



CENTRE NATIONAL D'ÉTUDES SPATIALES

# JA1&JA2 altimeter calibration and monitoring

**OSTST meeting – Lisbon  
October 2010**

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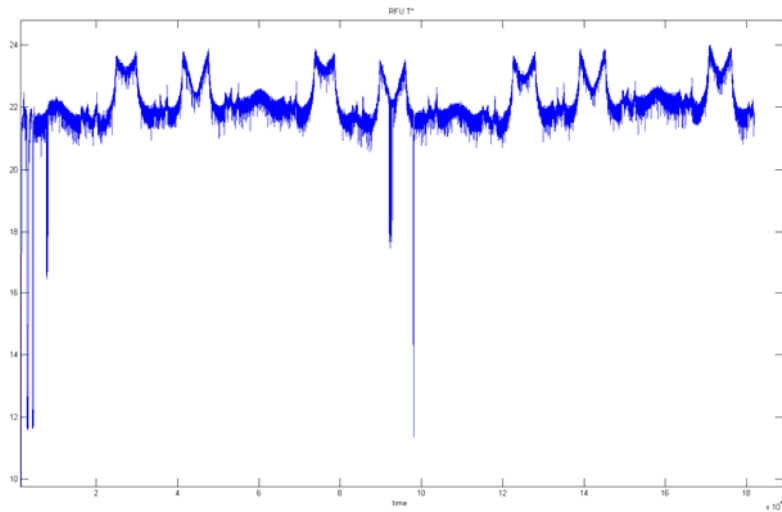


## Investigation Strategy

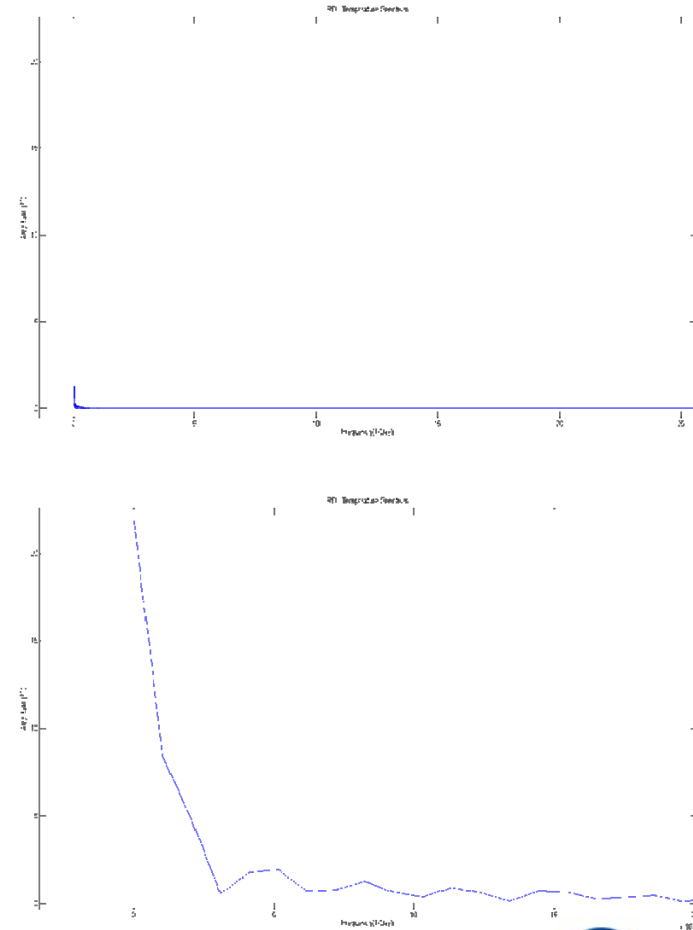
- **In term of range oscillations, Altimeters are only sensitive to temperature variations.**
  
- **A 60 days signal in the altimeter range would come from an equivalent “signal” in the environment temperature**
  
- **To reduce the altimeter sensitivity to aging and temperature**
  - ◆ **The electronic part is calibrated 3 times / days for data correction**
  - ◆ **The antenna part, by design, has a low sensitivity to temperature**

# Environment Temperature analysis

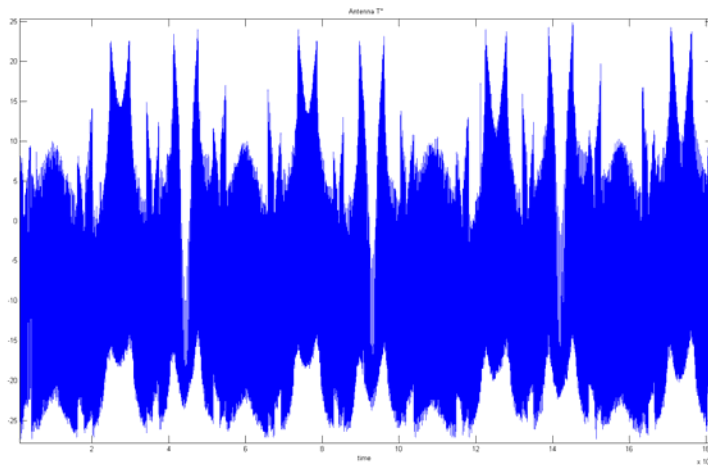
## Radio Frequency Unit Temperature



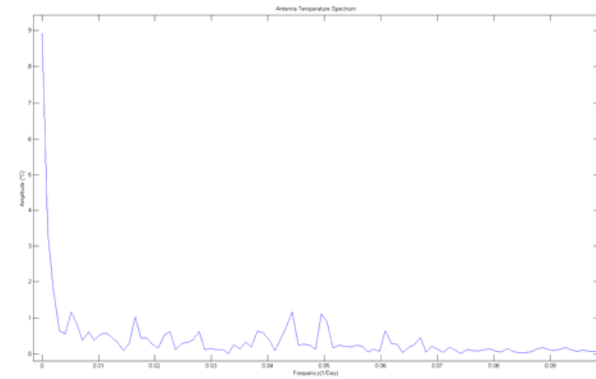
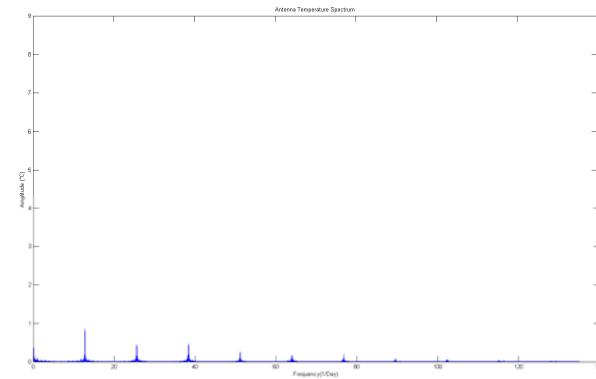
No 60 days signal



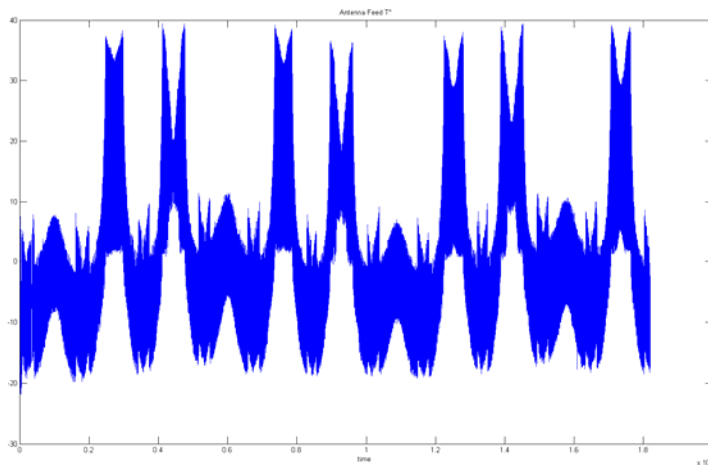
## ■ Antenna Temperature



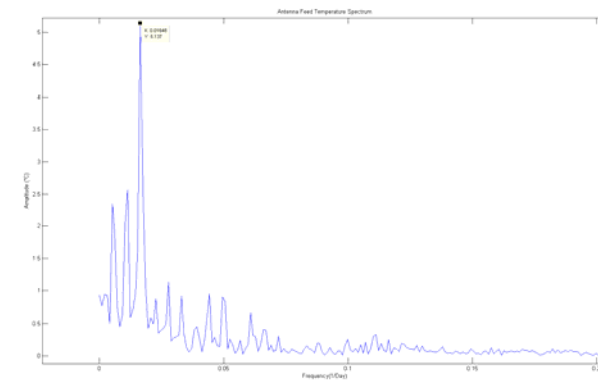
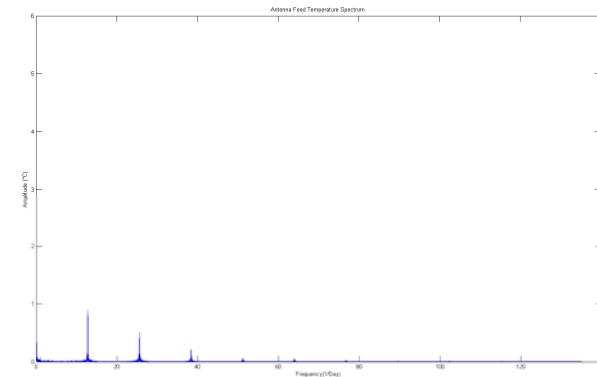
No 60 days signal



## ■ Antenna Feed Temperature

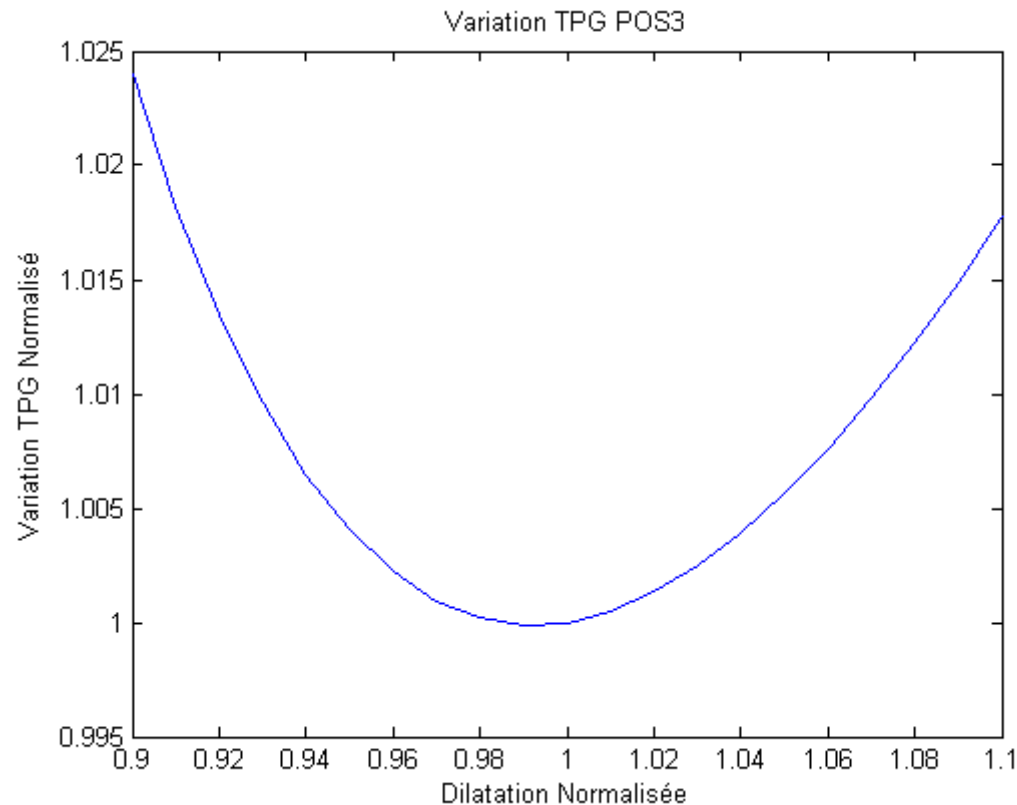


~60° C of variation



60 days component: 5° C

## Guide Dilatation Impact



**60° C variation**

->0.1386% of guide length variation

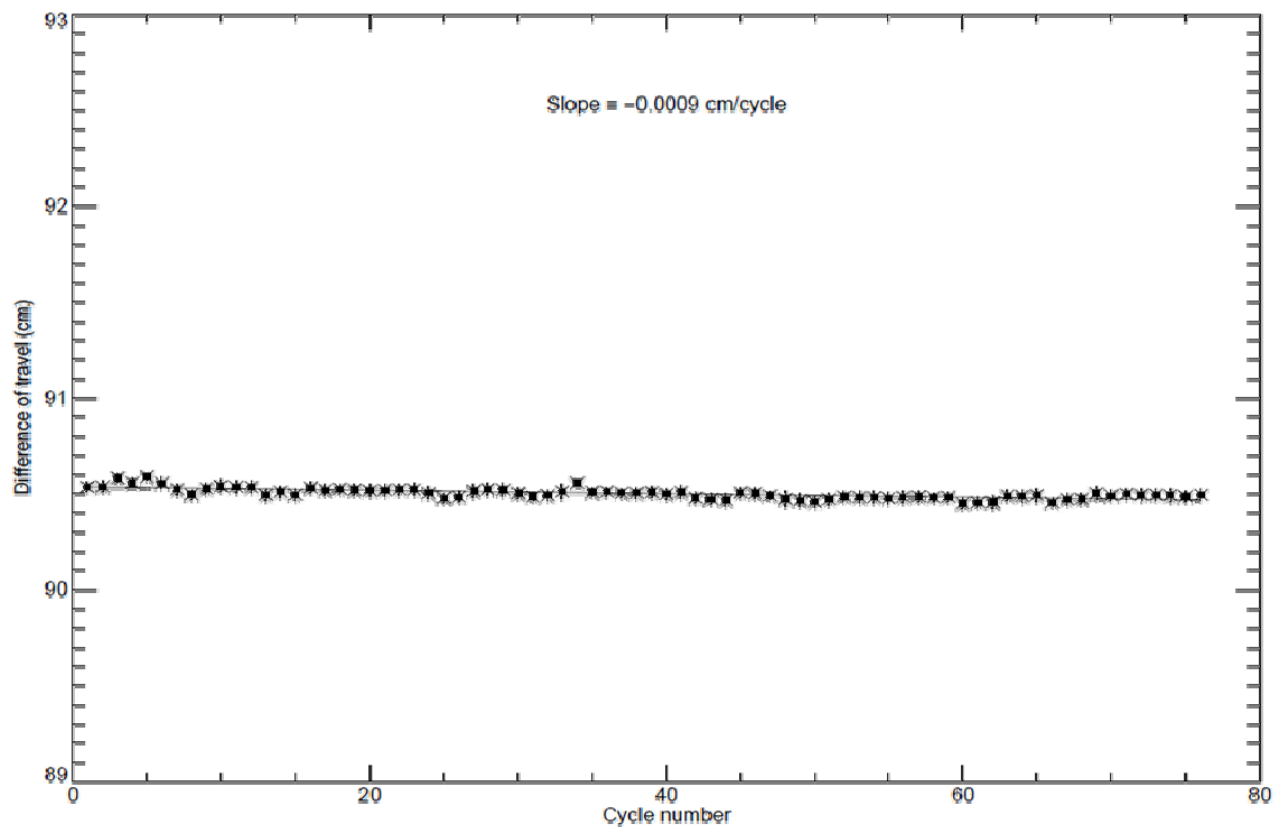
->0.0046% of TPG variation

**->1mm of Range variation**

# Ca1 Stability (Courtesy P. Thibaut, CLS)

POSEIDON3 - Cycle 001 to Cycle 076

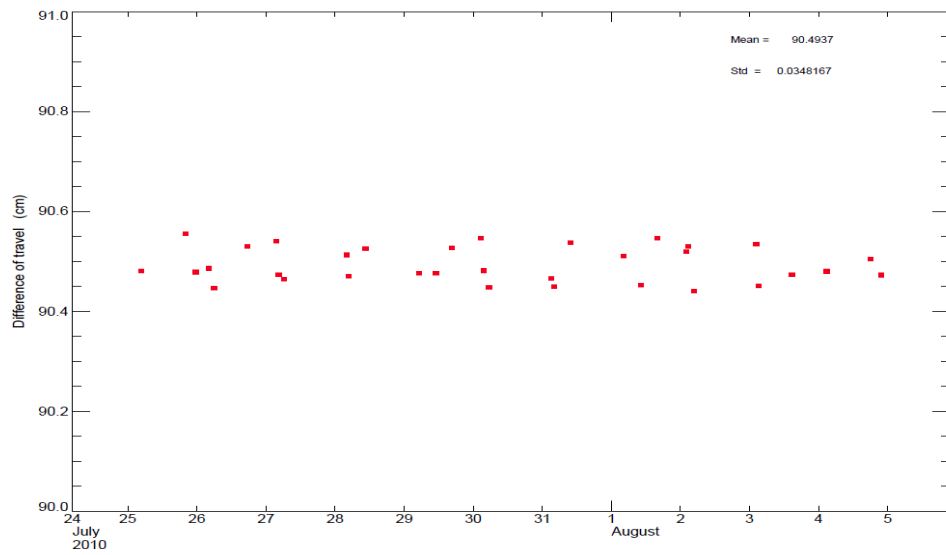
Difference of travel between E and R lines of the PTR in Ku band



**POSEIDON3 – Cycle 076**

25/07/2010 to 04/08/2010

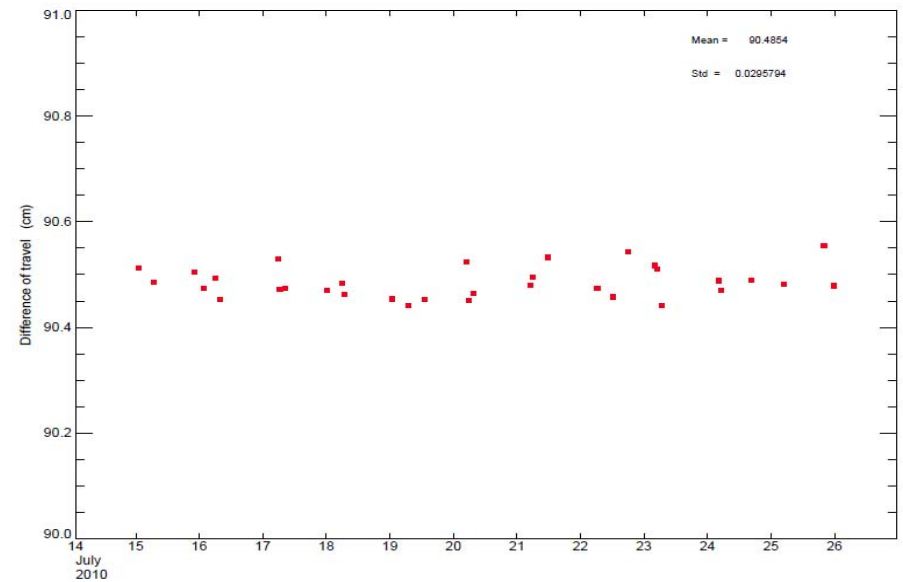
Difference of travel between E and R lines of the PTR in Ku band



**POSEIDON3 – Cycle 075**

15/07/2010 to 25/07/2010

Difference of travel between E and R lines of the PTR in Ku band

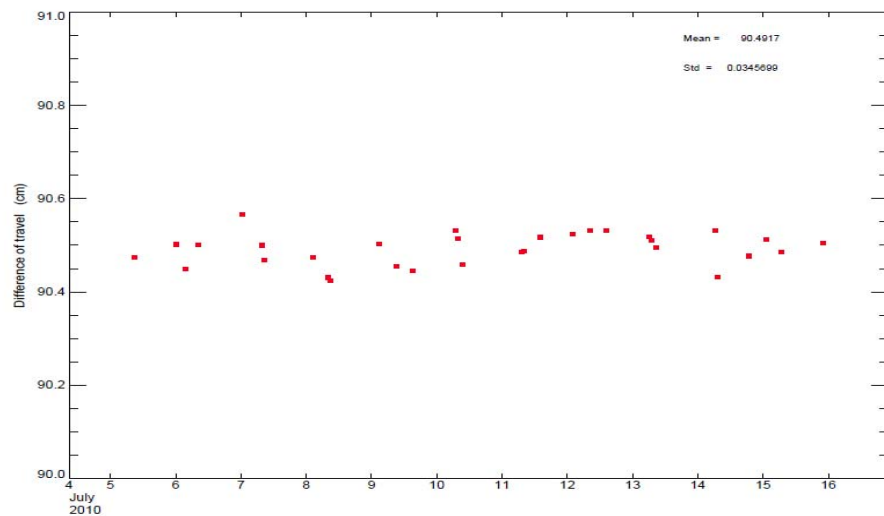




**POSEIDON3 – Cycle 074**

05/07/2010 to 15/07/2010

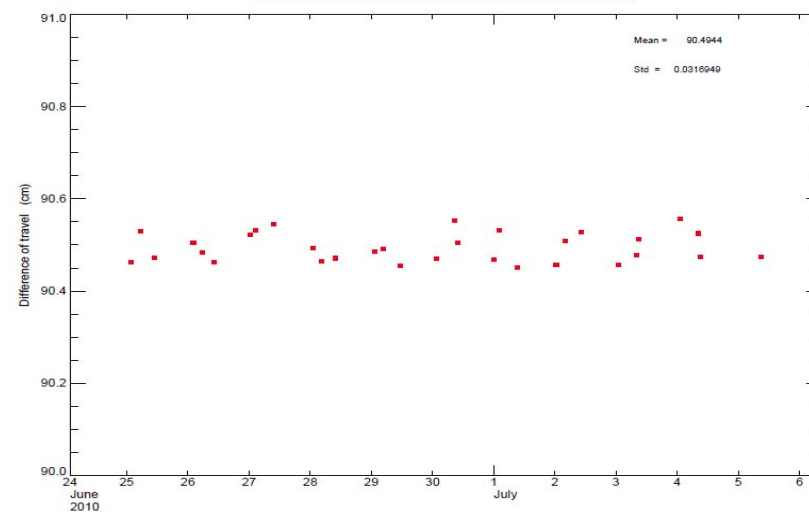
Difference of travel between E and R lines of the PTR in Ku band



**POSEIDON3 – Cycle 073**

25/06/2010 to 05/07/2010

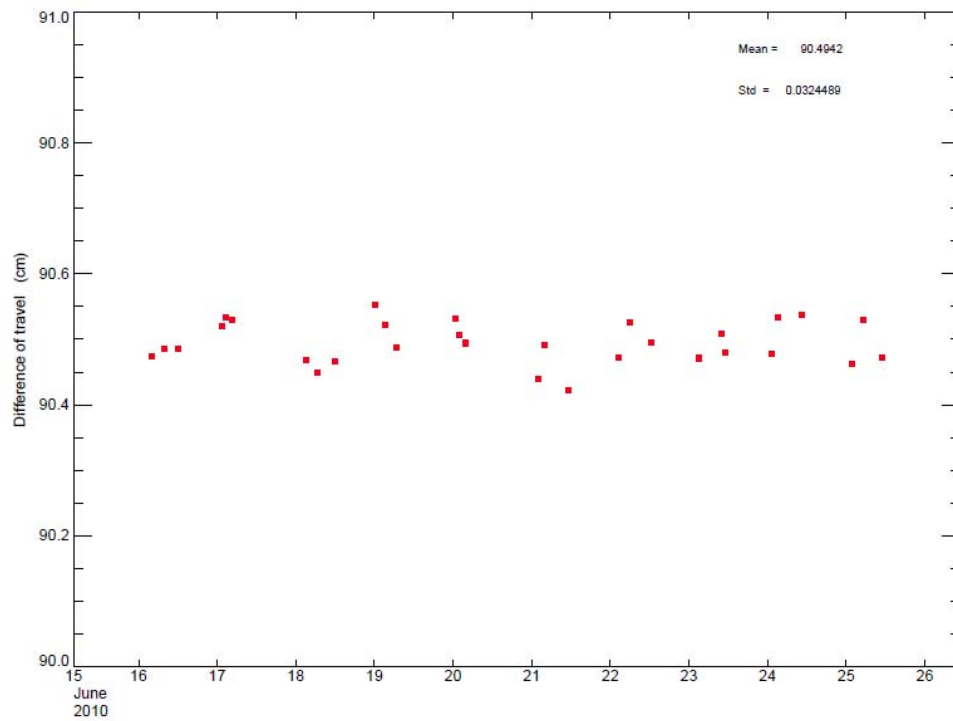
Difference of travel between E and R lines of the PTR in Ku band



POSEIDON3 – Cycle 072

16/06/2010 to 25/06/2010

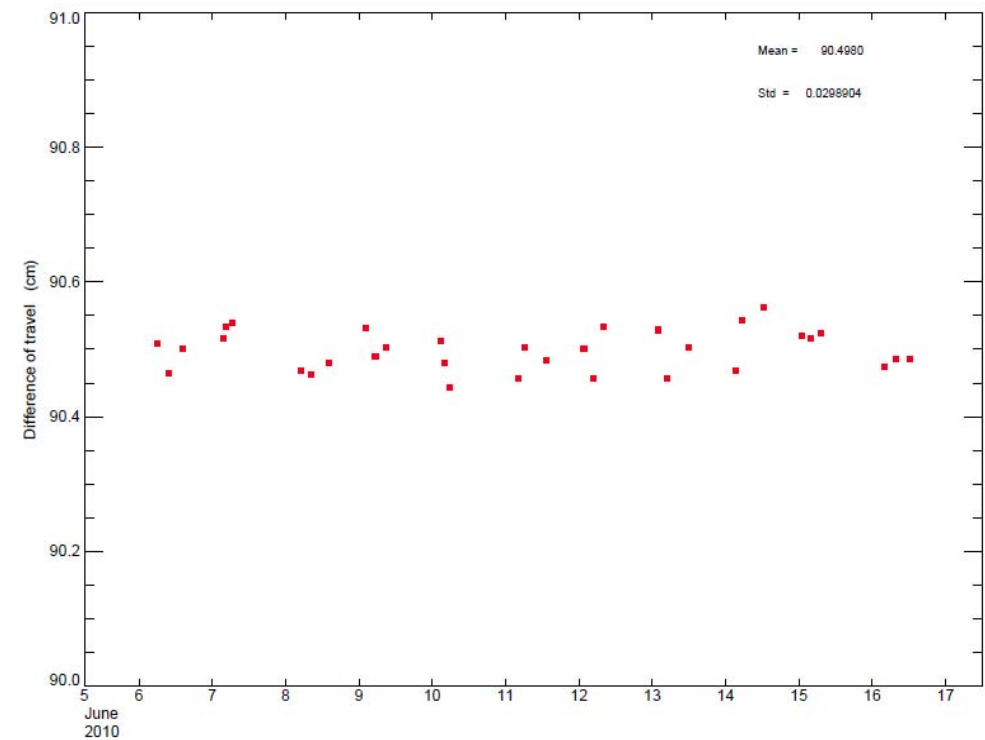
Difference of travel between E and R lines of the PTR in Ku band



POSEIDON3 – Cycle 071

06/06/2010 to 16/06/2010

Difference of travel between E and R lines of the PTR in Ku band



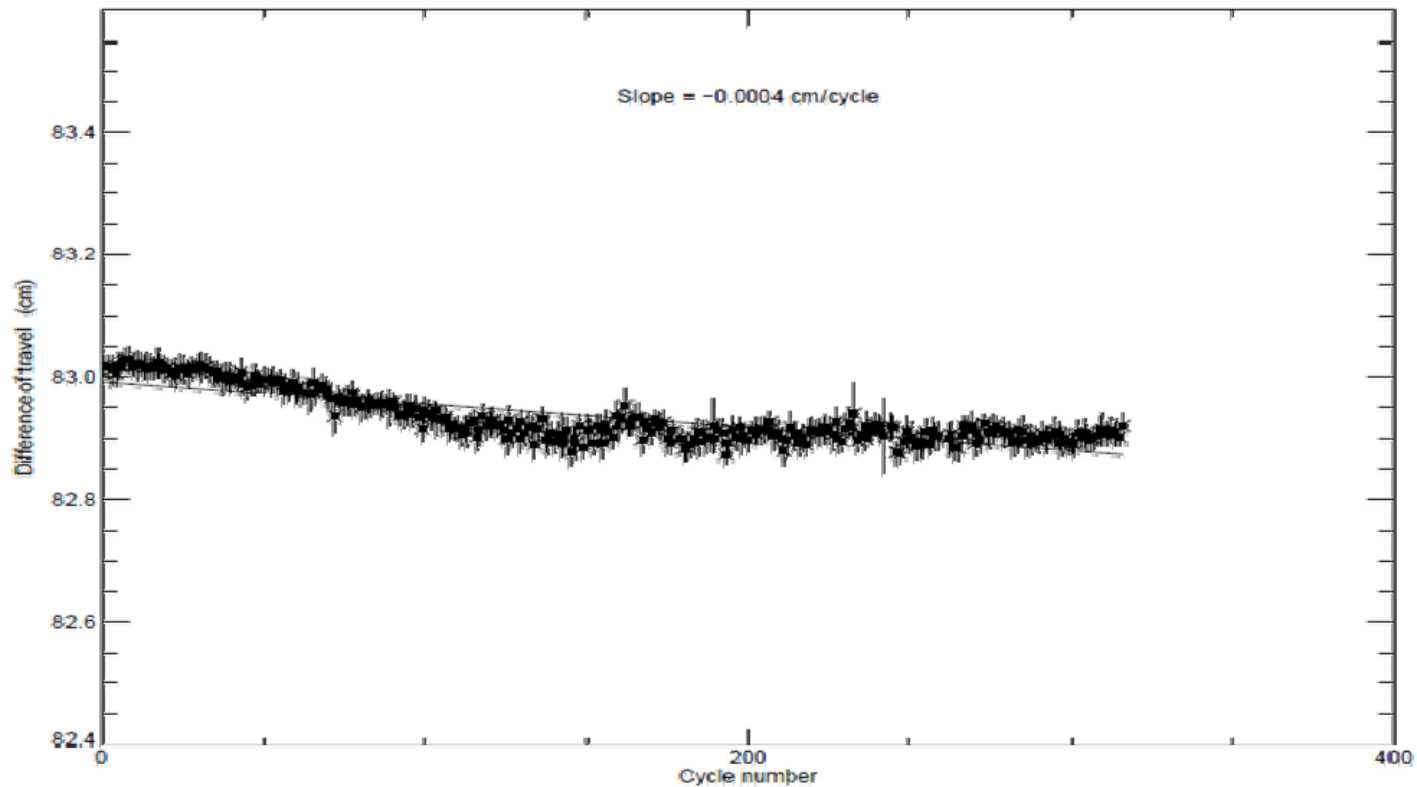
Electronic stability is about 1mm



# JASON1

POSEIDON2 – Cycle 001 to Cycle 316

Difference of travel between E and R lines of the PTR in Ku band



Electronic stability over a year is better than 1mm

## Conclusion

- No Range variation due to Electronic parts of Altimeter
- No Range variation due to Antenna part of Altimeter

**60 Days Signal comes not from Altimeter Data**