Array Processing and Data Handling (Aster, Gibbons, Peng)

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1. People who are interested in this could form a group to come up a forum for sharing codes,

procedures, data, best practices. Have a sample data set and tutorial for people to test.

2. Standard data product format for array processing? (Event pre-processed). Large data format for parallel computing so that they can be allowed to easily accessable?

3. Quality control of data and calibration: timing, USArray ANF is a good example; site specific noise; some data redundancy; co-site with broadband and short-period instruments; existing techniques to monitor timing error and amplitude issue; Beachmack with synthetics; Array technique could be better used to identify potential issues in timing and amplitudes; cross-correlations of ambient noises; finding anomaly in the F-K analysis etc; standard procedures to audit existing channels and establish calibration; quality of the site (shallow vs borehole); coming up with a metric for data quality (IRIS MUSTANG system for any data stream coming into IRIS); checking orientation of 3-component;

4. Feasible cheap MEMS type instrument for array (short period)?! (10 s, at least 5 k).

5. Code: in house legacy codes are mostly used in the scientific community; conflict of time to manage/maintain a code; have a community tool to analysis seismic data (thousands of seismograms); standard software and data format; putting codes close to the data; OpsPY, SEISCOMP3, seismic handler, geotool. <https://seiscode.iris.washington.edu/> seizmo

Action items:

1. Come up with a list of codes that can be used for array processing, and could put them into seiscode repository.

Data processing challenges:

1. Multiple array processing for imaging (quantify how useful they are before doing it)

2. Do we have the right format (SAC may not be the right format), time to think about a new GABBA format?

3. Will the IRIS DMC be able to increase of storage capability for massive volumn of data (5000 high-freq. instruments)?

4. IRIS DMC needs to come up with new ways to serve the researcher with data-ready format (pre-processed, instrument removed, etc)

5. automatic data process technique for data crawling/mining