

Southern Sicily Field Trip Proposal

Fault and fracture analysis along the Scicli-Ragusa strike-slip fault zone

The outcrops lie c.150 km South of Catania, accessed via the E45 motorway

Topics:

Deformation mechanisms in porous and tight carbonates

Compactive shear banding, pressure solution, jointing

Faulting of carbonates

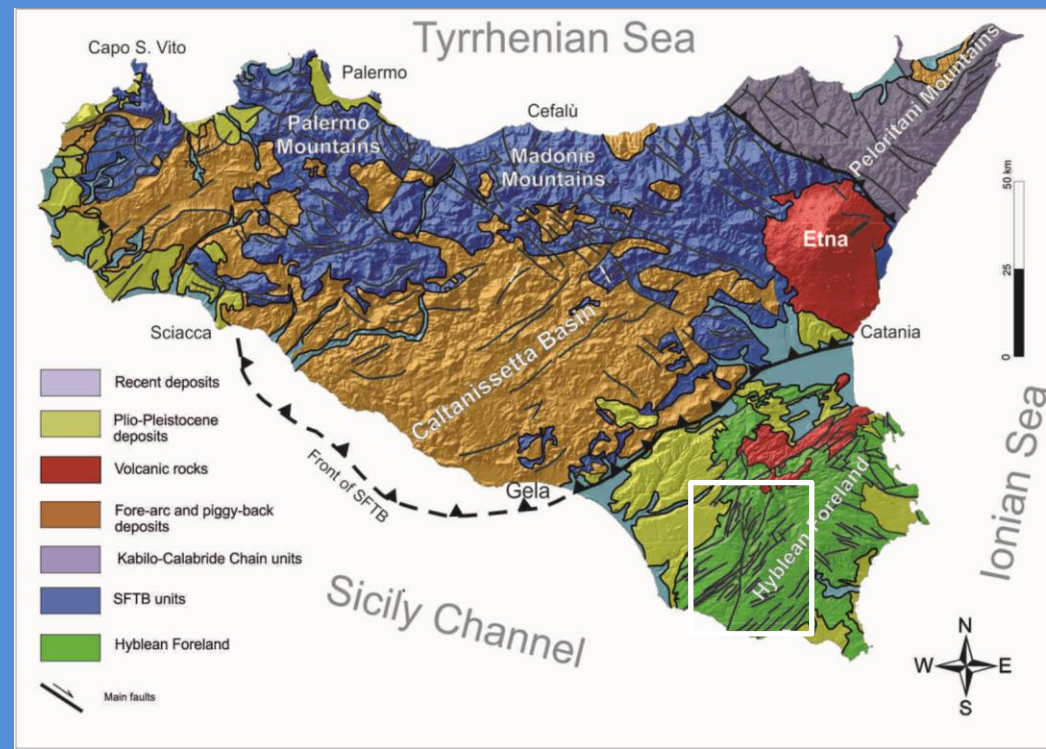
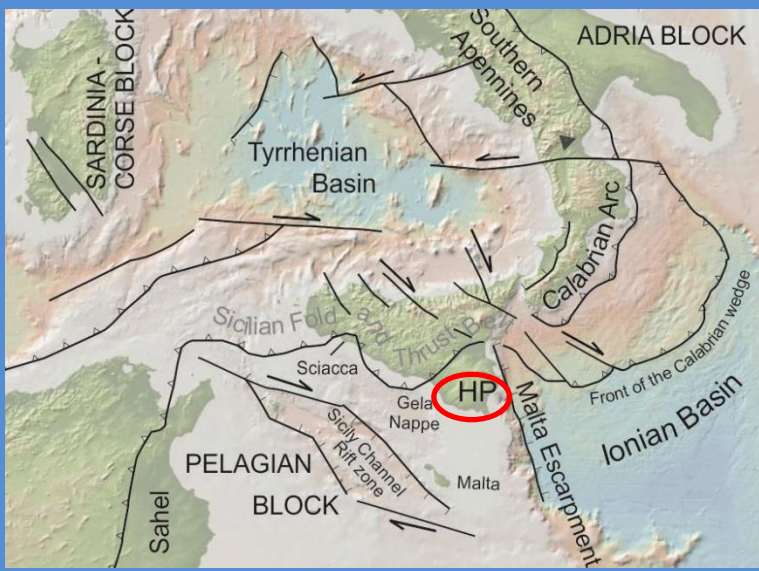
Strike-slip and normal faults

Fault architecture and multi-scale dimensional properties

Fault and fracture permeability

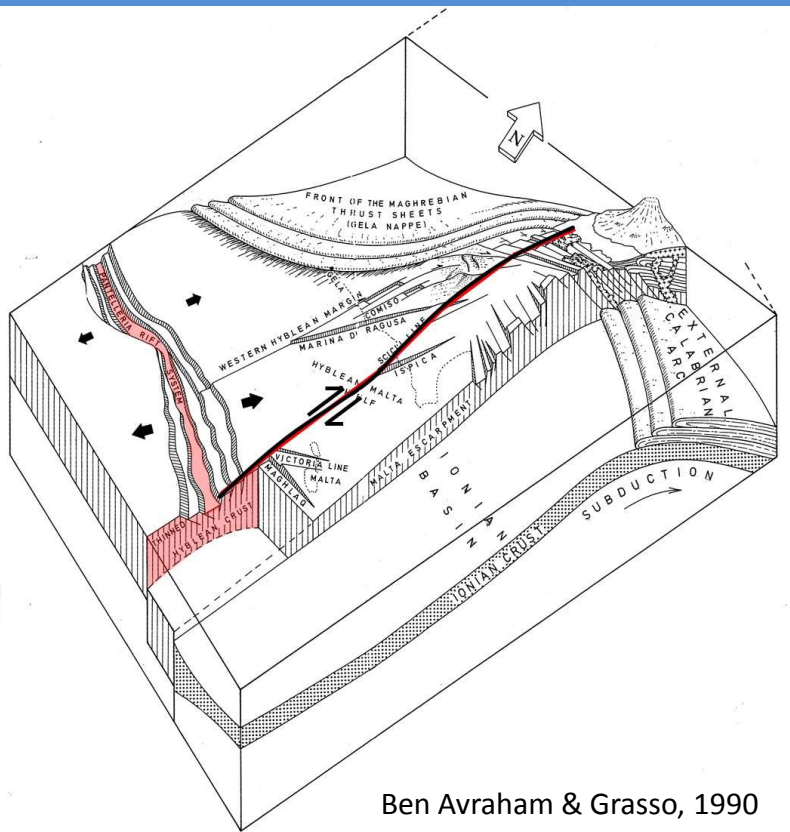
Fault and fracture-controlled hydrocarbon migration and storage

Outcrop locations in the Hyblean foreland of the Sicilian fold-and-thrust belt.

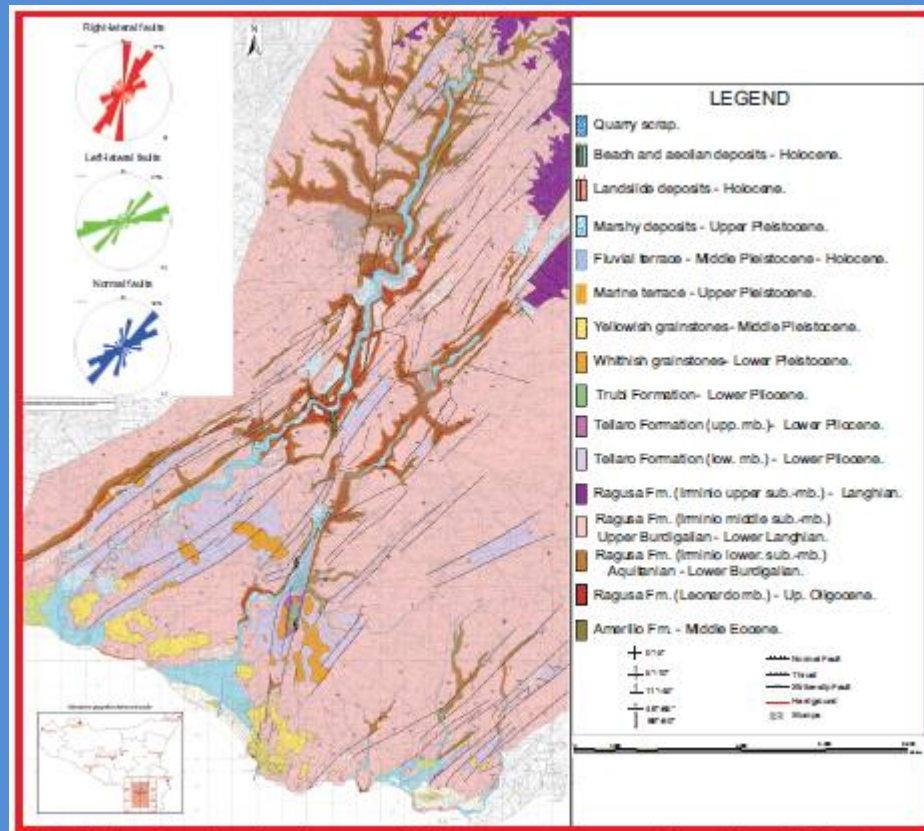


Structural outlines

- Since Messinian times, spreading activity localized in the Sicilian Channel (Pantelleria Rift), forming an incipient transform fault later aborted.
- The Hyblean Plateau is a NE-oriented structural high comprised of Mesozoic-to-Tertiary ramp carbonates topped by Plio-Pleistocene deposits.
- The Scicli-Ragusa tectonic line evolved as a *strike-slip* fault zone characterized by predominant right-lateral kinematics.
- Three main fault sets are present within the Scicli-Ragusa fault zone:
 - i. NNE-striking right-lateral faults
 - ii. ENE-striking left-lateral faults
 - iii. NE-striking normal faults



Ben Avraham & Grasso, 1990



Field trip



Main fault plane showing dextral kinematics (large-scale grooves and slicklines).



Compactive shear bands and joints within tar-invaded Miocene ramp carbonates.

SCICLI – Stop1

Compactive shear bands (porous carbonates)
Joints and pressure solution (tight carbonates)
Main fault planes of the Scicli-Ragusa fault zone

MODICA- Stop2

Architecture of high-angle faults:

- Background structural elements
- Fault-related structural elements

Fault architecture as function of fault offset

RAGUSA- Stop3

Fault and fracture-controlled hydrocarbon migration and storage within the Ragusa oil field:

- tar-free compactive shear bands
- tar-rich joints and sheared fractures

