Observations of GPS Sea Surface Reflections from the SAC-C Spacecraft

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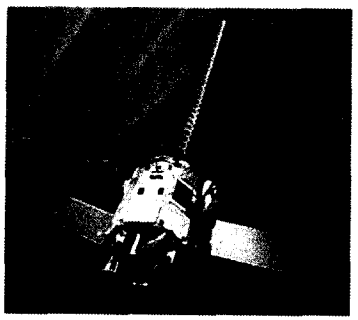
Overview

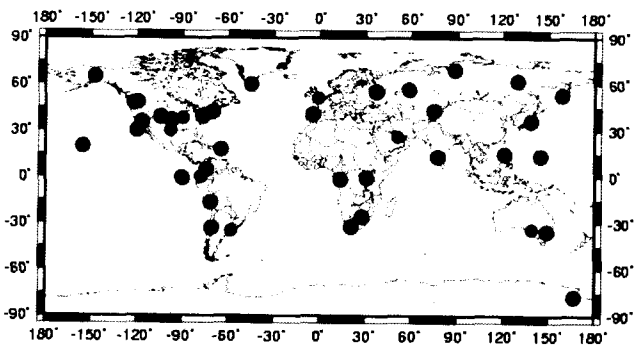
- Configuration of SAC-C BlackJack Instrument
- Antenna Orientation
- Observation Method
- SNR vs Spot Location
- SNR vs Elevation Angle
- Correlation Shape
- Summary and Conclusions

Experiment Configuration

Approximately 100 Reflection Returns/day



SAC-C at:
98° Inclination
705 km Altitude



Reflection returns

Antenna Orientation

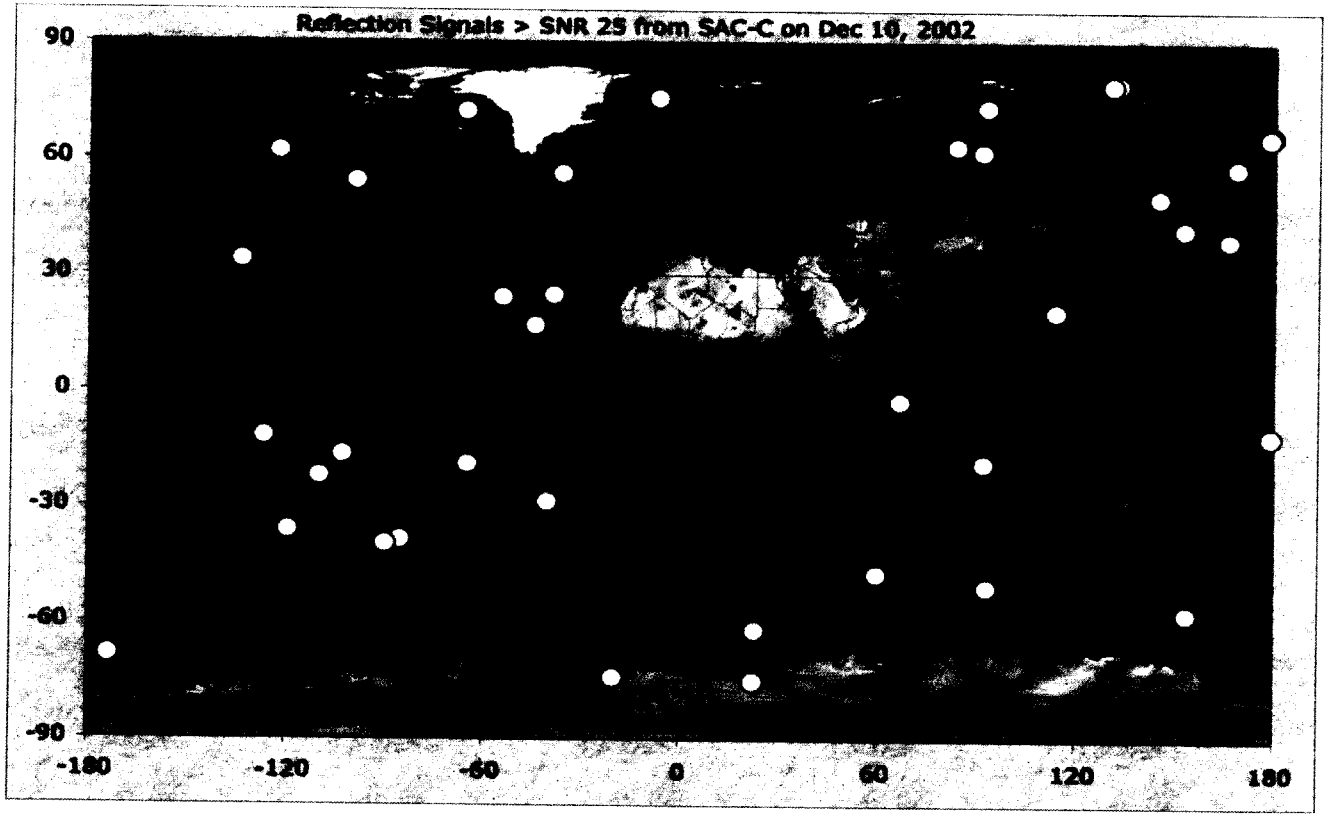
Three of the four GPS antennas are used.

Zenith antenna provides model for nadir antenna

Aft-viewing limb antenna used for both direct & reflected signals

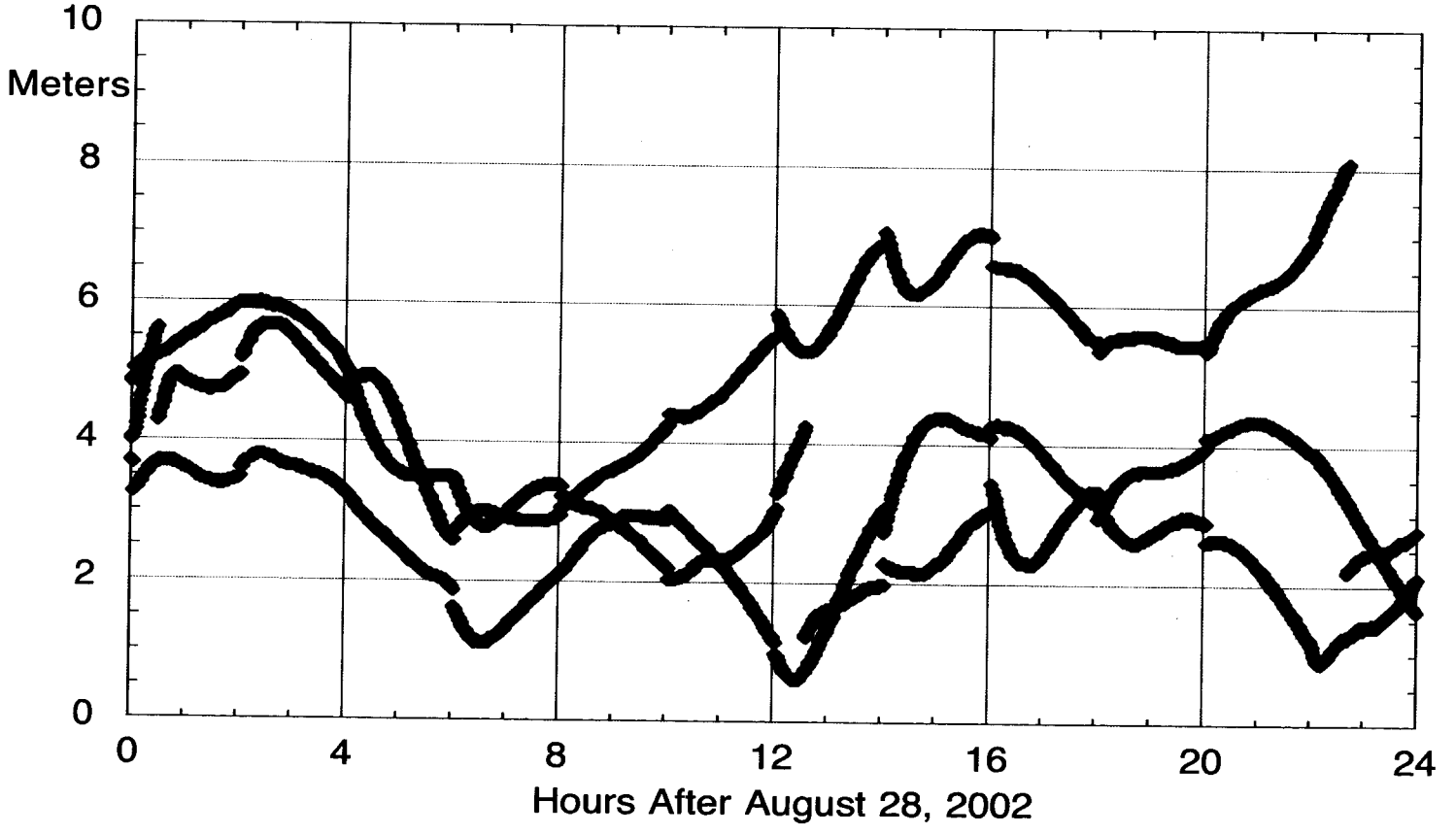
Data taken at 50 hz rate with models updated every 8 secs

SNR vs. Spot Location



SNR vs Delay

- Reflected Amplitude vs. Model Delay



Summary

- Although Correlation Times Are Long (20msec) Signal Amplitude is Sufficient
- Correlation shape corresponds to analysis
- Nadir antenna SNR remains an issue