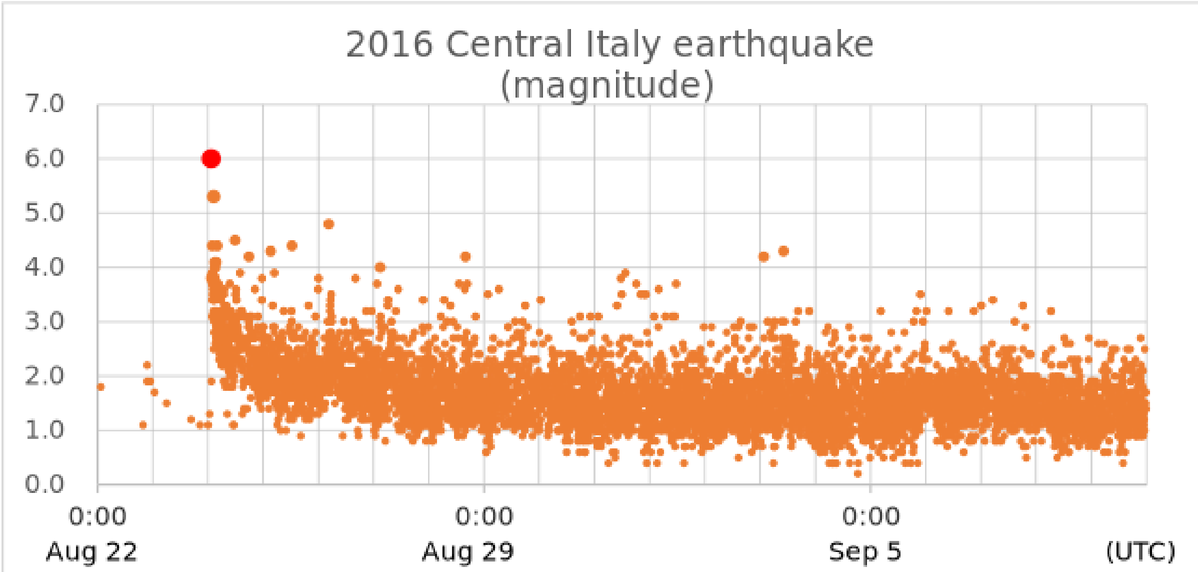


Figure 1 | Time Series of an Aftershock Sequence

A typical aftershock sequence, as recorded in Central Italy. The aftershock sequence contains a clear main shock - bolded in red - at magnitude 6.0 with a decay in magnitude as time progresses in the sequence. The bulk of activity is around 1.0-2.0 in magnitude with few events greater than 3.0 after the first days. This figure models an ideal behavior to compare to other sequences in this study. An aftershock should contain a main event of highest magnitude. Courtesy of National Institute of Geophysics and Volcanology Italy.

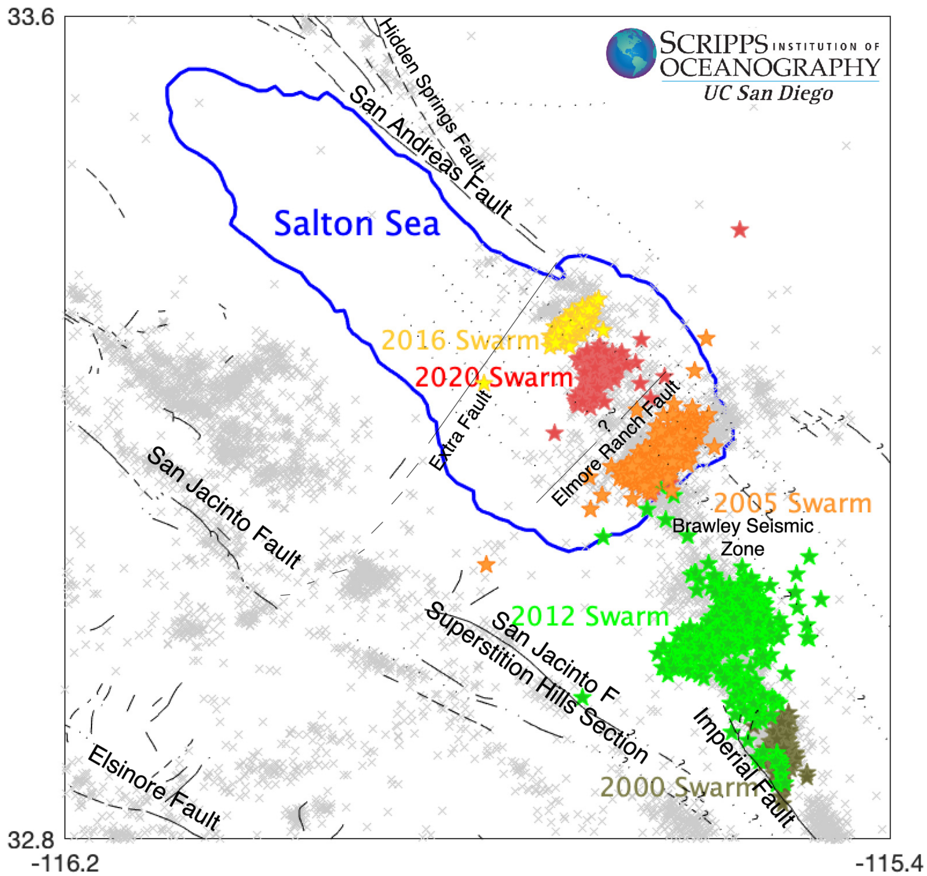


Figure 2 | Seismic Swarms in the Salton Sea Region
An image uploaded to the Scripps IGPP website with sequences exhibiting swarm behaviors. As discussed, swarms contain multiple sequences with no event of highest magnitude obviously defined. These sequences originated on the beginning of the San Andreas Fault where perpendicular faults blocks run beneath the Salton Sea. Courtesy of Deborah Kilb with addition of fault lines by Gabi Laske.

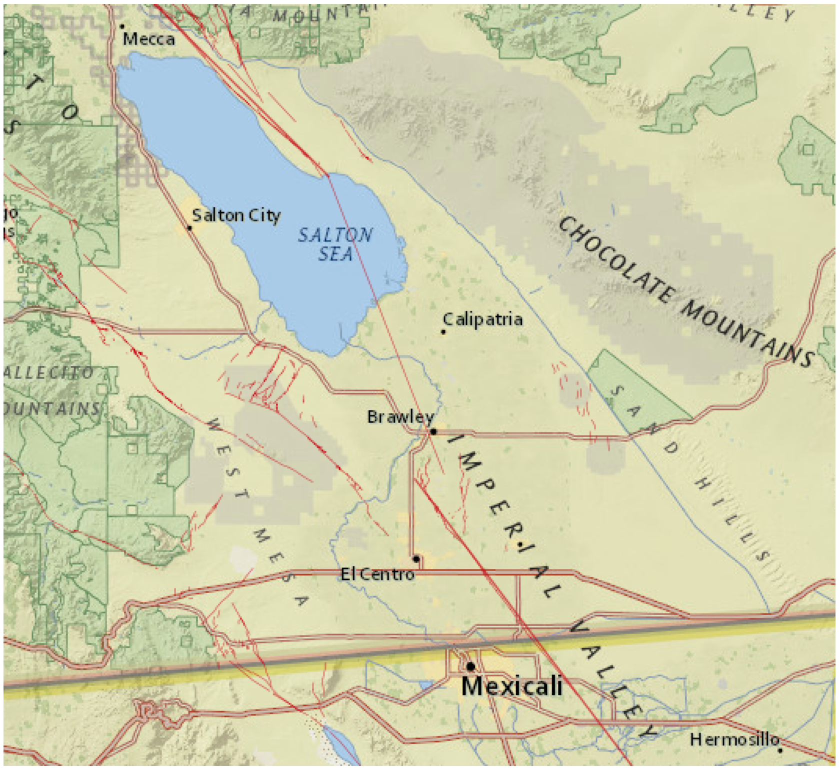


Figure 3 | Terrain Map
This terrain map contains man-made freeways along with a few local faults and plate boundaries. This is the general area of this study and shows how seismically important the region is. A large portion of the boundaries is beneath the southeast part of the Salton Sea to Brawley. This is where the majority of activity is present and this study focuses on categorizations of these sequences. Courtesy of USGS Latest Earthquakes with terrain overlay.

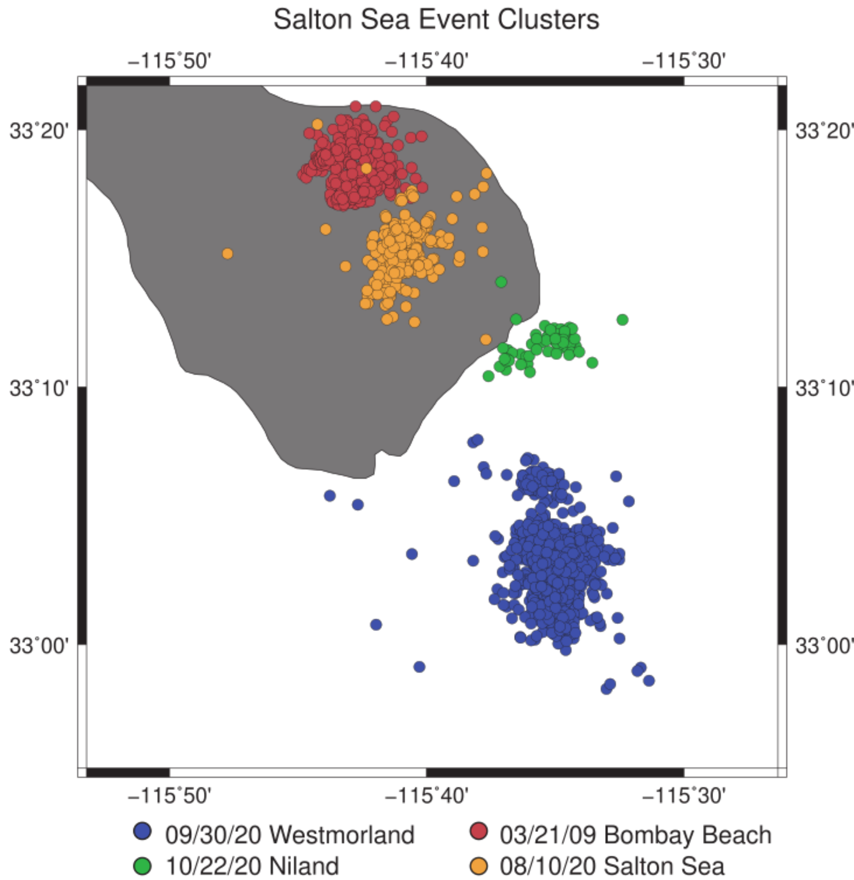


Figure 4 | Event Clusters

Each sequence is mapped by location and single events. This gives a map of all four sequences showing their spatial differences and sizes. As from Figure 3, these sequences occur directly above the SAF with the exception of Niland (10/22 - Green). Courtesy of Gabi Laske.

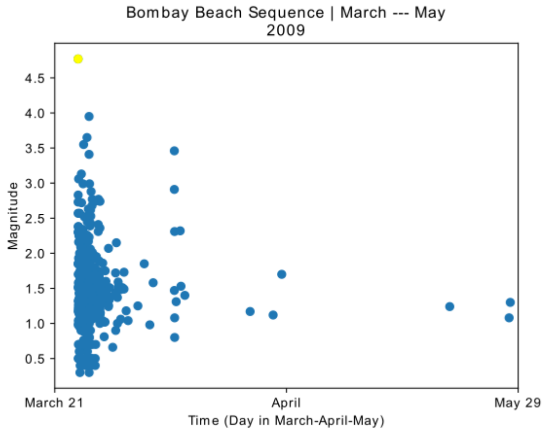


Figure 5a | Time Series Bombay Beach
This plot spans three months of events. There is an obvious main event; however, the beginning of April experiences another set of events interrupting the data.

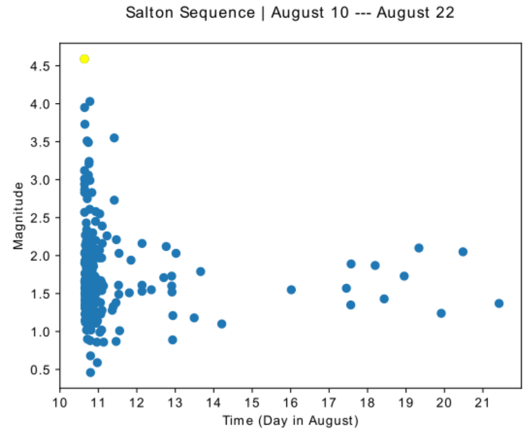


Figure 5b | Time Series Salton Sea
This plot spans twelve days of events. There is an obvious main event, but events beyond the 16th are possibly due to other factors.

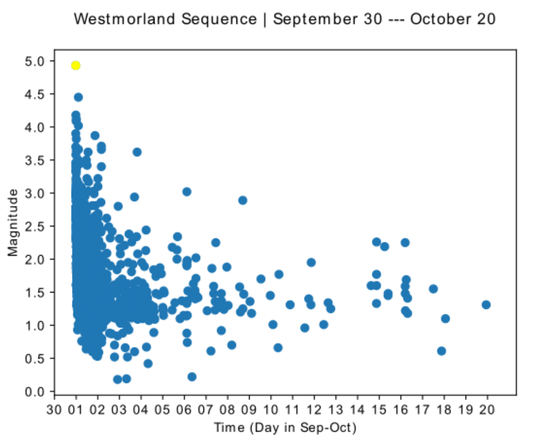


Figure 5c | Time Series Westmorland
This plot spans thirty days of events. There is an obvious main event, and the sequence appears to decay in magnitude and occurrence as time progresses.

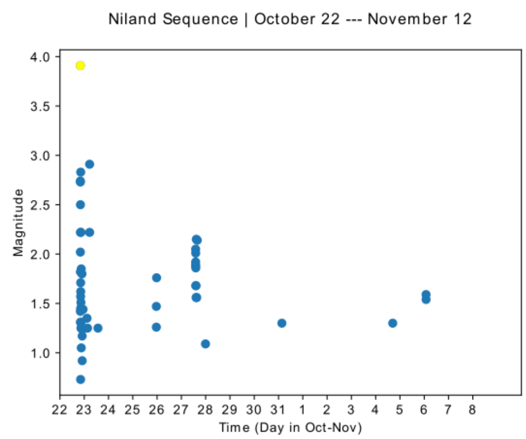


Figure 5d | Time Series Niland
This plot spans twenty days of events. There is an obvious main event, but events are clustered temporarily. There does not appear to be many aftershocks with gaps spanning days of no activity between these clusters.

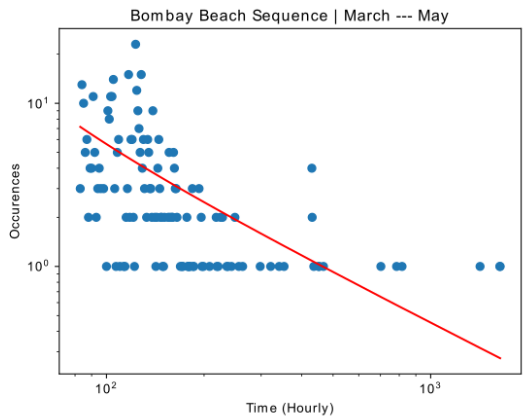


Figure 6a | Omori's Law Bombay
This sequence contains the most accurate model of Omori's Law. As the occurrence of events decreases with time, there are significant data points on both sides of the modeling line.

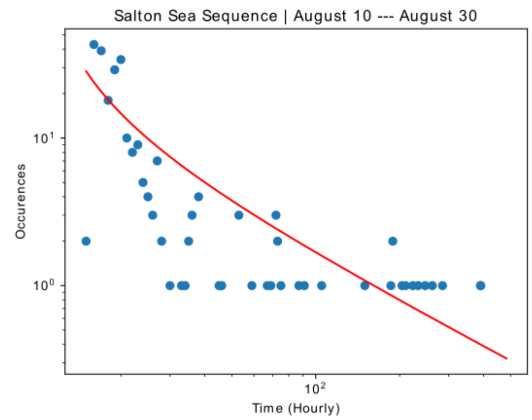


Figure 6b | Omori's Law Salton
This sequence contains a bulk of data later in the sequence as Figure 6a. This makes for a slightly skewed regression at the beginning.

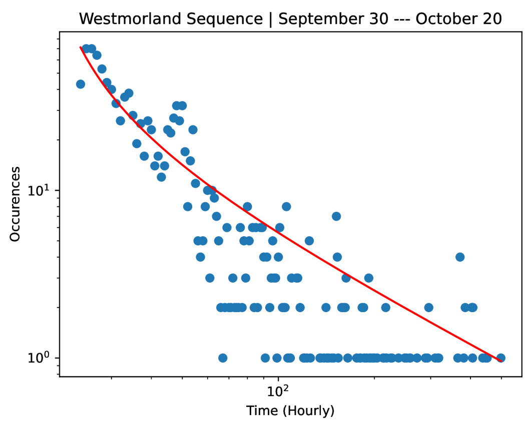


Figure 6c | Omori's Law Westmorland
This sequence contains the largest sequence and contains a majority of data points after significantly into the sequence.

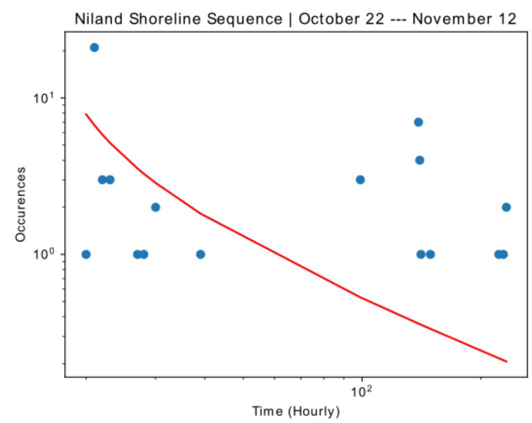


Figure 6d | Omori's Law Niland
This sequence contains the smallest amount of events with data points vastly spaced out and little relationship is obvious from appearance.

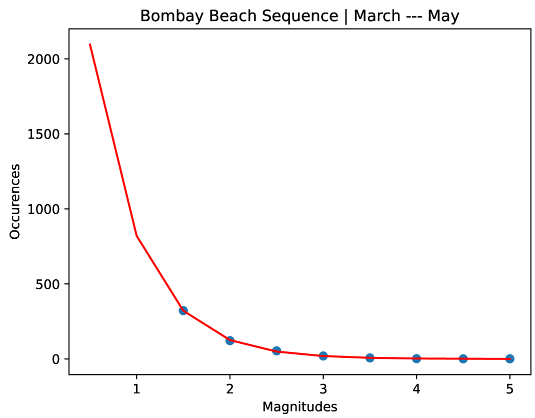


Figure 7a | Gutenberg-Richter Bombay
This plots the decay of the number of magnitude events. The first 0.5, 1.0, and 1.5 magnitudes are removed for a better modeling.

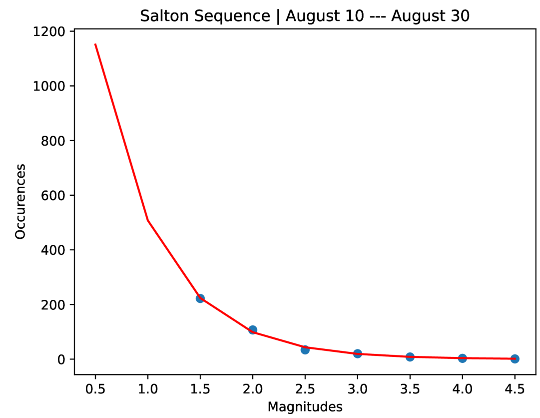


Figure 7b | Gutenberg-Richter Salton
This plots the decay of the number of magnitude events. The first 0.5, 1.0, and 1.5 magnitudes are removed for a better modeling.

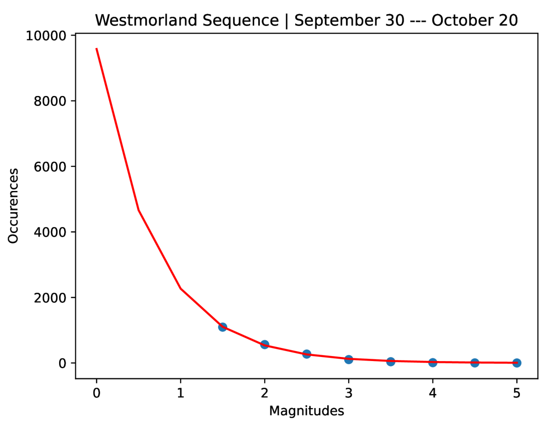


Figure 7c | Gutenberg-Richter Westmorland
This plots the decay of the number of magnitude events. The first 0.5, 1.0, and 1.5 magnitudes are removed for a better modeling.

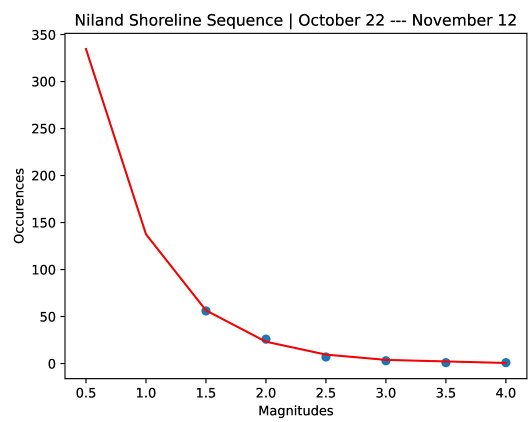


Figure 7d | Gutenberg-Richter Niland
This plots the decay of the number of magnitude events. The first 0.5, 1.0, and 1.5 magnitudes are removed for a better modeling.

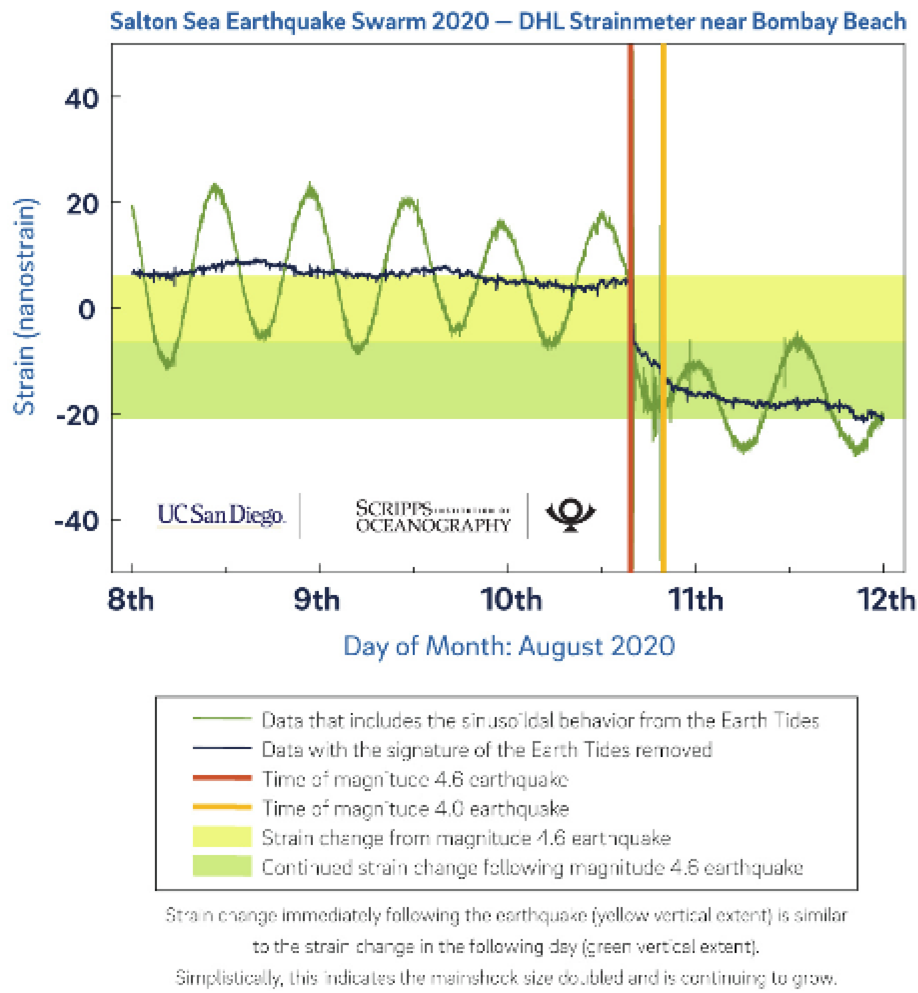
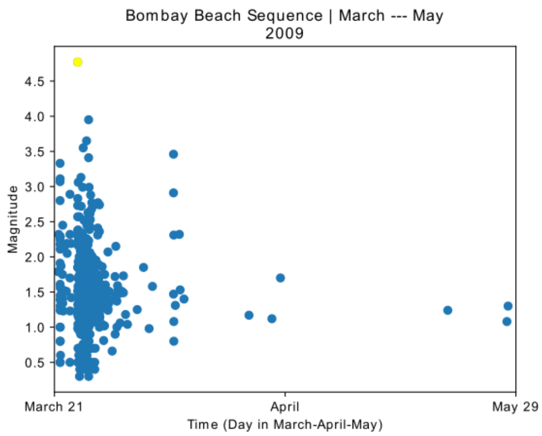


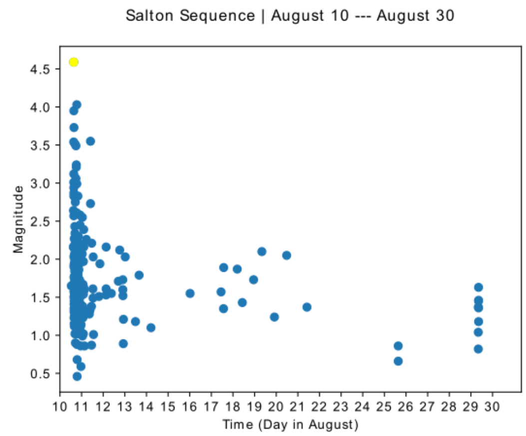
Figure 8 | Strainmeter near Bombay Beach

This shows the results from the Salton Sea 2020 sequences. The station had failures during the Westmorland quake and has been decommissioned since. Strainmeters show the effects of a sequence and the rate to return to baseline. This is essentially the definition of an aftershock sequence, and would be greatly appreciated to use in the future if investment is there. Courtesy of Frank Wyatt.

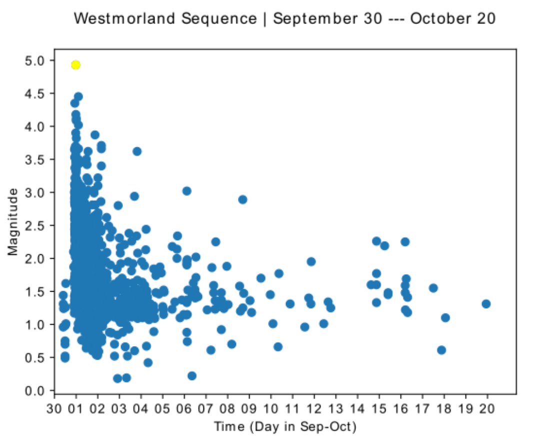
Appendix



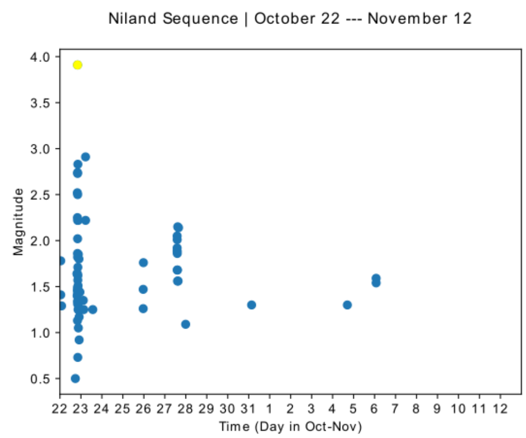
A 1a | Raw Time Series Bombay
Full data of the sequence including all foreshocks and aftershocks from .csv files.



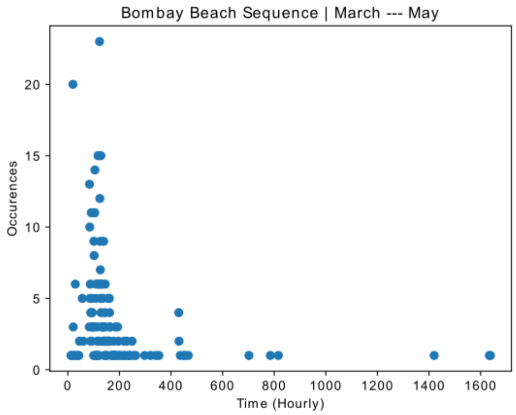
A 1a | Raw Time Series Salton
Full data of the sequence including all foreshocks and aftershocks from .csv files.



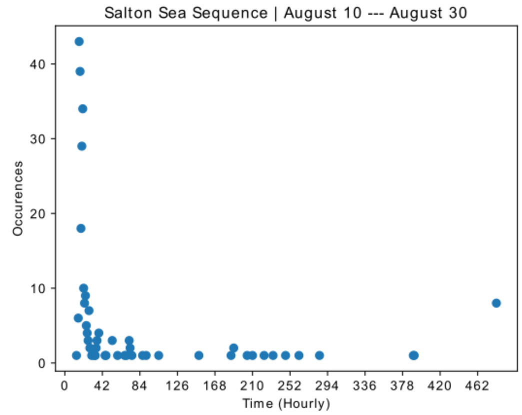
A 1c | Raw Time Series Westmorland
Full data of the sequence including all foreshocks and aftershocks from .csv files.



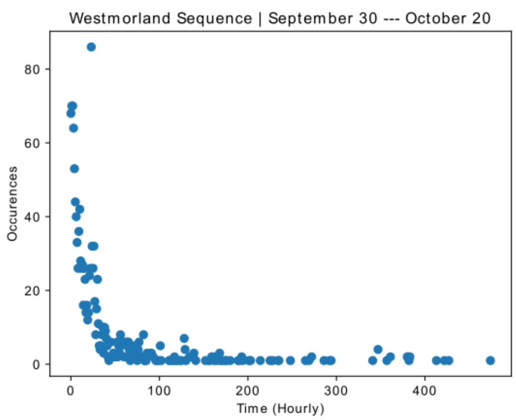
A 1d | Raw Time Series Niland
Full data of the sequence including all foreshocks and aftershocks from .csv files.



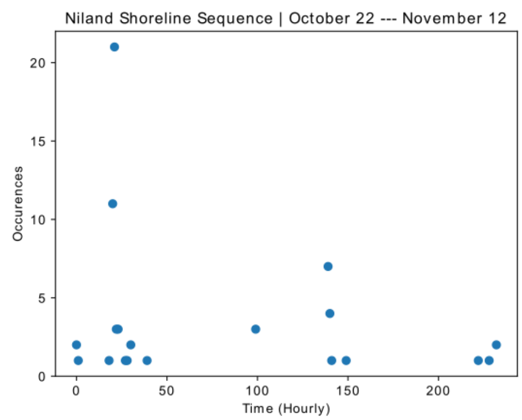
A 2a | Raw Omori's Law Bombay
Full data of sequence with Omori's Law axes and no curvefit applied. Provides relatively similar values as the Corrected Omori's Law in Figures 6a-d.



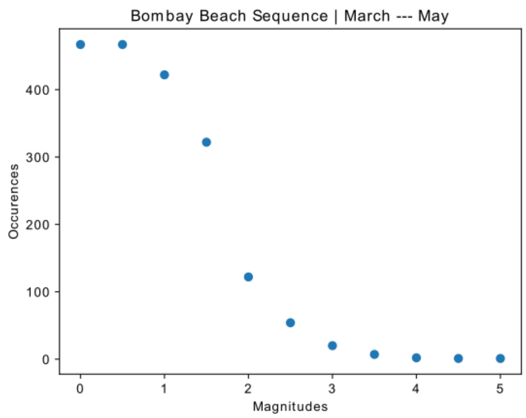
A 2b | Raw Omori's Law Salton
Full data of sequence with Omori's Law axes and no curvefit applied. Provides relatively similar values as the Corrected Omori's Law in Figures 6a-d.



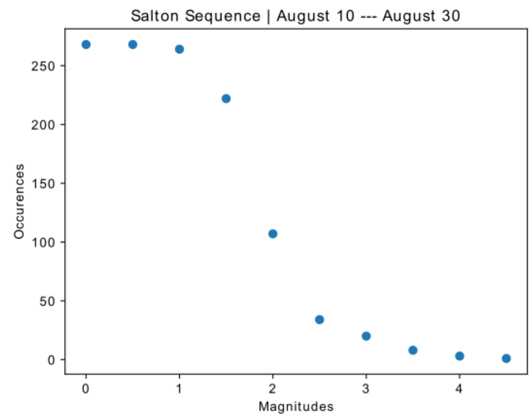
A 2c | Raw Omori's Law Westmorland
Full data of sequence with Omori's Law axes and no curvefit applied. Provides relatively similar values as the Corrected Omori's Law in Figures 6a-d.



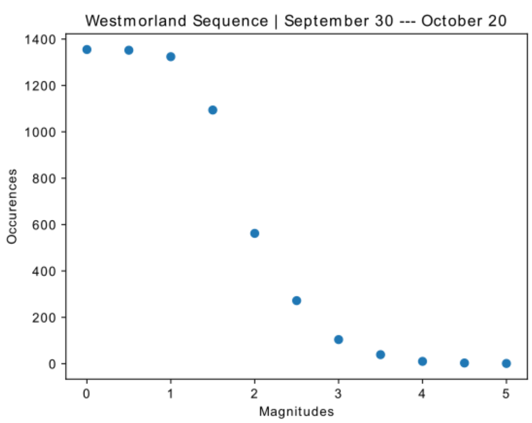
A 2d | Raw Omori's Law Niland
Full data of sequence with Omori's Law axes and no curvefit applied. Provides relatively similar values as the Corrected Omori's Law in Figures 6a-d.



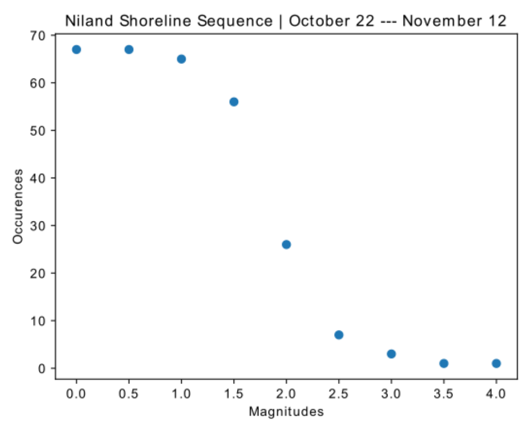
A 3a | GR Bombay
Full data of sequence with Gutenberg-Richter axes. These require removing the 0 and 0.5 bins for an analysis. These differ from Figures 7a-d by excluding foreshocks and rounding down.



A 3b | GR Salton
Full data of sequence with Gutenberg-Richter axes. These require removing the 0 and 0.5 bins for an analysis. These differ from Figures 7a-d by excluding foreshocks and rounding down.



A 3c | GR Westmorland
Full data of sequence with Gutenberg-Richter axes. These require removing the 0 and 0.5 bins for an analysis. These differ from Figures 7a-d by excluding foreshocks and rounding down.



A 3d | GR Niland
Full data of sequence with Gutenberg-Richter axes. These require removing the 0 and 0.5 bins for an analysis. These differ from Figures 7a-d by excluding foreshocks and rounding down.