SAND2012-3635P

Exceptional service in the national interest

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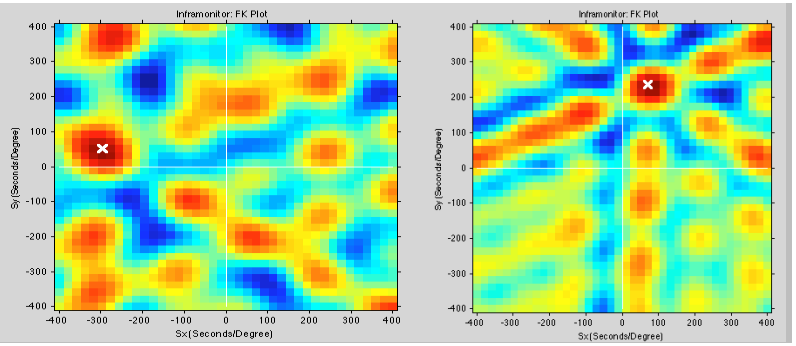

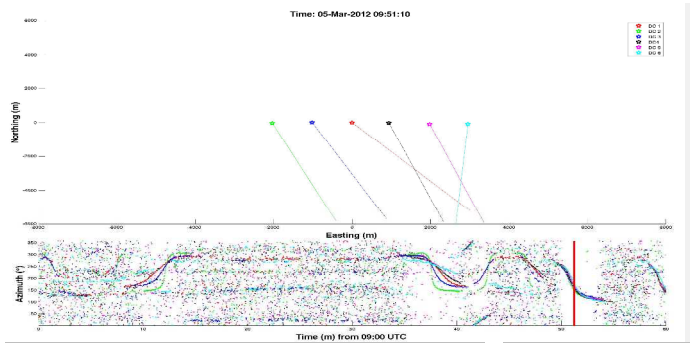

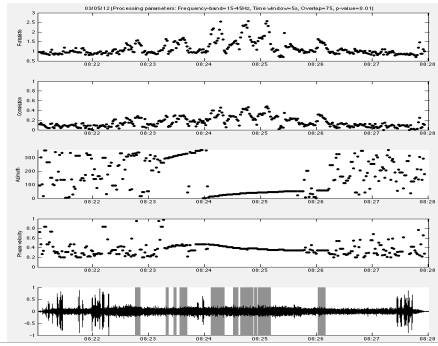

March 5 – Data Collection Preliminary Results

Kyle R. Jones

Darren M. Hart

April 16, 2012

U.S. DEPARTMENT OF ENERGY

NNSA Nuclear National Security Administration

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Preliminary Infrasound Results DC – March 5, 2012

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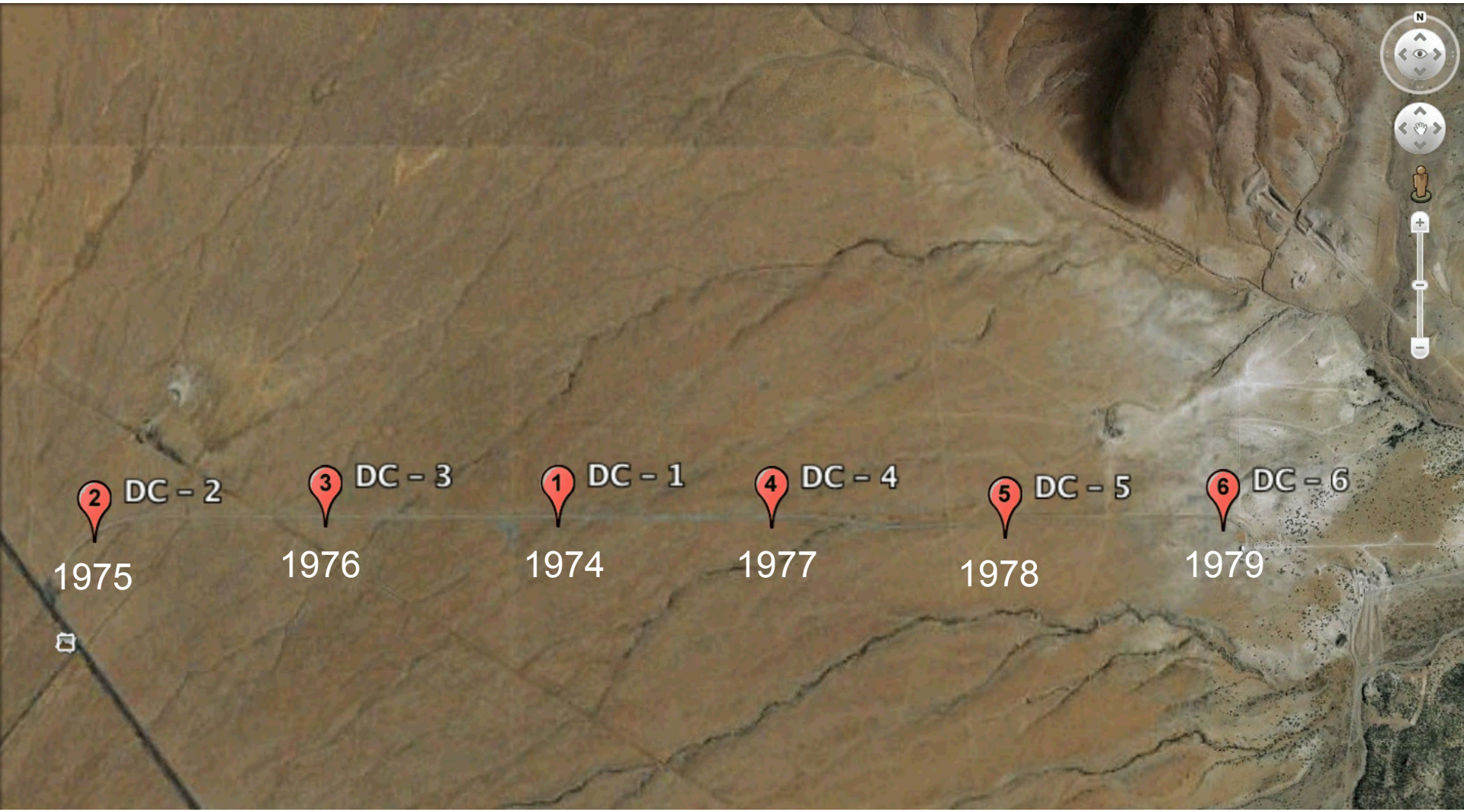
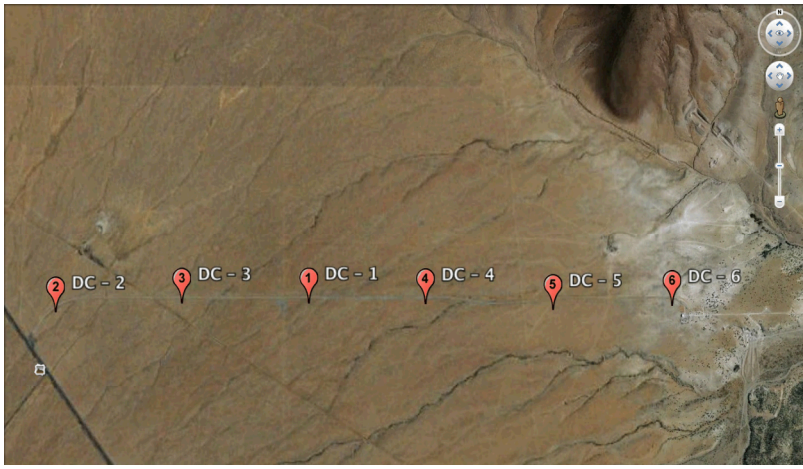
- Brief overview of data
- Independently verify results
  - InfraTool (Matseis)
  - InfraMonitor
  - Other
- Best Day of Data
  - March 5, 2012
- Processing Parameters
  - 15-45 Hz 4^{th} order band pass filter
  - 5 second window
  - 75% overlap

Map of Field Area



Map of Field Area

- 6 Stations
  - 6 → CP25 mini arrays
    - 3 – CP25s w/Porous hoses per array
  - 1 → NASA/PCB Array
    - 3 – PCB sensors w/Spherical windscreens
- 4 Stations with 10 m arm lengths
  - DC1, DC2, DC3, DC6
- 2 Stations with 30 m arm lengths
  - DC4, DC5



- Flight Track GPS Data

GPS Aircraft Track Map

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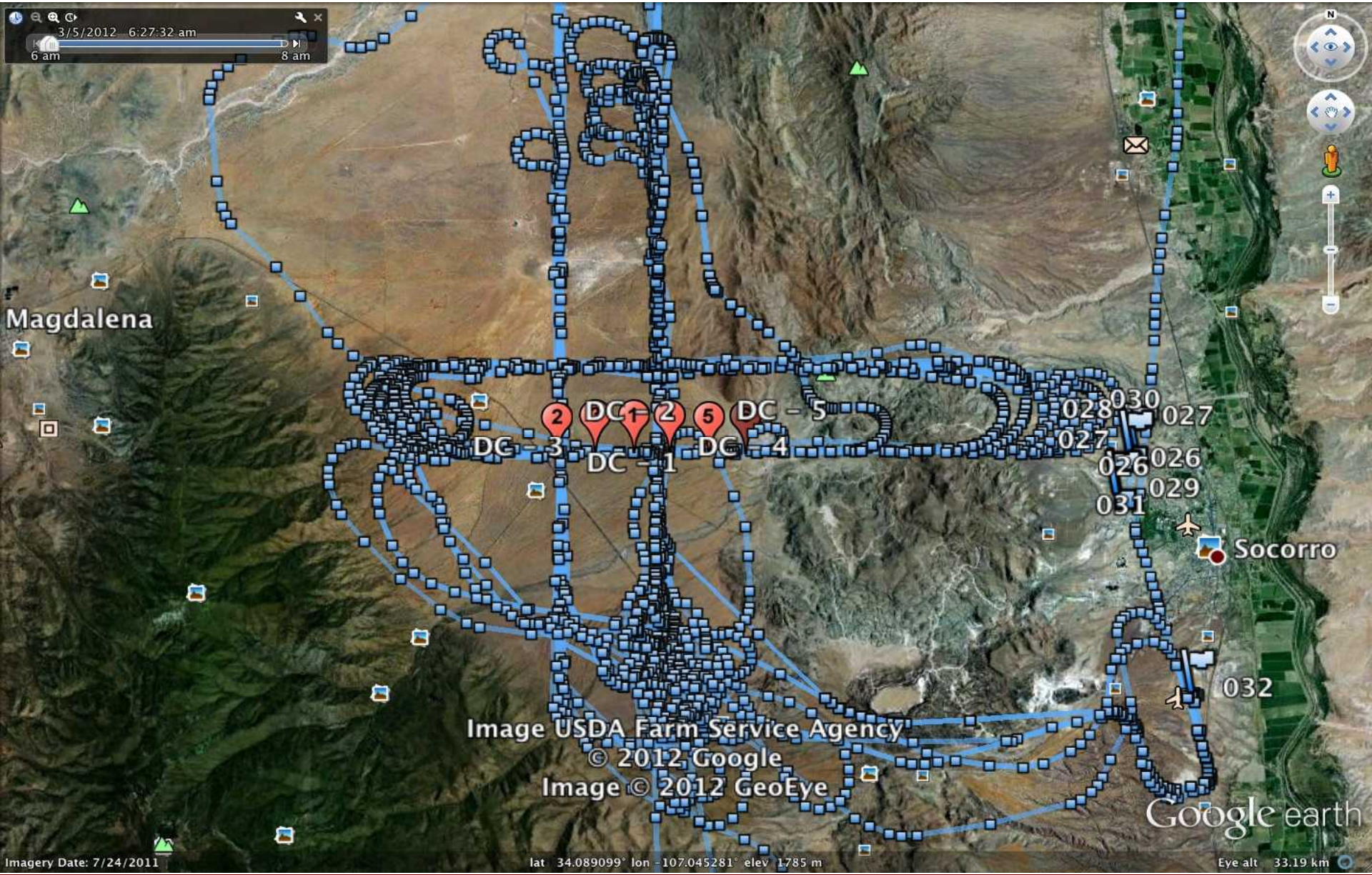
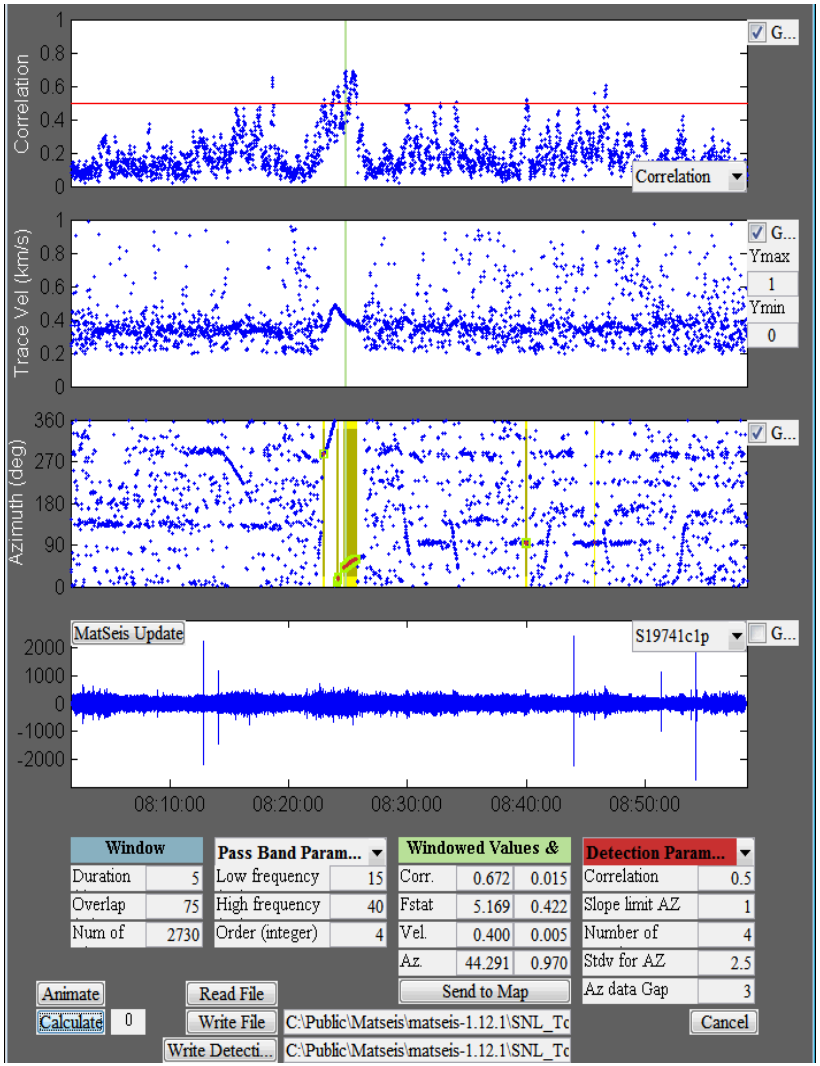
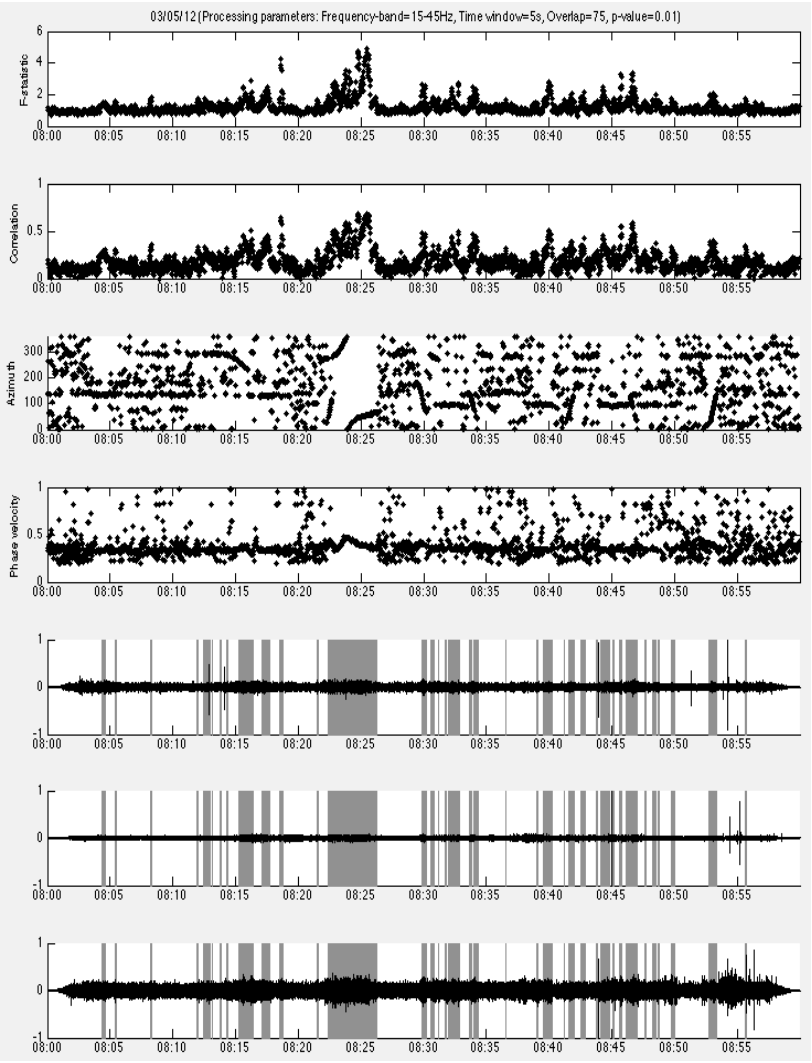


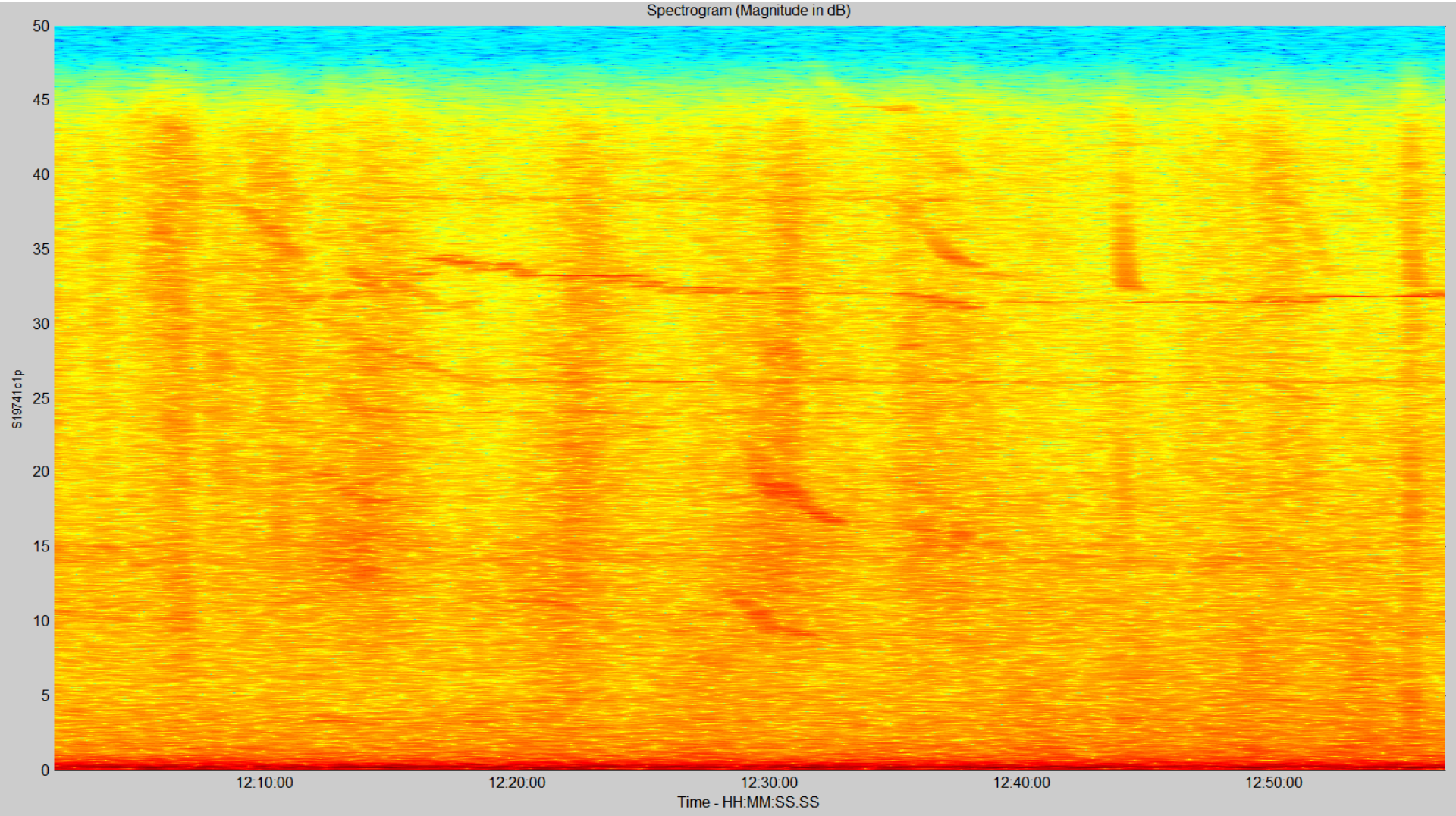
InfraTool and InfraMonitor





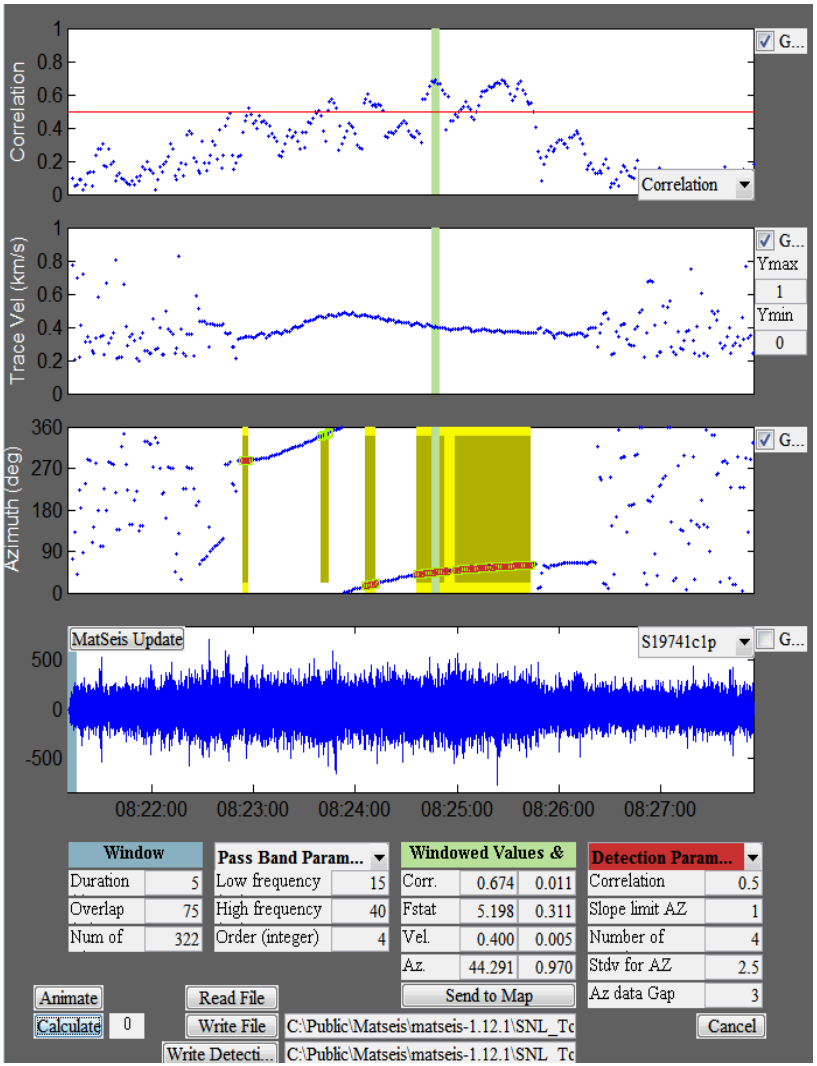
- Station 1974 (DC1) → 0800 – 0900 UTC (0100 – 0200 MST)

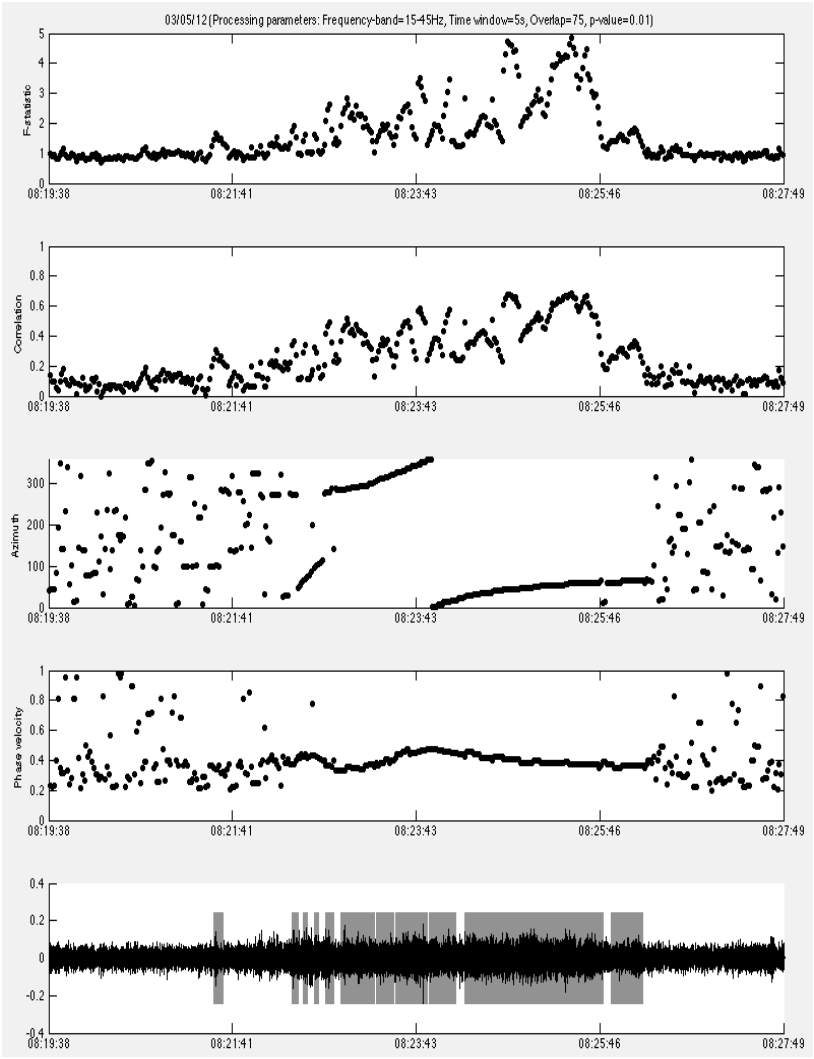
InfraTool and InfraMonitor



- Spectrogram from station 1974

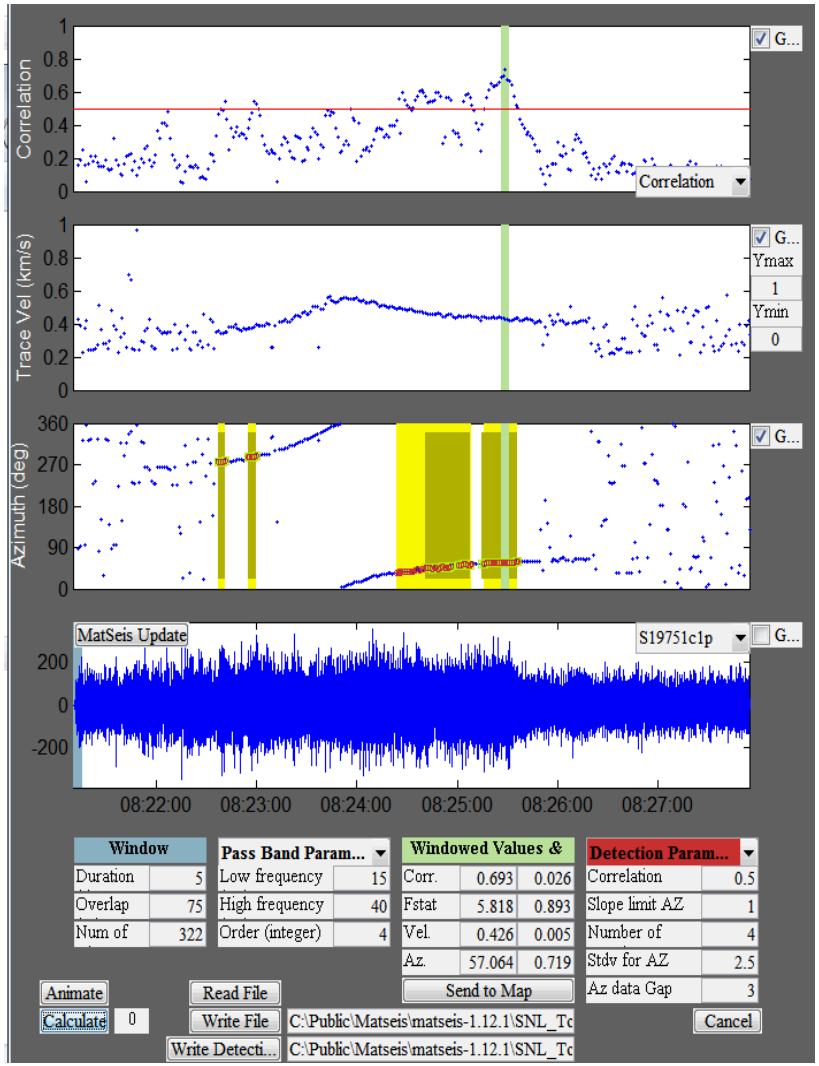
InfraTool and InfraMonitor

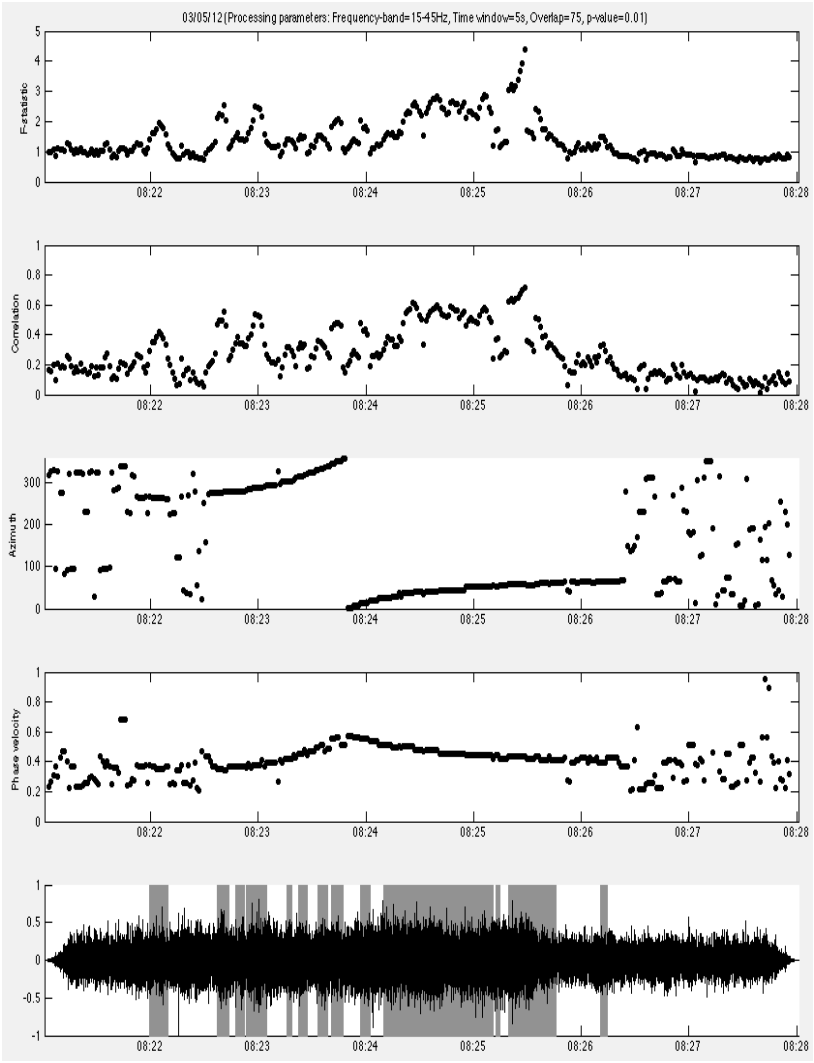




- Station 1974 (DC1) → 0820 – 0828 UTC (0120 – 0128 MST)

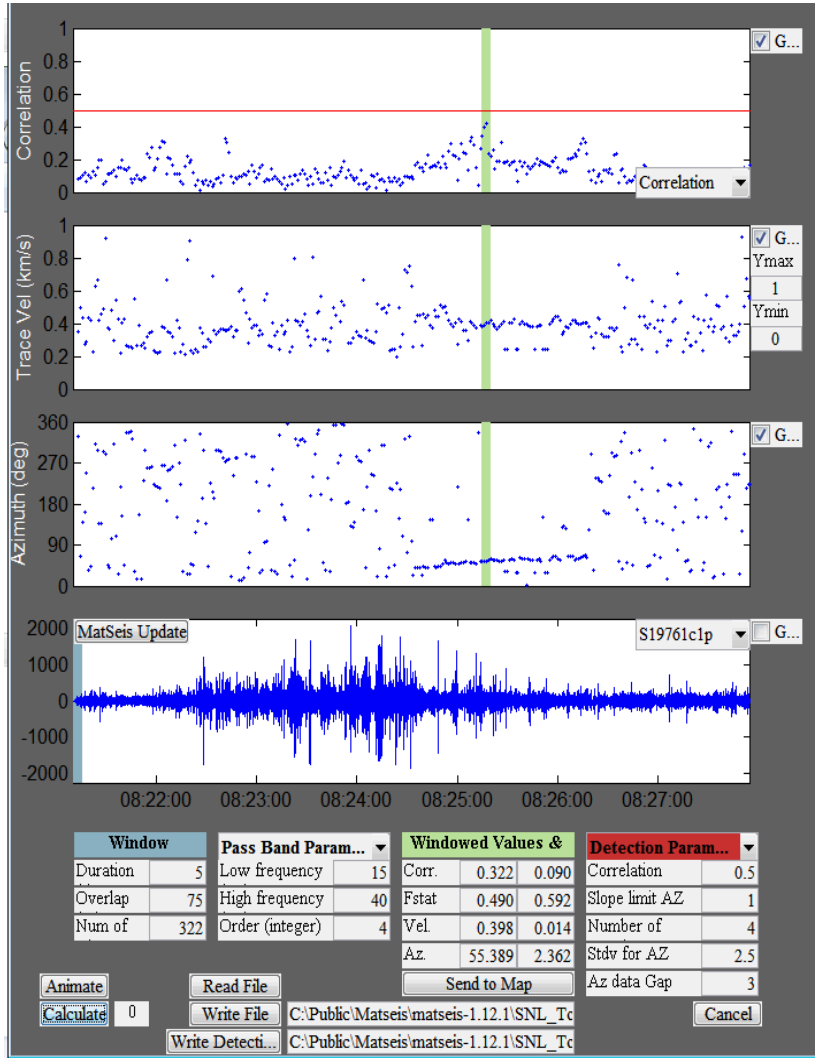
InfraTool and InfraMonitor

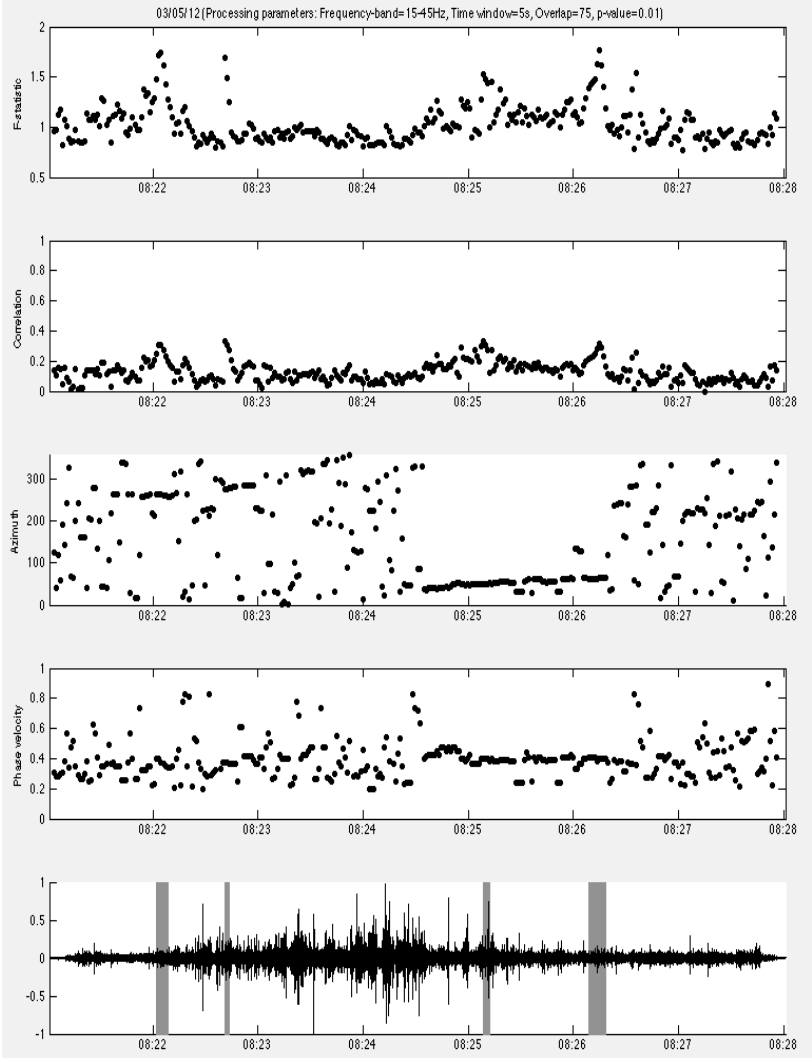




- Station 1975 (DC2) → 0820 – 0828 UTC (0120 – 0128 MST)

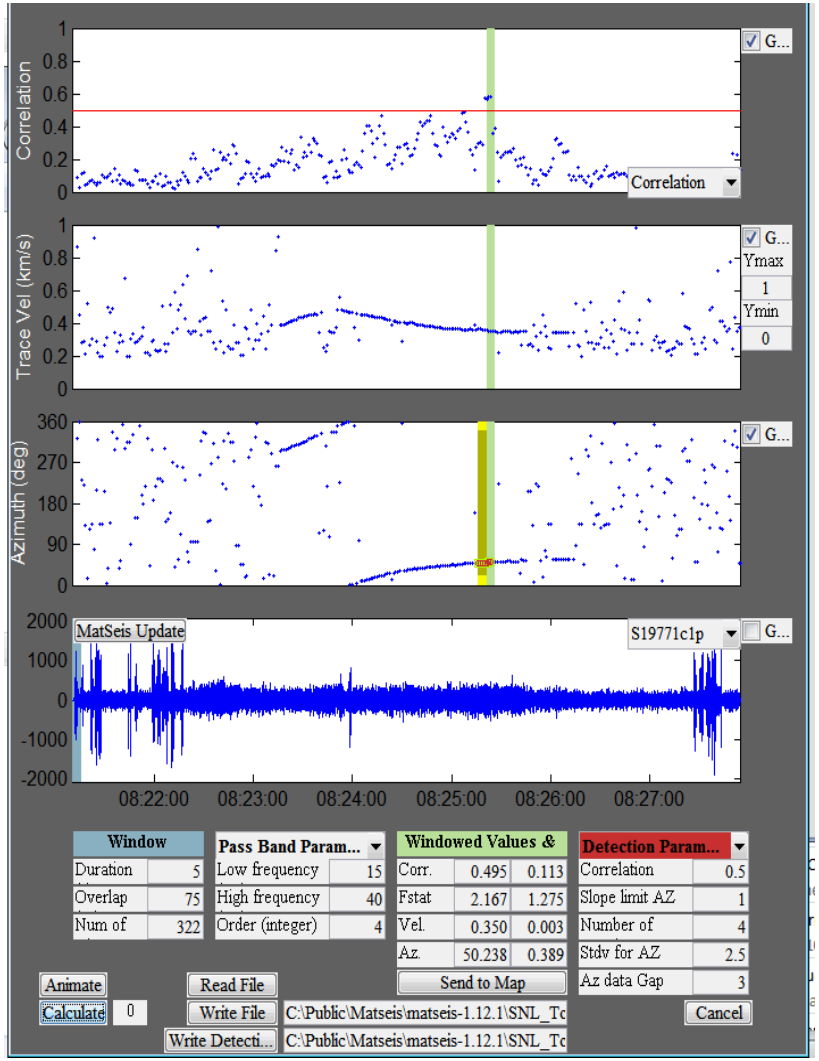
InfraTool and InfraMonitor

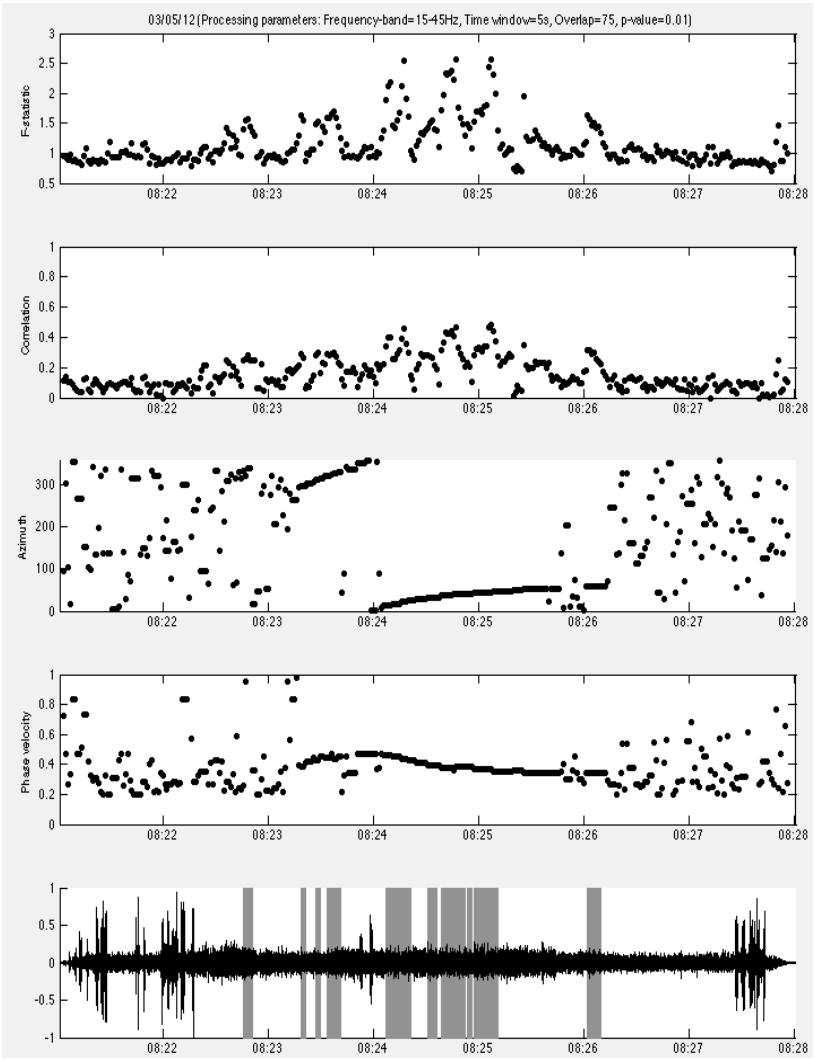




- Station 1976 (DC3) → 0820 – 0828 UTC (0120 – 0128 MST)

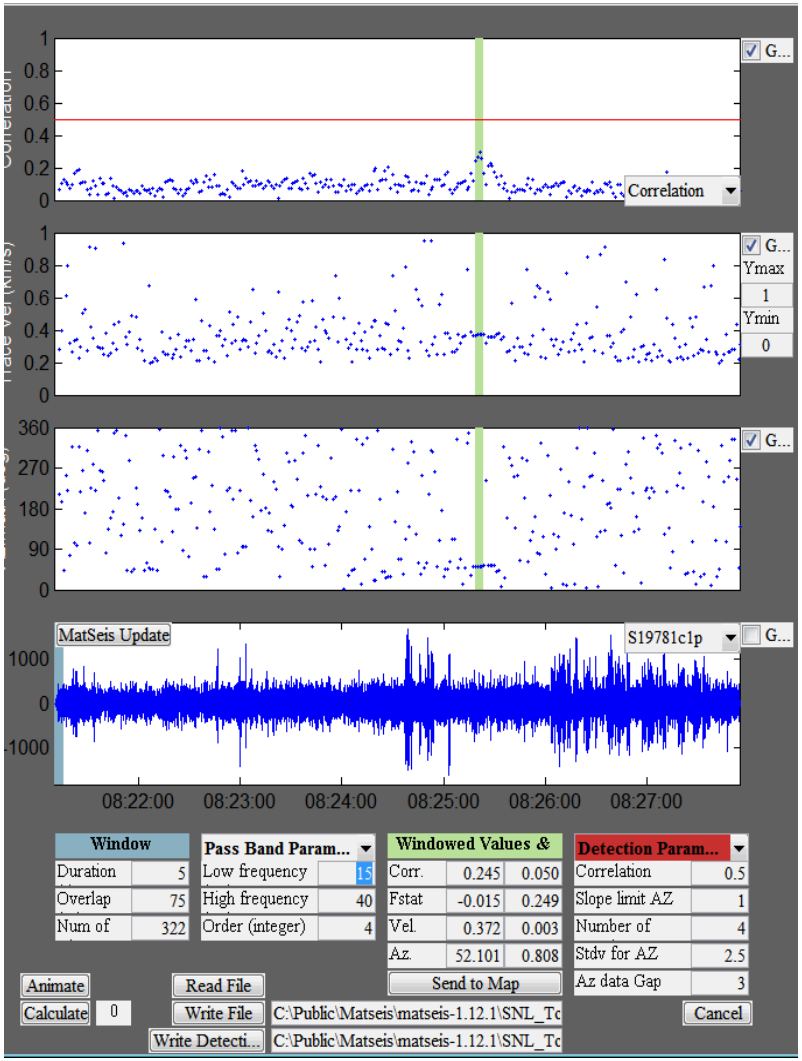
InfraTool and InfraMonitor

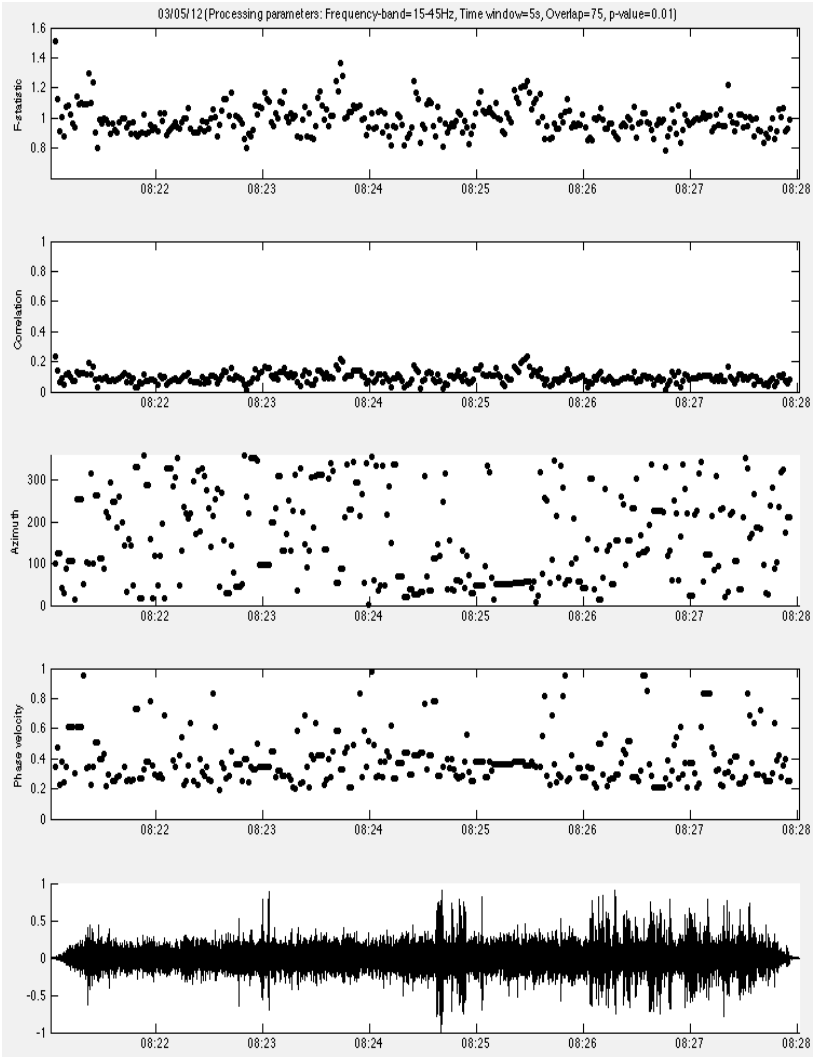




- Station 1977 (DC3) → 0820 – 0828 UTC (0120 – 0128 MST)

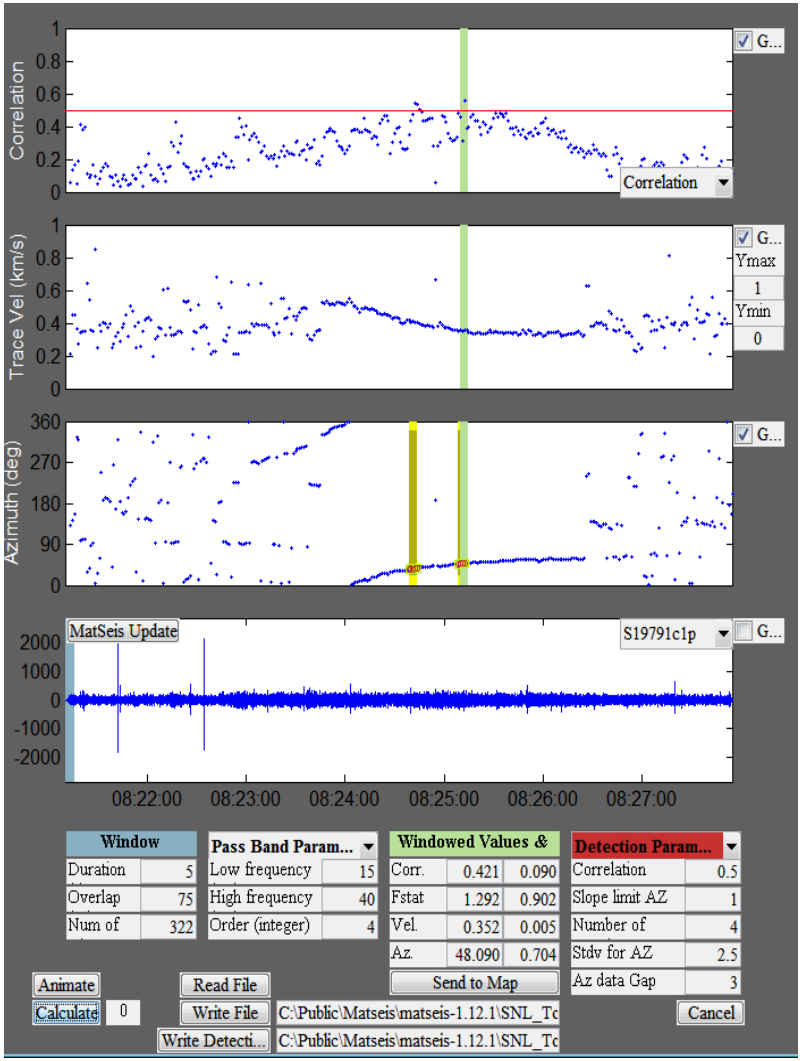
InfraTool and InfraMonitor

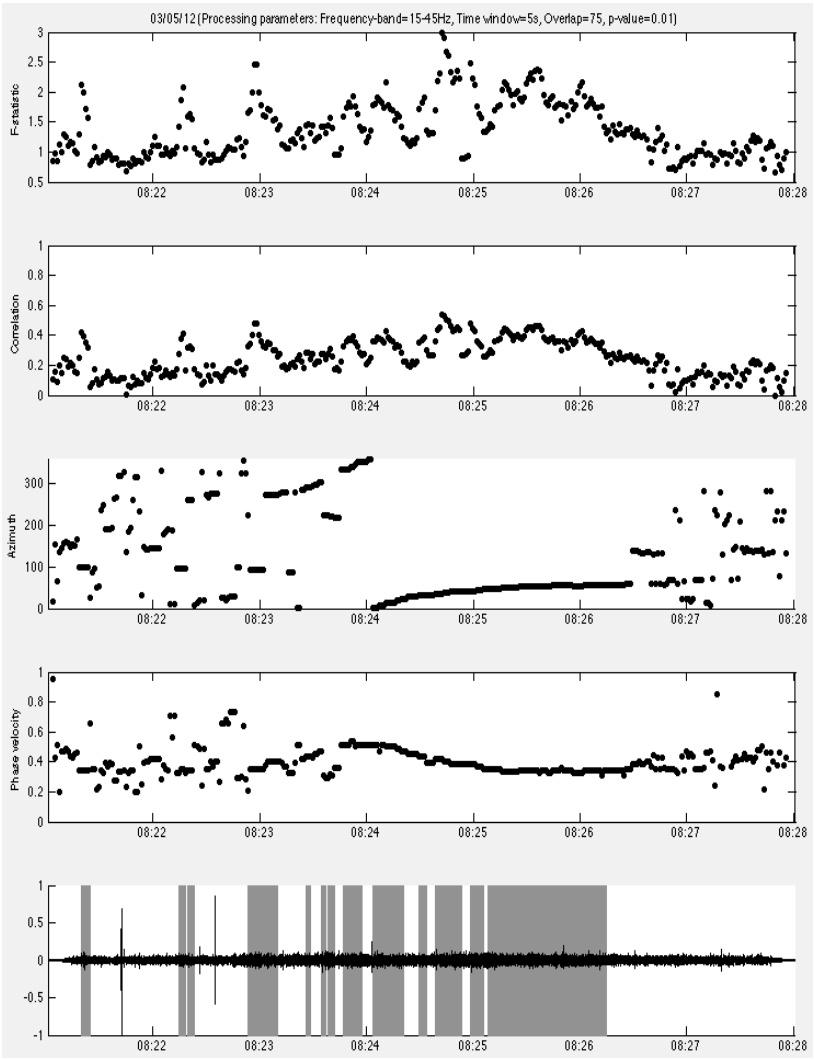




- Station 1978 (DC3) → 0820 – 0828 UTC (0120 – 0128 MST)

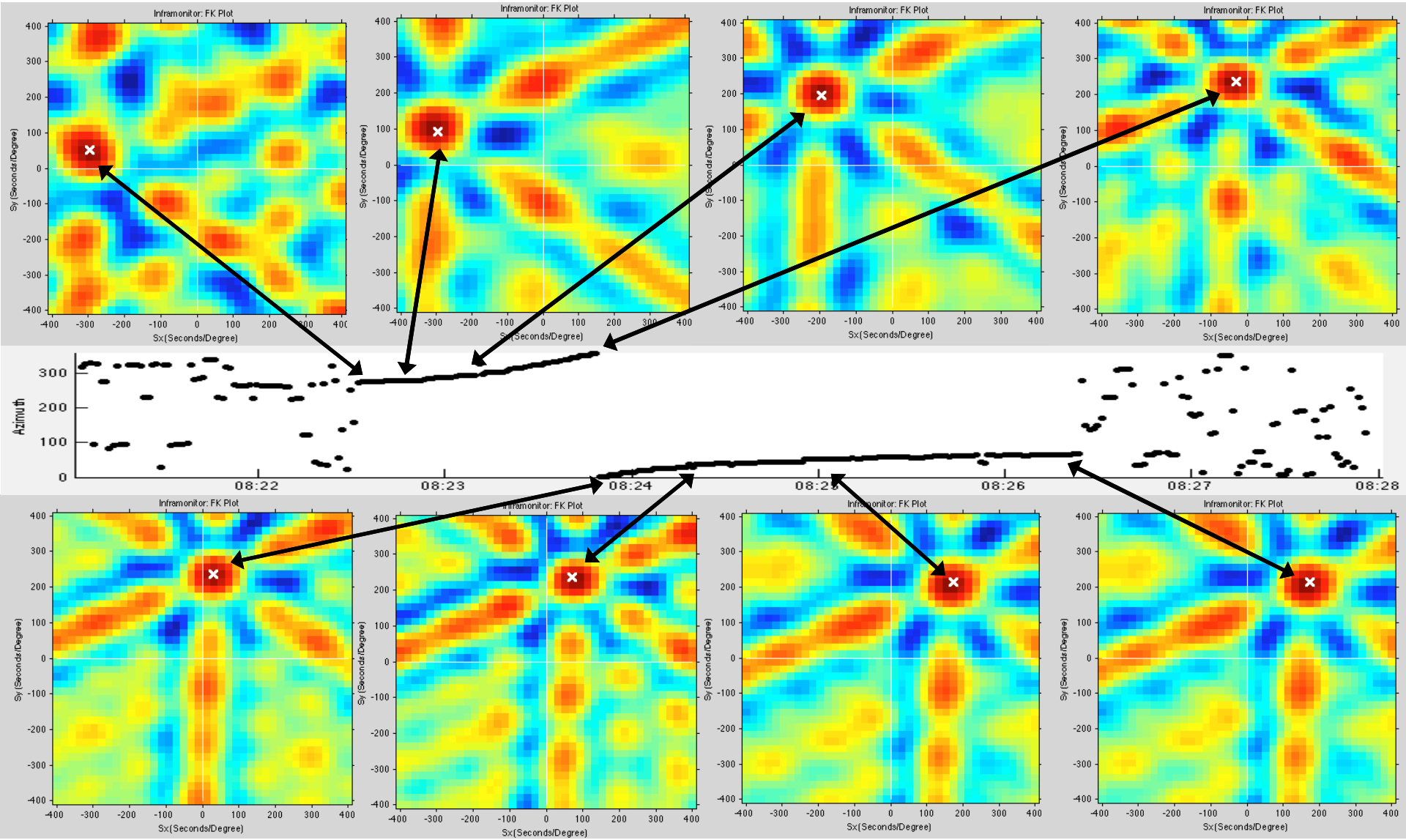
InfraTool and InfraMonitor





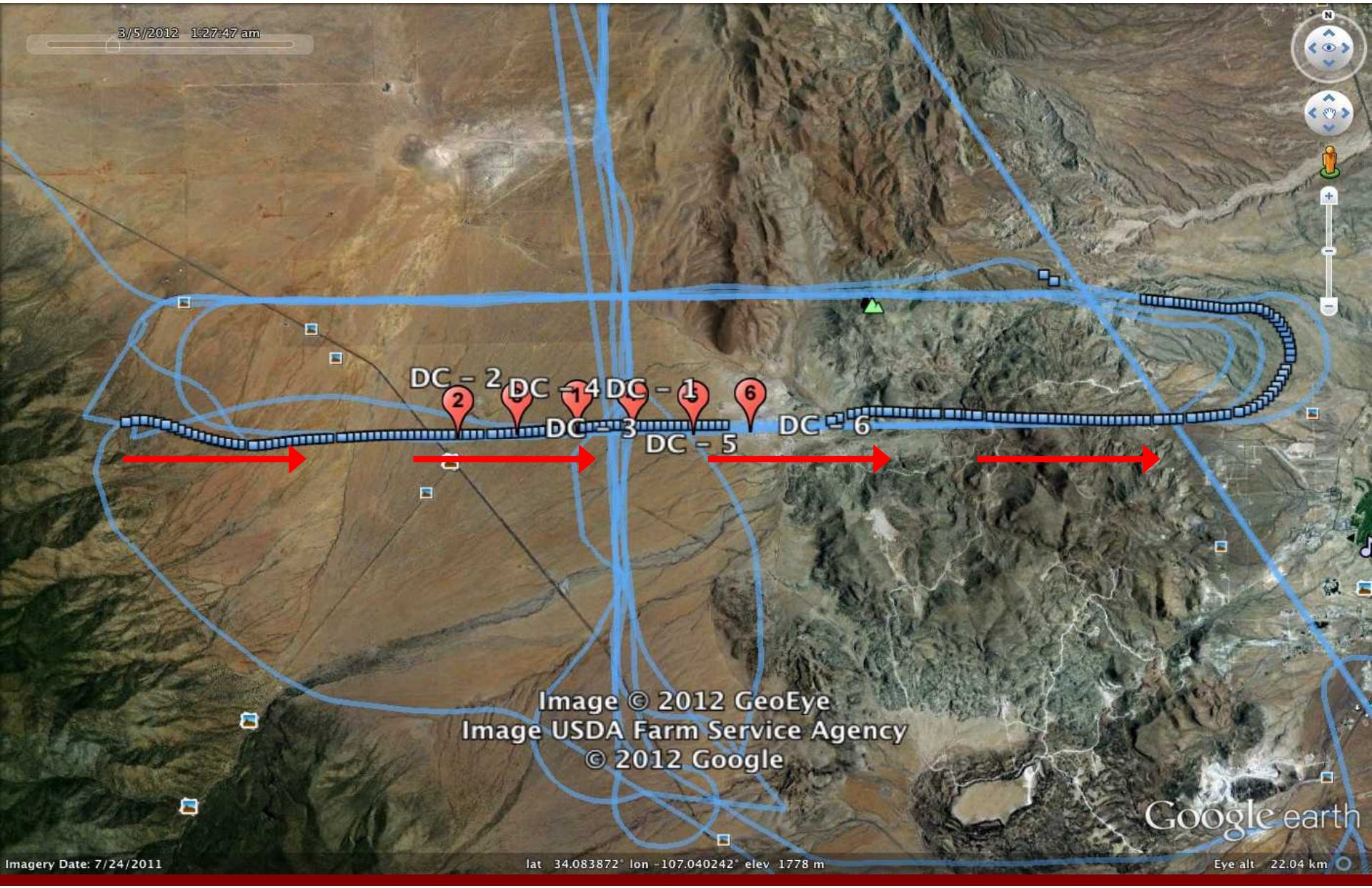
- Station 1979 (DC3) → 0820 – 0828 UTC (0120 – 0128 MST)

FK Back Azimuth

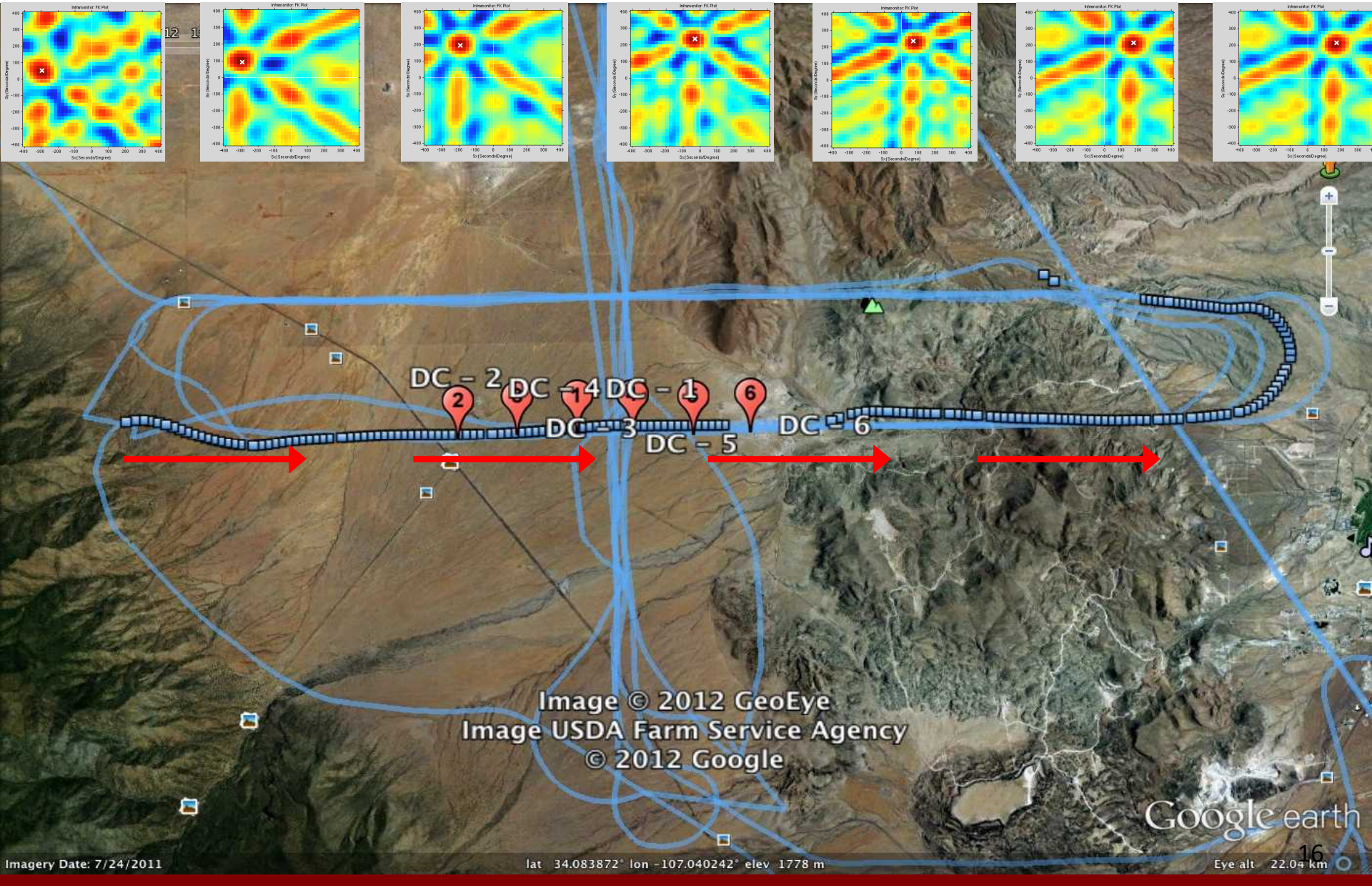


- FK Back Azimuths from station 1974 for track at 08:20 – 08:28 UTC

0820-0828 UTC GPS Track



FK Back Azimuth and GPS Track



Azimuth Movie (0820-0830 UTC)

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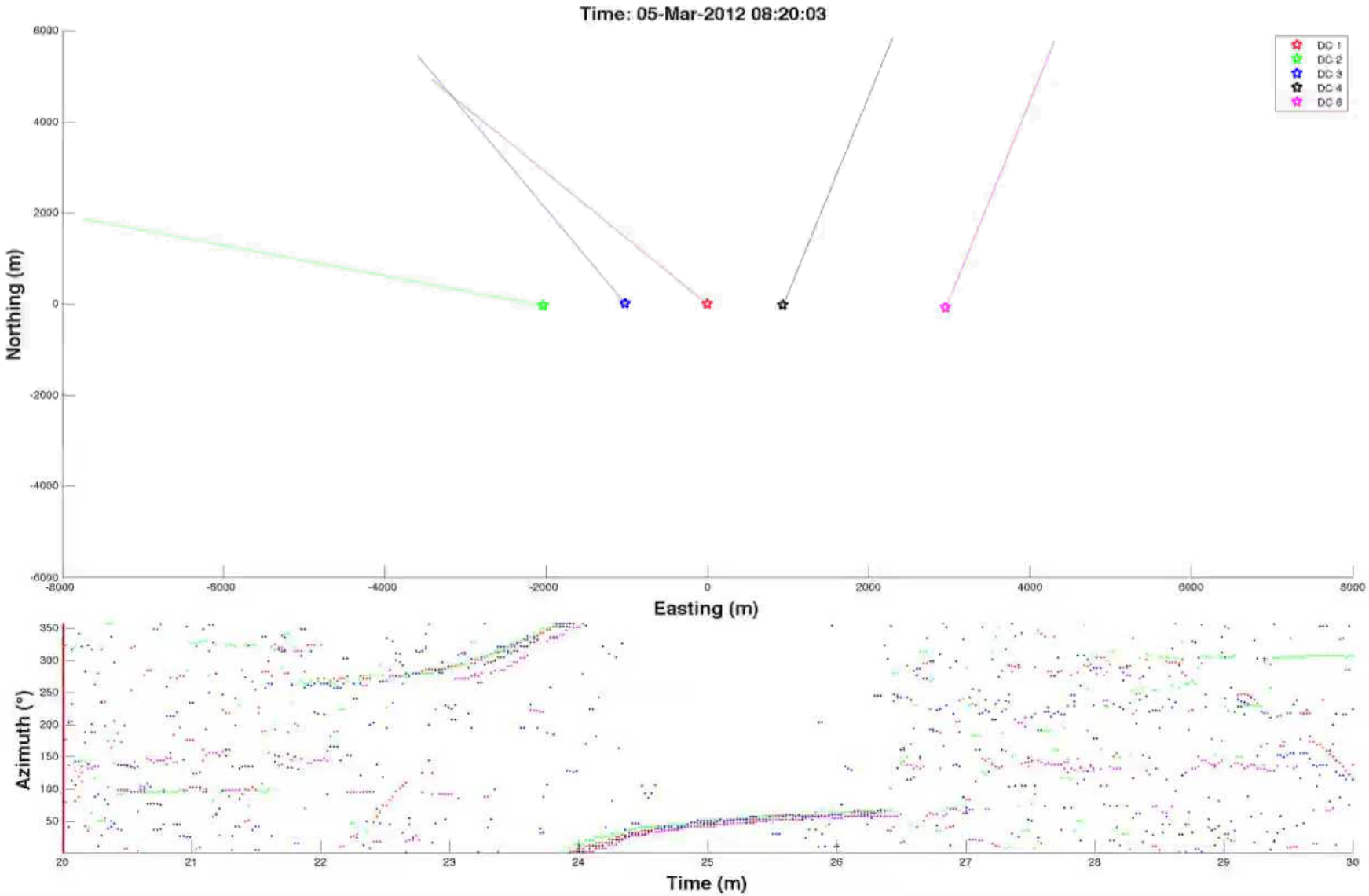
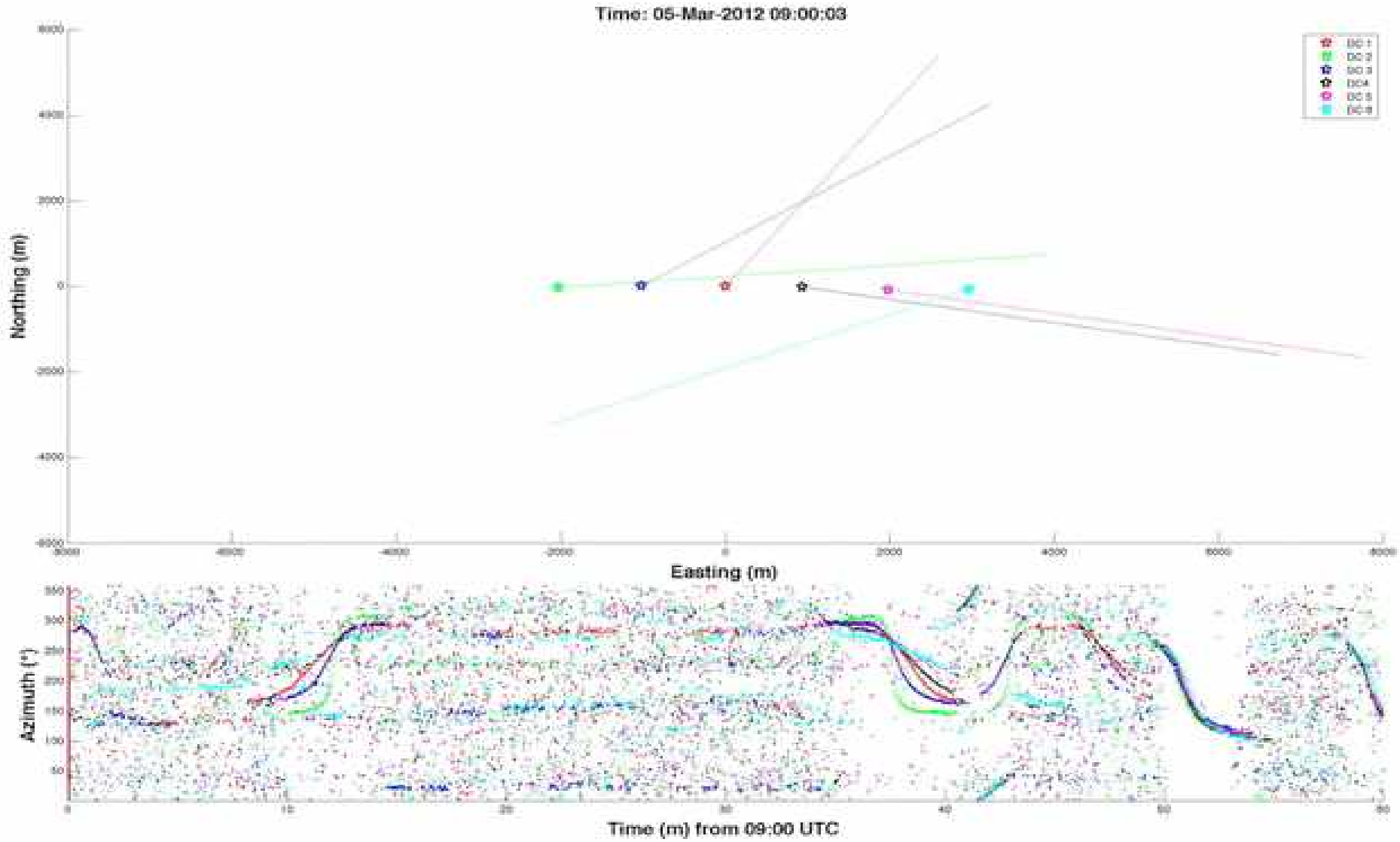


Azimuth Movie (0900-1000 UTC)



Future Work

- What are your goals?
- Find “Good” events to process thoroughly
  - Back azimuth tracking
  - Location verification with GPS
  - Modeling
  - Use other techniques for location
- How much processing? Cost?
  - A few weeks
  - 5-10K