

Diverse Observations from USArray

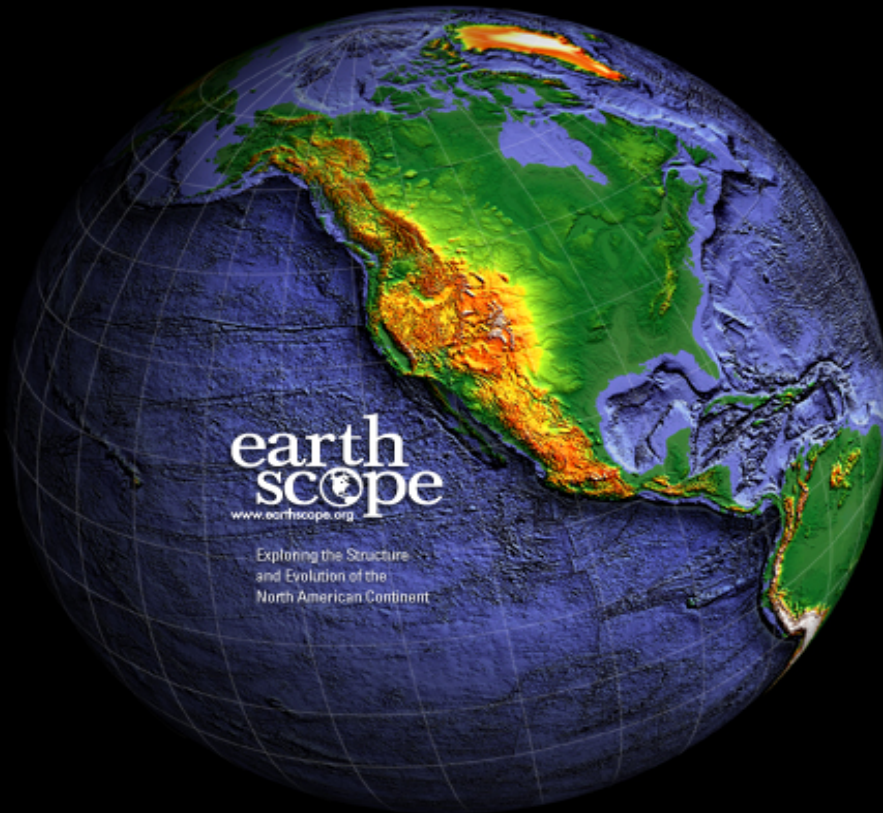
Kasey Aderhold
Project Associate

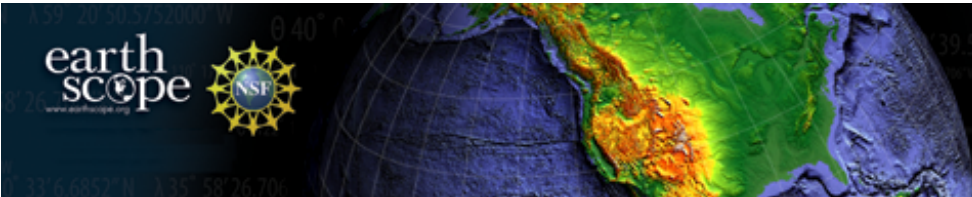
Bob Busby
TA Manager

Bob Woodward
IRIS Director of Instrumentation Services

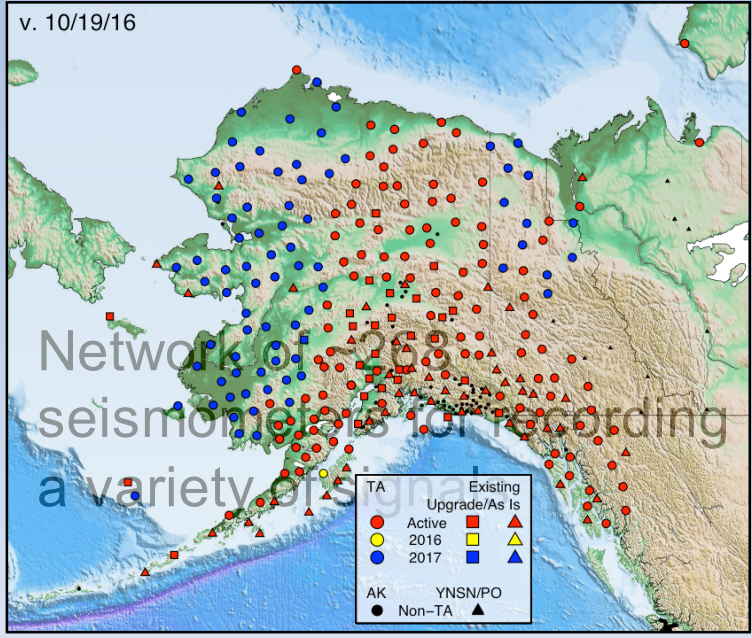
Bob Detrick
IRIS President

*USArray Sustainability Workshop
Washington, DC
November 9-10, 2016*





v. 10/19/16



Network of 208 seismic stations for recording a variety of signals



Ocean Waves



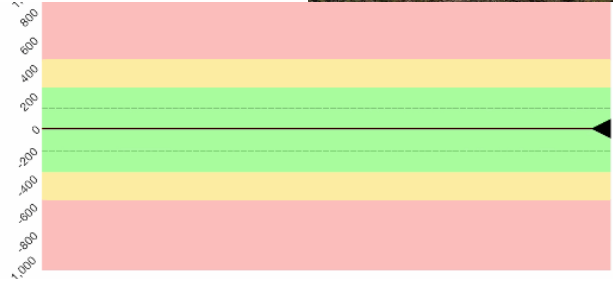
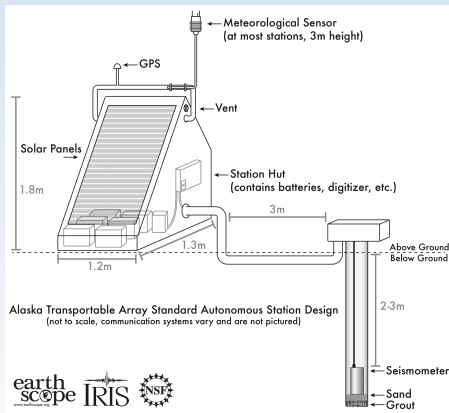
Wind



Wildlife



Storm Systems



Landslides

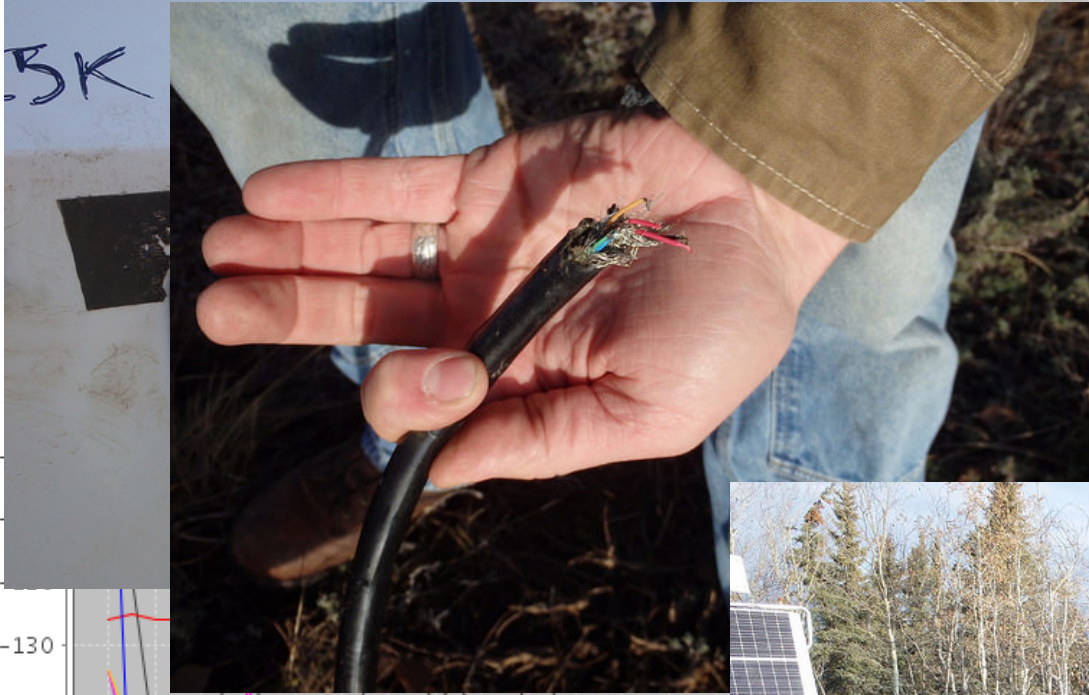


Glacial Activity

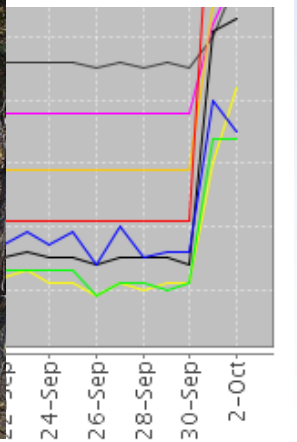
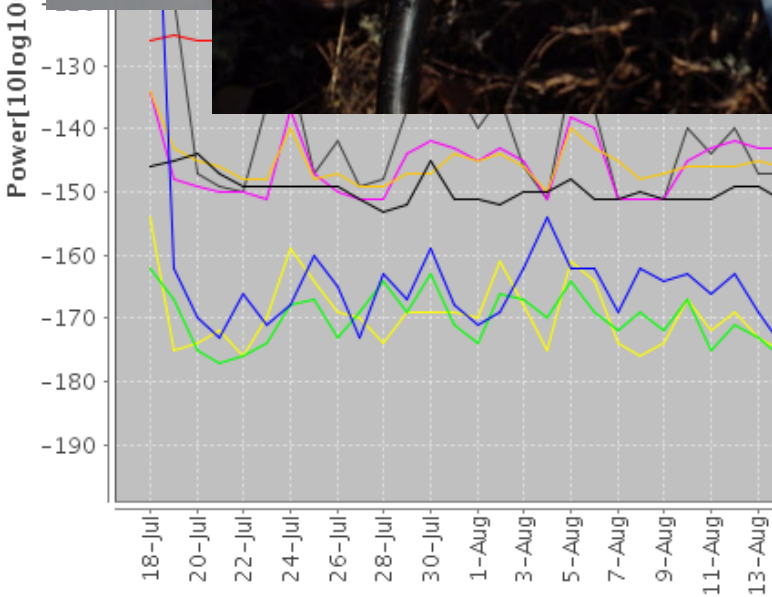
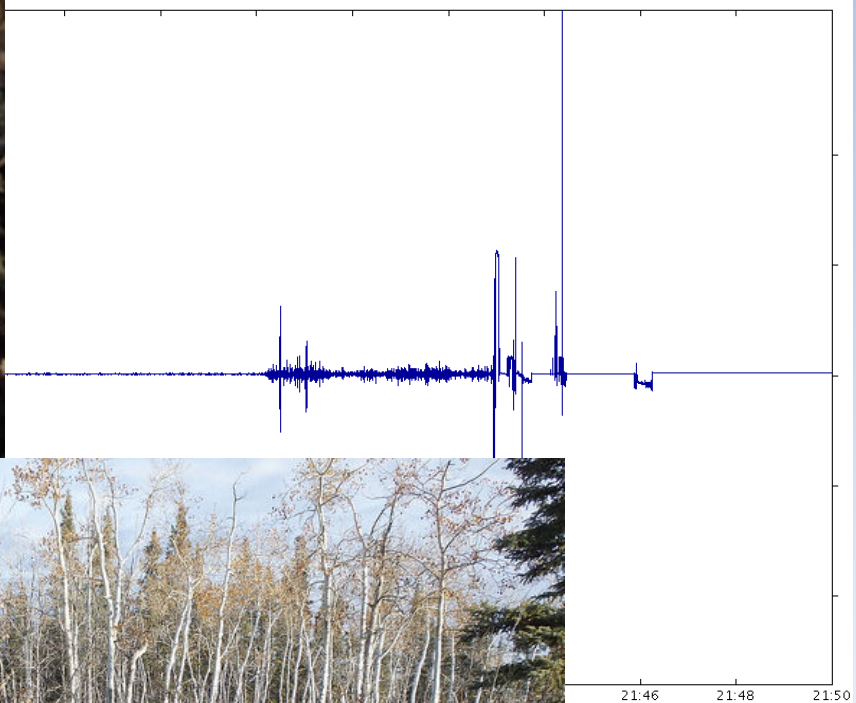
Code Timelines

5-07-18 to 2016-10-02

Power[10log10(m**2/sec**4/Hz)] [dB]



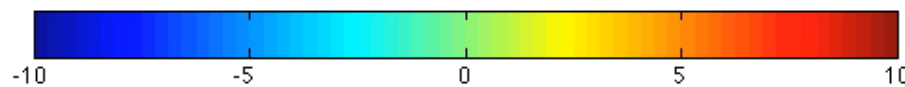
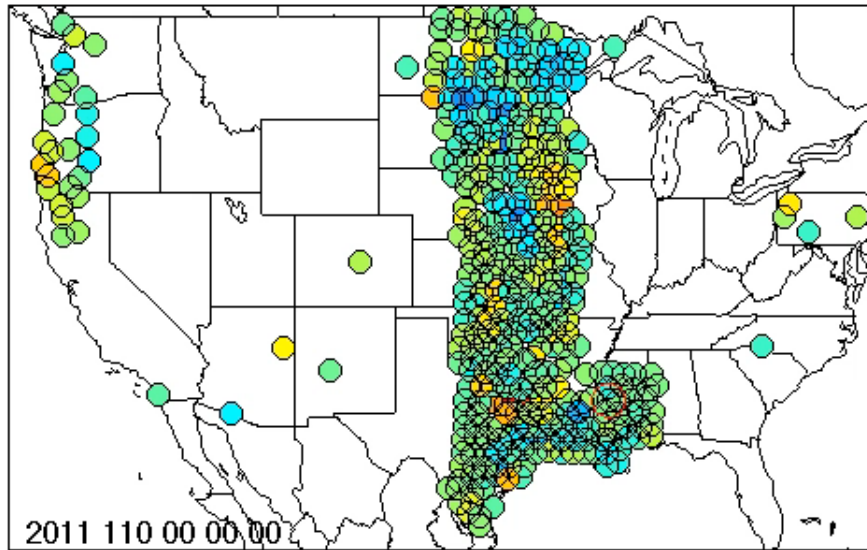
TA_G25K_77_BHZ, 48001 samples, 40.0 sps, 2016-08-14T21:30:00.000



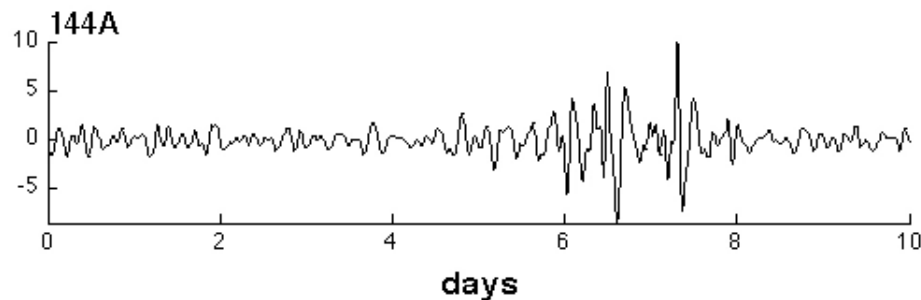
- 190.27 Sec (0.005 Hz)
- 103.75 Sec (0.010 Hz)
- 30.84 Sec (0.032 Hz)
- 10.00 Sec (0.100 Hz)
- 3.24 Sec (0.308 Hz)
- 0.96 Sec (1.037 Hz)
- 0.31 Sec (3.200 Hz)
- 0.10 Sec (9.870 Hz)
- 0.05 Sec (19.740 Hz)

Barometric Pressure --- Ground Motion, Pressure and Hurricanes

April 2011, Barometric Pressure

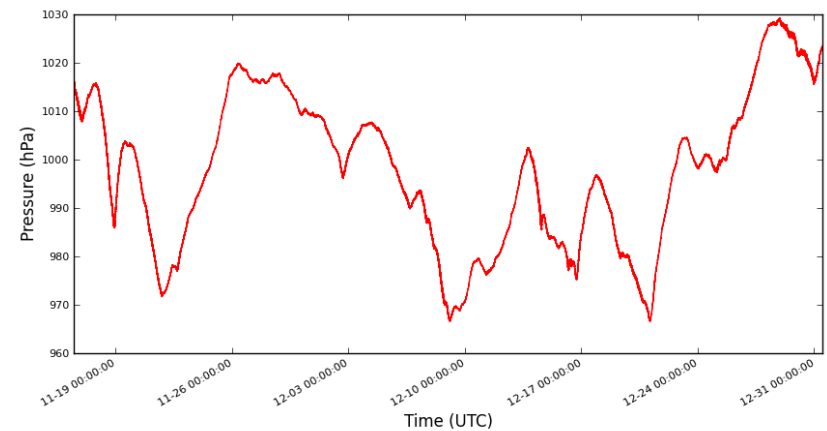


pressure variation in millibar

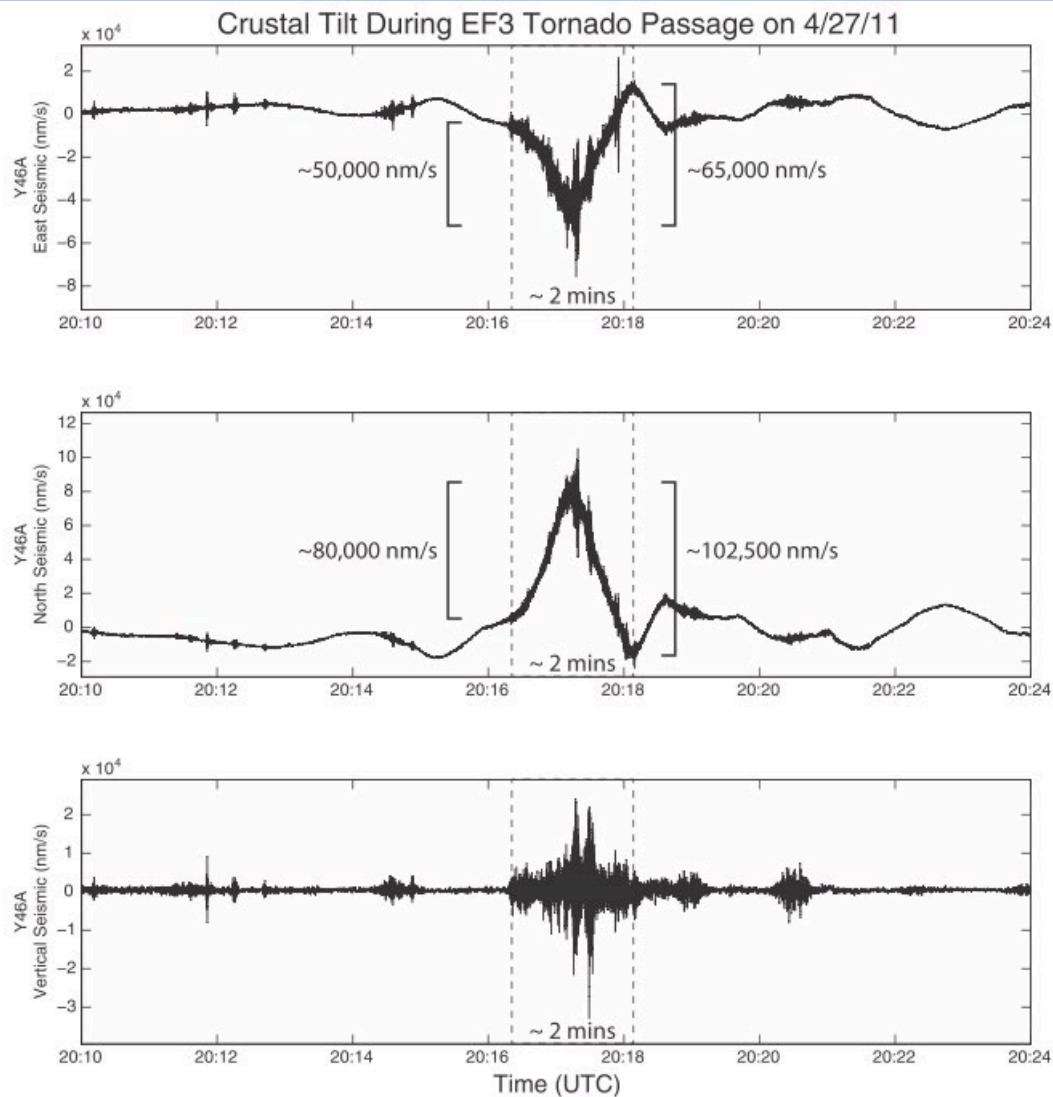


Dots show station barometric pressure as it varies over a period of ten days in April 2011. A severe outbreak of Tornadoes (red squares) occurred and spawned a pressure wave rolling north thousands of miles into Canada.

Q23K 1 Hz Setra-278 Pressure: 16 Nov 2014 12:00 UTC - 31 Dec 2014 12:00 UTC

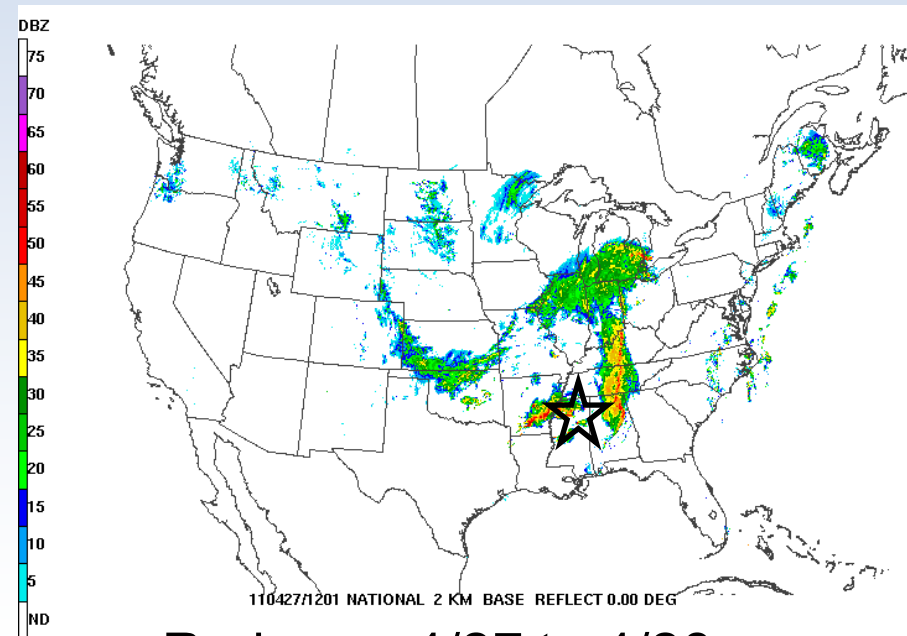


Ground Motion from a Tornado



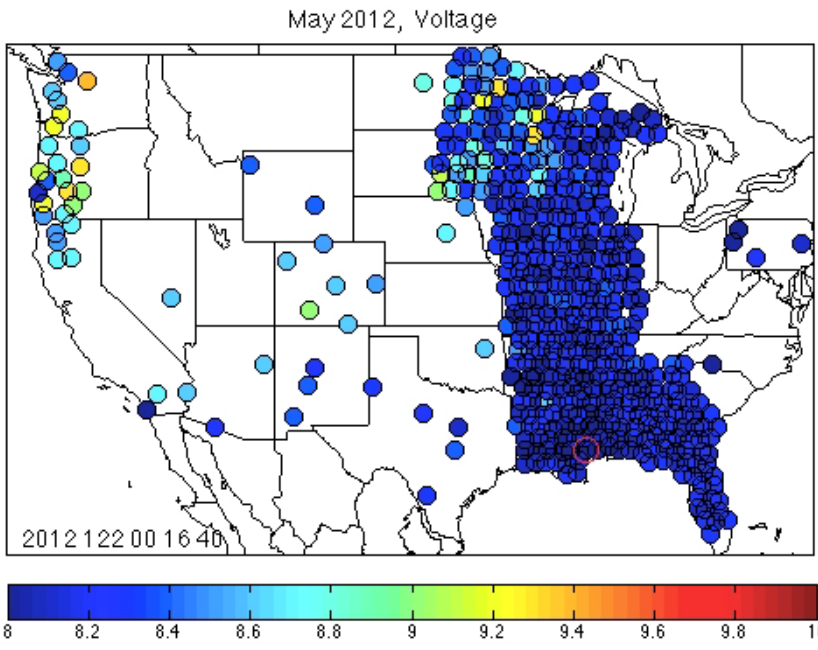
Signal as an EF3 tornado passes over a single station in Mississippi

Horizontal components register the pull on crust

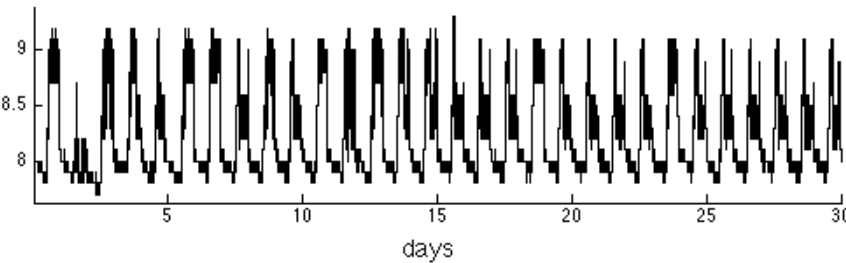


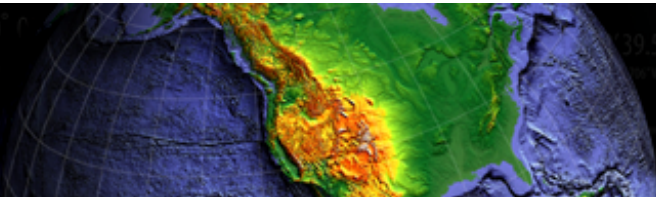
Radar on 4/27 to 4/28

Solar Panel Output



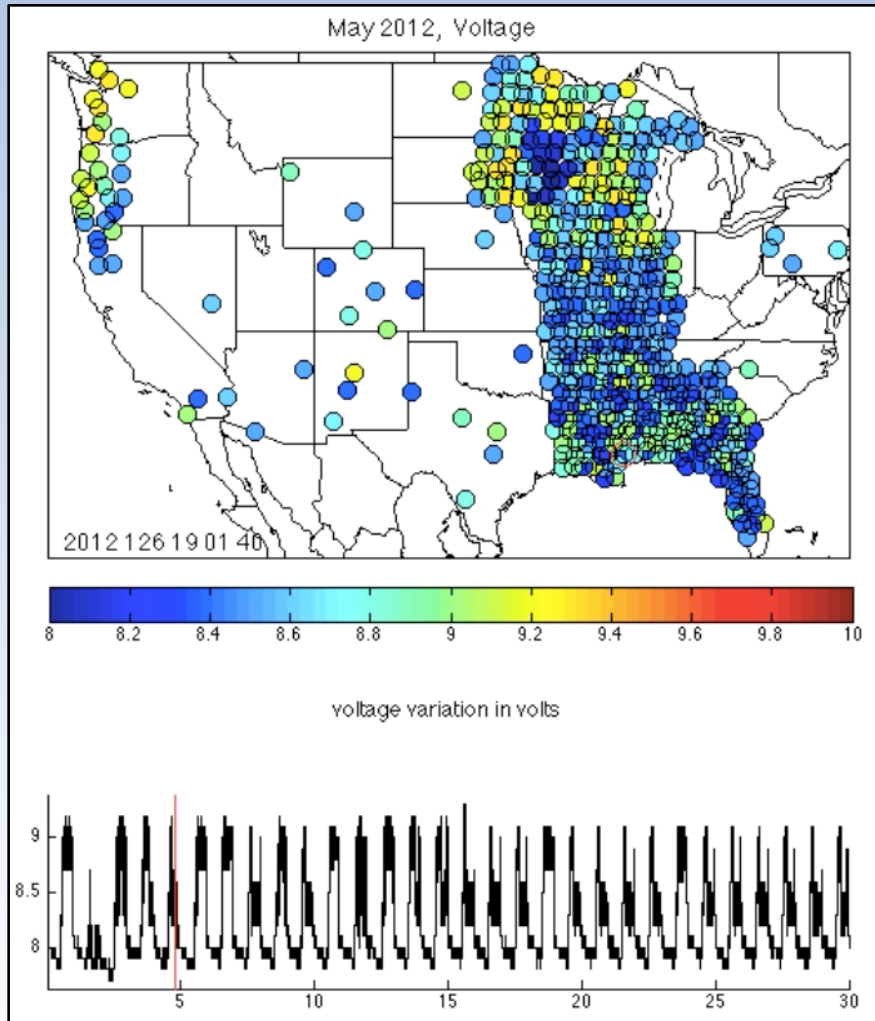
voltage variation in volts



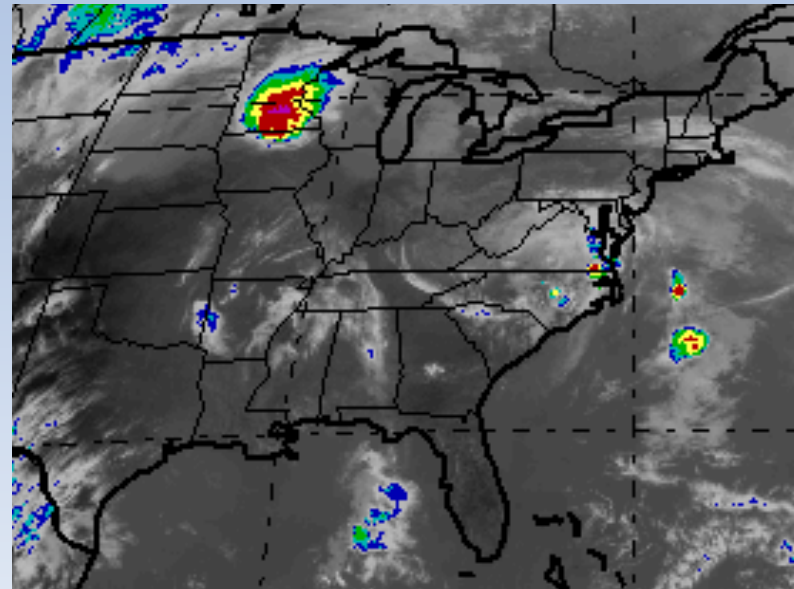


Solar Panel Output

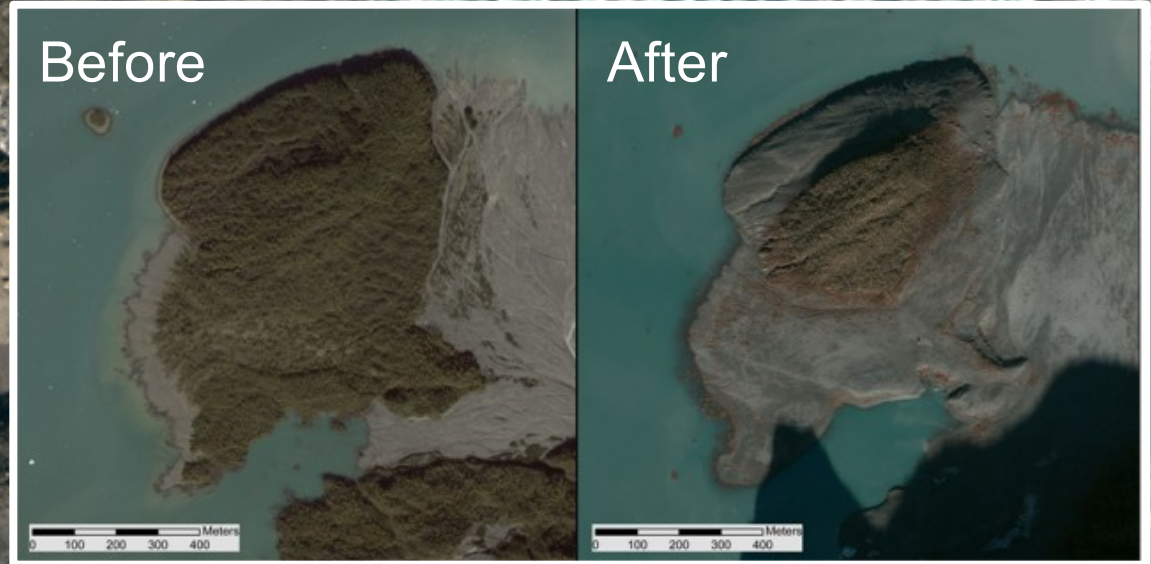
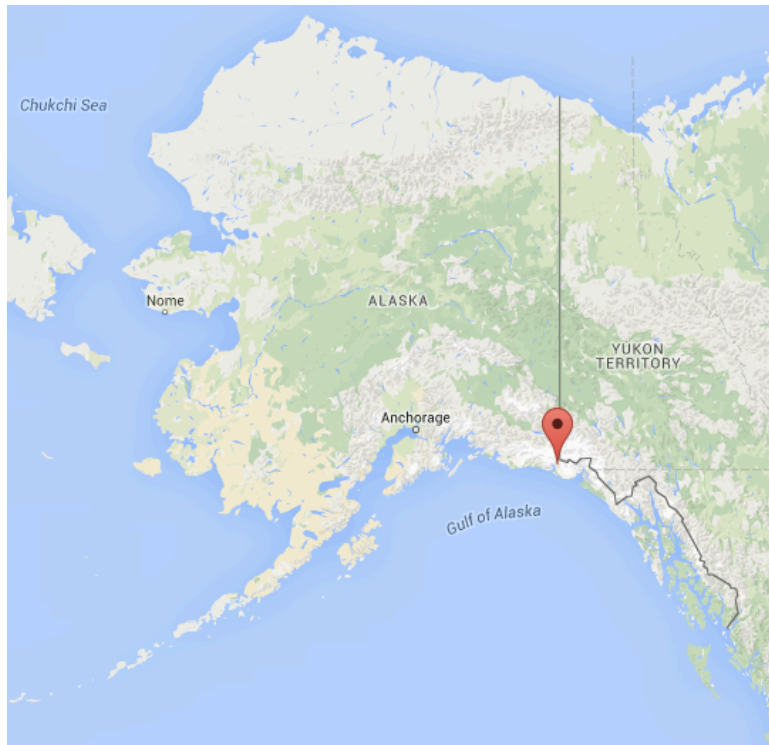
TA Solar Panel Voltage 1901Z 5 May 2012



GOES-East Infrared Image 1900Z 5 May 2012



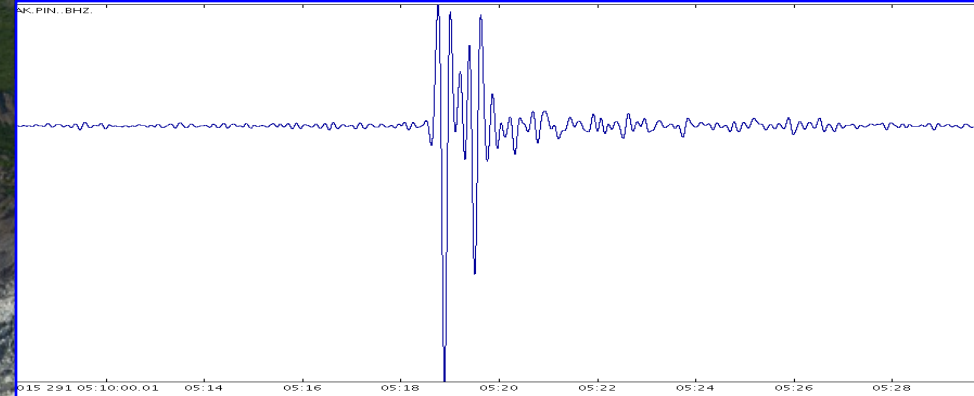
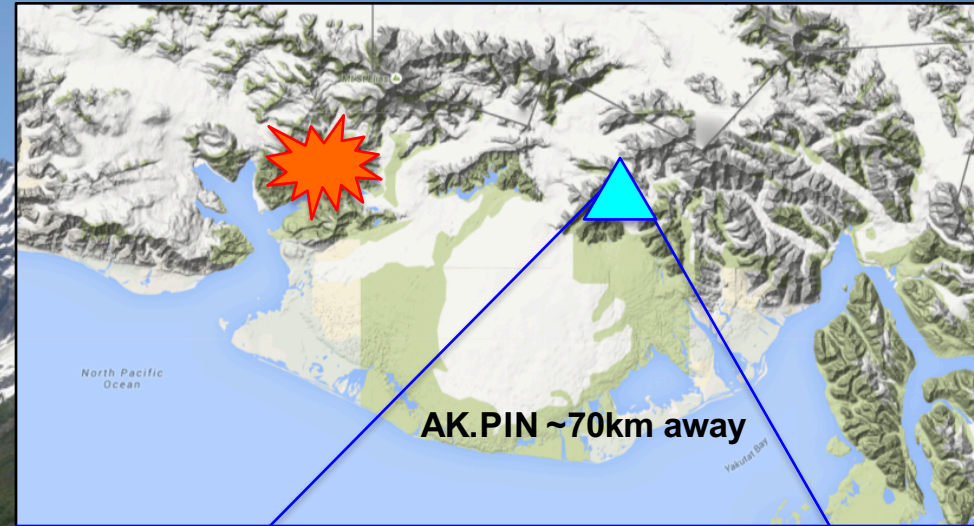
Landslides

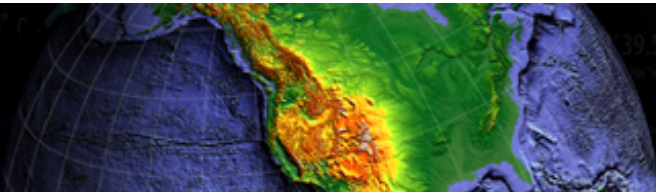


200 million ton landslide
on Tyndall Glacier

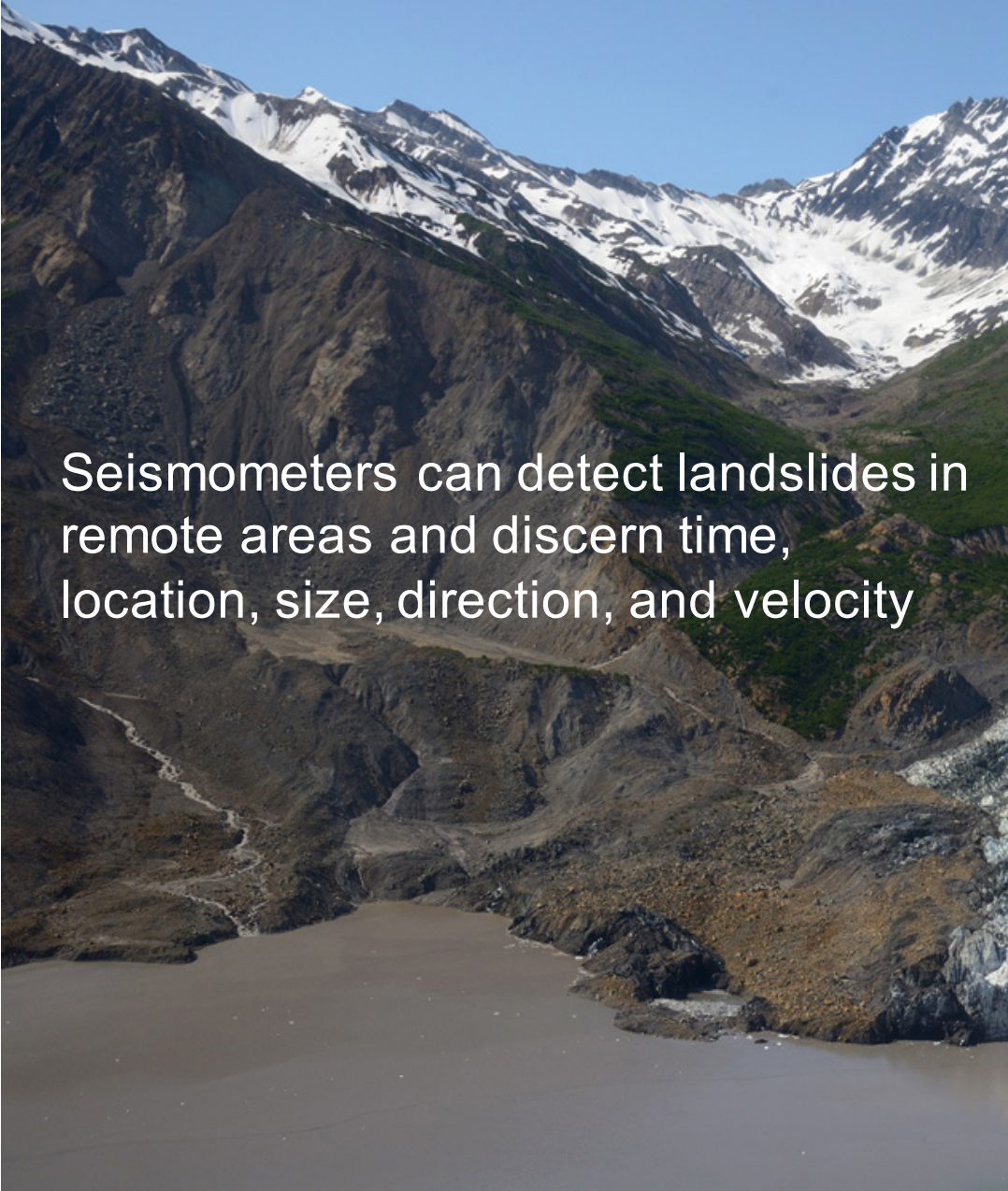


Seismometers can detect landslides in remote areas and discern time, location, size, direction, and velocity

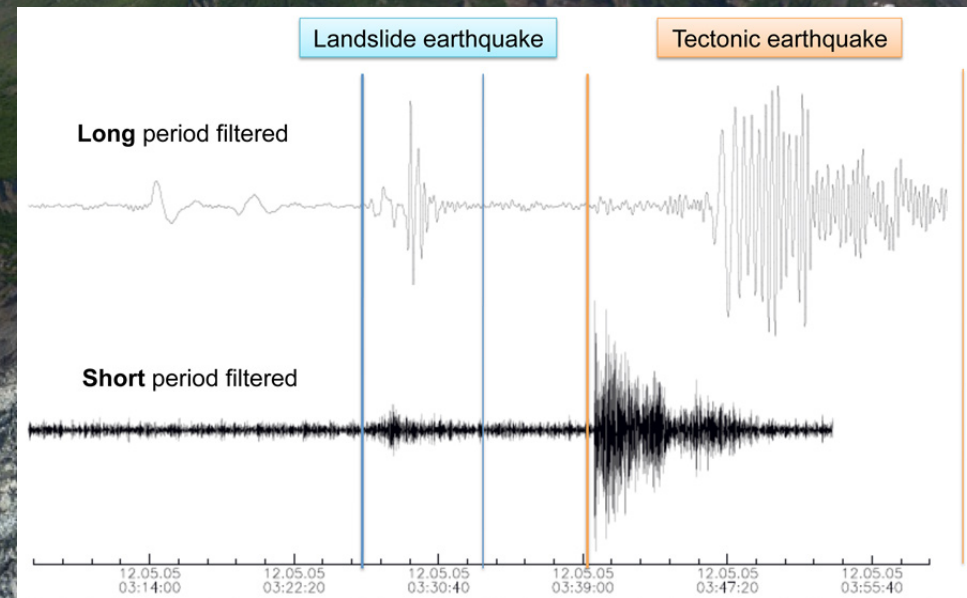
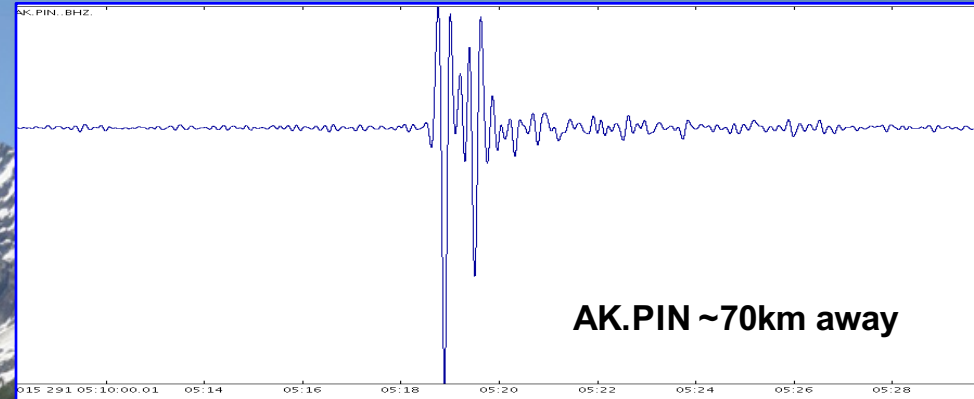




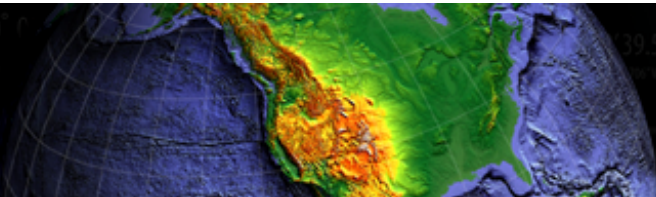
Landslides



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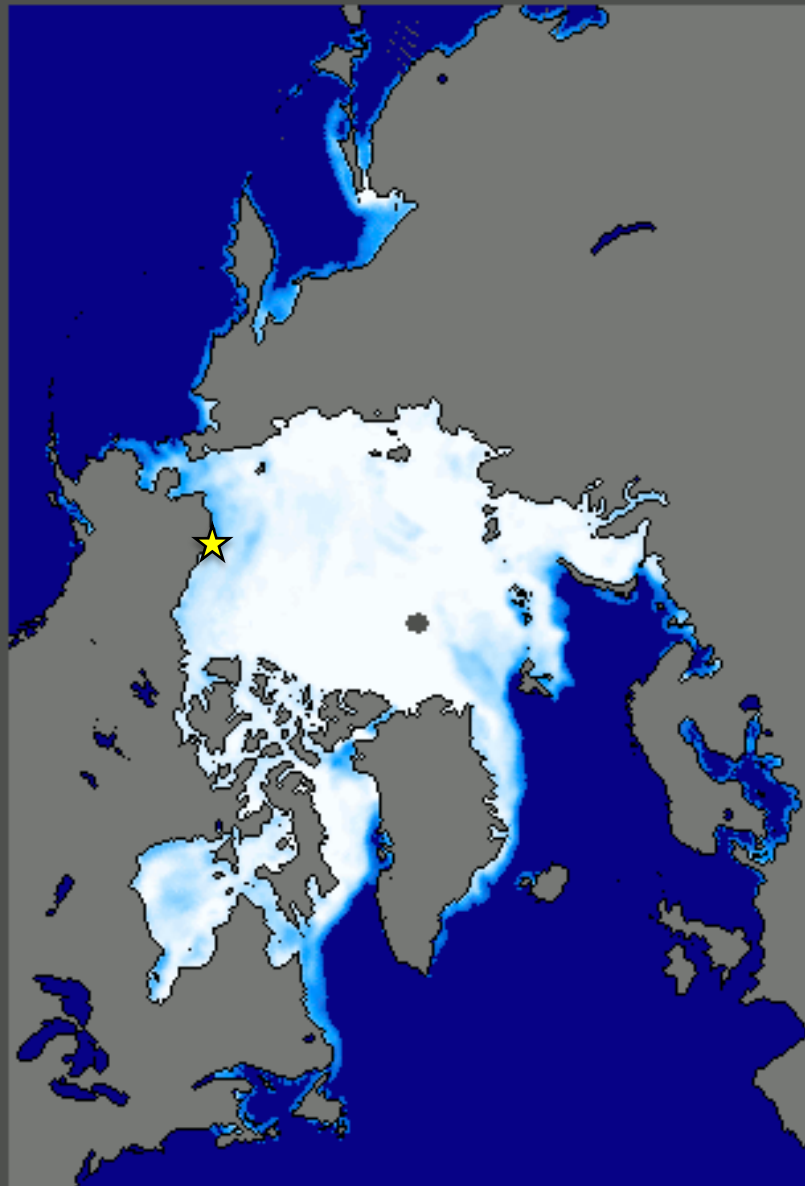
Stark and Ekström



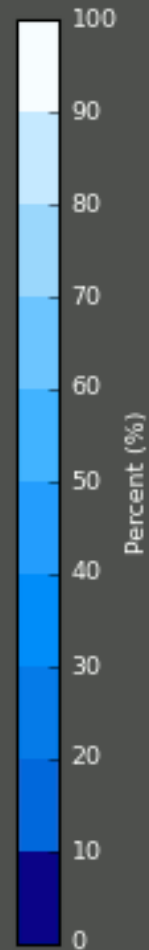
Sea Ice

01/01/2015

High noise (red) corresponds to open water

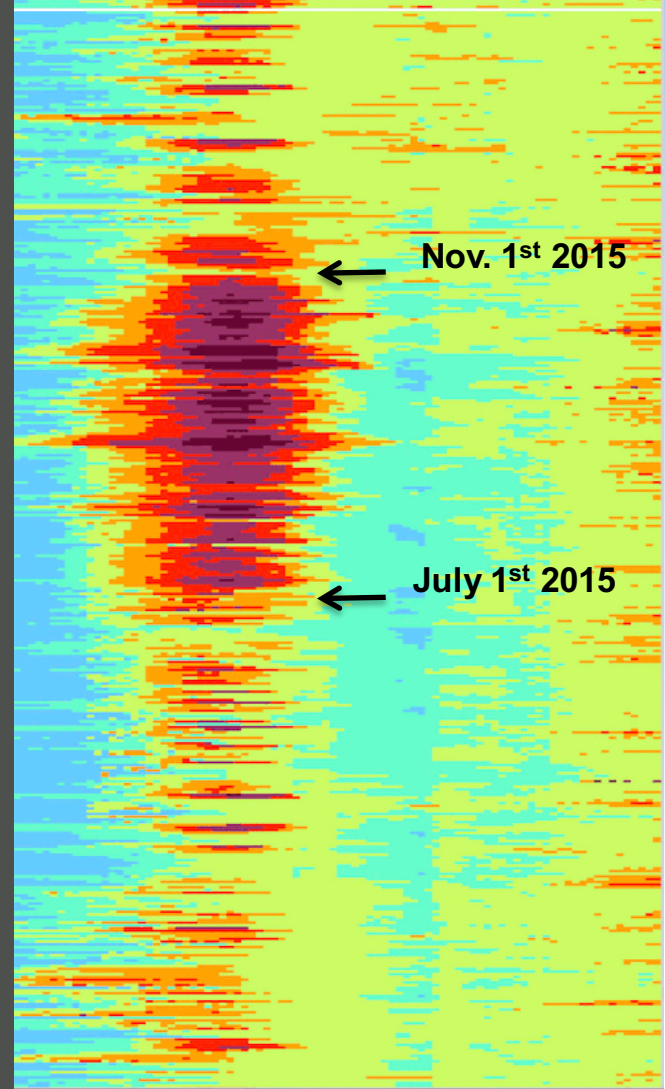
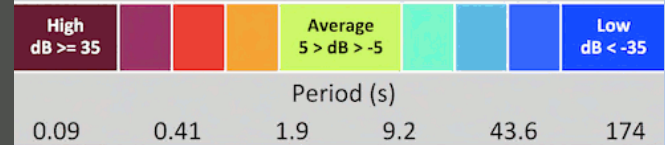


National Snow and Ice Data Center, Boulder, CO



Near-Real-Time DMSP SSM/I-SSMIS Daily Polar Gridded Sea Ice Concentrations

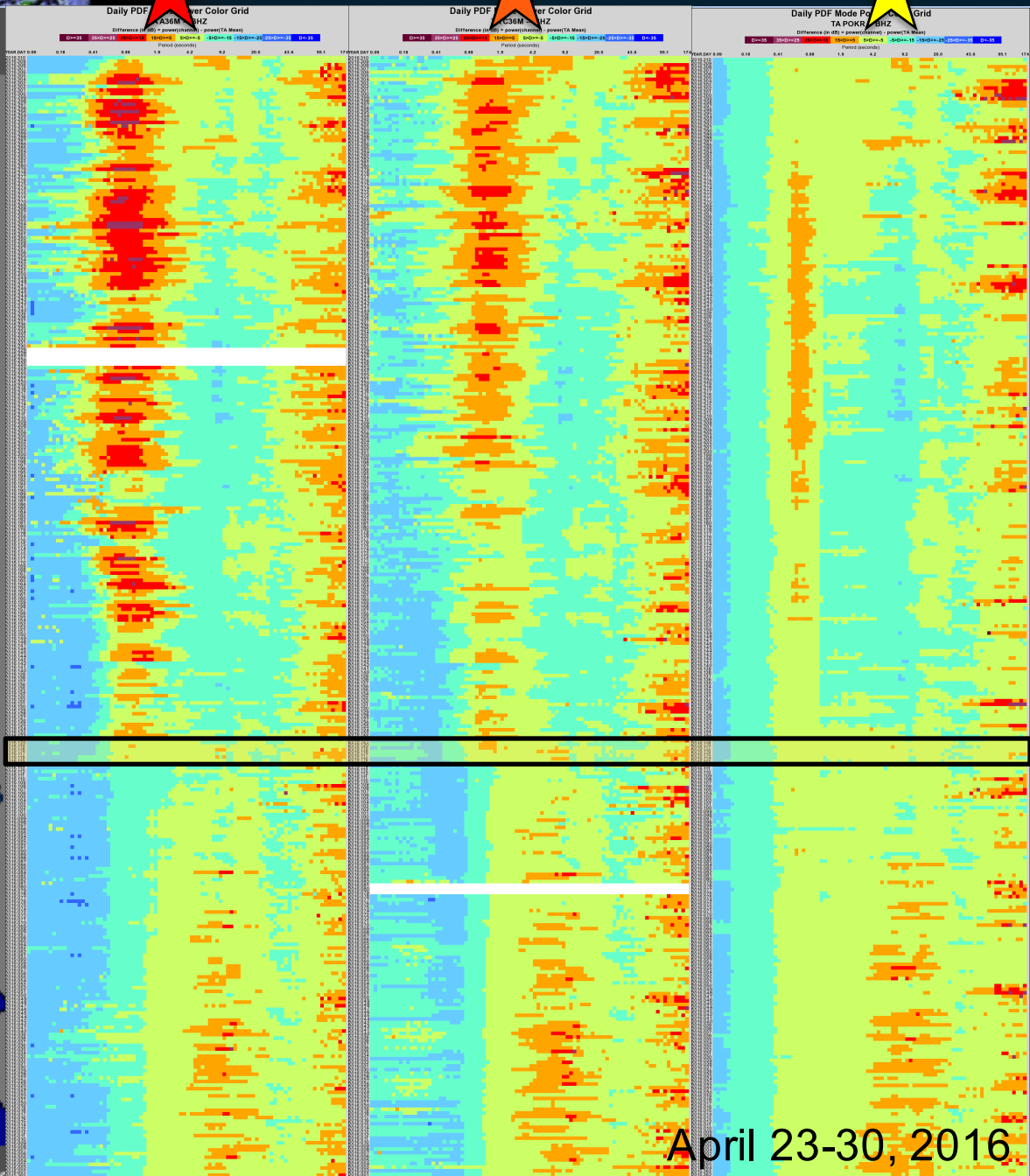
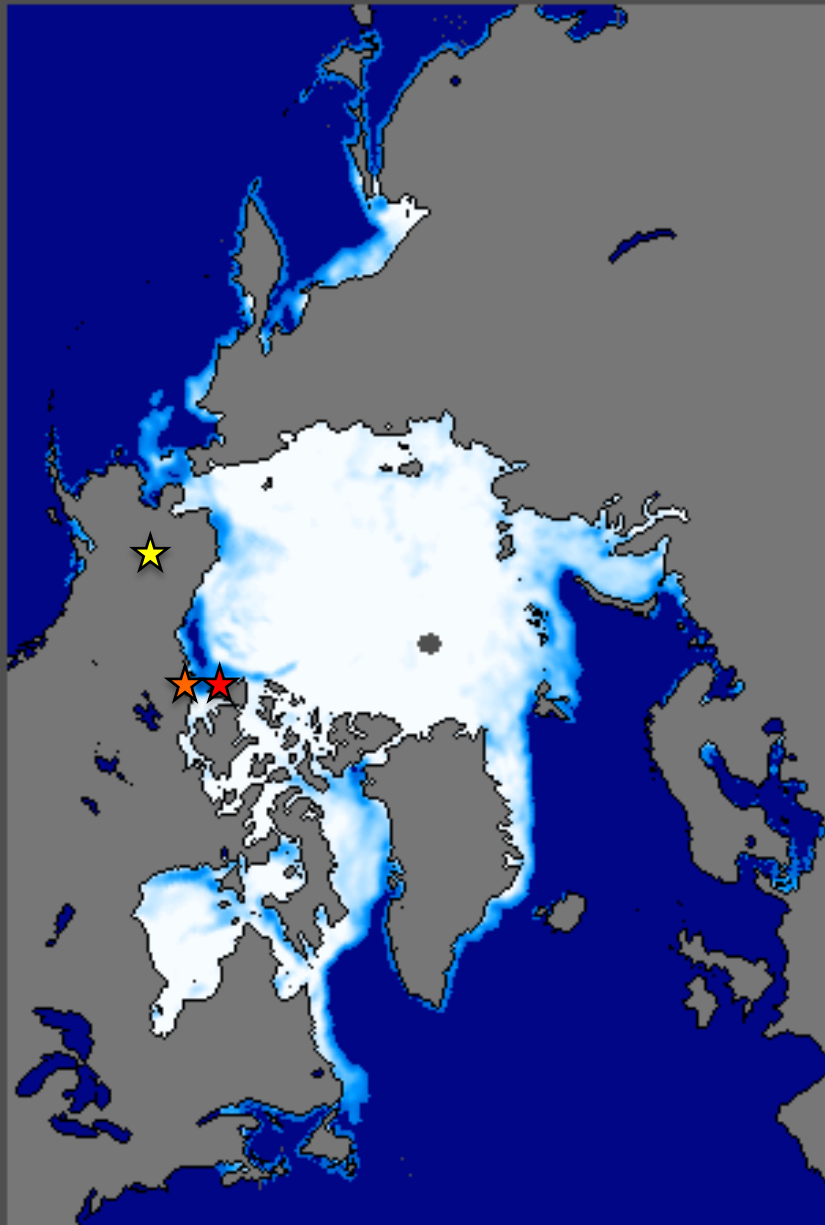
Relative Daily Noise – Barrow, AK – TA.A21K.BHZ



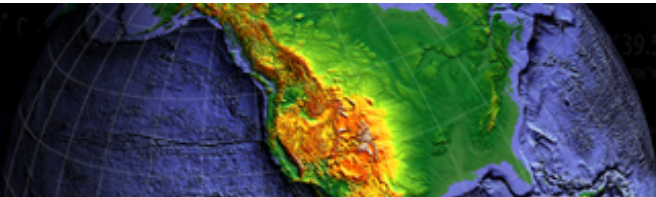
Data Available at IRIS DMC

Sea Ice

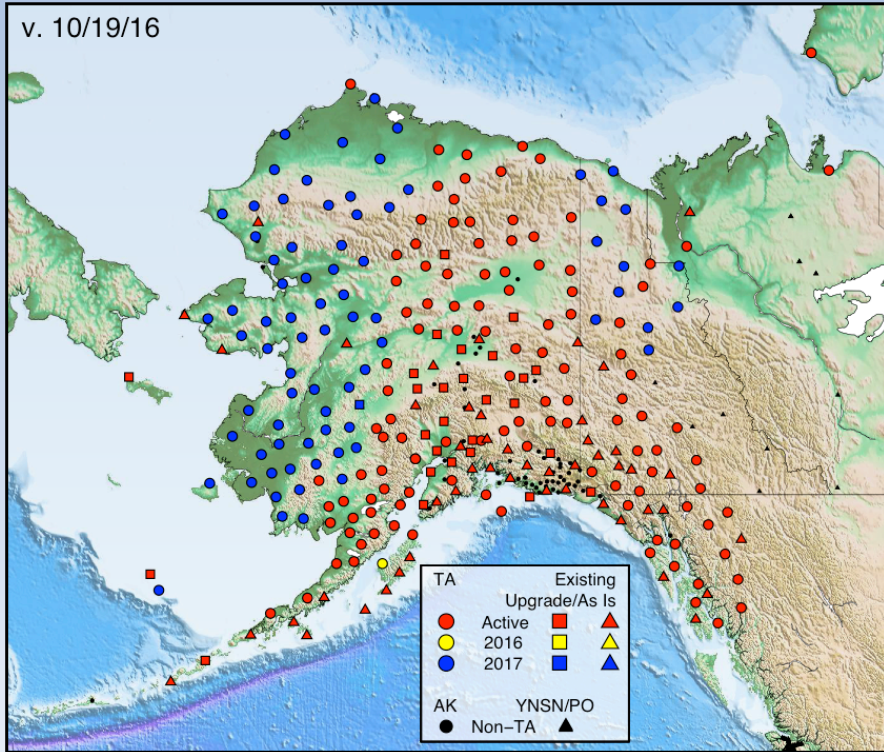
04/30/2016



April 23-30, 2016



v. 10/19/16



Ocean Waves



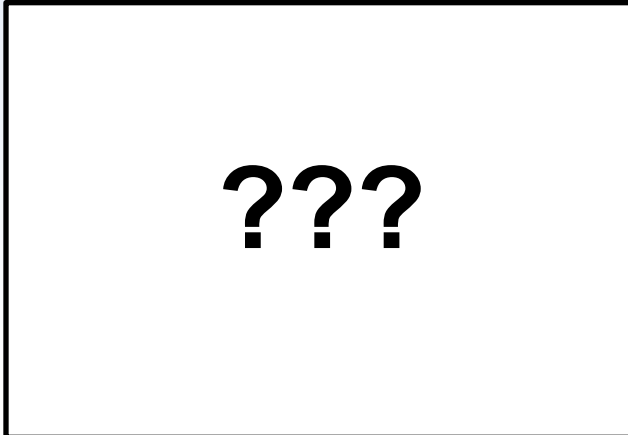
Wind



Wildlife



Storm Systems



Landslides



Glacial Activity

On the Web

- EarthScope
www.earthscope.org
- USArray
www.usarray.org
- PBO
www.unavco.org
- National Science Foundation
www.nsf.gov

EarthScope is funded by the National Science Foundation.

