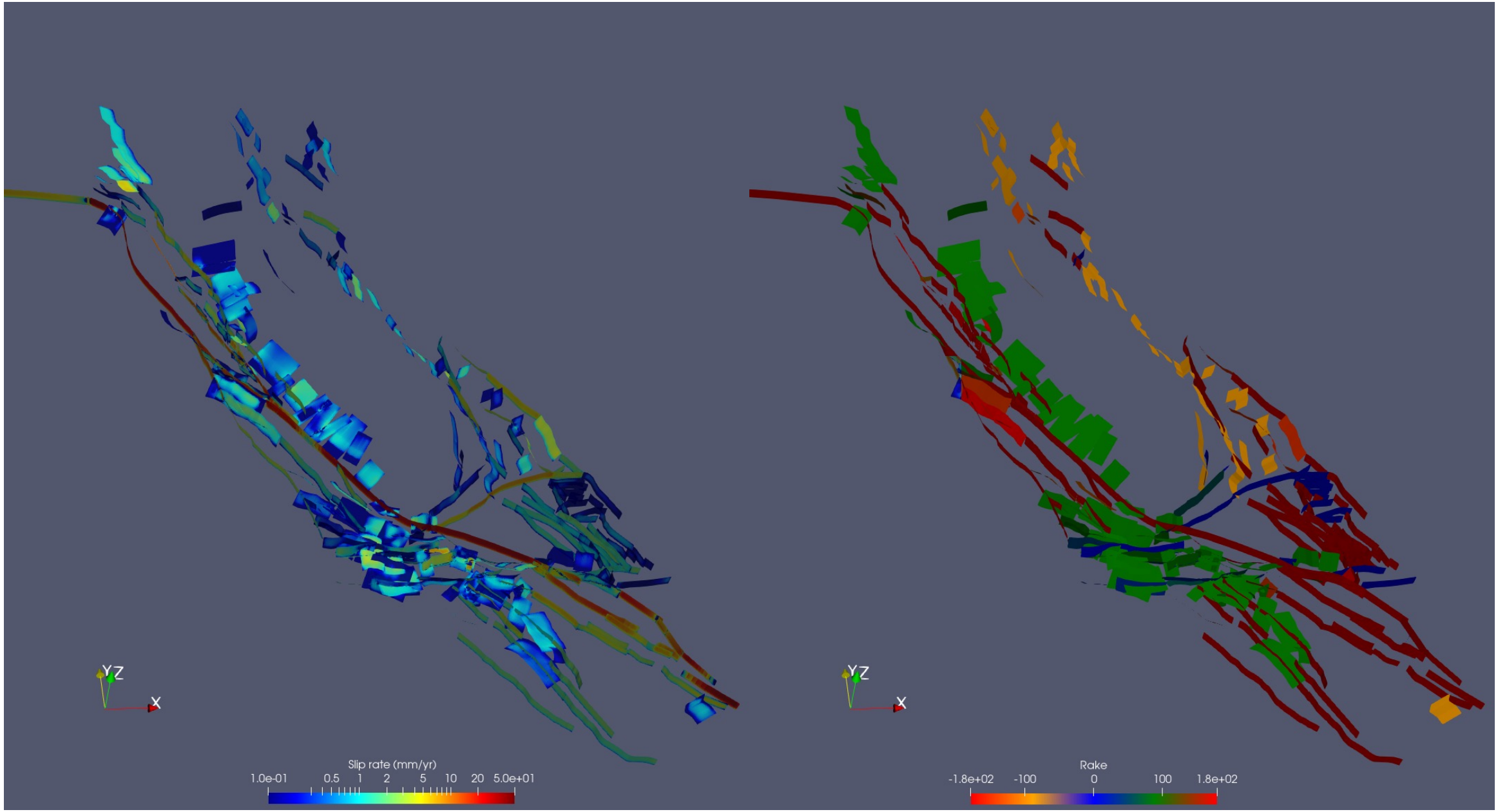
Fault geometry used in RSQ



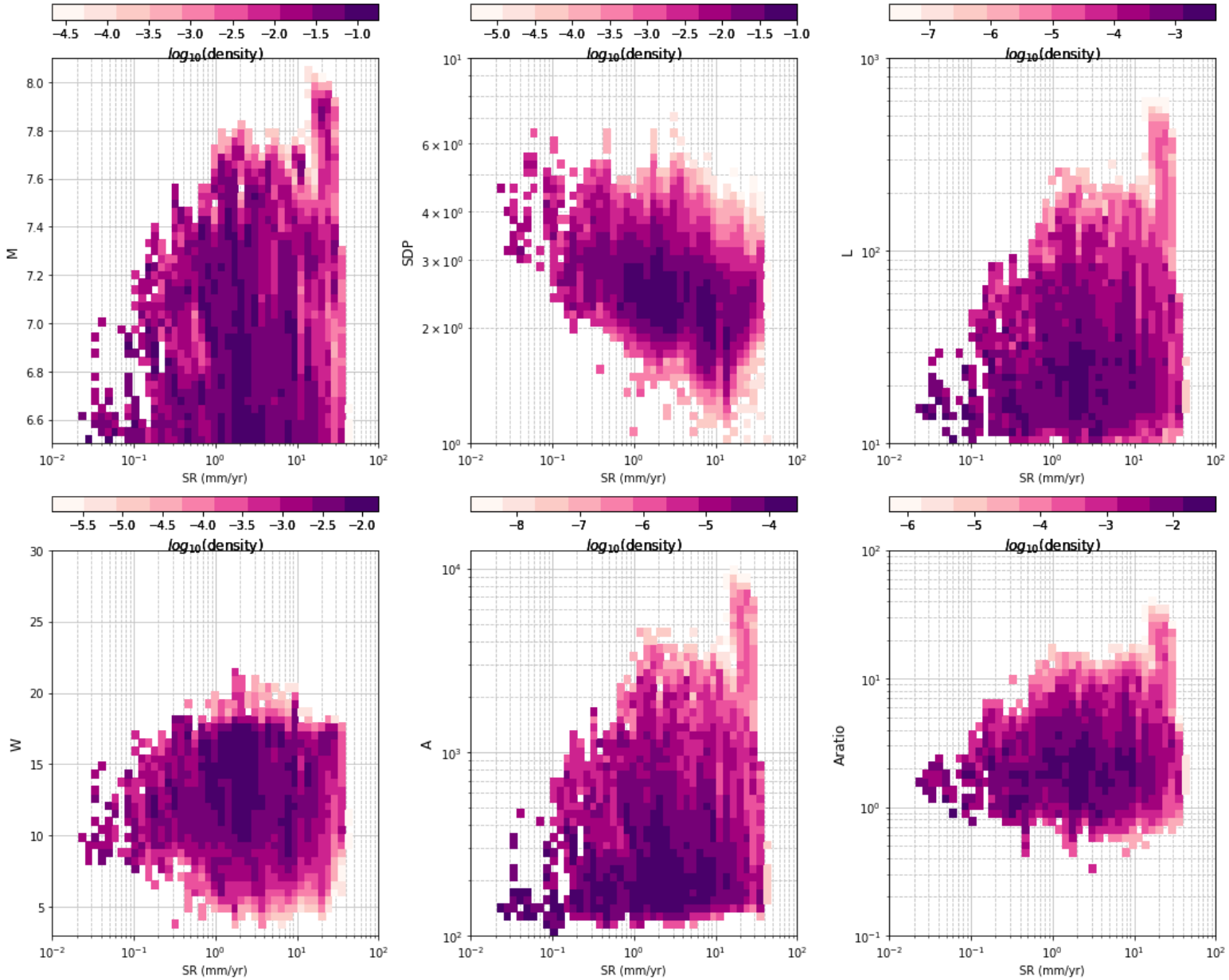
Strike-slip events

Raw data from RSQsim:

1. M
2. SR
3. A
4. L (FSL, FML …)
5. AD

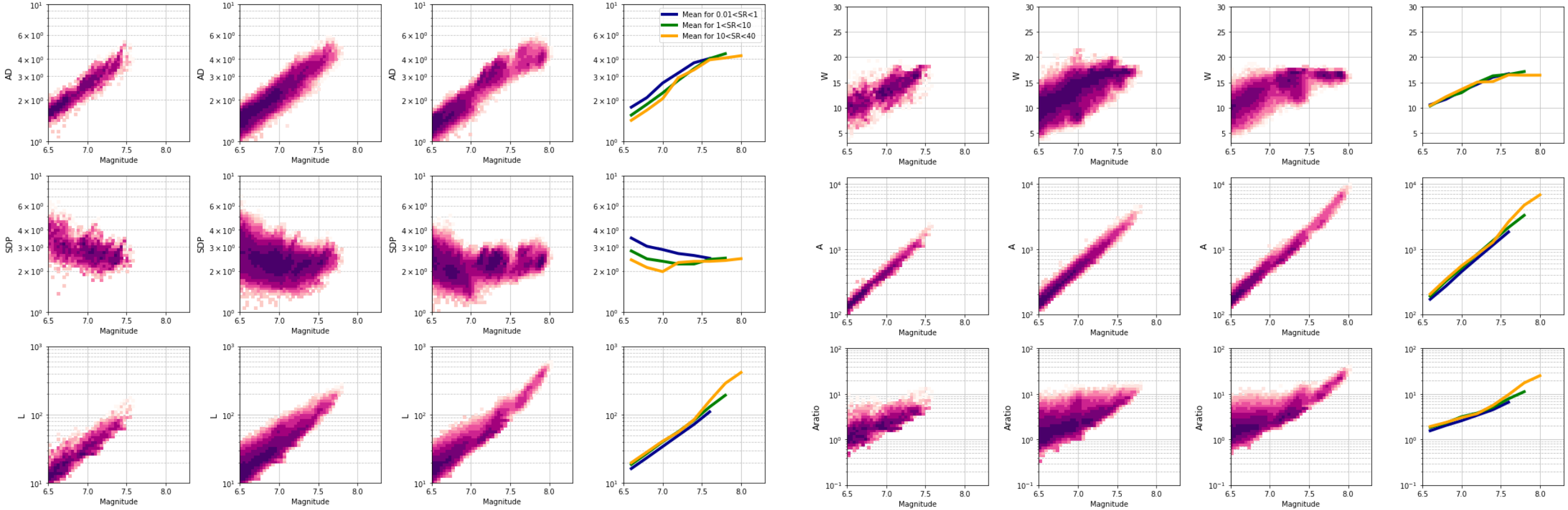
Derived data from them:

1. W (A/L)
2. Aspect ratio (L/W)
3. SDP (stress drop from AD, L and W)



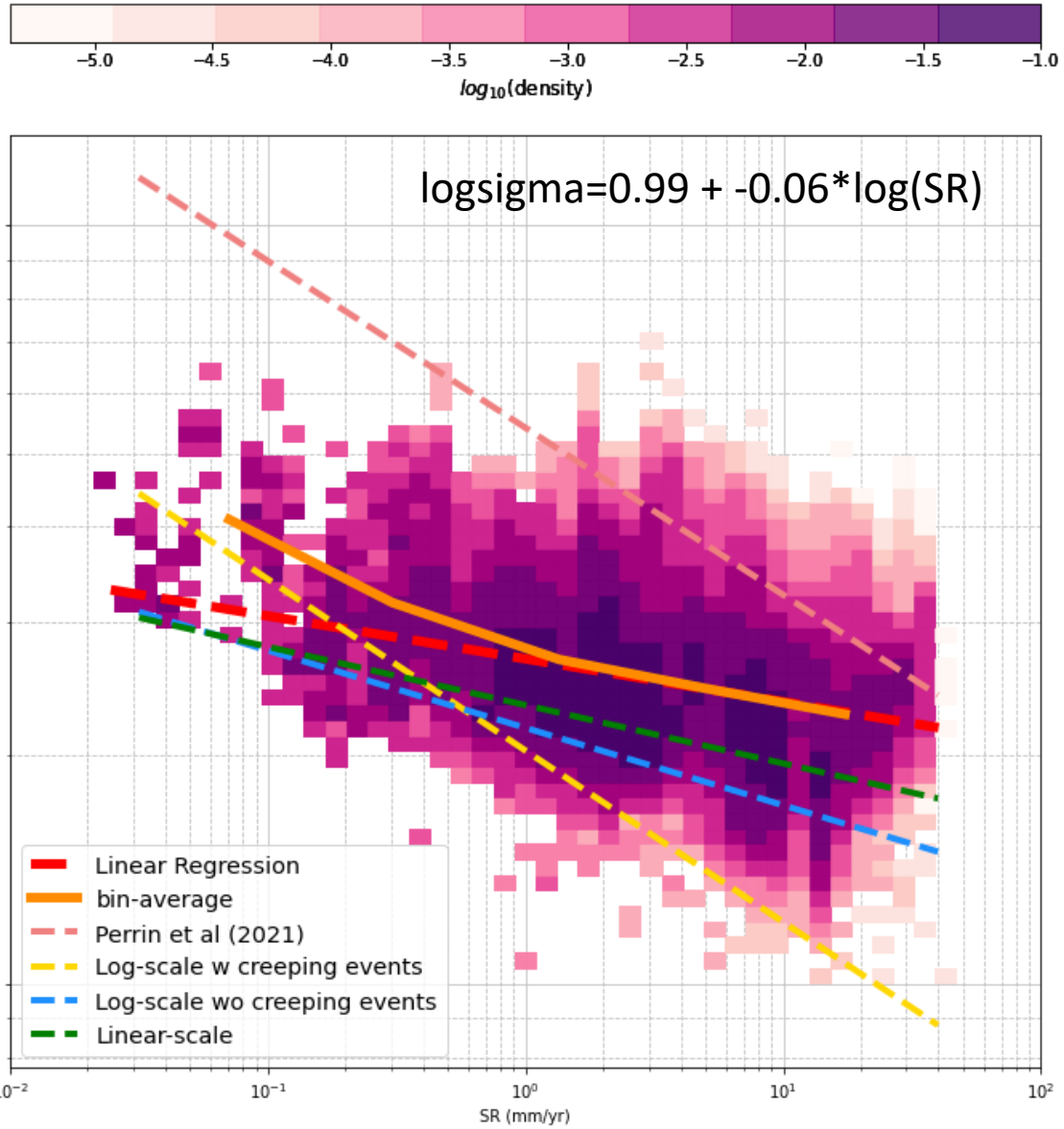
Comparison of subgroups (fault maturity)

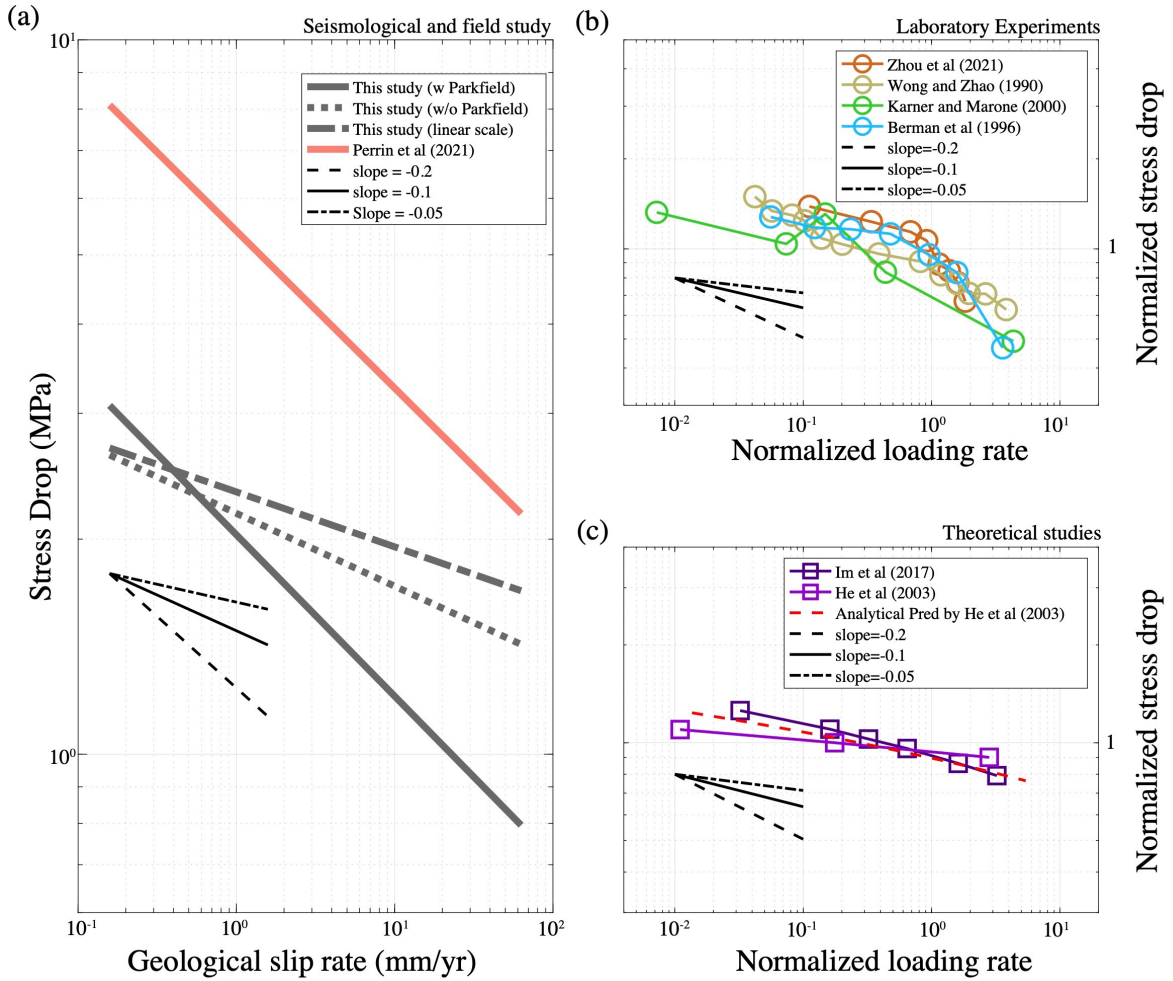
Immature fault: 0.01<SR< 1 mm/yr
Intermediate mature fault: 1 <SR< 10 mm/yr
Mature fault: 10 <SR< 40 mm/yr



Stress drop vs geological slip rate

logsigma=1.68 + -0.22*log(SR)
logsigma=0.71 + -0.23*log(SR)
logsigma=0.78 + -0.10*log(SR)
logsigma=0.85 + -0.08*log(SR)

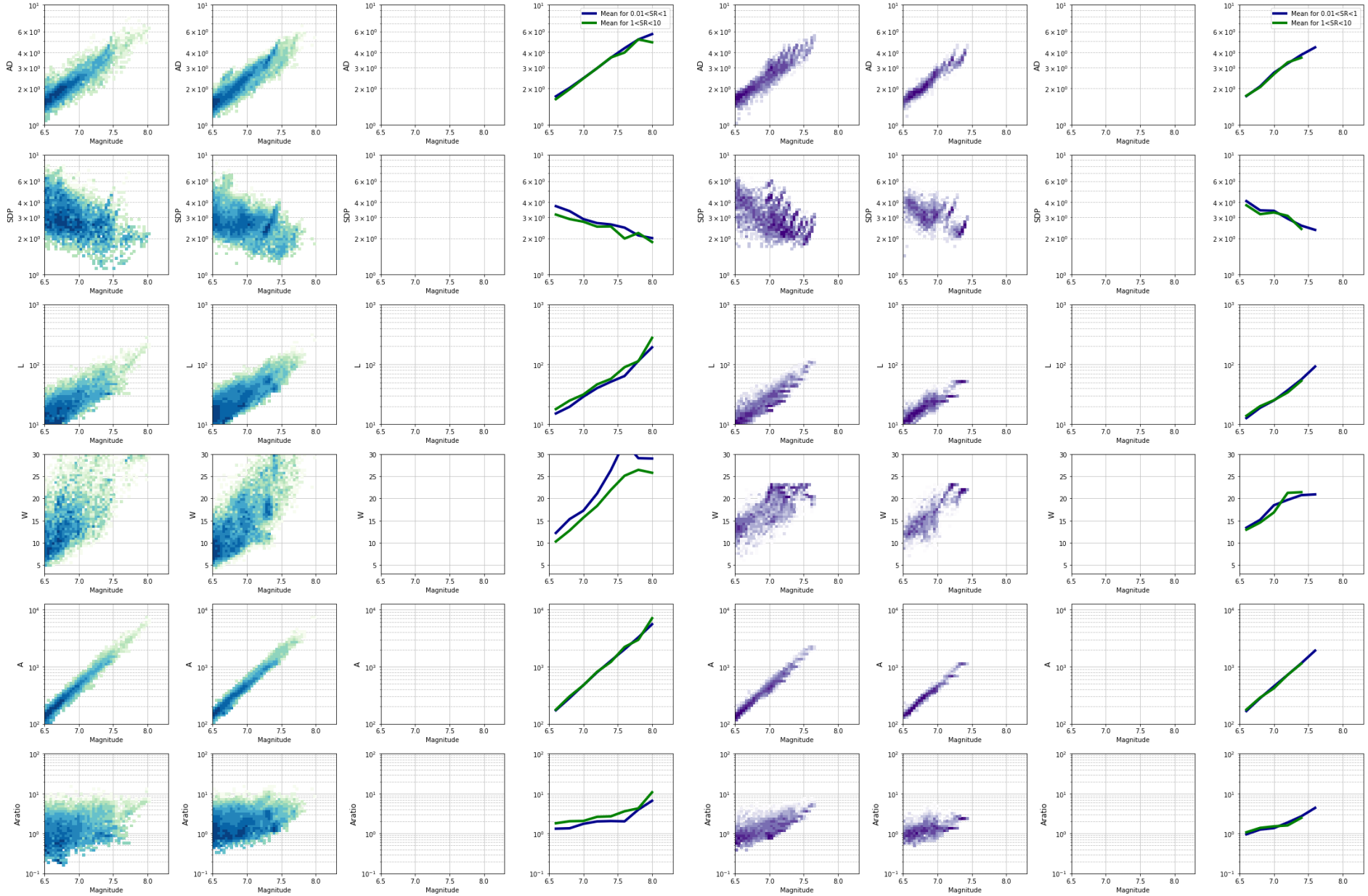




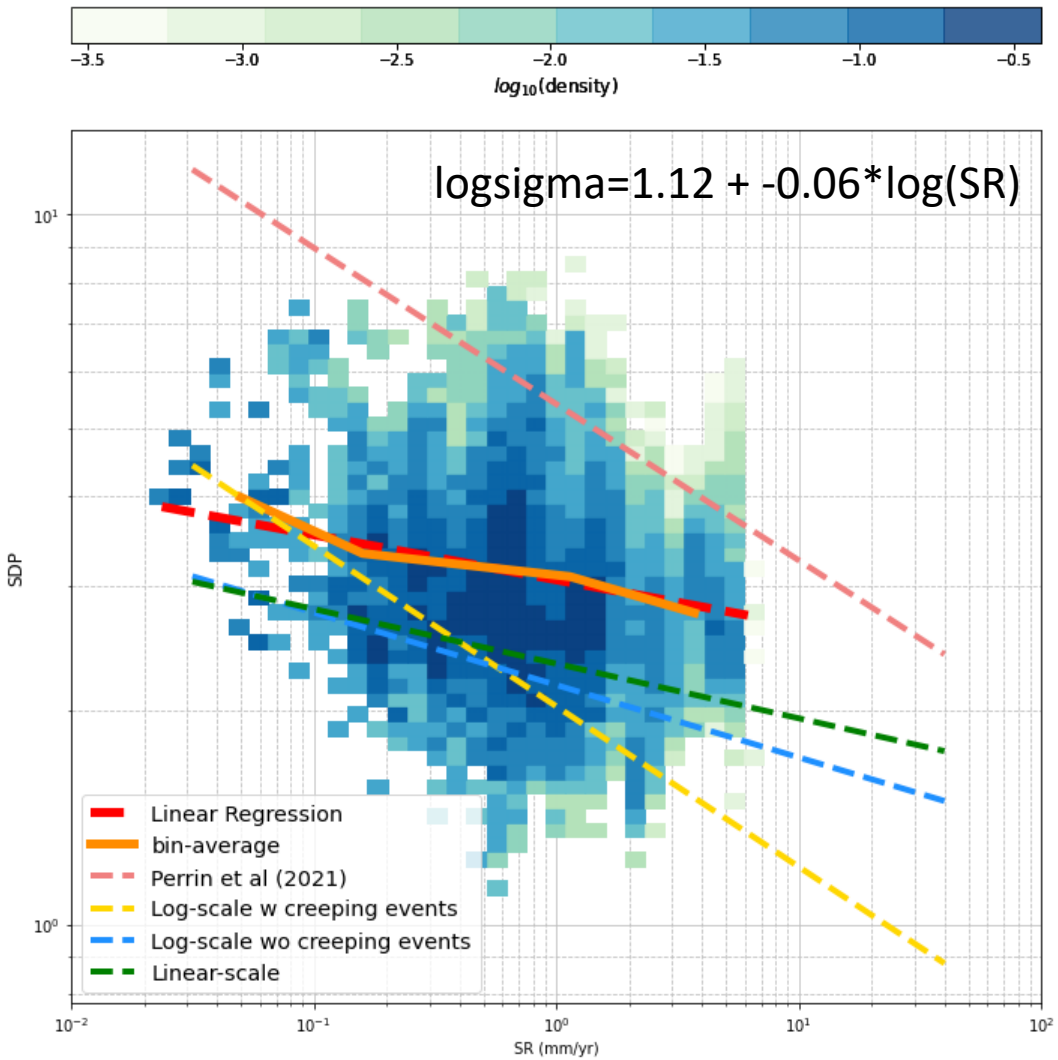
Reverse and normal events

Reverse

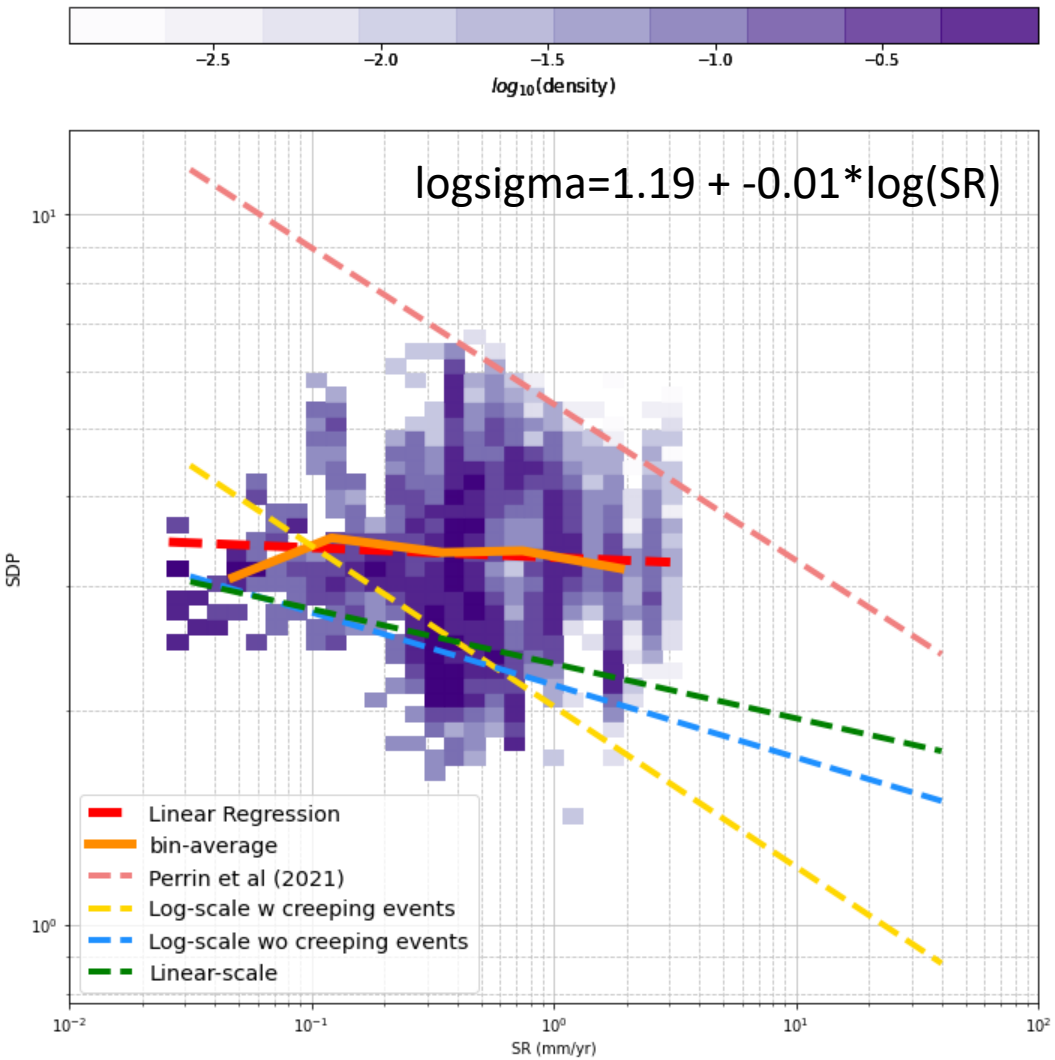
normal



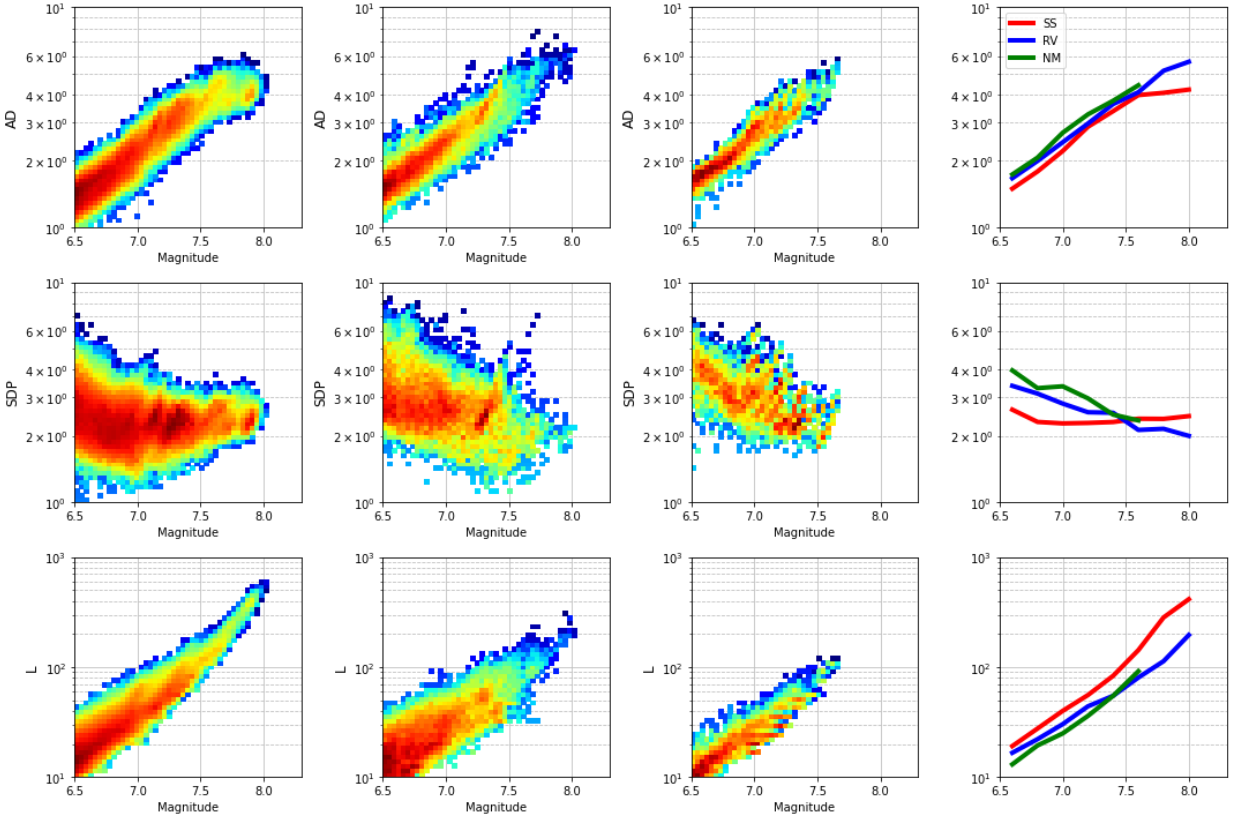
Reverse

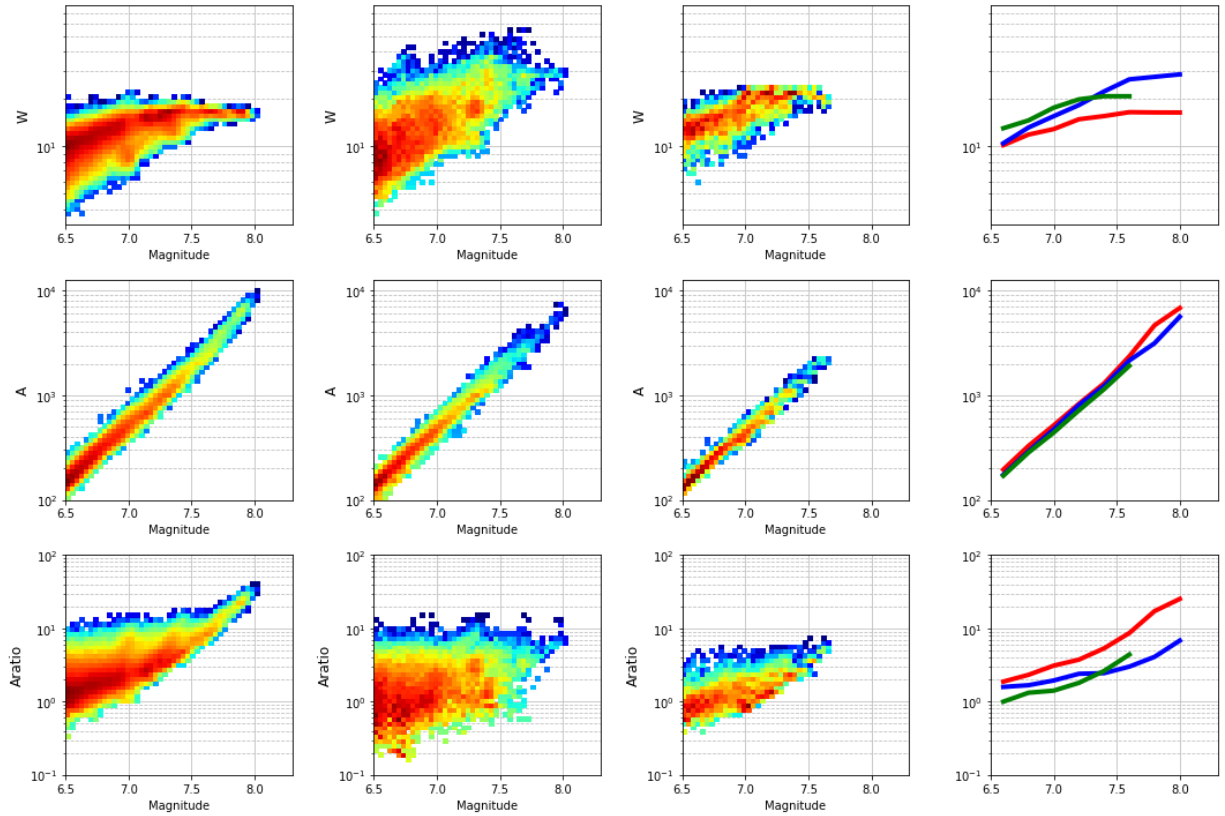


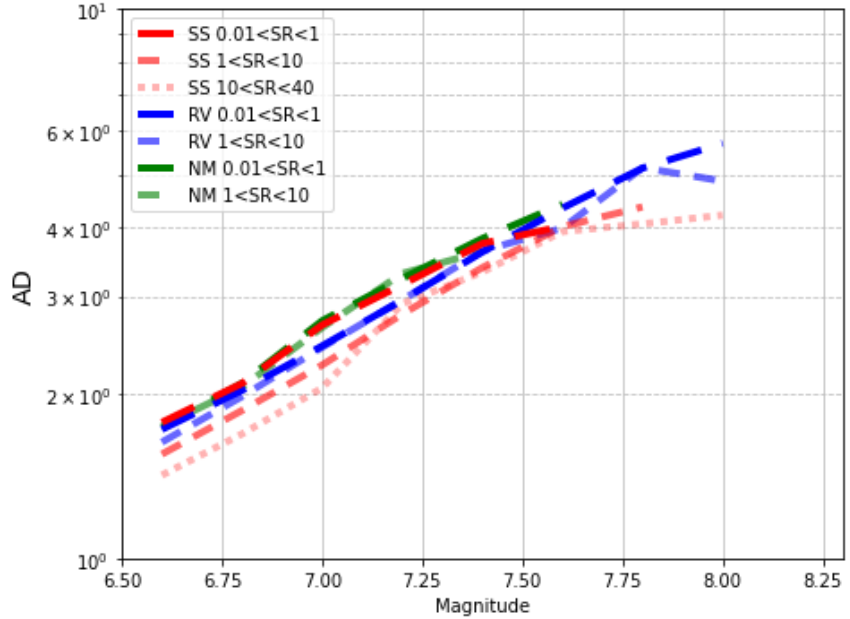
normal

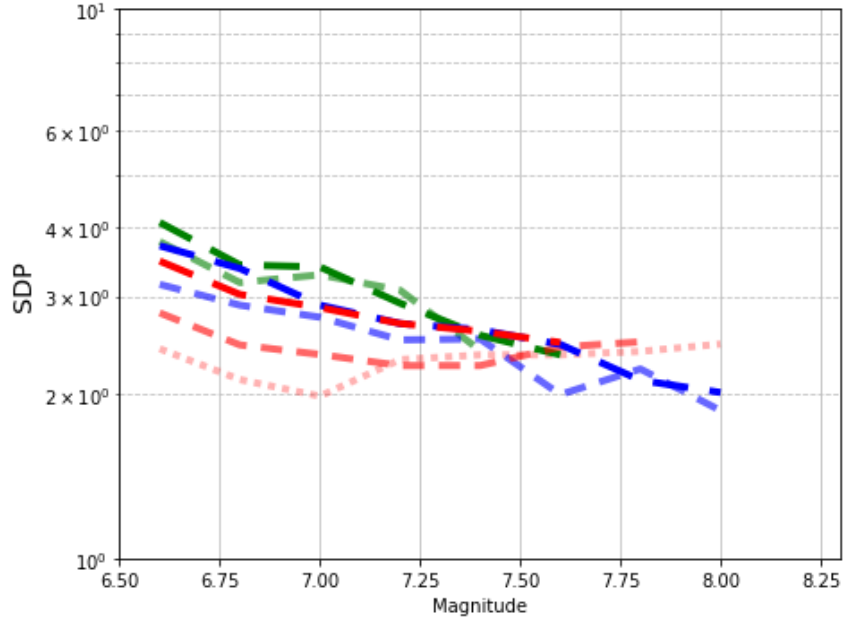


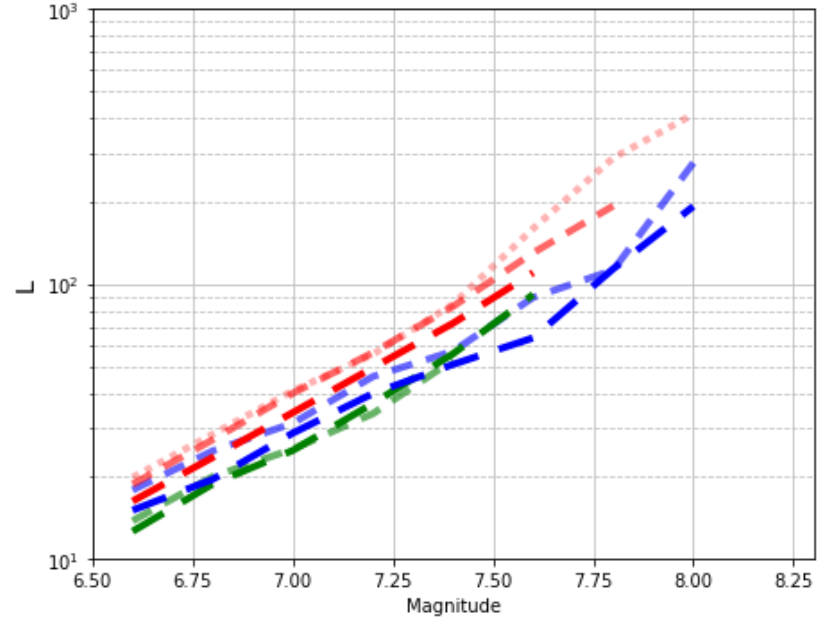
Fault style dependence

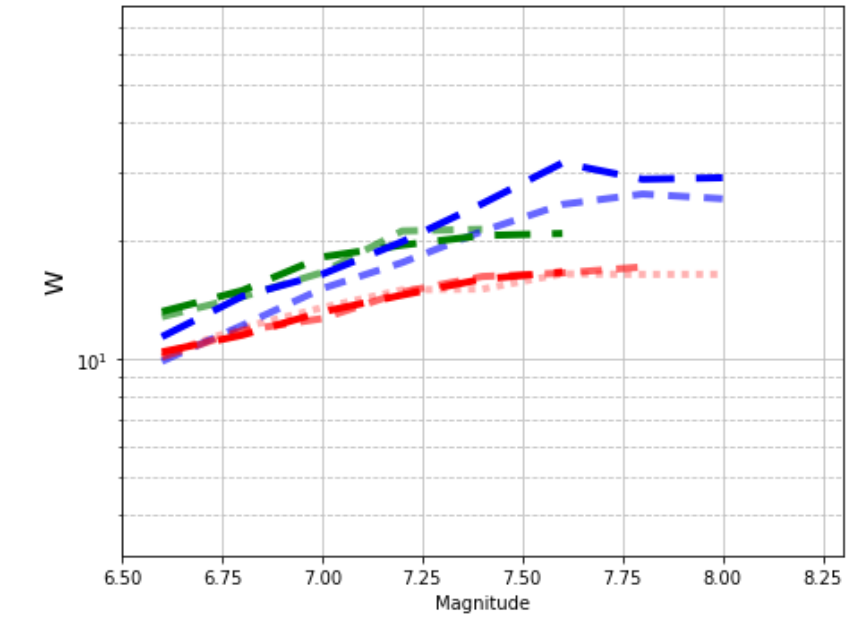


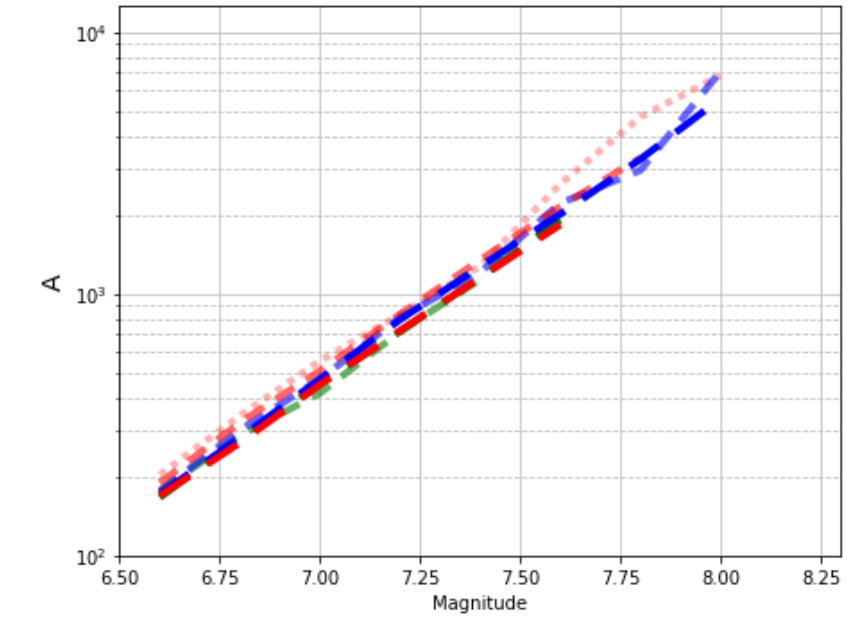


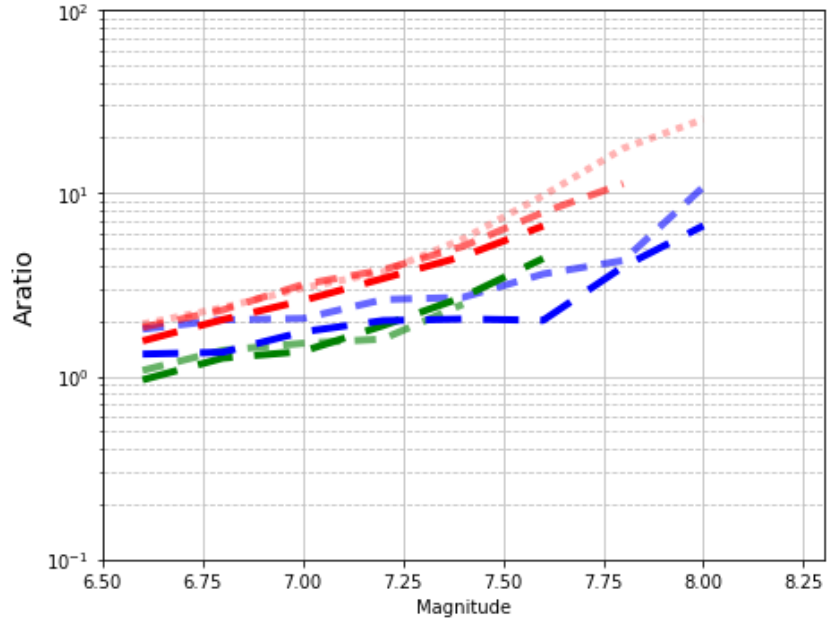

SS 0.01<SR<1
SS 1<SR<10
SS 10<SR<40
RV 0.01<SR<1
RV 1<SR<10
NM 0.01<SR<1
NM 1<SR<10
AD
Magnitude


SDP
Magnitude

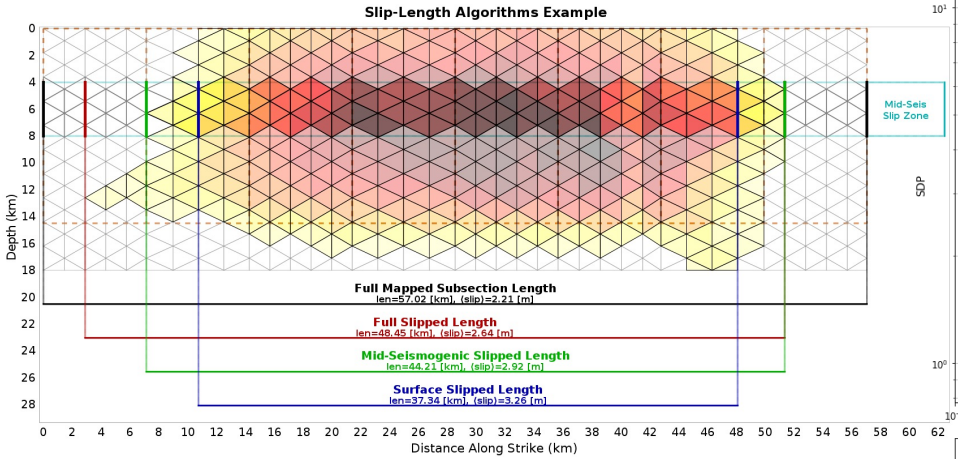

L
Magnitude

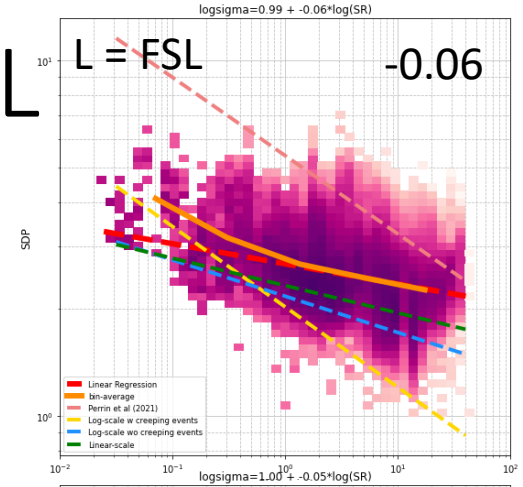

W
Magnitude

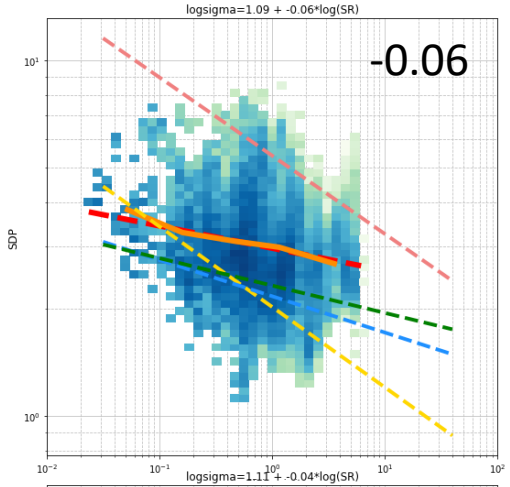

A
Magnitude

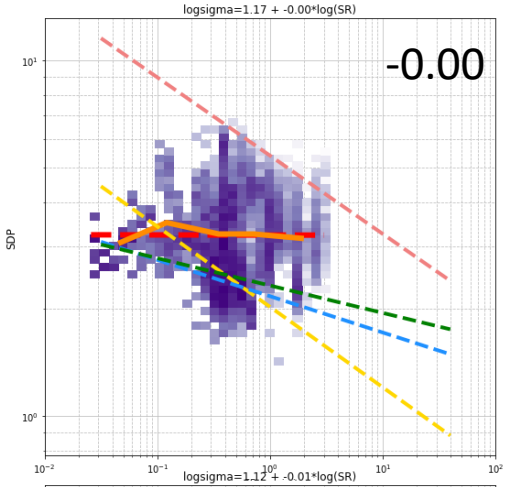

Aratio
Magnitude

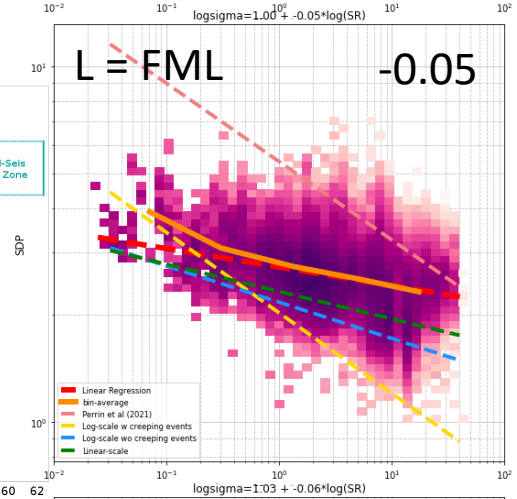
Change definition of L

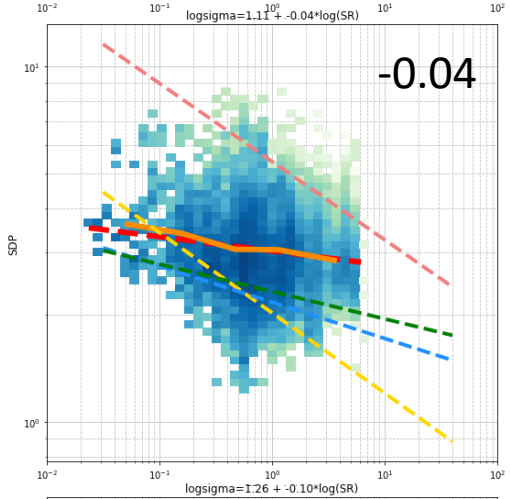


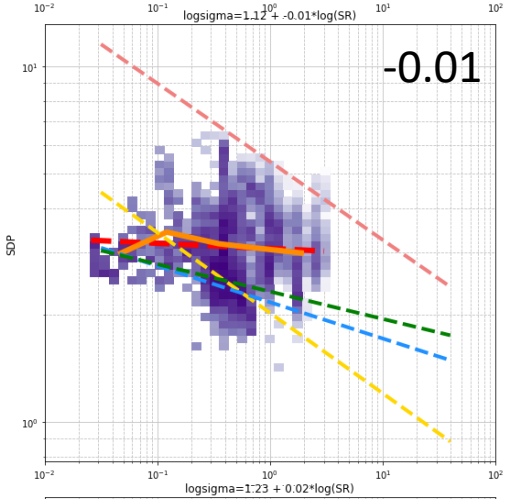


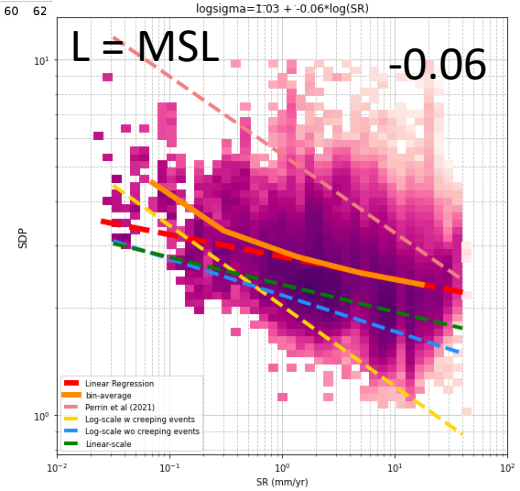


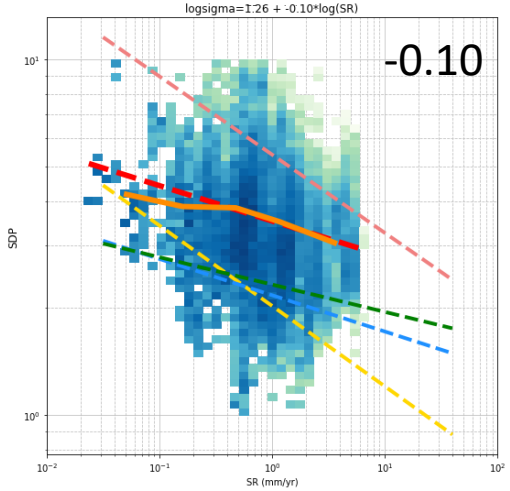


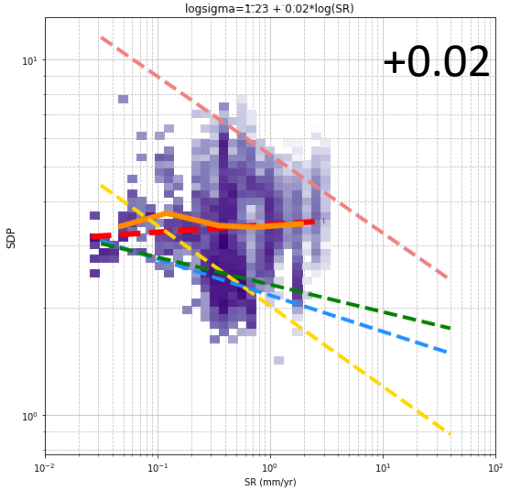












Next validation?

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Fault Interactions Enhance High-Frequency Earthquake Radiation

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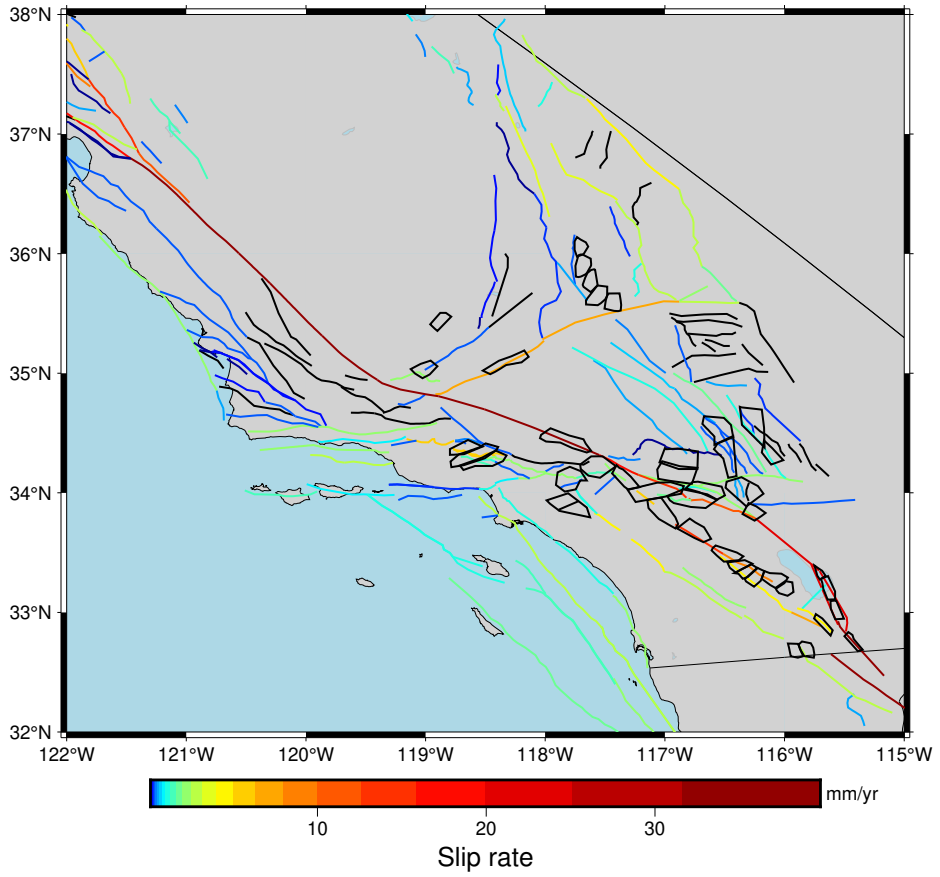
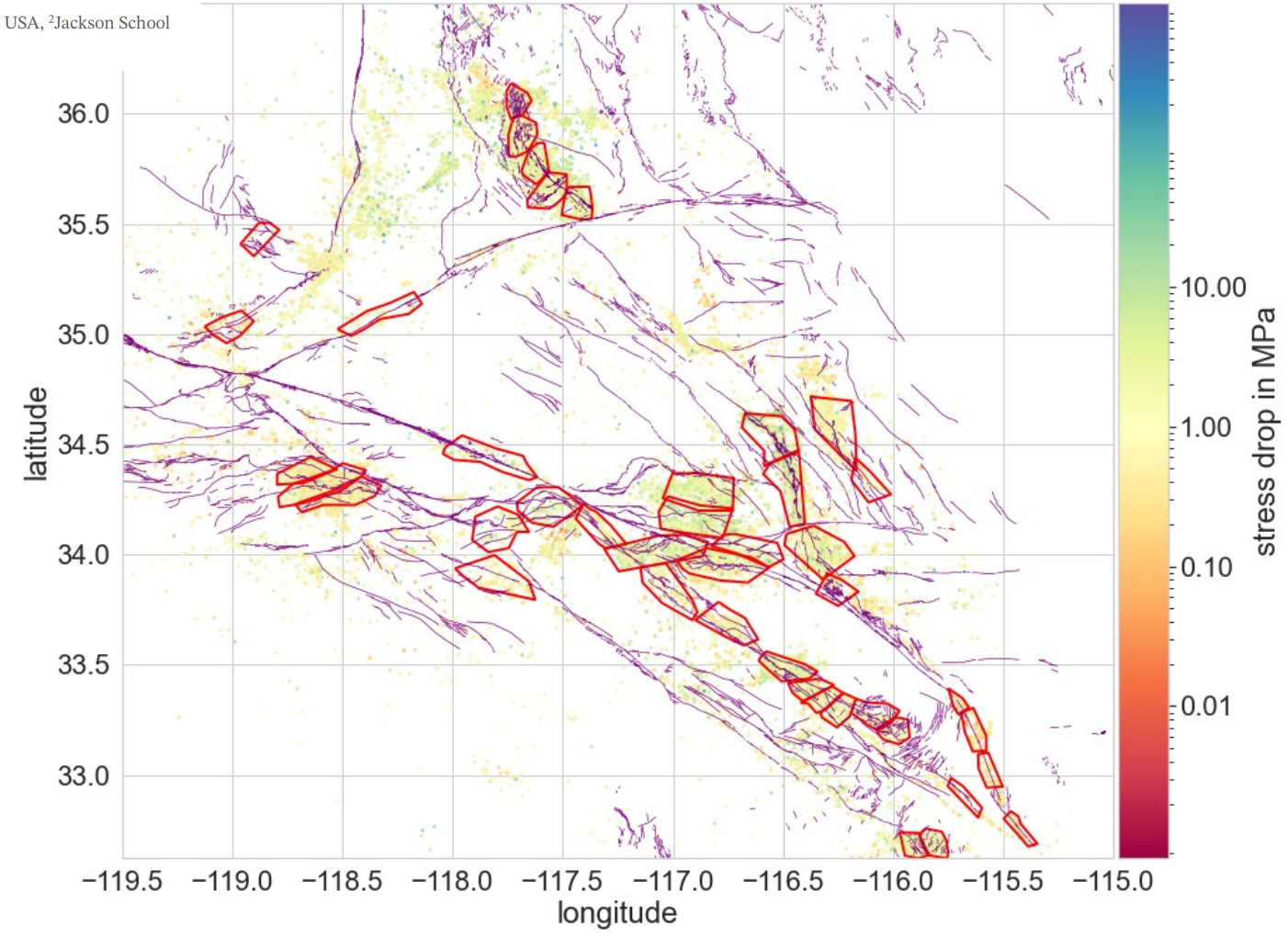
Key Points:

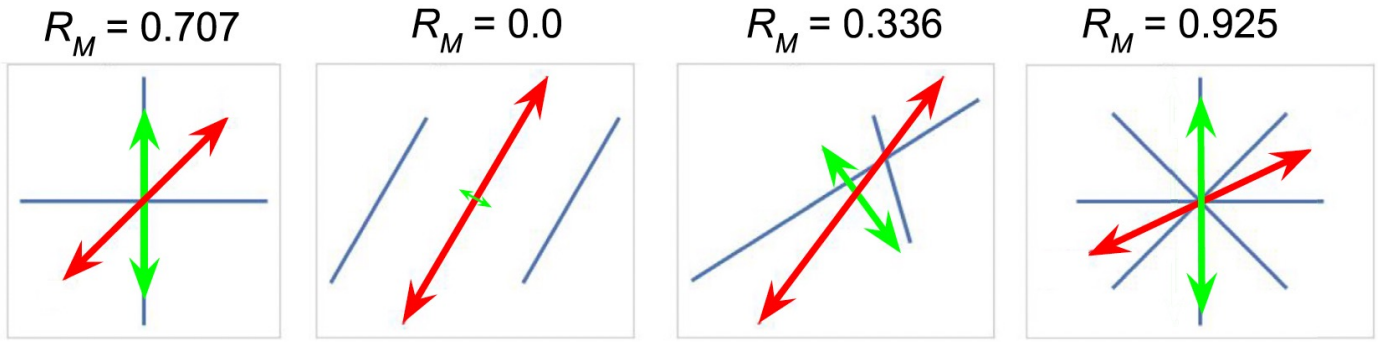
- We introduce two new metrics quantifying the complexity of interacting faults
- In Southern California, enhanced

A recent study connects stress drop of seismicity with the fault surface trace complexity and a power law has been found.





(a) misalignment, R_M



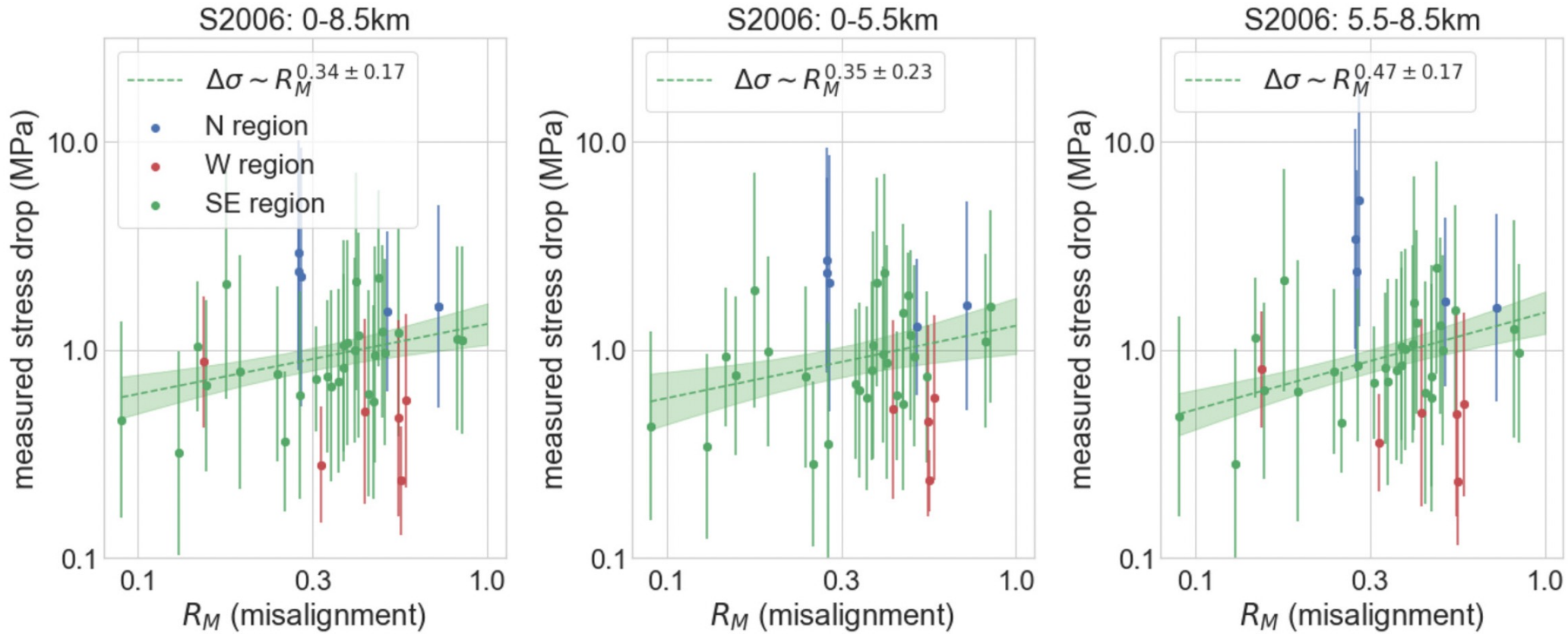
Legend

faults (real, simulated)

projection direction, maximum (not actual length)

projection direction, minimum

convex hull



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Evolving geometrical heterogeneities of fault trace data

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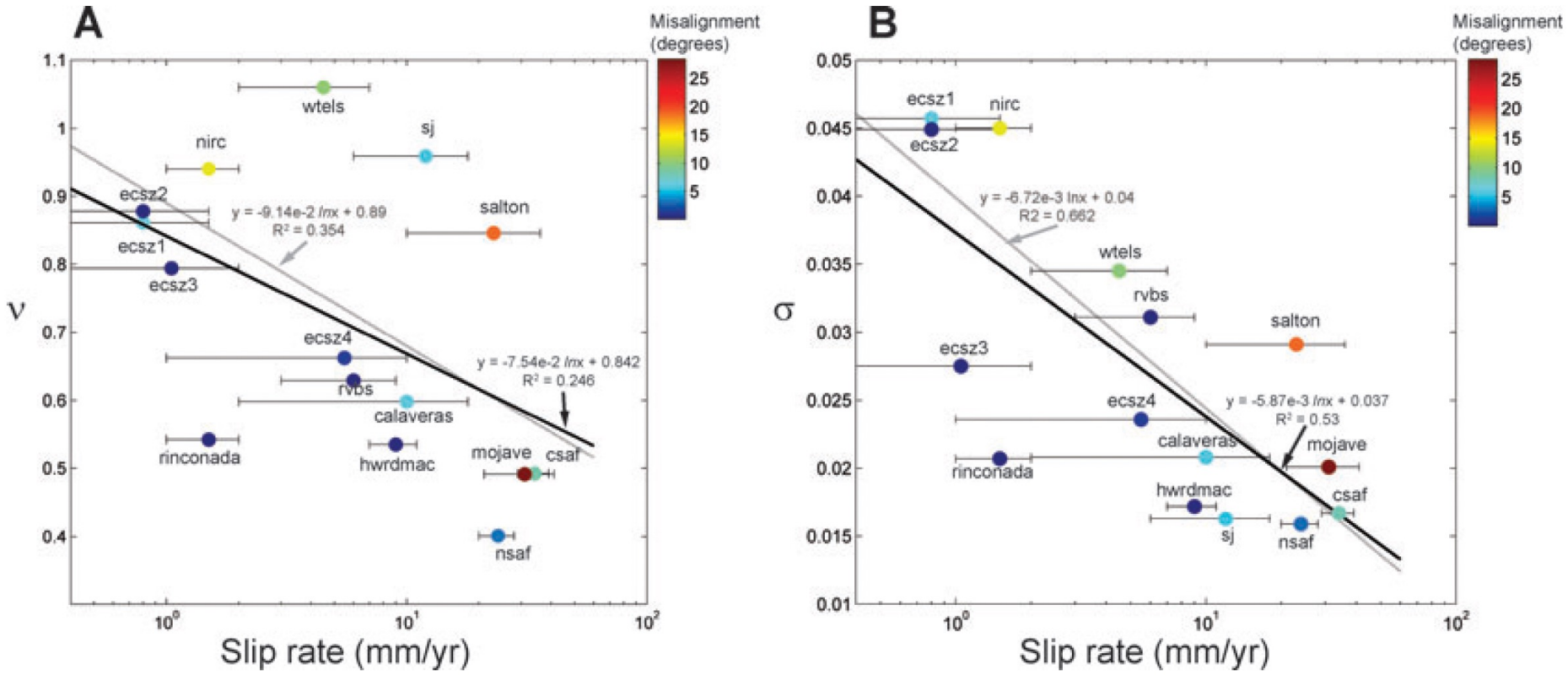

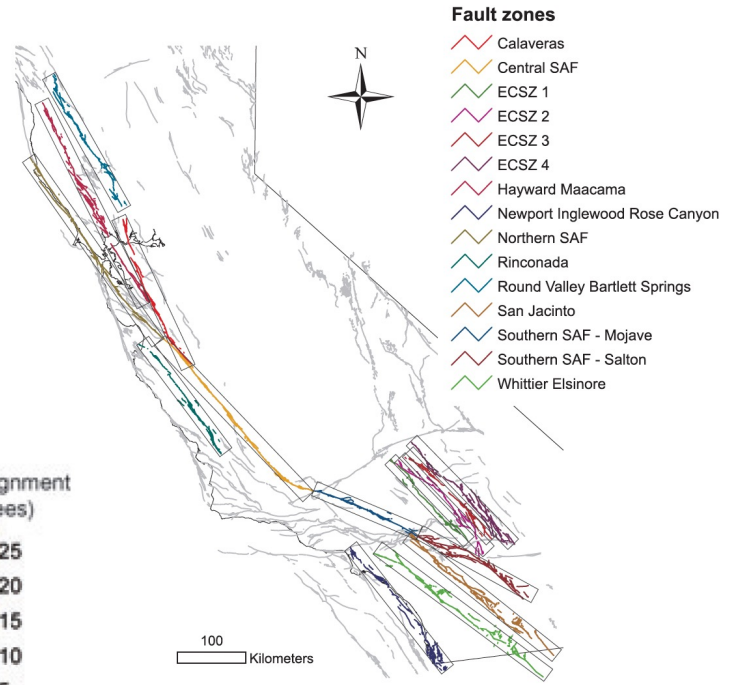

fornia with the faults used in this study. The fault zones are marked by their defining rectangles. See

Figure 7. (a) The relation between the circular standard deviation, the misalignment from plate motion direction and the recent slip rate for each fault zone. Black line is the least squares fit for the data using a log-linear relation. The grey line is the same, but dropping the Rinconada data point. The corresponding equations and R^2 values are next to each fit. (b) Same as a, but for the circular standard error.

Can we derive a relation of SR-sigma (surface trace complexity) from seismicity (may or may not support that from previous study)? Any thoughts?