Status of version 3 of the GRUAN RS92 radiosonde data product

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ICM-7
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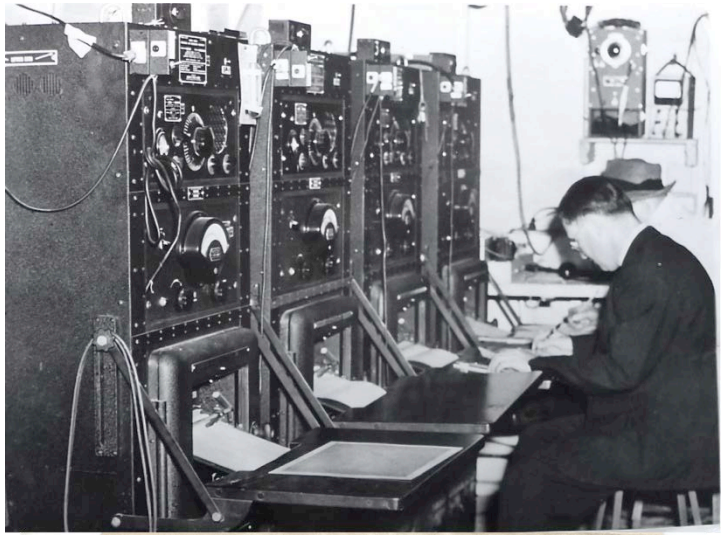


http://radiosondemuseum.org

Outline

- Introduction
- Software design considerations
- Improved correction: radiation error
- Summary

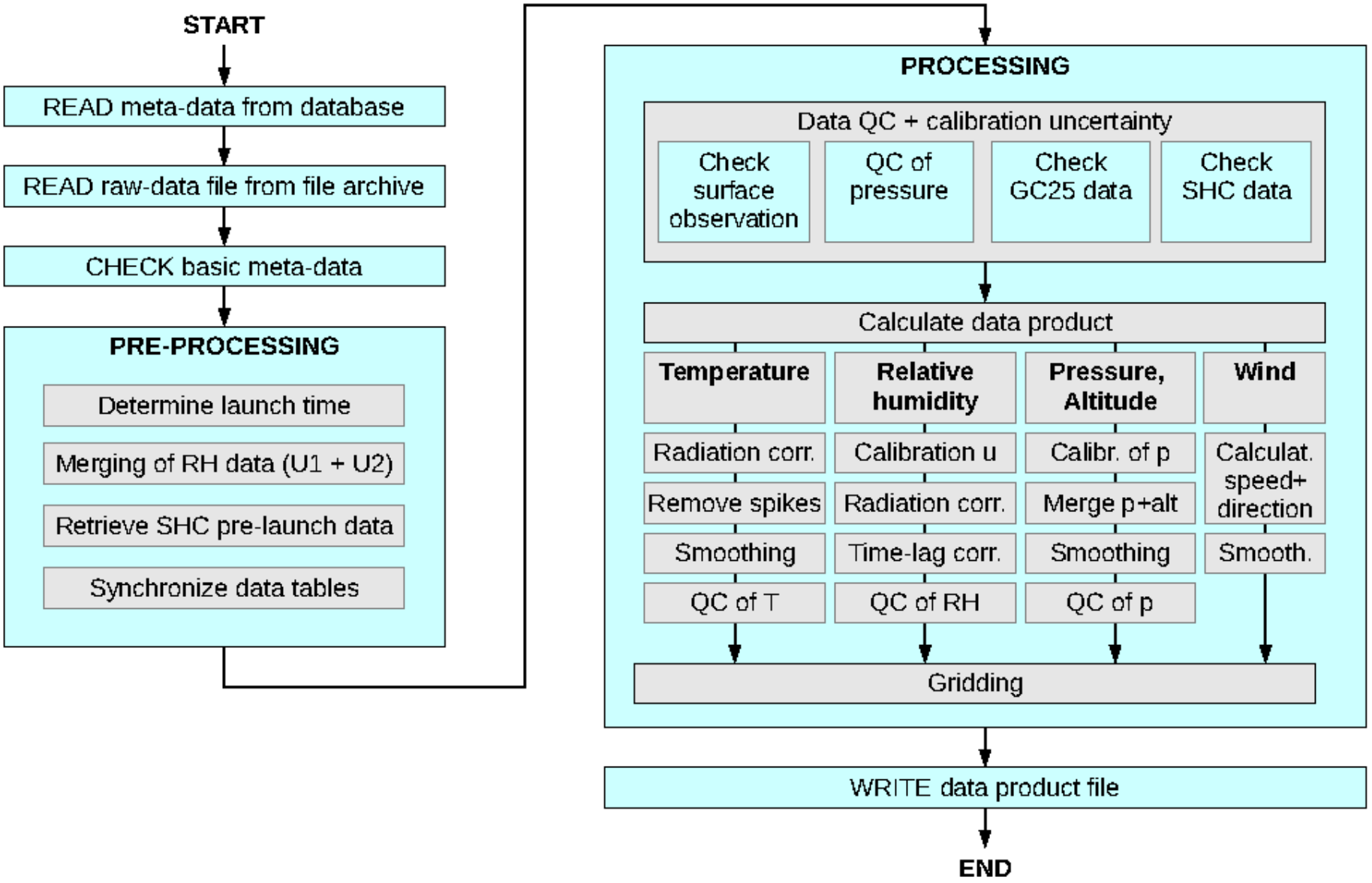
Heritage of GRUAN data processor

- Original design: Franz Immler & Michael Sommer (2008-2011)
- Started from scratch
- Correction algorithms :
  - Based on literature (e.g. time lag, calibration correction)
  - Newly developed (e.g. radiation correction)
- Integration with GRUAN metadata base
- Vertically resolved uncertainty estimates

Version 2: Sept 2012 (Ruud Dirksen & Michael Sommer)

Dirksen et al. AMT 2014 (DOI: 10.5194/amt-7-4463-2014)

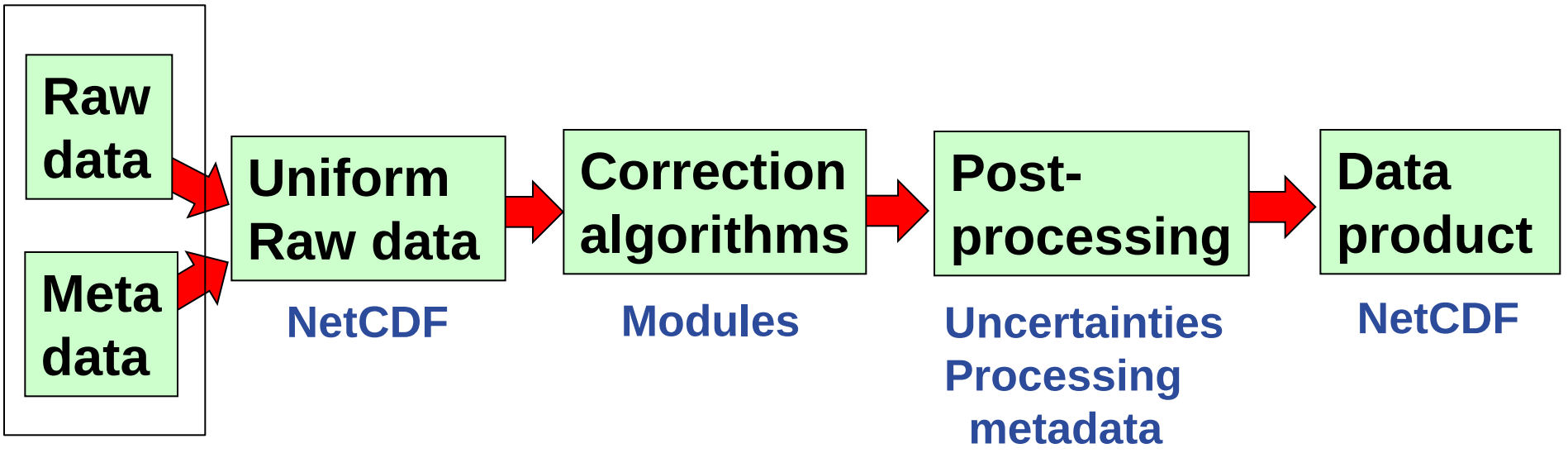
Flow diagram of GDP v2



Motivation for version 3

- Restructuring of program code (modular)
- Transition to MW41 receiving systems (.mwx data)
- Improved user feedback (e.g. clear message in case of failed QC)
  - ➢ input from site representatives (Hurst/Demoz)
- Generic data processor (digest non-RS92 data)

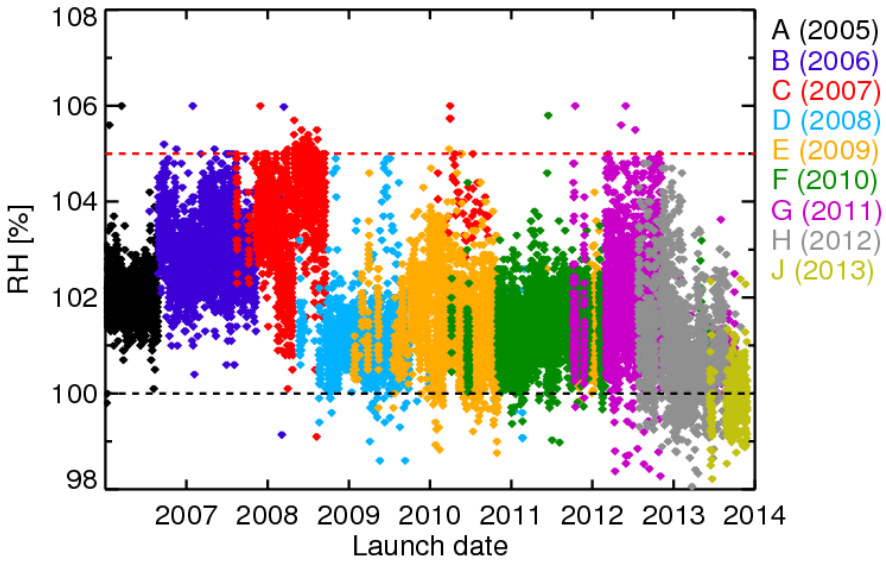
Dataflow version 3



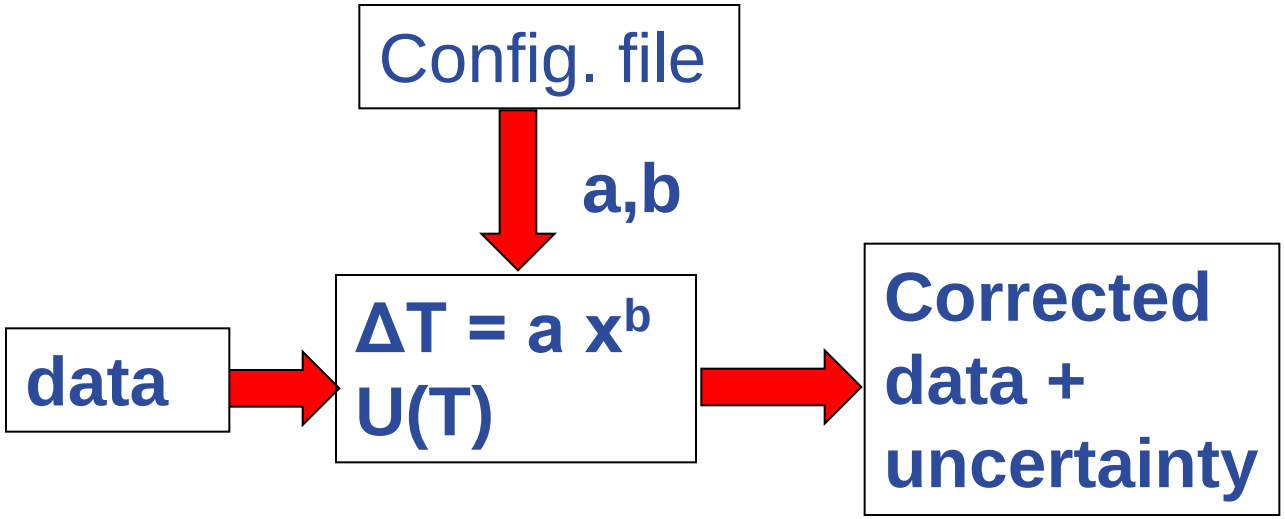
RS41	SRS34
RS92	RS-11G
DFM09	iMet
M10	etc.

version 3

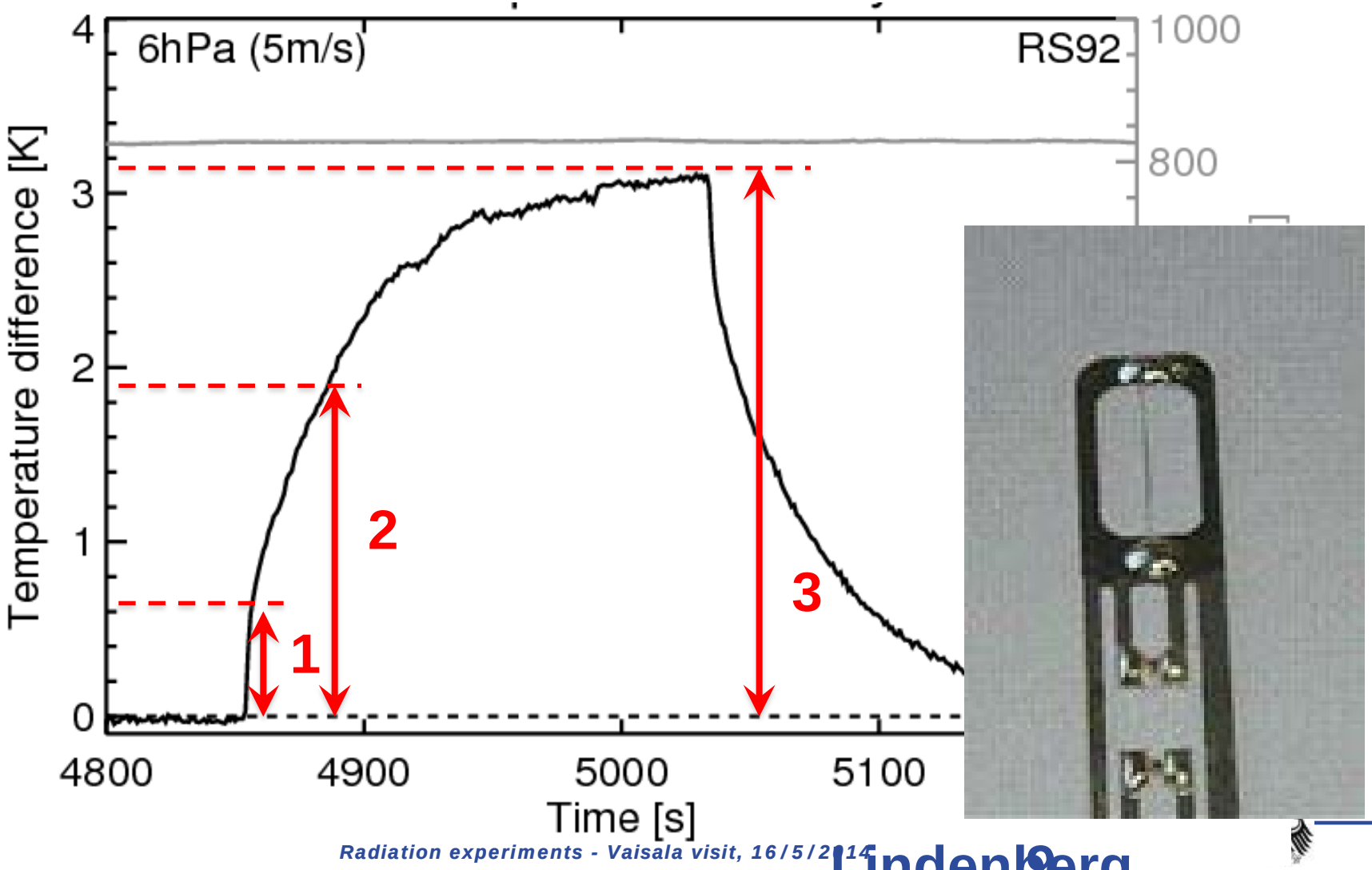
- Dedicated, small modules for each correction (building blocks)
- Program flow controlled by configuration files
- Processing flags
- Processing metadata & improve logging
- Scale humidity profile with SHC ground check (presentation Tuesday morning on network homogeneity)



Example: T correction step



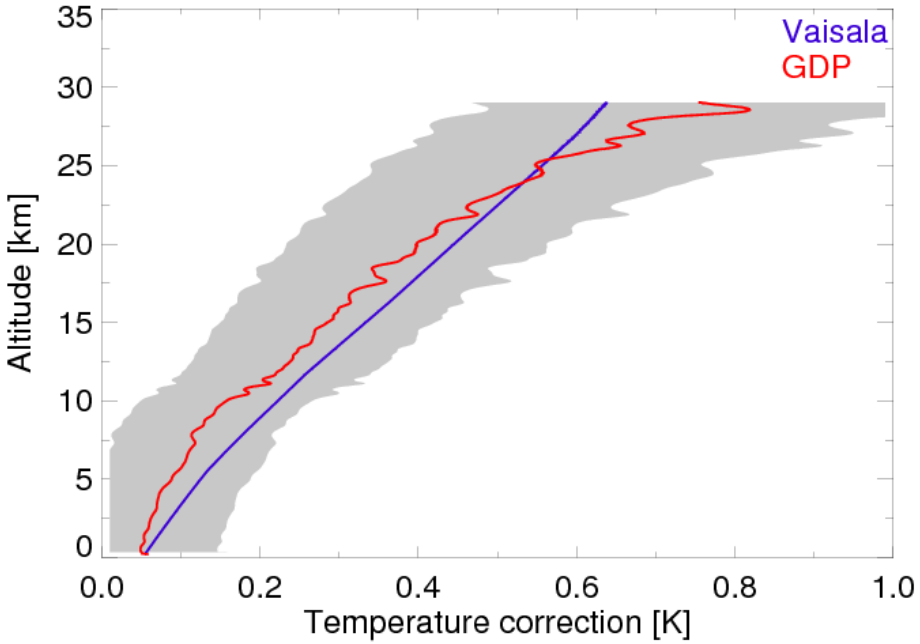
Radiation correction: Sampling moment?



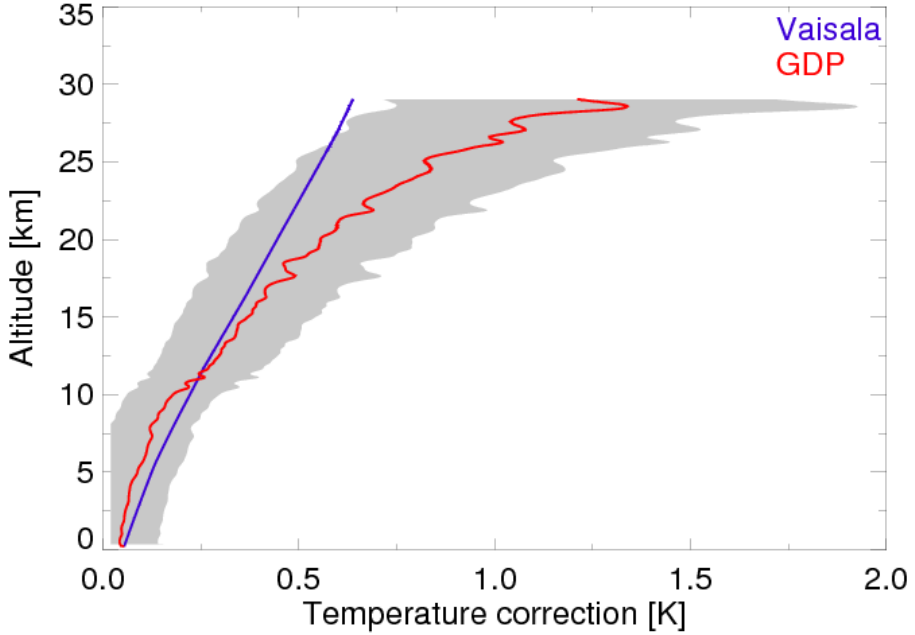
Radiation correction

Full relaxation: Substantial increase of temperature correction in stratosphere

current sampling



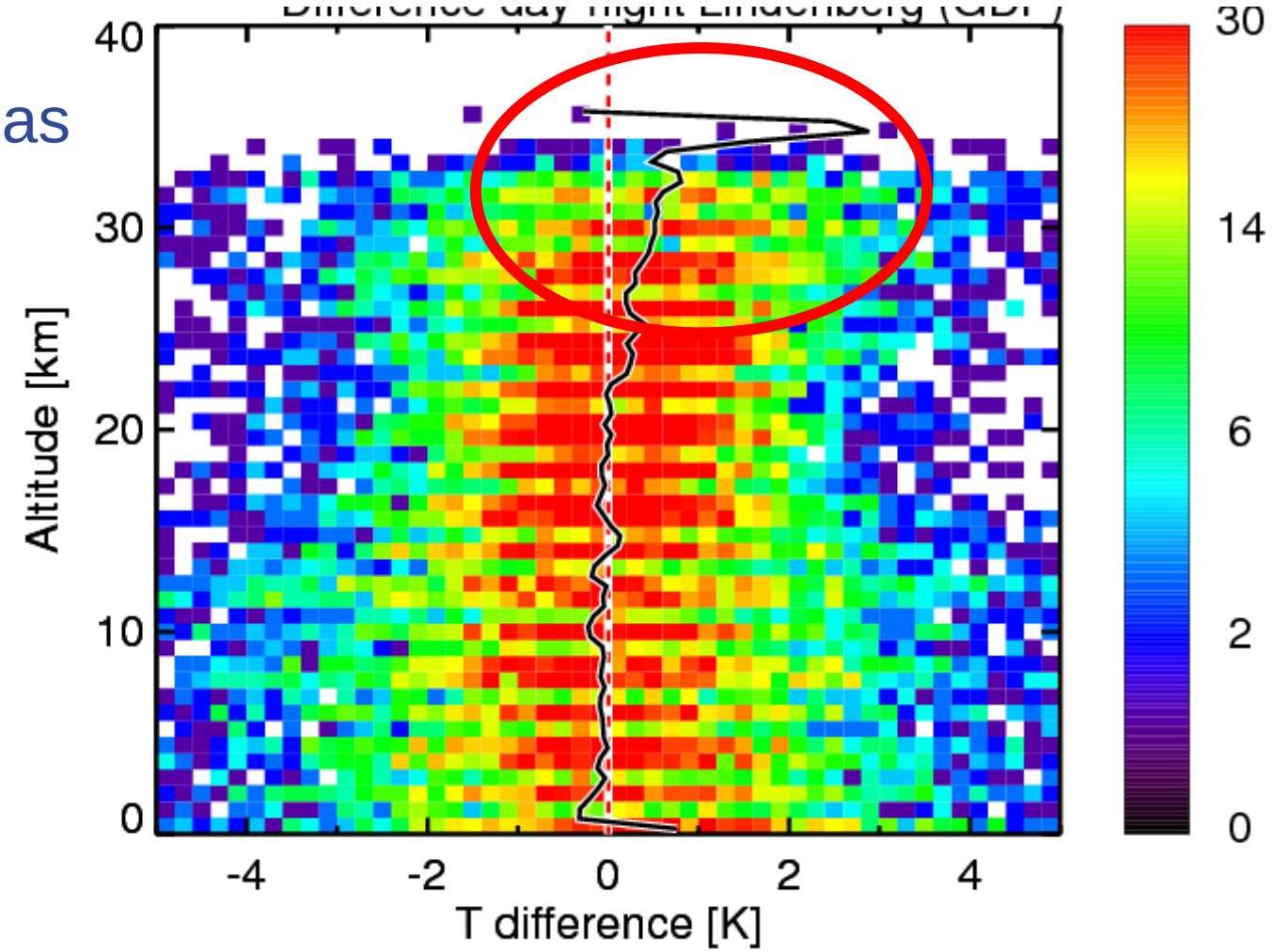
"full relaxation"



Difference day-night soundings (GDP v2)

Daytime warm bias in stratosphere?

GPS-RO
Sun et al. 2013



Summary

- Version 3 available in 2015
- Supports MW41 system (.mwx data format)
- Restructuring of software design (maintenance)
- Generic data processor, can ingest non-RS92 data
- SHC scaling
- Change in radiation error correction
- Improved user feedback, operational/processing issues