

Alaska's Continuously Operating Reference Station Network (ACORN)



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ACORN Helps to Solve:

01

- Problem 1: Accuracy

02

- Problem 2: A Dynamic Earth

03

- Problem 3: Consistent Coordinates



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01 Problem 1: Accuracy



Accuracy : 10 – 30 feet



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Solution: Two or More GPS

Ex: RTK Survey: Accuracy approx. 1inch



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RTK Surveys



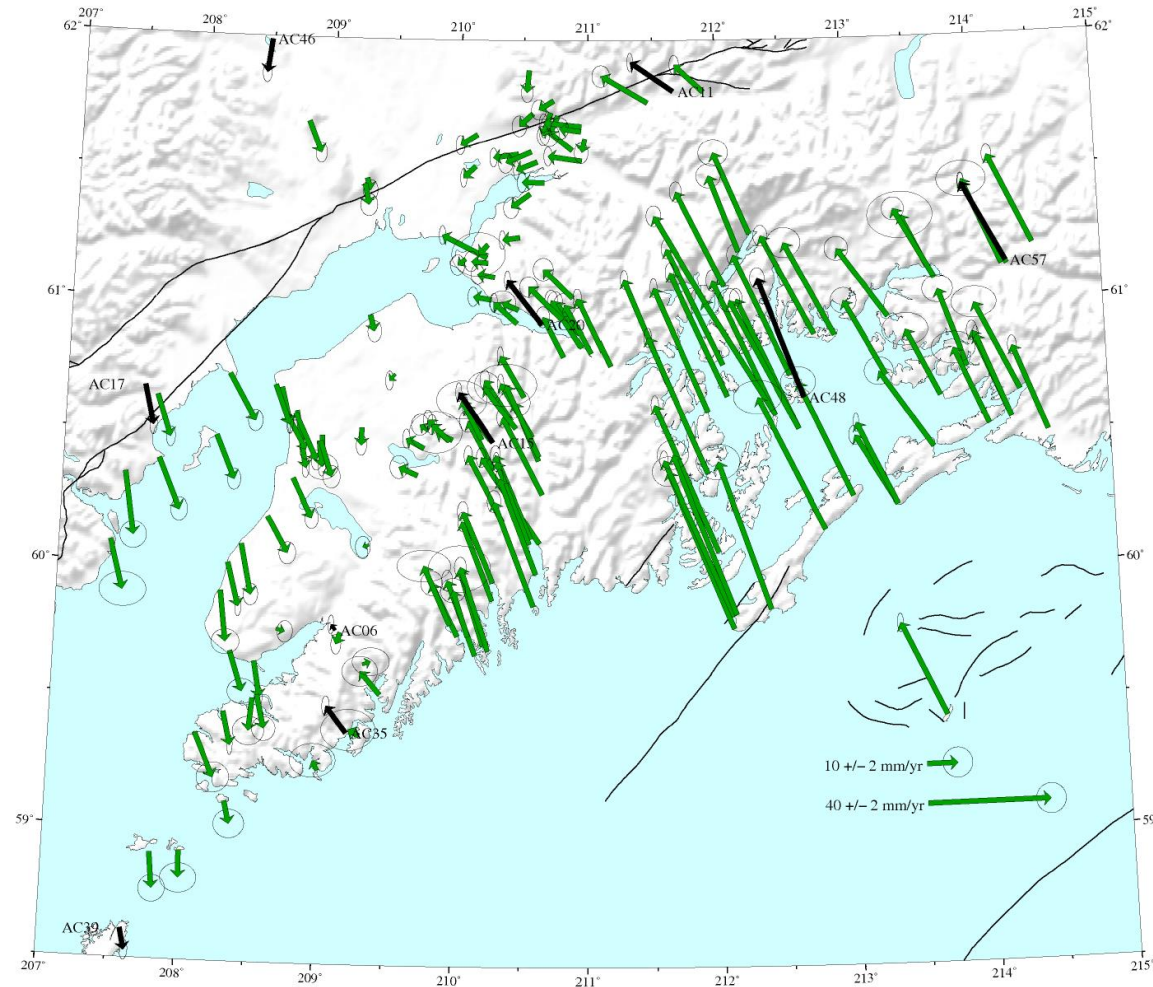
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02 Problem 2: A Dynamic Earth Passive Monumentation



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Land is ACTIVE and **NOT** PASSIVE



Jeff Freymueller - Geophysical Institute - UAF 2009



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Solution: Permanent GPS

CORS Coverage - April 2006



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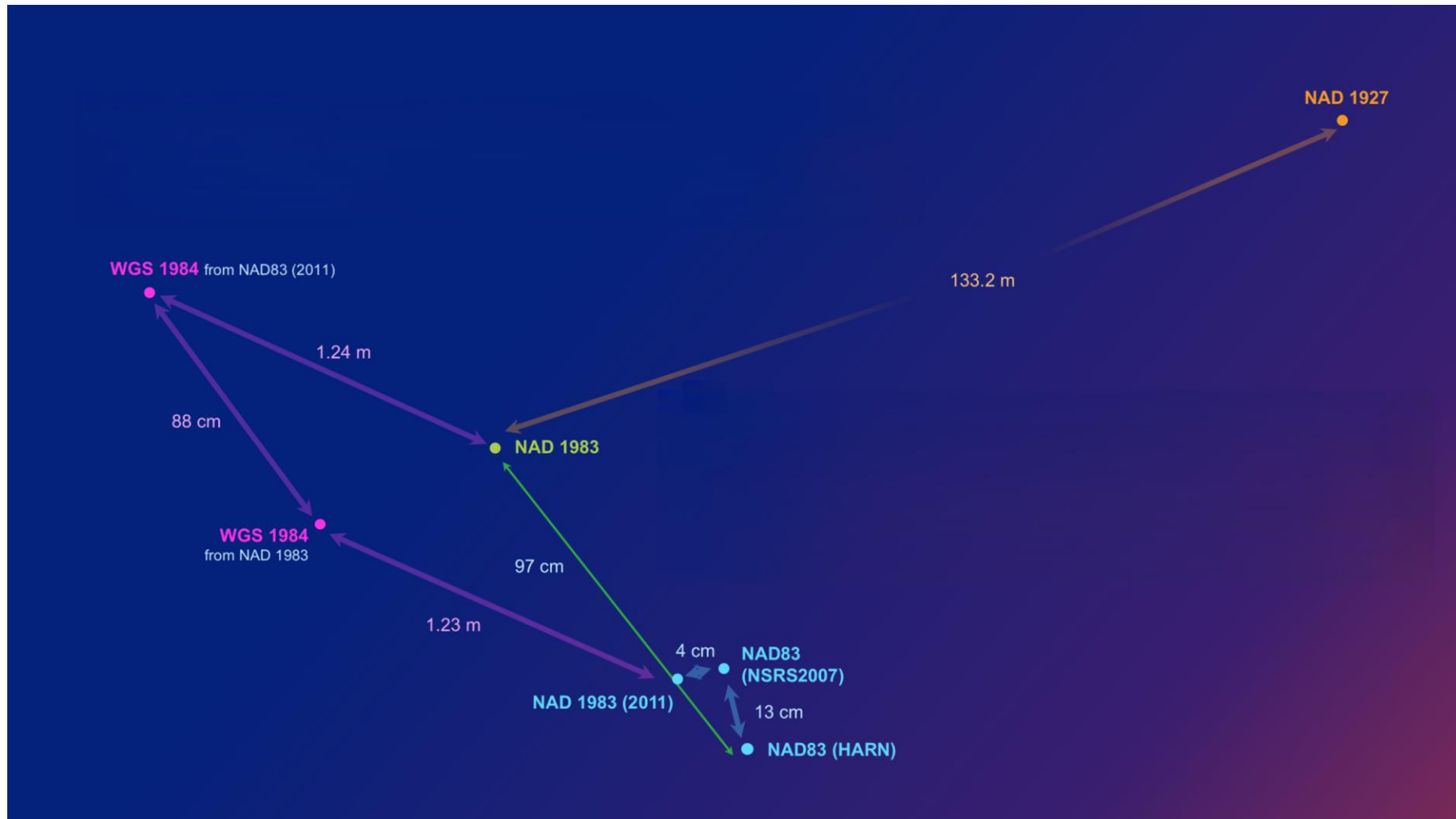
03 Problem 3: Consistent Coordinates North American Datum 1983 – Legal Coordinates of USA

- **NAD 83 (1986)**
- **HARN/HPGN** (High Accuracy Reference Network)
- **NAD 83 (CORS96)**
- **NAD 83 (NSRS2007)**
- **NAD 83 (2011) Epoch 2010.00**
- **NAD 83 (PA11) & (MA11)**
- **NAD 83 (CSRS)** (Canadian Spatial Reference System)



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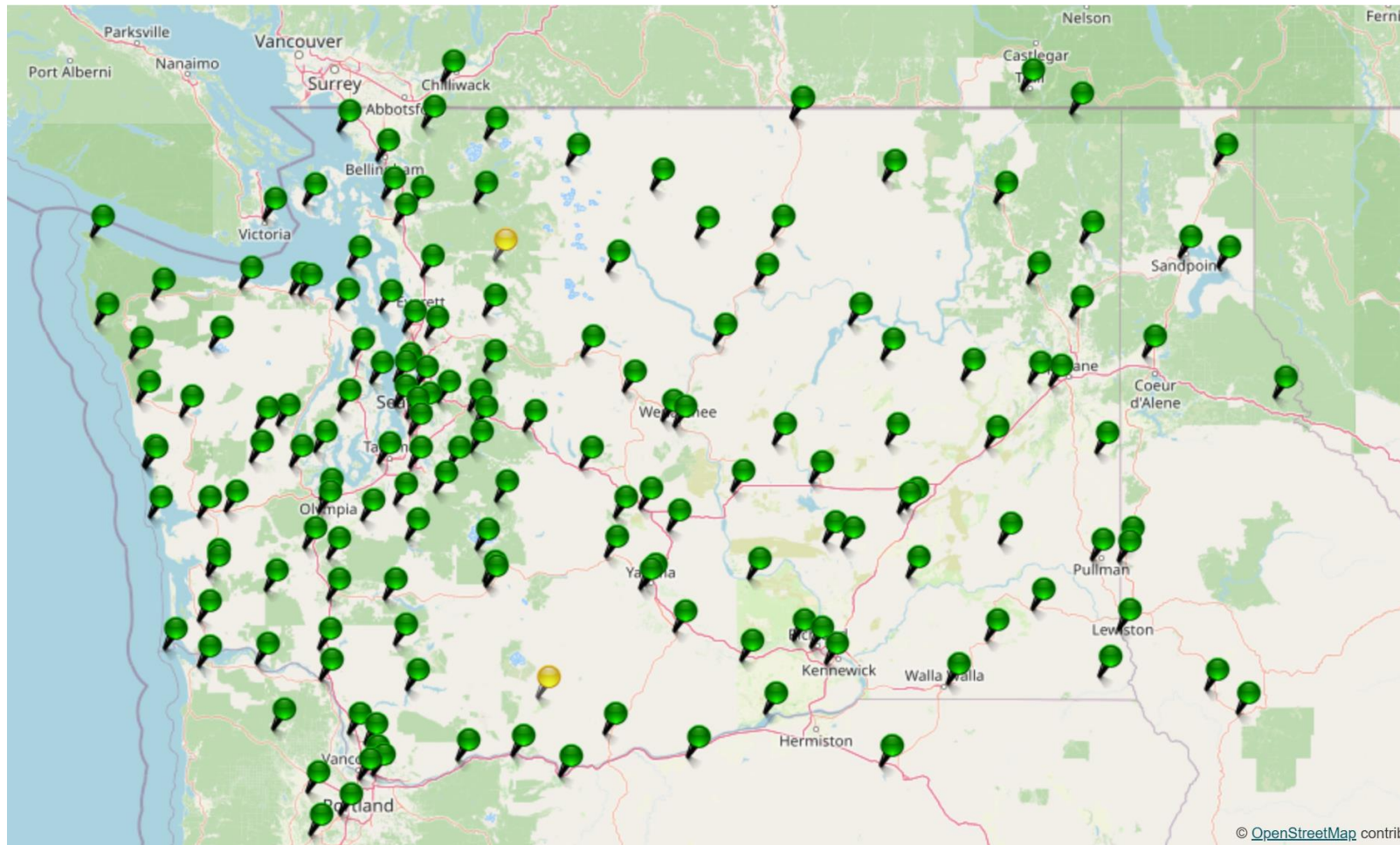
NAD83 Differences in the Anchorage Area



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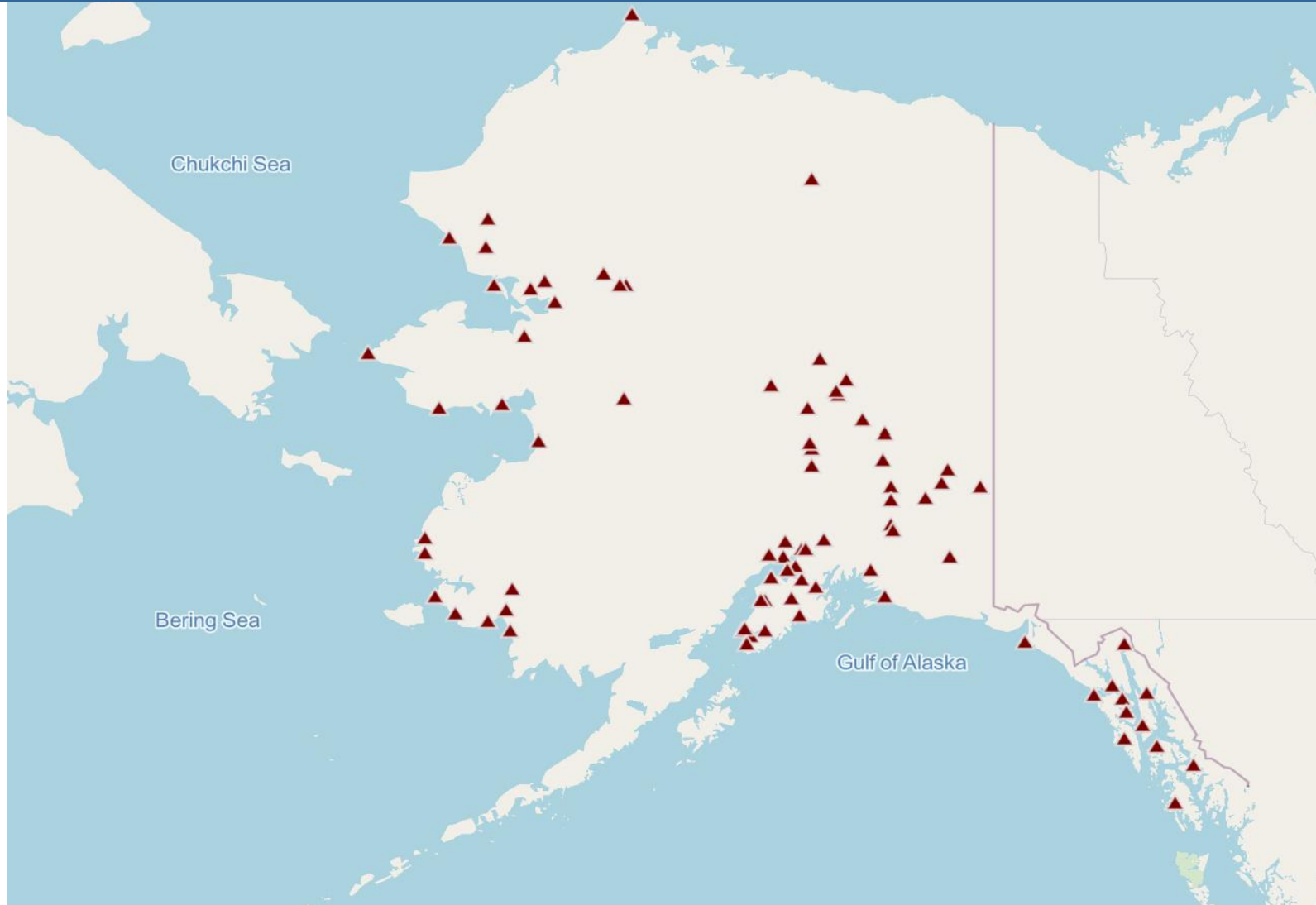
Solution: Reference Networks:

Ex: Washington State Reference Network - 165 Stations



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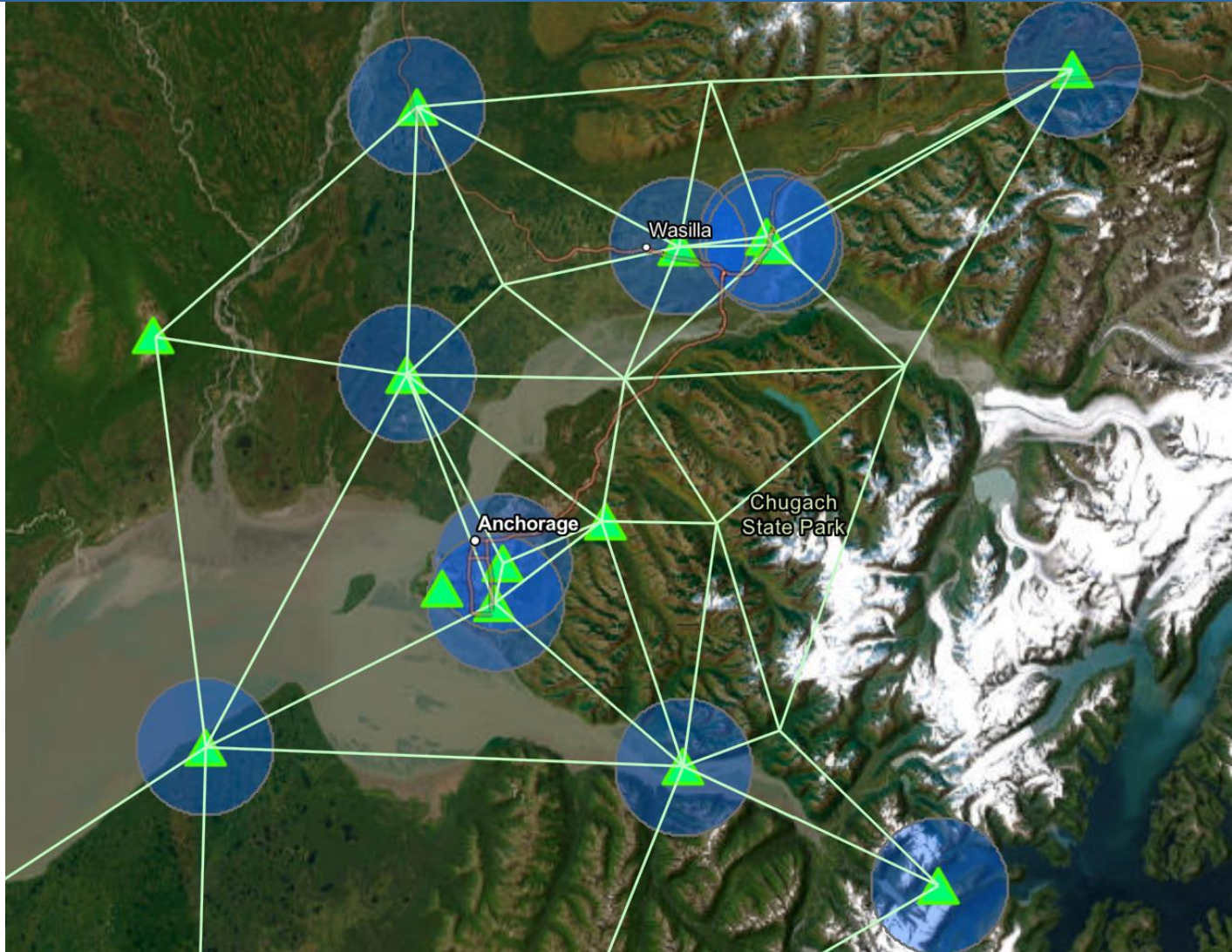
Reference Networks: Alaska – 45 Stations (6/2025) – 84 Stations (4/2026)



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VRS vs RTK: Same Accuracies – Different Coverage!

- **RTK: 10 miles**
- **VRS: 40 miles**



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Applications of ACORN

- Emergency Services
- Surveying / Mapping
- Drone Imagery / Lidar Mapping
- Snowplows
- Heavy Equipment
- Construction
- Earthquake Monitoring
- Water Levels
- Snow Depth
- Many other uses



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Pre ACORN: Thompson Pass RTK



www.truckinginfo.com - 2019



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Typhoon Halong: November 2025



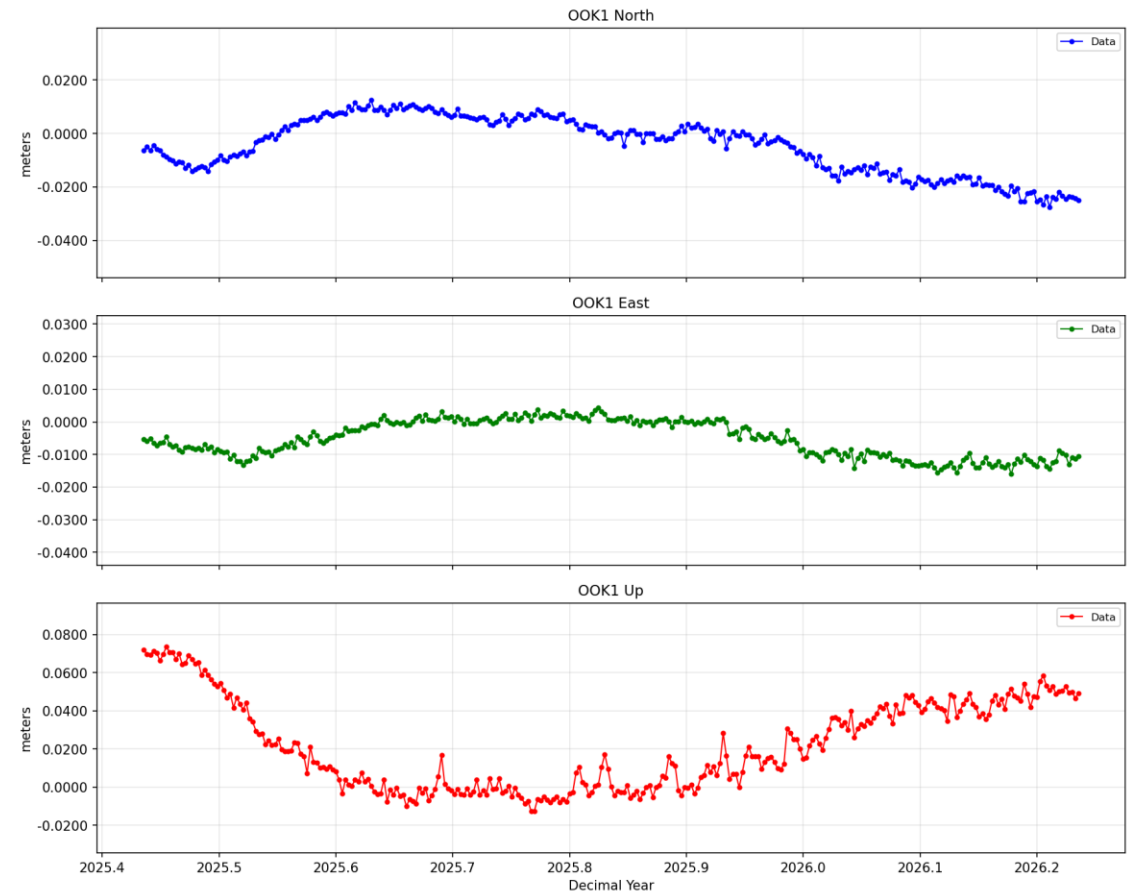
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Typhoon Halong: November 2025

VAK1 Position Time Series (2025-2026)



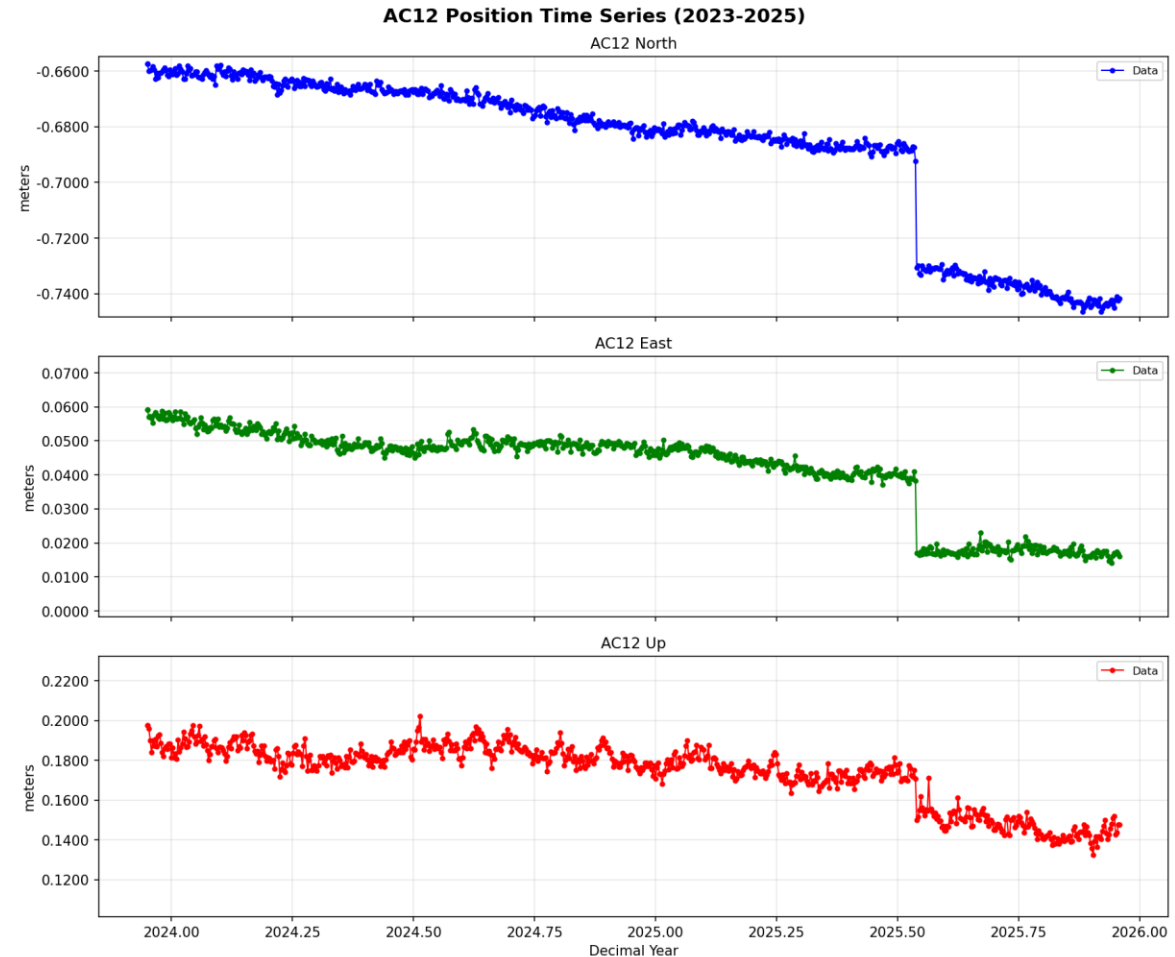
OOK1 Position Time Series (2025-2026)



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Earthquakes: Shake Alert

- Earthquake Early Warning (EEW) System managed by the U.S. Geological Survey
- Uses many sensors including ACORN



Thank You.

Questions?

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