Status of the Data reduction pipeline of TIGRE

Marco Mittag
Hamburger Sternwarte
Universität Hamburg

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Outline

- Pipeline
- Main changes in the data reduction v3 to v3.1
  - Multiexposed spectra
  - Merging
  - RV estimation
- Reduction of the NoCal Data
- Temperature stability
- Status of Iglu
- Outlook

Pipeline

- Based on IDL reduction package REDUCE written by Piskunov and Valenti (2002)
- Fully automatic data reduction pipeline, with an automatic wavelength calibration
- Includes all necessary data reduction steps for the Échelle spectra
- Starts after the observation night and transfer to Hamburg automatically

Main changes in the data reduction pipeline v3 to v3.1

Multiexposed spectra

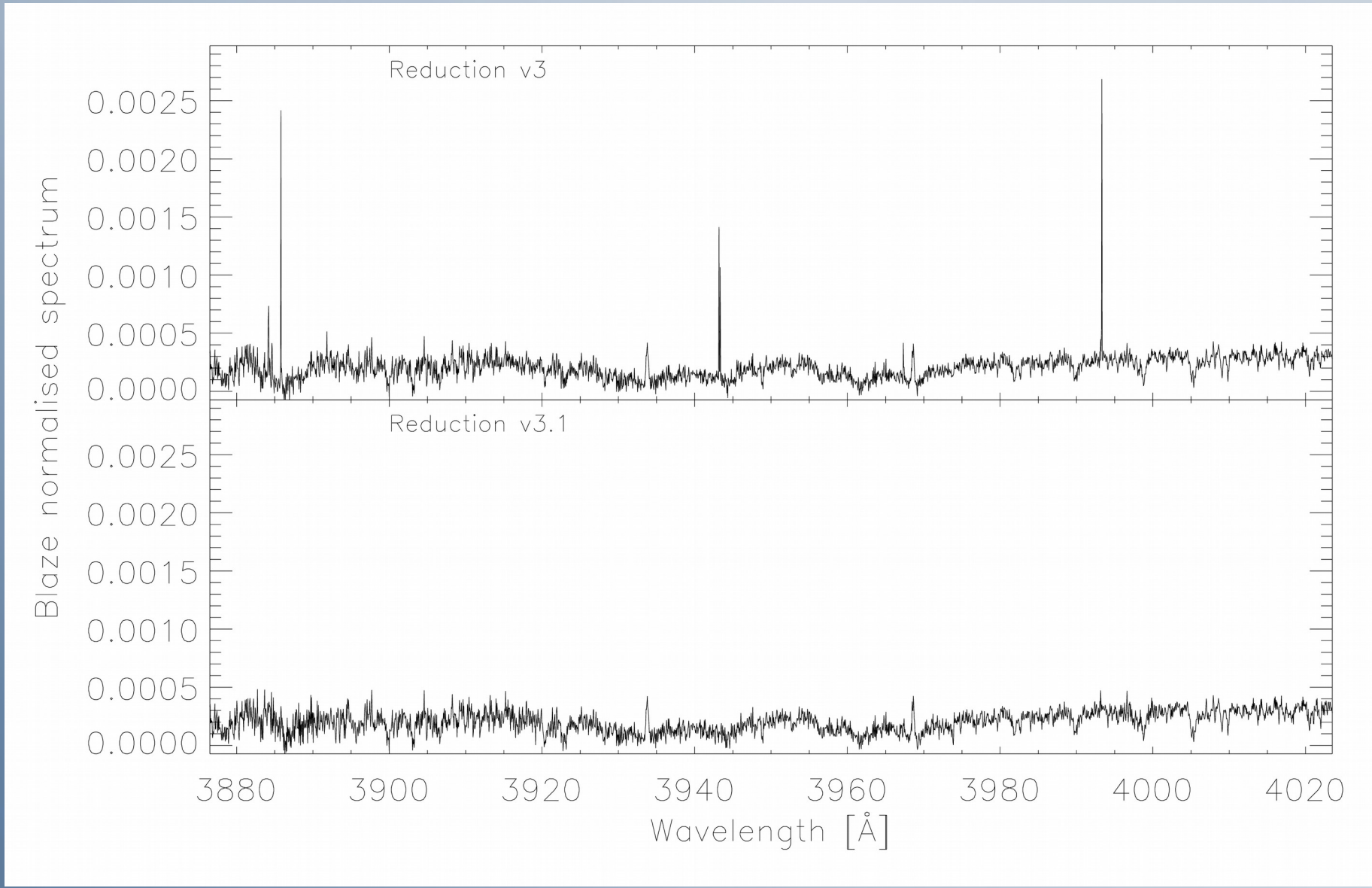
v3

- 2 methods of coadding
  - High SNR: The single 1D spectra are coadded
  - Low SNR: The single images are coadded without extraction of the single spectra
- No proper cosmic correction

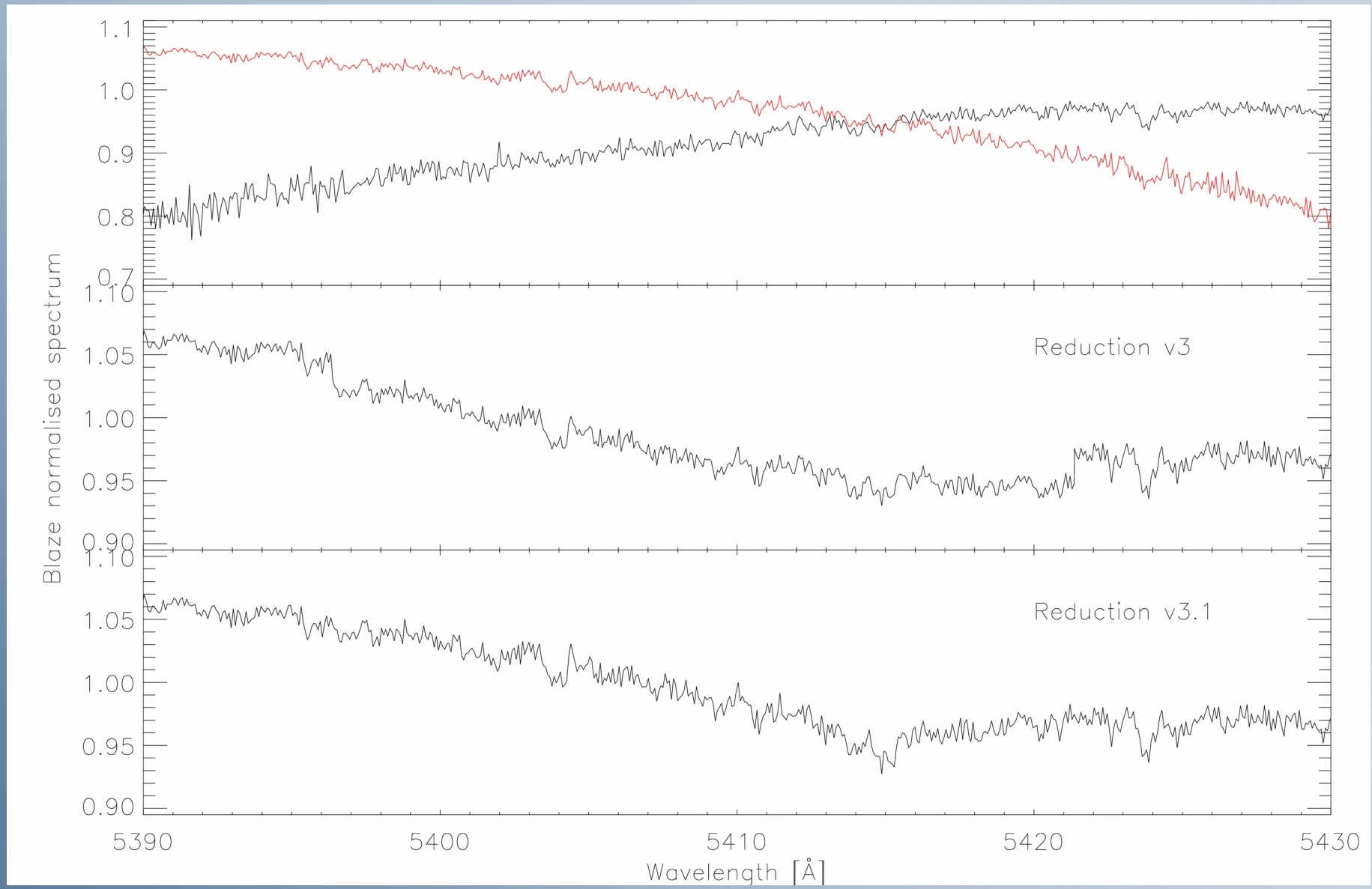
v3.1

- All spectra are extracted
- The final spectrum is extracted from the coadded image
- Cosmic correction performed during the coadding

Multiexposed spectra



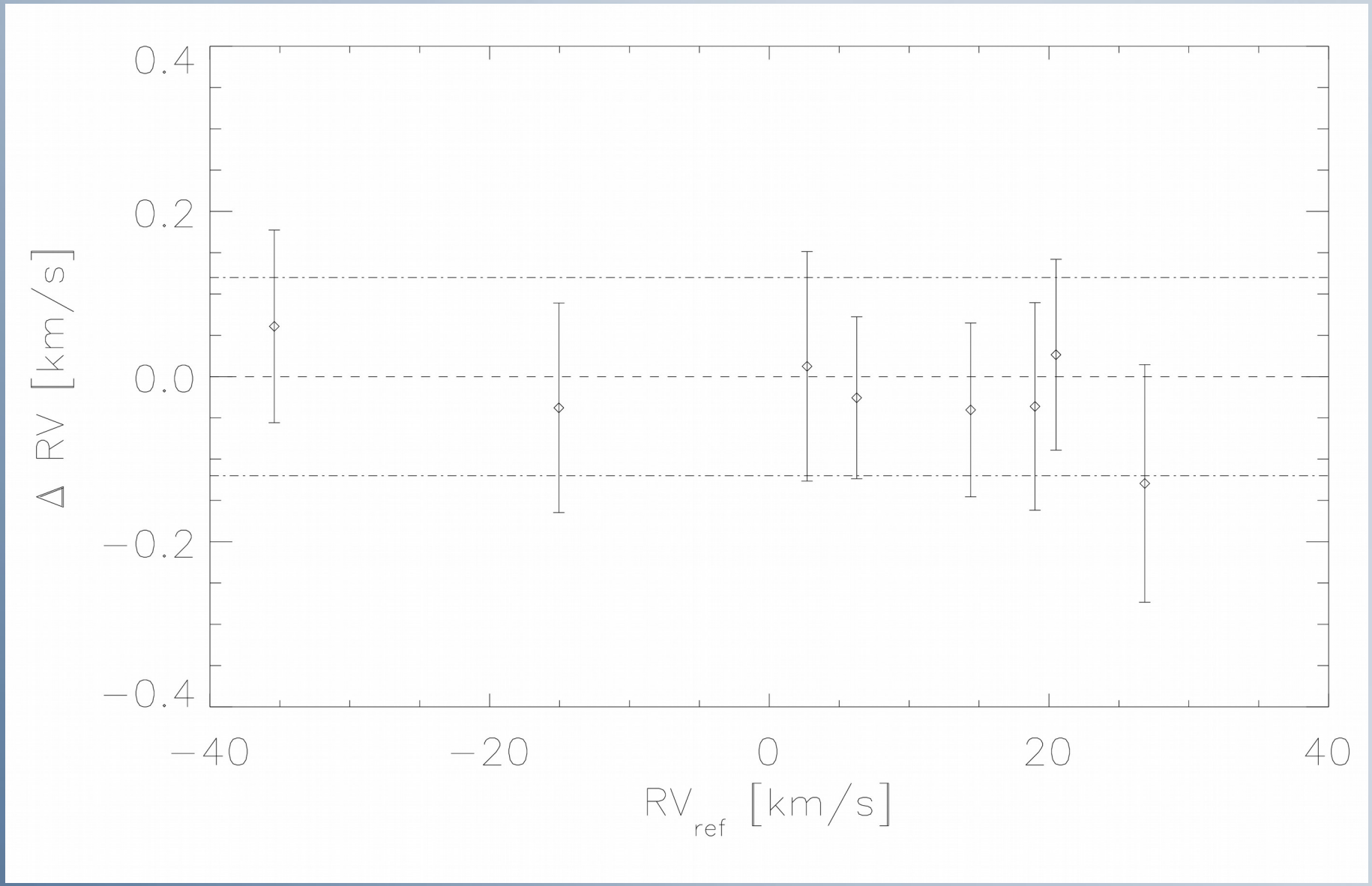
Merging


Blaze normalised spectrum
1.1
1.0
0.9
0.8
0.7
1.10
1.05
1.00
0.95
0.90
Reduction v3
1.10
1.05
1.00
0.95
0.90
Reduction v3.1
5390
5400
5410
5420
5430
Wavelength [Å]

RV estimation

- In the v3 version, there is an offset in the absolute RV value from ~250 m/s
- In the v3.1 version, this offset removed
  - Precision ~120 m/s
  - Accuracy inside the precision
- Description in AN (Mittag et al. 2018)

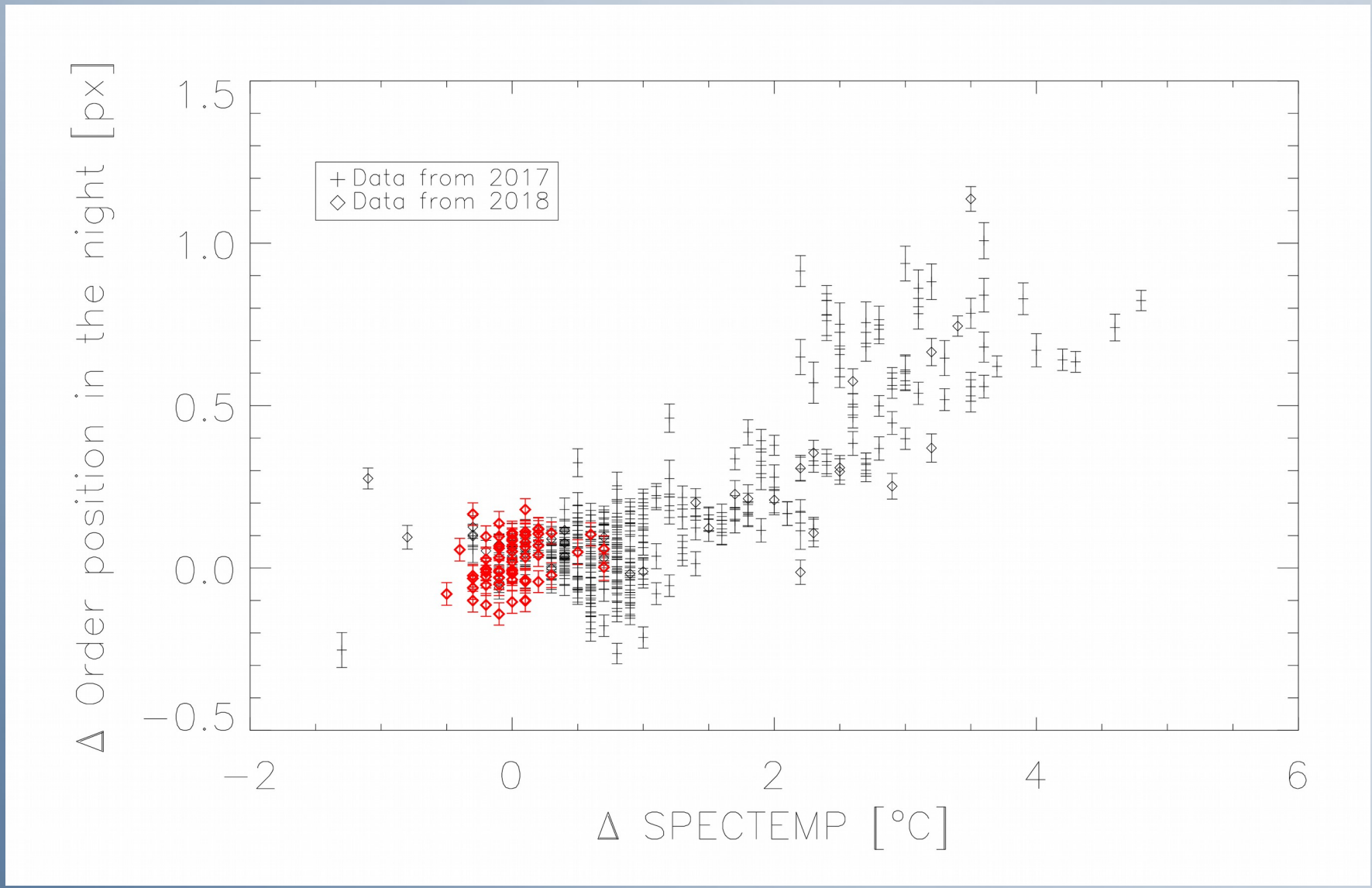
RV estimation



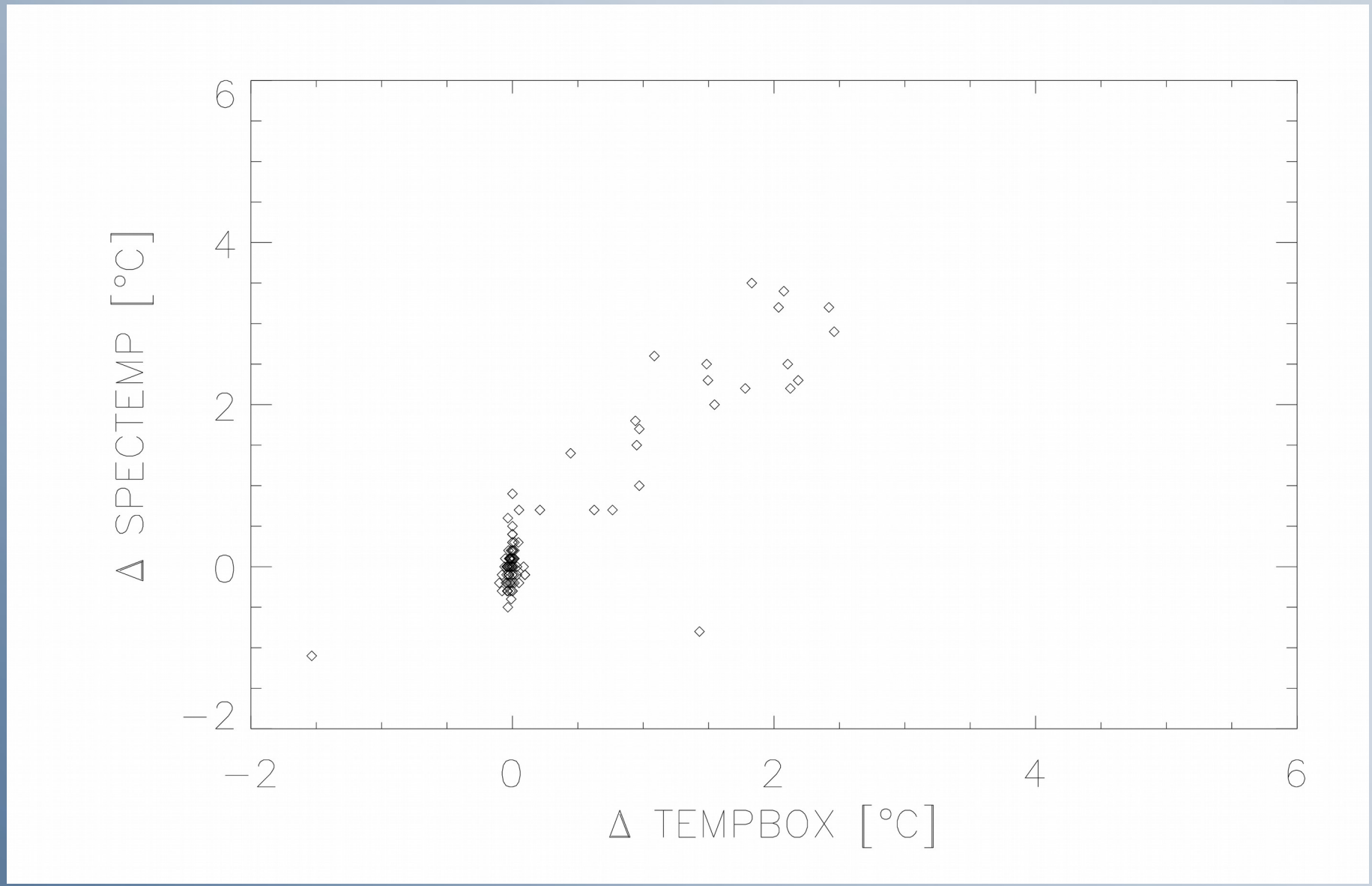
Reduction of the NoCal Data

- No Flat field and ThAr images taken (between 6 Dec. 2017 – 6 Jan. 2018)
- More standard stars observed
- Selection of the flat field and ThAr images
  - Order definition estimated from the observed standard stars (also used in the reduction)
  - Compared with the order position estimated from the master flat fields from 2017
  - Selected the flat field with the smallest differences in the order position
  - Flat field and ThAr images copied to the corresponding RAW path

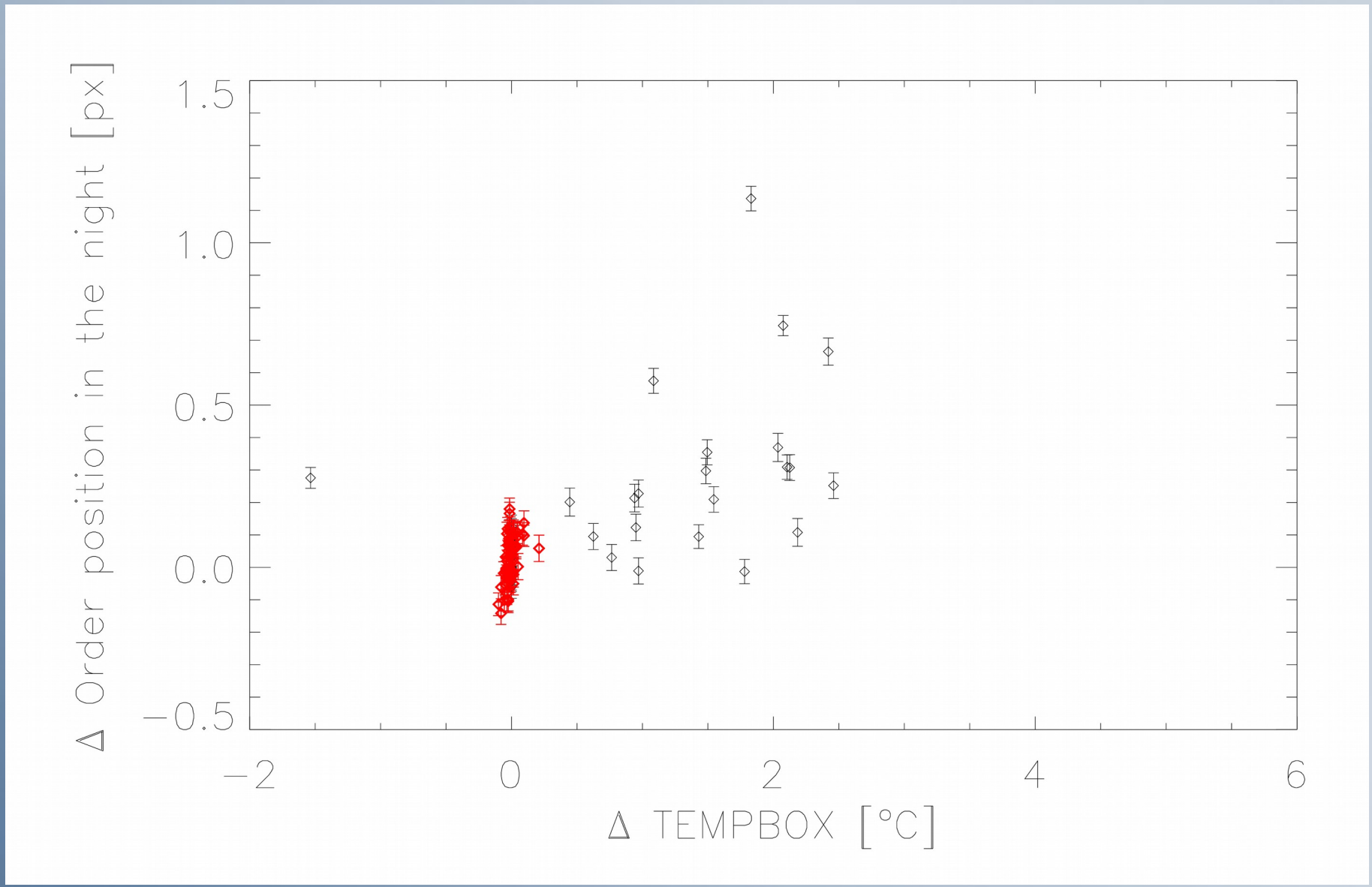
Temperature stability



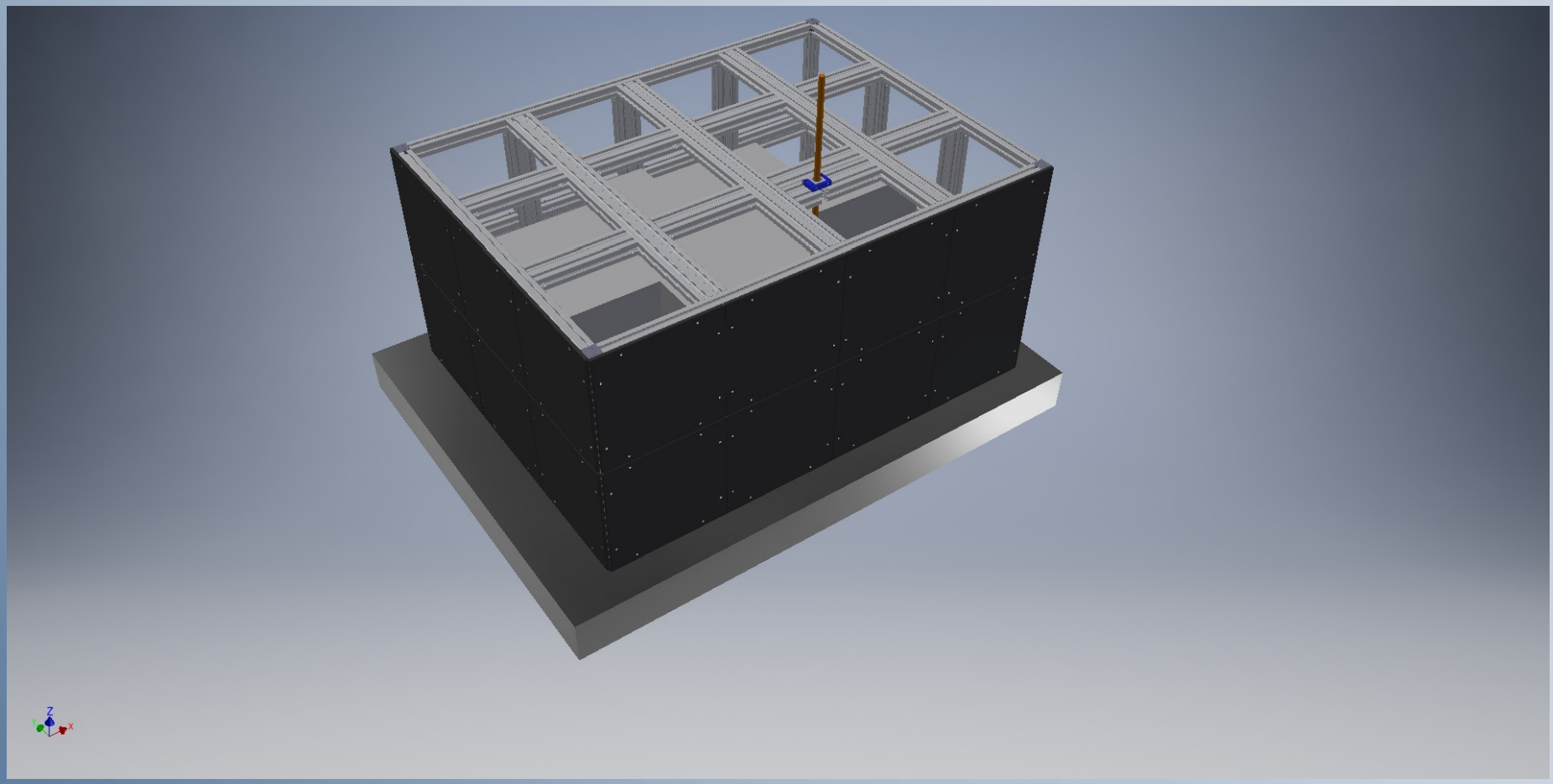
Temperature stability



Temperature stability

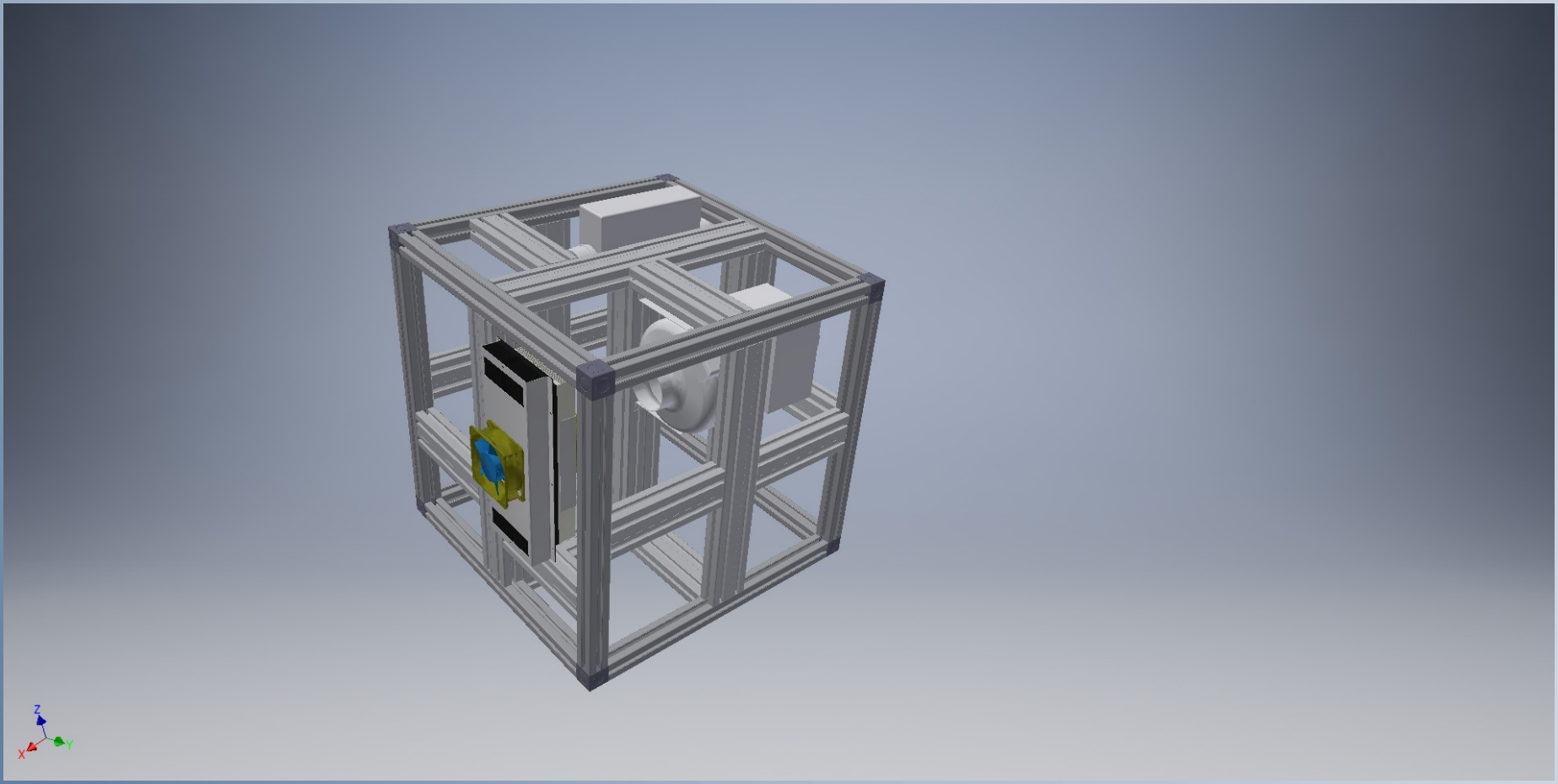


Status of Iglu



Credit: Arnis Levits

Status of Iglu



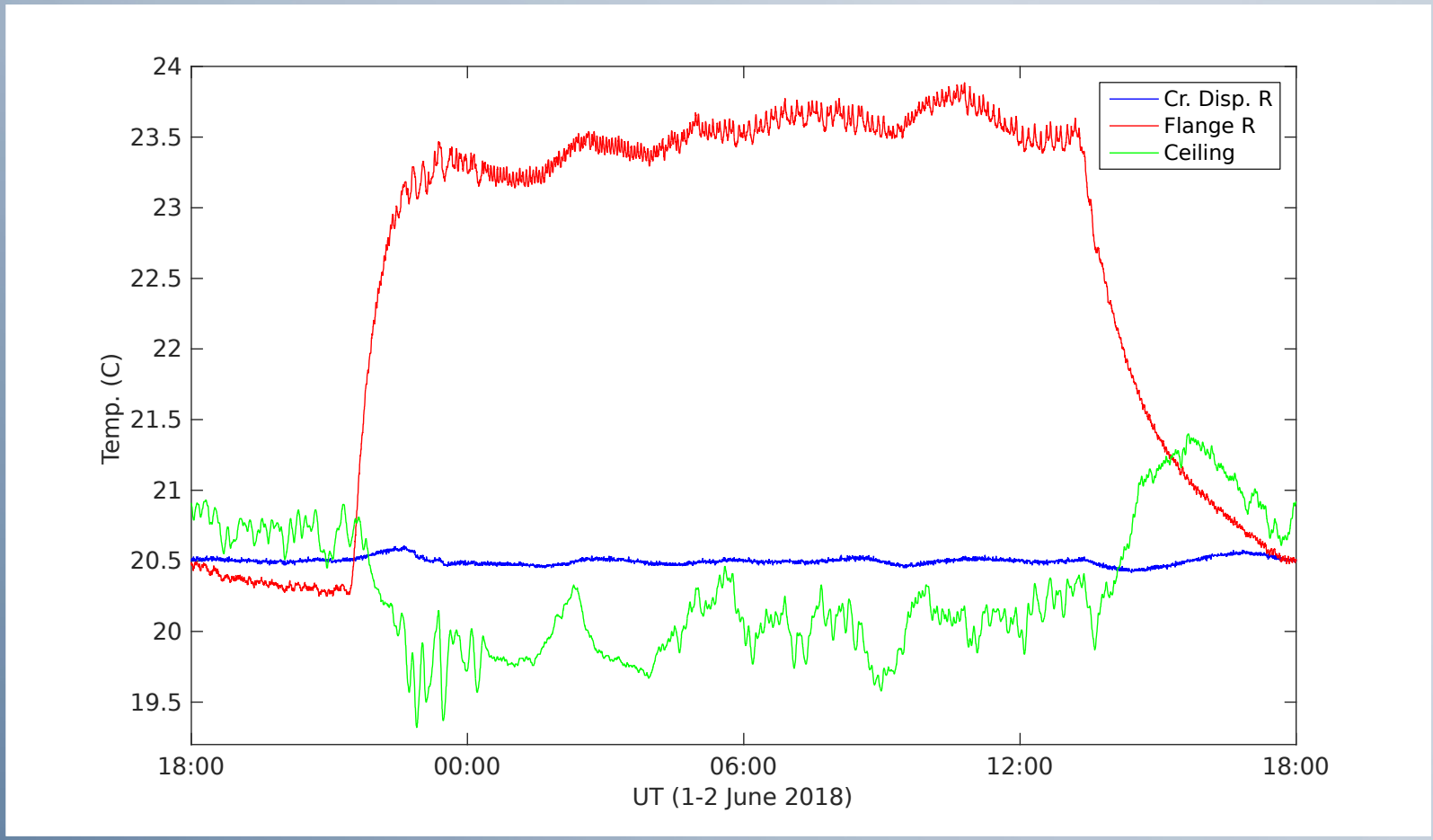
Credit: Arnis Levits and Nils Böhmer

Outlook

- New reduction of the data with version v3.1
- Description and pipeline on our webpage
- Database for the S- and RV-values with a web interface

Appendix

Temperature



Credit: José Nicolás González Pérez