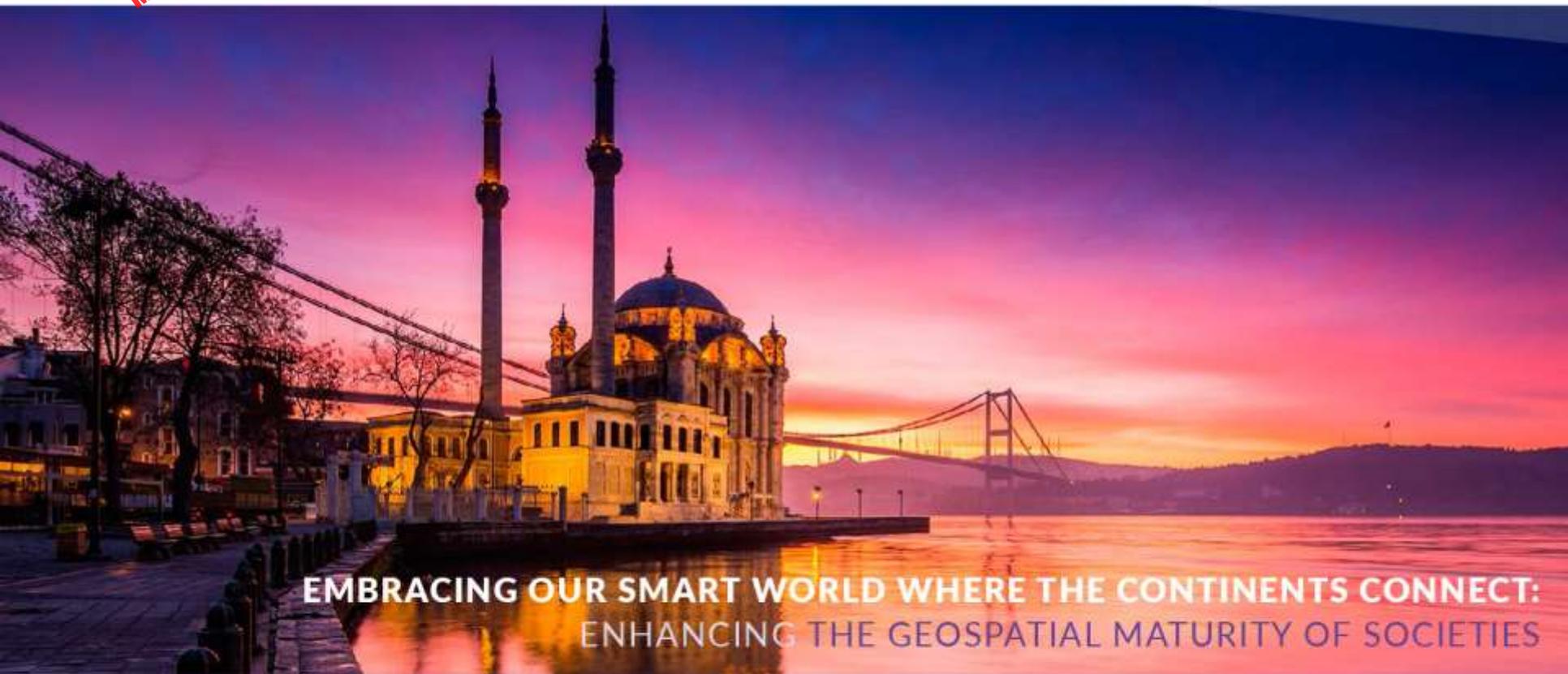




**Presented at the FIG Congress 2018,
May 6-11, 2018 in Istanbul, Turkey**

**6-11 May 2018
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Determinaton of Seismic Activity on the Main Marmara Fault with GPS Measurements

Mehmet Nurullah Alkan

Volkan Özbey

Hasan Hakan Yavaşoğlu

Reha Metin Alkan

Frédéric Masson

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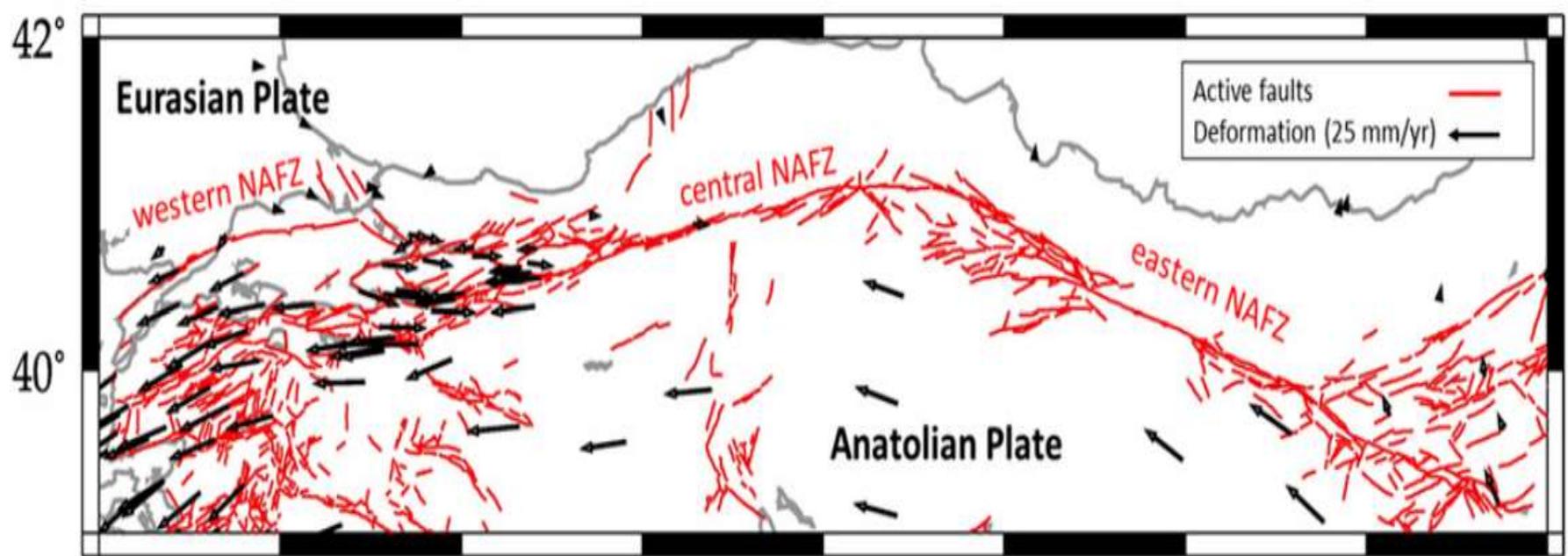
Aim of the project

- An earthquake is expected on the Marmara segment of the North Anatolian Fault(NAF).
- But there's a seismic gap in the middle of the segment, which might show 3 different scenarios:
 1. Fault in this region may have 3 consecutive segments that might show different behaviour

Aim of the project

2. Middle part of the segment might have an aseismic deformation or creep
 3. This seismic gap or possible creep behaviour might indicate a relief or accumulation in the stress
- This project conducted to figure out if one of these scenarios is possible.

North Anatolian Fault(NAF)



Active faults through the NAF and tectonic plate movements per year(Bohnhoff et al.2016)



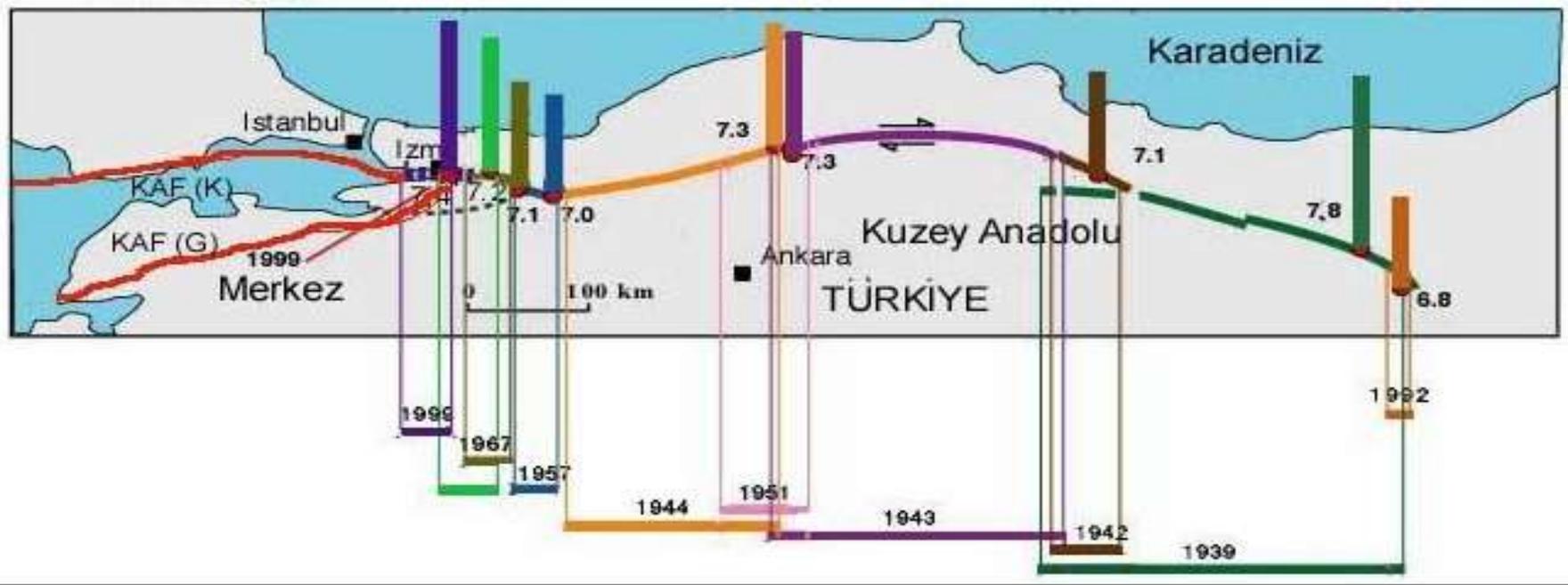
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North Anatolian Fault(NAF)



Migration of destructive earthquakes through the NAF in the 20th century(URL-1).

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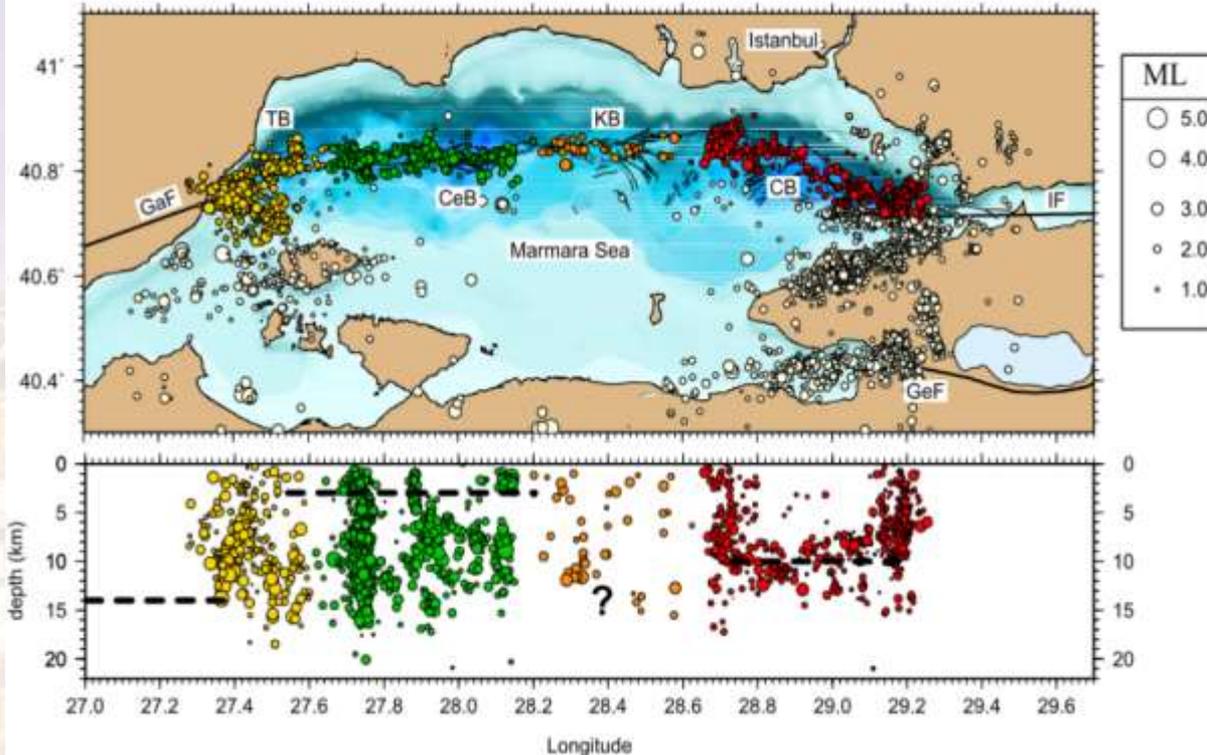
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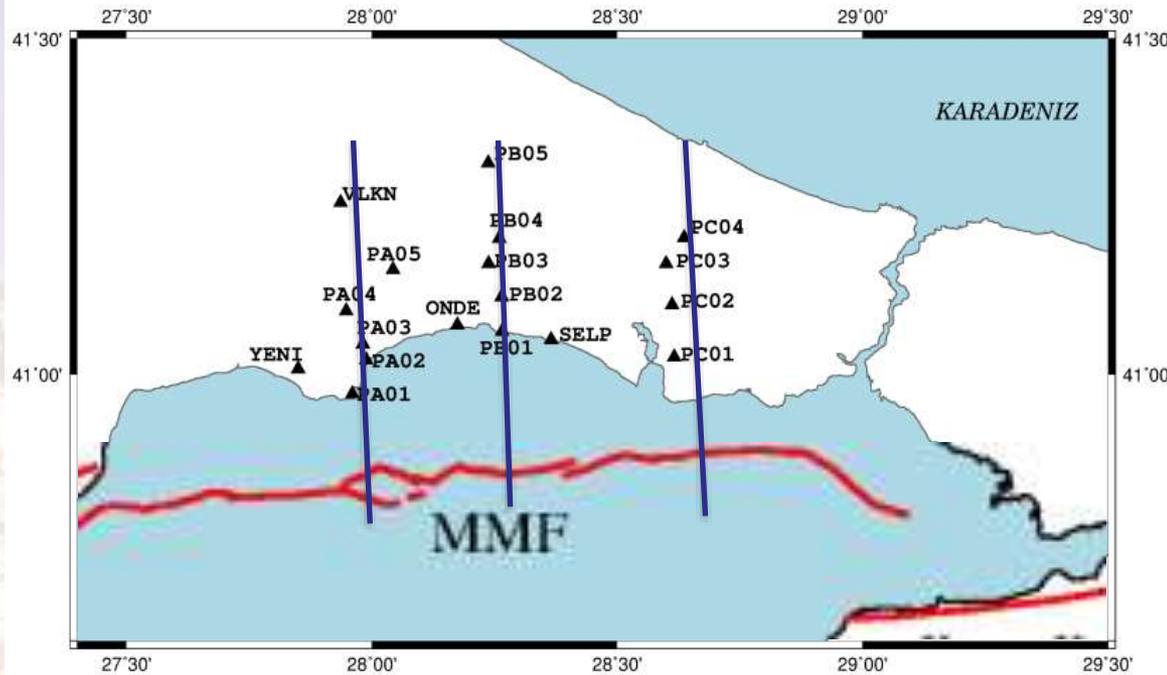


Marmara Segment of the NAF



- Marmara Fault consists of 4 different parts.
- There's a seismic gap in the middle segment, from Adalar to Tekirdag (Schmittbuhl et al. 2015)

Preliminary and Field works



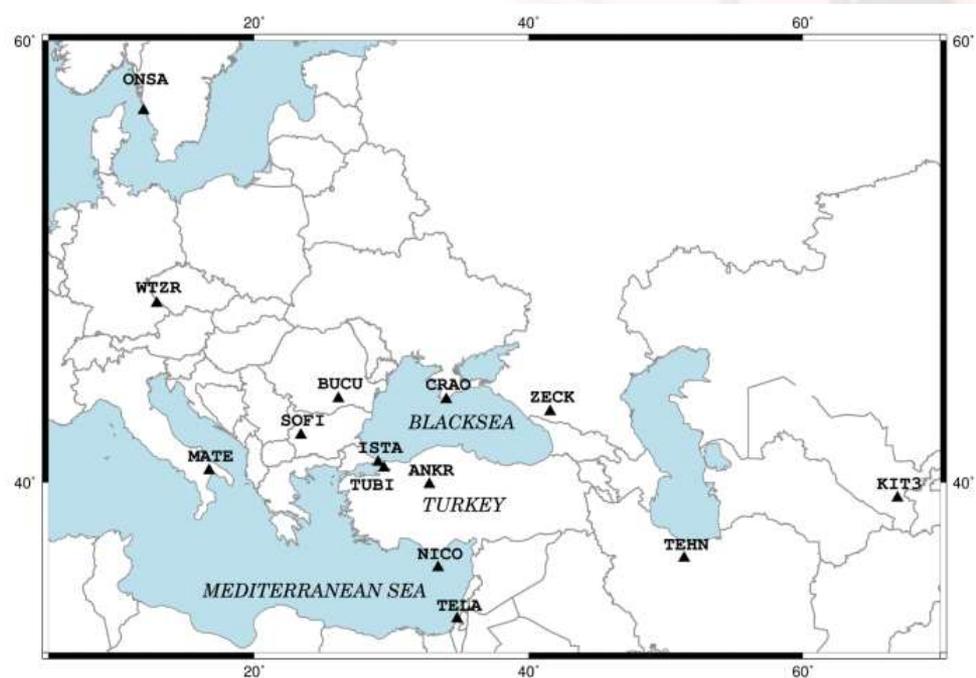
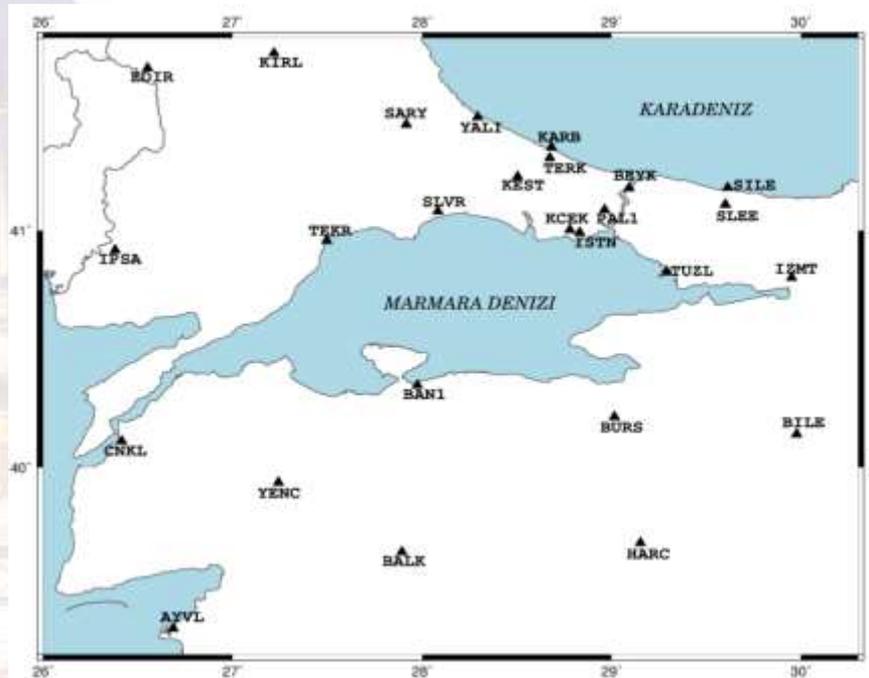
- 3 profiles established to resolve fault parallel-perpendicular velocities and to figure out the mechanism.
- 3 campaigns between 2015-2017.



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Preliminary and Field works



CORS-TR and ISKI-UKBS continuous GPS stations and IGS stations used for global connection

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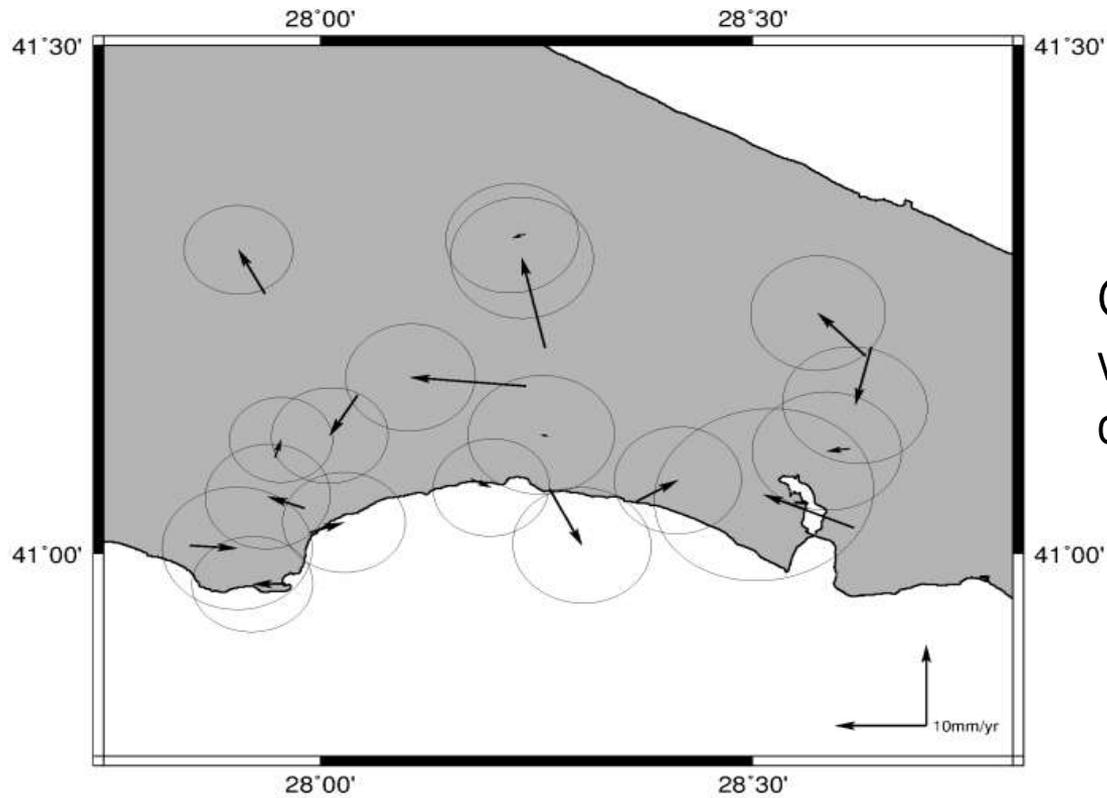
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RESULTS



GLOBK calculated velocities for campaign points

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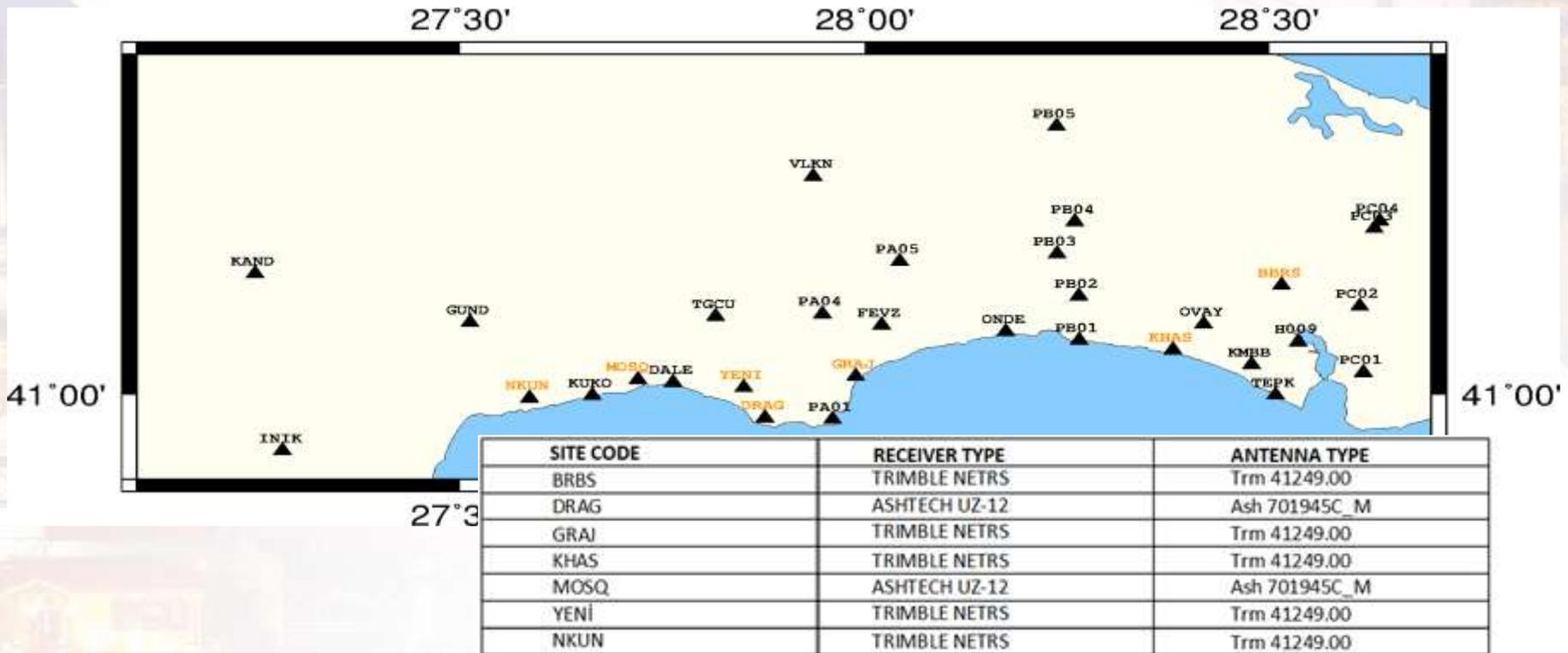
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FUTURE WORKS

Observation network expanded with 7 cGPS sites in the area(yellow)



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REFERENCES

- **Bohnhoff M, Martinez-Garzon P, Bulut F, Stierle E, Ben-Zion Y.** Maximum earthquake magnitudes along different sections of the North Anatolian fault zone. *Technophysics* 674 (2016) 147-165.
- **Schmittbuhl, J., Karabulut, H., Lengliné, O., ve Bouchon, M.** (2015). Seismicity distribution and locking depth along the main marmara fault, turkey. *Geochemistry, Geophysics, Geosystems*.
- **Url-1** <<https://www.bakiacil.com/faylar.html>> last visited: 02.04.2018