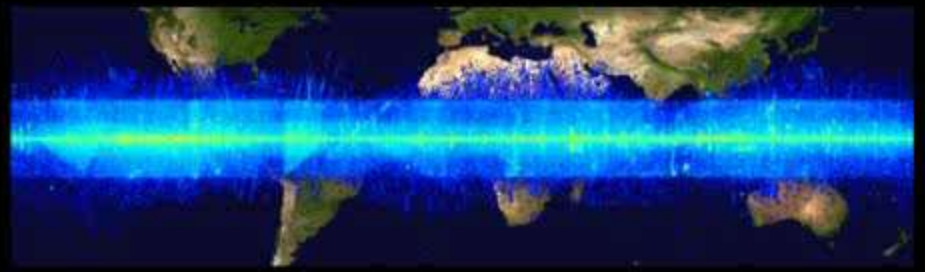
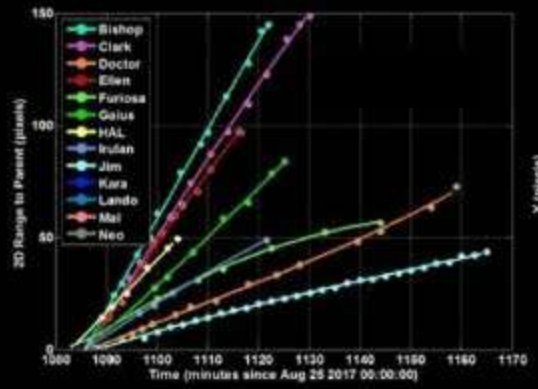
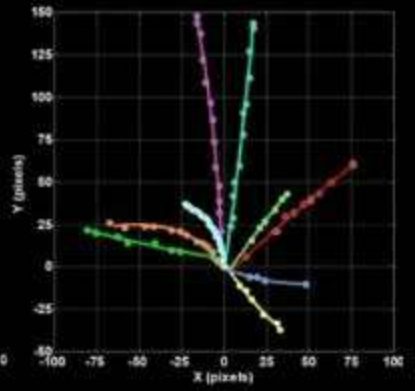
Space Object Behaviors

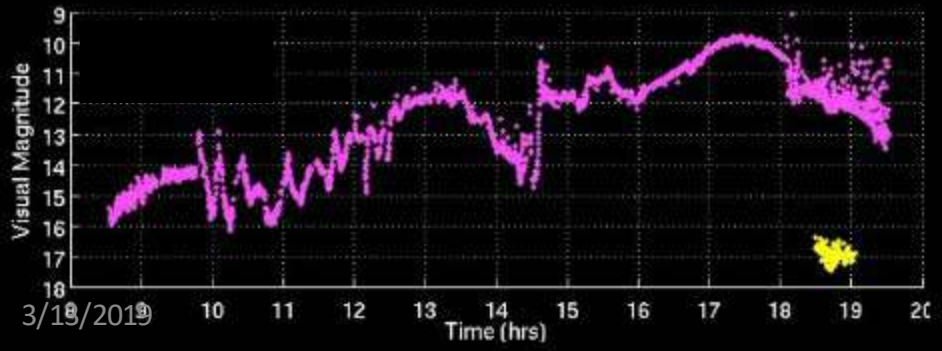
The View From the Ground

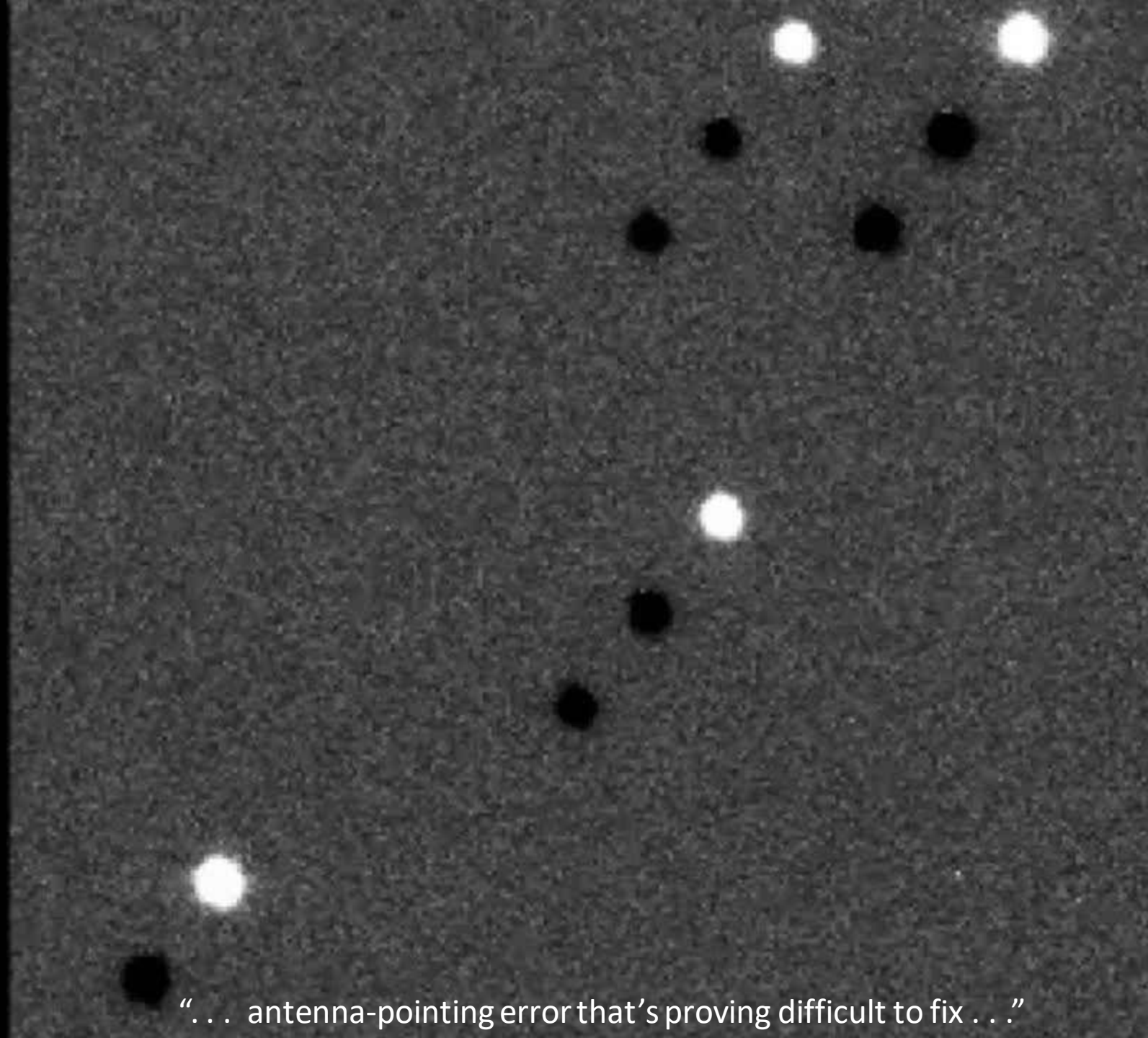
ExoAnalytic SOLUTIONS





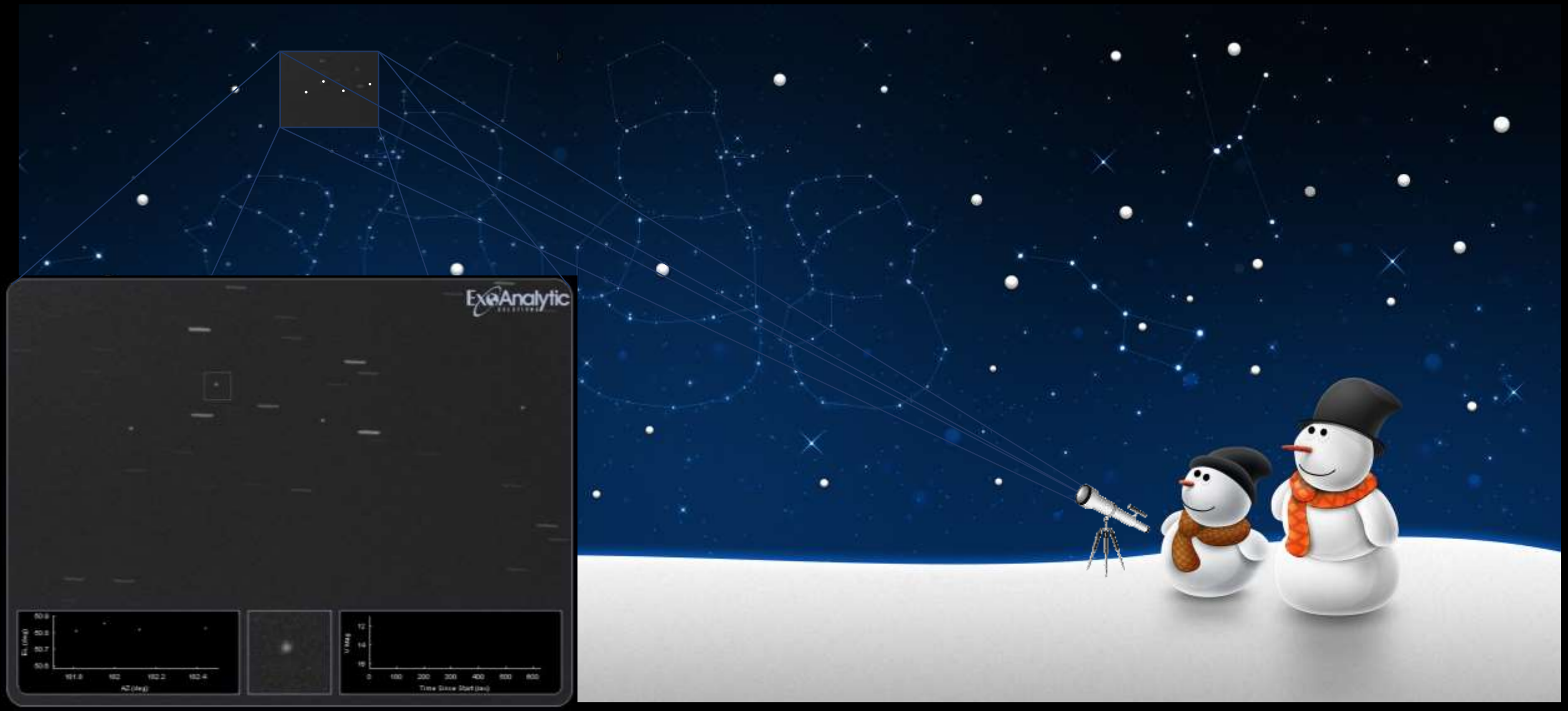




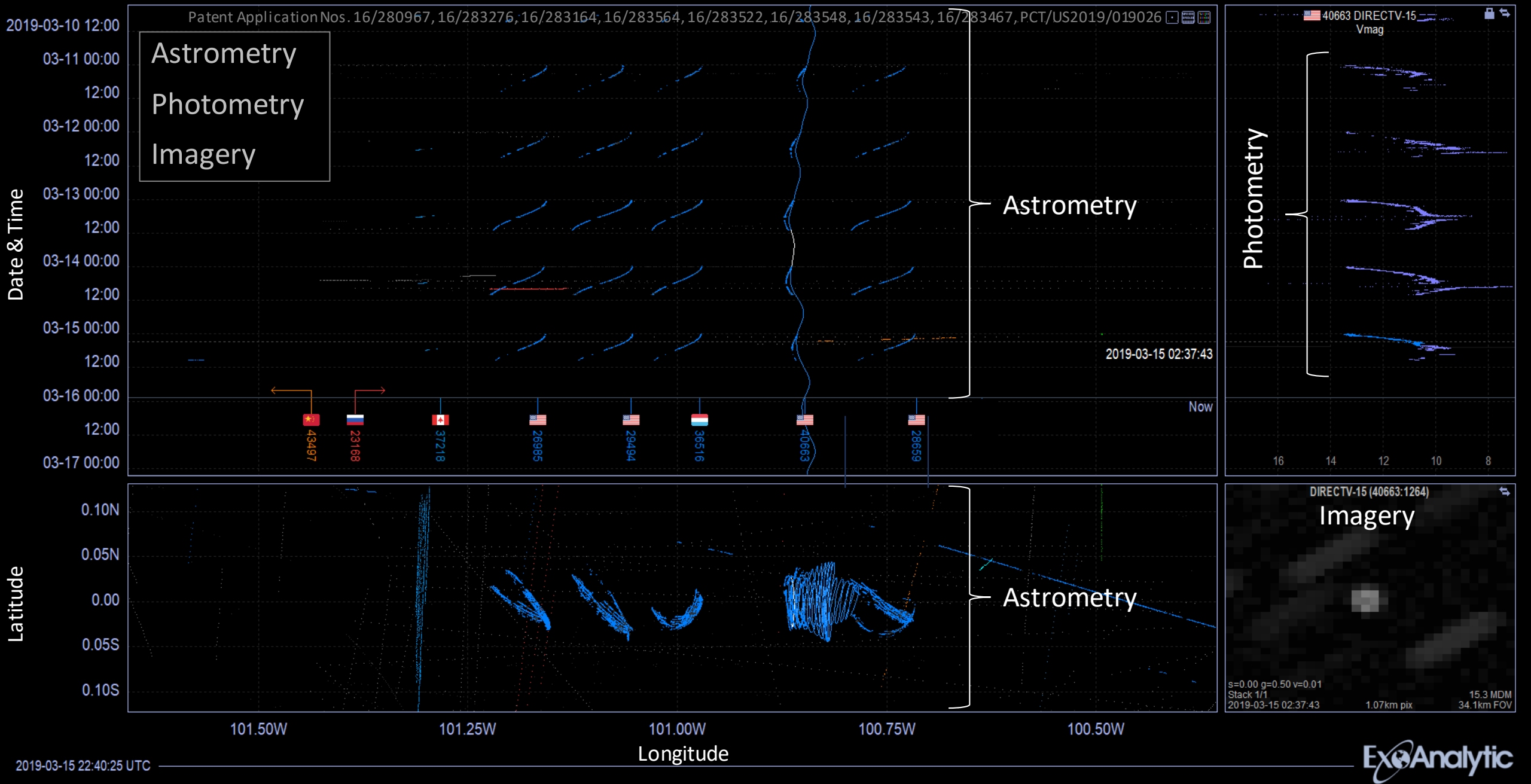


"... antenna-pointing error that's proving difficult to fix ..."

GEO Satellites Viewed from the Ground



Ground Based Optical Observables



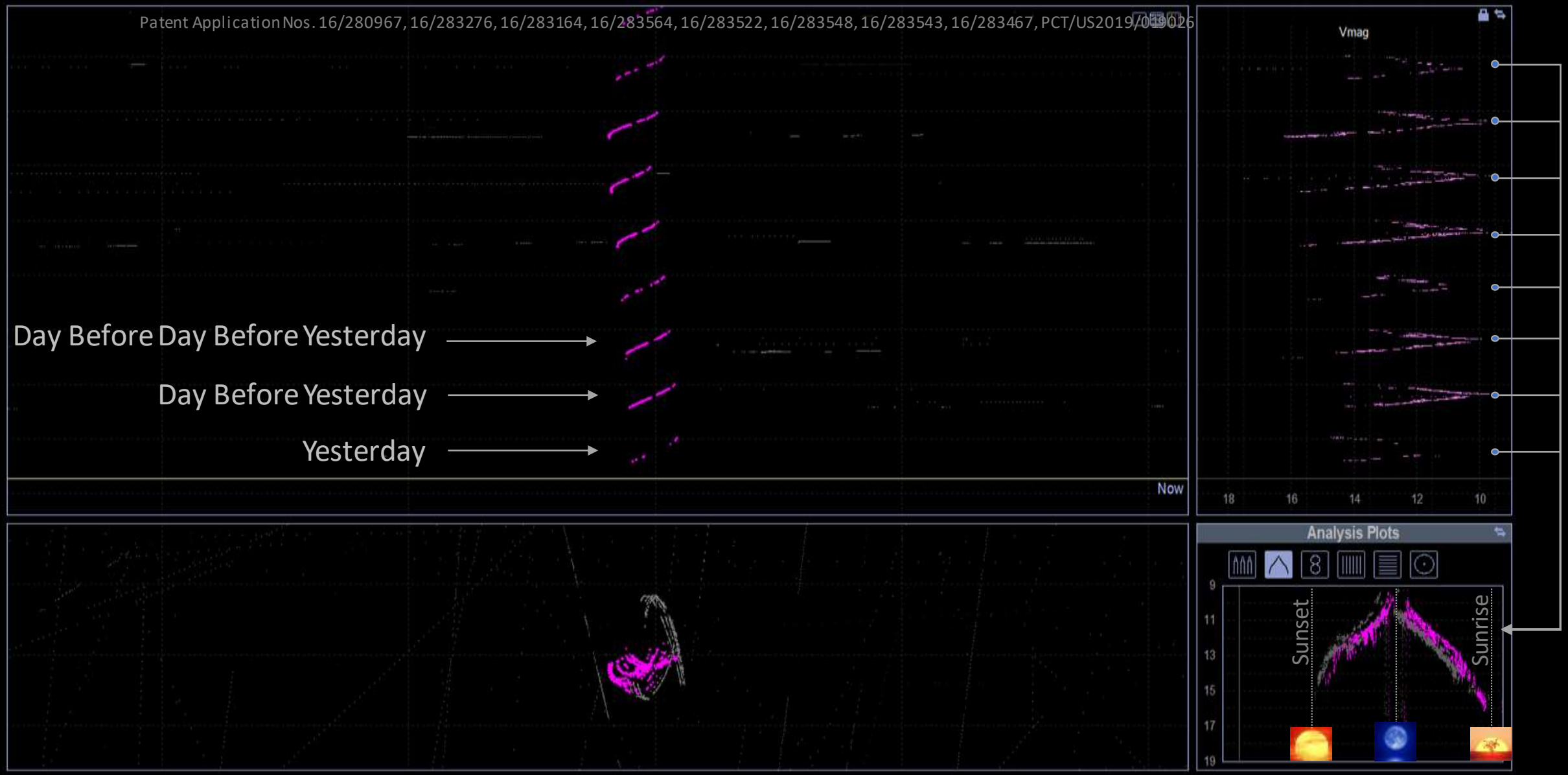
Observable Behaviors

- Attitude
  - ✓ 3-Axis Stable
  - ✓ Tumbling
  - ✓ Spinning
- Maneuver
  - ✓ Station Keep
  - ✓ Slot Change
- Proximity Ops
  - Inclination Match
  - Fly-by
  - Orbit Match

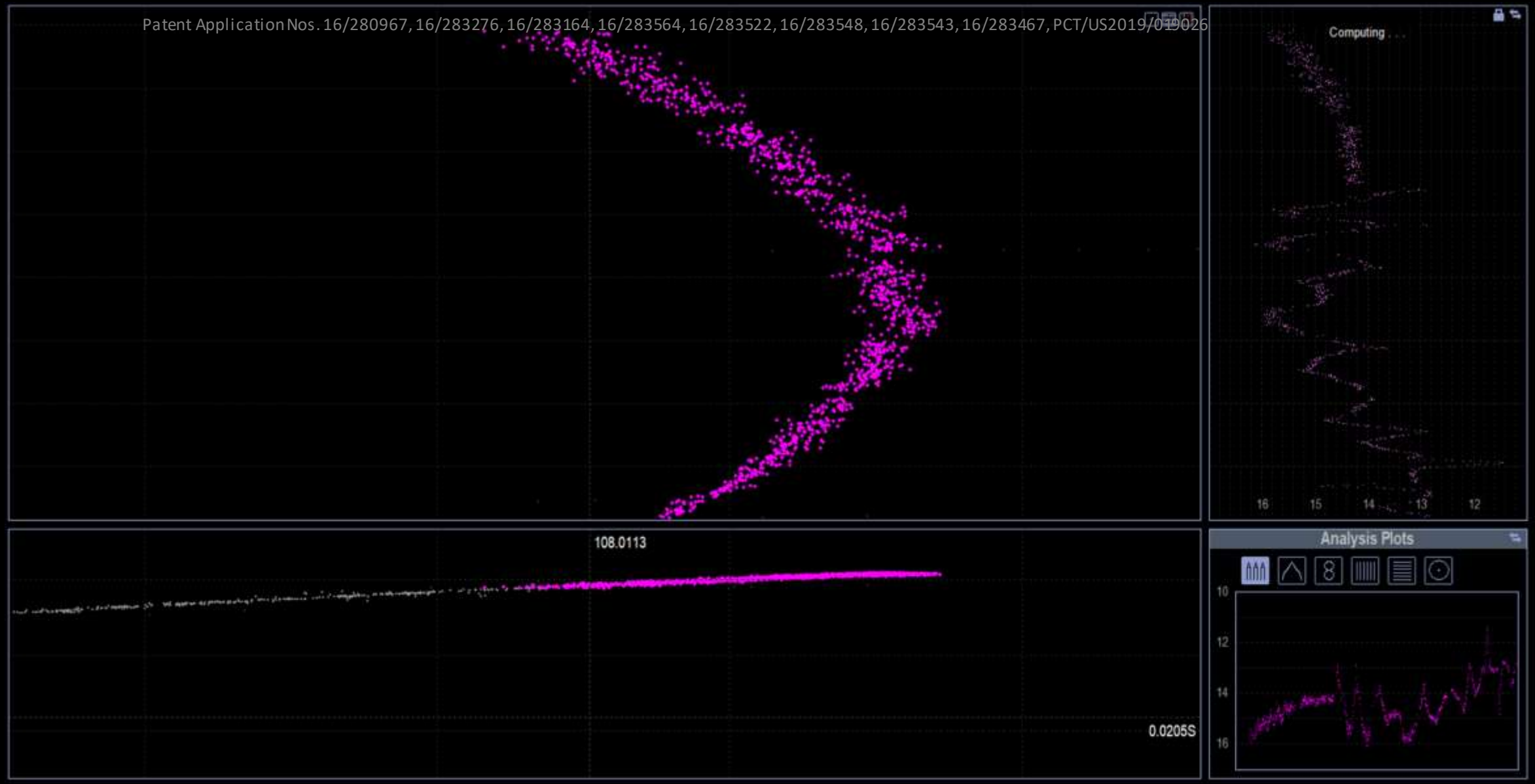
✓ Insertion

- Deployment
  - ✓ CSO
  - ✓ Photometry
- Thrusting
  - ✓ Plume
- Debris
  - ✓ Intentional
  - ✓ Unintentional
- Misc.
  - Glint

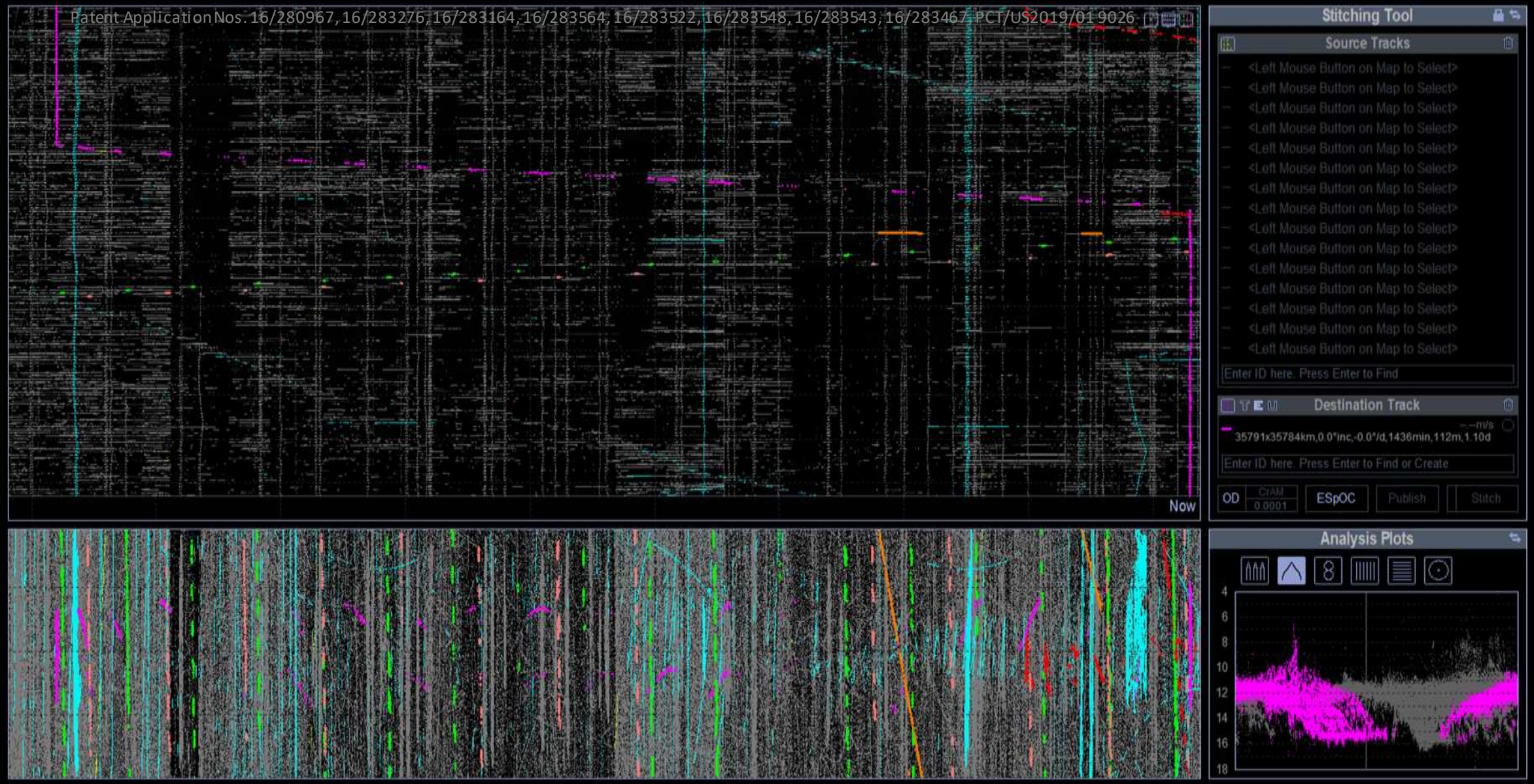
Photometry: 3-Axis Stable



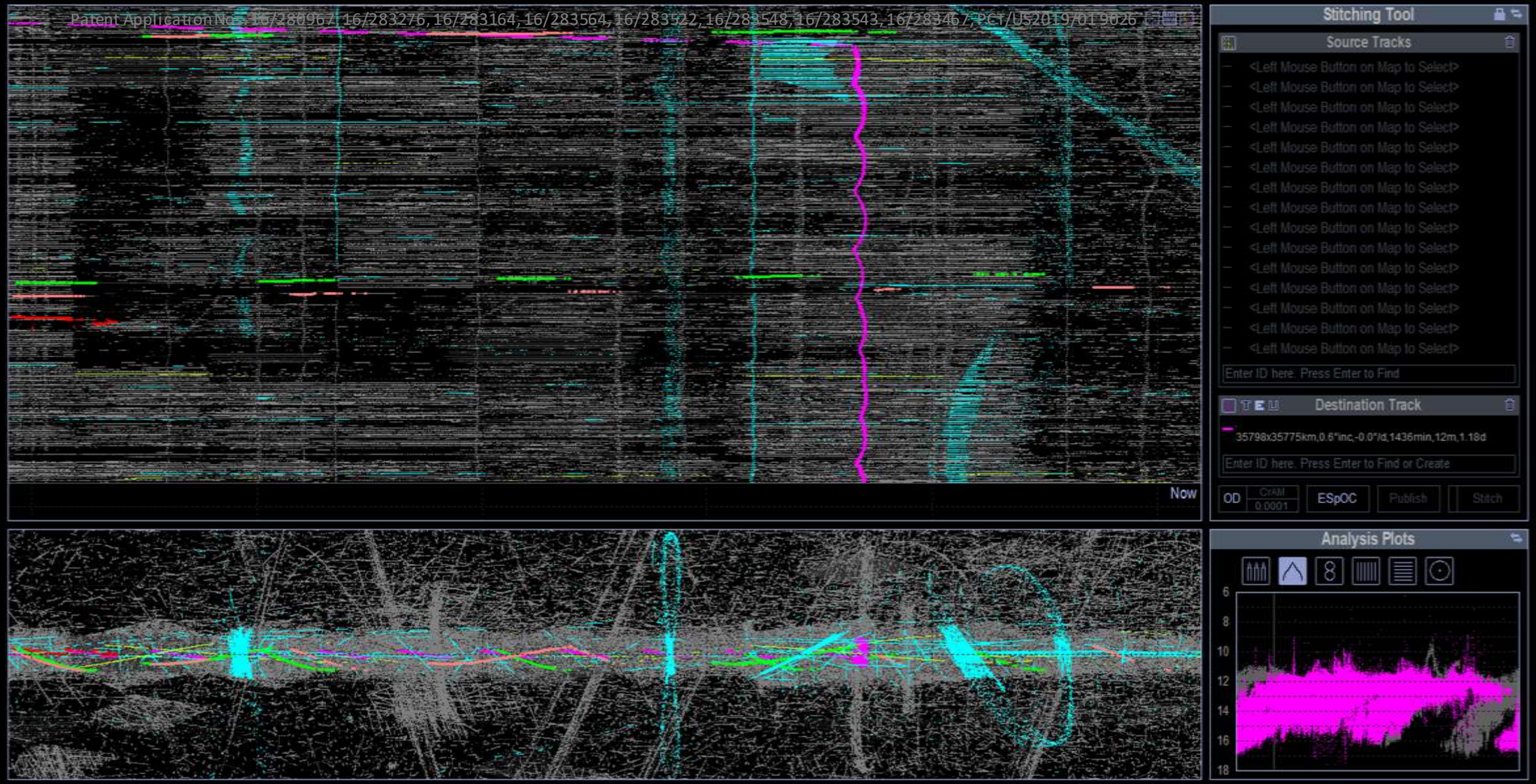
Photometry: Tumbling



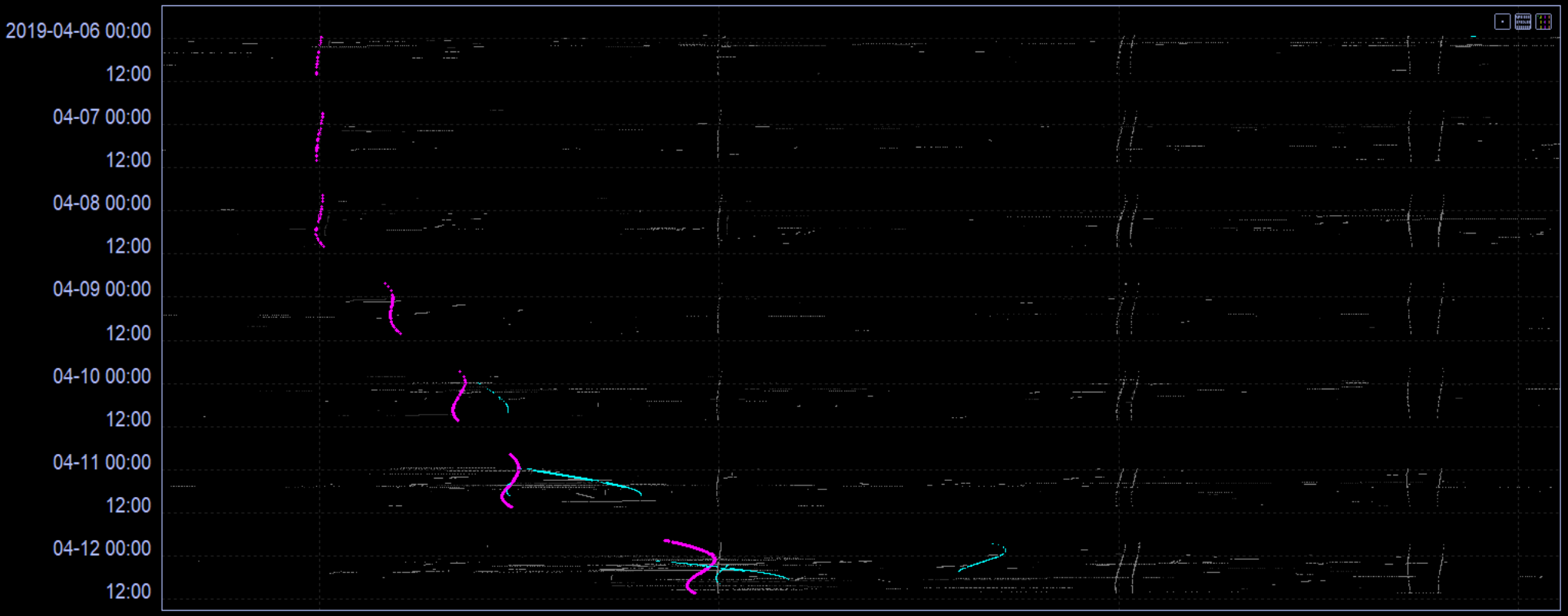
Maneuver: Slot Change



Maneuver: Slot Change and Station Keeping



Exo Maps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12:00
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04-11 00:00
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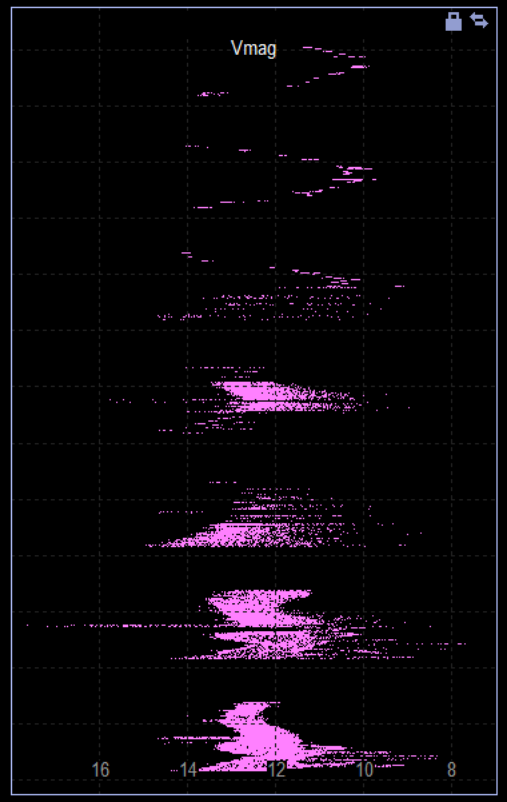
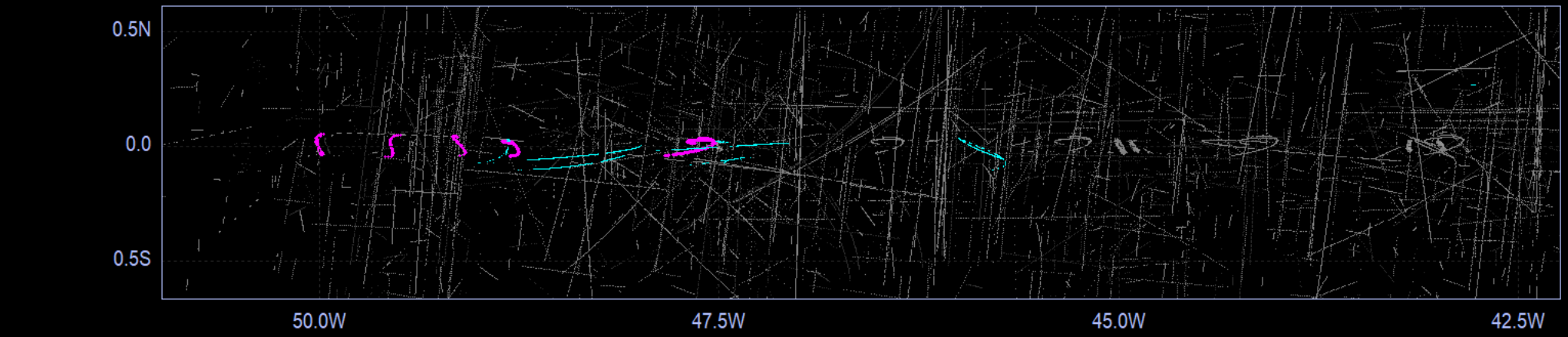
04-12 00:00
12:00


Vmag
16
14
12
10
8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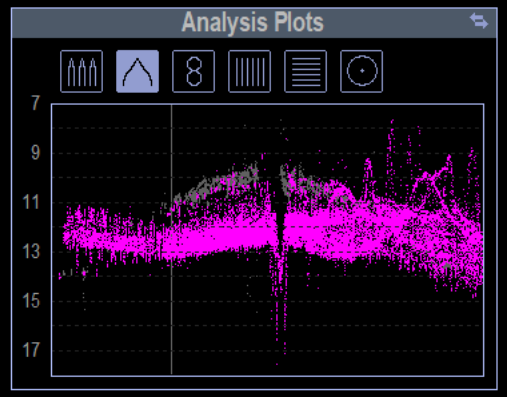
0.0
0.5S
50.0W
47.5W
45.0W
42.5W


Analysis Plots
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9
11
13
15
17

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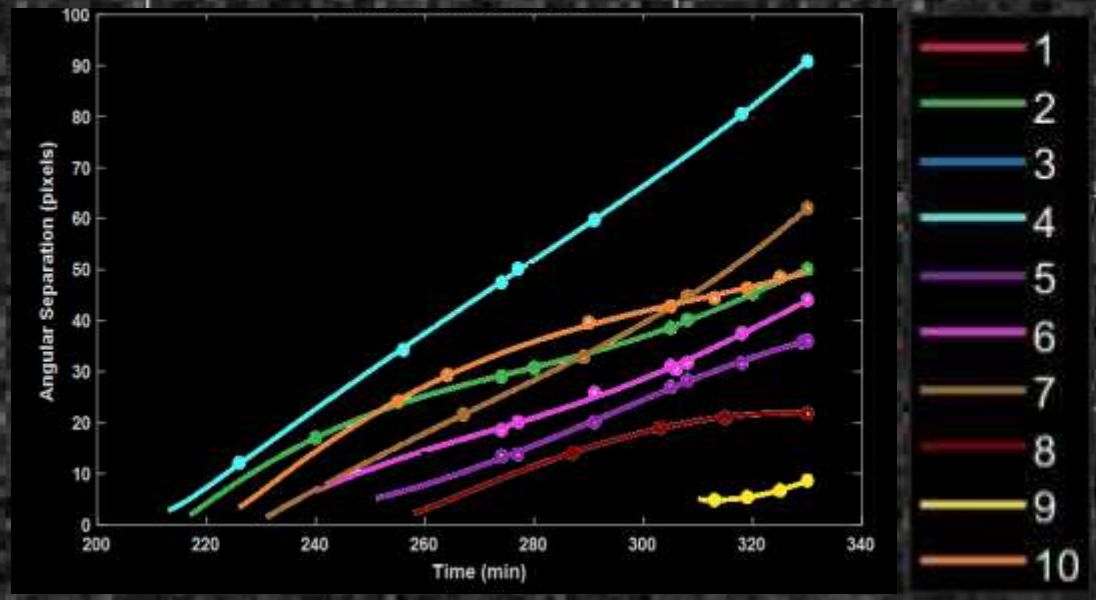
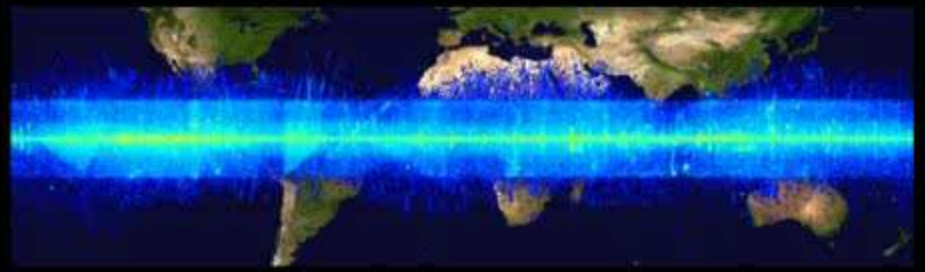
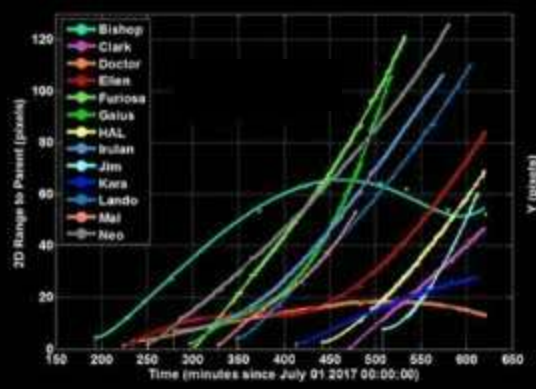


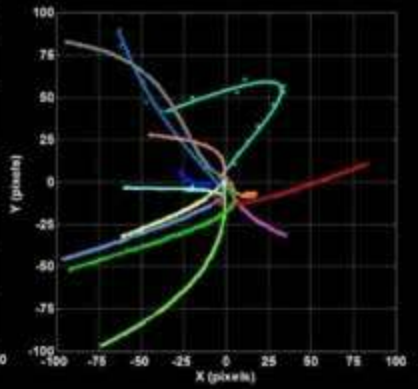
“ three-year-old satellite “experienced damage” —
the cause of which it did not identify — resulting in a fuel leak”

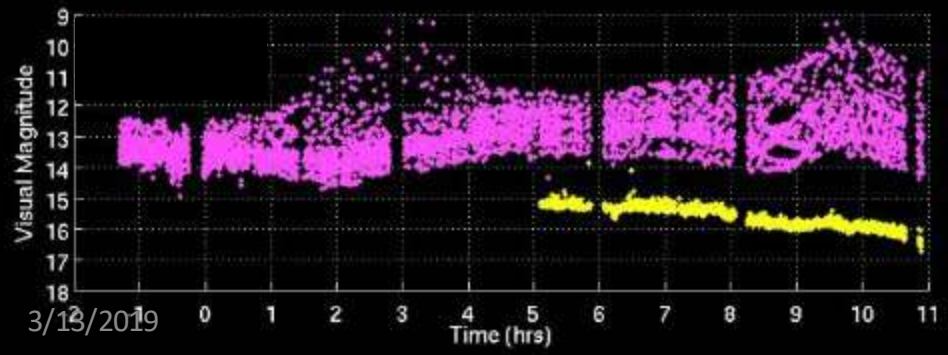
ExoAnalytic SOLUTIONS

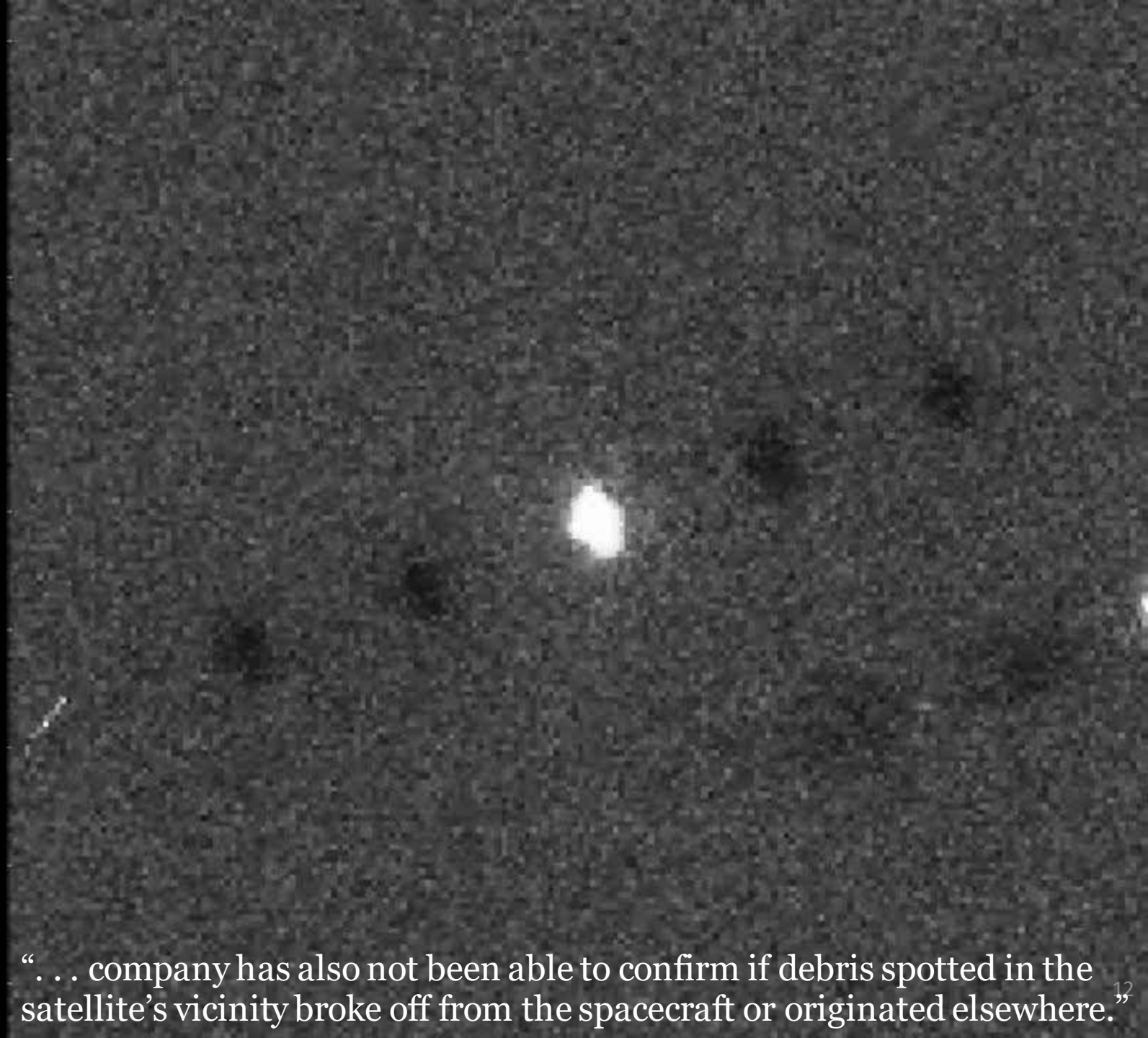
ExoAnalytic SOLUTIONS





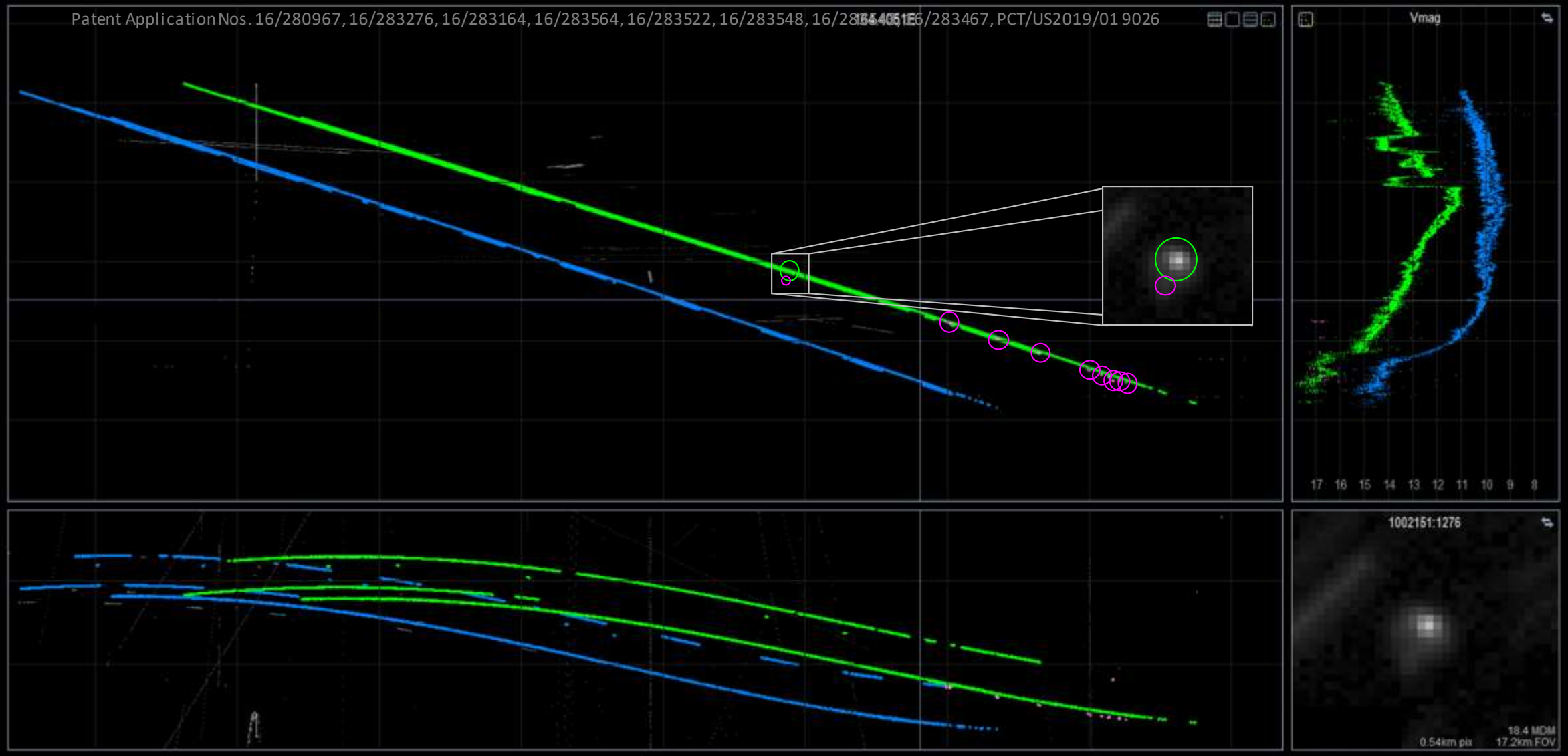






"... company has also not been able to confirm if debris spotted in the satellite's vicinity broke off from the spacecraft or originated elsewhere."

Deployment: Photo/Astro-metric & Image Evidence



Insertion, Deployment, Thrusting