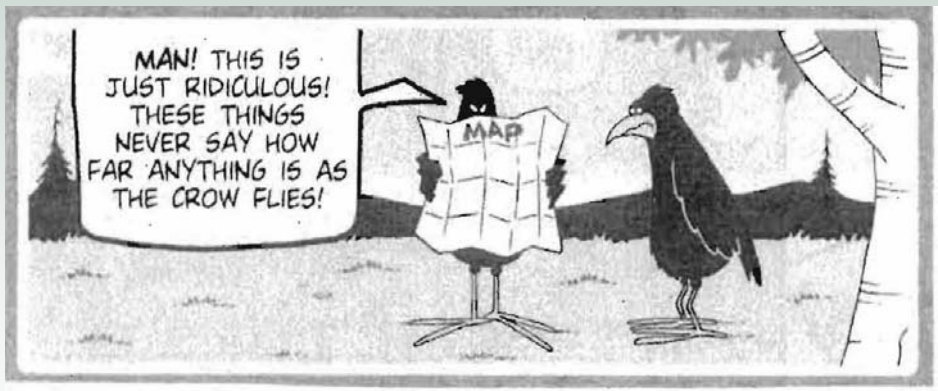
National Park Service GPS Program

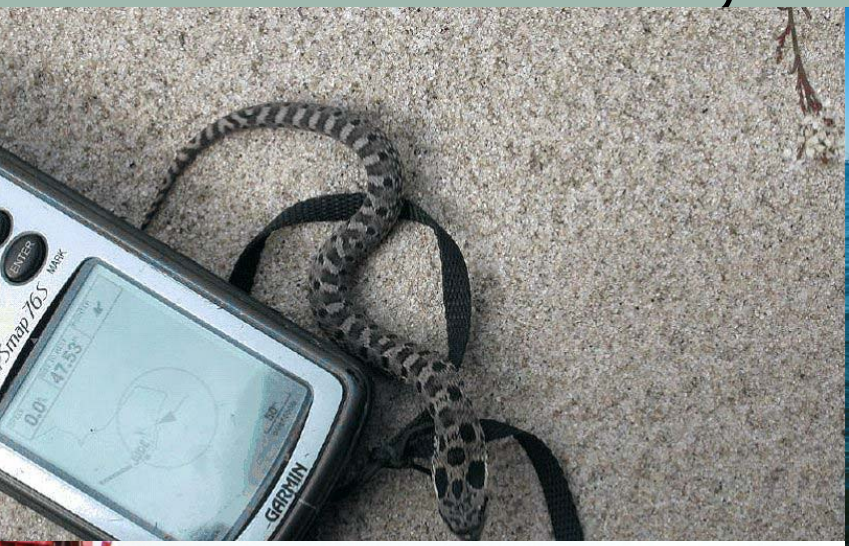


“It’s always been like that.”

You think that you have masking problems!

GPS in the National Park Service

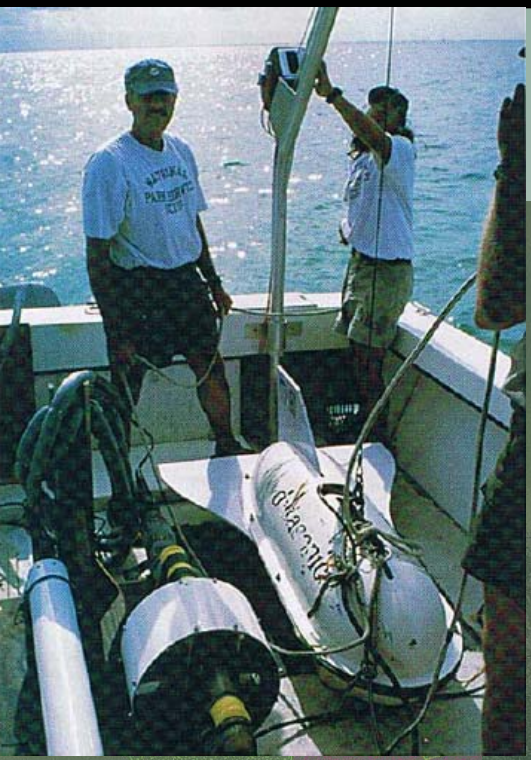
wide variety of users and requirements

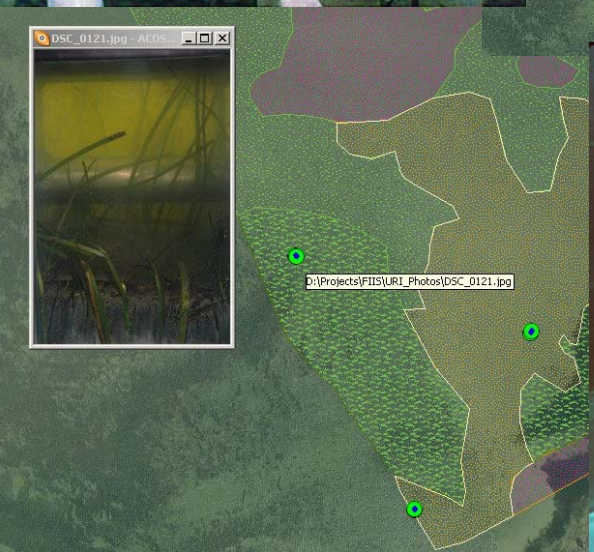


GPS in the National Park Service

wide variety of users and requirements

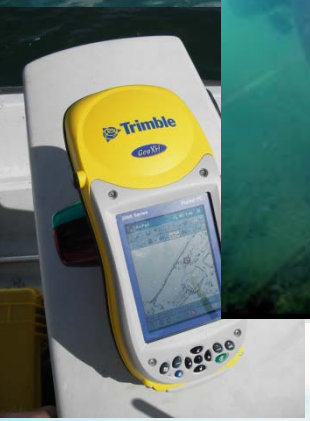
Hydrographic Surveying





GPS Photo Geotagging with GPS PhotoLink

Topo and High Accuracy Surveying



Topo and High Accuracy Surveying

Missouri National Recreation River
Wreck for the *North Alabama*

GPS in the National Park Service

- Very wide variety of users, difficulties, environments
- No official standardization of hardware and software (good or bad?)

Training

On-site or Remote

http://www.ngs.noaa.gov/corbin/

http://gis.nwcg.gov/training_gps.html

Equipment Testing

Post-Processing and Realtime Differential Corrections

Equipment Testing

Data Collection Methodology

- Collect NMEA output from receivers
- Collect about one-half hour of data or 1800 points if possible
- Multiple visits to location if possible

Reasons for Methodology

- Parse data any way you want
- Use in any program
- Higher degree of analysis possible
- Acquire data as close to “raw” as possible
- Supply “raw” data to others

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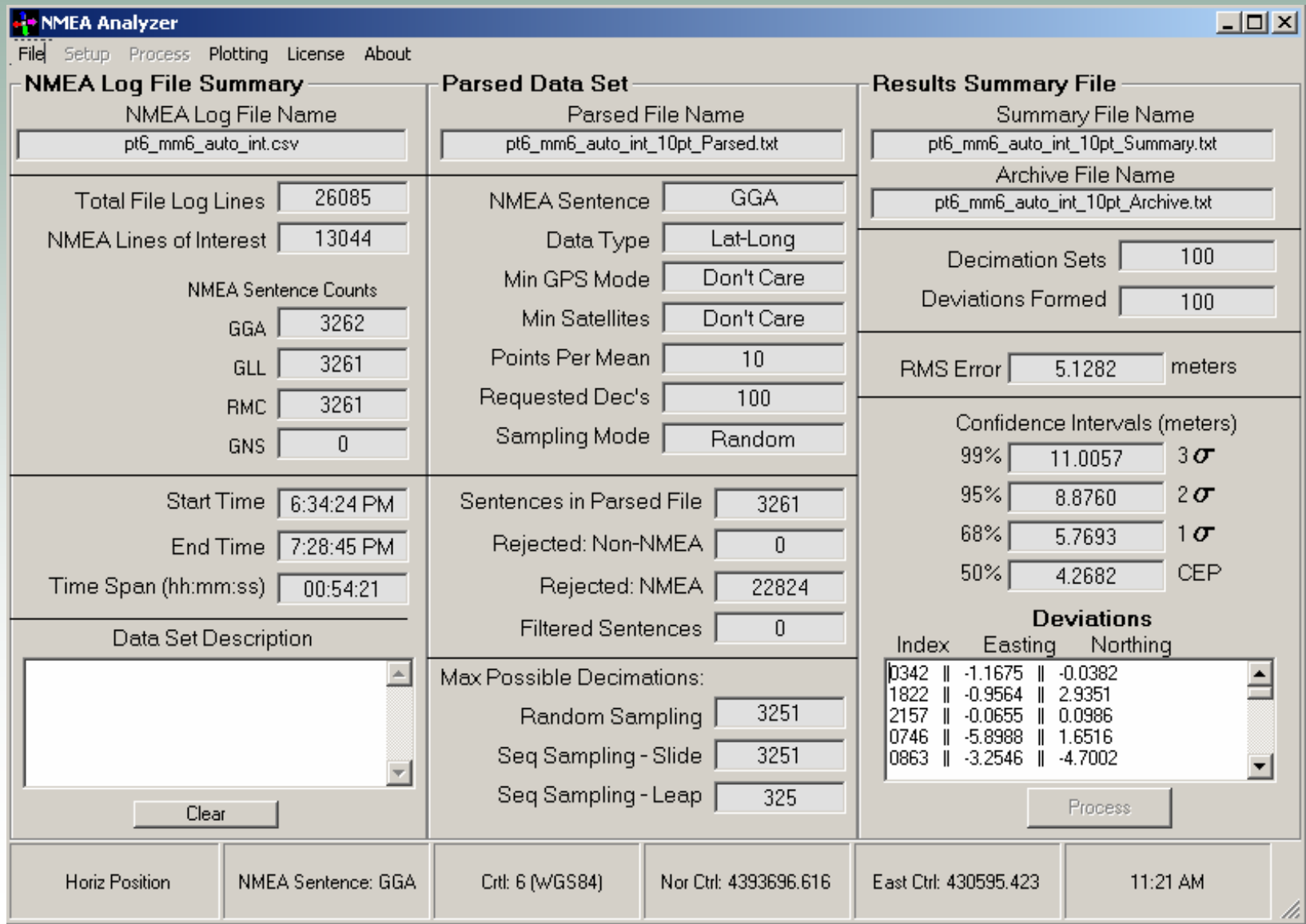
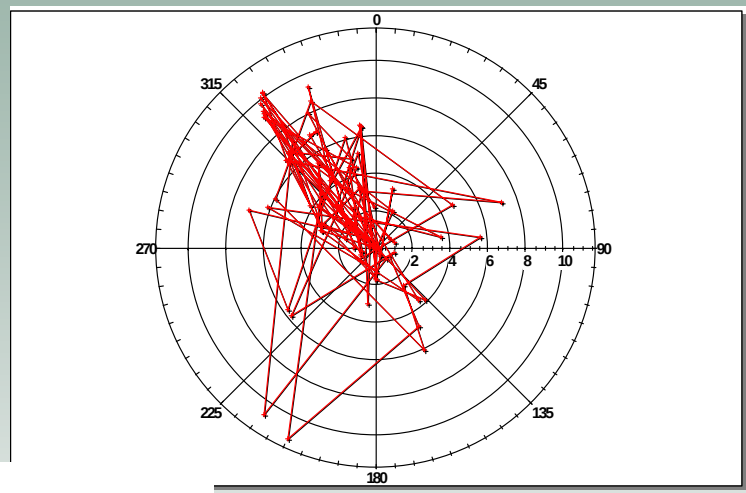
Equipment Testing

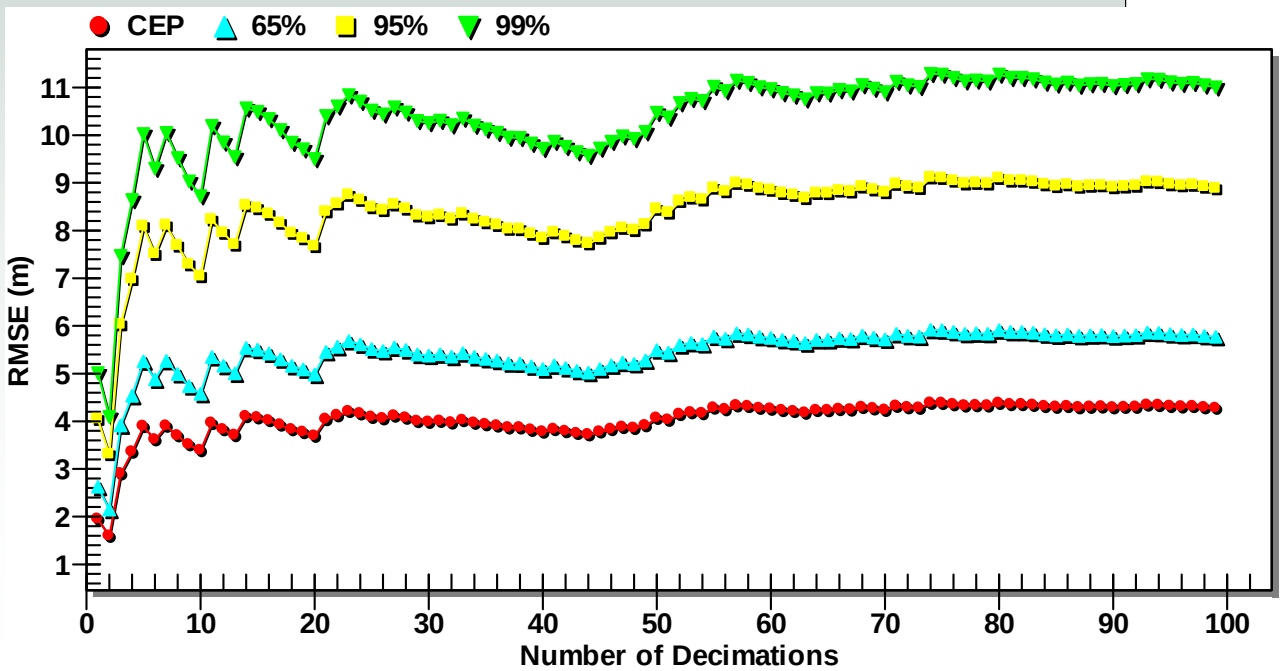


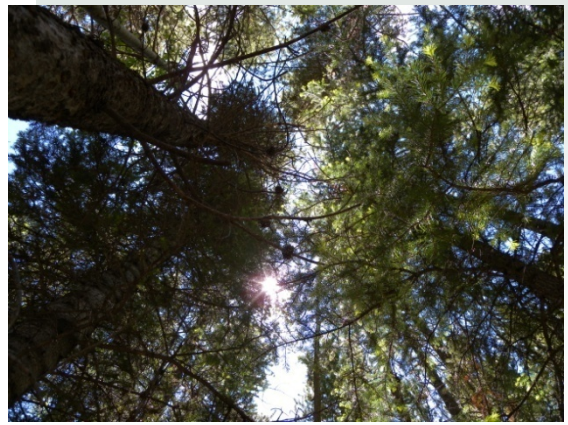
Equipment Testing

CONFIDENCE INTERVALS

99% Interval: = 11.0057
95% Interval: = 8.8760
68% Interval: = 5.7693
50% Interval: = 4.2682







Equipment Testing

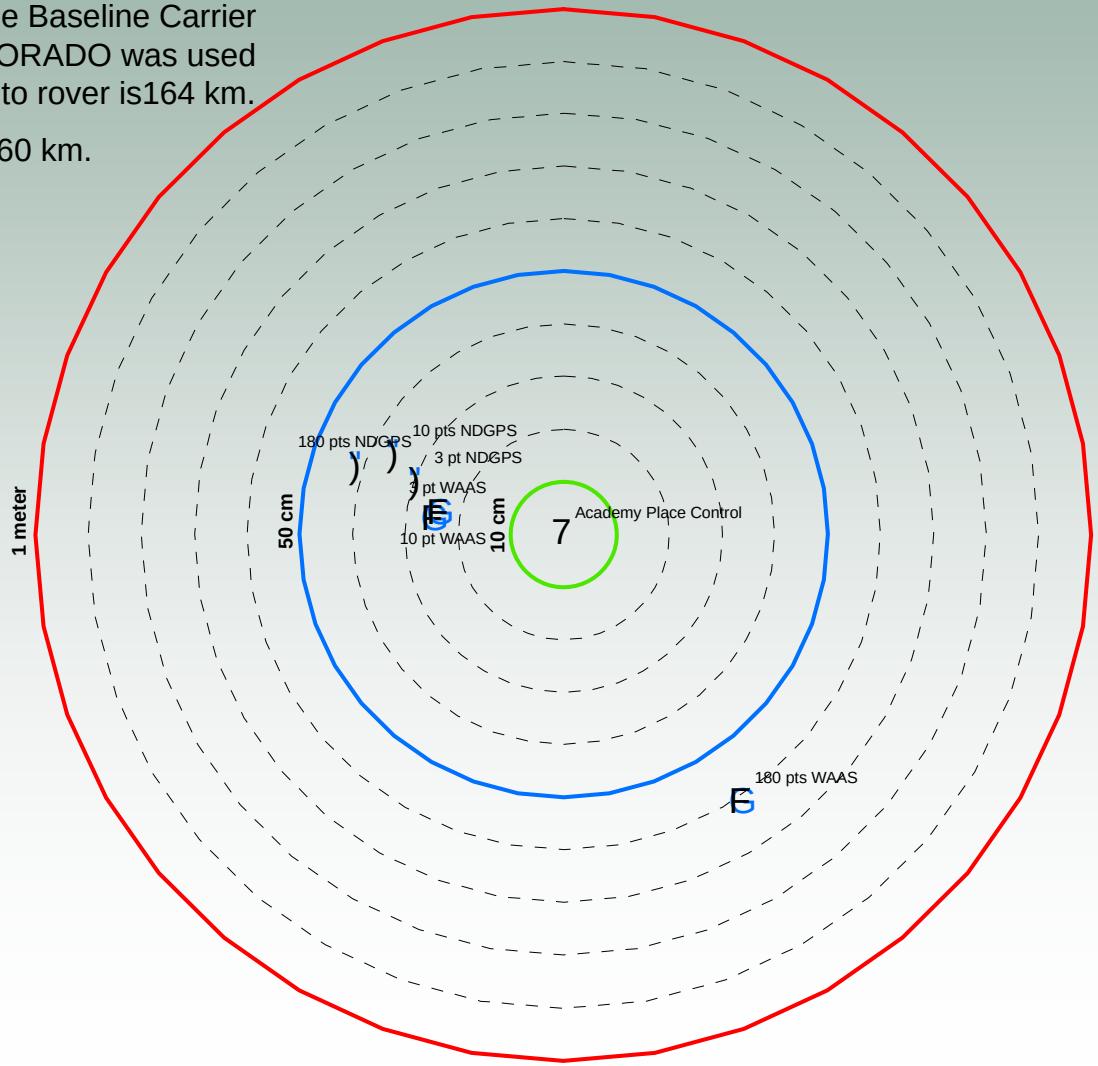
Post-Processing and Realtime Differential Corrections

Equipment Testing

Post-Processing and Realtime Differential Corrections

For Realtime, PP Code and Single Baseline Carrier CORS, PUEBLO 5 (PUB5), COLORADO was used for the base. Distance from base to rover is164 km.

Nearest WAAS CORS (ZDV1) is 60 km.



Legend

- NDGPS
- WAAS
- Realtime (NDGPS and WAAS)
- Post processed Code
- Post Processed Single Baseline Carrier
- Post Processed Multi Baseline Carrier
- AP Control

Error Ellipse

- 10 cm
- 30 cm
- 40 cm
- 50 cm
- 60 cm
- 70 cm
- 80 cm
- 90 cm
- 1 m

Equipment Testing

Post-Processing and Realtime Differential Corrections

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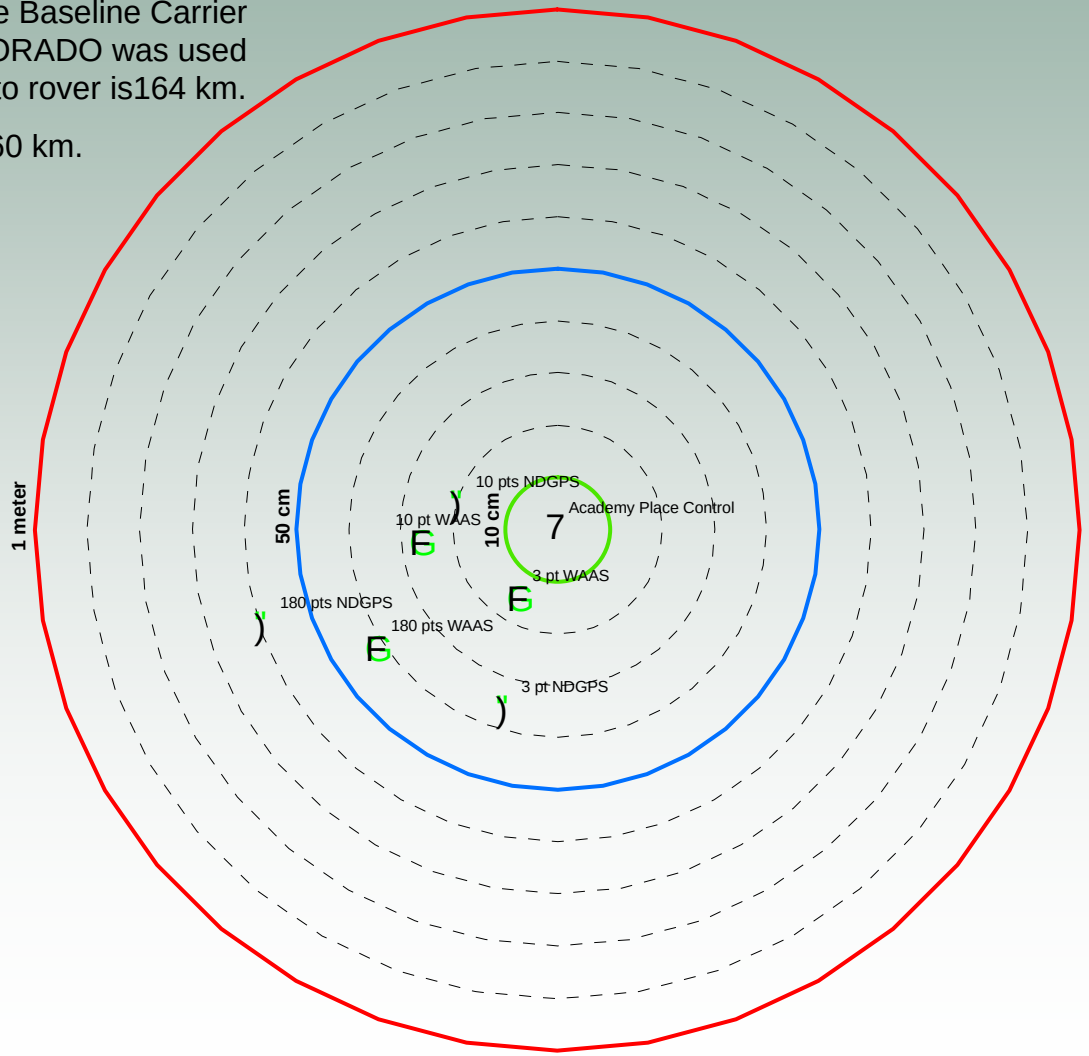

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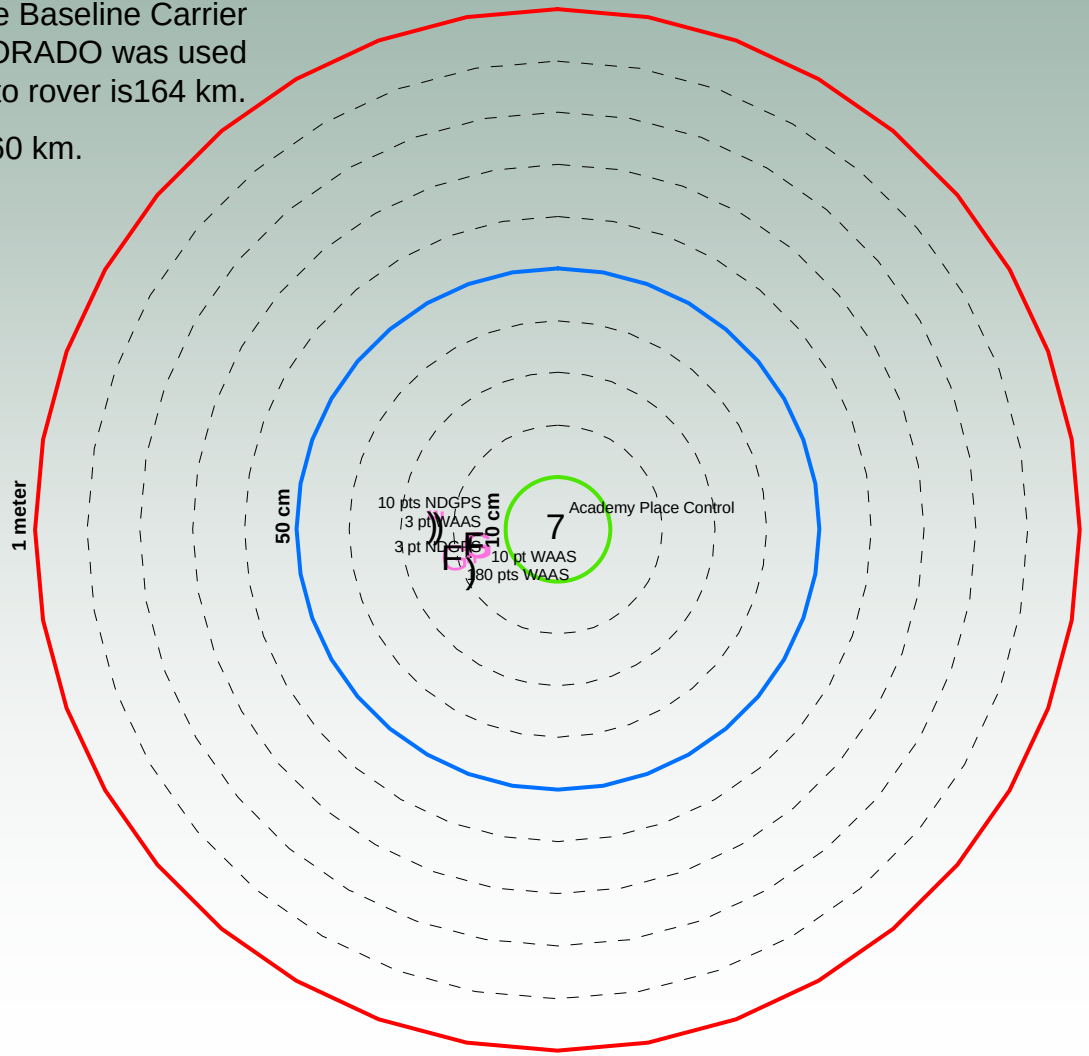

Legend

- NDGPS
- F WAAS
- Realtime (NDGPS and WAAS)
- Post processed Code
- Post Processed Single Baseline Carrier
- Post Processed Multi Baseline Carrier
- 7 AP Control

Error Ellipse

- 10 cm
- 30 cm
- 40 cm
- 50 cm
- 60 cm
- 70 cm
- 80 cm
- 90 cm
- 1 m

Equipment Testing

Post-Processing and Realtime Differential Corrections

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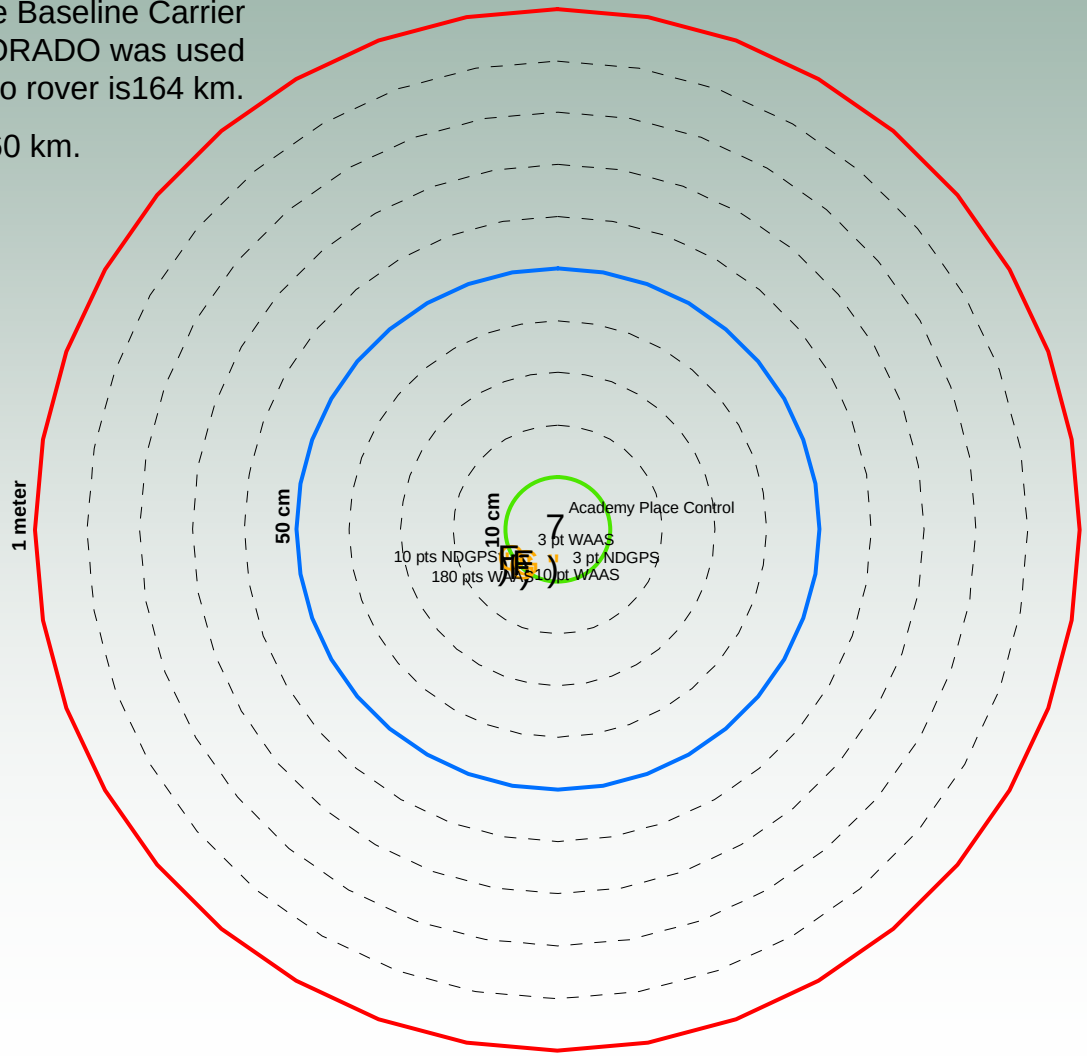

Legend

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- Realtime (NDGPS and WAAS)
- Post processed Code
- Post Processed Single Baseline Carrier
- Post Processed Multi Baseline Carrier
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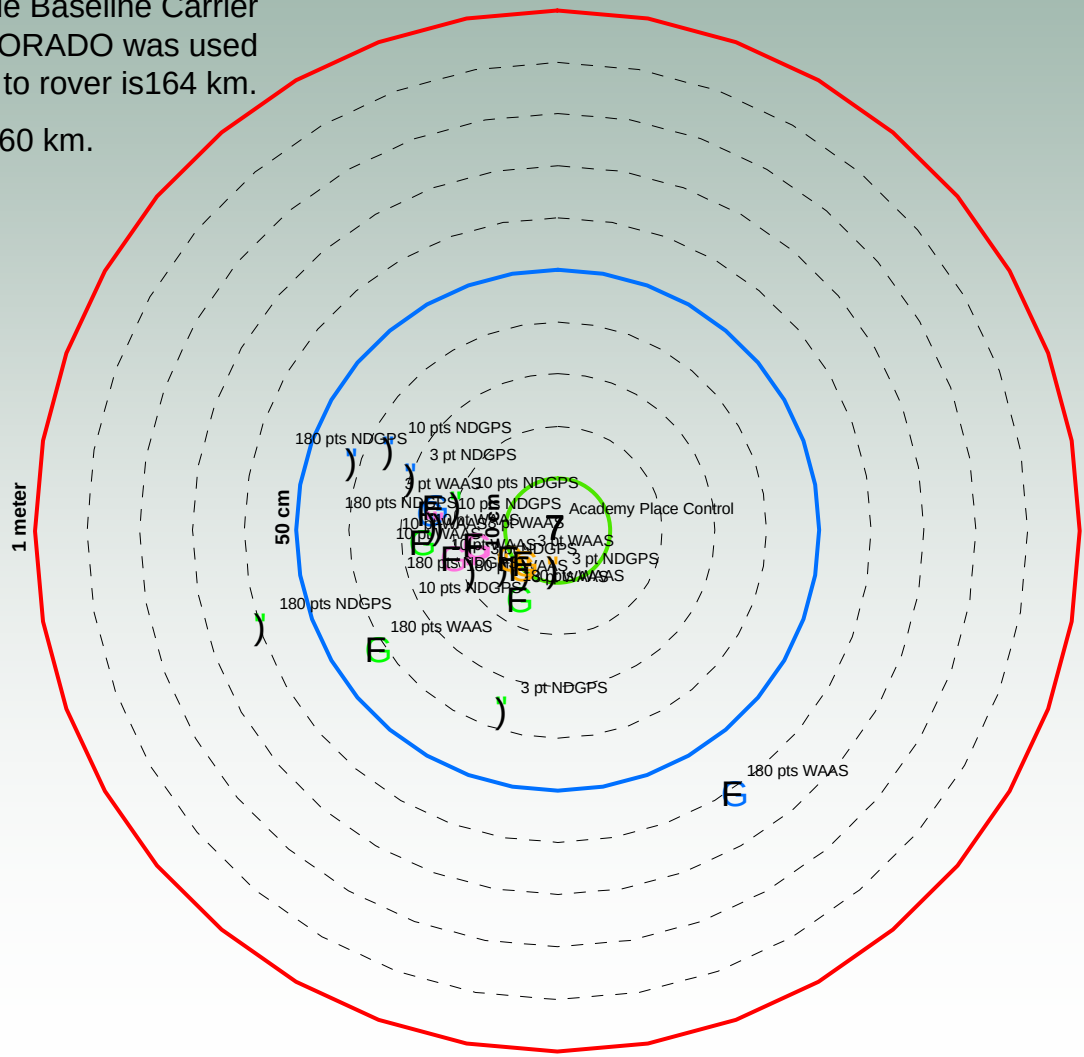

Legend

- NDGPS
- F WAAS
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- Post processed Code
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Error Ellipse

- 10 cm
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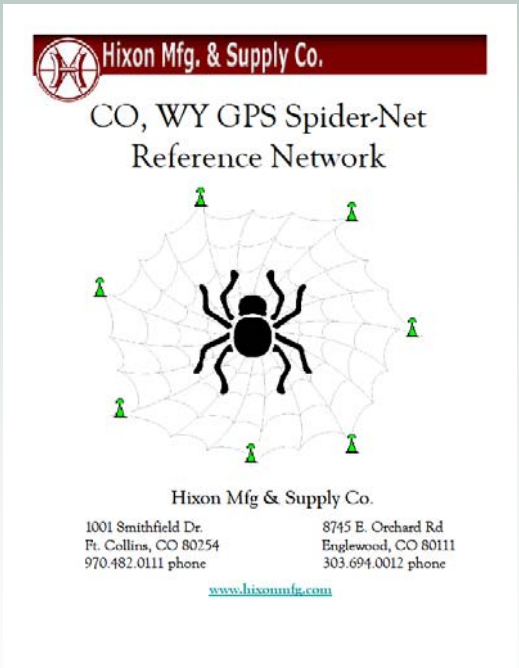
- 40 cm
- 50 cm
- 60 cm
- 70 cm
- 80 cm
- 90 cm
- 1 m

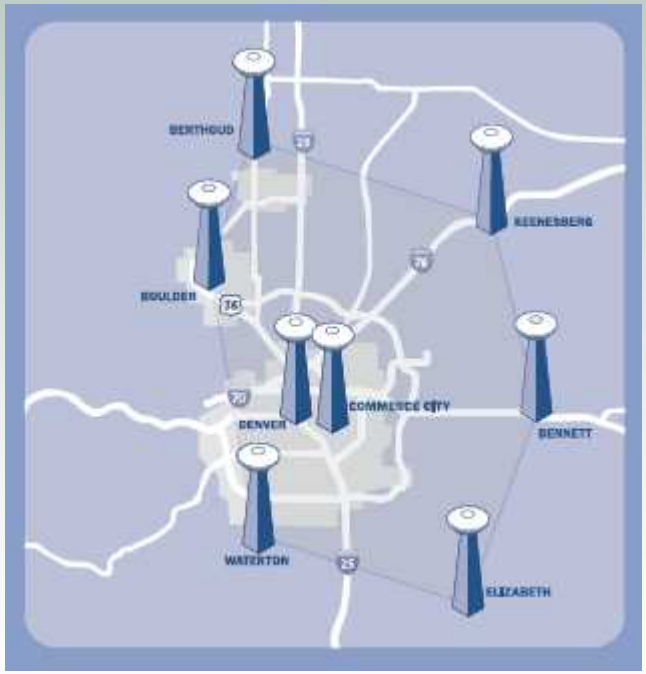
High Accuracy Equipment Testing in 2010

HA-NDGPS and RTN

Leica



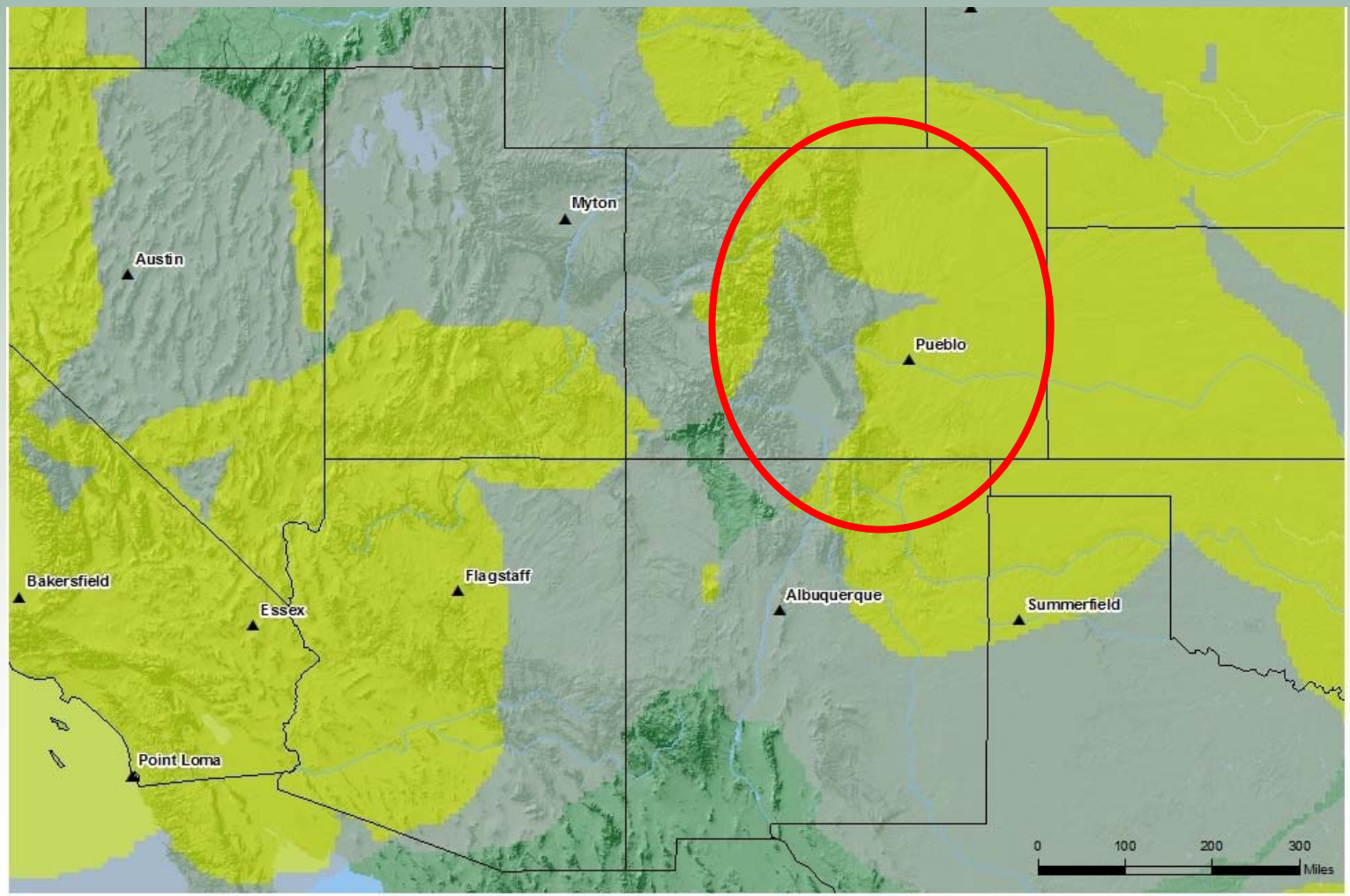
Trimble



HA-NDGPS at Pueblo, CO

High Accuracy Equipment Testing in 2010

HA-NDGPS and RTN



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