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Outstanding Student & PhD candidate Presentation contest

Low temperature geochronology and lithostratigraphy of Folegandros, Cyclades, Greece: relationship between low- and high-angle faults results in crustal mosaic

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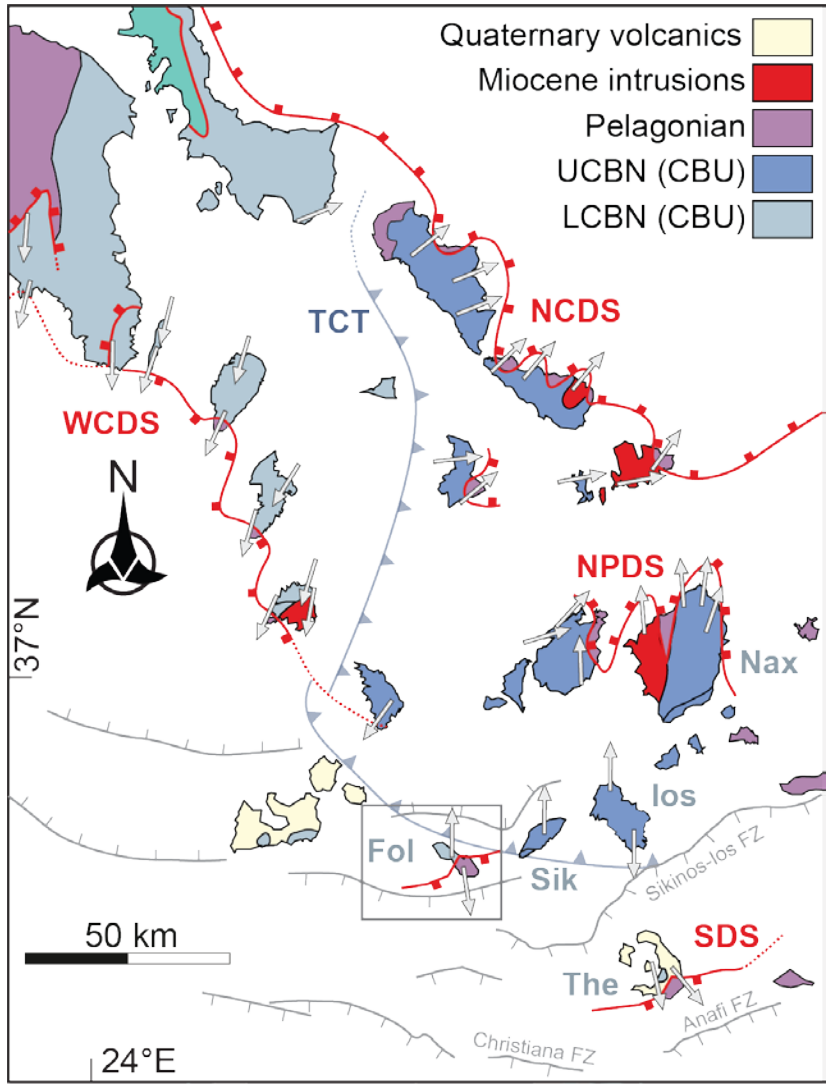
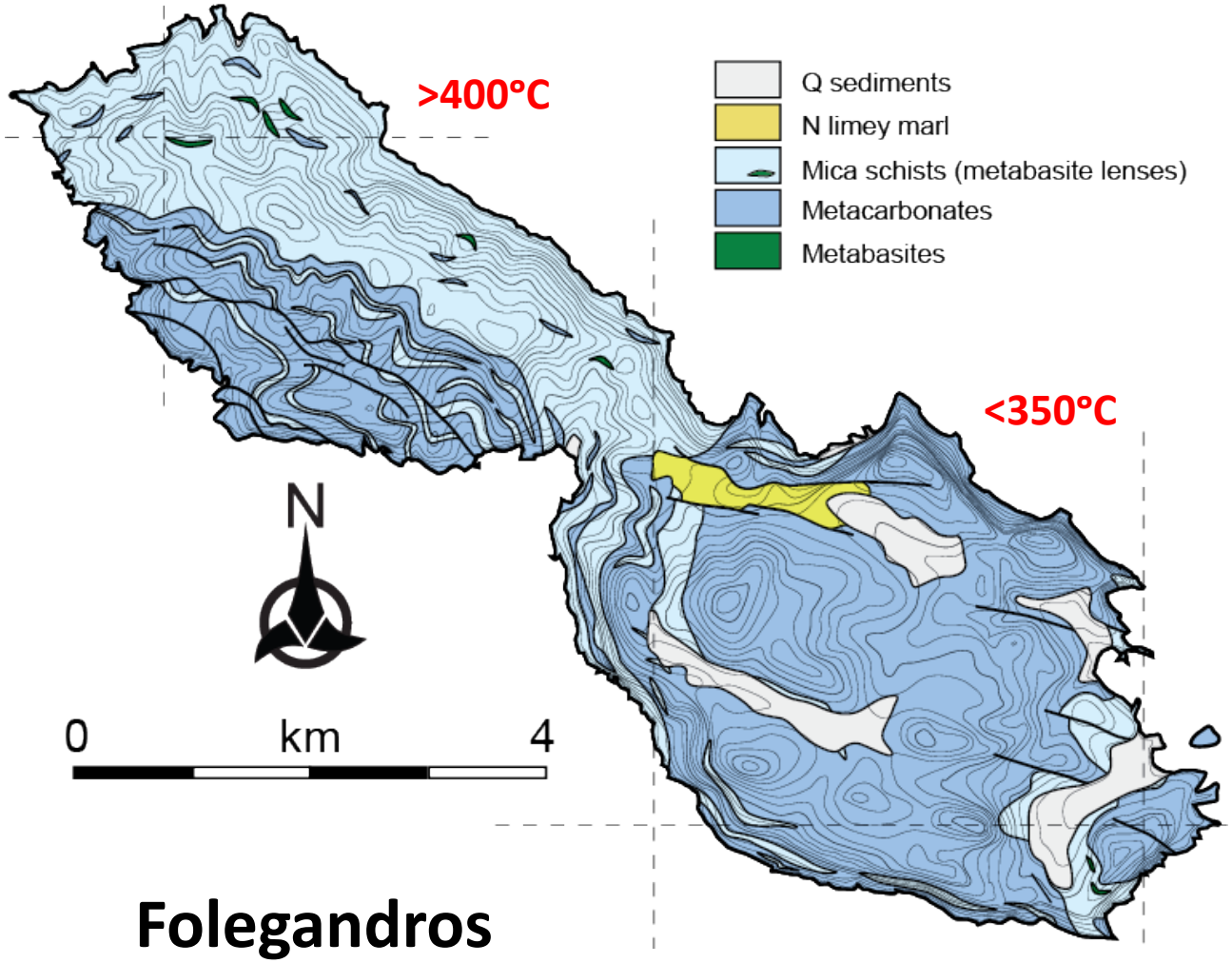
Background



Modified from Grasemann et al. 2018

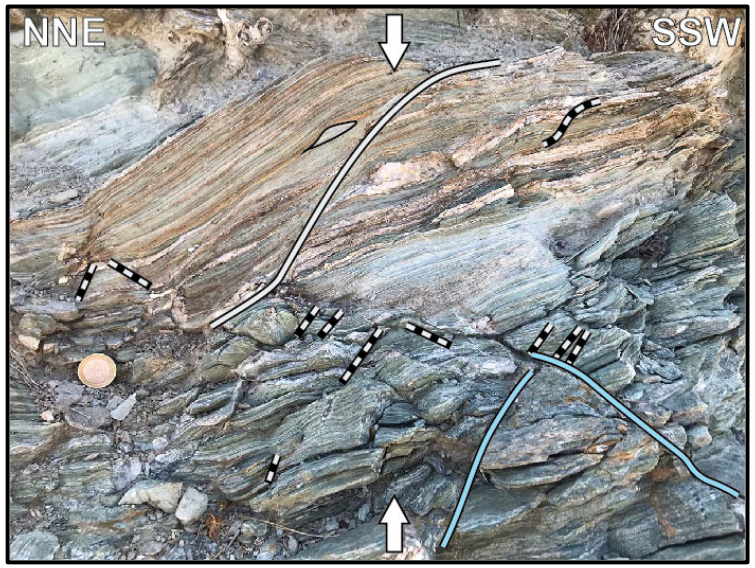


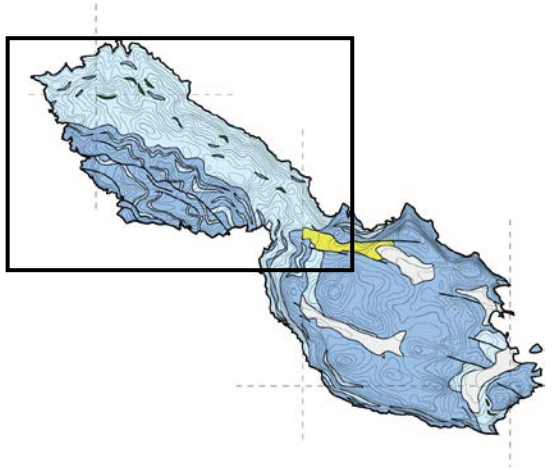
Folegandros

Augier et al. 2015

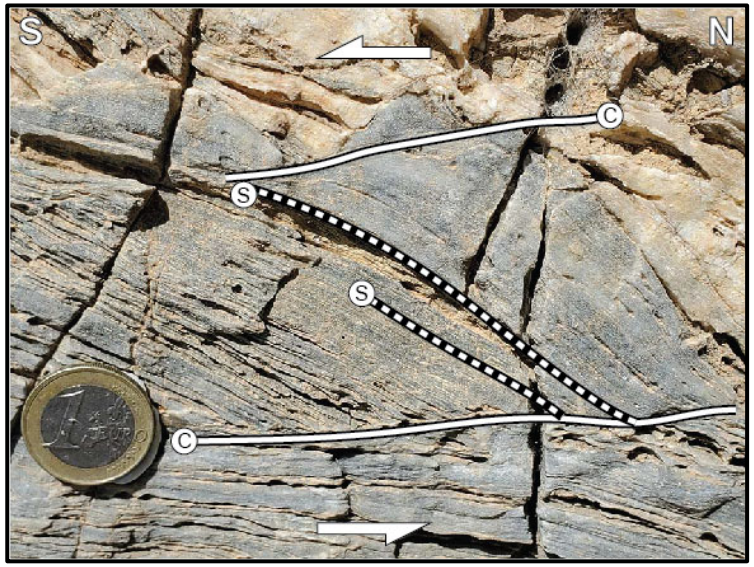
- Retreating African plate → Miocene extension of Aegean region
- Accommodated by low-angle detachment systems
- Island resides in critical location (along with Sikinos, Ios)

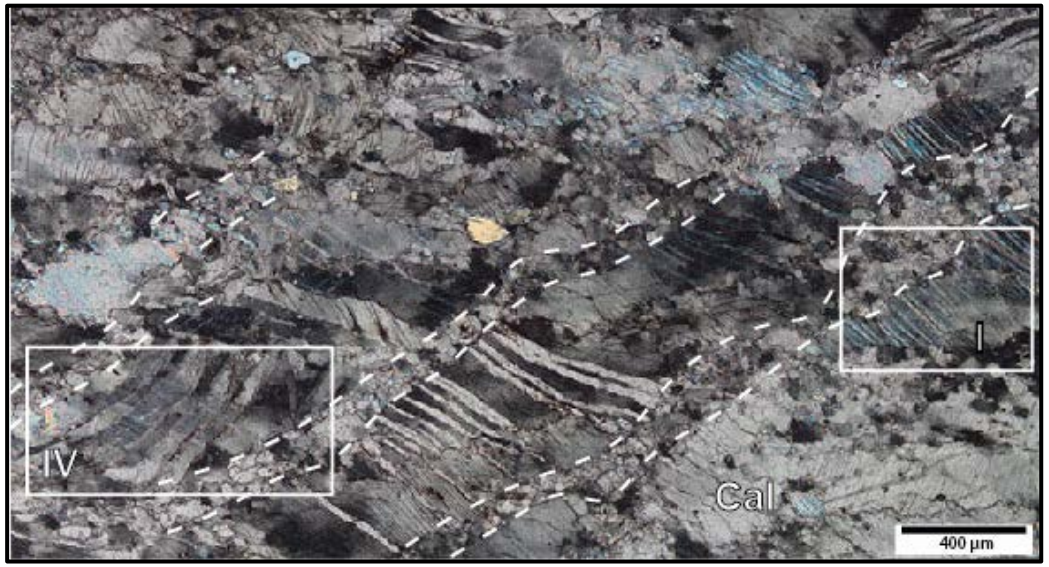
CBU



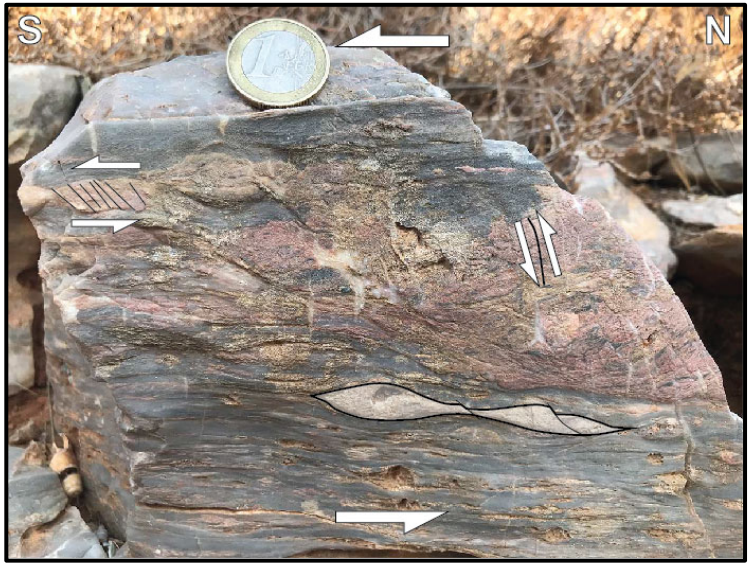


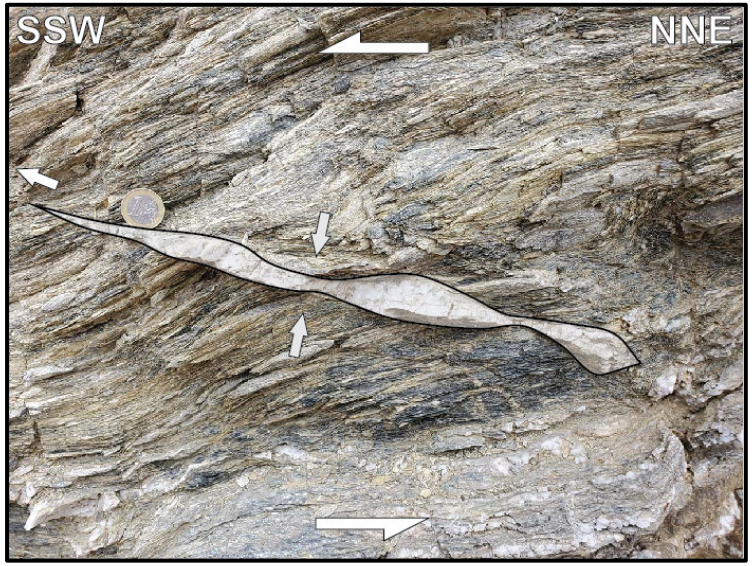
- Micaschist, Gln / Lws metabasite, marble
- Peak temperatures >400°C
- 20-31 Ma $^{40}Ar/^{39}Ar$ ages
- Ductile top-S Qtz sigmoids and SC fabric
- BD top-N faults and flattening structures

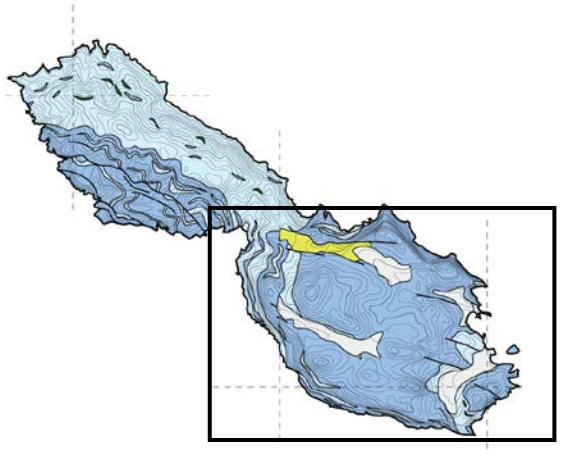




CBU?







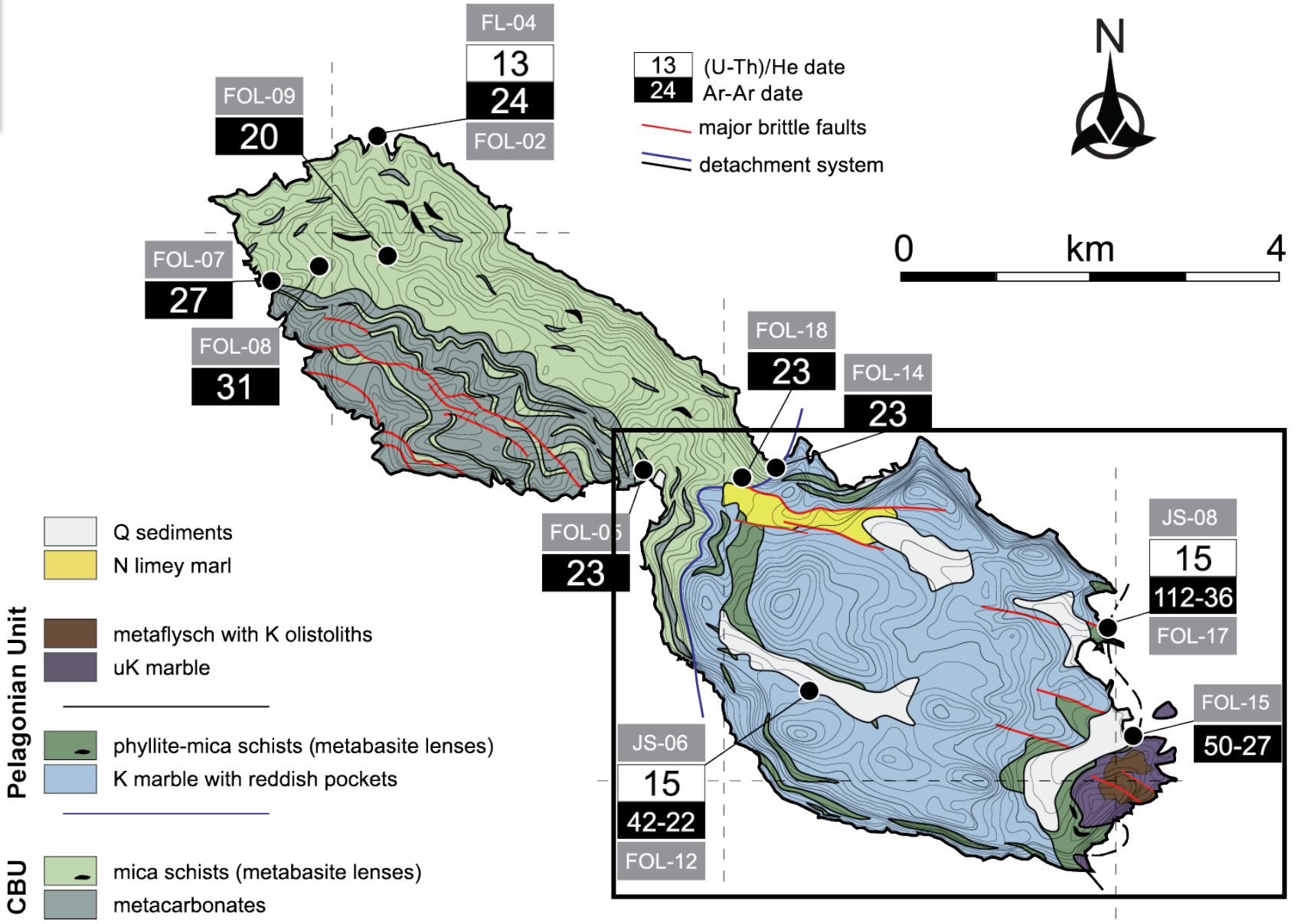
- Marble/Qtz-phyllite sequence
- Metaflysch (J-K marble olistoliths)
- Peak temperatures <350°C
- 22-112 Ma $^{40}Ar/^{39}Ar$ ages
- Ductile top-S boudinage
- BD top-N faults and SC fabric

~~CBU?~~ Pelagonian Zone

- Lower peak T
- K to Pε chronostratigraphy
- Correlation of units

+ J-K marble

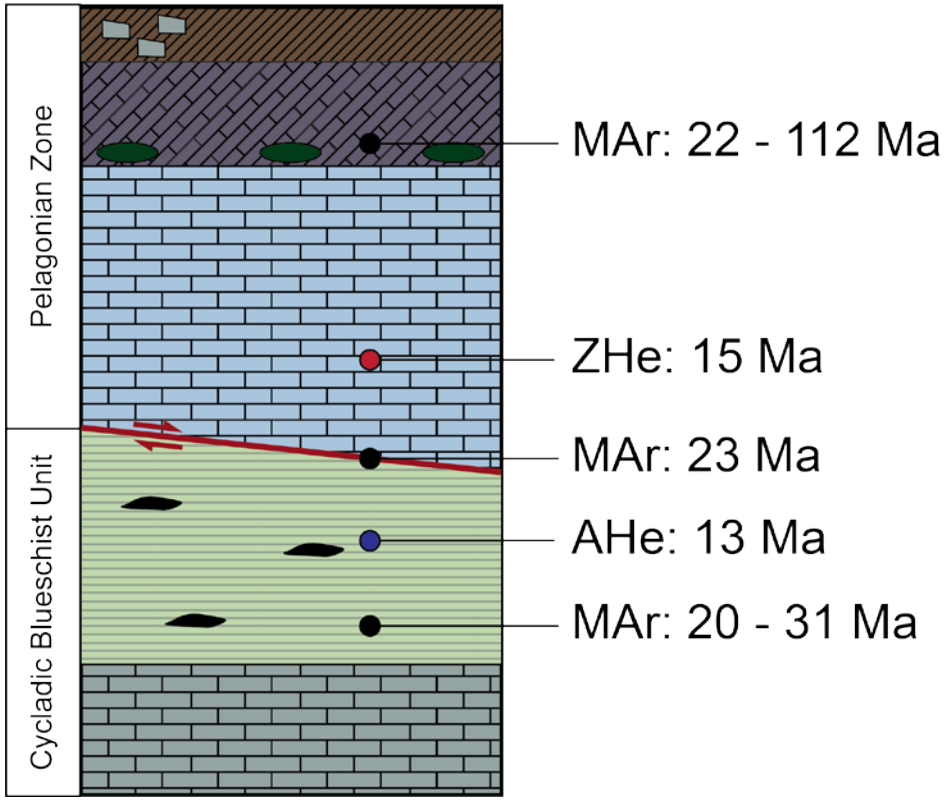
➔ **Uppermost Pelagonian Zone**
(*Mesoautochthonous Unit*)

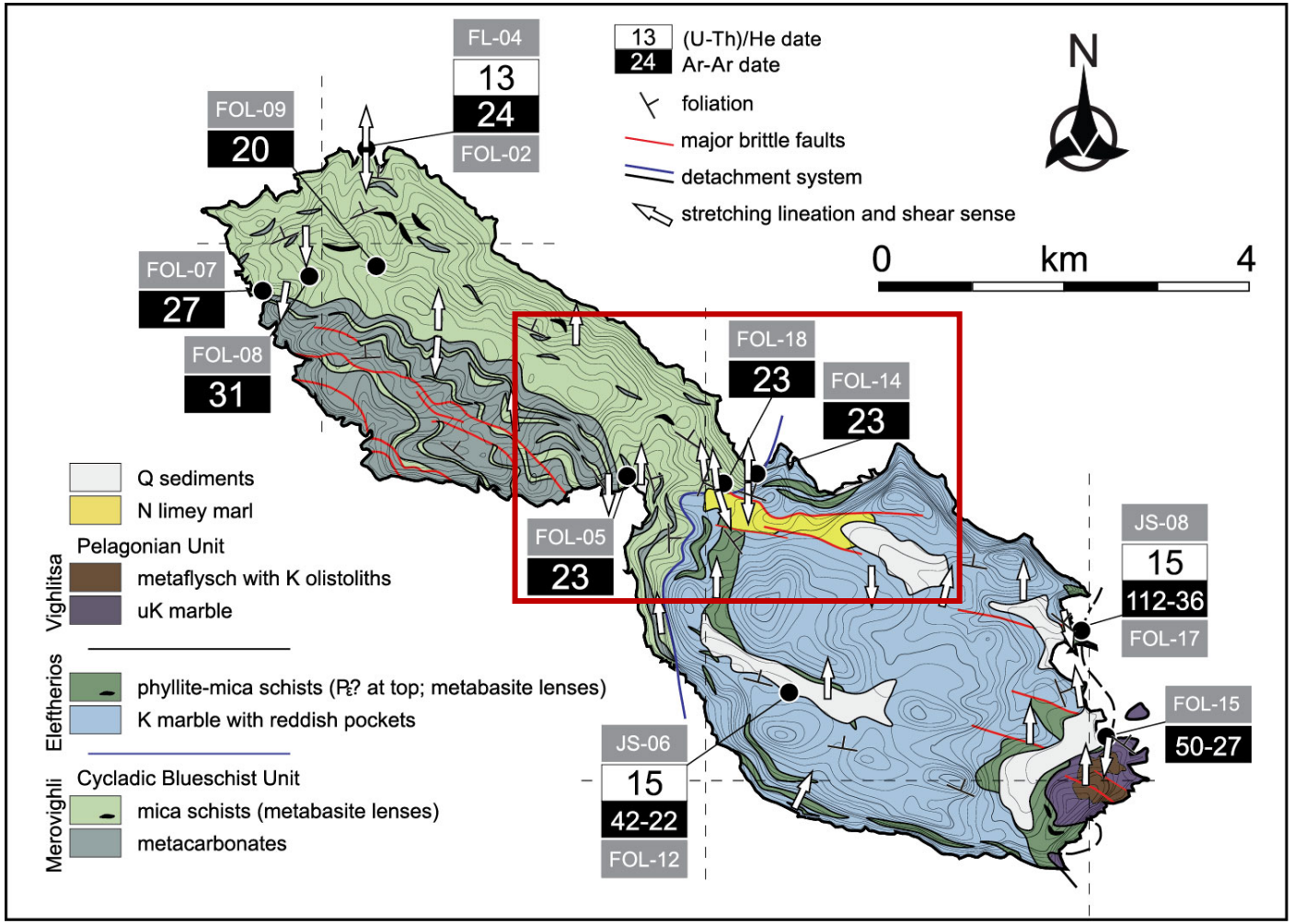


After Sowa et al. 1985

Exhumation processes

- Opposing kinematics (ductile top-S; BD top-N)
- Conjugate shear bands
- 23 Ma mica $^{40}Ar/^{39}Ar$ ages at tectonic boundary
- Middle Miocene (U-Th)/He ages
- Extensional regime





Pure-shear flattening +
S-directed low-angle detachment

Regional synthesis

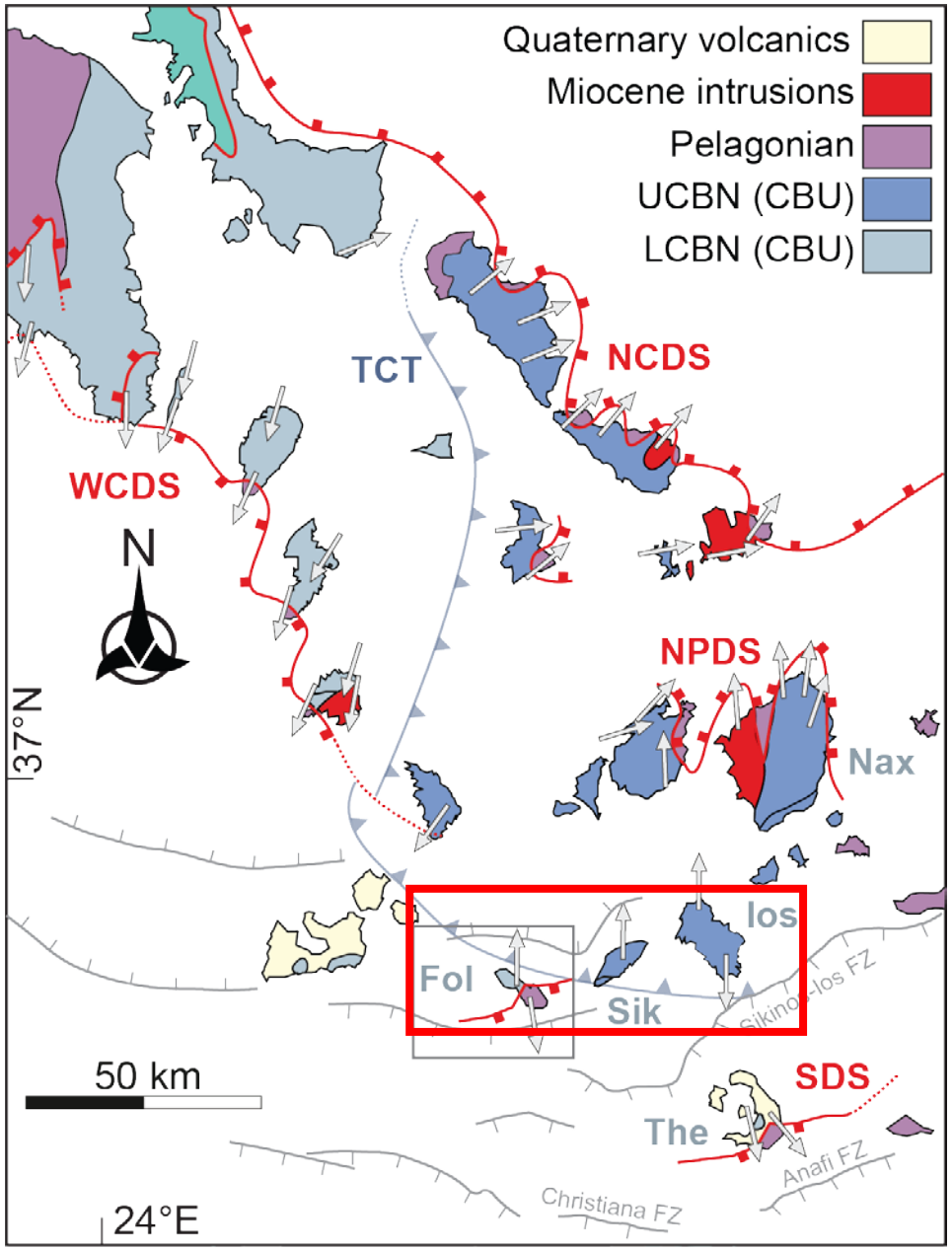
Folegandros tectonostratigraphy:

- Upper units → **Pelagonian Zone**
  - Separated by top-S low-angle detachment
- Lower unit → **CBU**
- [Sikinos → **Cycladic Basement**]

East-west corridor (Fol, Sik, Ios) of extensive Miocene regional stretching and exhumation accommodated by:

- **Ductile thinning**
- **Opposing kinematics**
- **Local development of detachment plane**

→ coincides with high-T Naxos migmatization event



Modified from Grasemann et al. 2018

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