



Schweizerische Eidgenossenschaft
Confédération suisse
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Federal Department of Justice and Police FDJP

Federal Office of Metrology METAS

TWSTFT Station Report of METAS Ch. Schlunegger





Menu

- New laboratory organisation
- Interruption of TW operation
- Recent disturbance of UTC(CH)
- Reception quality on satellite T11-N
- Simple TW stability measurement



New Laboratory Organisation

Since 2012 the METAS Time and Frequency laboratory has been merged with the “Fibre Optics” laboratory to build a new laboratory called

Photonics, Time and Frequency

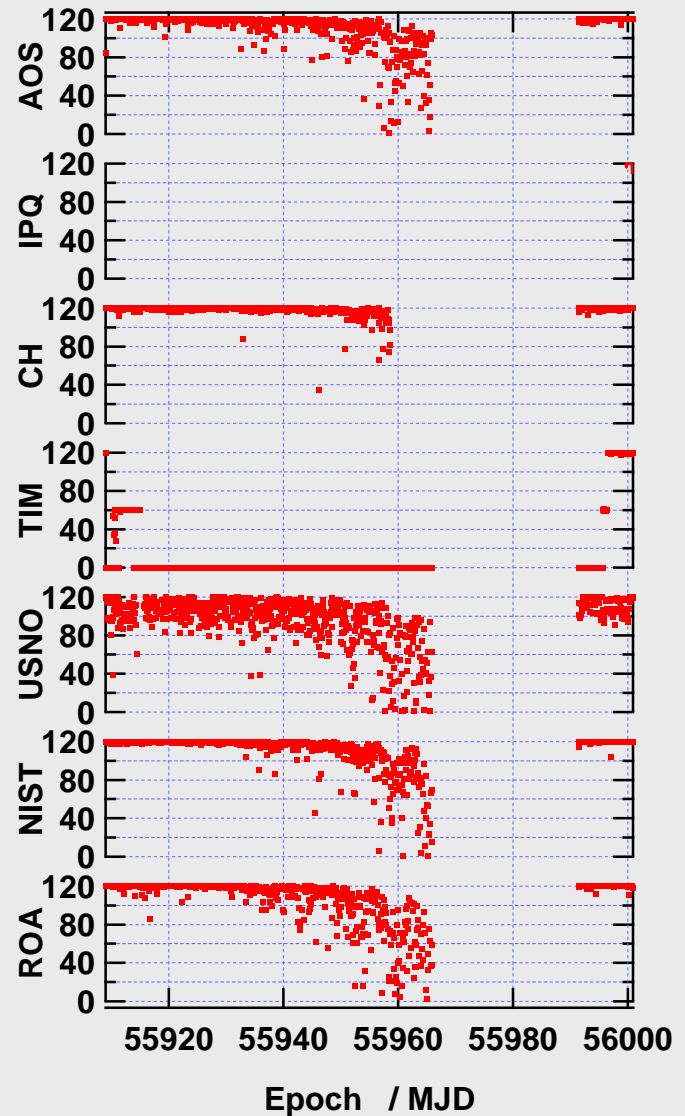
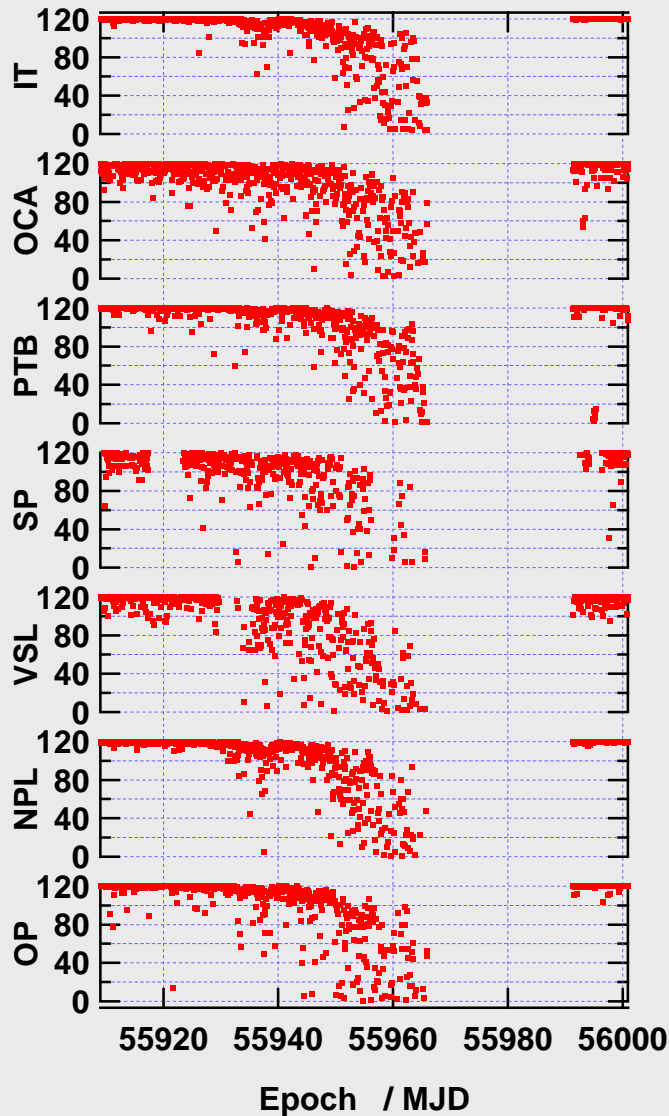
Staff: Jacques Morel (Head of Laboratory)
Laurent-Guy Bernier
Laurent Devenoges
Armin Gambon
Christian Schlunegger
Stella Foaleng (Post Doc)





Interruption of TW operation

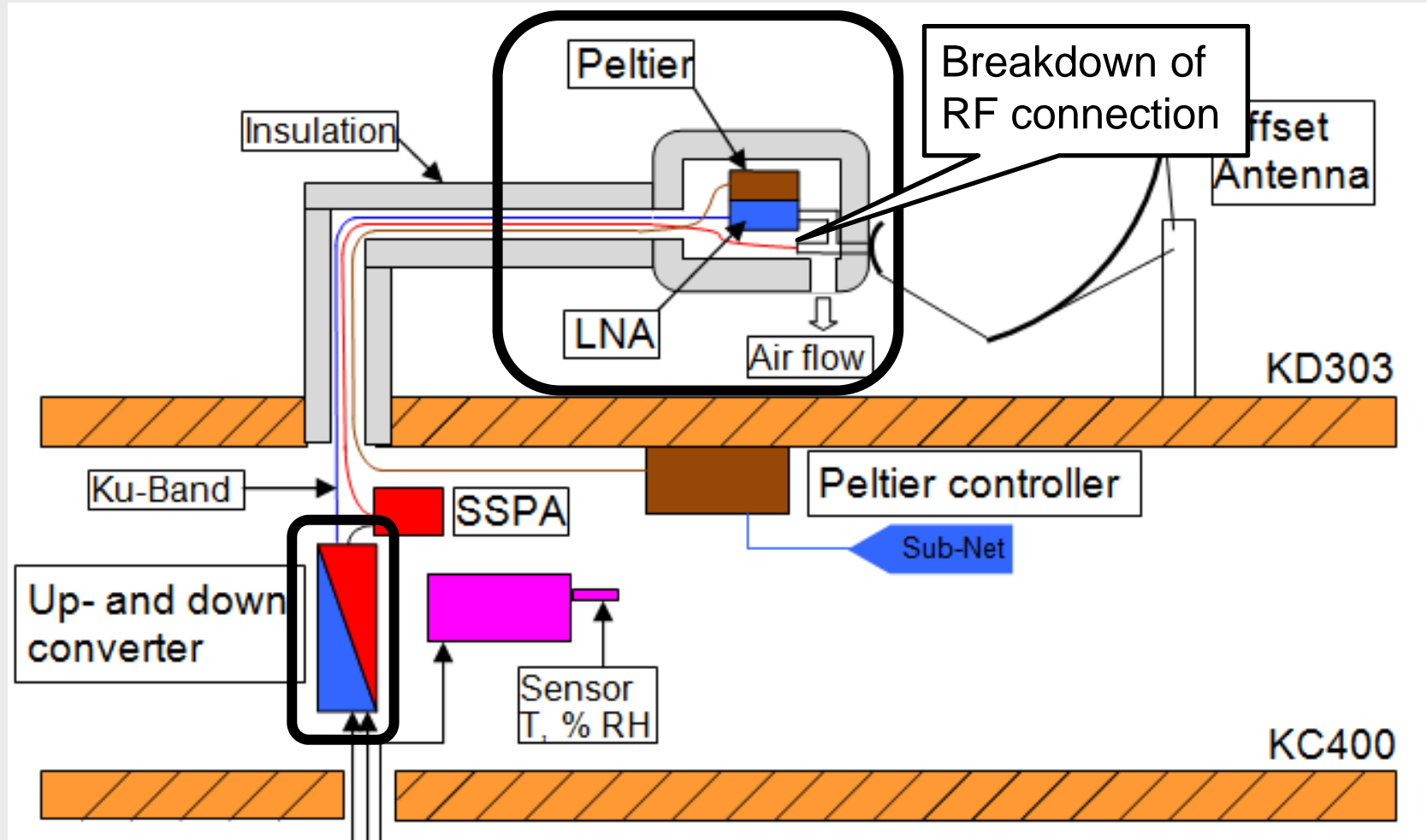
Number of measurement points per TW session





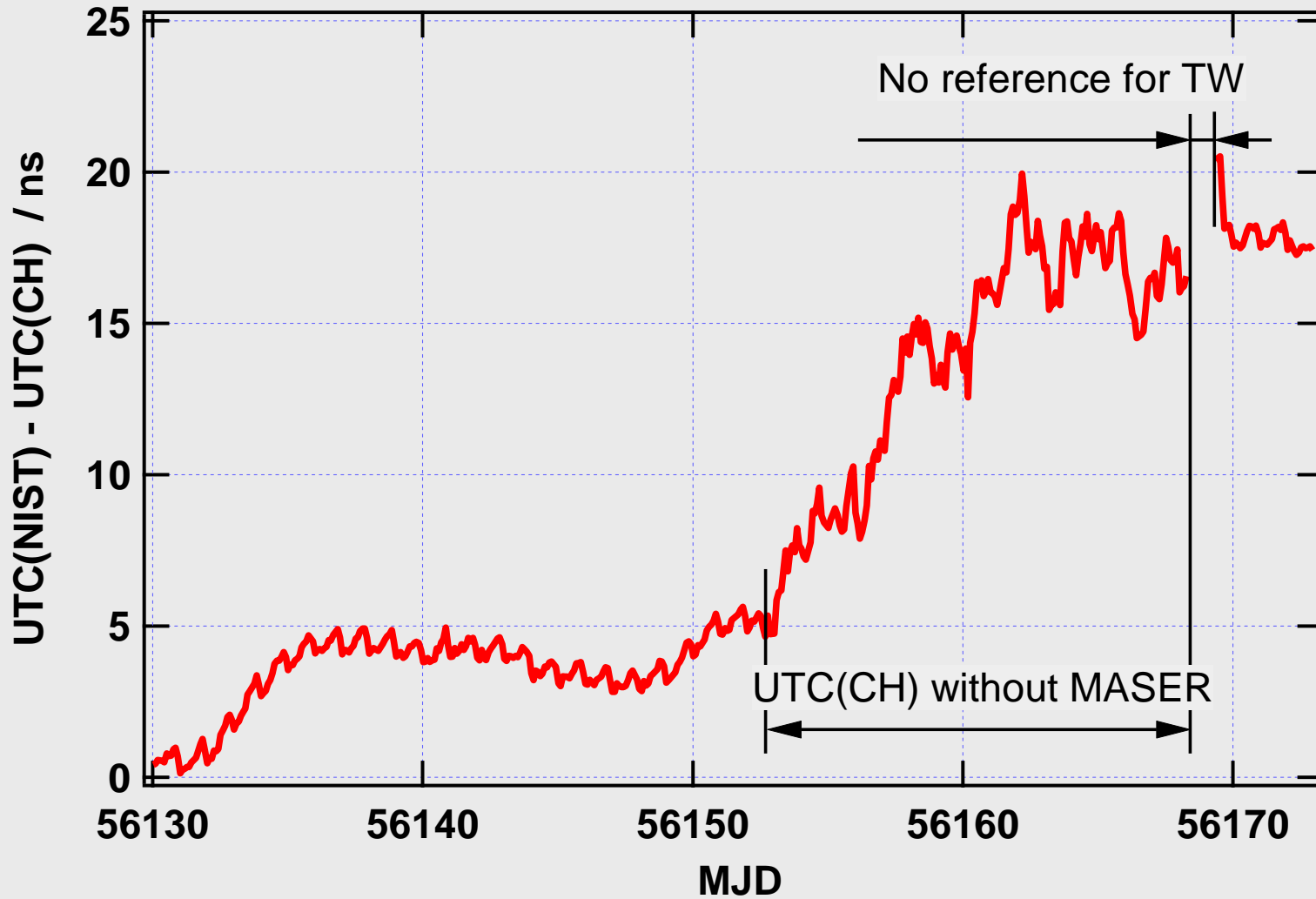
Interruption of TW operation

Breakdown of RF setup





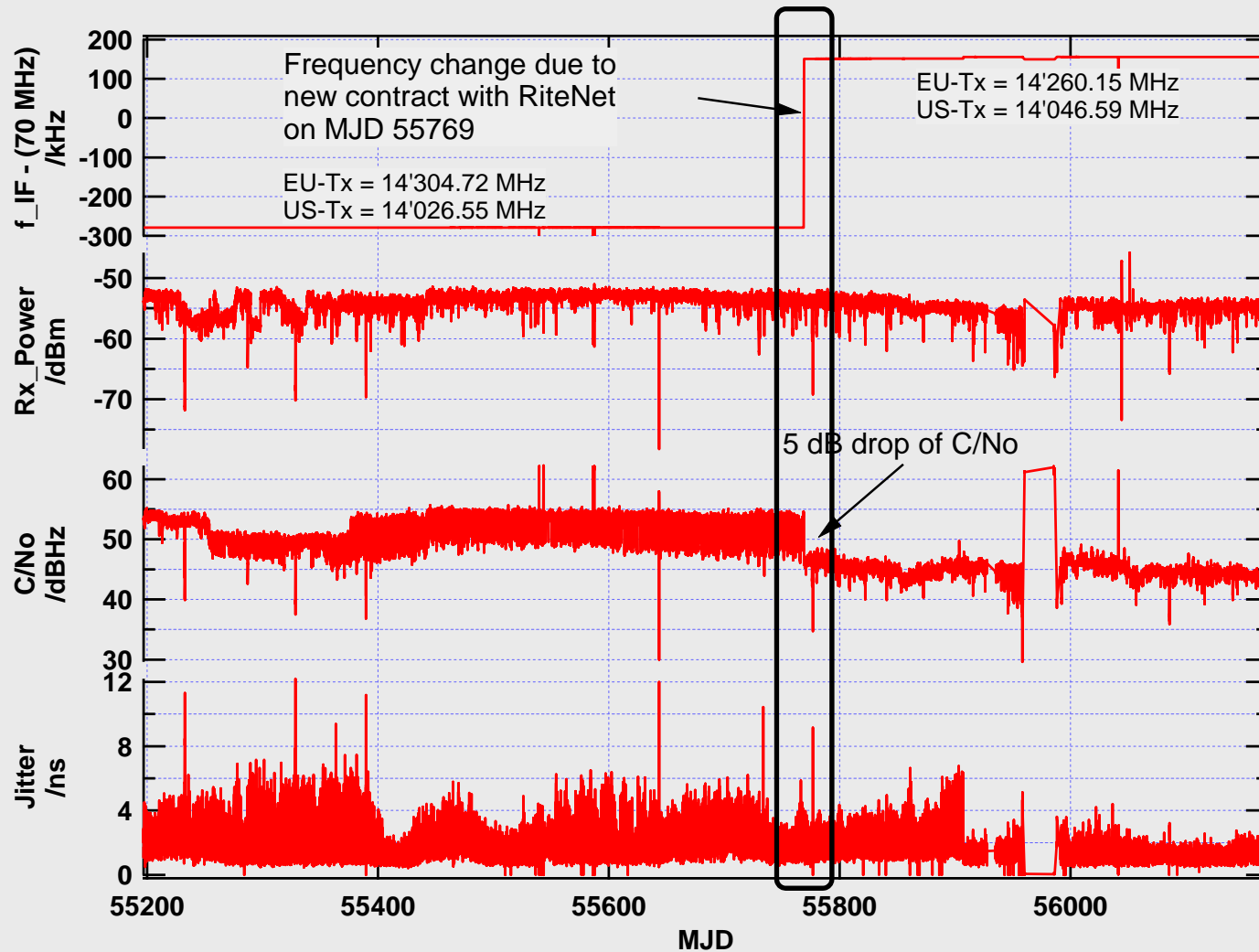
Recent Disturbance of UTC(CH)





Reception Quality on Satellite T11-N

CH ranging measurement



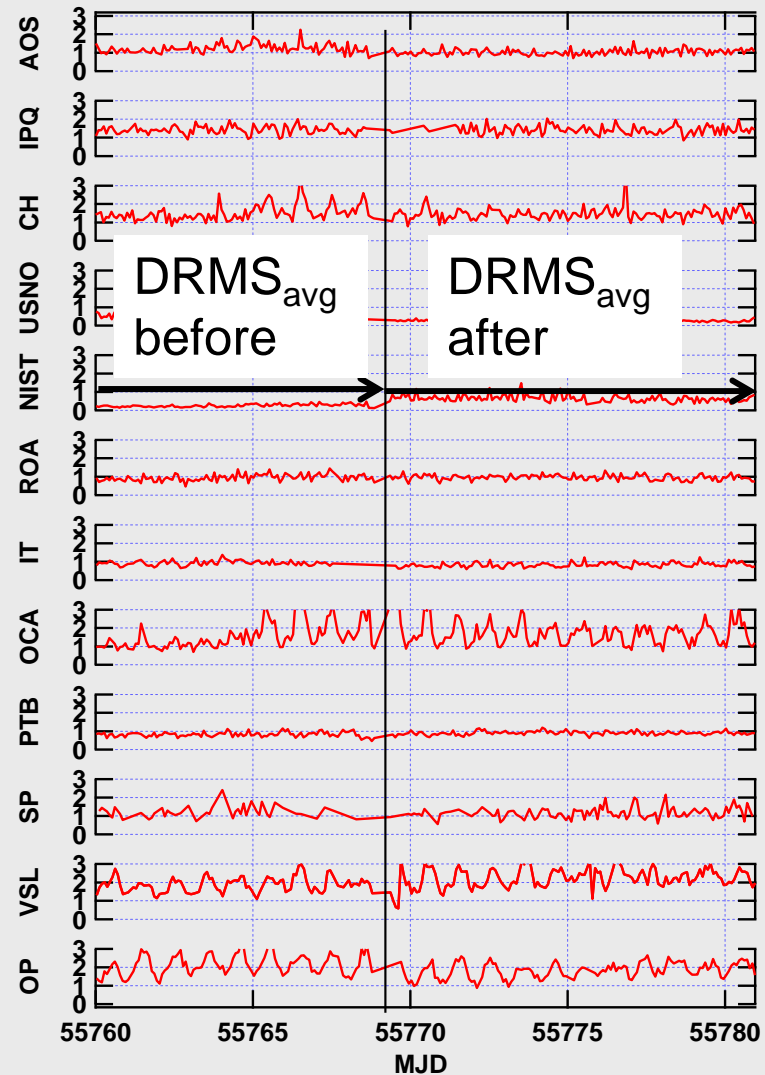
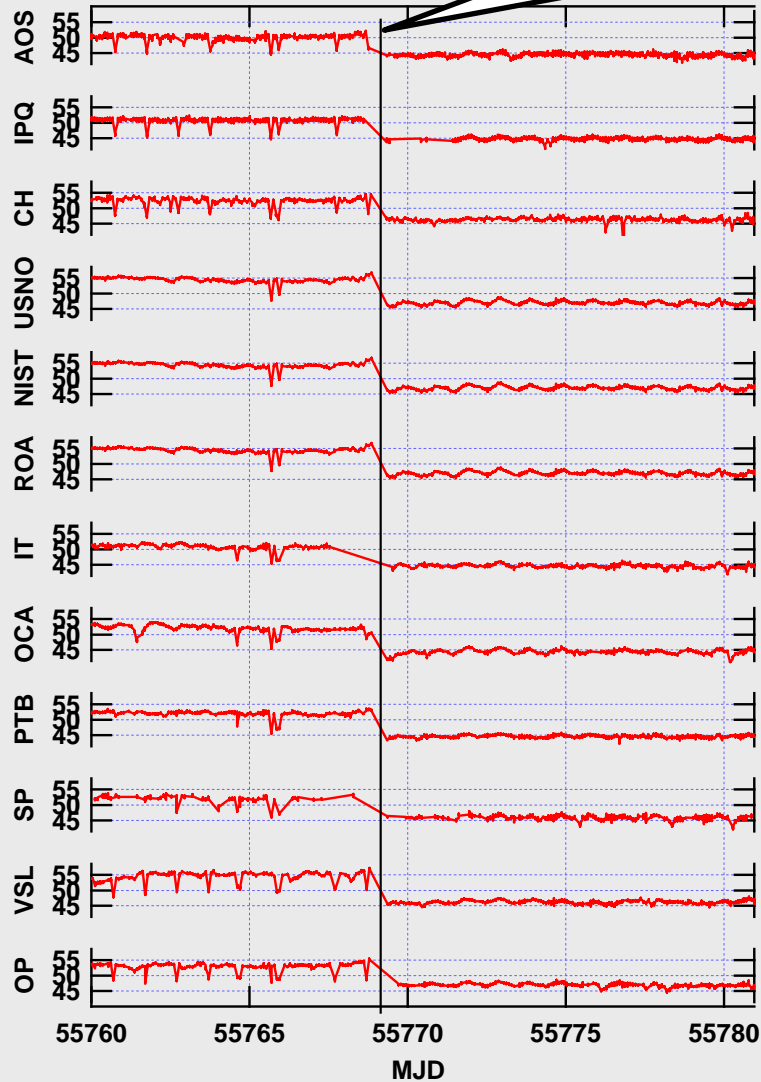


Reception Quality on Satellite T11-N

C/No /dBHz

Frequency change on T11-N
C/No drop of appr. 5 dB

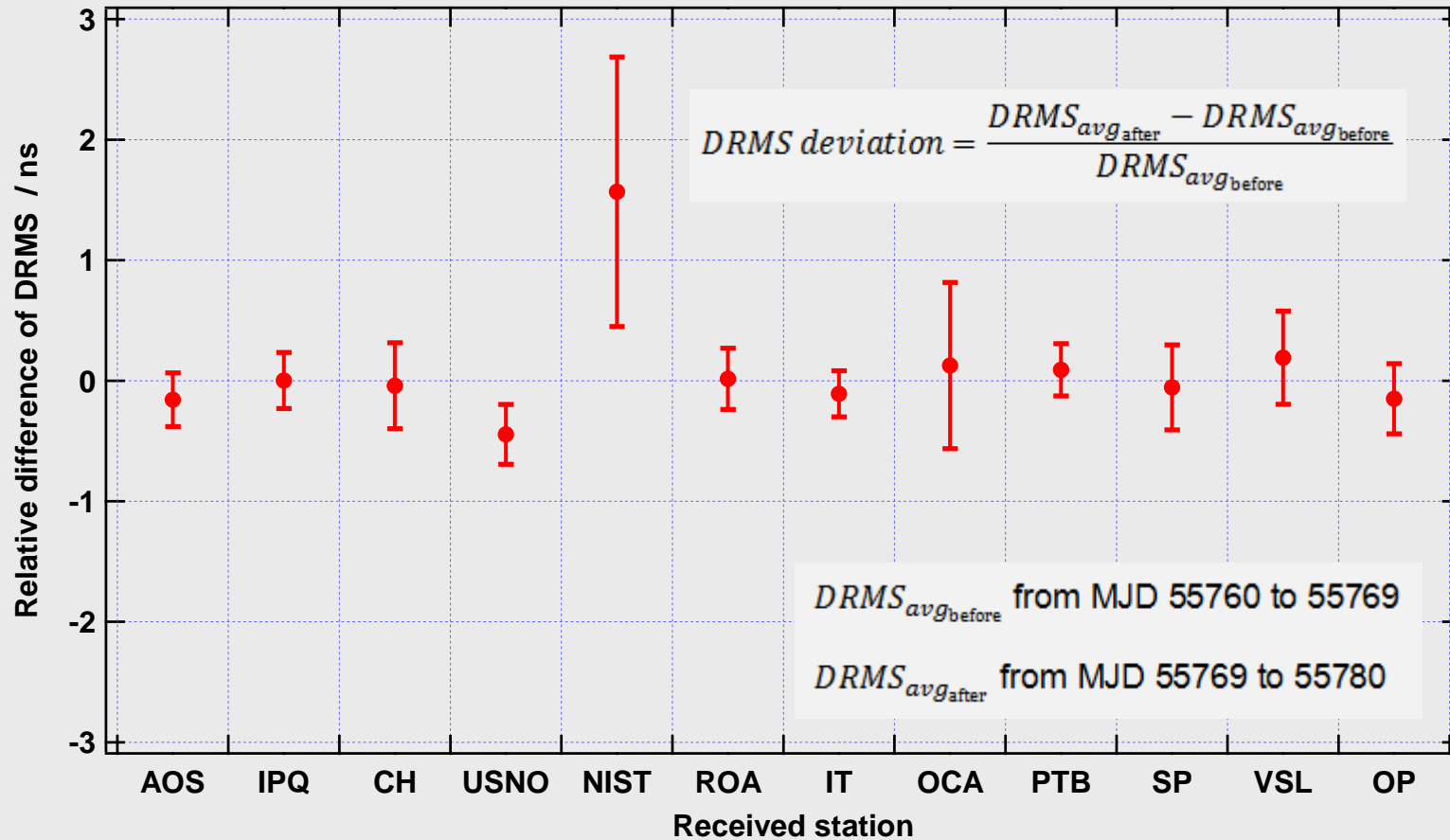
DRMS /ns





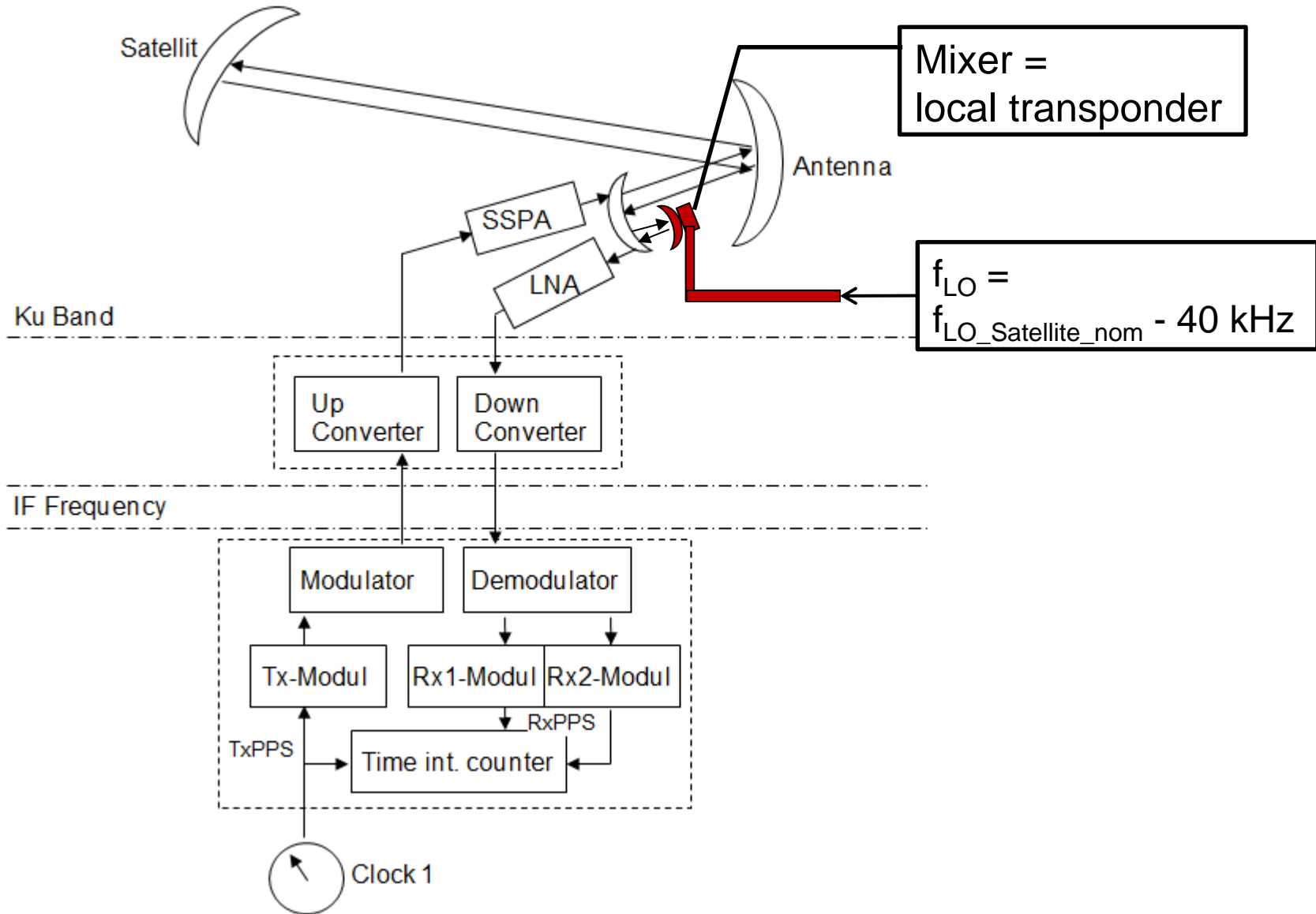
Reception Quality on Satellite T11-N

Statistical analysis of the DRMS





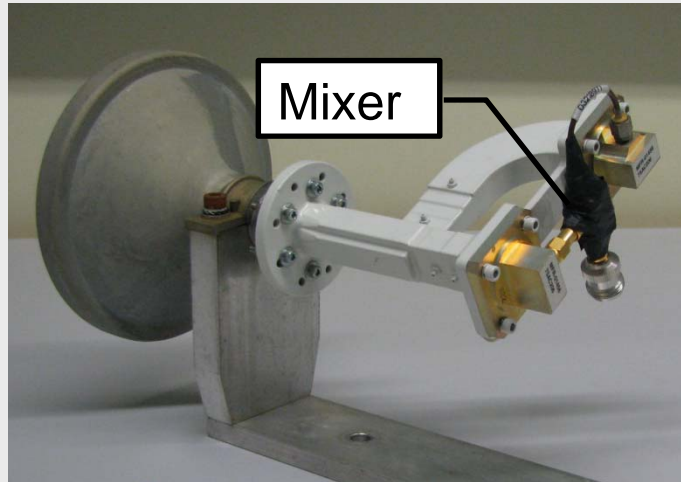
Simple TW Stability Measurement



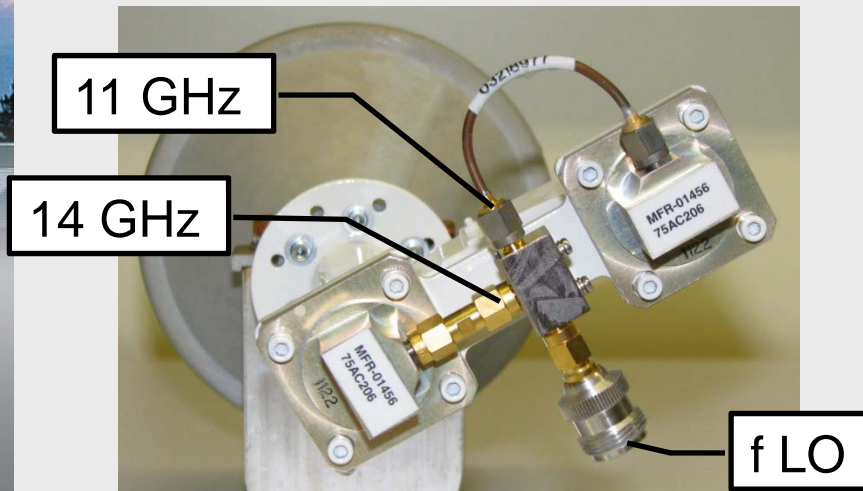


Local Transponder Configuration

Mixer configuration

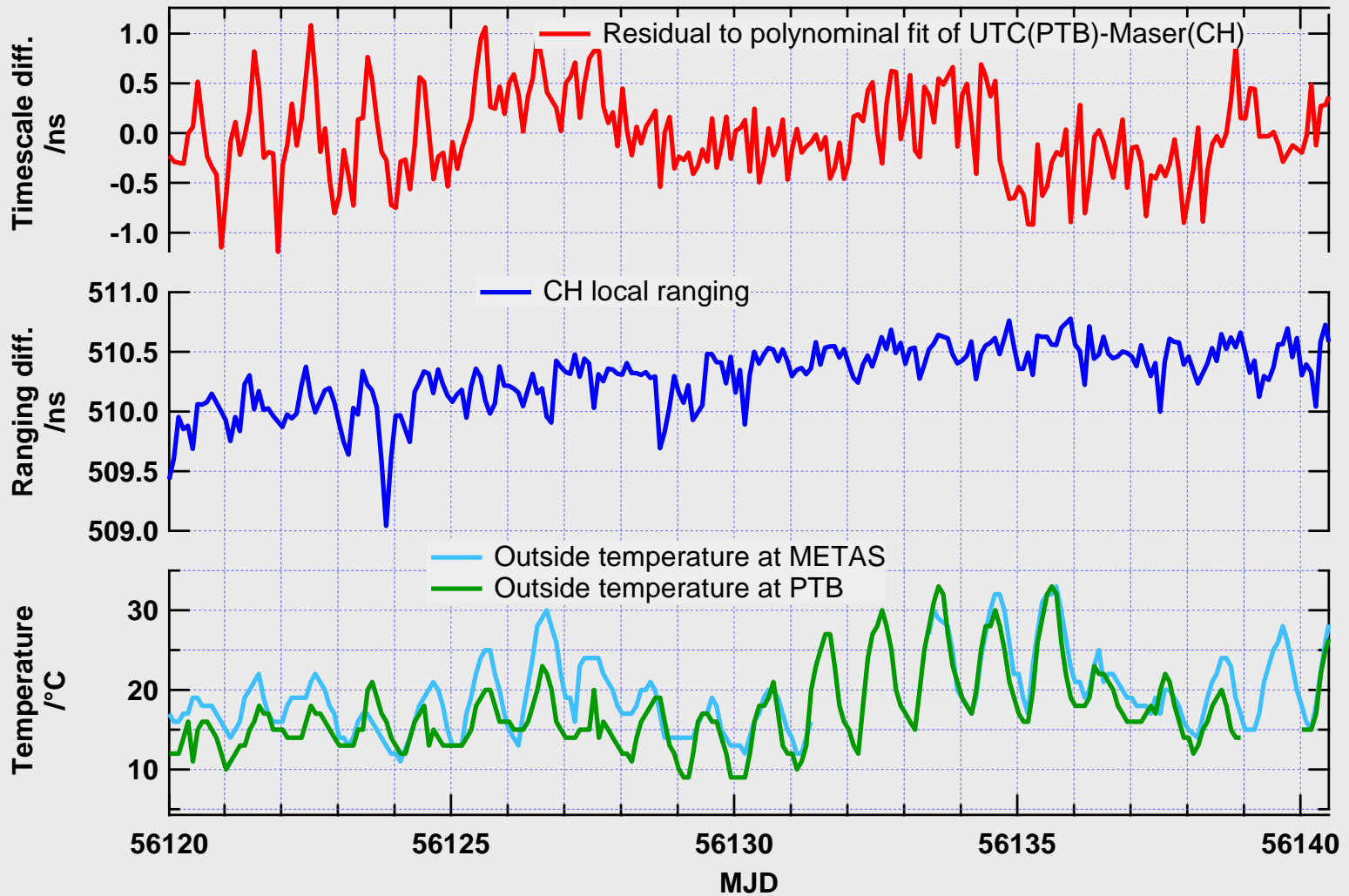


Installation on the antenna





Local TW Ranging





Potential for Improvements of the Ranging Experiment

- The outdoor mixer is only covered with a black tape.
=> Implementation of outdoor protection for mixer
- Cross talk effects are presumed due to parallel reception of the same code.
=> Distinguish both signals (from satellite and direct) by a frequency shift larger than the operational bandwidth.
- The computed DRMS ($\text{DRMS}_{\text{avg}} = 0.386 \text{ ns}$) of the ranging experiment is of the order of its diurnals amplitude.
=> The ranging experiment should be performed with a higher chiprate (without transmission to the satellite).