

Recent Results for the Estimation of the Altimeter Bias For the Jason satellites Using Gavdos.

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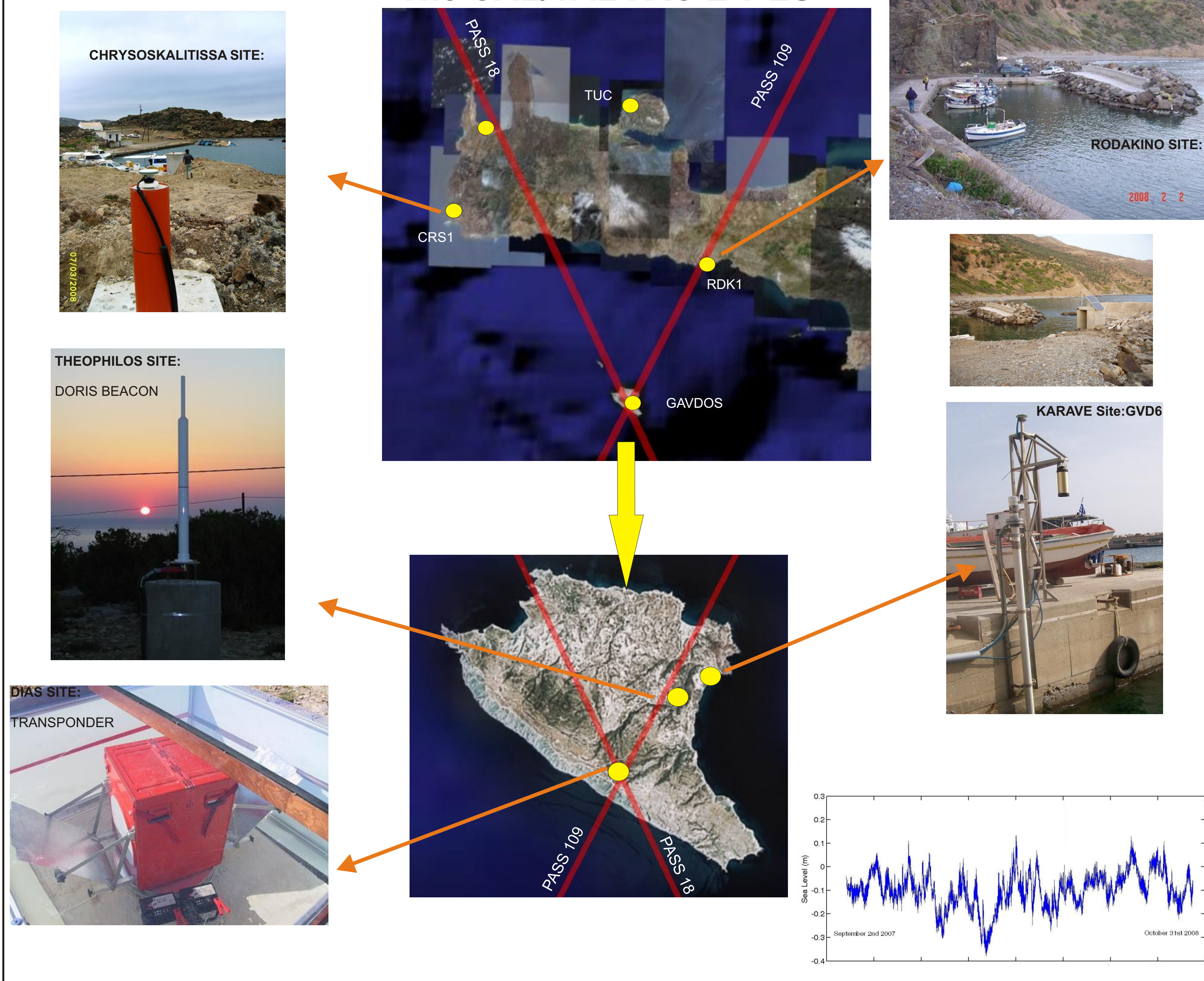
Abstract

The dedicated calibration site for satellite radar altimeters in Gavdos has been operational since 2004. The small island of Gavdos is located along a repeating ground track of Jason satellites (crossover point of No.109 ascending and No.18 descending pass), and additionally where the altimeter and radiometer footprints do not experience significant land intrusion. The purpose of such permanent Cal/Val facility is to calibrate the sea-surface height and ancillary measurements made by the Jason satellites as they pass overhead, by using observations from tide gauges, GPS, DORIS and other sensors directly placed under the satellite ground tracks.

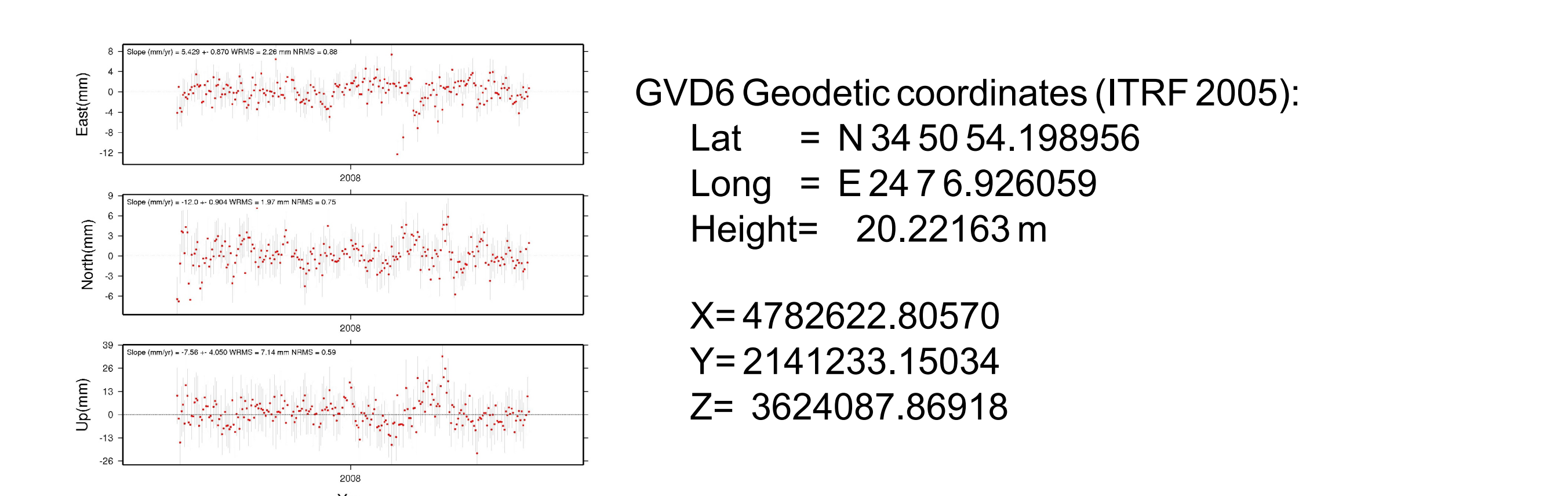
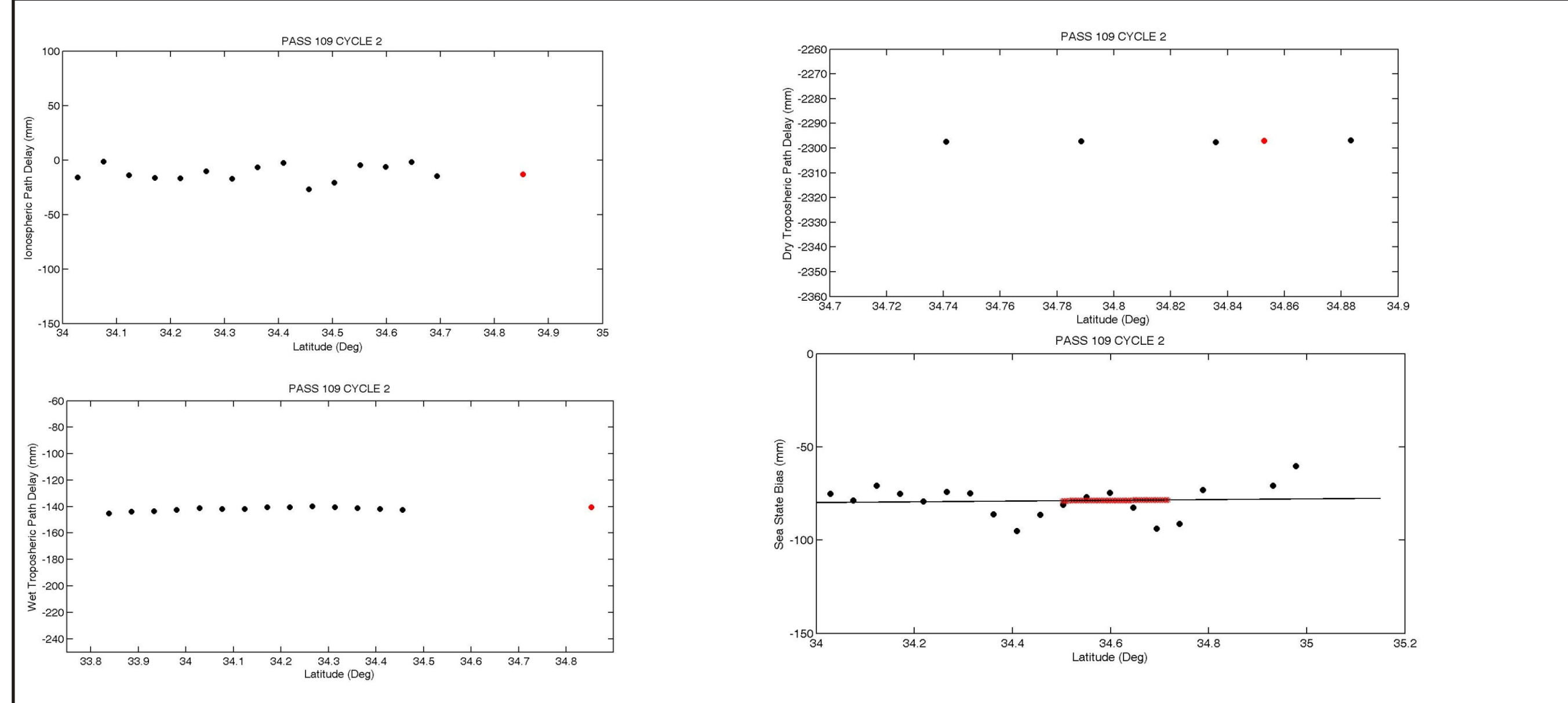
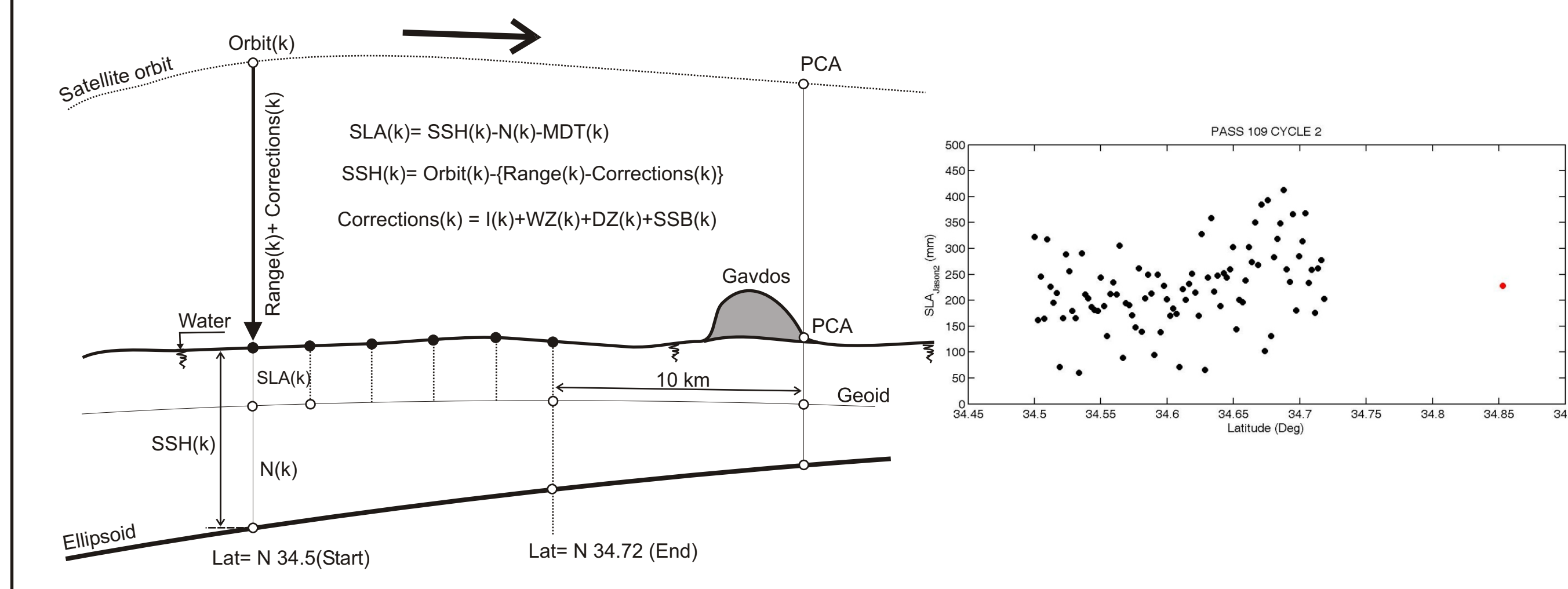
Up to now, altimeter calibration at Gavdos has been performed by averaging gridded sea-level anomalies as produced by the satellite altimeter measurements and then comparing the result with the tide gauge observations. In this work, the absolute altimeter bias of Jason-1 & Jason-2 has been determined using (1) more than one year of tide gauge observations; (2) the GDR-C and IGDR altimeter records and (3) the seasonal effects of sea level in the region and alternative calibration technique..

The absolute altimeter bias of Jason-2 has been determined using cycles No.2-11 and the 20-Hz IGDR data as well as the Jason-1 bias with the GDR-C data. Finally, the altimeter error has been estimated to be $B2 = +204.8 \text{ mm} \pm 17 \text{ mm}$ for Jason-2 and $B1 = +115.6 \text{ mm} \pm 42 \text{ mm}$ for Jason-1 (1-Hz data) in the tandem mission.

The CAL/VAL FACILITIES



METHODOLOGY (PASS Number 109)

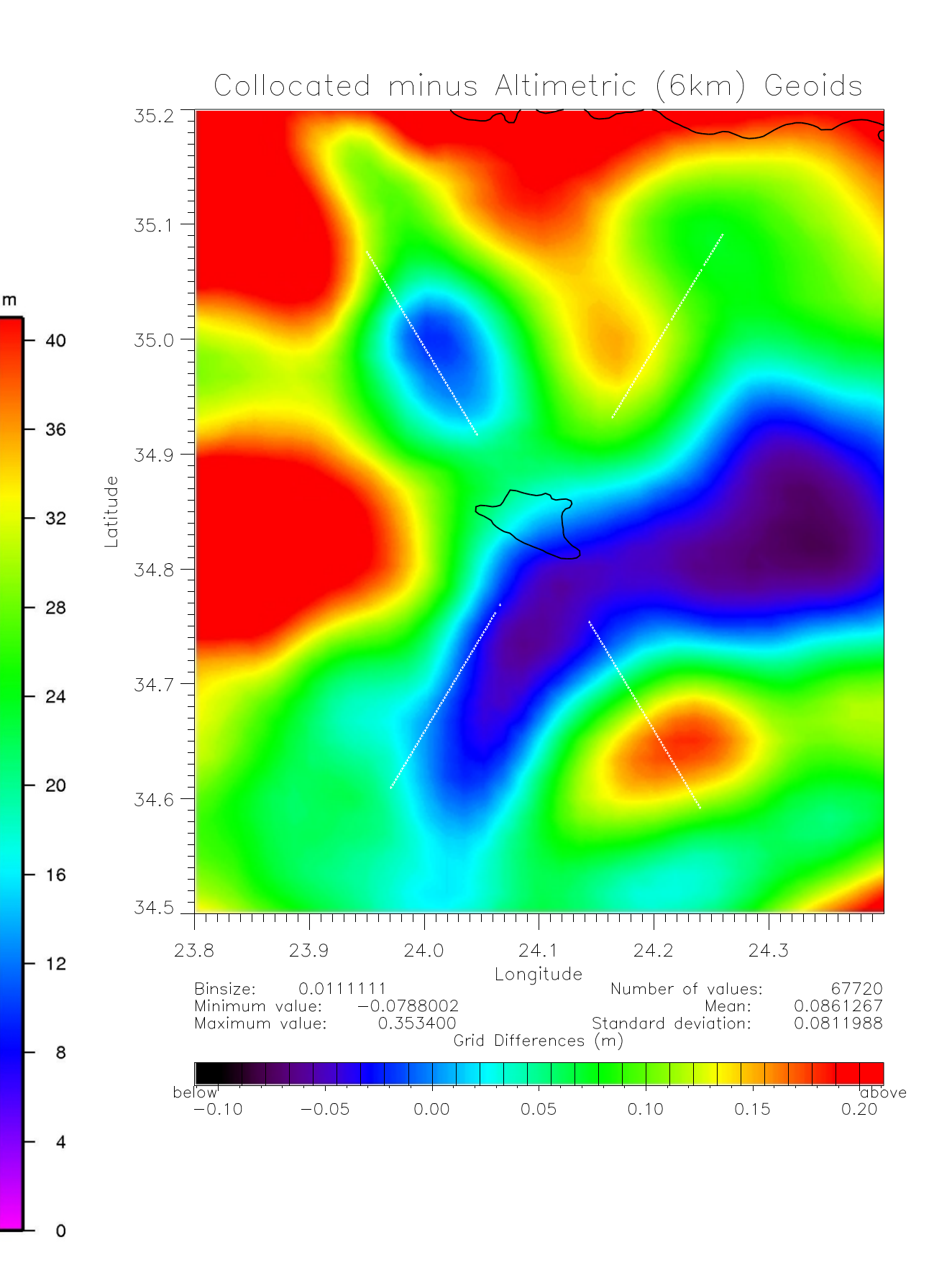
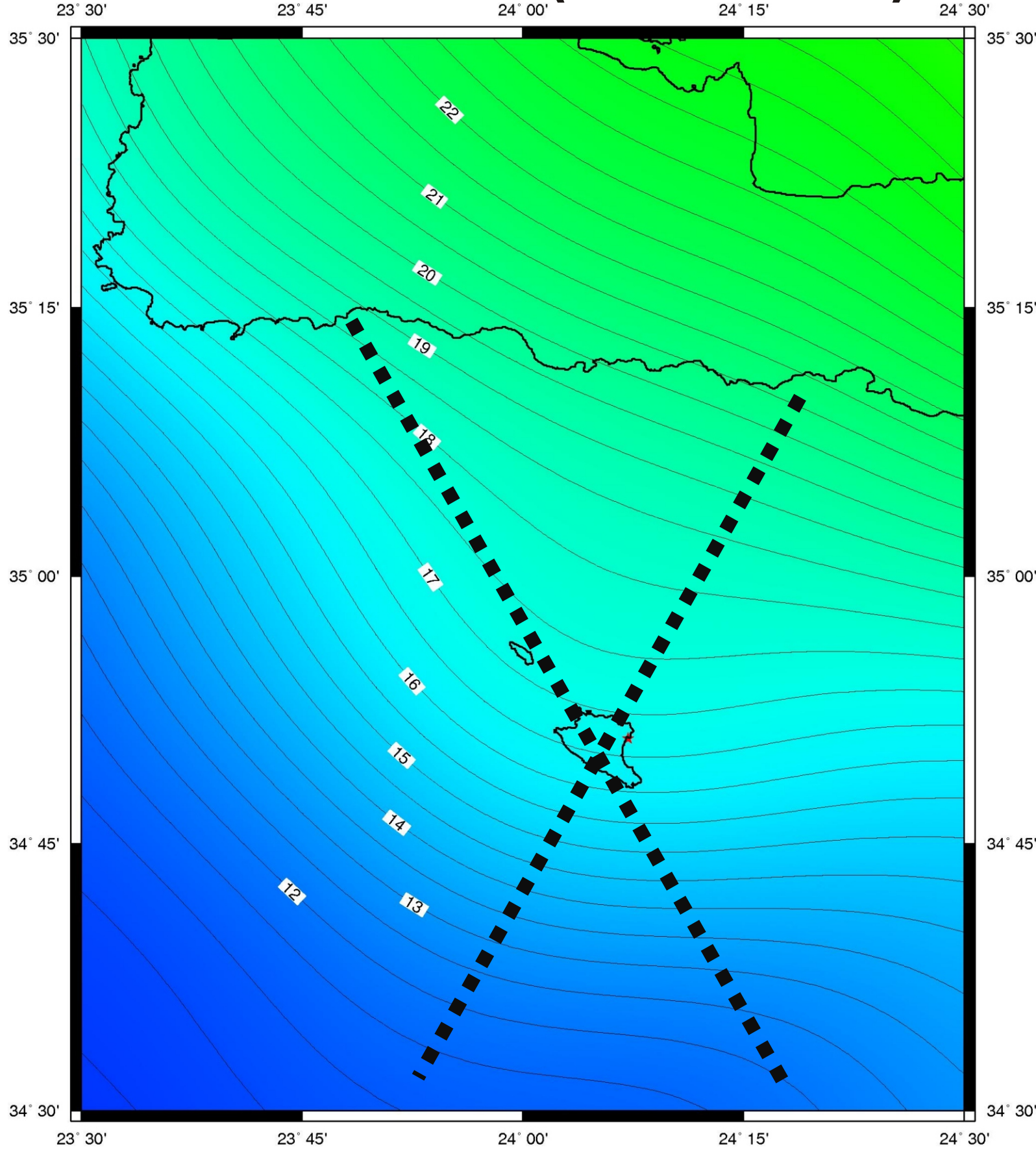


CORRECTION MODELS AND THEIR APPLICATION

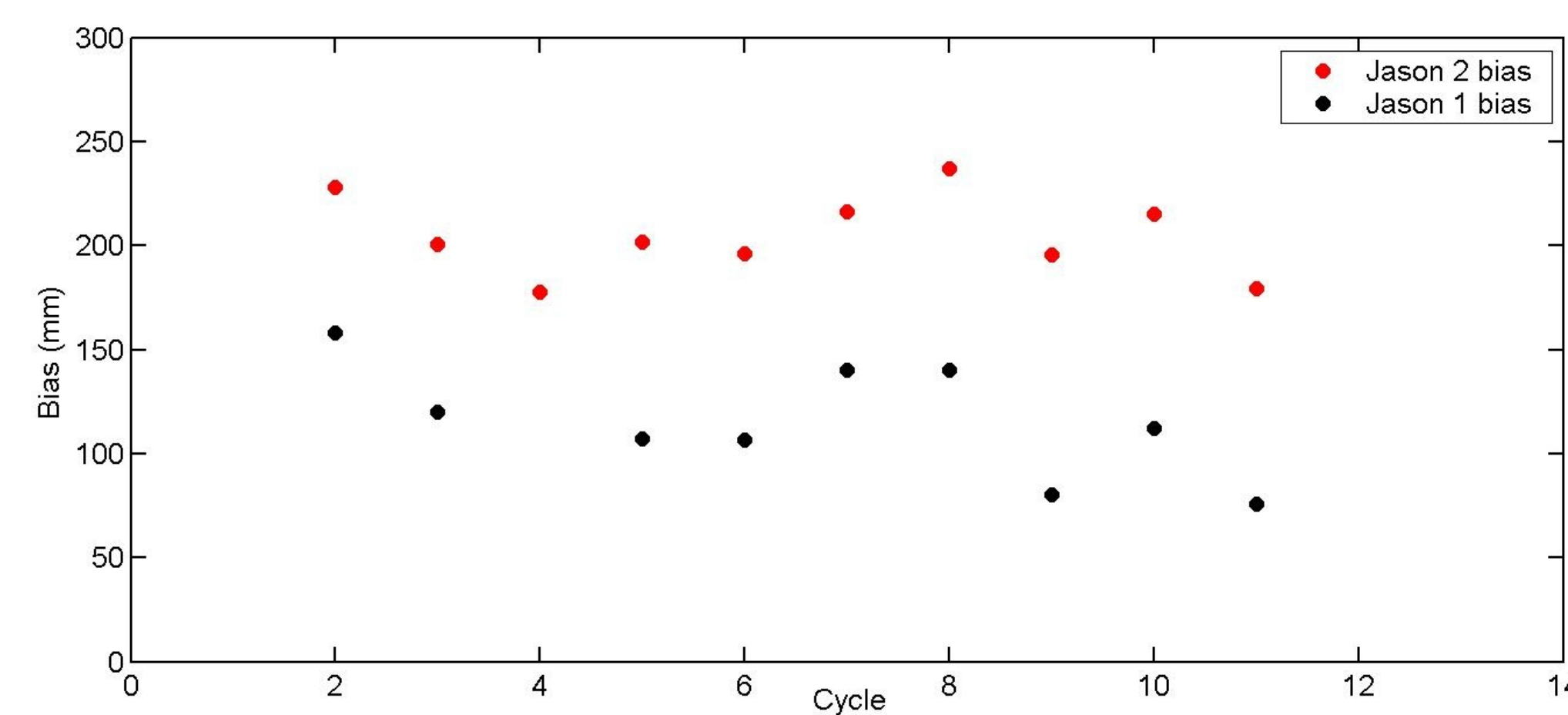
IONOSPHERIC	Mean over -21sec to -1sec around the TCA (~140km).
DRY TROPOSPHERIC	Linear fit over -5sec to +2sec around the TCA interpolated at the TCA.
WET TROPOSPHERIC	Linear fit over -15sec to -5sec from TCA (avoid land contamination, ~30km). Last fit value used for all overflight data.
SEA STATE BIAS	Cubic fit over -10sec to -1sec from TCA till TCA -1s.
GEOPHYSICAL	IGDR and GDR-C corrections for: Ocean loading, solid, tide, pole tide.
TIDE GAUGE	Linear fit over 30 min centered on TCA (6-min sampling).

LOCAL GEOID (Collocated)

Differences in Geoid models



BIAS ESTIMATION for Jason-1 and Jason-2 in tandem



CONCLUSIONS

The systematic error of the Jason-2 altimeter between cycles No.2-11 has been estimated to be $B2 = 204.8 \text{ mm} \pm 19.4 \text{ mm}$ (20-Hz data) and $B1 = 115.6 \text{ mm} \pm 42 \text{ mm}$ (1-Hz data) for Jason-1 in the tandem mission.

Procedures of calibration have been standardized between Corsica, Harvest Platform and Gavdos.

To date, the altimeter calibration experiment is enhanced by the addition of another site (RDK1) across Gavdos and on the same ground track (No.109). At that site a new tide gauge station collocated with a permanent GPS receiver is being installed.

To check the geoid model differences, field surveys are being planned using survey boat, an ultra-sound height measuring device, a GPS and tracks along the Passes No. 018 and 109 around Gavdos.

ACKNOWLEDGMENTS

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