Posthole Sensor Performance in the USArray Transportable Array: Results from Testing and Initial Deployments



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#### TA in Alaska (and Canada)

v. 4/14/15



#### **PSD-PDF** Analysis









#### Viewing PDFs

TA.TOLK.01.BHZ # 1525244 PSDs



# Example - TOLK





### Example - TOLK





# Example - TOLK







### TA in Alaska (and Canada)





# Harding Lake (HDA)

#### AEC Tank, T240





#### **REINSTALLED October 2012**







# **HDA** Performance



# TA in 2014



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### AK – 1 Year Before

#### Station PDF Residual Medians BH[E/N]





#### AK – To Present

#### Station PDF Residual Medians BH[E/N]





#### New TA sites

#### Station PDF Residual Medians BH[E/N]



#### **Station Seasonality**



Time (Year.Month)



### **Station Seasonality**

Daily PDF Mode Timelines TA.A21K.BHEM: 2014-06-23 to 2015-04-02





# 2014 Piñon Flat Tests



~0.75 km



**Epoch A (April 10 – July 6):** 9 TA seismometers, various grouting/hole packing combinations

**Epoch B (July 7 – November 13):** 4 UCSD seismometers added, packing changed

**Epoch C (November 14 – Present):** Some sensors swapped, all now packed with sand

**Grout** – plungered from base, filled around annulus from surface, pumped under 30-100 PSI through base (done in AK)

Examples – Epoch C





Installation: PVC case, sand fill, grouted annulus

Examples – Epoch C





Installation: Steel case, sand fill, loose grouting at bottom of case

#### earth scope

#### Epoch C

**Epoch C PDF Medians BHZ** 



#### Epoch C









# Epoch C – PY Mean Ref.

**Epoch C PDF Residual Medians BHZ** 





#### **Epoch C PDF Residual Medians BH[E/N]**

earth scope





# Epoch C – TA.TFPO Ref.

#### Epoch C PDF Residual Medians BH[E/N]





#### Median Noise Levels

**A** TPFO



Good correlation w/grouting type at long periods.



# Thanks!

#### Stay Tuned...



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## **HDA** Performance





## **HDA** Performance





#### **Station Seasonality**

Daily PDF Mode Timelines TA.POKR.01.BHEM: 2012-10-04 to 2013-10-01





#### **Station Seasonality**

Daily PDF Mode Timelines TAPOKR.01.BHEM: 2013-10-01 to 2014-10-01

