This document will contain summary of selected papers I read.

[*Yokota et al.*, 2016] reported the seafloor geodetic observation network data and an offshore interpolate slip-deficit rates (SDRs) distribution model. They use the seafloor geodetic data to invert the SDRs in Japan, and get a model that is robustly similar to that obtained in the past studies using only the onshore data. A couple of interesting things:

* Subducting ridge not only activates shallow VLFEs, but also forms the low-SDR region (low-coupling condition)
* These low-SDR region usually is the boundary of the rupture, if the earthquake rupture stops at these boundaries, it maybe a small earthquake, but if it ruptures through, it maybe a large earthquake.

[*Hardebeck and Shelly*, 2016] using templates matching and double-difference to identify and locate the aftershocks for the 2014 Napa Earthquake. They find many aftershocks occur in a complex zone of secondary faulting. They also generate the focal mechanism and most of them show strike-slip and oblique-reverse faulting on secondary dipping faults in the main aftershock zone. These secondary faults were brought closer to failure by Coulomb stress changes from the main-shock. One conclusion is: the lack of stick-slip patches in the southern rupture zone may contribute to the low productivity of the South Napa aftershock sequence.

A new paper in Science in the week of Jun 6th 2016 [*Jiang and Lapusta*, 2016] reports the evidence to answer the question why many major strike-slip fauts known to have had large earthquakes are silent in the interseismic period. They suggest the absence of the microseismcity at the bottom of the seismogenic zone indicates deep rupture past the seismogenic zone in previous large earthquakes. They supporting their hypothesis using observation and numerical simulations. The observations are from 3 earthquakes, the Parkfield M6.0 and the Loma Prieta M6.9, and the M7.5 Denali earthquakes. But I think the observations are not supporting quite well, you do see for Loma Prieta M6.9 seismicity move deeper after the earthquake, for Denali earthquake, they argue there was a large earthquake penetrated deeper before the Denali earthquake, that’s why you don’t see the seismicity before or after the earthquake. I don’t buy it. The conclusions come from numerical simulations of fault behavior looks fine, they compared two models M1 and M2, which M1 only rupture in the seismogenic zone, but M2 rupture into the deeper creeping section. You do see the microseismicity stop after the rupture in M2, which support their hypothesis.

[*Zaliapin and Ben-zion*, 2015] try to classify the induced seismicity and natural seismicity using statistical features of different clusters. They use a metrics that defined the distance between any of the two earthquakes from [*Baiesi and Paczuski*, 2004] to study the difference. The metrics is interesting and can be used as the weight of the nodes in network theory. But this paper is a not easy reading due to the poor writing, a lot of the things are not explained clearly!

[*Hsu et al.*, 2016] started to build a classification algorithm to distinguish false triggers and true triggers using machine learning algorithms that I long thought to do. See their feature list. But I think their method have some problems that will not working so well in real time.

[*An and Meng*, 2016] try to use array backprojection to do tsunami early warning. What they are doing is to use current EEW system to find the location of the earthquake, and then estimate the rupture area using an ellipse/polygon encloses seismic radiators. The magnitude can be estimated based on the scaling law. Based on the M = uAD, they can then estimate the average slip which is used to feed into the model to simulate the tsunami waves. This is different from Diego’s method [*Melgar et al.*, 2016] which is estimating the rupture dimension based on the scaling law from the past earthquakes. Then he estimate the average slip based on M = uAD. So they use scaling law to estimate different quantity in the M = uAD equation.

An, C., and L. Meng (2016), Application of Array Back-projection to Tsunami Prediction and Early Warning, *Geophys. Res. Lett.*, n/a–n/a, doi:10.1002/2016GL068786.

Baiesi, M., and M. Paczuski (2004), Scale-free networks of earthquakes and aftershocks, *Phys. Rev. E*, *69*(6), 066106, doi:10.1103/PhysRevE.69.066106.

Hardebeck, J. L., and D. R. Shelly (2016), Aftershocks of the 2014 South Napa, California, Earthquake: Complex Faulting on Secondary Faults, *Bull. Seismol. Soc. Am.*, *106*(3), 1100–1109, doi:10.1785/0120150169.

Hsu, T. Y., R. T. Wu, and K. C. Chang (2016), Two Novel Approaches to Reduce False Alarm Due to Non-Earthquake Events for On-Site Earthquake Early Warning System, *Comput. Civ. Infrastruct. Eng.*, *00*, 1–15, doi:10.1111/mice.12191.

Jiang, J., and N. Lapusta (2016), Deeper penetration of large earthquakes on seismically quiescent faults, *Science (80-. ).*, *352*(6291), 1293–1297, doi:10.1126/science.aaf1496.

Melgar, D. et al. (2016), Local tsunami warnings: Perspectives from recent large events, *Geophys. Res. Lett.*, *43*(3), 1109–1117, doi:10.1002/2015GL067100.

Yokota, Y., T. Ishikawa, S. Watanabe, T. Tashiro, and A. Asada (2016), Seafloor geodetic constraints on interplate coupling of the Nankai Trough megathrust zone, *Nature*, 4–6, doi:10.1038/nature17632.

Zaliapin, I., and Y. Ben-zion (2015), Discriminating characteristics of tectonic and human-induced seismicity, *Bull. Seismol. Soc. Am.*, *106*(ii), 1–36, doi:10.1785/0120150211.