

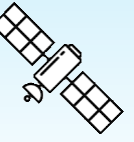
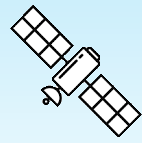
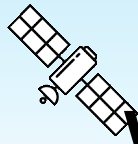
GNSS DATA USED IN REMOTE SENSING

David Moehl, PLS, CH

david.moehl@odot.oregon.gov

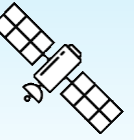
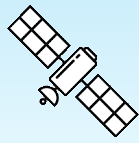
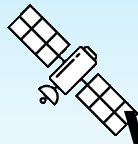
Oregon GNSS Users Group

6/21/2024



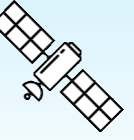
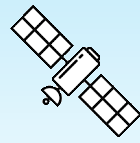
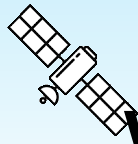
What is Remote Sensing?

- Remote sensing is the **science of obtaining information** about objects or areas from a distance



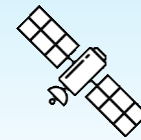
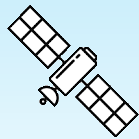
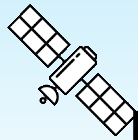
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- Why is GNSS important?
 - Positioning
 - Timing



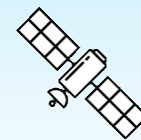
My GNSS timeline



2005



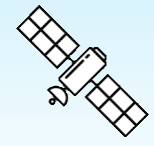
My GNSS timeline



2005



2007



My GNSS timeline



2005

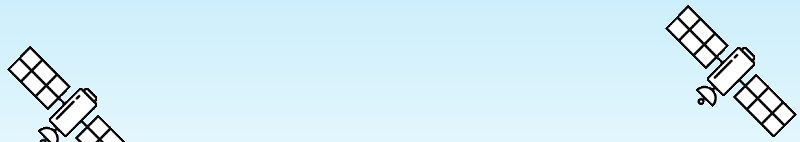


2007

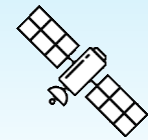


2010

← Remote Sensing begins



My GNSS timeline



2005

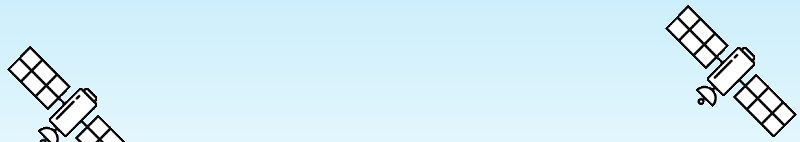


2007



2010





My GNSS timeline



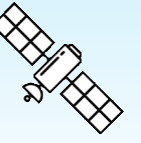
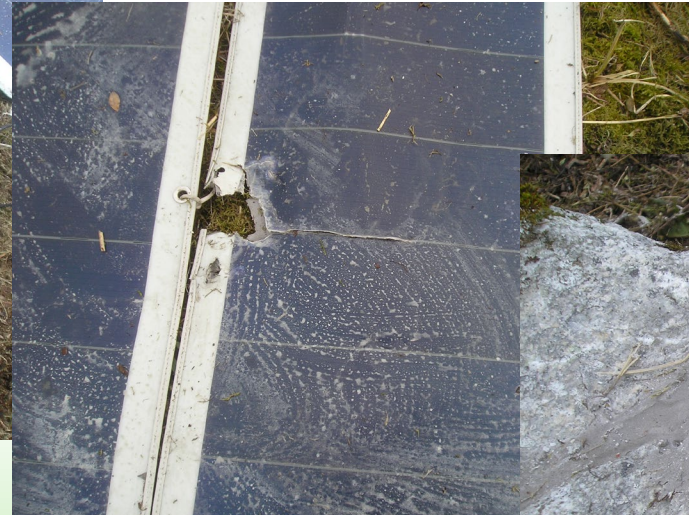
2005

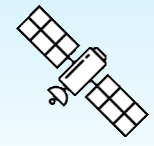


2007



2010





My GNSS timeline



2005



2007



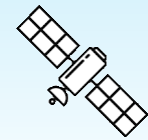
2010



2015



My GNSS timeline



2005



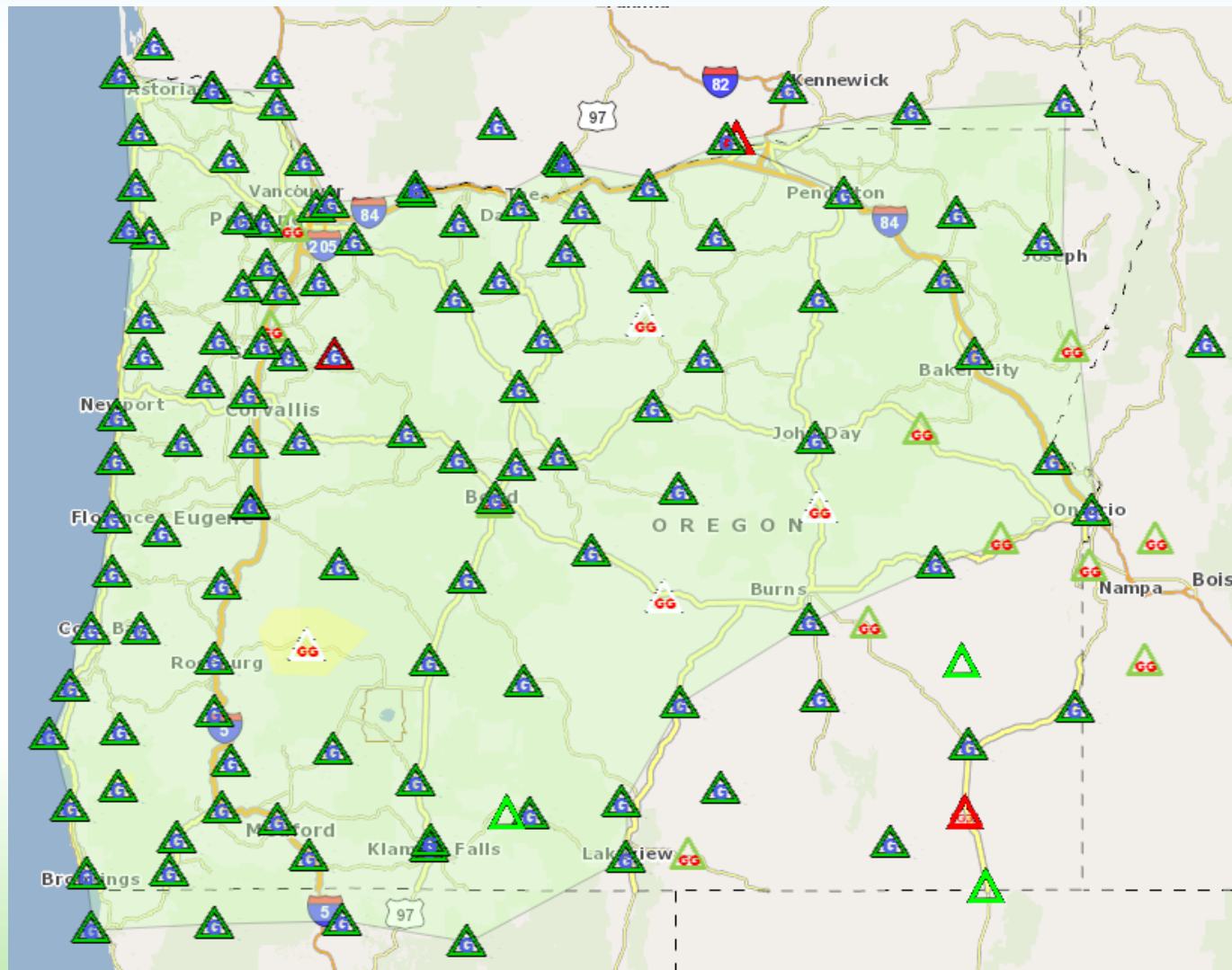
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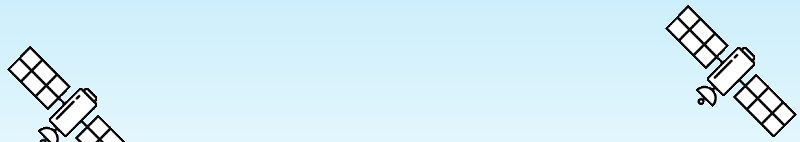


2010

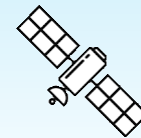


2015





My GNSS timeline



2005



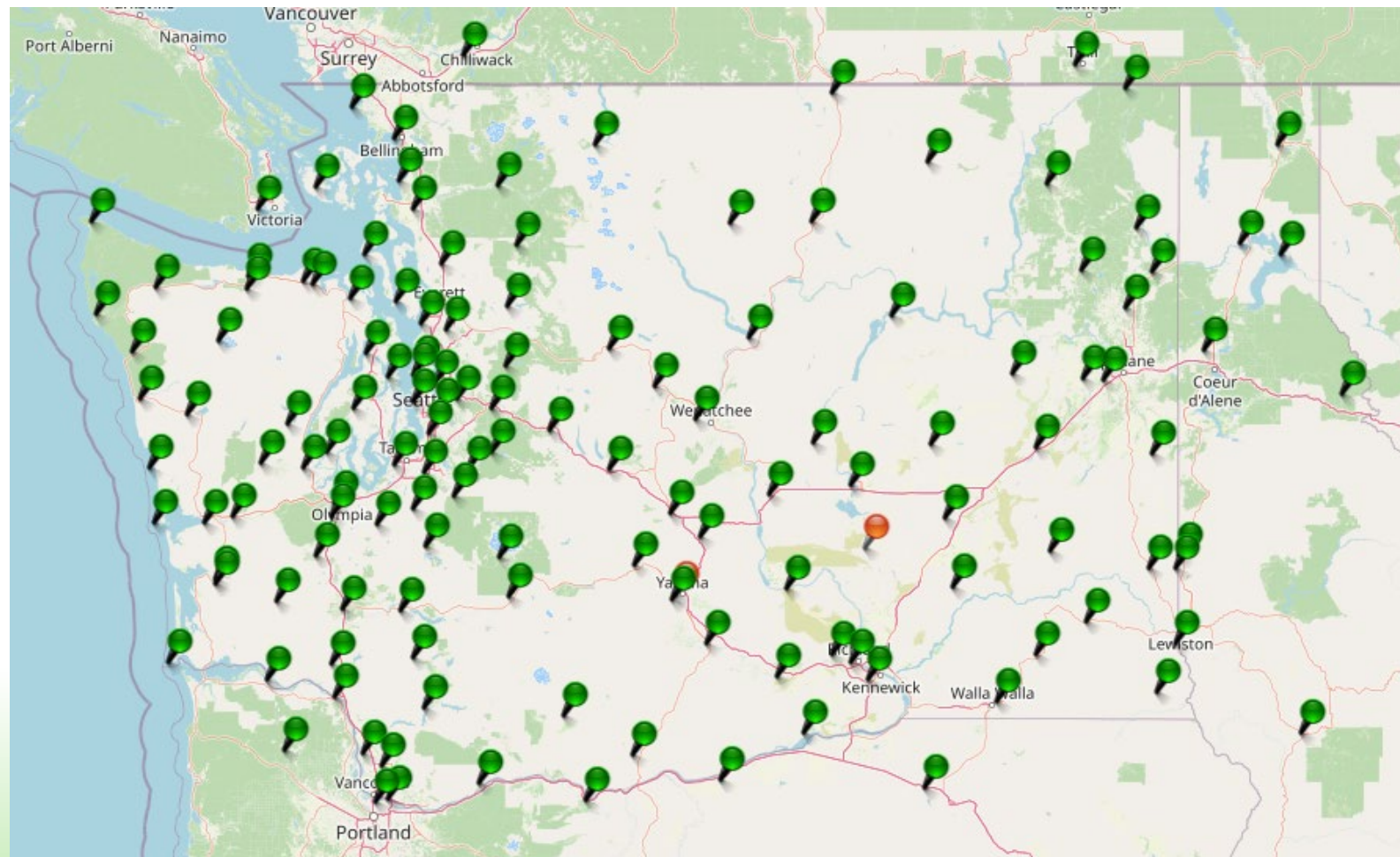
2007



2010



2015



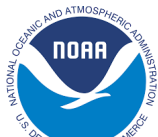
My GNSS timeline



2005



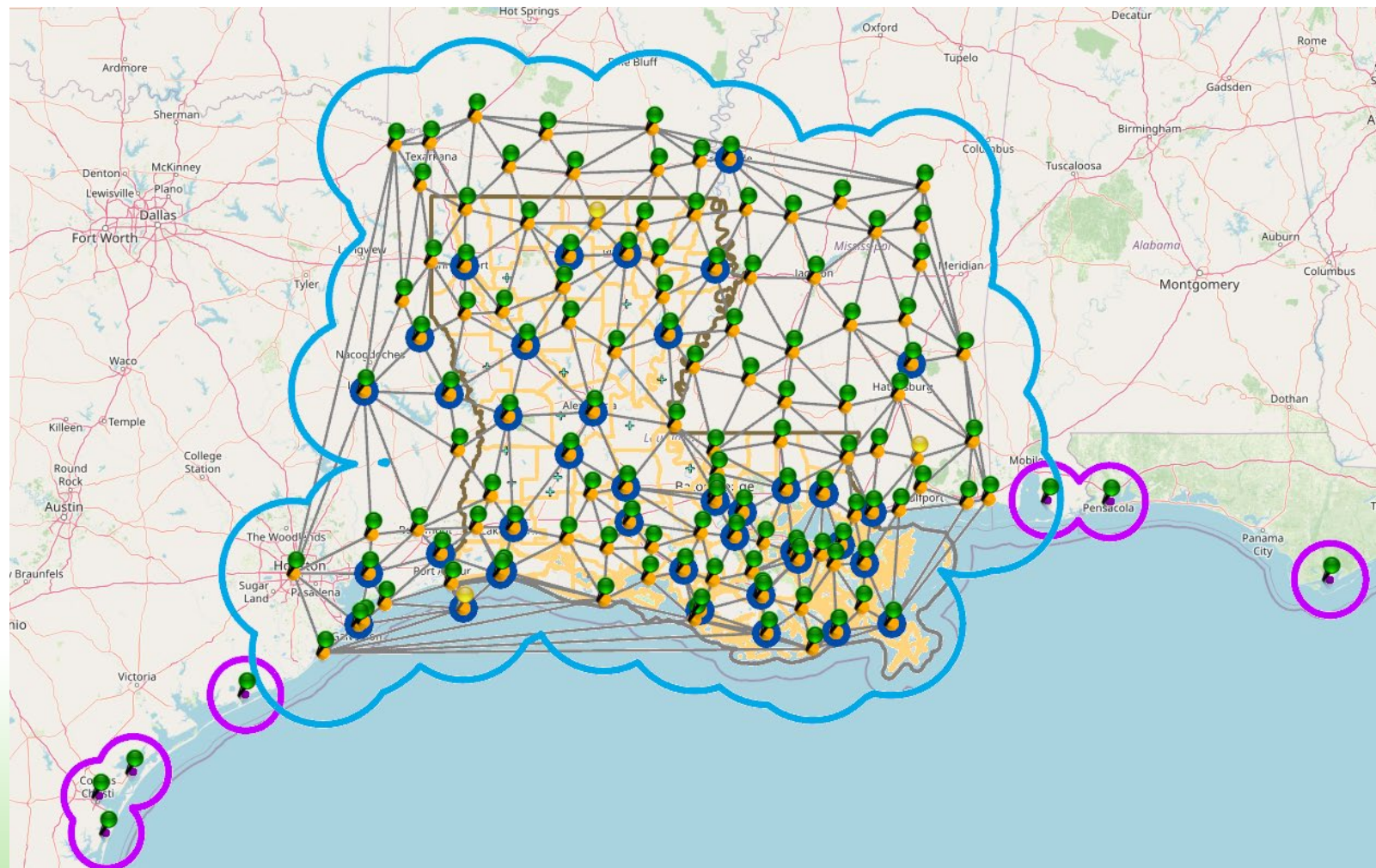
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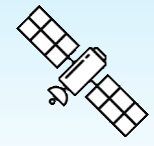


2010



2015





My GNSS timeline



2005



2007



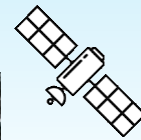
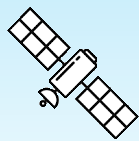
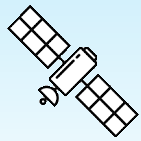
2010



2015

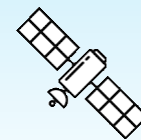


2020



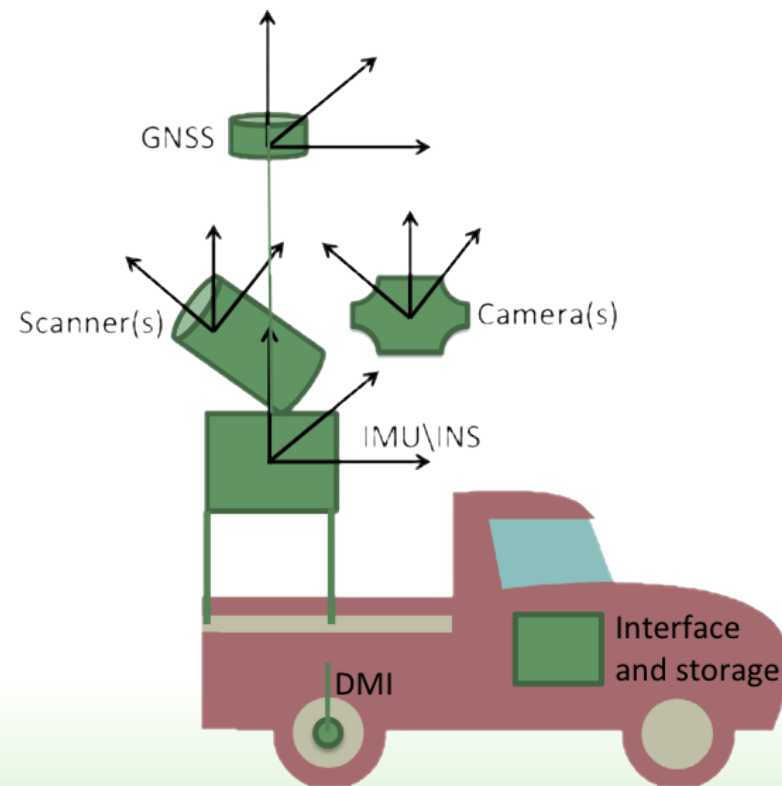
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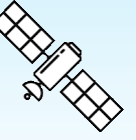
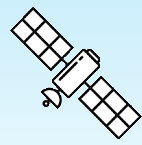
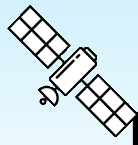




Remote Sensing Setups

- GNSS Antenna
 - Primary
 - Secondary?
- Inertial Measurement Unit (IMU)
- Laser Scanners
- Cameras
- Distance Measurement Indicator (DMI)
- Echosounder
- Ground Penetrating Radar (GPR)
- ???



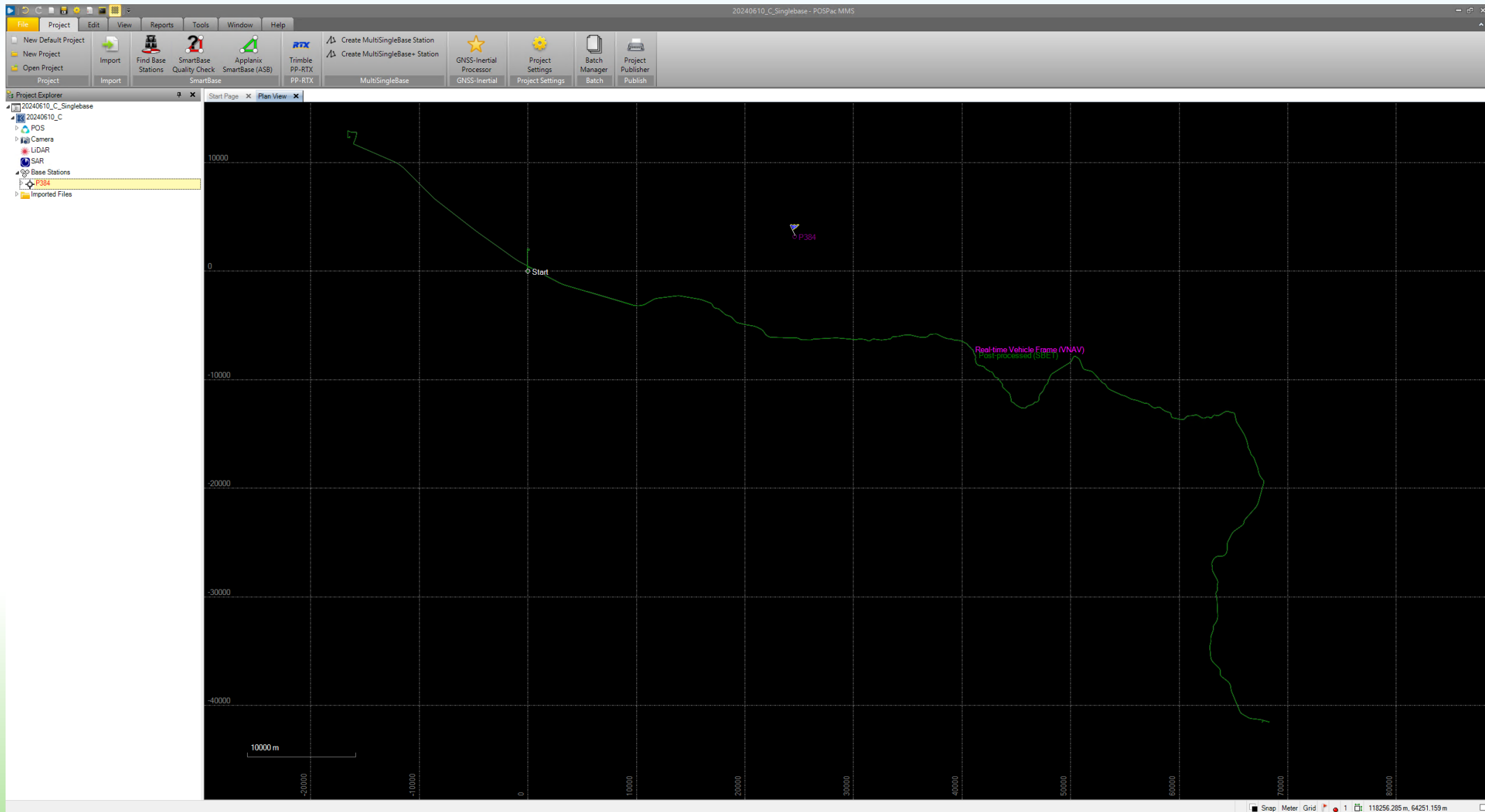


Best Practices

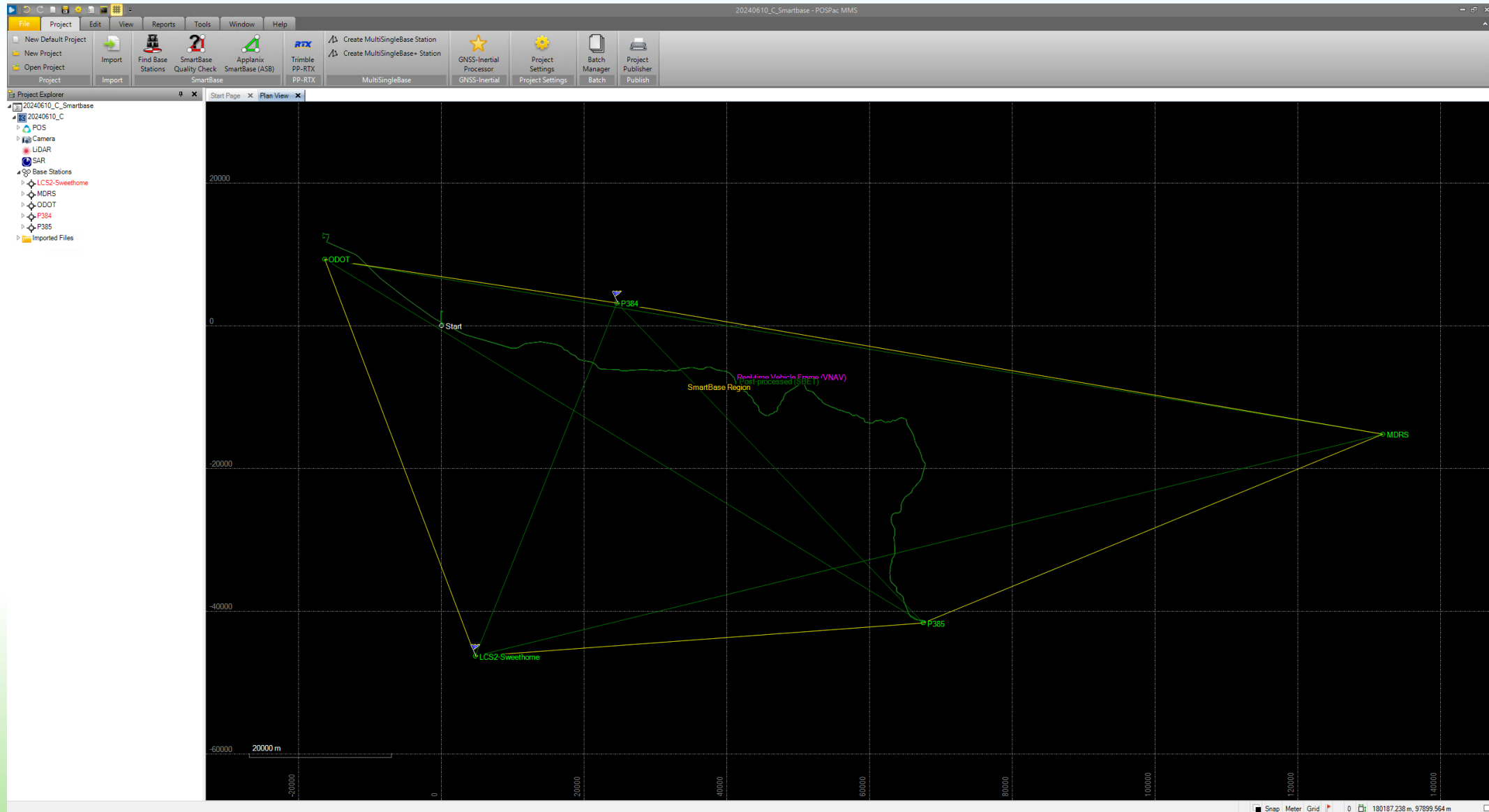
- Post-Processed Kinematic
- ORGN or user-base setup
 - Download Rinex from ODOT, UNAVCO, WSRN, TURN (Utah)
- High-Rate Data (1 Hz)
- 30-km baseline length for singlebase

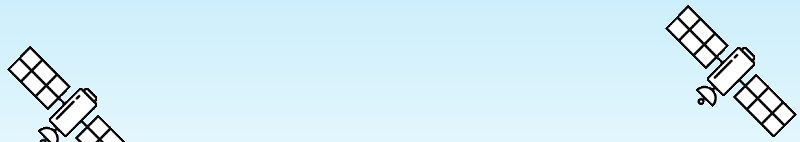


Singlebase

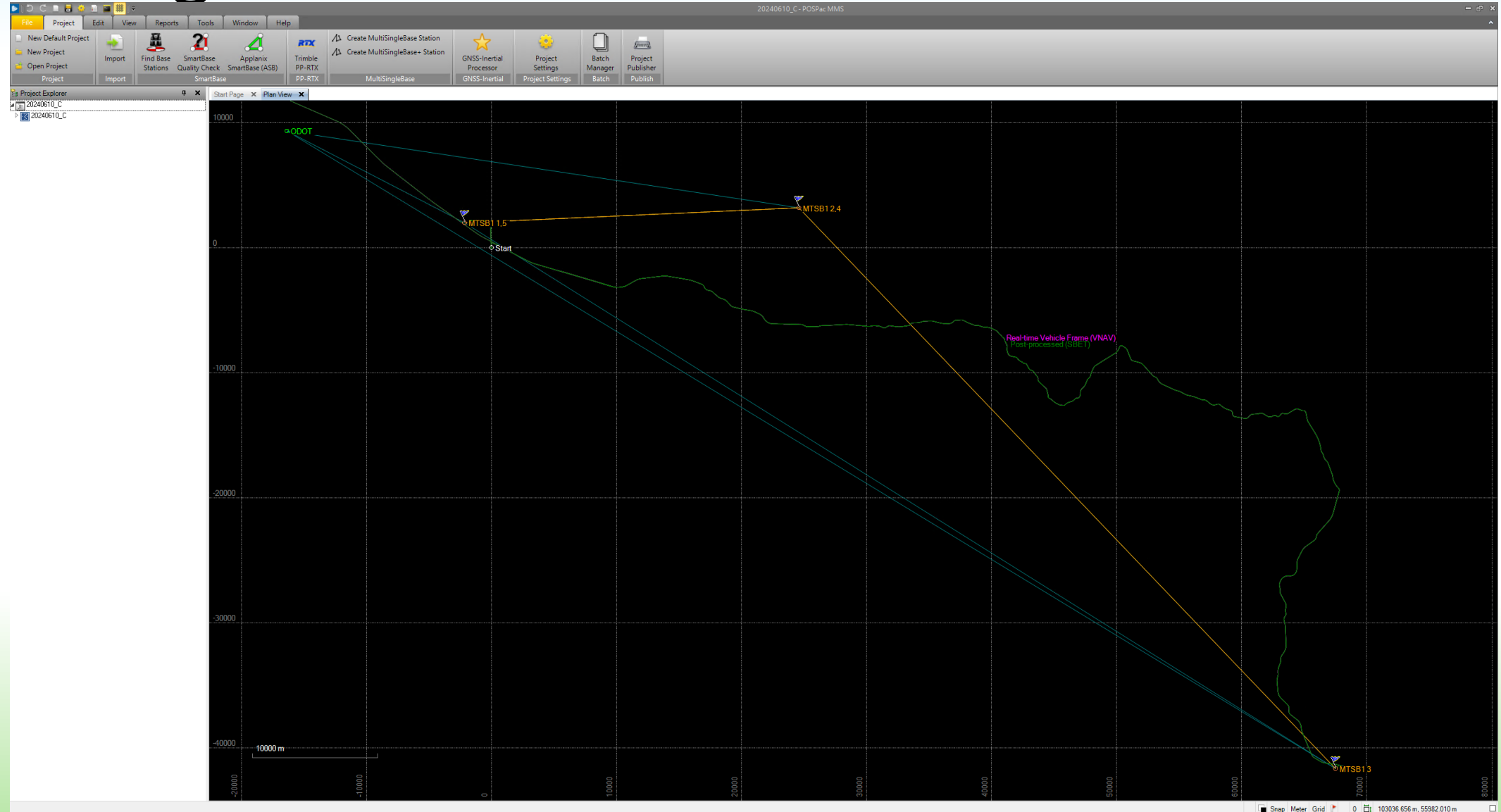
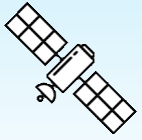
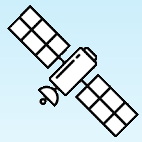


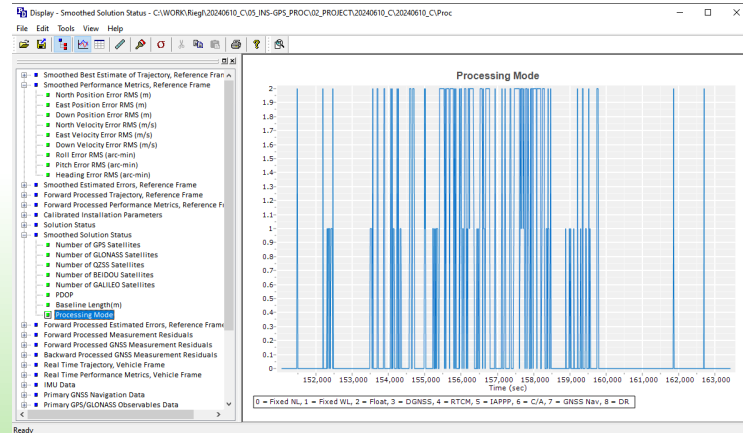
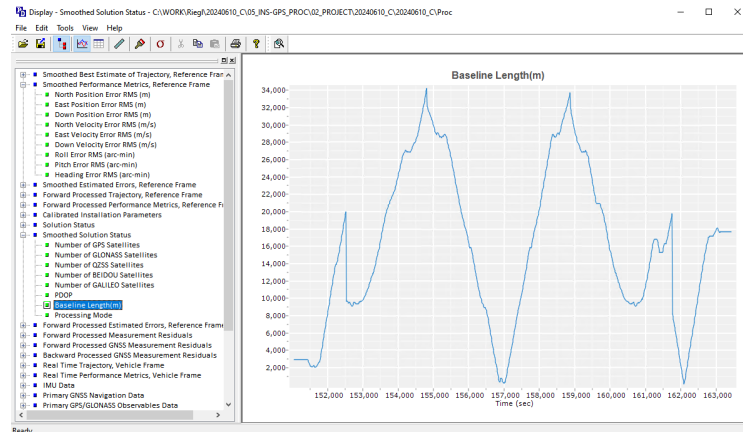
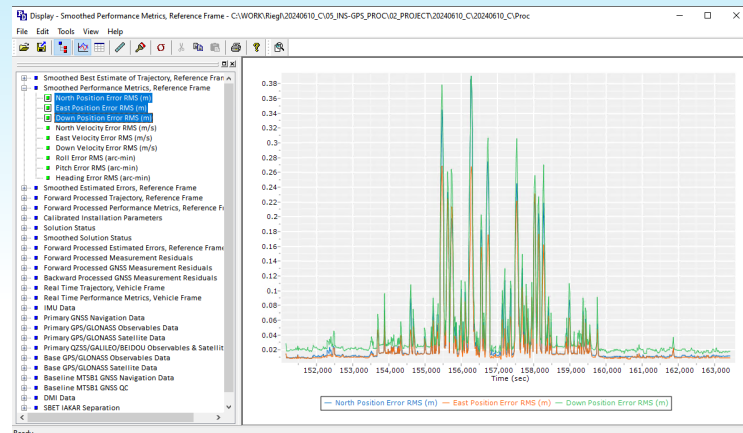
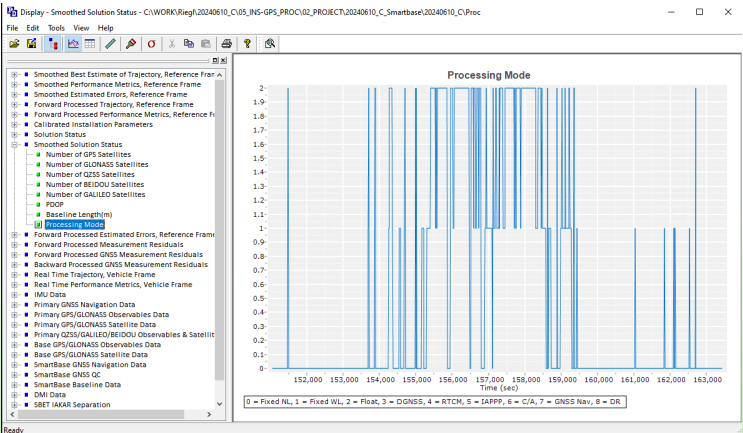
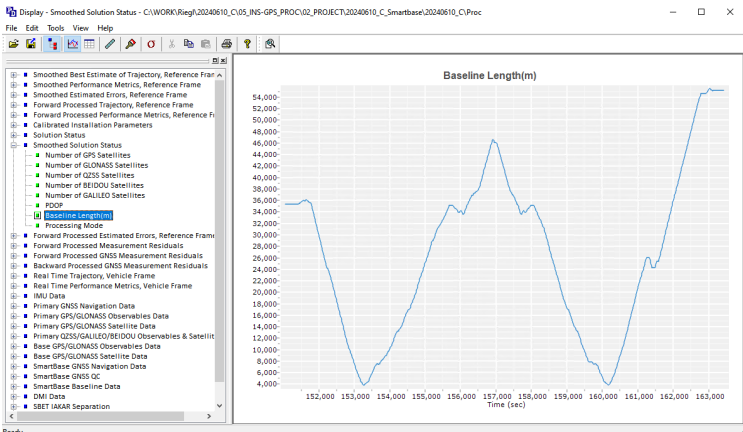
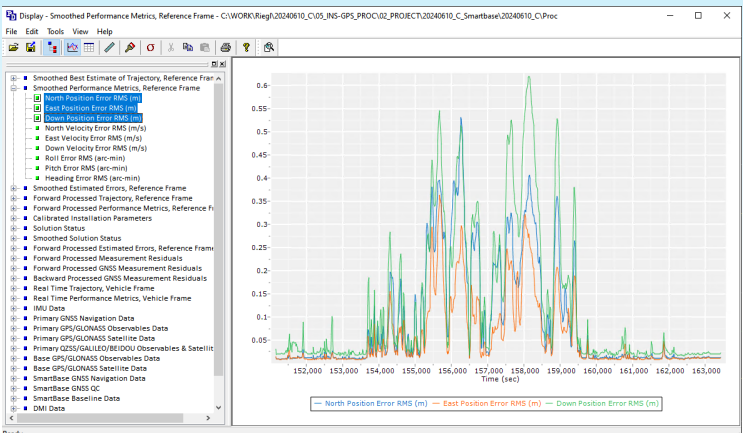
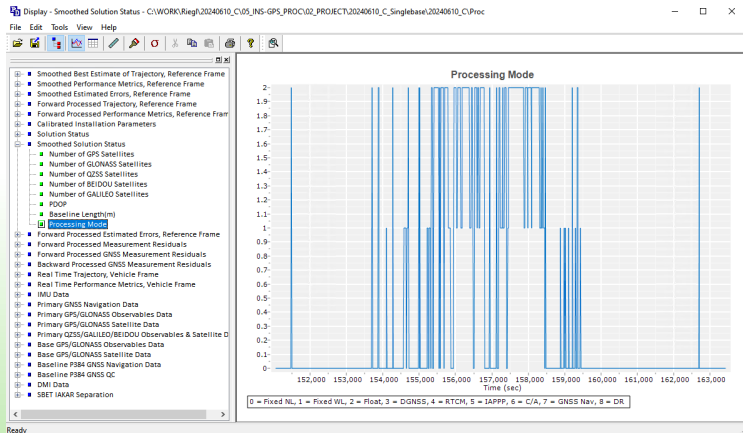
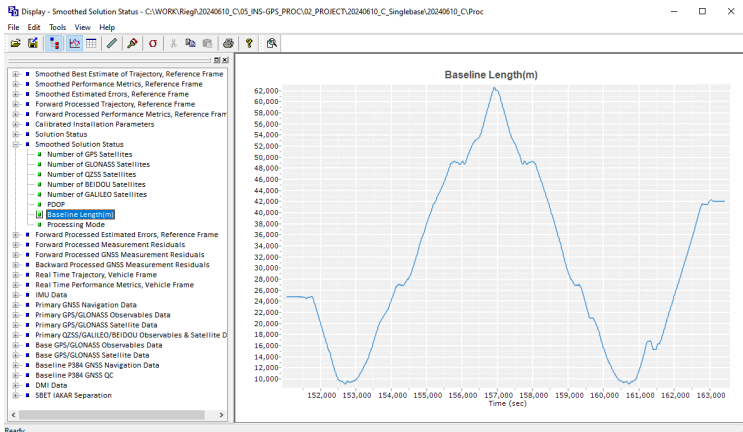
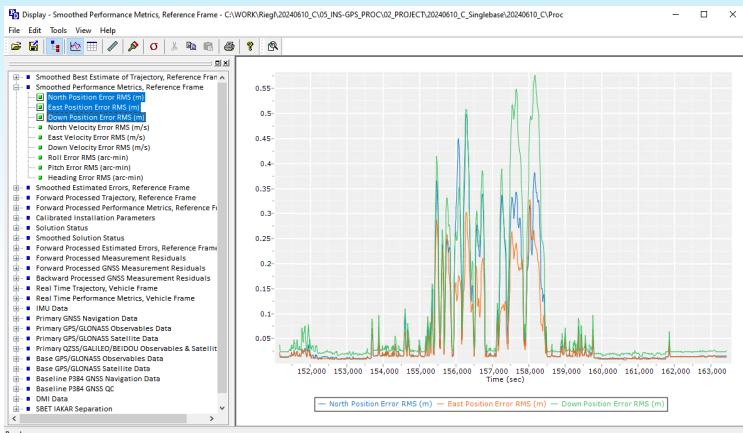
Smartbase





Multi-Singlebase

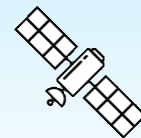
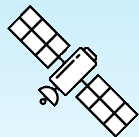
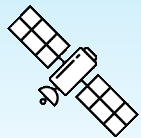




Singlebase

Smartbase

Multi-Singlebase



Questions?

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