

Crustal structure of the eastern Alps from SWATH-D Receiver Function Migration

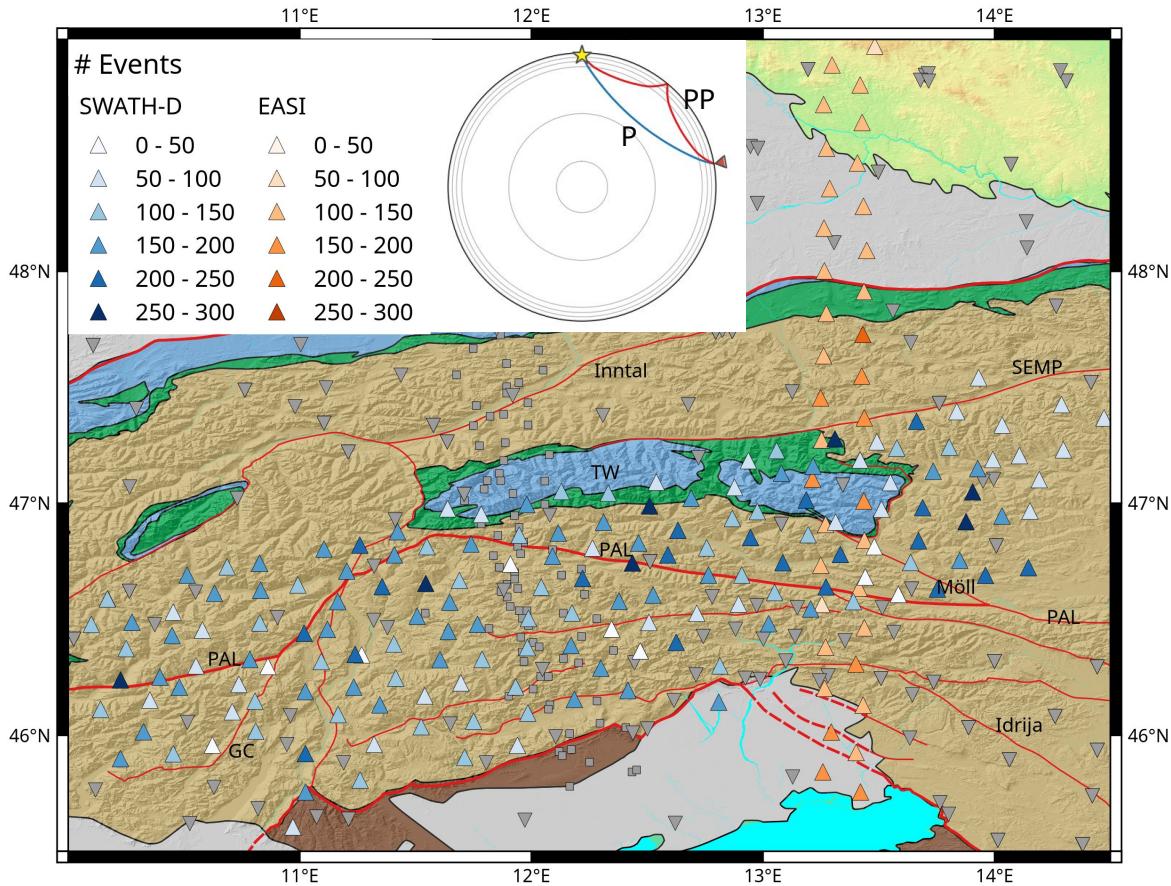
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Data

- 140 high quality RFs per station
- Incomplete dataset
 - September 2019 for online stations
- P-s and PP-s RFs
 - 50% of each
- Migrated with common conversion point stack
 - By pierce points
 - 20 km transect width
 - 4 km horizontal smoothing

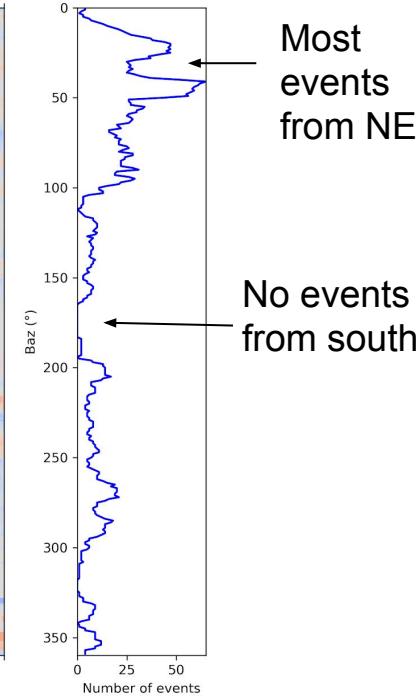
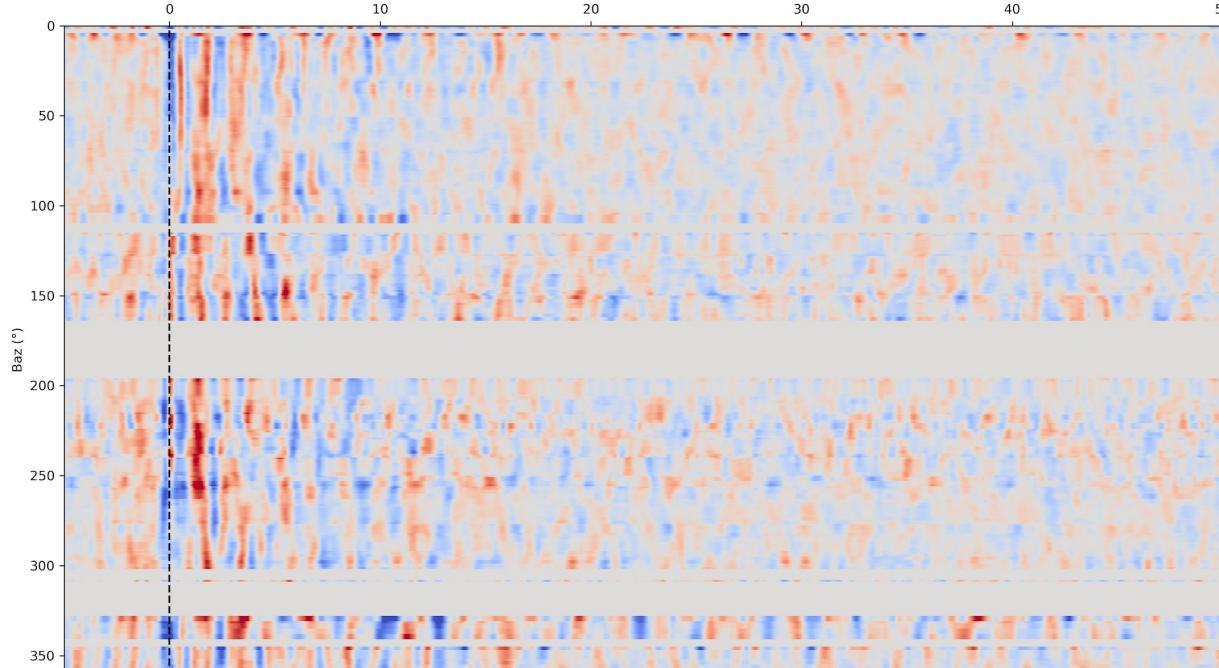


Map units after Schmid et al. 2004

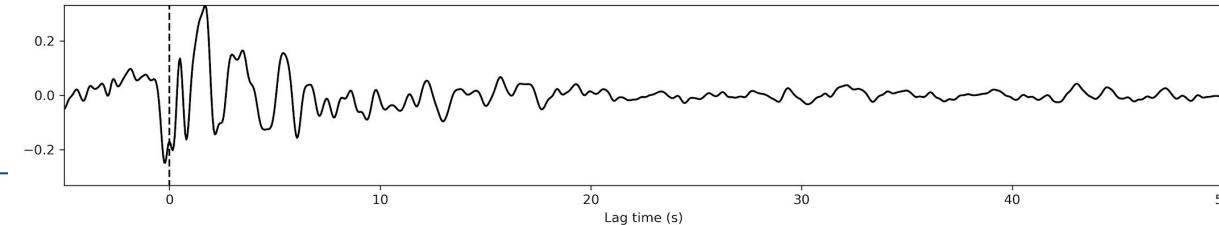
HELMHOLTZ

Window
size= 10°
Step= 1°

Receiver function moving average (by back azimuth)



Receiver function stack



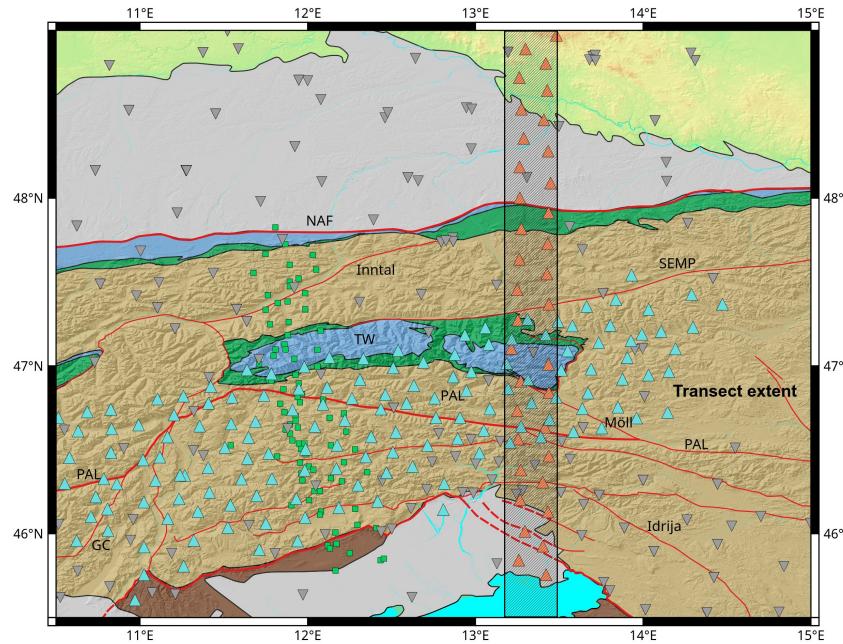
Shows Back-azimuthal variation

SWATH-D
Station D012

Longitude=13.3°

EASI Transect 13.3°

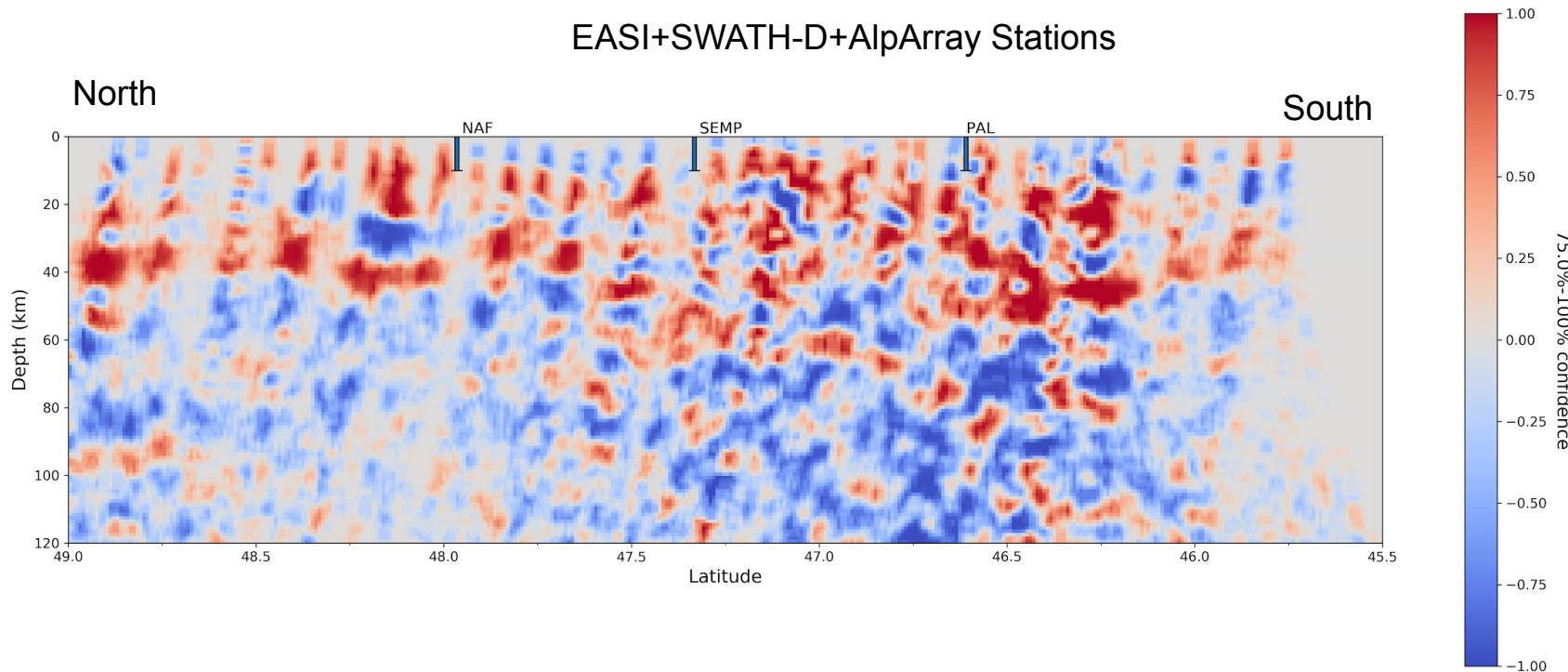
(Original EASI study: Hetényi et al. 2018)



Longitude=13.3°

EASI Transect 13.3°

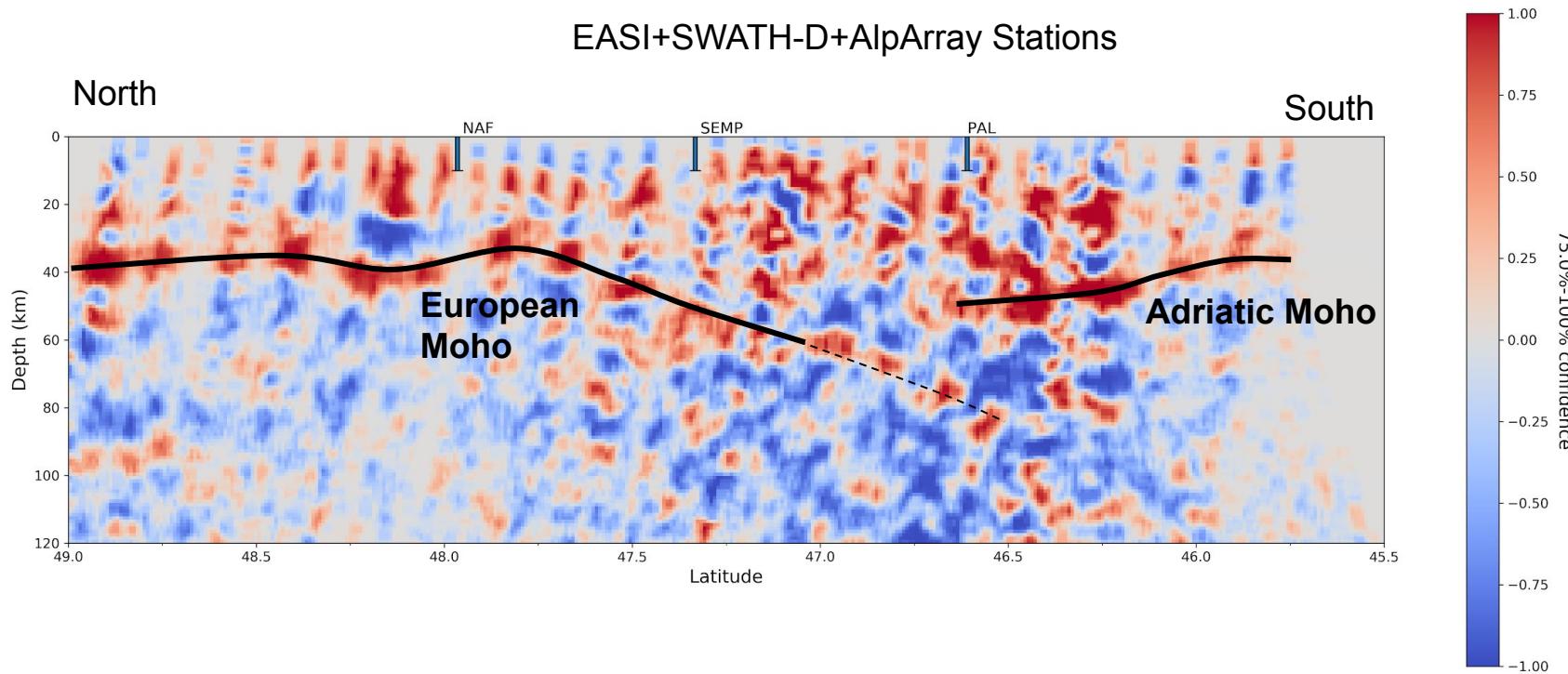
EASI+SWATH-D+AlpArray Stations



Longitude=13.3°

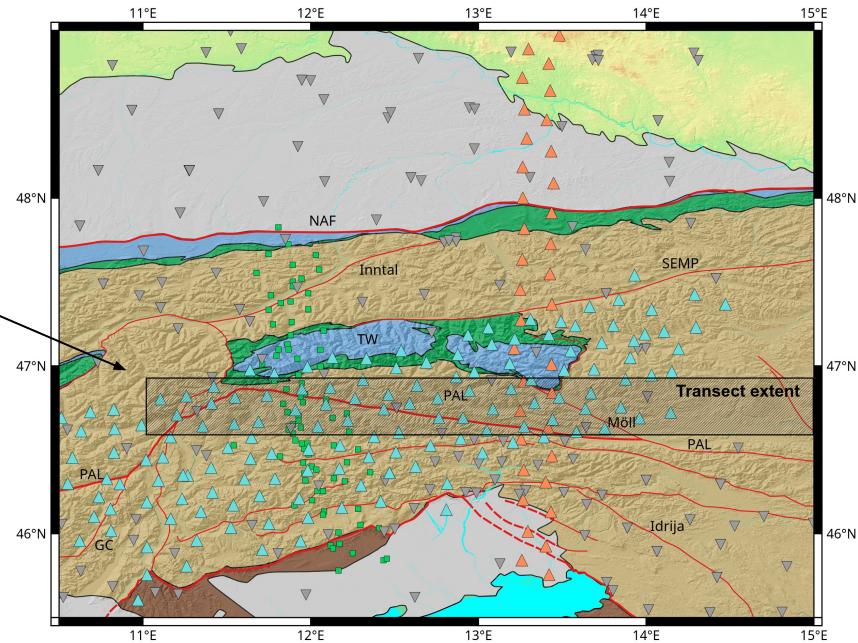
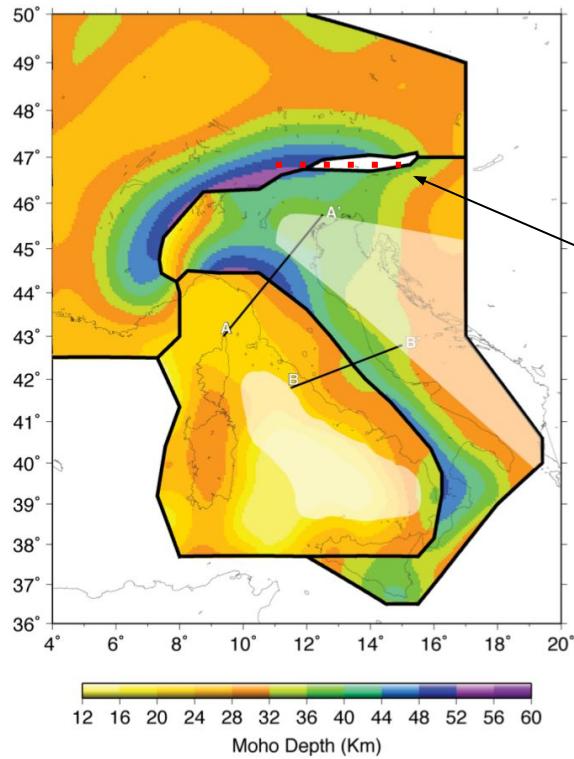
EASI Transect 13.3°

EASI+SWATH-D+AlpArray Stations



The Moho Gap - EW profile

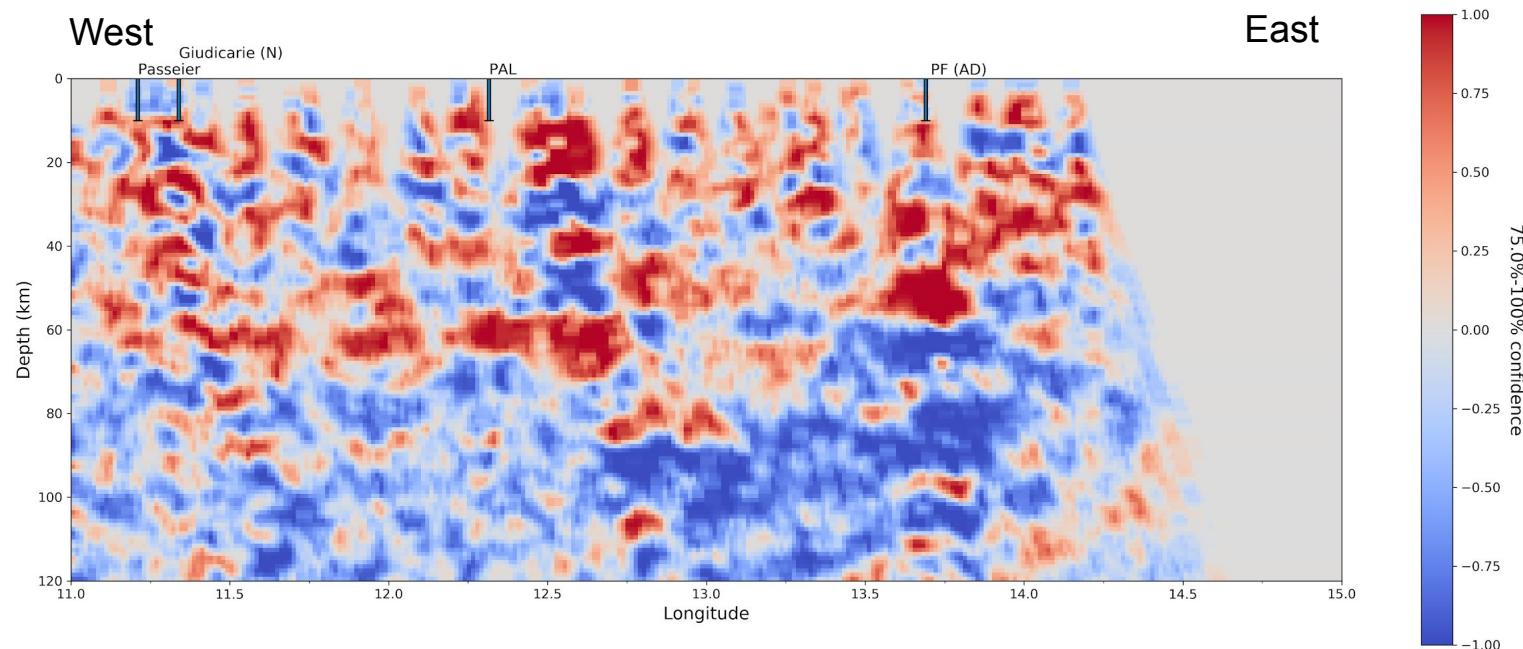
Spada et al. (2003)



Latitude=46.75°

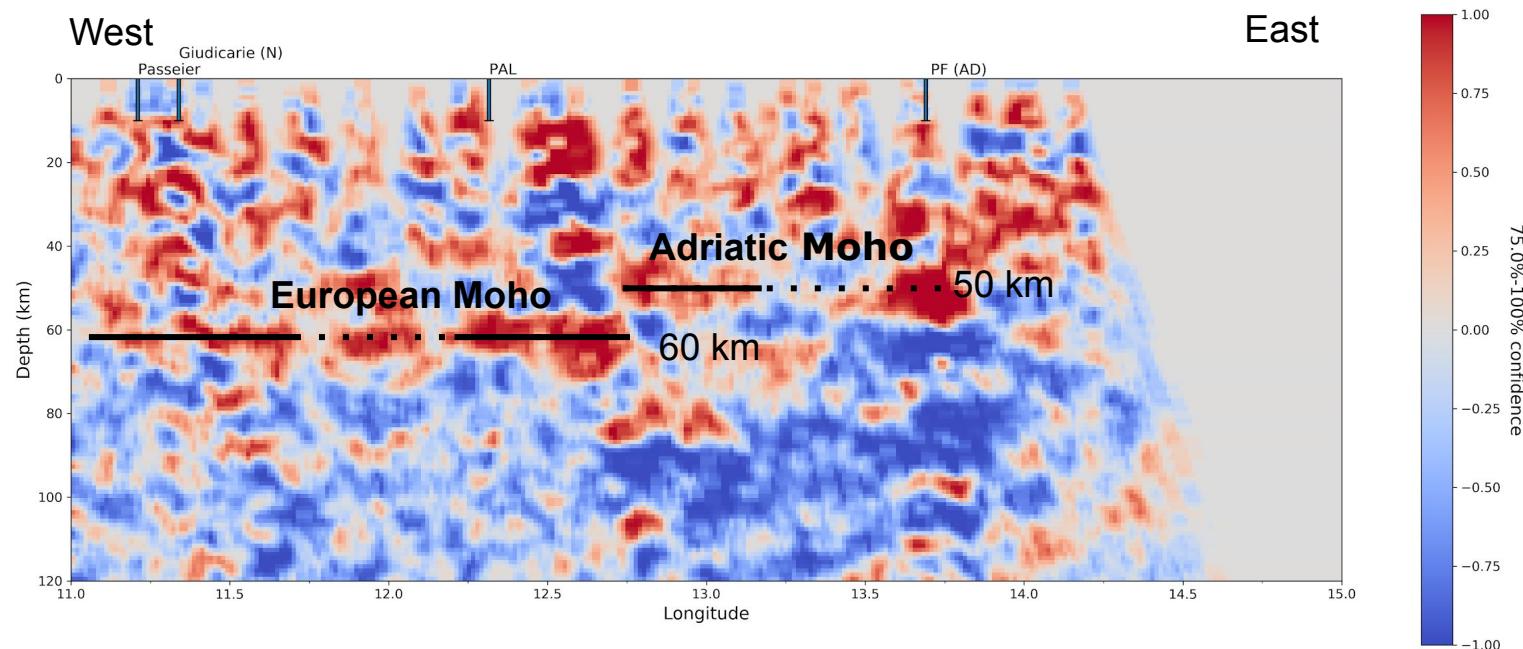
Latitude=46.75°

The Moho Gap - EW profile



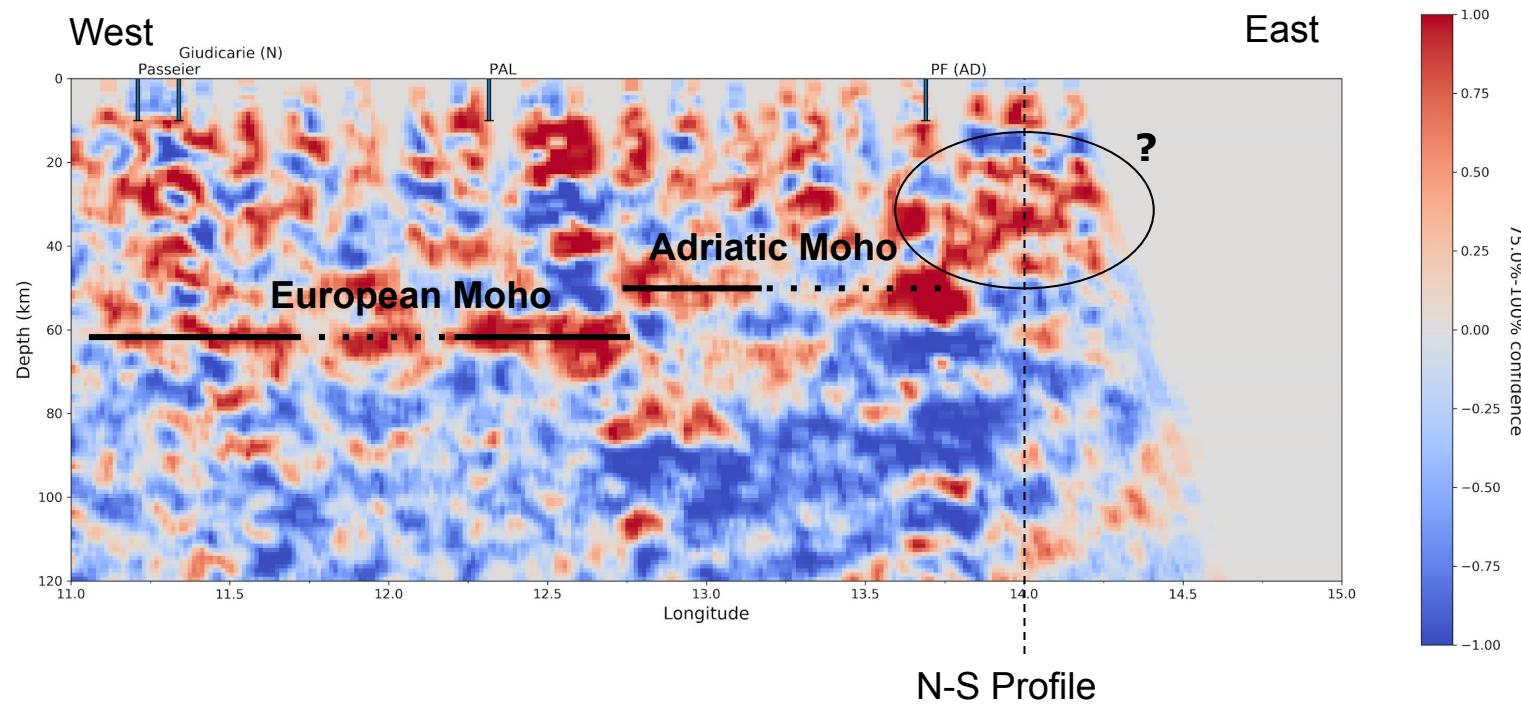
Latitude=46.75°

The Moho Gap - EW profile



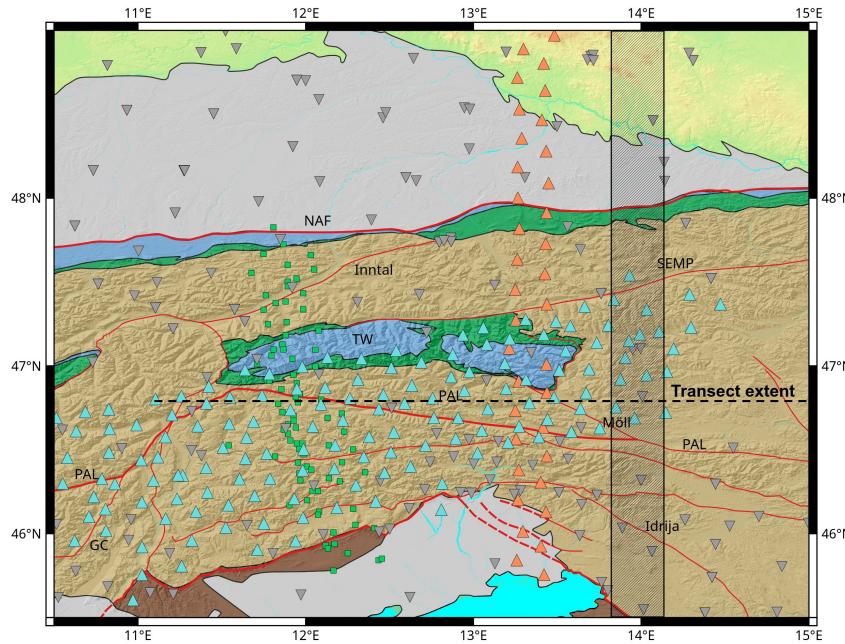
Latitude=46.75°

The Moho Gap - EW profile



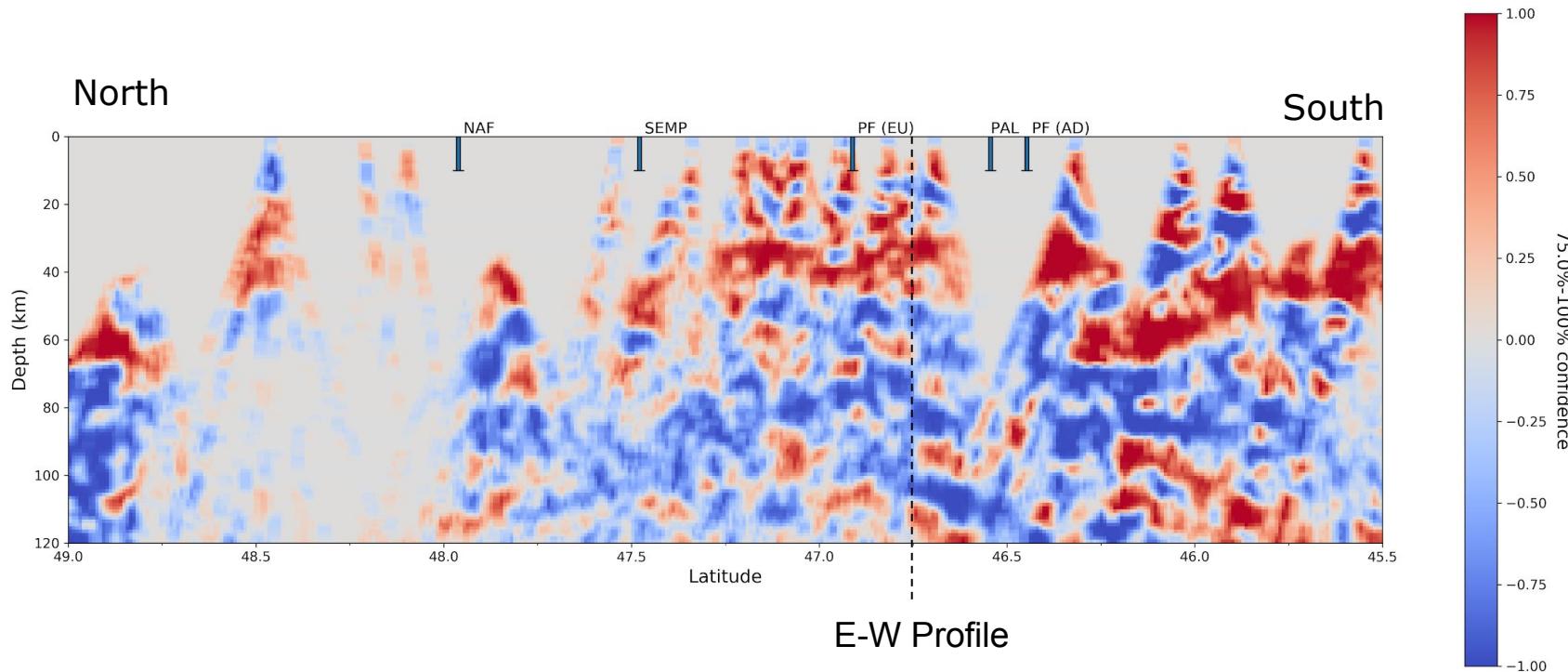
Longitude=14.0°

The Moho Gap - NS profile



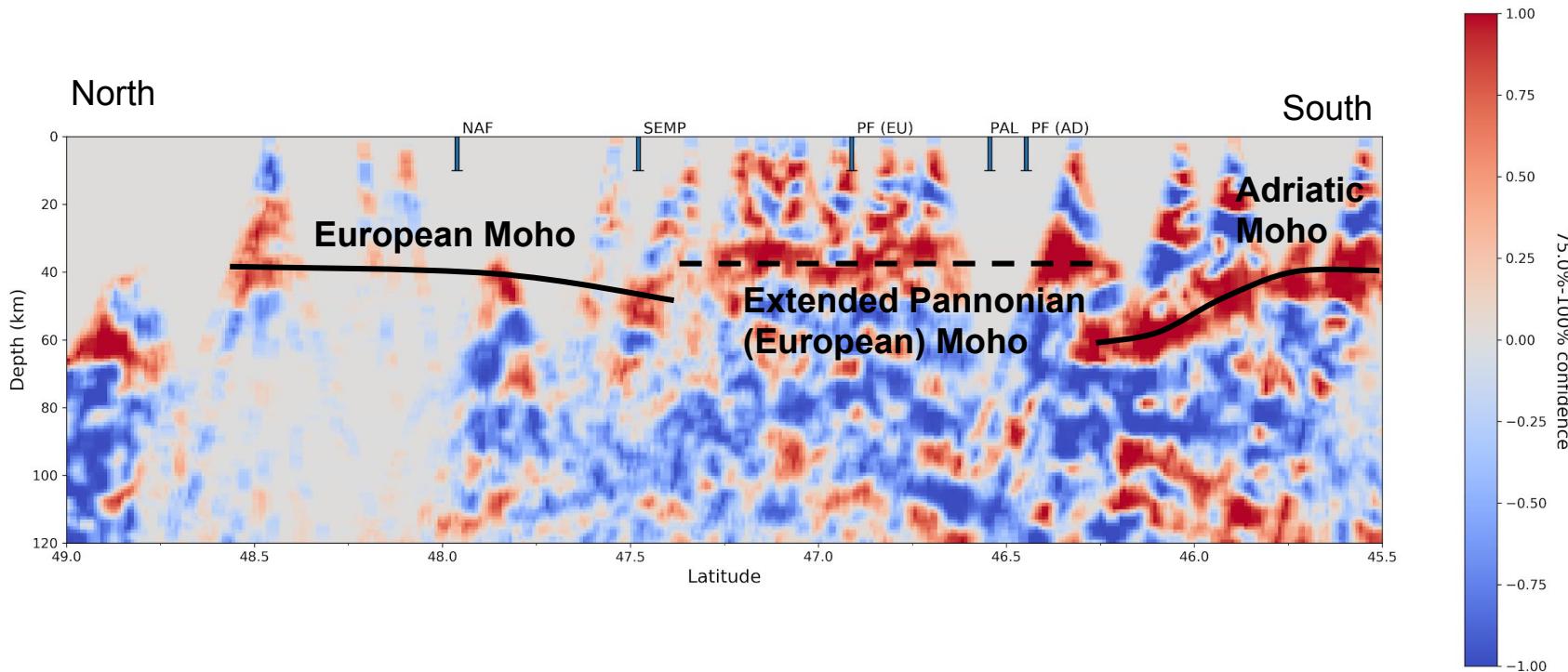
Longitude=14.0°

The Moho Gap - NS profile



Longitude=14.0°

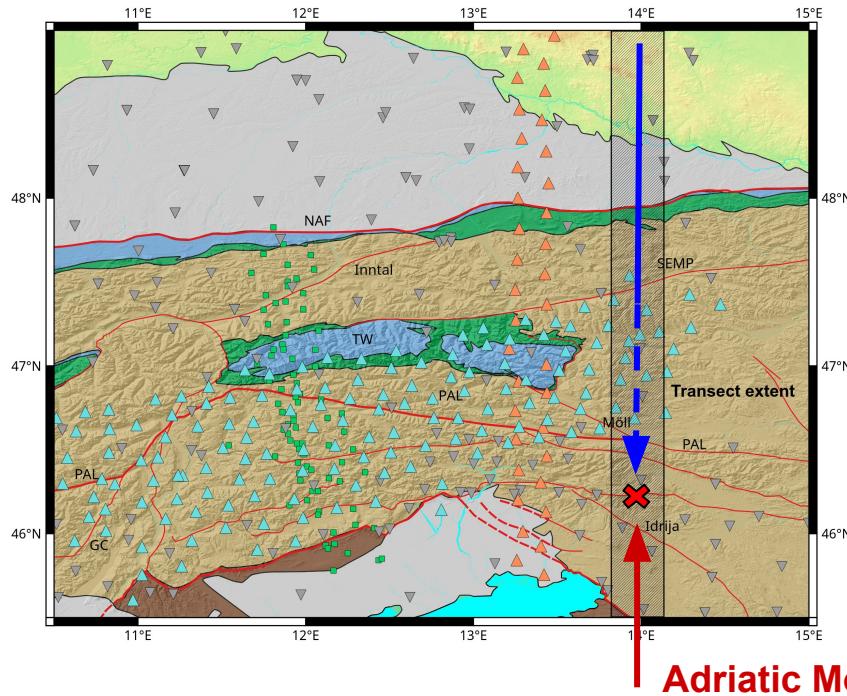
Underthrusting Adriatic Moho



Longitude=14.0°

Underthrusting Adriatic Moho

Overlying European Moho

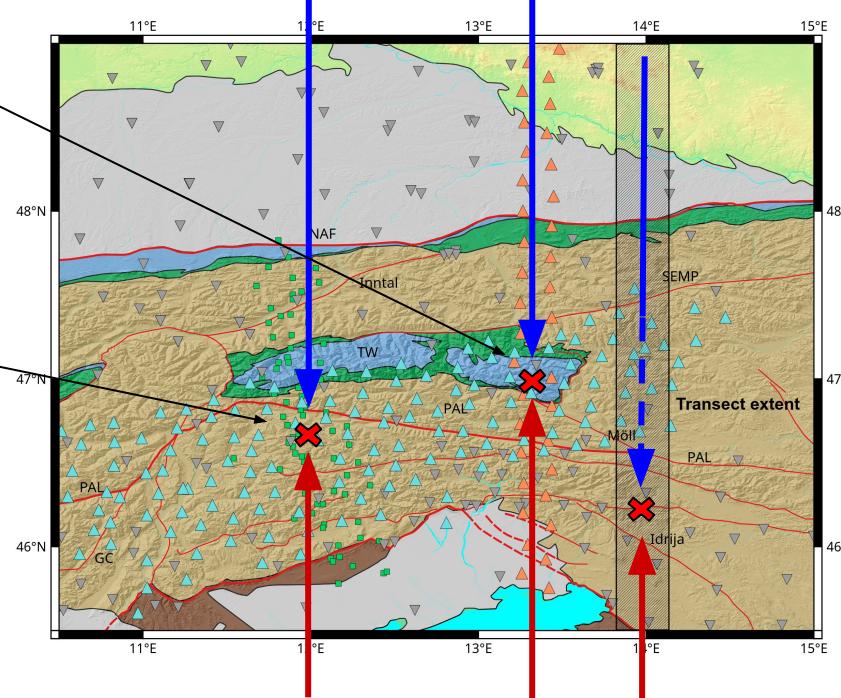


Meeting point of the European and
Adriatic Moho from previous
studies
(regardless of inferred polarity)

European Moho

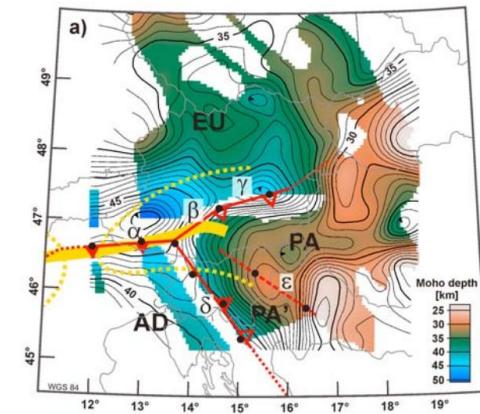
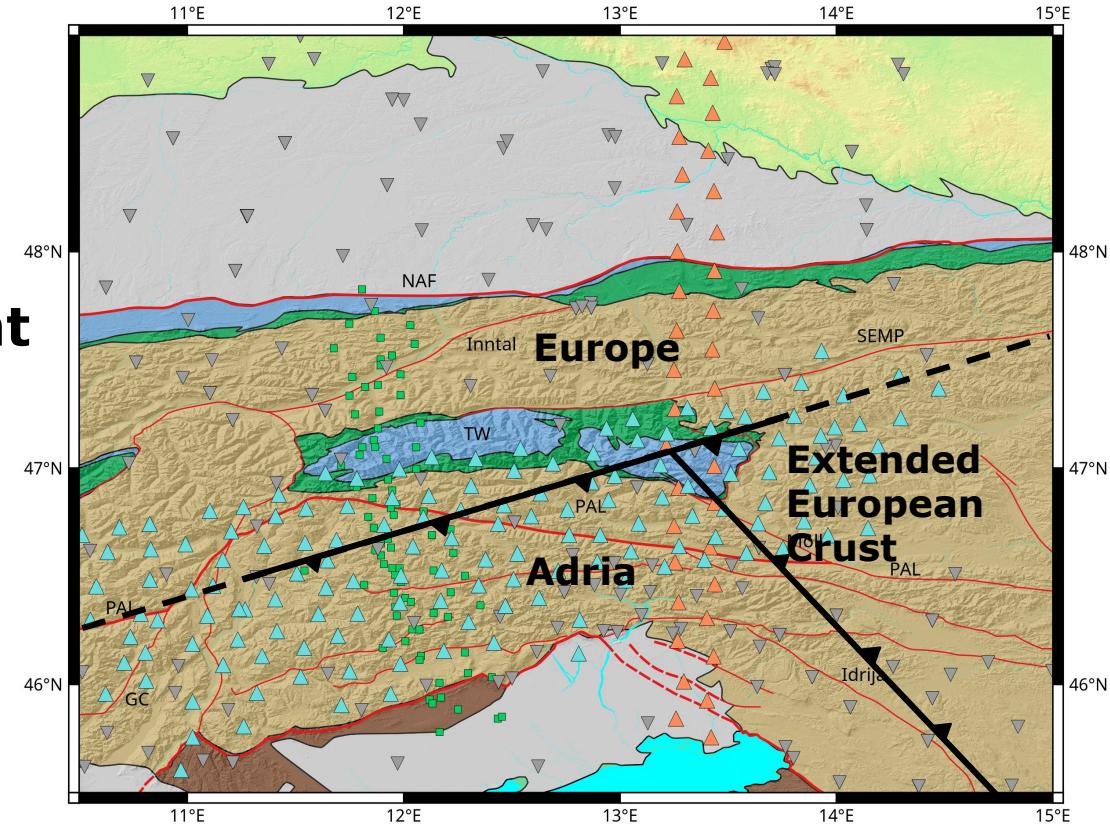
EASI- Hetényi et al. (2018)

TRANSALP- Kummerow et al.
(2004)



Adriatic Moho

Moho Extent S

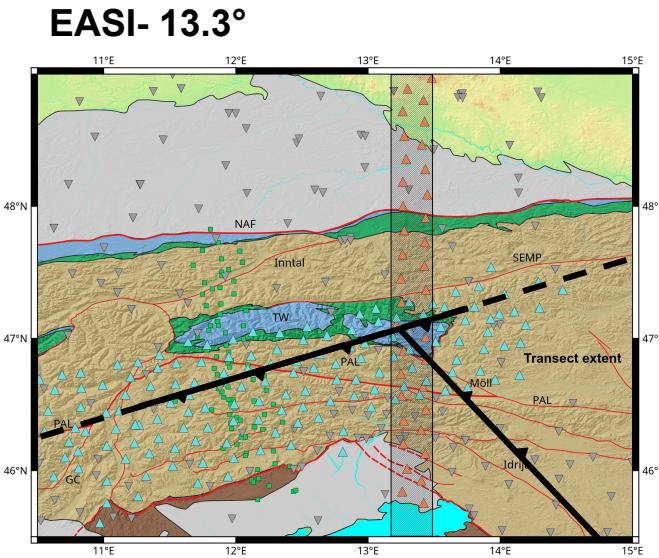


Conclusions

- European subduction in the Eastern Alps
- Switch to Adriatic subduction beneath the Dinarides
- EASI transect (13.3°) is transitional
 - Intersection of European, Pannonian, and Adriatic Mohos

Future

- Process full catalog
- Produce synthetic receiver functions
 - Suite of models
- Investigate deeper structures and multiples



Acknowledgements

- AlpArray-EASI working group
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References

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