

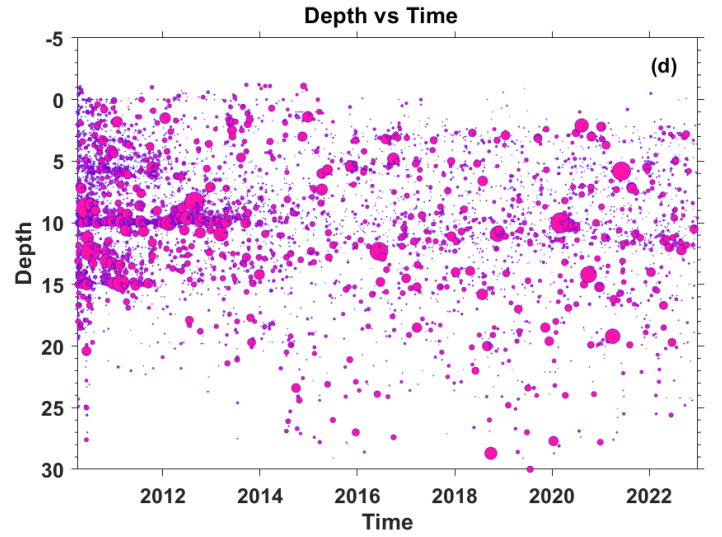
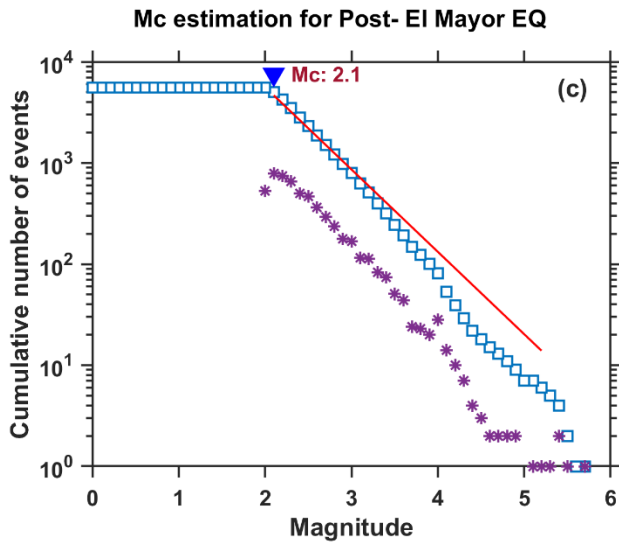
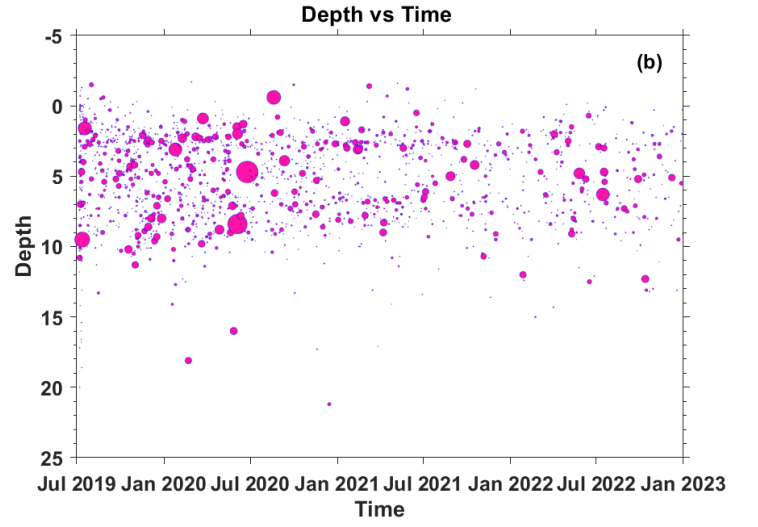
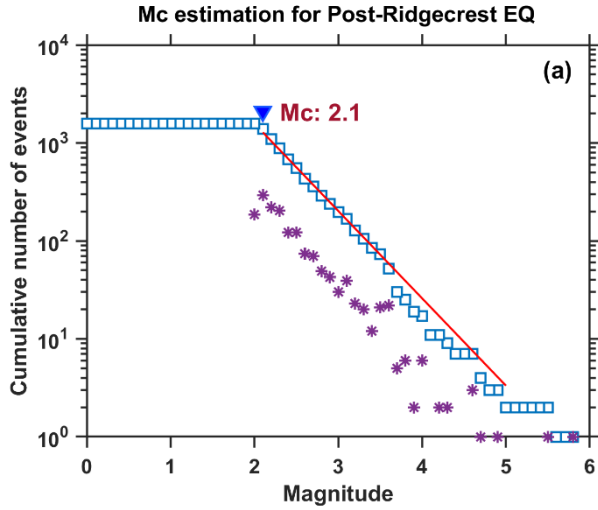


Fig. S1. a) M_c obtained followed by the occurrence of 2019 Ridgecrest series, b) Depth-wise distribution of seismicity through 07 July 2019-31 December 2022. Pink star indicates earthquakes of $M \geq 2.1$, c) M_c obtained followed by the occurrence of 2010 El-Mayor earthquake, d) Depth-wise distribution of seismicity through 05 April 2010- 31 December 2022, Pink star indicates earthquakes of $M \geq 2.1$.

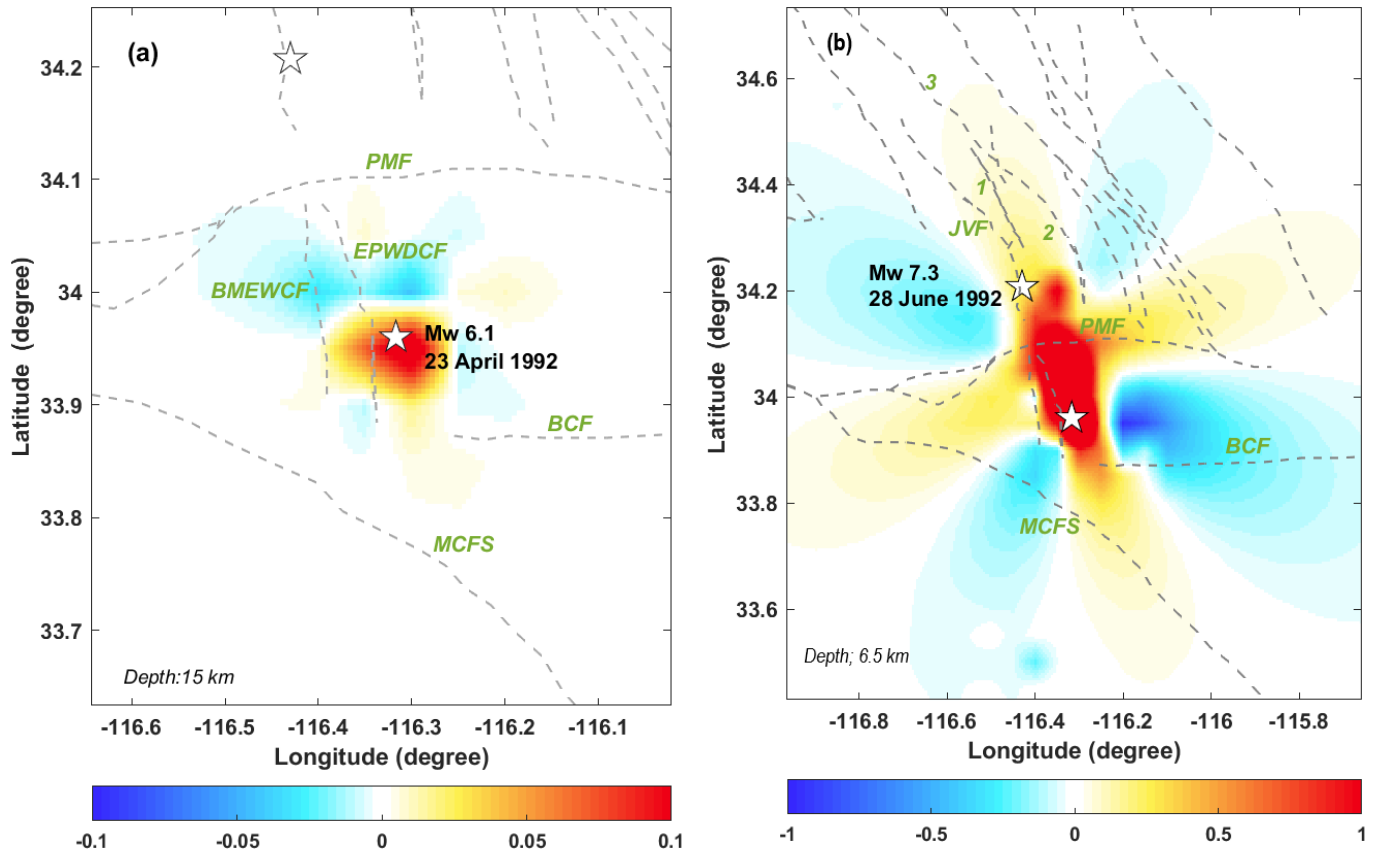


Figure S2: a) Background CCS variation before the occurrence of M_w 6.1 (white star) since 1990 at 15 km, b) CCS variation before the M_w 7.3 (white star) since 1990 at 6.5 km. Grey line indicate major faults; BMEWCF: Burnt Mountain East Wide Canyon fault, EPWDCF: Eureka Peak West Deception Canyon fault, PMF: Pinto Mountain Fault, BCF: Blue Cut Fault, MCFS: Mission Creek Fault Strand, JVF: Johnson Valley Fault, 1-Homestead valley fault, 2-Emerson fault, and 3-Camp Rock fault.

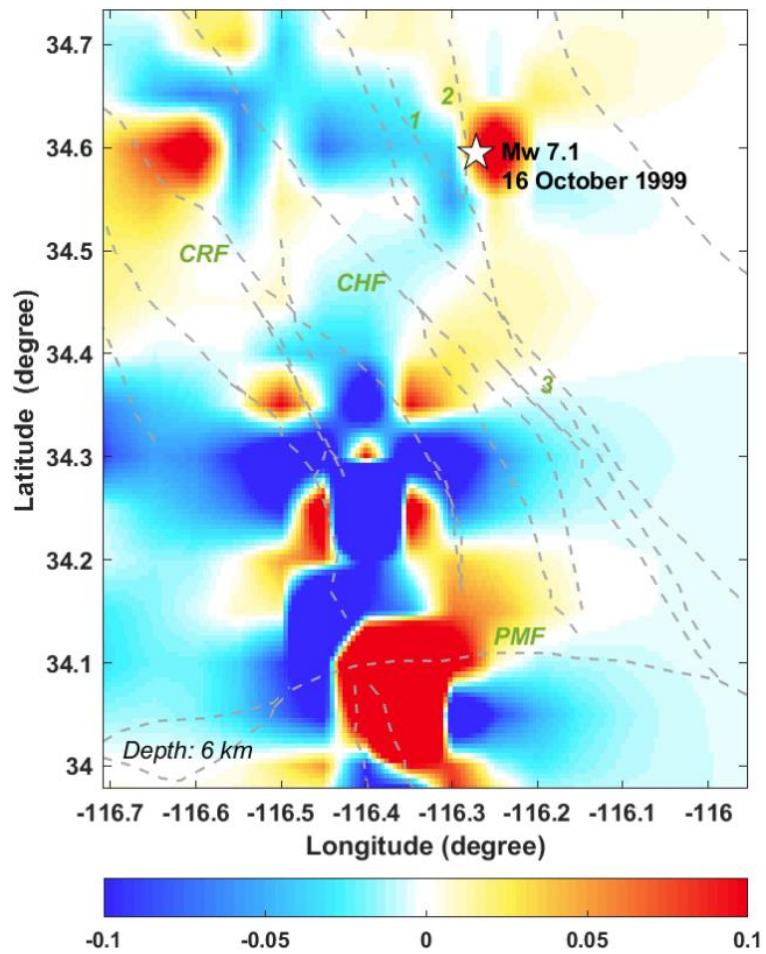
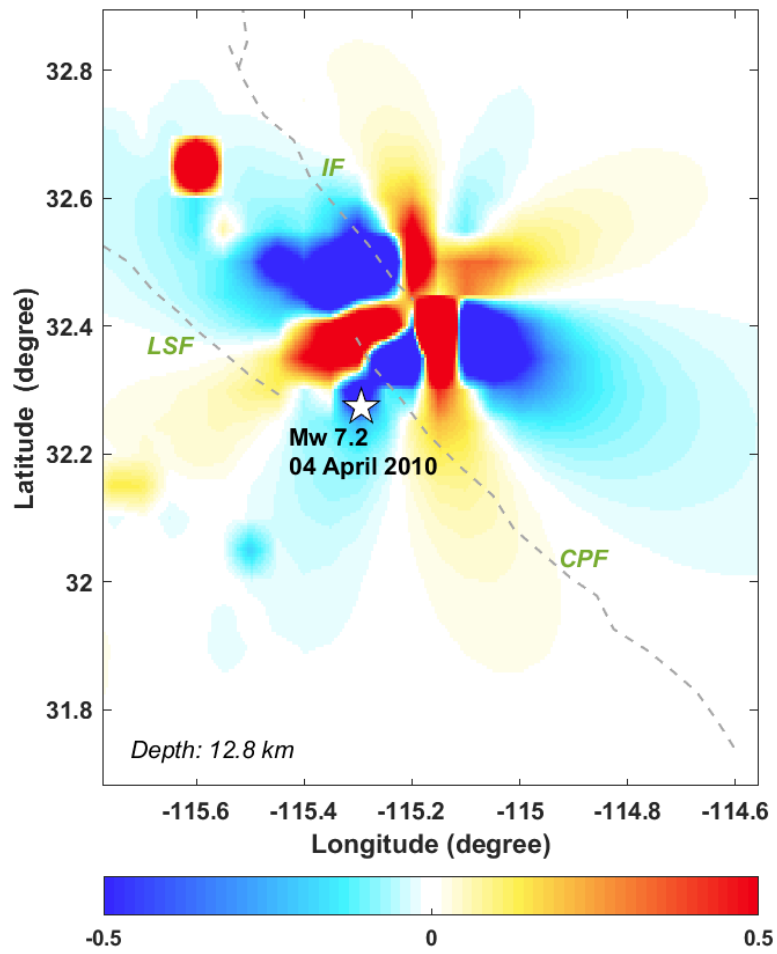


Figure S3: Background CCS variation before M_w 7.1(white star) measured at 6 km. Grey line indicate major faults in the study region. PMF: Pinto Mountain fault, CHF: Calico Hidalgo fault, CRF: Camp Rock fault, 1, 2-Lavic Lake North West Bullion, and 3- Pisan Bullion West Bullion fault.



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Figure S4: CCS before the rupture of M_w 7.2 (white star) at 12.8 km. Grey dashed line indicates faults. LSF: Laguna Salada Fault, IF: Imperial Fault, CPF: Cerro Prieto Fault.

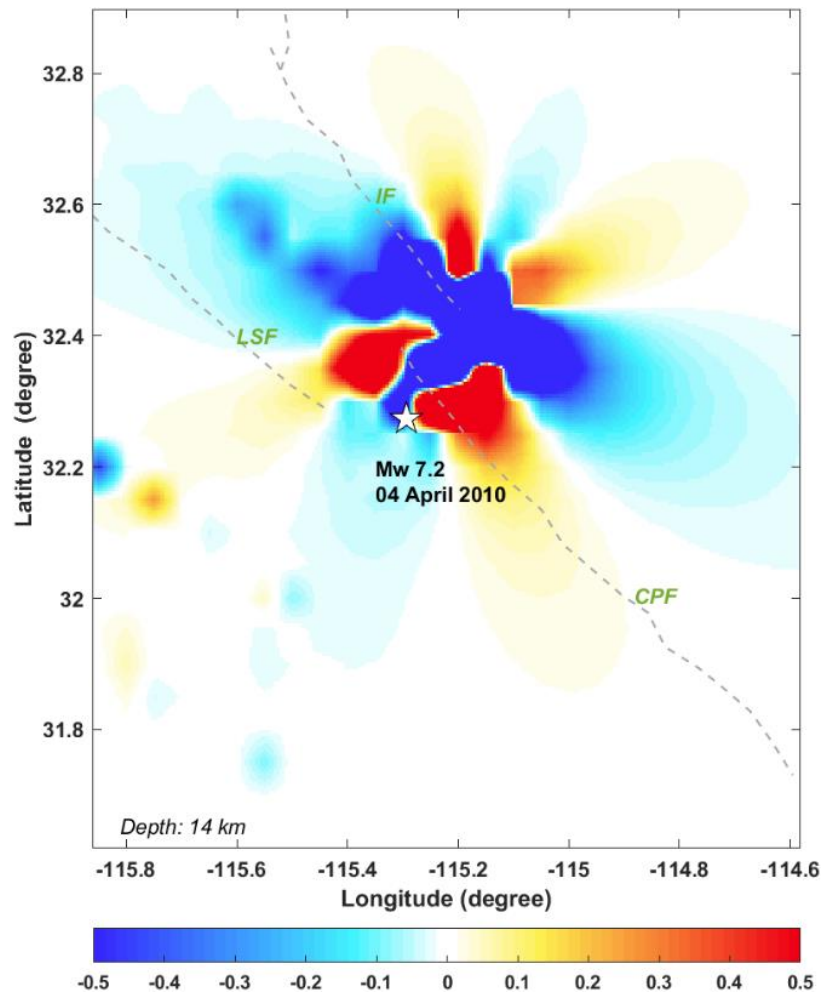


Figure S5: Background CCS before the rupture of M_w 7.2(white star) at 14 km. Grey dashed line indicates faults. LSF: Laguna Salada Fault, IF: Imperial Fault, CPF: Cerro Prieto Fault.

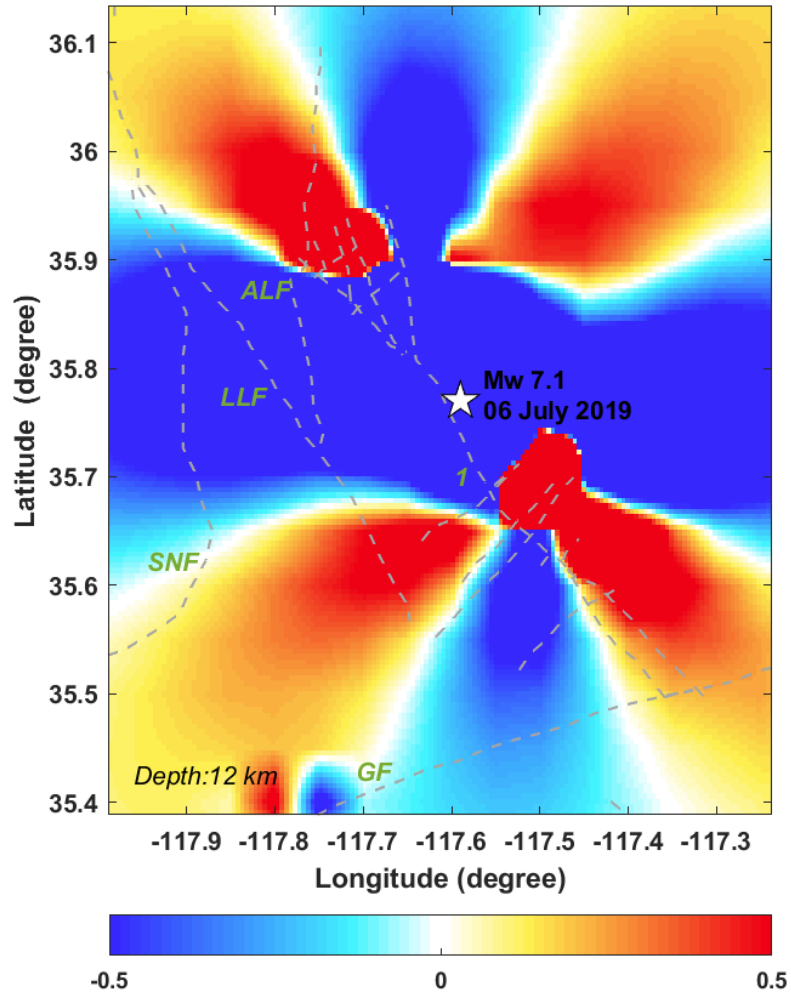


Figure S6: CCS before the rupture of M_w 7.1 (white star) at depth 12 km. Grey dashed lines are faults, GF: Garlock fault, SNF: Sierra Nevada fault, LLF: Little Lake fault, ALF: Airport Lake fault.

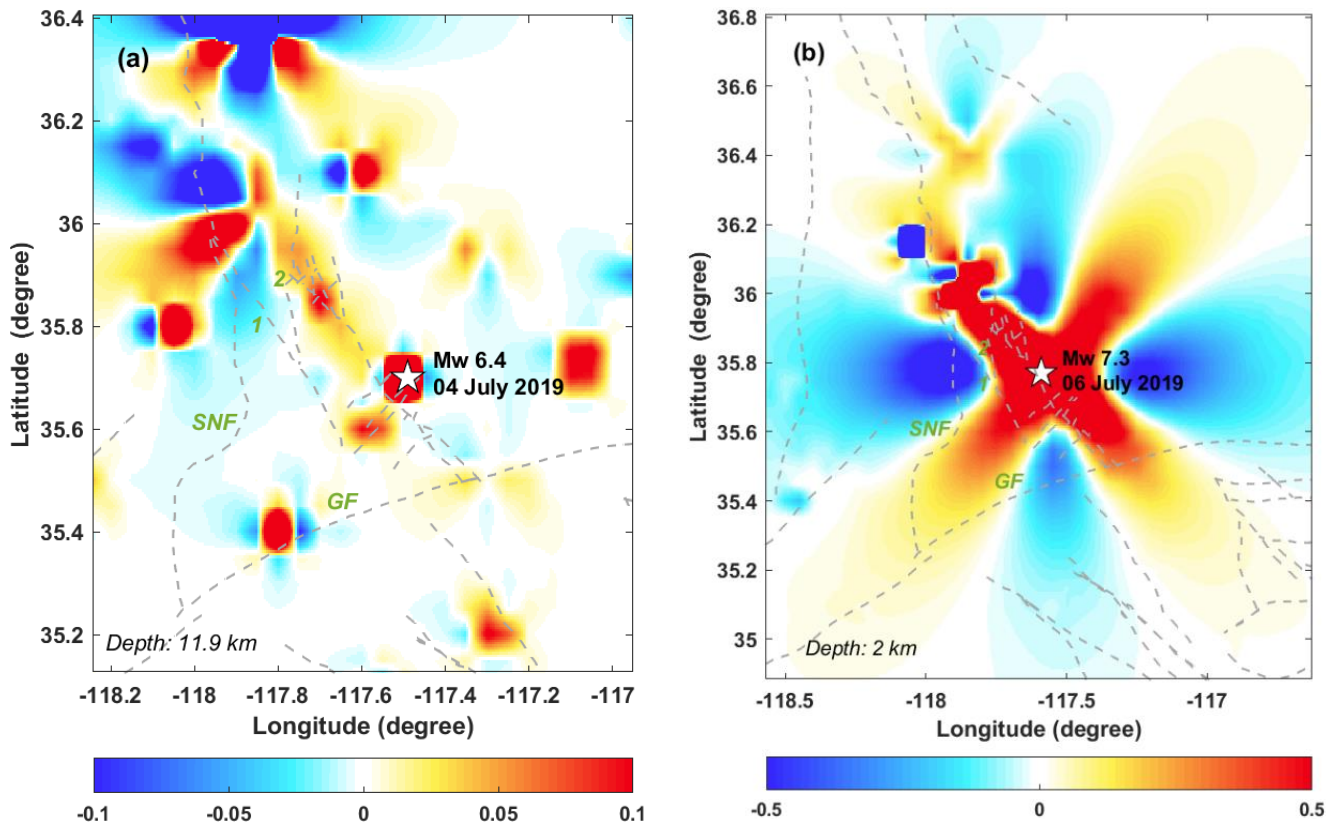


Figure S7: a) Background CCS before the rupture of M_w 6.4 (white star) since 1990, b) Background CCS before the rupture of M_w 7.1 (white star). Grey dashed lines indicates major faults, GF: Garlock fault, SNF: Sierra Nevada fault, 1-Little Lake fault zone, 2-Airport Lake fault zone.

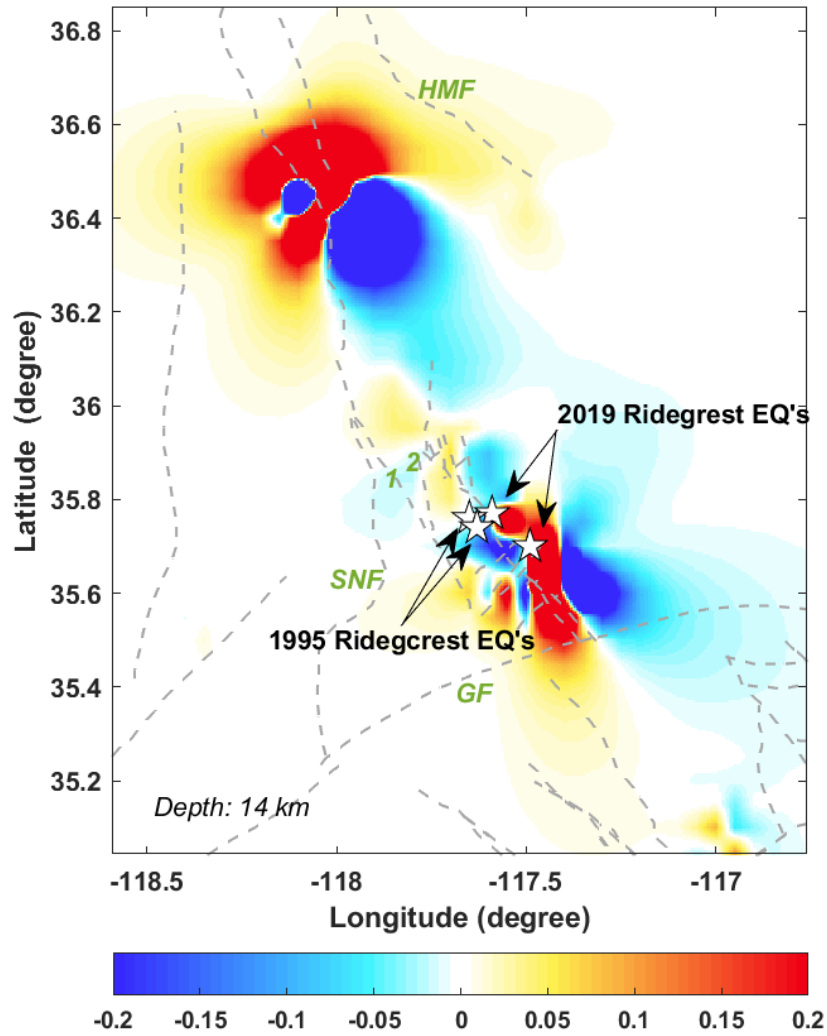


Figure S8: CCS following the rupture of $M_w 7.1$ (white star) at depth 14 km considering SDR: $251^\circ/30^\circ/-48^\circ$. Grey dashed lines are faults, GF: Garlock fault, SNF: Sierra Nevada fault, 1- Little Lake fault, 2- Airport Lake fault.

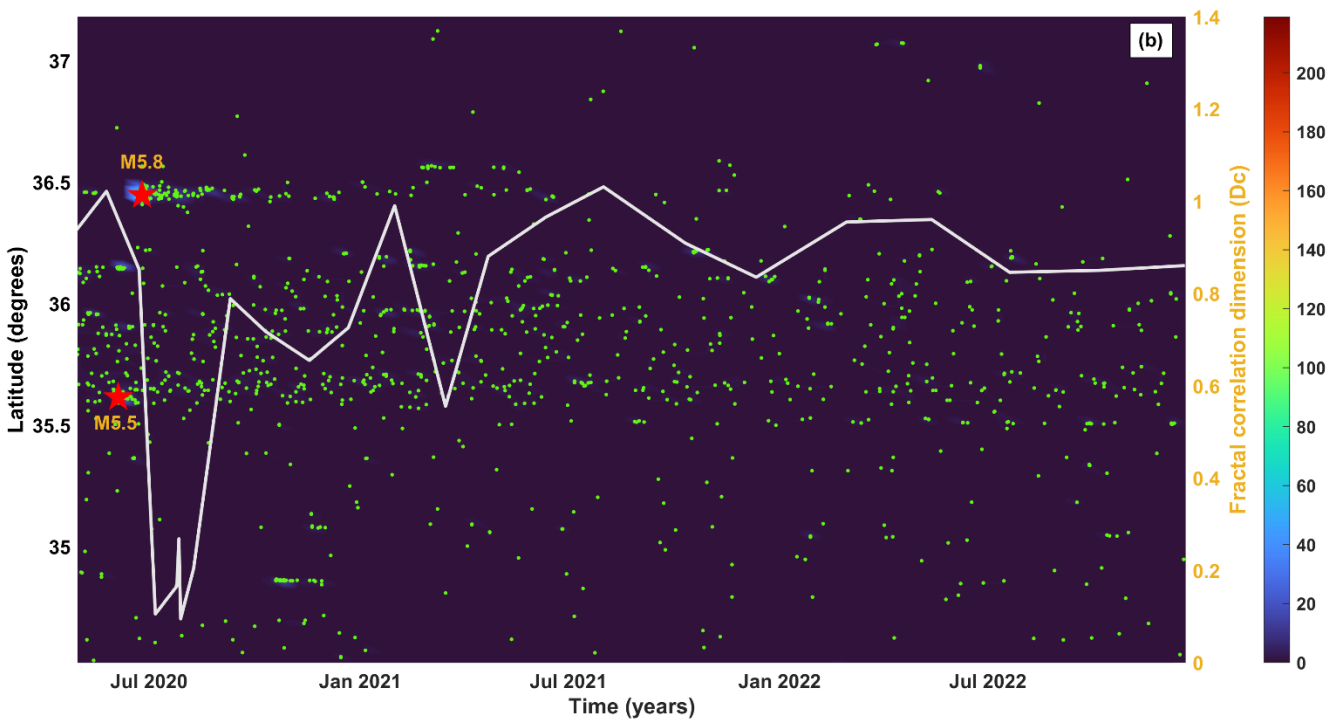
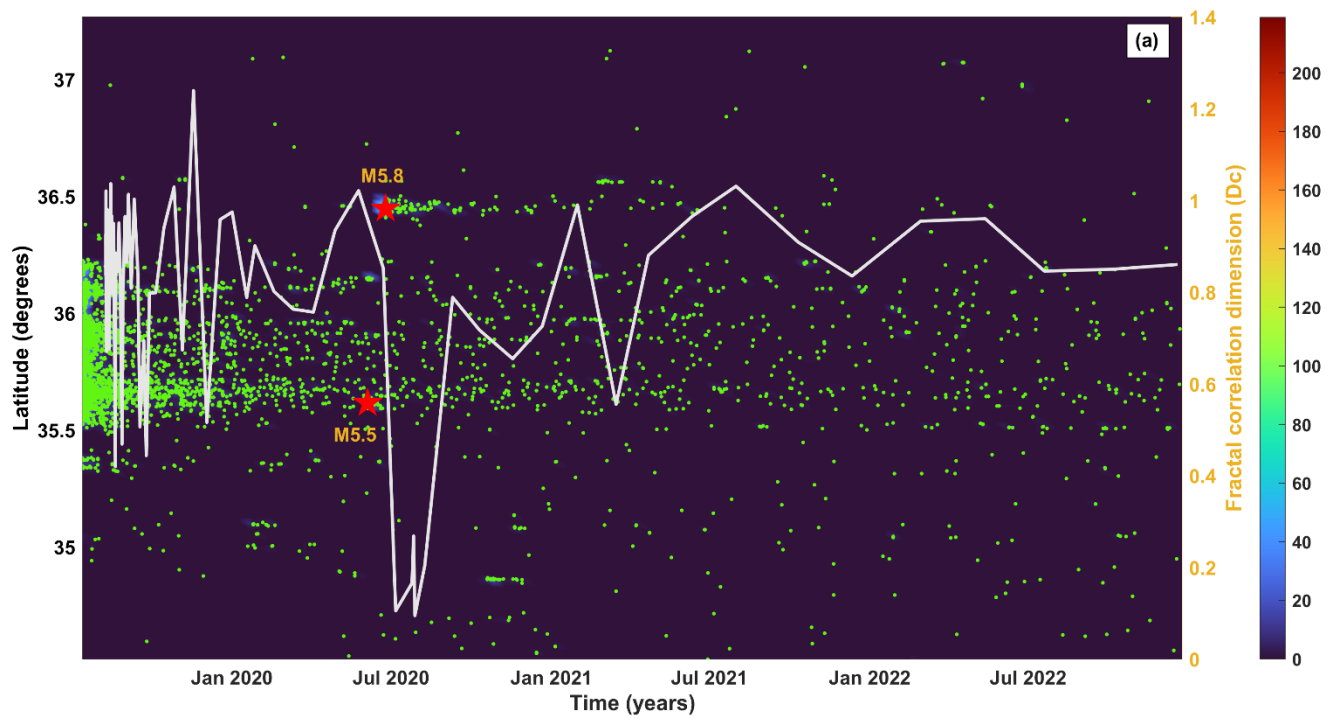


Figure S9: a) D_c variation from 07 July 2019 to 31 December 2022 shown by white line. Green dots represents background seismicity. Earthquakes with $M > 5$ shown by red stars, b) D_c variation year after 2019 Ridgecrest to December 2022.

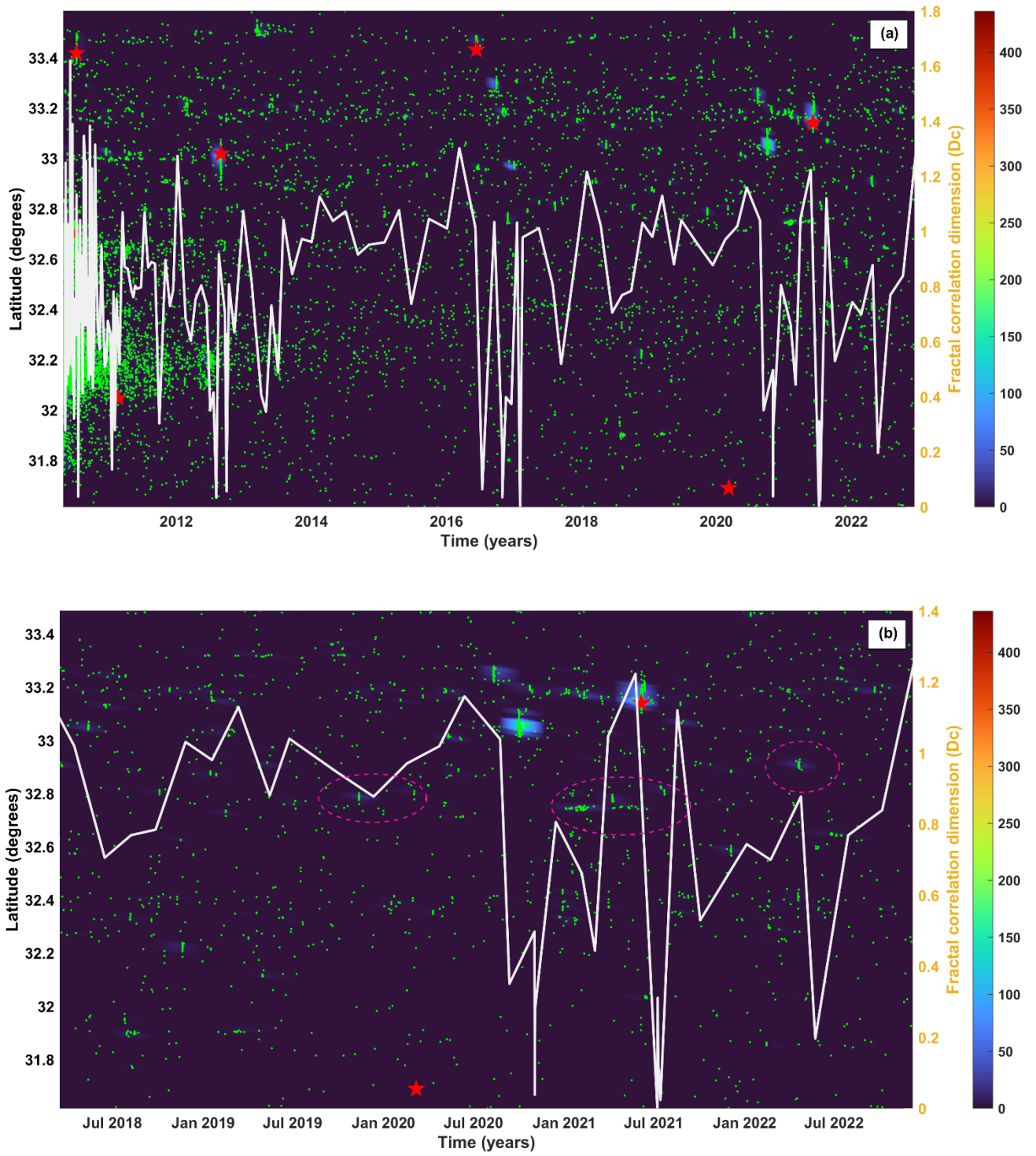


Figure S10: a) Dc variation from 05.04.2010 to 31-12-2022 shown by white line. Green dots represents background seismicity. Earthquakes with $M > 5$ shown by red stars, b) Dc variation year after 2019 Ridgecrest to December 2022, b) Dc variation from 2018 to 2022. Prominent clusters are marked by pink dash lines.