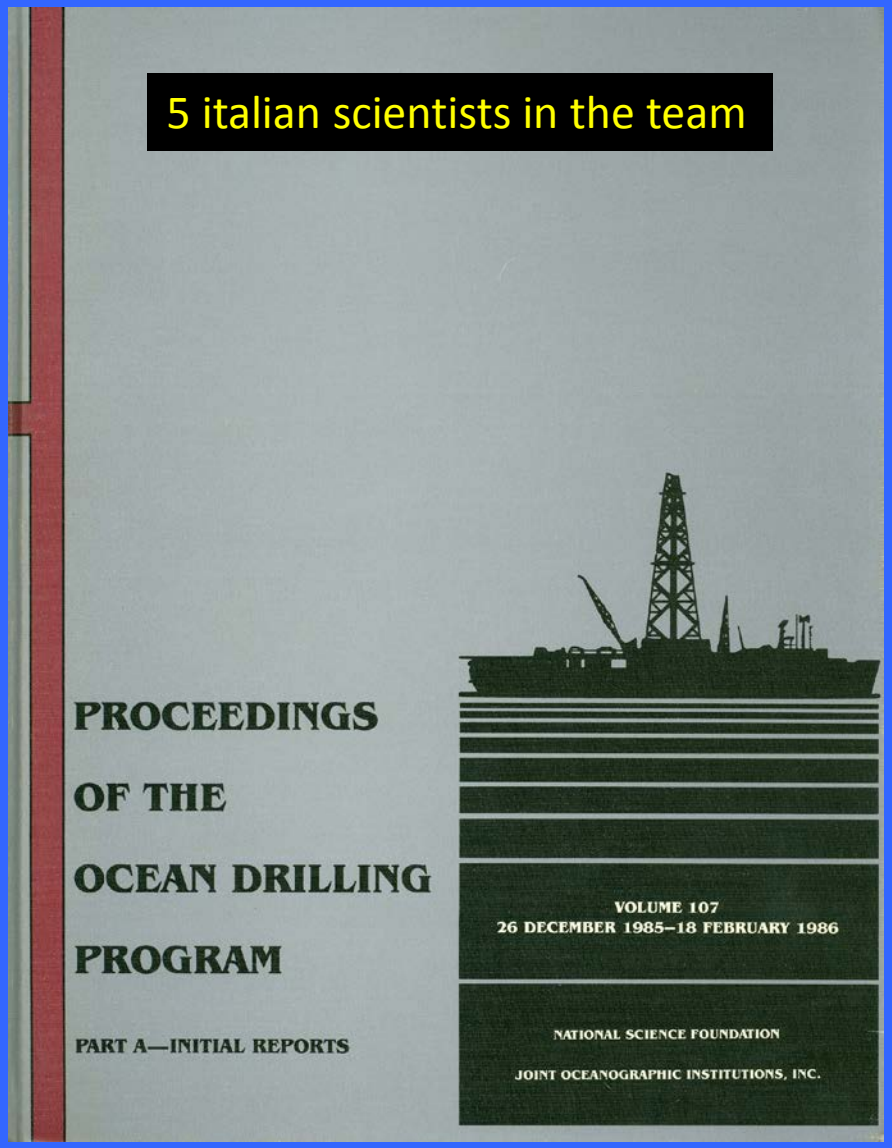
Site 650 : contact between Pliocene « cooked » sediments and Basalt at about 600m below sea floor





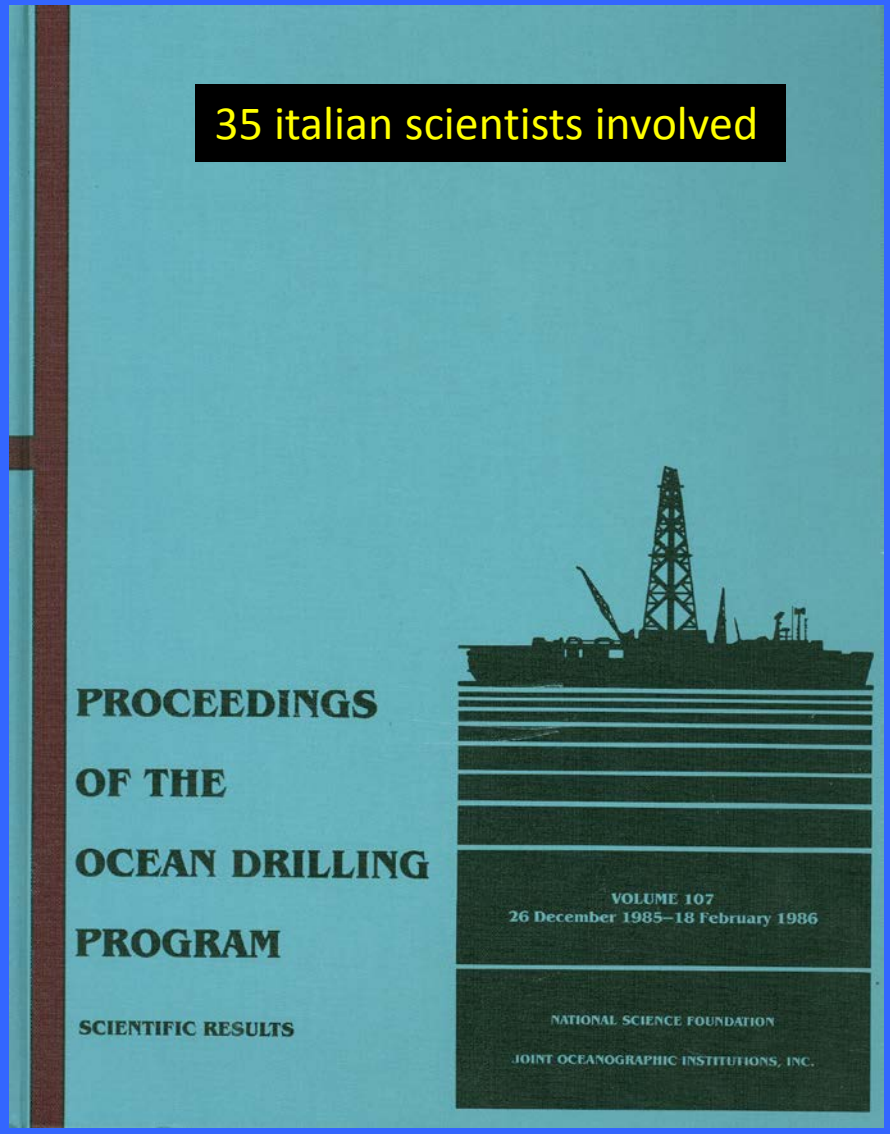
ODP 107 « Tyrrhenian transect above a bathymetric and crustal section of the basin

5 italian scientists in the team



Kastens, K., Mascle, J., Auroux, C. et al., 1987,
Proc. Init. Repts. (Pt. A), ODP 107
1013 pages

35 italian scientists involved



Kastens, K., Mascle, J., et al., 1990, *Proc. ODP,*
Sci. Results, 107, College Station, TX
(Ocean drilling program)
45 scientific papers; 772 pages