

# Marine geophysical tools applied to active tectonics: fault characterization as input for hazard assessment.

## Proposed topics for the open discussion

Laura Gómez de la Peña ([lgomez@geomar.de](mailto:lgomez@geomar.de))

Francesco Emanuele Maesano ([francesco.maesano@ingv.it](mailto:francesco.maesano@ingv.it))

Sara Martínez-Loriente ([smartinez@icm.csic.es](mailto:smartinez@icm.csic.es))

Hector Perea ([hperea01@ucm.es](mailto:hperea01@ucm.es))

Morelia Urlaub ([murlaub@geomar.de](mailto:murlaub@geomar.de))



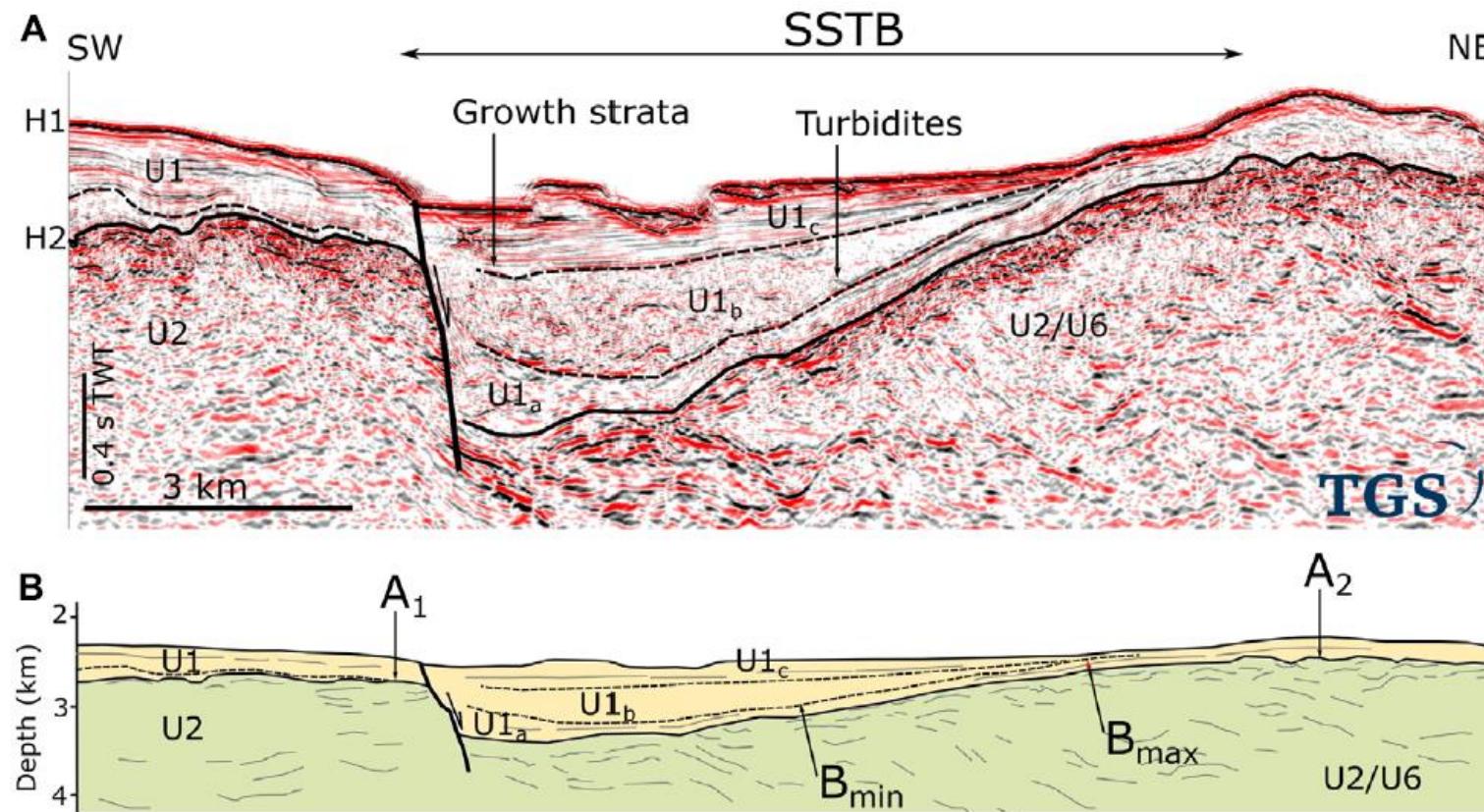
- **Faults:** What to do to improve the slip estimations offshore?

- Approaches on the offshore to estimate fault slip rates. A better constraints on displacements and sediment ages is needed?
- How to constrain slip rates when you do not have ages but displacements observed in seismic profiles → Go to slide 3!
- Is there a necessity to carry on probabilistic slip rate assessments?

# Constrain slip rates when you do not have ages but displacements observed in seismic profiles.

One approach is to consider constant average sedimentation rate for pre-tectonic strata.

Is it always correct? Do you think that there could be better approaches to this problem?



SSTB – Shallow syn-tectonic basin

H1 – seafloor

H2 – Messinian unconformity

U1 – Pliocene-Holocene

U2/U6 – pre-Messinian

$A_{1/2}$  – Thickness of U1 away from SSTB

B<sub>min</sub>-max – Thickness of U1 before tectonic inception (U1<sub>a</sub>)

U1<sub>b-c</sub> – Syn-tectonic deposits

Assuming constant average sedimentation rate for A<sub>1/2</sub> and U1<sub>a</sub> (average of B<sub>max</sub> and B<sub>min</sub>), the age of inception is 2.6 Ma

from Maesano et al. (2020) Frontiers in Earth Science doi: 10.3389/feart.2020.00107

- **Mass Transport Deposits:**

- Few examples of very well-known MTD (e.g. Storegga). Can we apply what we know to other less-known MTD? What are the “transferability” criteria?
- What might be the criteria to categorize the MTD from the collected information/data?
- Relationship between landslides and small tsunami waves → this is a possible near source hazard to shelf infrastructures.

- **Tsunami:**

- Influence of geometrical constrains of fault plains in hazard. Is it is needed a very detailed fault plane for modelling or no critical?