Existing Array Types:

-- need complete inventory of available stations, tool to make virtual arrays of broadband stations including temporary PASSCAL-like and permanent, expansion of existing DMC capability

(1) large aperture , broadband, 3C (e.g., TA, EIDA)

(2) national network style arrays (Japan, Ecuador, Chile, New Zealand, Switzerland), intermediate aperture mostly broadband/3C; lots of nets that need/could be opened up; which are real time ? FDSN can help with data sharing ....

(3) regional nets and temporary arrays of dimensions of hundreds of kms, PASSCAL, industry, etc., LDEO; embargo can be a problem, non-real-time sometimes

(4) IMS style arrays, small-aperture, mostly short-period, detection array; some industry data sets might fit here. Most IMS data is very difficult to get. FDSN could help here.

(5) NORSAR/LASA and FA array of arrays, GRF,

(6) Large-N, long beach dataset

(7) Ocean arrays: OBS experiments, floating stations, offshore-cabled, ocean bottom node/Valhalla/life-of-field

(8) strong-motion arrays, including large N (QCN, iPhone), bridges / structures engineering studies

(9) Deep borehole / vertical arrays

(10) Infrasound / hydroacoustic

What Do We Want?

(1) Southern Hemisphere coverage!! Oceans are a problem, but OBS arrays are on the way. Africa and Antarctica are big. Need at least two per continent. In Antarctica can put arrays in Dry Valleys for low reverberations from ice.

(2) Antipodal deployments of arrays, might be difficult

(3) putting arrays in tectonically quiet regions is positive (virtual sources, low noise); cratons are good

(4) political challenges will be a problem (India / China / Russia / Saudi Arabia ) getting existing data let alone installing new open arrays.

(5) Fractal design (at least irregular), spans large wavenumbers, azimuthally distributed; mix of small and large apertures; should we go all broadband, even at small spacings?? Probably. Want low-noise from 10 Hz to 100 s, boreholes would help.

(6) Need quasi-permanent arrays, 10-20 years; is near real-time, TA-style latency/reliability OK?

(7) Ancillary sensors: GPS, MT, infrasound/air pressure, strainmeters, meteorology, hydroacoustic, ring-laser / rotational sensors, gravity. Need catch phrase -

 Geophysical Arrays (is not good enough)

 Earth Receptors

What Else?

(1) Site selection strategies, method of ranking sites will be needed; proximity to source regions / ring-of-fire

(2) Evaluating coherency of various sites is non-trivial