

# Kinematic processing with track

## Tutorial 03 and 04

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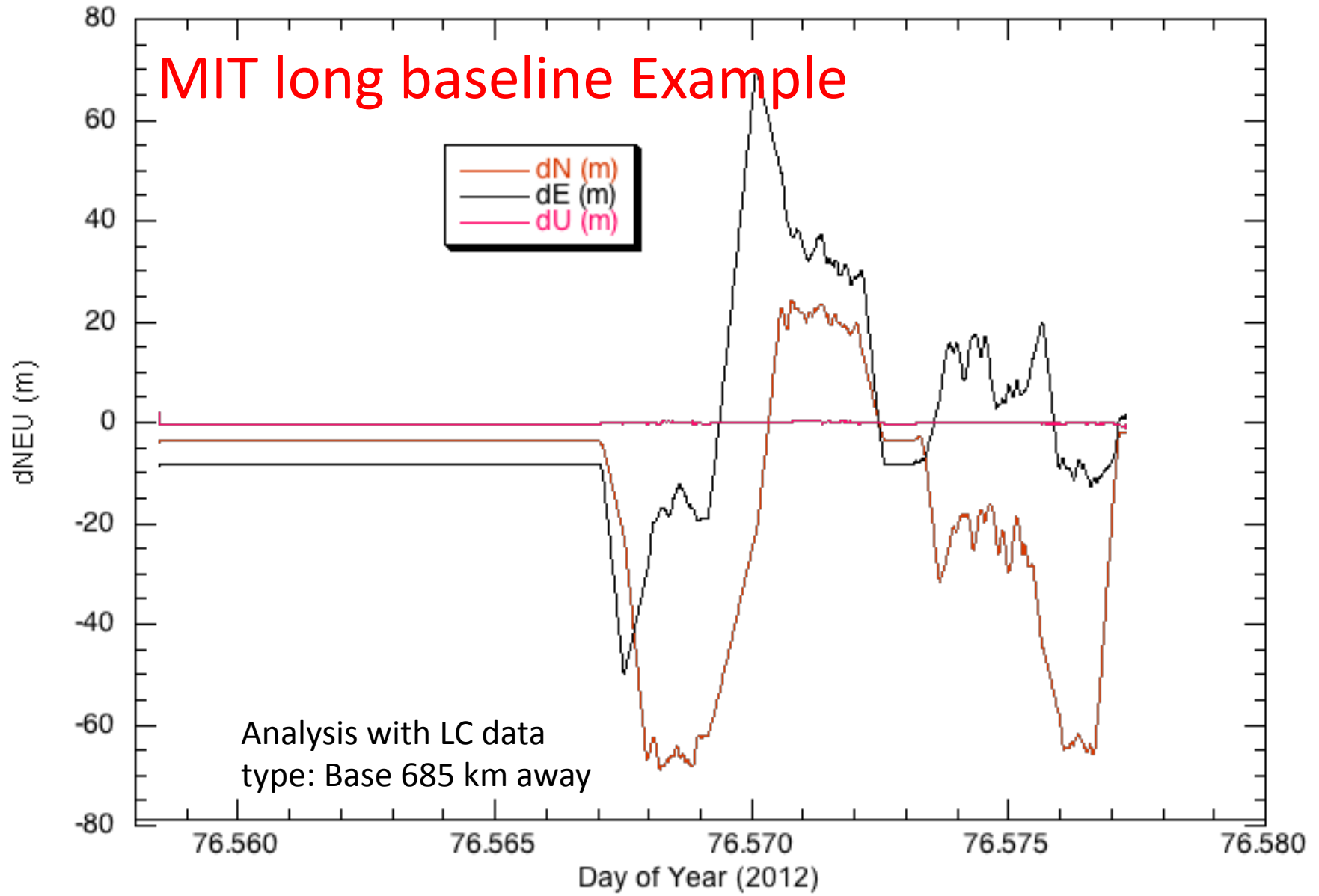
# Tutorial

- There are 2 tutorial folders for this exercise.
  - BajaEQ
    - This set of data contains 5 Hz GPS data at the time of the El Major Cucapah earthquake in April 2010.
    - We demonstrate long baseline processing with these data and methods of using time-dependent process noise to improve ambiguity resolution on long baselines.
    - Start with the track\_shrt.cmd file in std folder.
  - kineMIT
    - This data set is a kinematic experiment carried out at MIT and when displayed in Google Earth it becomes clear what was being measured.
    - We can process this data has a short baseline and has a long baseline using Algonquin Park in Canada has the reference station.

# Some results

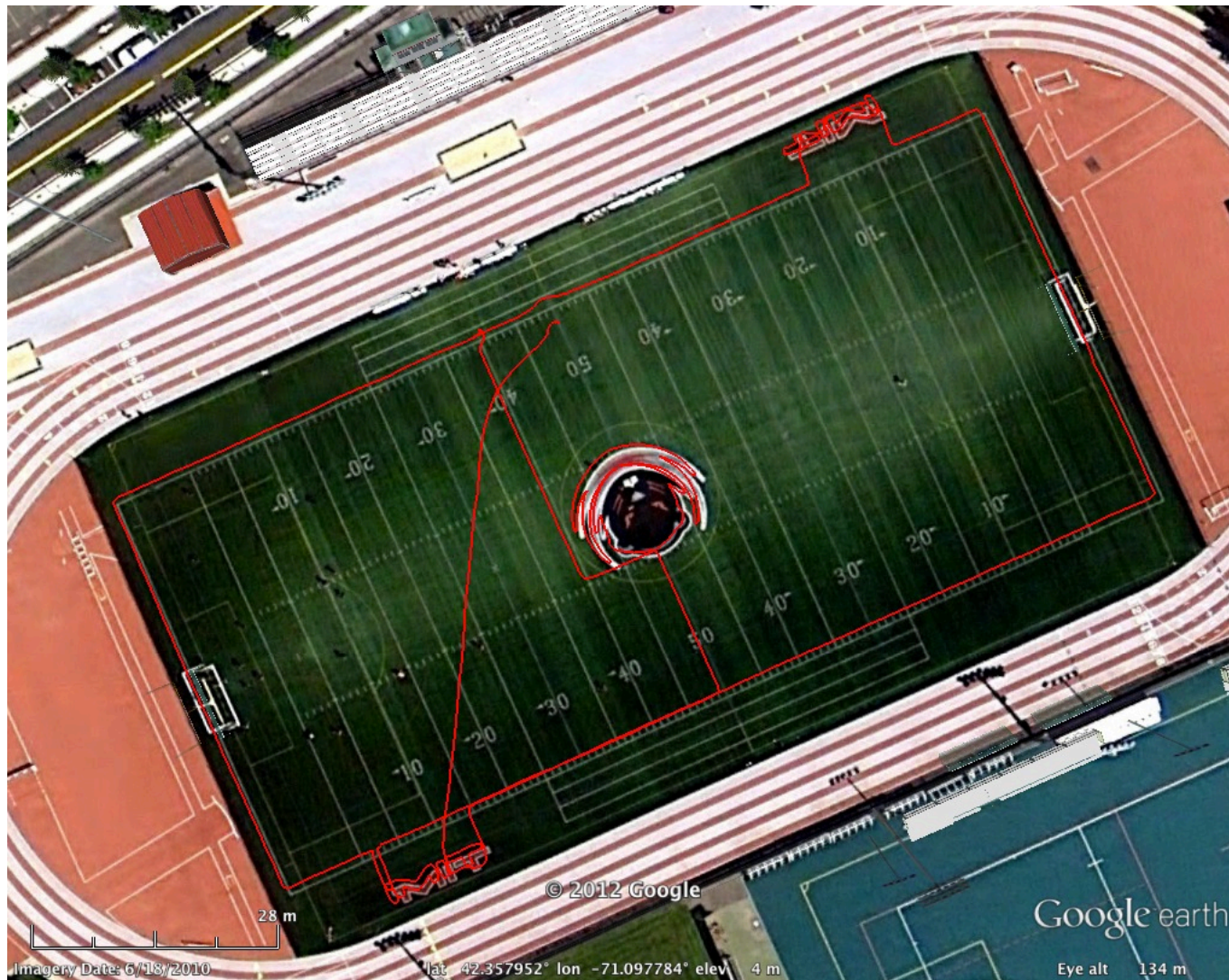
- Examine the short/long baseline MIT results: Look at this example in more detail later
- April 4, 2010 El-Mayor Cucapah earthquake in Baja California: 5-Hz results. Look later at long baseline processing for these sites.

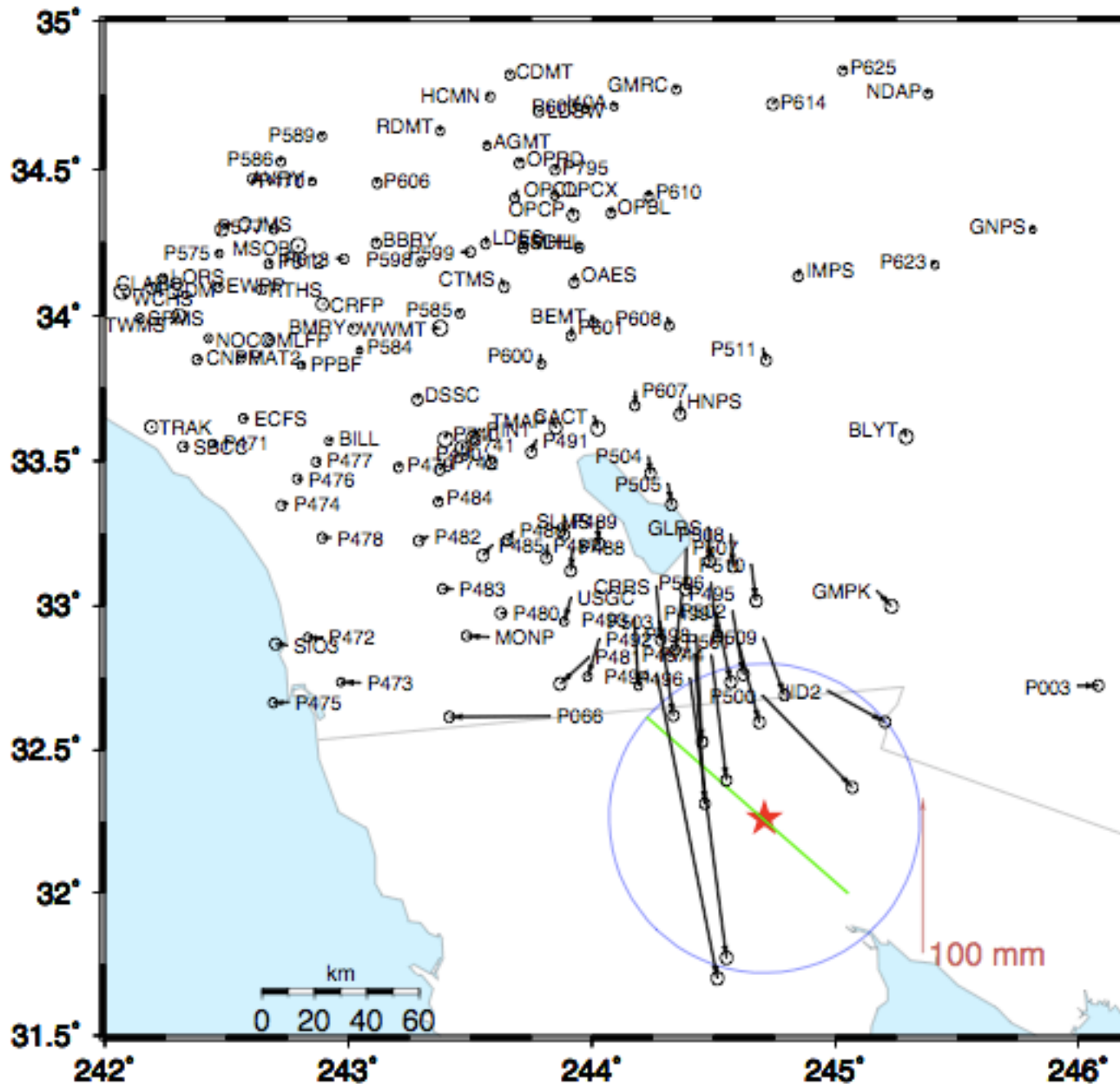
# MIT long baseline Example



Analysis with LC data  
type: Base 685 km away

# MIT track run

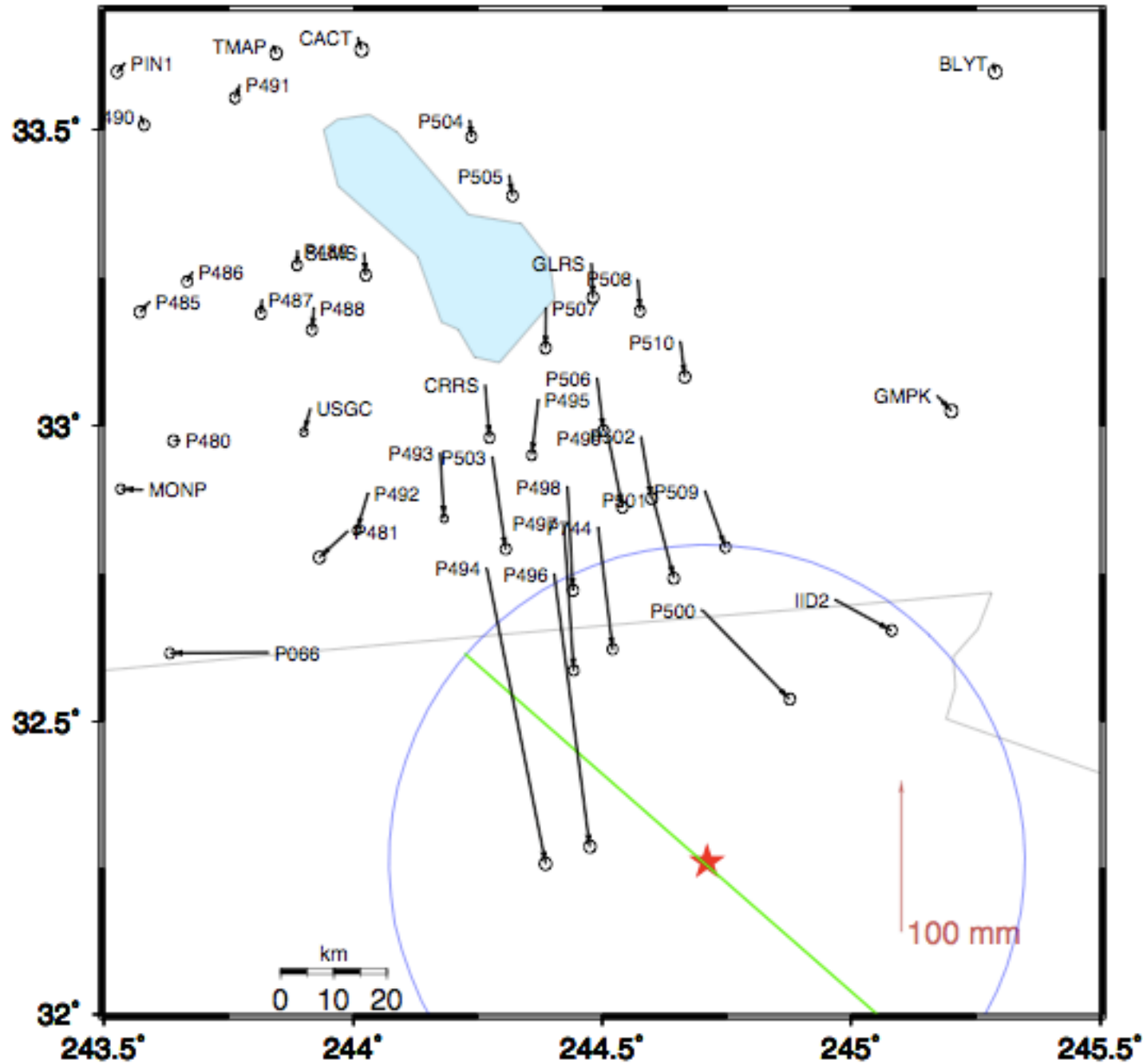




## Coseismic offsets

- Offsets based on 2-days before and after earthquake.
- Two days used is reduce leakage of postseismic motions.
- Red Star is epicenter; blue circle is 60 km (15-20 seconds surface wave speed)

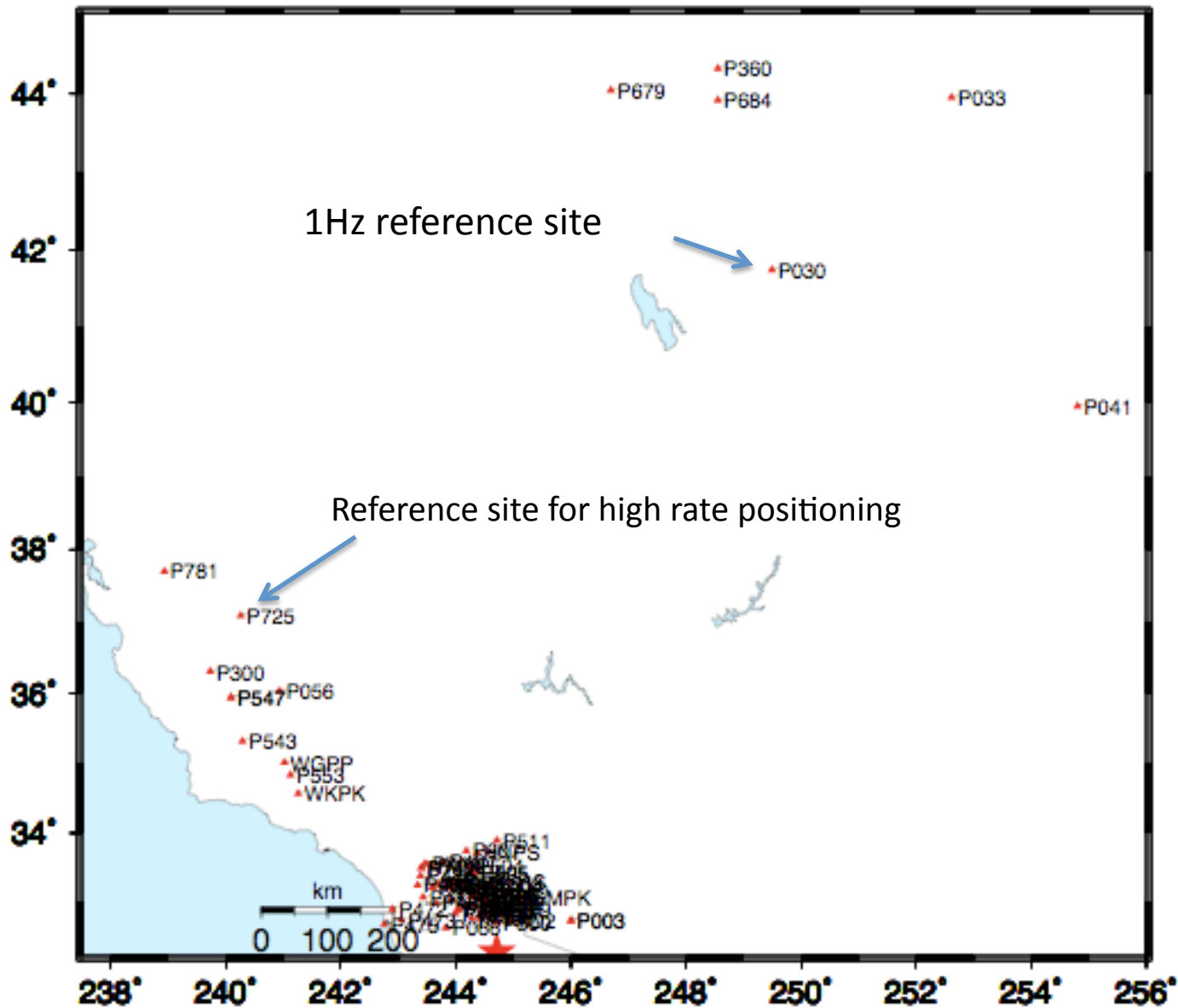




# Zoom around border

Sites near the epicenter.  
 Blue circle is 60 km radius  
 Displacement s

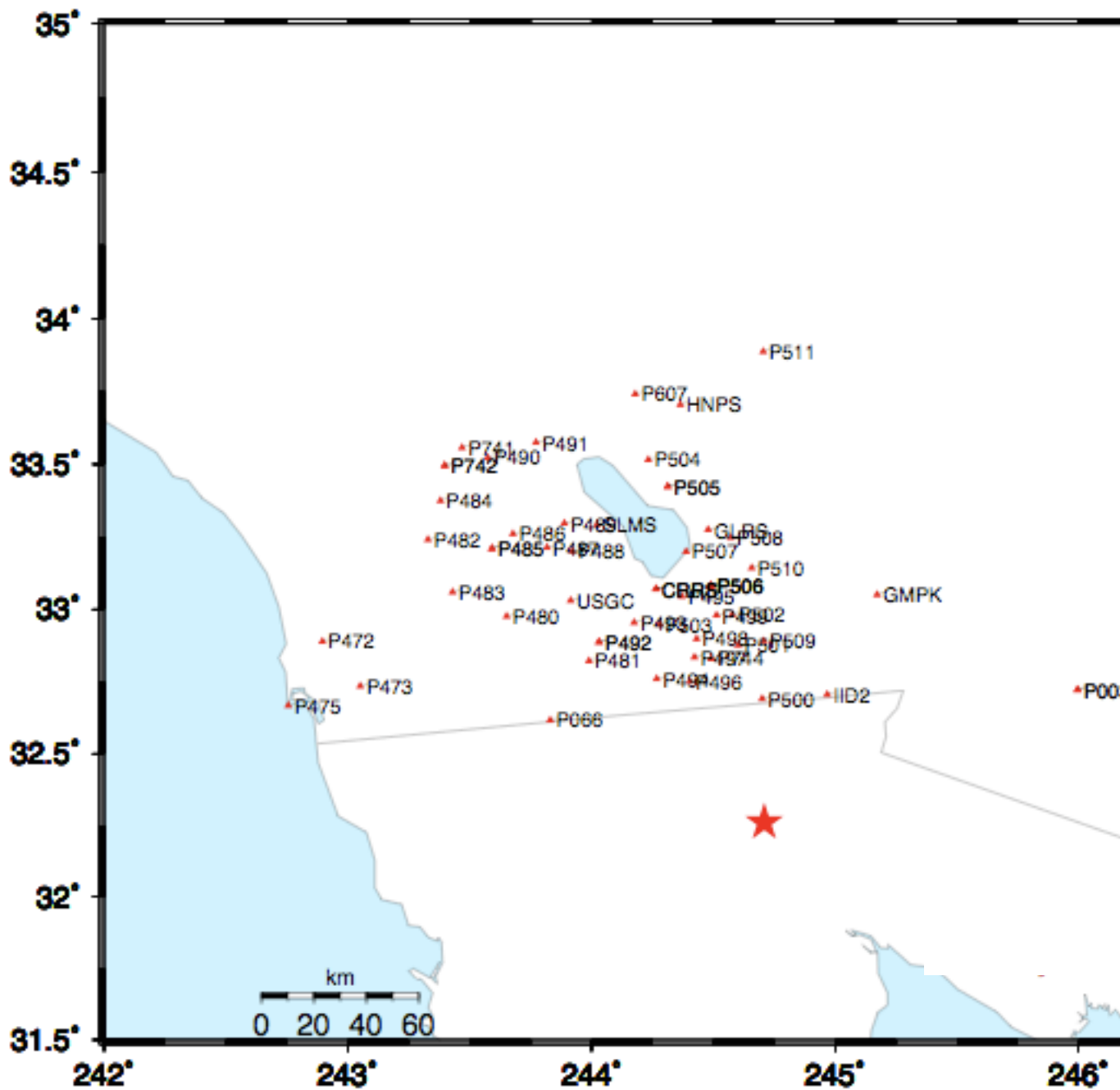
P494	200 mm
P496	182 mm
P497	97 mm
...	
P491	9 mm



## High-rate GPS site download

- High rate data from these sites downloaded after event.
- Most sites are 5-Hz; more distant sites are 1-Hz.

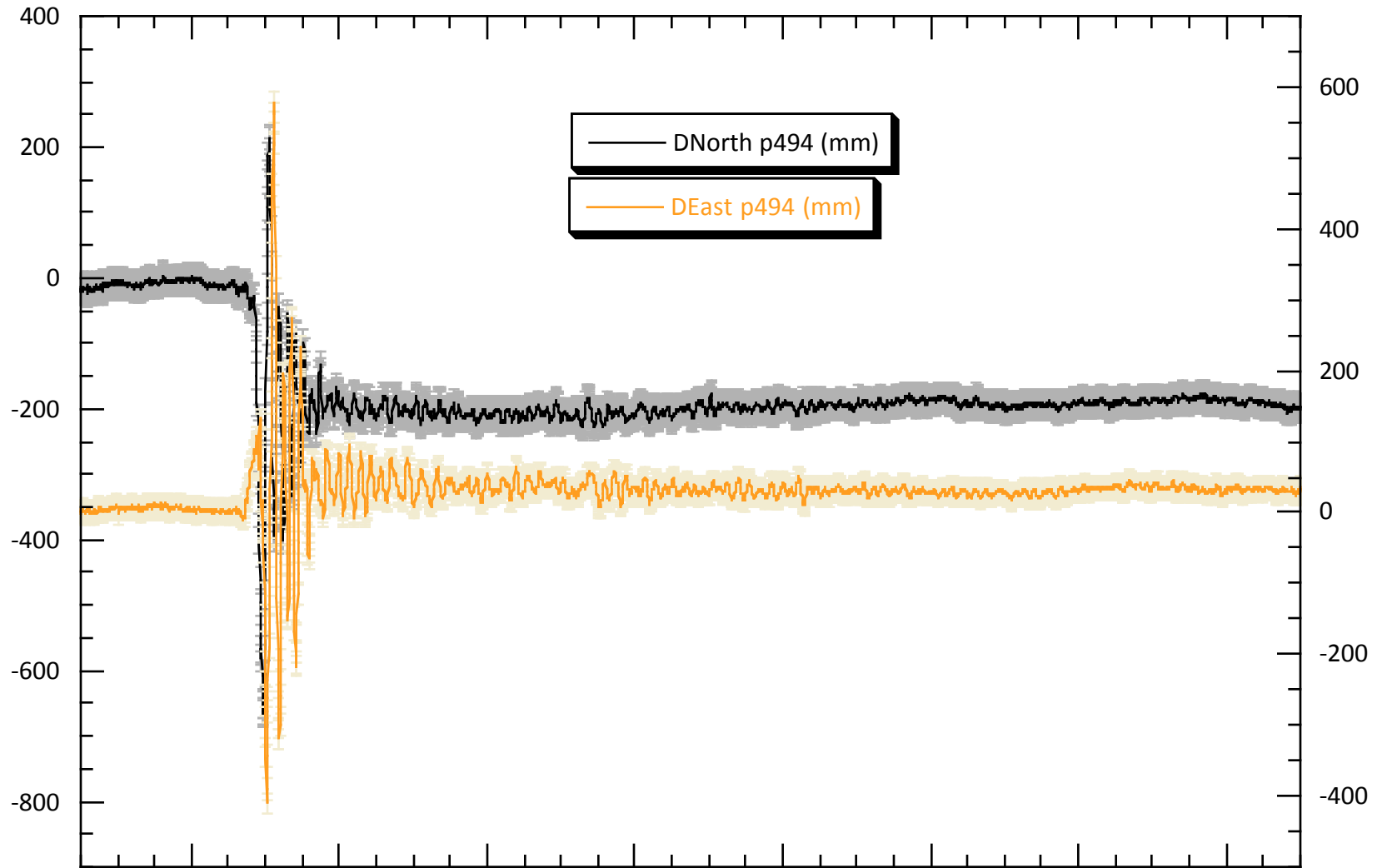




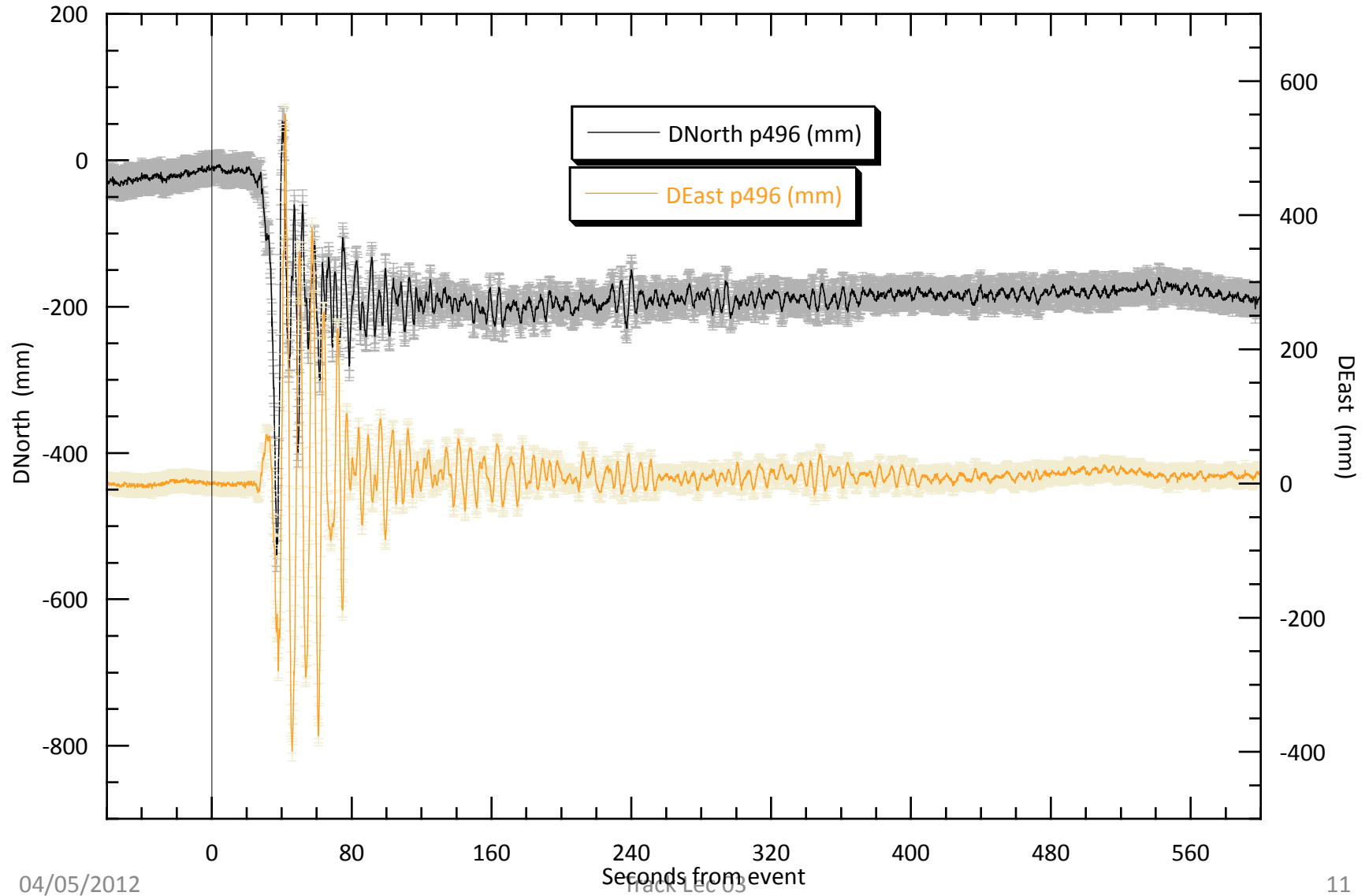
## Sites in coseismic region

- Sites shown have 5-Hz data for 3-days before and after the earthquake
- Examine sequence of sites along US/Mexico border and North

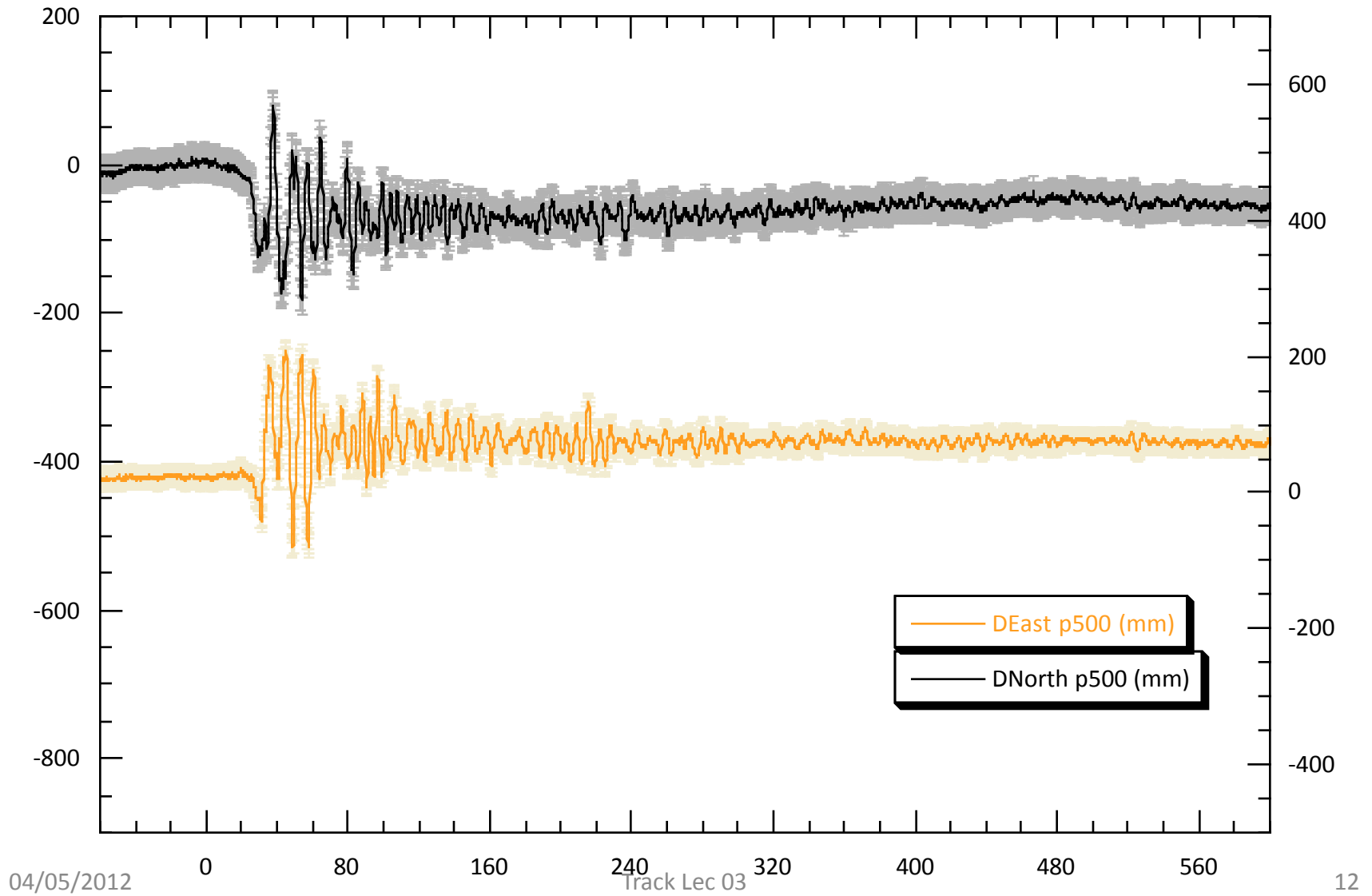
# P494



# P496



# P500

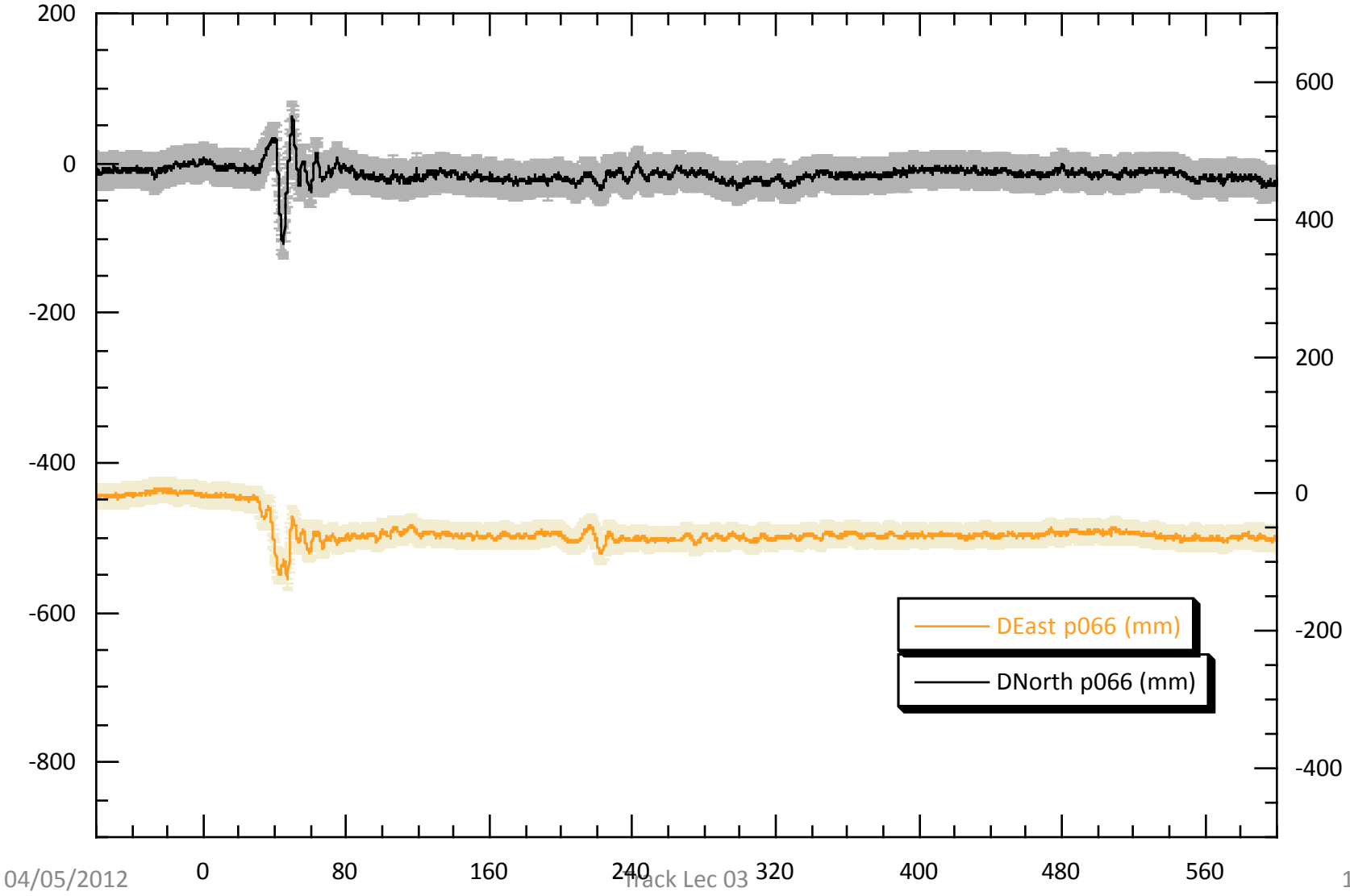


04/05/2012

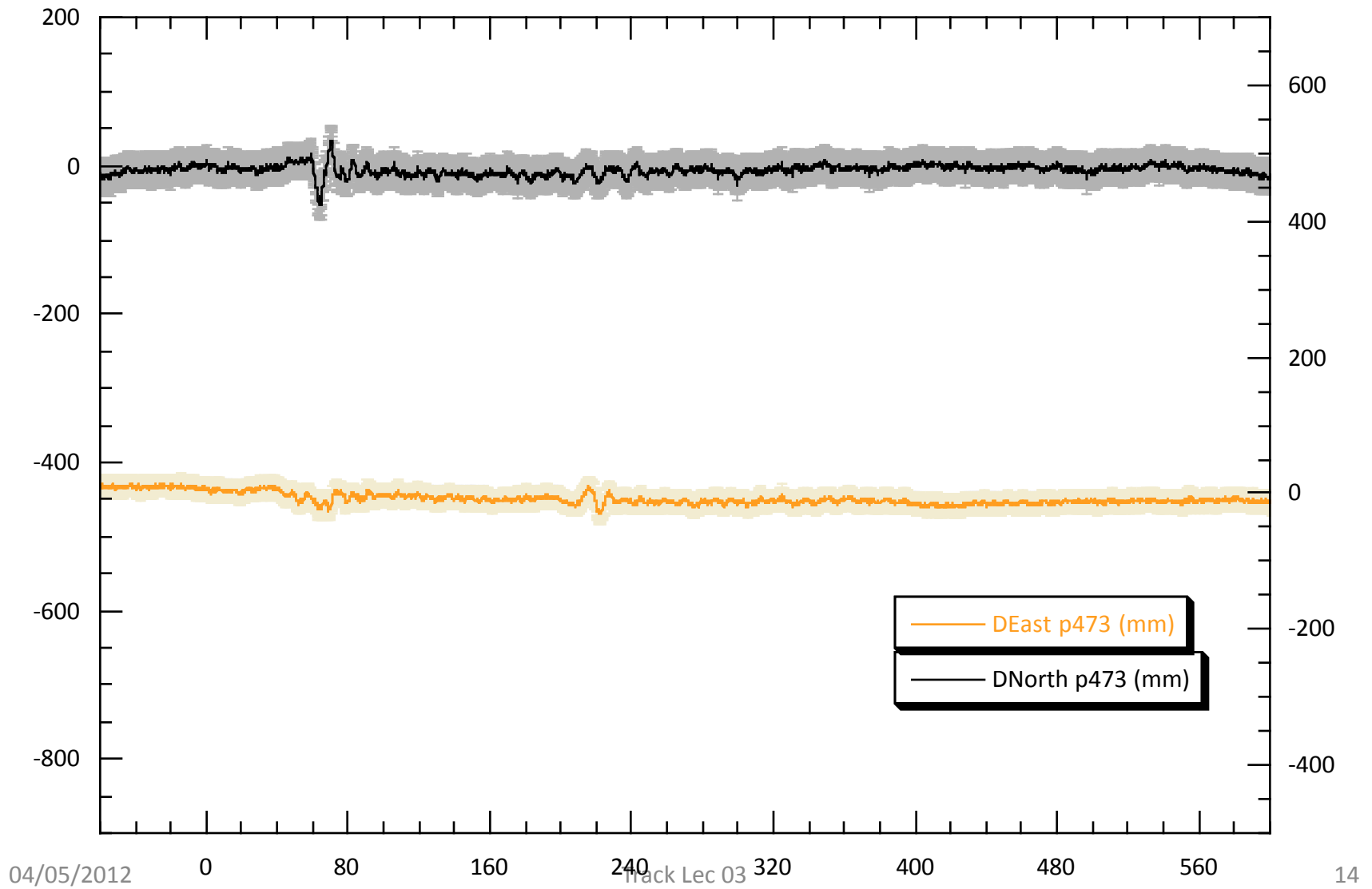
Track Lec 03

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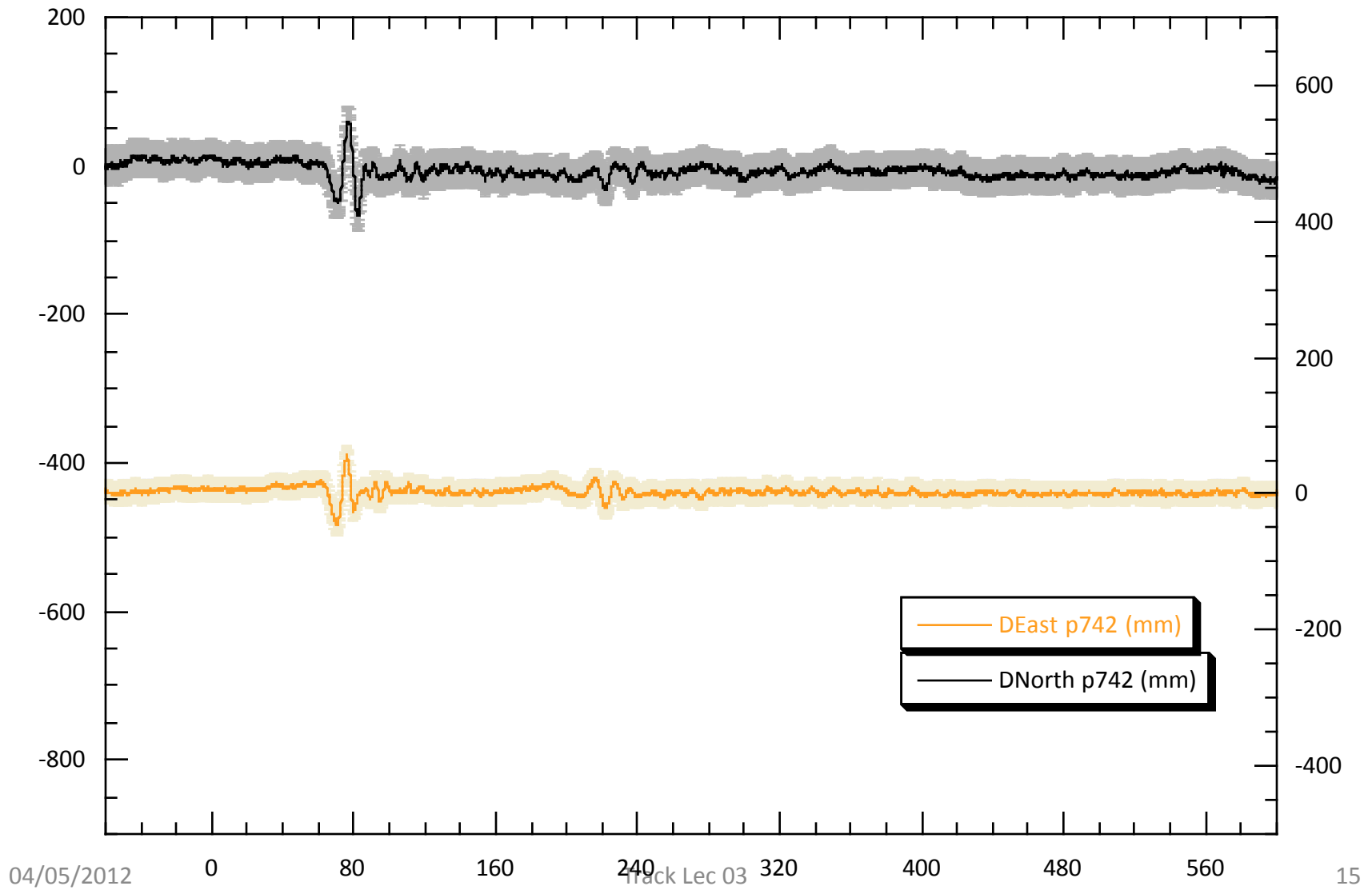
# P066



# P473



# P742





# Surface wave arrival at P725

- P725 is ~600 km from epicenter. This signal common to sites is the arrival at the “reference site”

