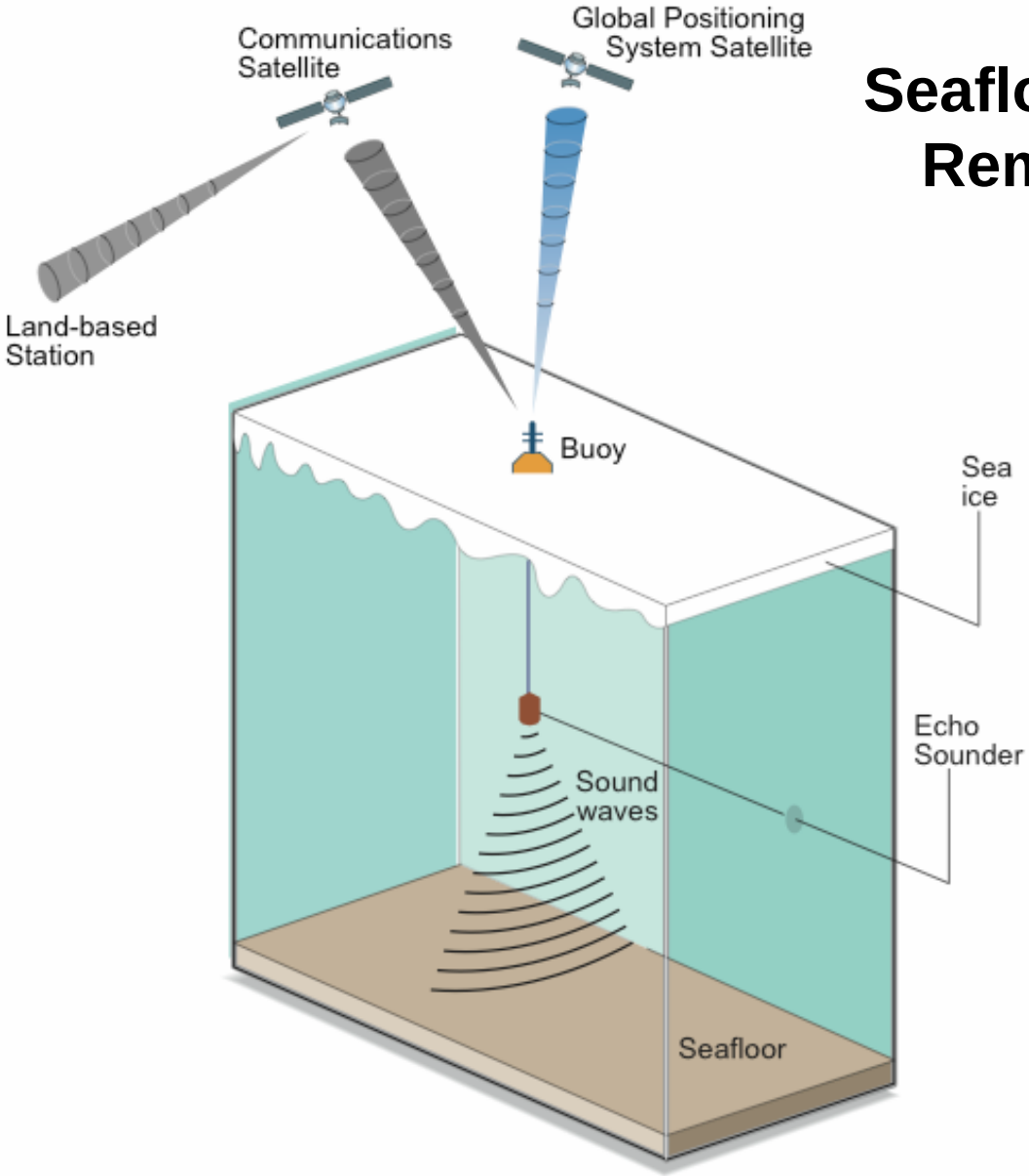
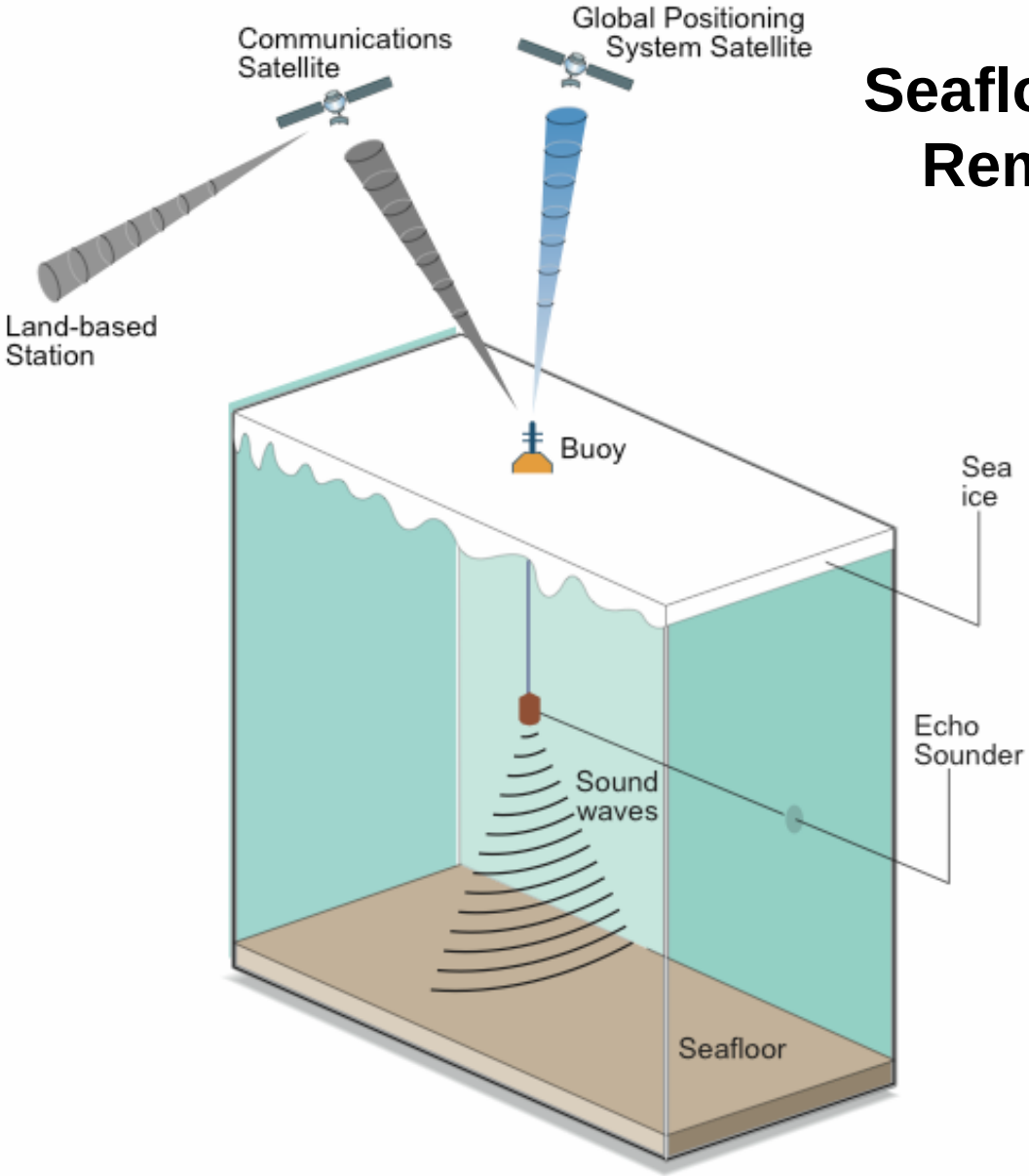


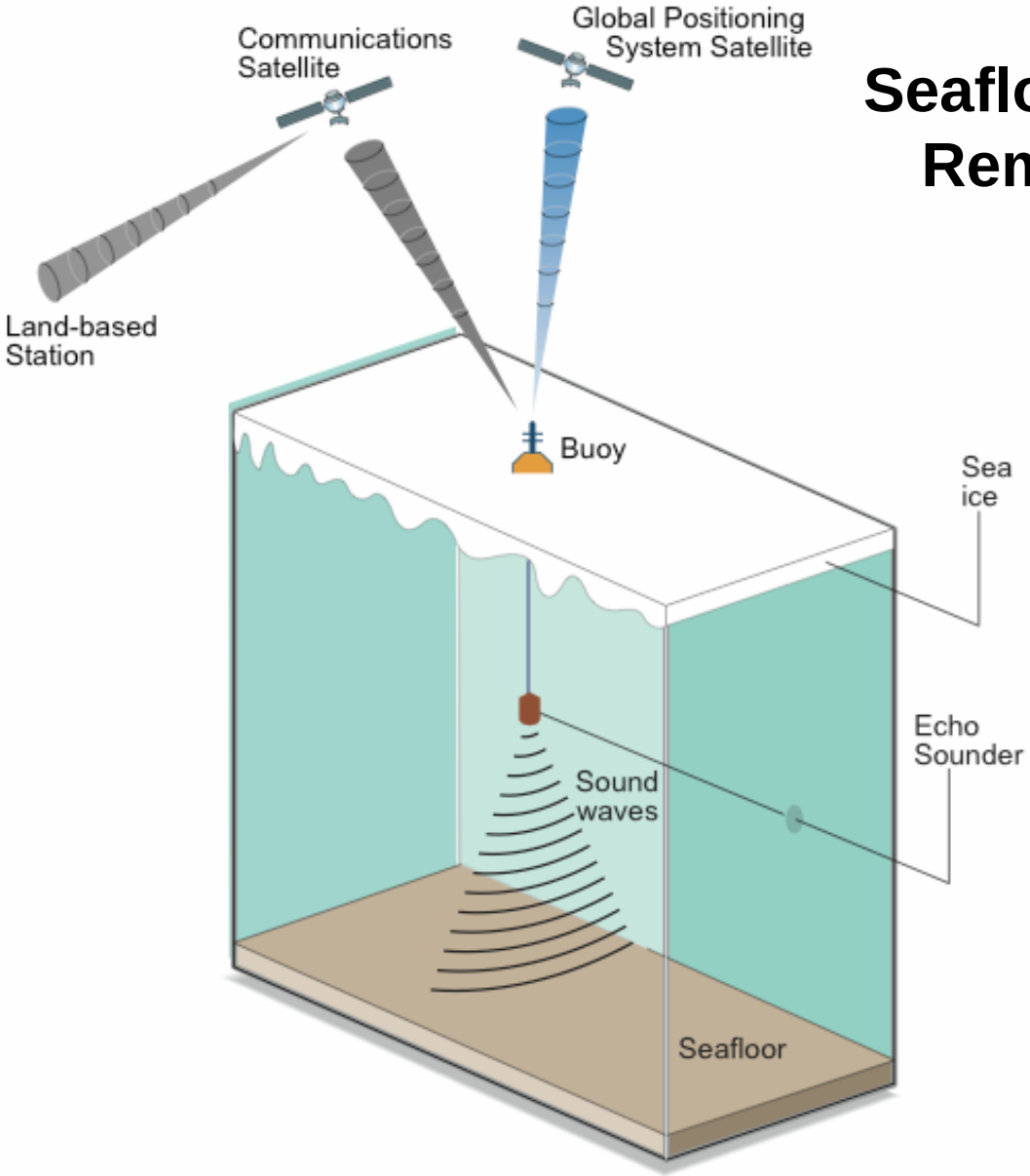
Seafloor Sounding in Polar and Remote Regions (SSPARR)

- **Buoy Control/Telemetry Module**
  - Iridium Short Burst Data modem
  - Data Acquisition/Archiving & Control Sys.
  - May be floating or through-ice
- **Electromechanical Tether**
  - Oil-filled hydraulic hose protects from ice damage
  - Integral electrical conductors
- **Depth Sounder Module**
  - Nominal 20m depth to reduce ice damage, surface bubbles, cavitation
  - Internal power supply for 5 year lifetime
  - Energy output dependent on expected seafloor depth

Seafloor Sounding in Polar and Remote Regions (SSPARR)



- Fulfills need for seafloor depth measurements in areas not visited by ships, such as:
  - Arctic Ocean
  - Southern Ocean
  - Southern Pacific and Indian Oceans
- NSF-sponsored, three-year engineering development leading to production capability
- SSPARR buoy is an expendable device, deployable in open ocean or ice with expected 5 year lifespan
- Original SSPARR buoy concept was a depth sounder but now addressing use as an aid to navigation for under-ice vehicles



Seafloor Sounding in Polar and Remote Regions (SSPARR)

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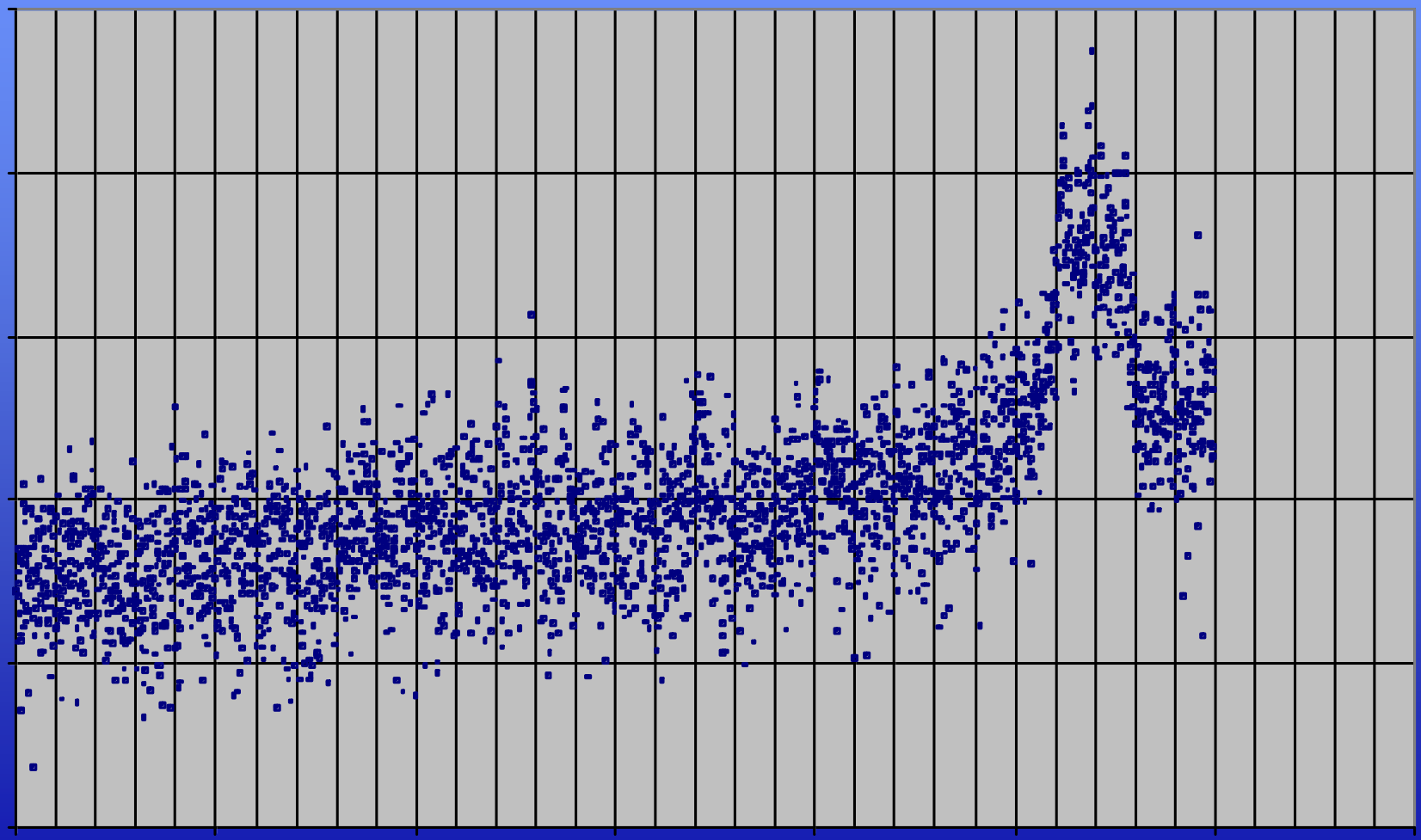
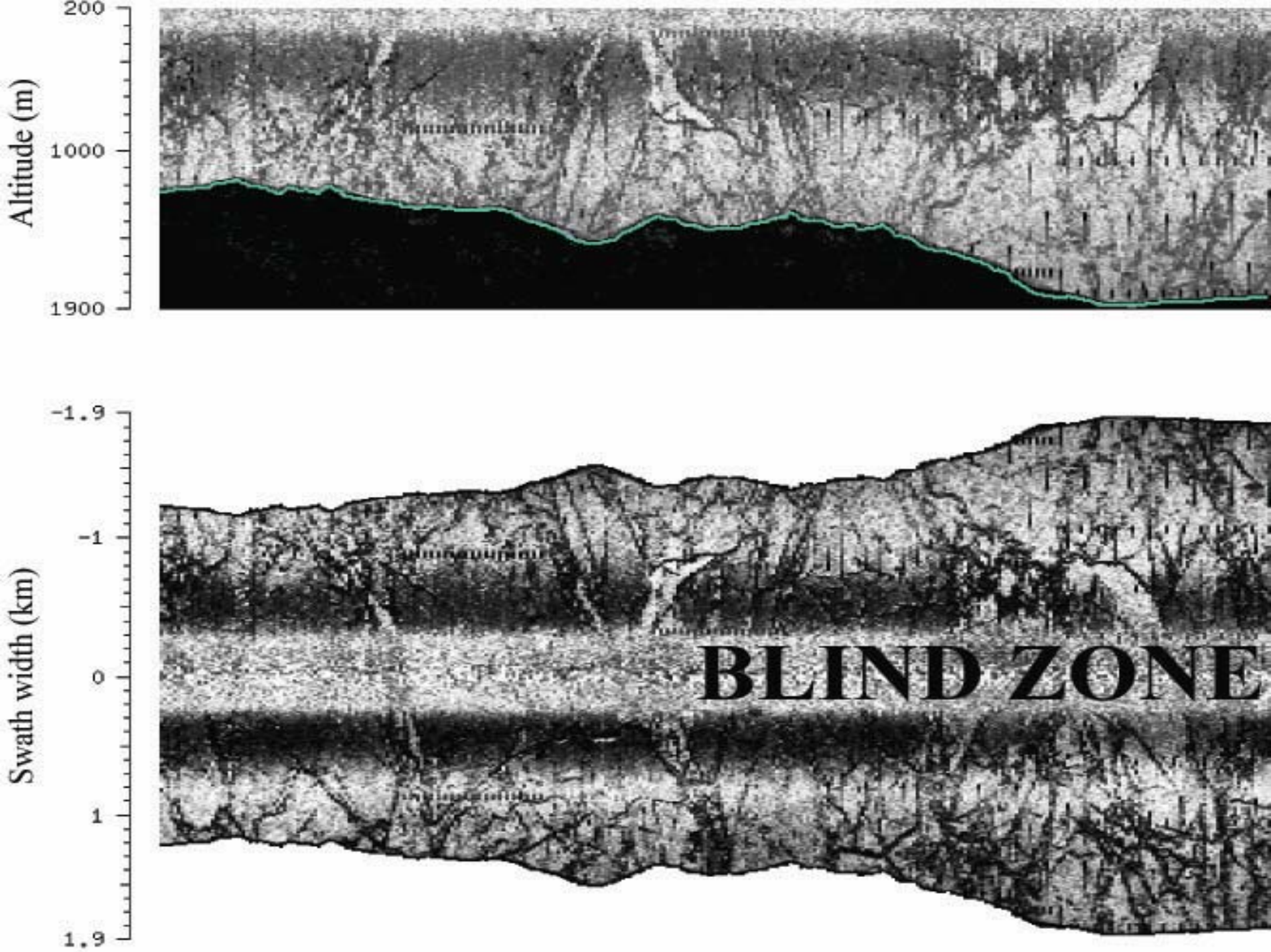
Preliminary Results

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1900
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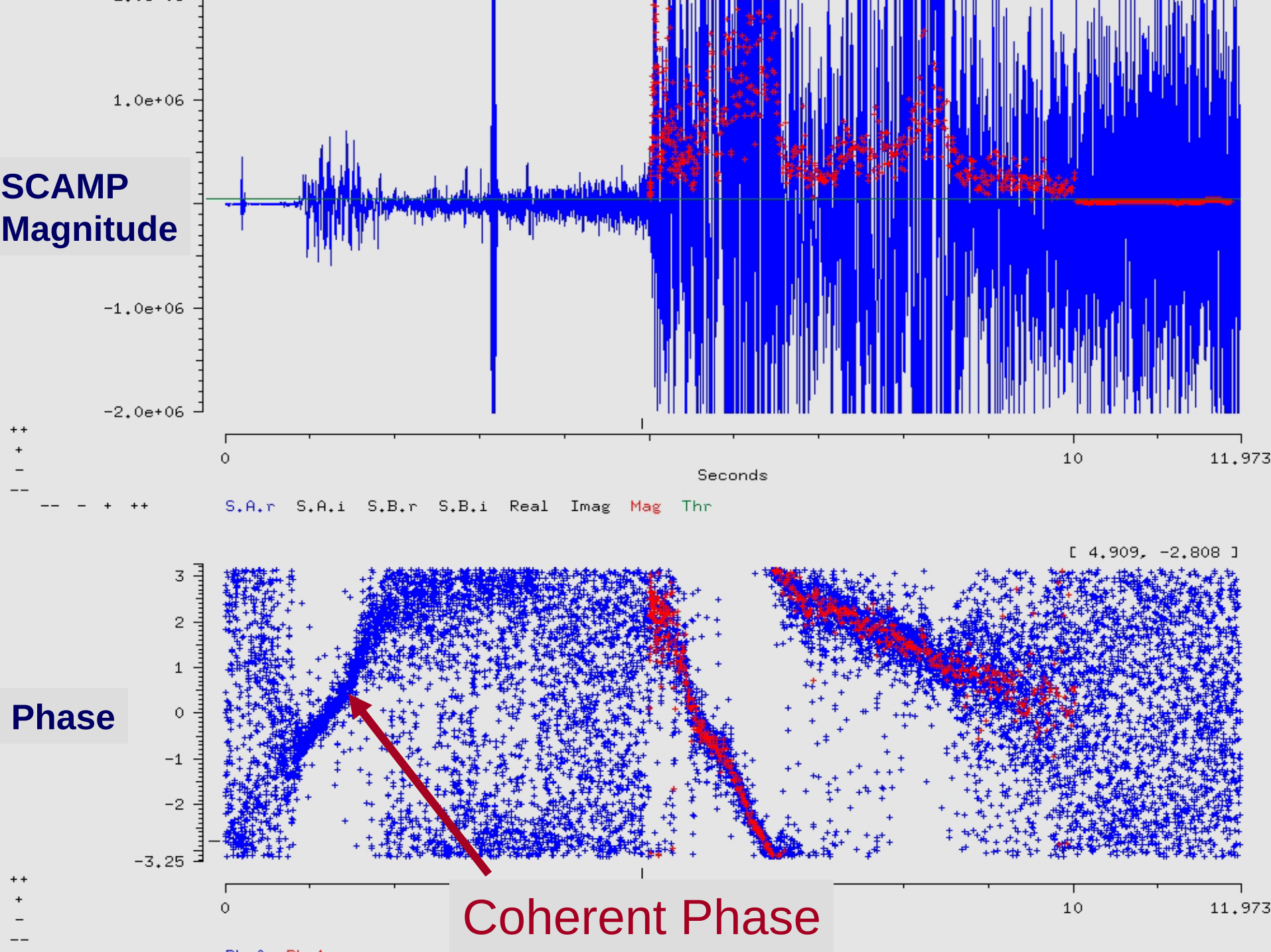
-1
0
1
1.9
BLIND ZONE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-1.0e+06
-2.0e+06
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10
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Seconds
S.A.r S.A.i S.B.r S.B.i Real Imag Mag Thr
[4.909, -2.808]
Phase
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2
1
0
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-2
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Coherent Phase