EGU General Assembly 2022

Multiparametric and multilayer investigation of global earthquakes in the World by a statistical approach

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Research supported by:

Grant number: 41974084

Grant number: 2021M691190

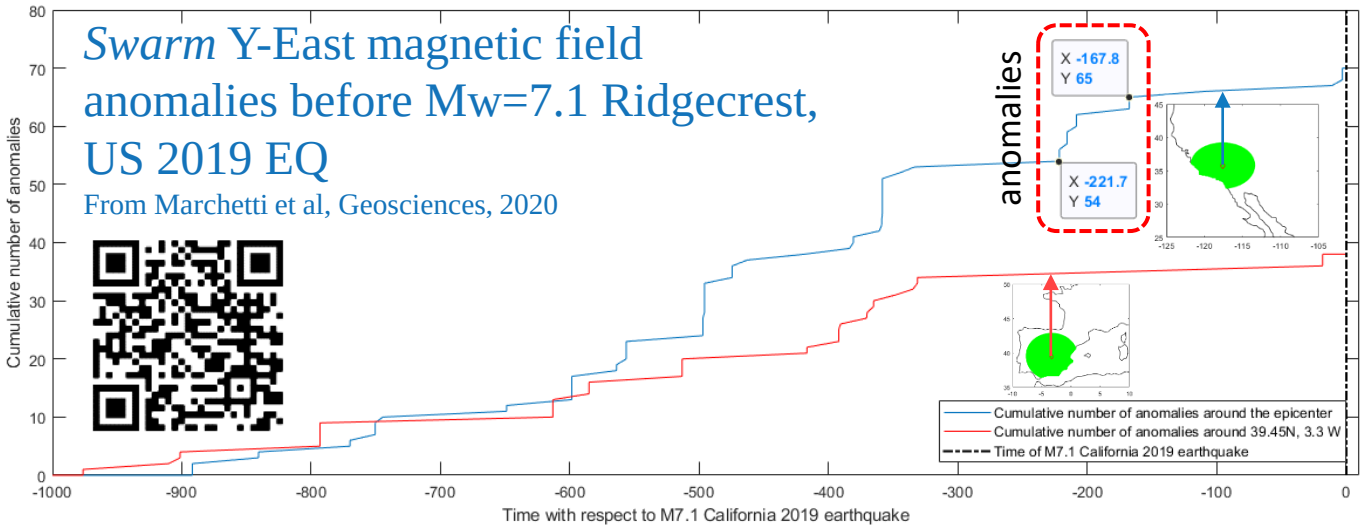
LIMADOU Science+

Presentation EGU22-3337 – 27 May 2022 09:18 CET (15:18 China)

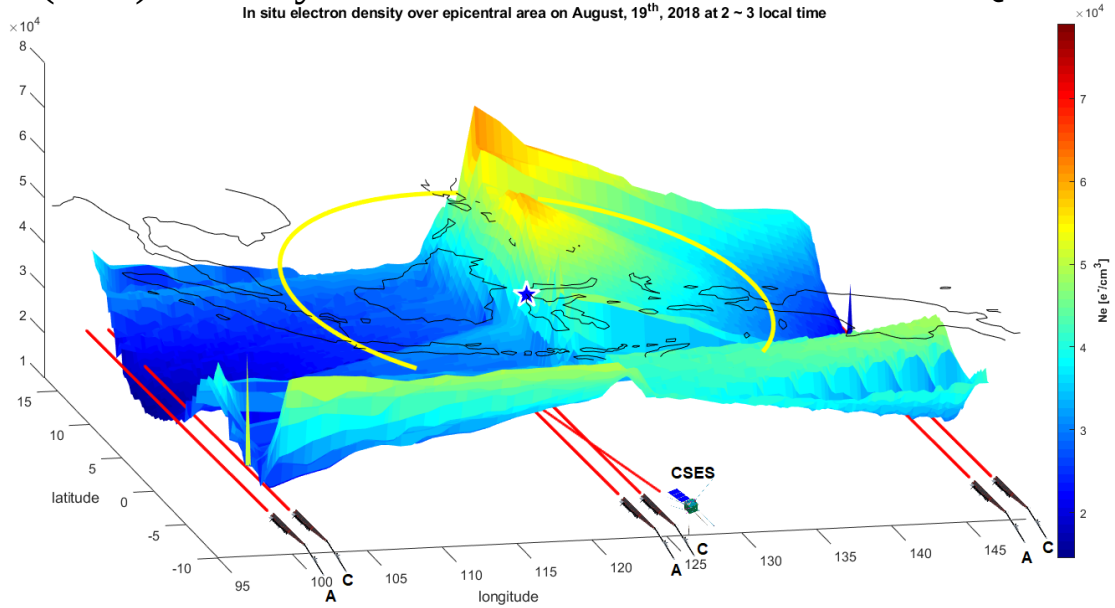
Research background

Swarm Y-East magnetic field anomalies before Mw=7.1 Ridgecrest, US 2019 EQ

From Marchetti et al, Geosciences, 2020

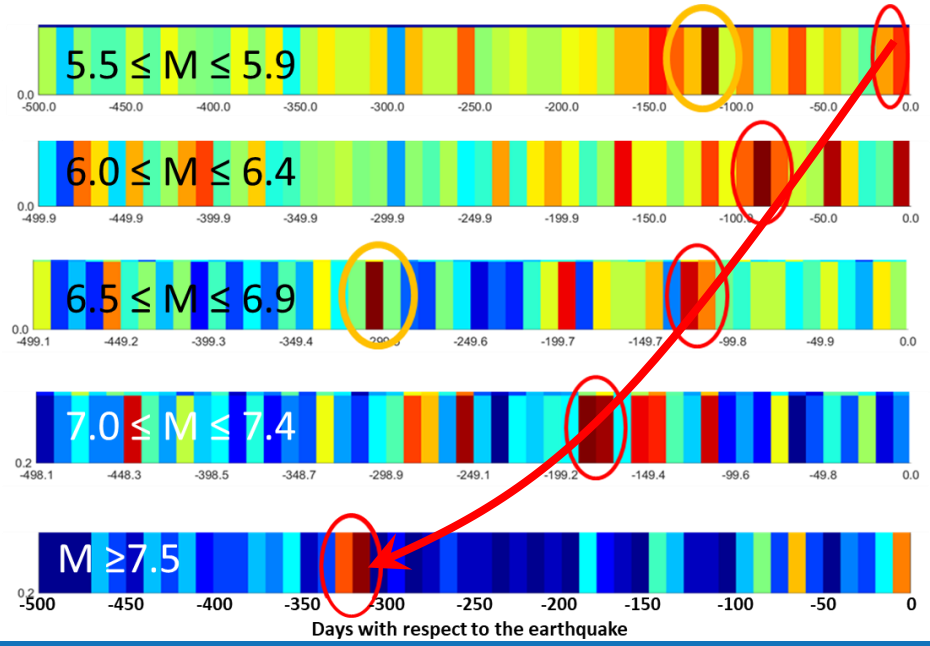


Appearance of Equatorial Ionospheric Anomaly (EIA) ~40 days before Mw7.5 Indonesia 2018 EQ



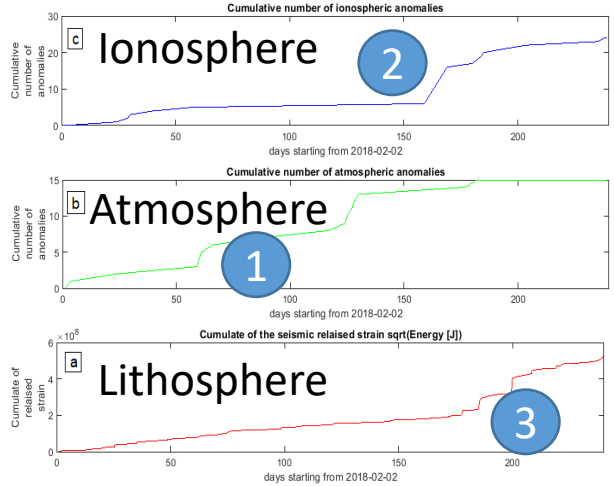
Worldwide Statistical Correlation of ***Swarm*** magnetic field anomalies and **M5.5+ earthquakes** (2014-2018)

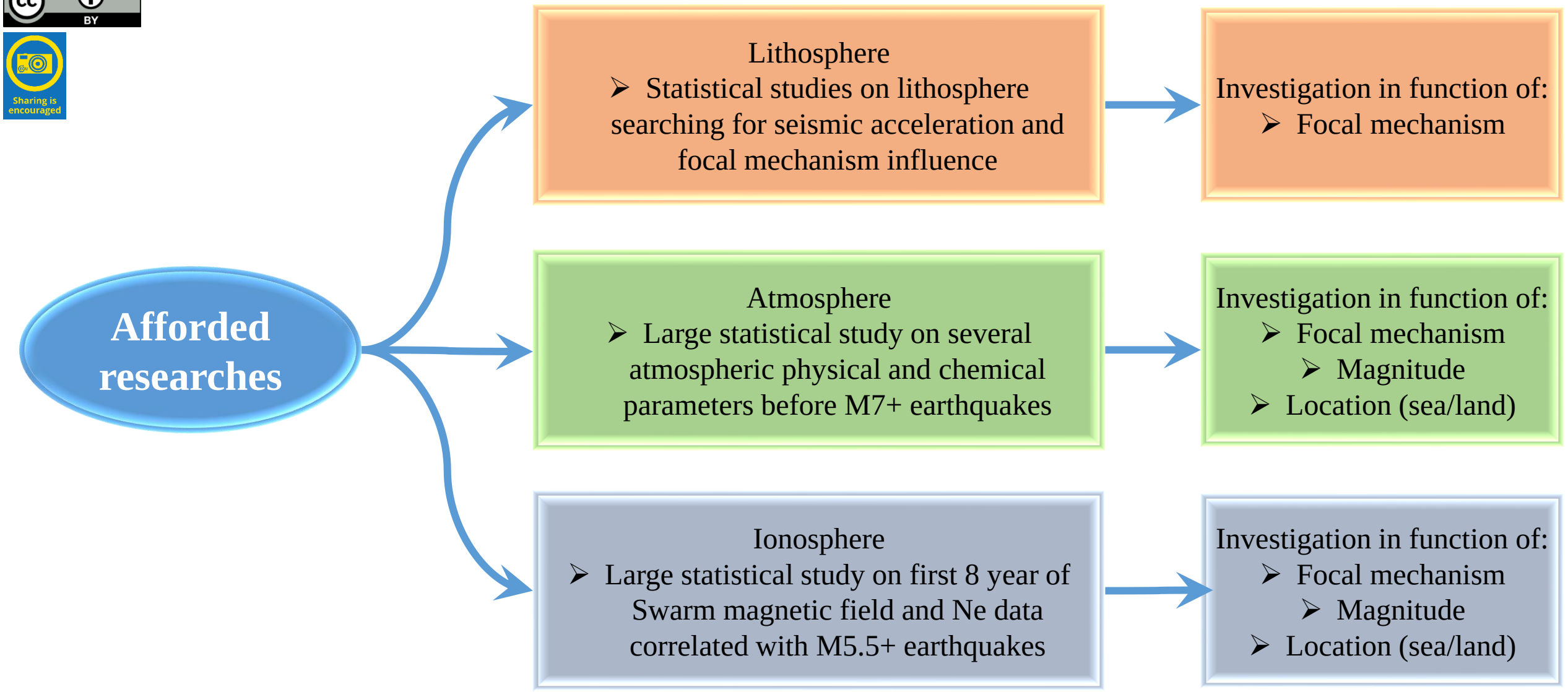
From De Santis et al., SR, 2019



Multilayer investigation of single case study (Mw7.5 Indonesia 2018 EQ)

From Marchetti et al., JAES, 2020





For further details, see the presentation EGU22-3337 – 27 May 2022 09:18 CET (15:18 China)

Conclusions and future perspectives

- Statistical investigation applied to lithosphere atmosphere and ionosphere is providing interesting results depicting anticipation time longer than expected
- Including in the analysis earthquake tectonic settings (as focal mechanism) permits to better understand which mechanism and precursor is more likely to precede which earthquake and understand (partially) why the preparation time patterns are different
- Future works will integrate more the multiparametric and multilayer studies in a statistical approach taking into account different earthquake features!

Invitation to submit papers on
Lithosphere Atmosphere Ionosphere Coupling
to study the earthquakes and their preparatory phase:

Thank you very much for your attention!