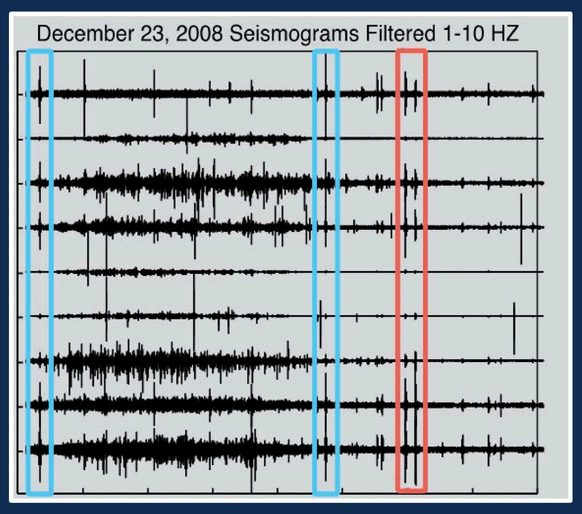
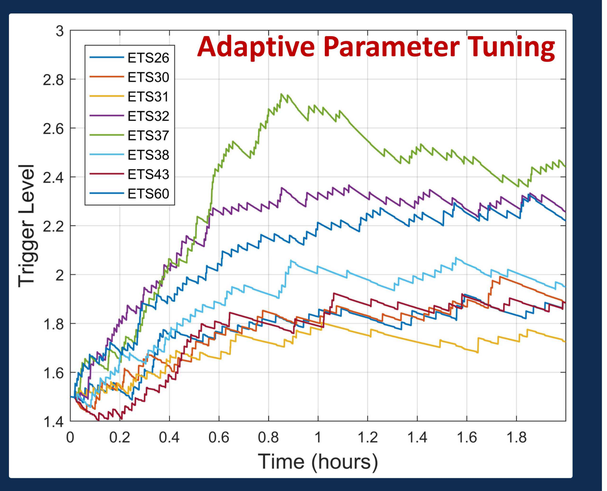
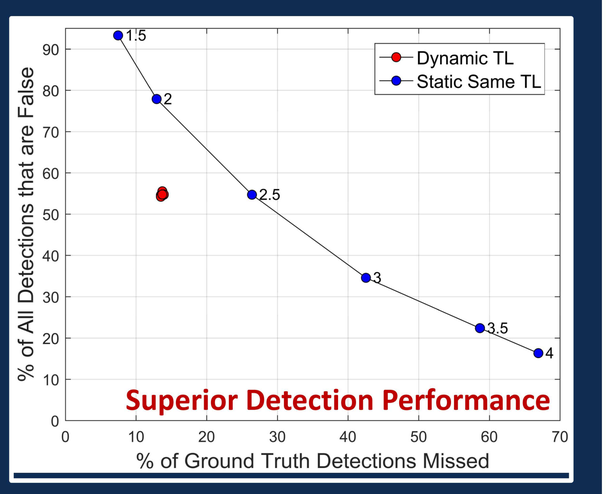
SAND2016-9548C

Self-Tuning Sensor Networks

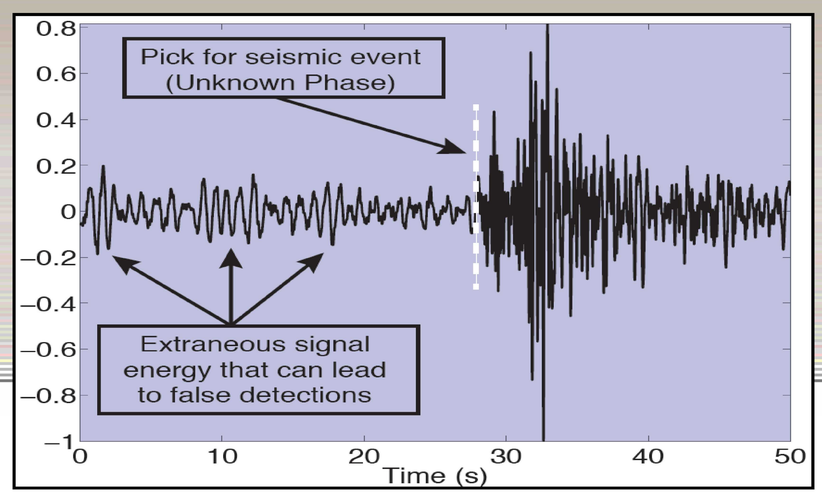
Tim Draelos, Hunter Knox, Matt Peterson, Ben Lawry, Eric Chael, Chris Young





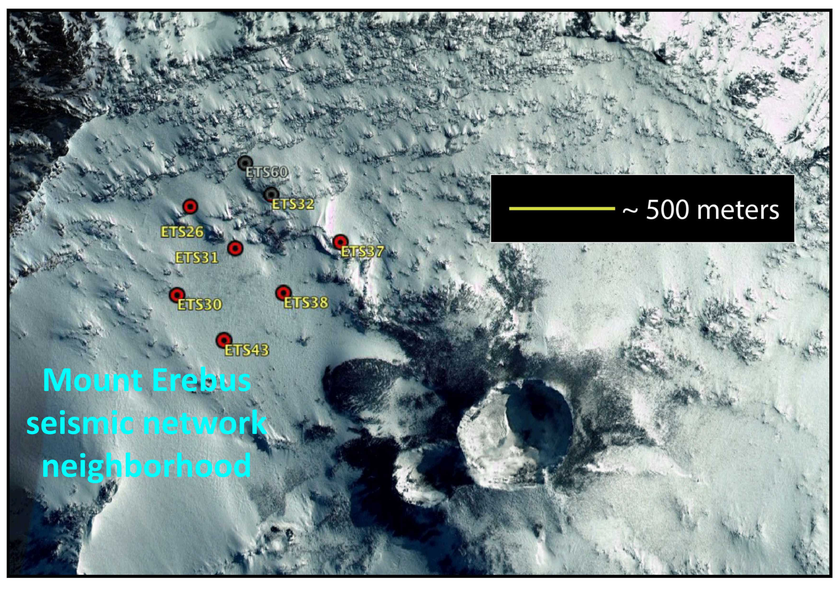


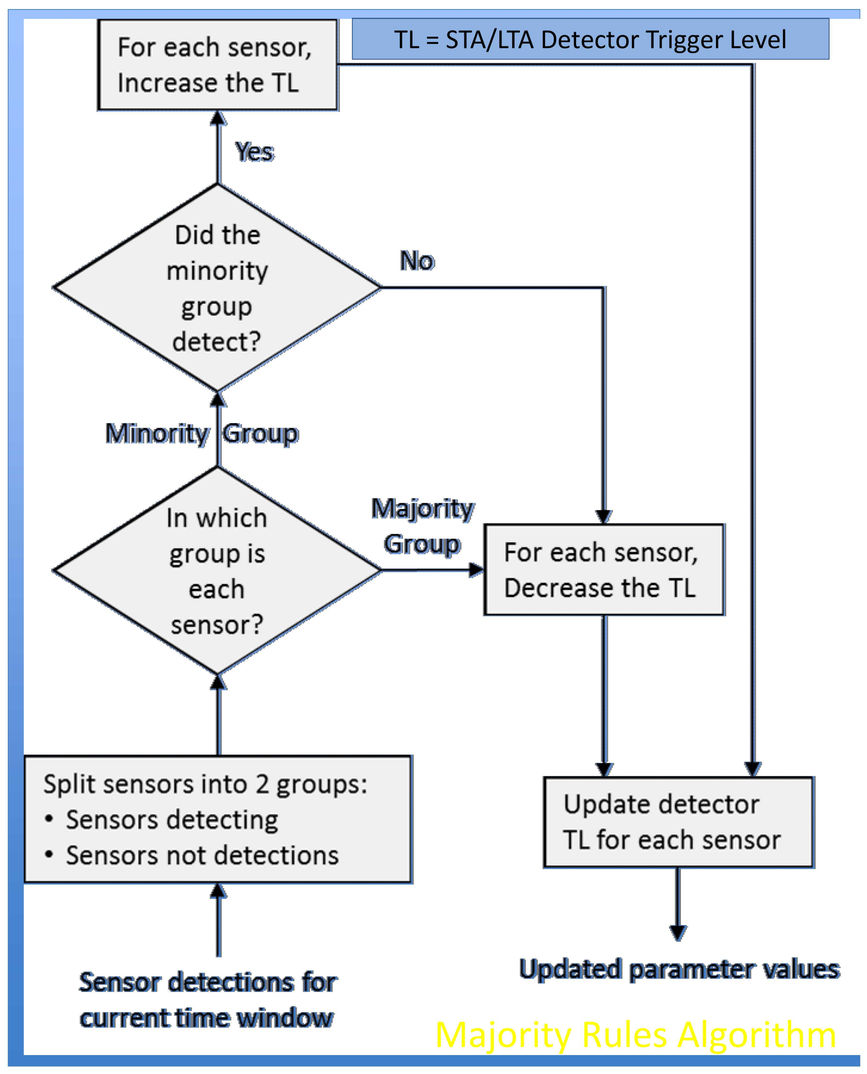
Typical automated processing of data from seismic sensors produces many false signal detections that are not associated with events of interest. This is in part because sensor detection parameters are set as sensitive as possible to avoid missing detections, accepting that this will lead to many false detections that can in turn lead to false events. The problem is exacerbated by the fact that the noise conditions at each sensor often vary dynamically such that parameters that work well for one period of time may not work well for another period of time.

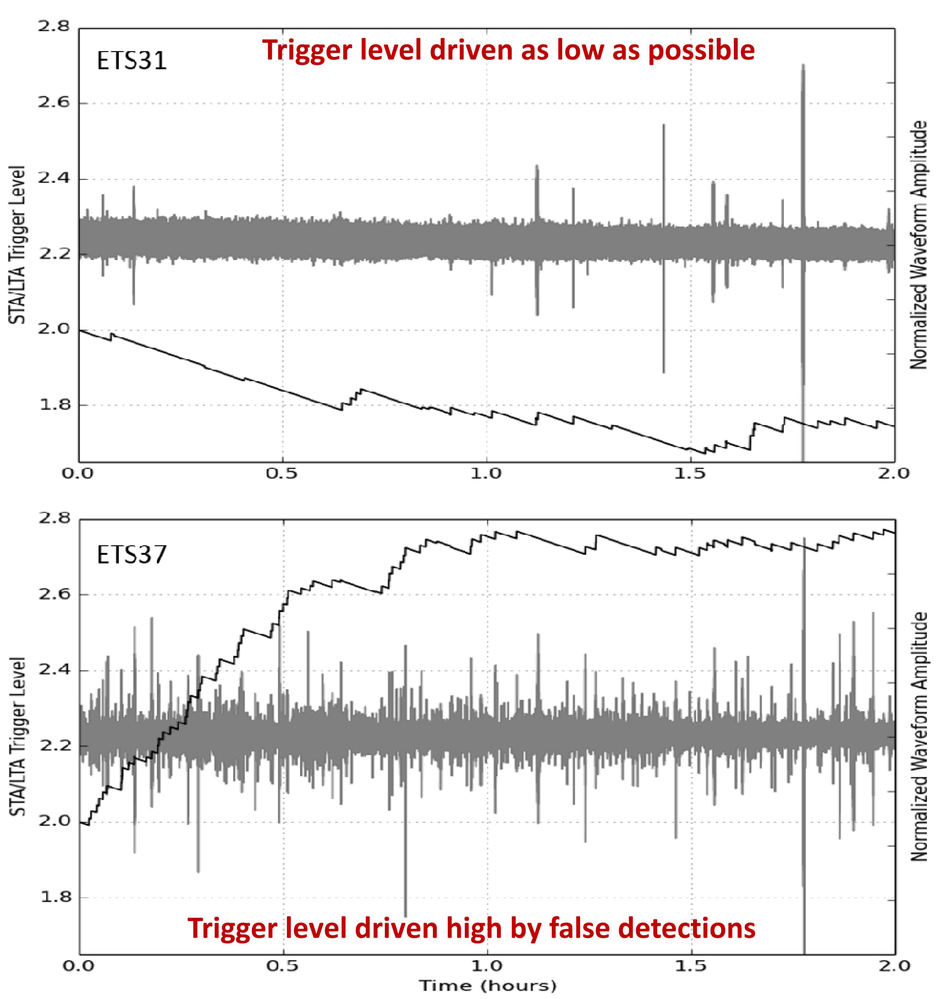


We present a model wherein sensor parameters are dynamically changed to achieve a balance between missing signals from events of interest and detecting false signals. The key metric guiding dynamic tuning is consistency of each sensor with its nearest neighbors.

- **Parameters are automatically adjusted on a per station basis to be more or less sensitive and produce consistent agreement of detections in its neighborhood.**







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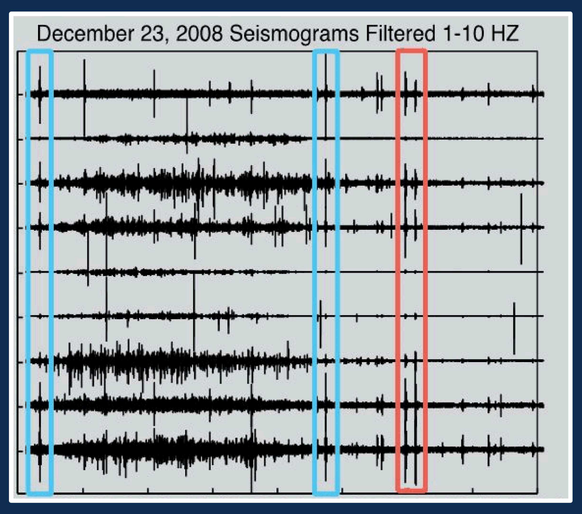

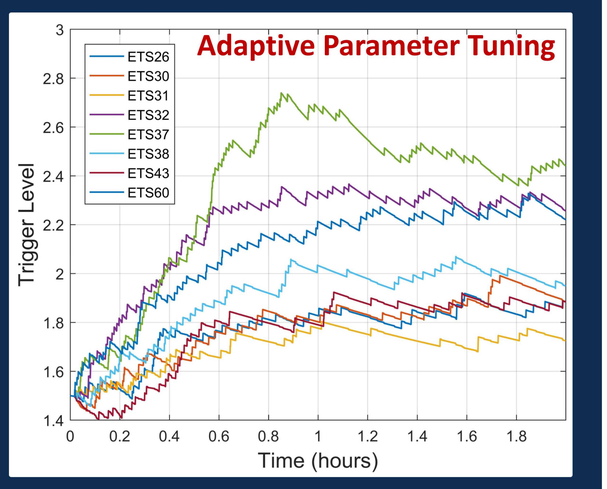

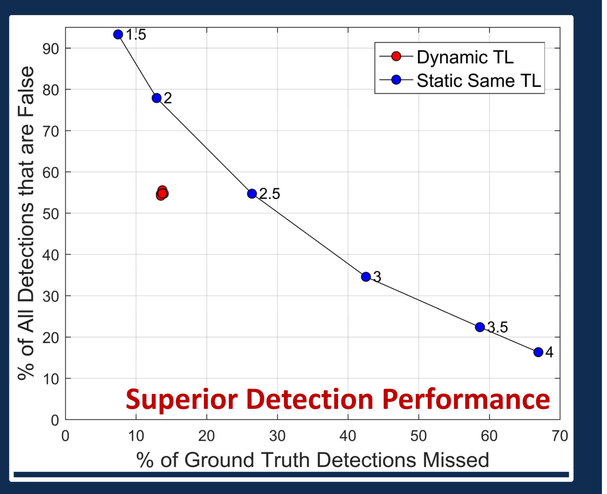

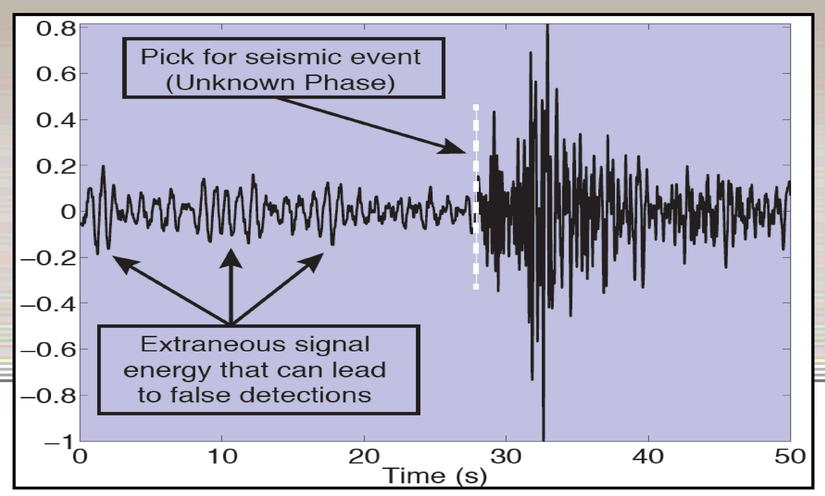

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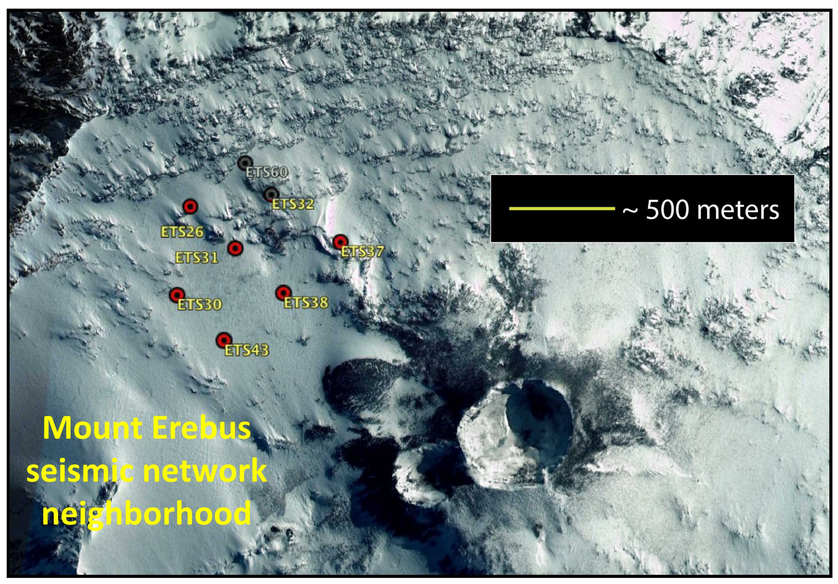

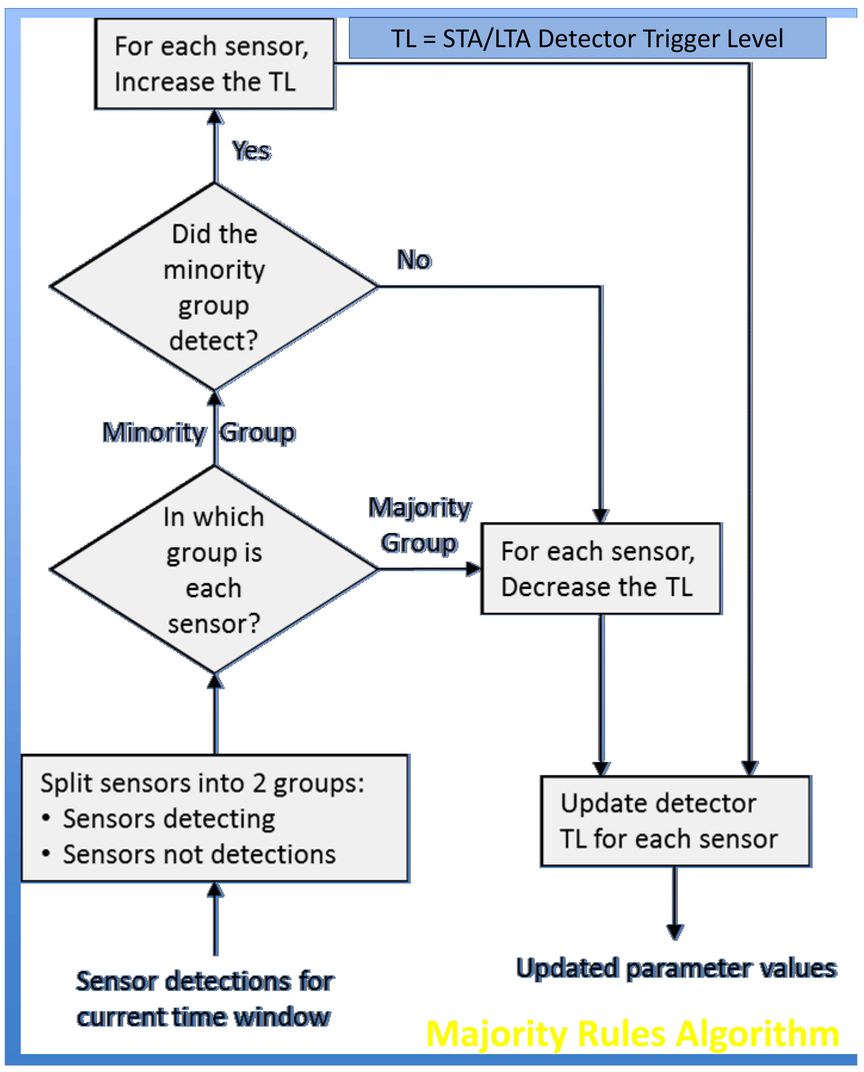

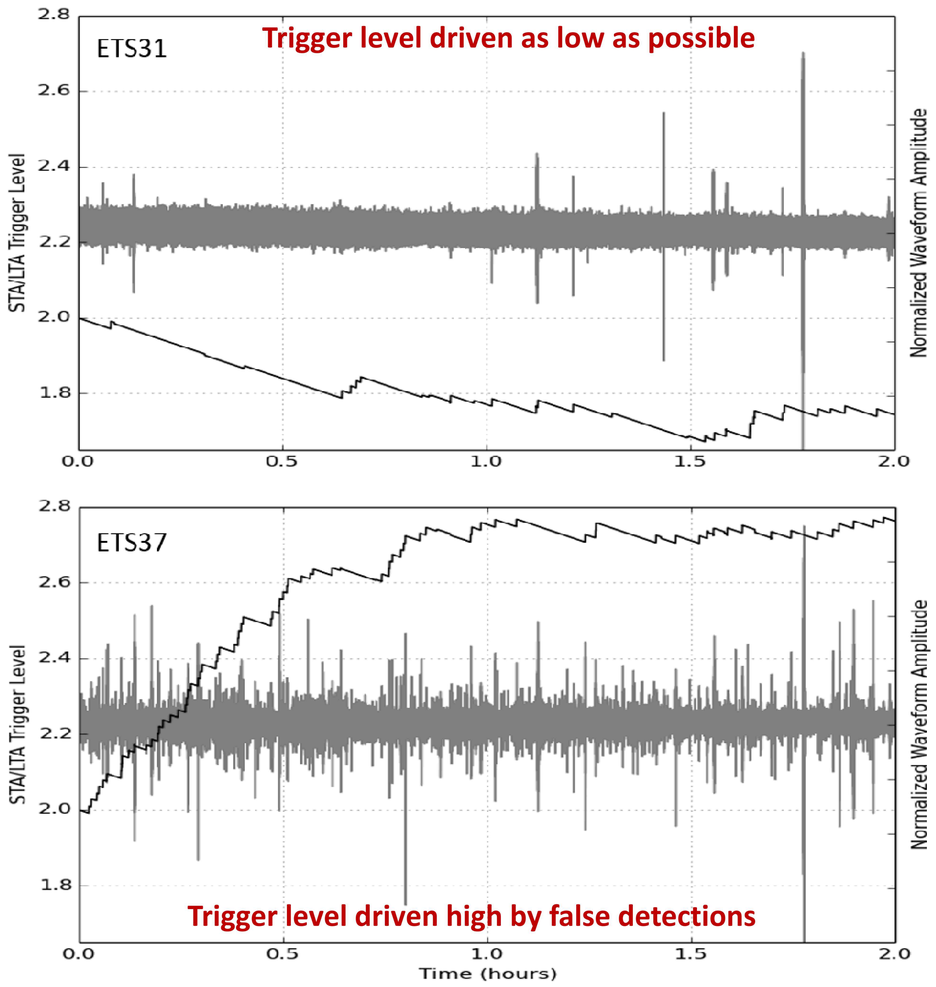

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