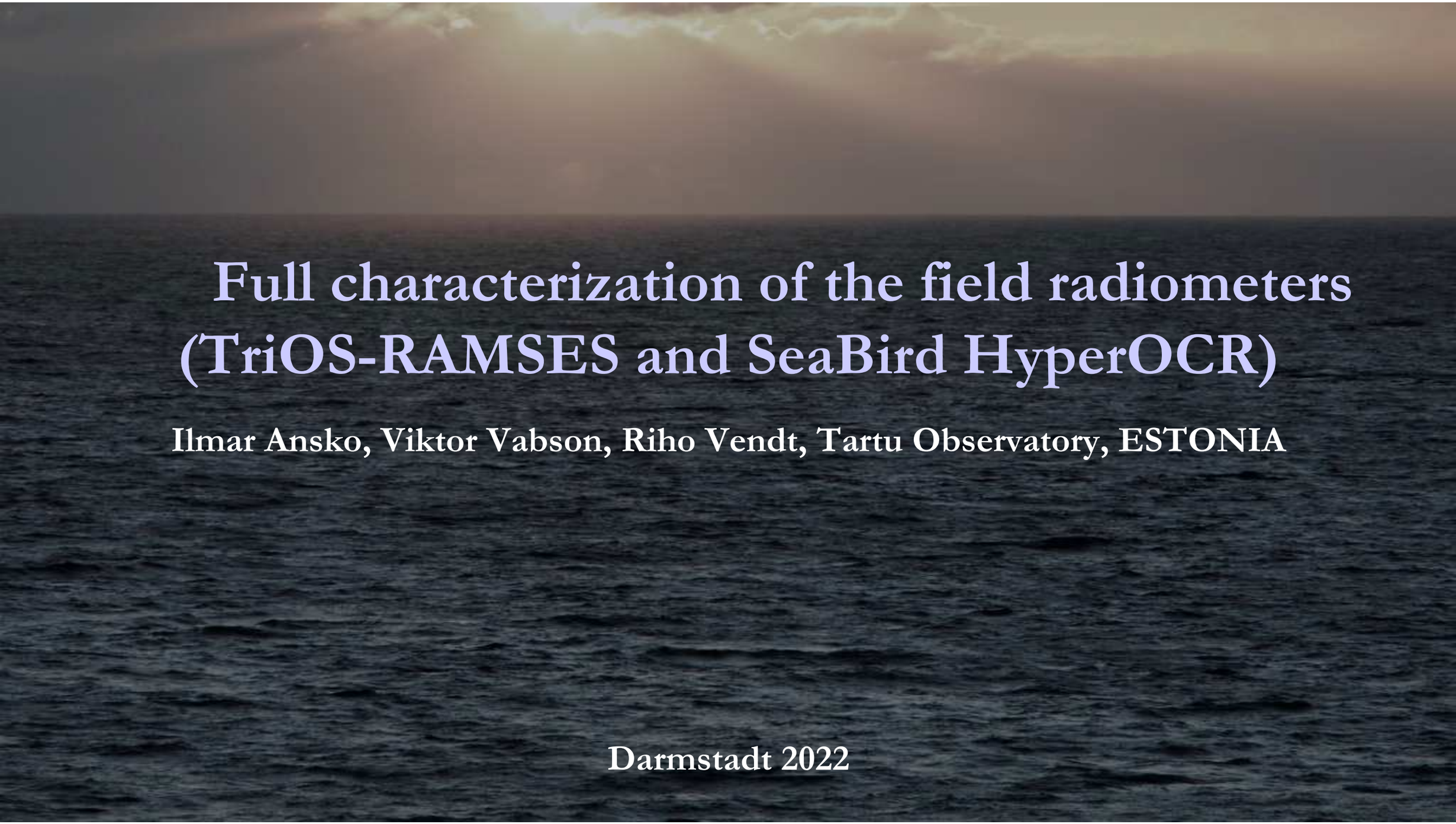


Full characterization of the field radiometers (TriOS-RAMSES and SeaBird HyperOCR)

Ilmar Ansko, Viktor Vabson, Riho Vendt, Tartu Observatory, ESTONIA

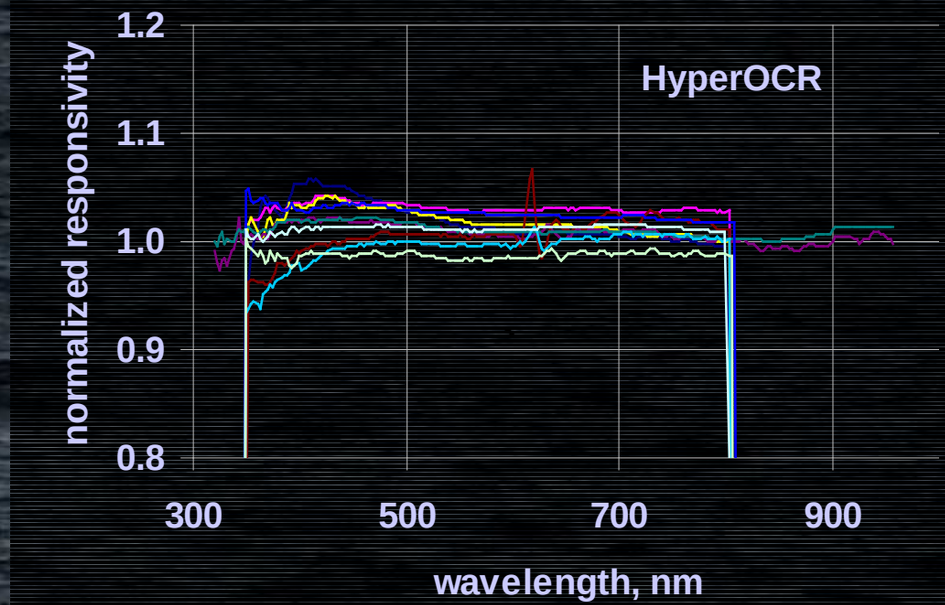
Darmstadt 2022

Instrument parameters

1. Absolute calibration for radiometric responsivity
2. Long term stability
3. Straylight and out of band response
4. Immersion factors (radiance, irradiance)
5. Angular response of irradiance sensors in air
6. Angular response (FOV) of radiance sensors in air
7. Non-linearity
8. Accuracy of integration times
9. Dark signal
10. Thermal sensitivity
11. Polarization sensitivity
12. Temporal response
13. Wavelength scale
14. Signal-to-noise ratio
15. Pressure effects

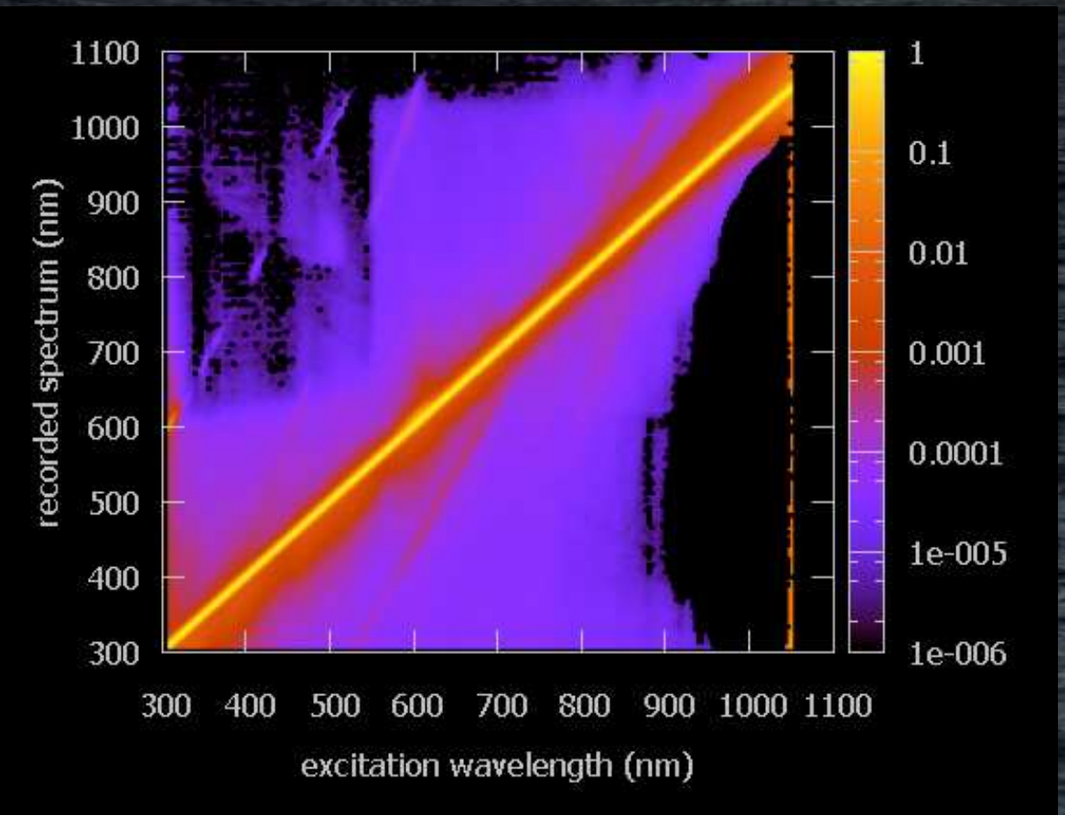
Absolute radiometric responsivity

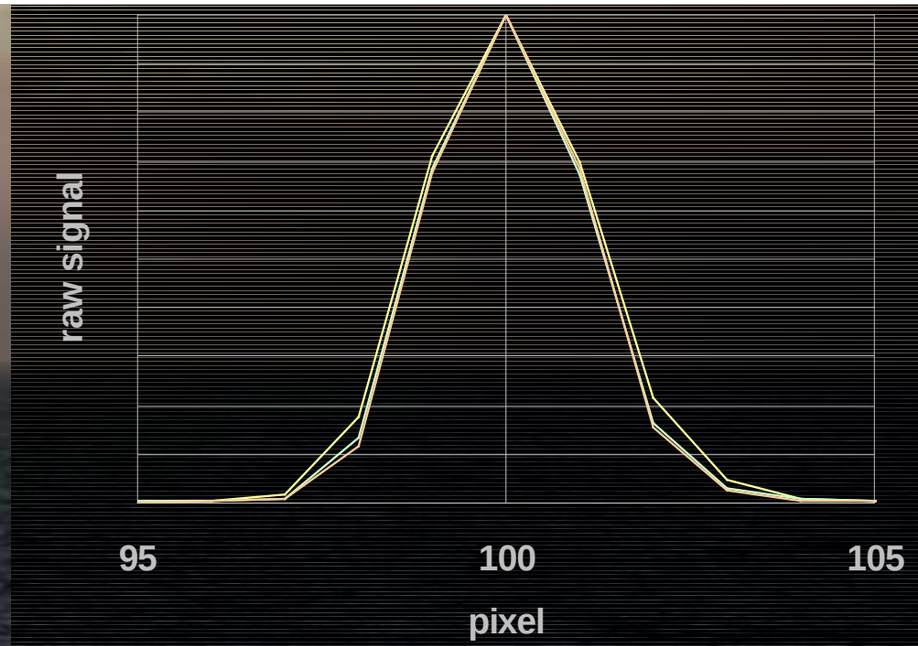
Reviewers responsivity units the red line below

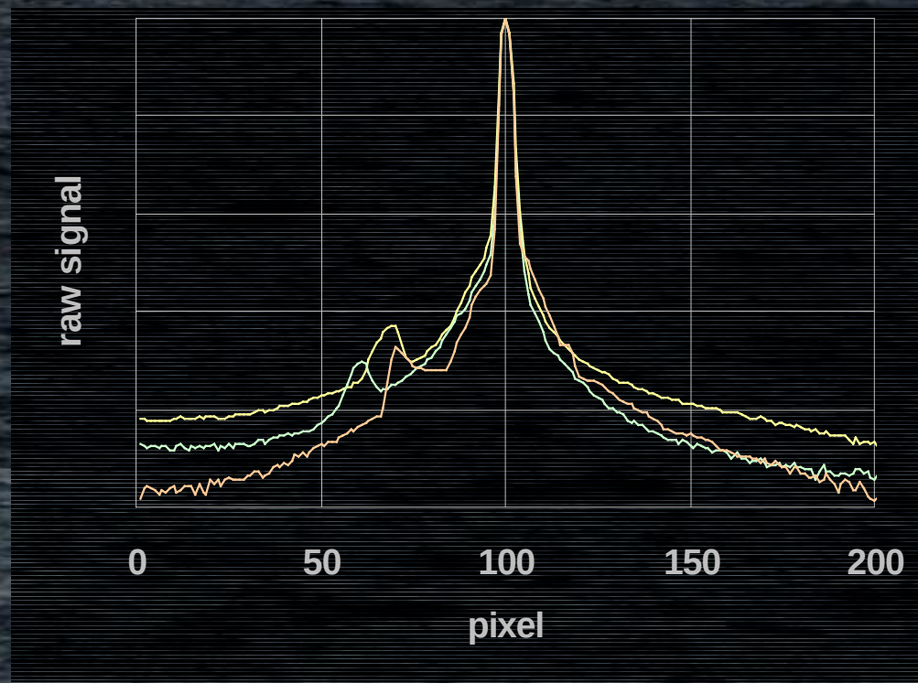


Straylight and out-of-band response

Reviewers more technical details
filling the missed values





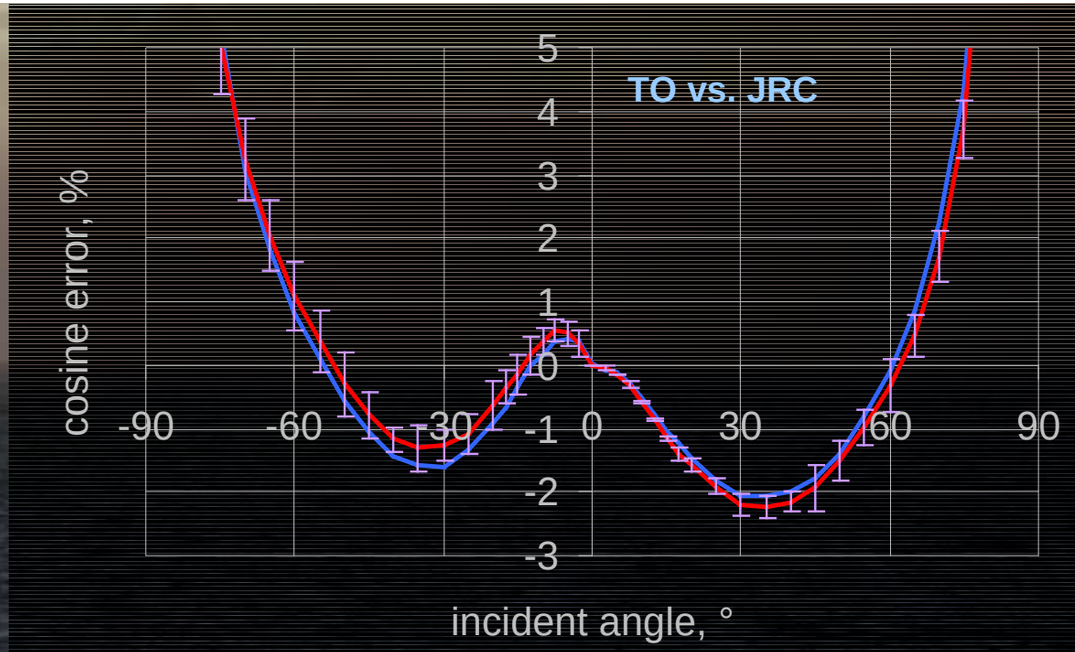


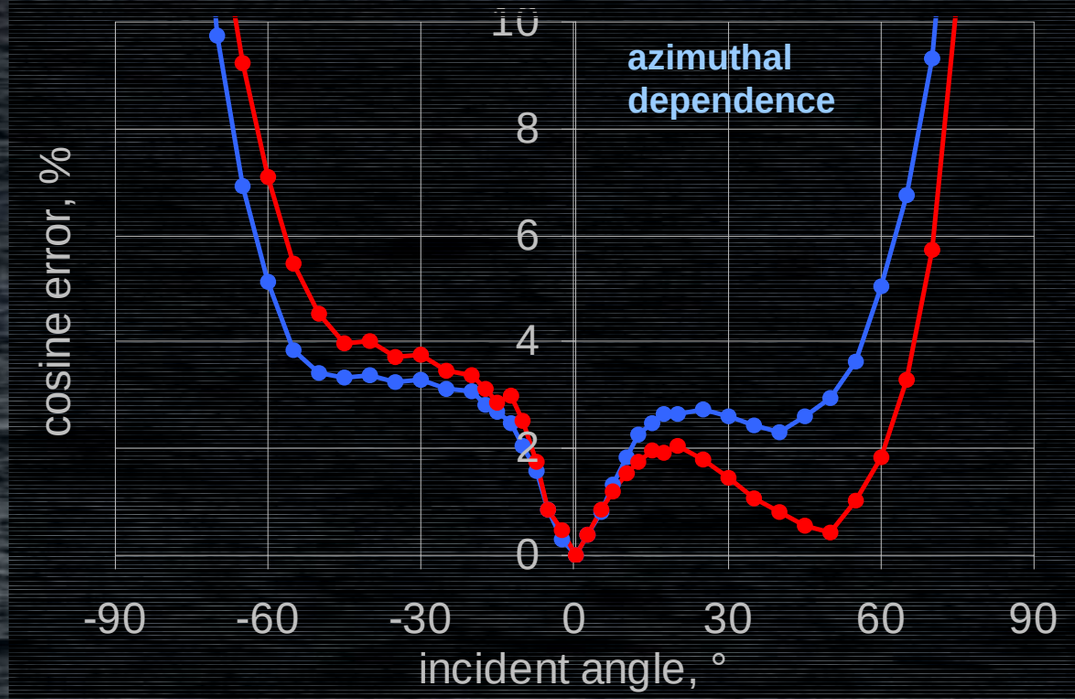
Immersion factors

Reviewers	none

Angular response

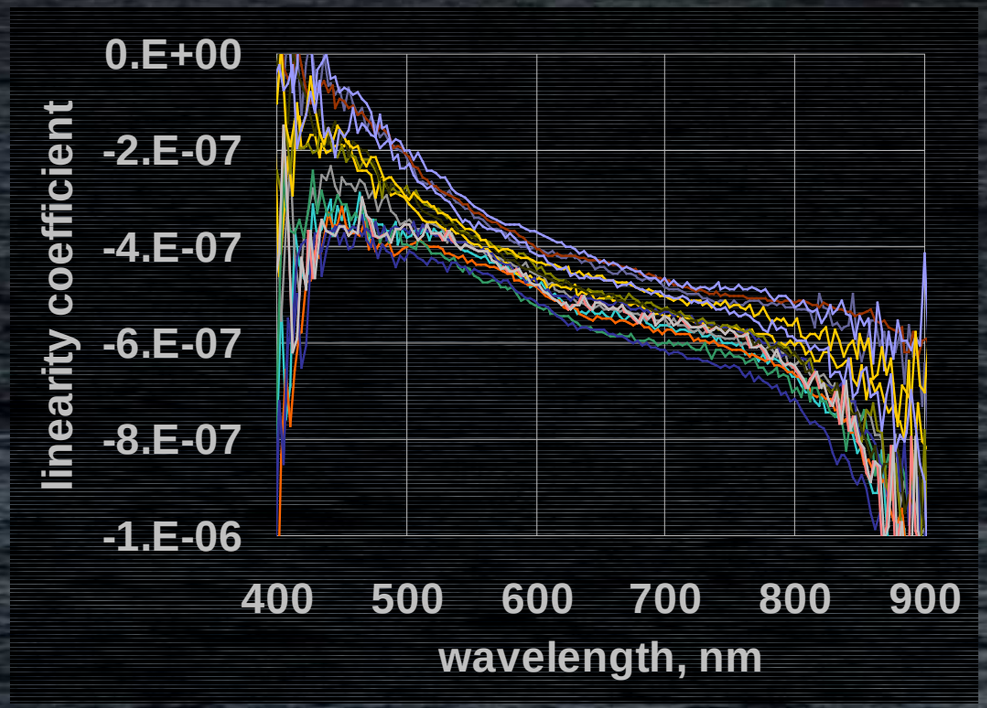
Reviewers reasons for angular dependence
L sensors on the log plot & OOB

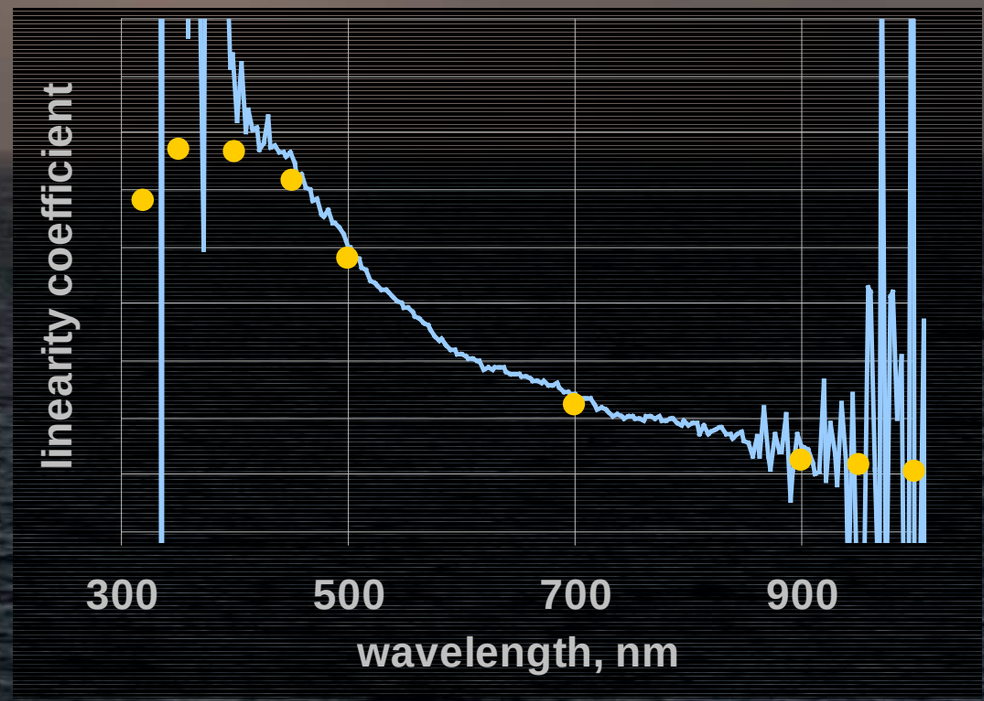




Radiometric non-linearity

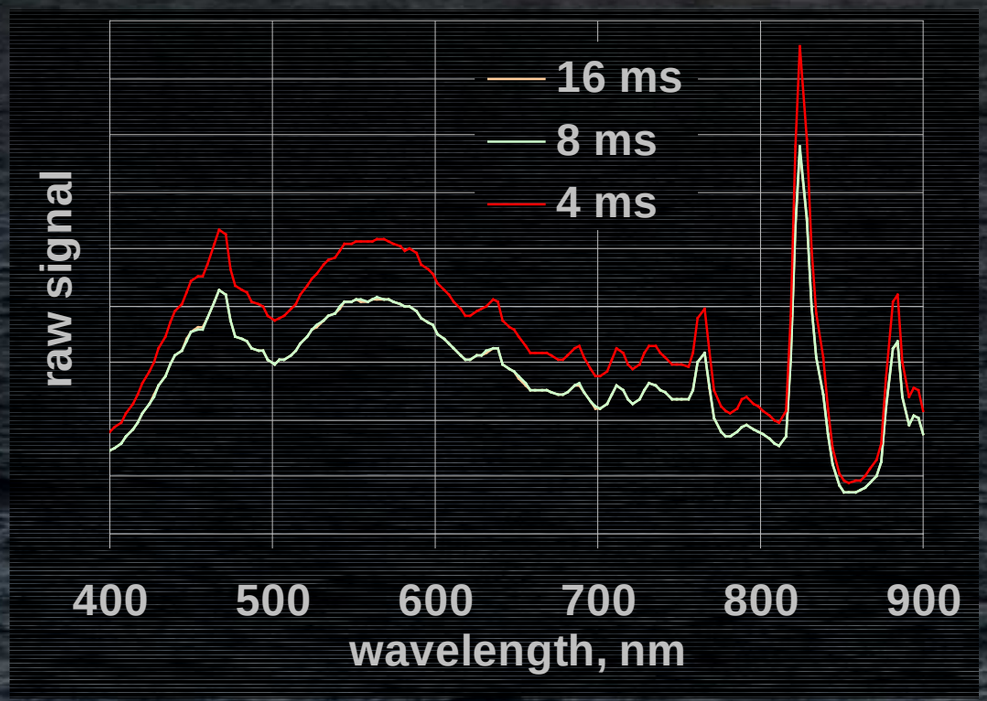
Reviewers why depends on wavelength?
proposing the varying source

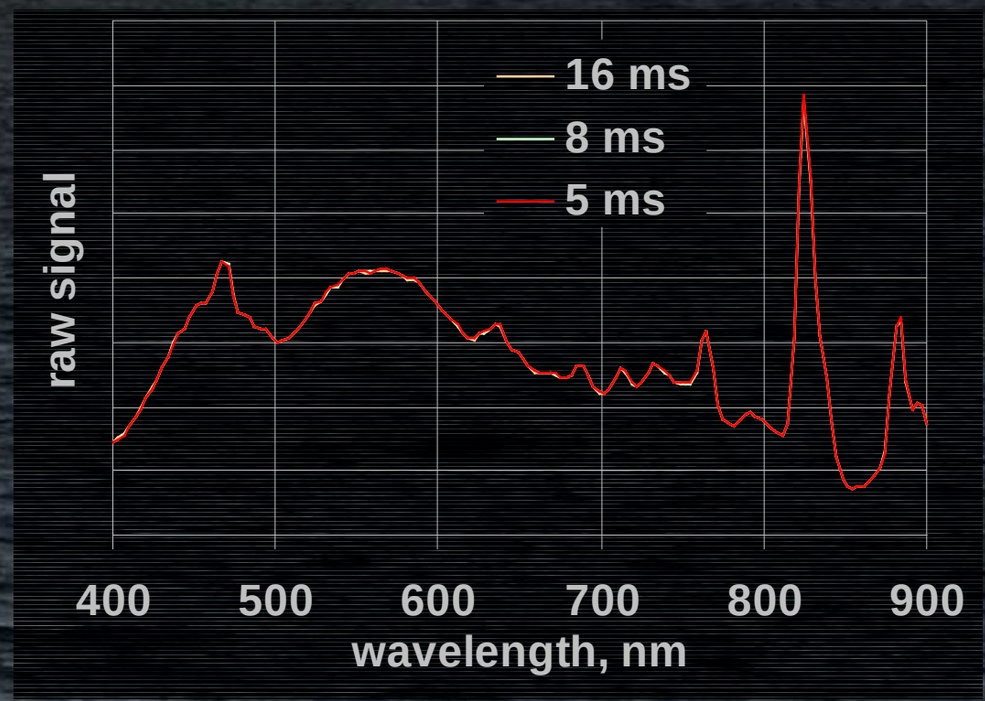




Accuracy of integration times

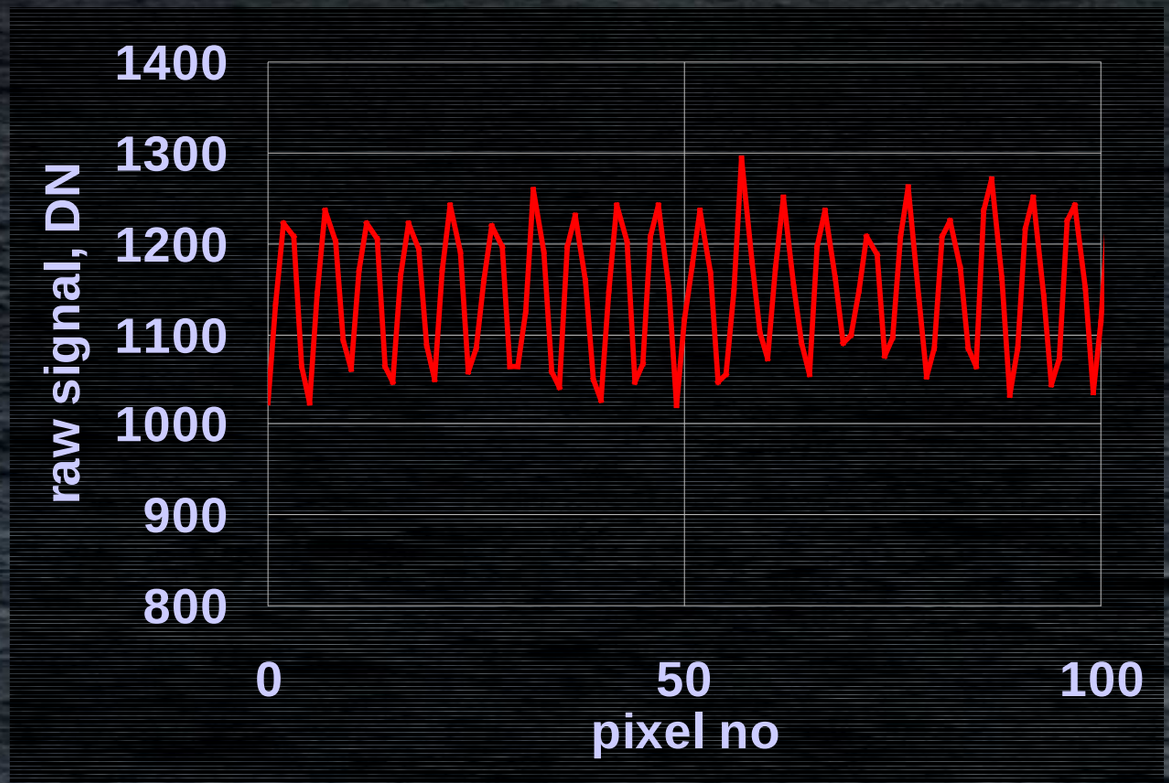
Reviewers integration time method

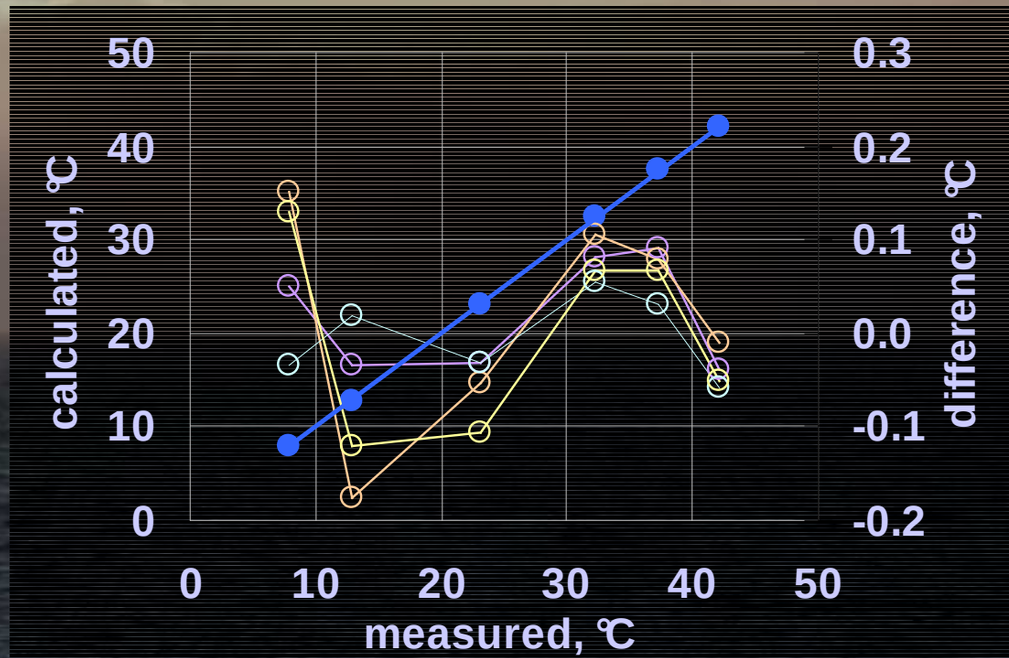


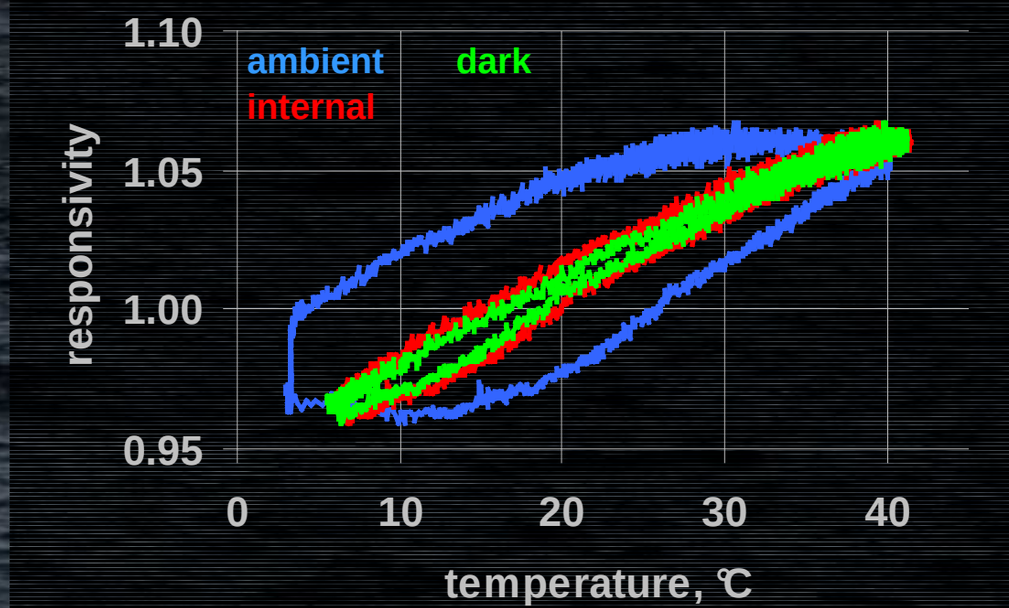


Dark signal

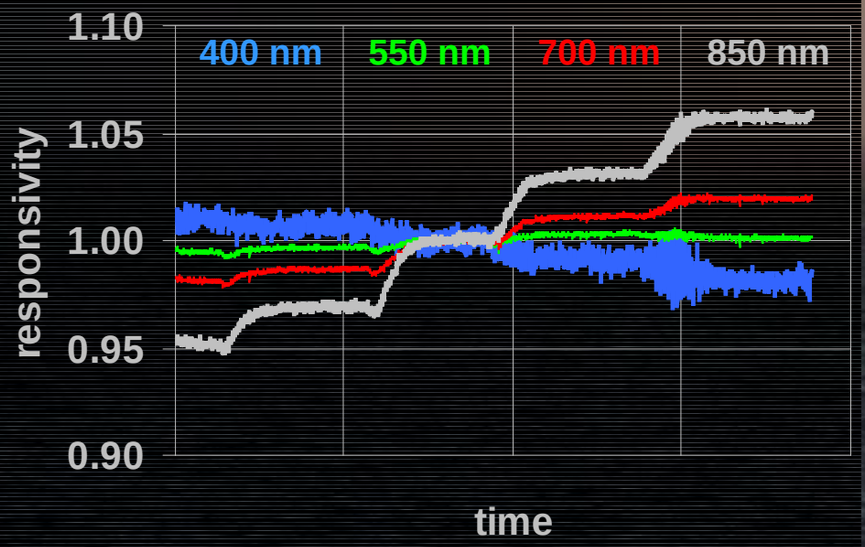
Reviewers modelling: why not for RAMSES?

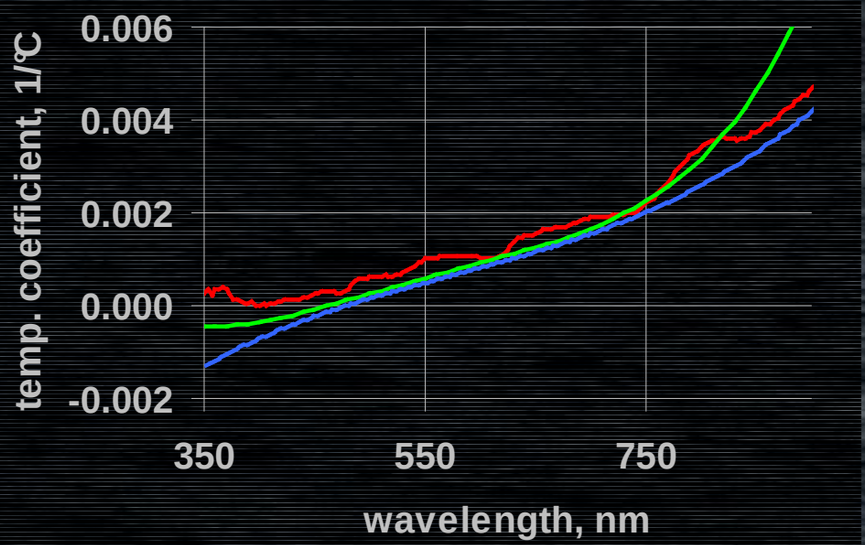


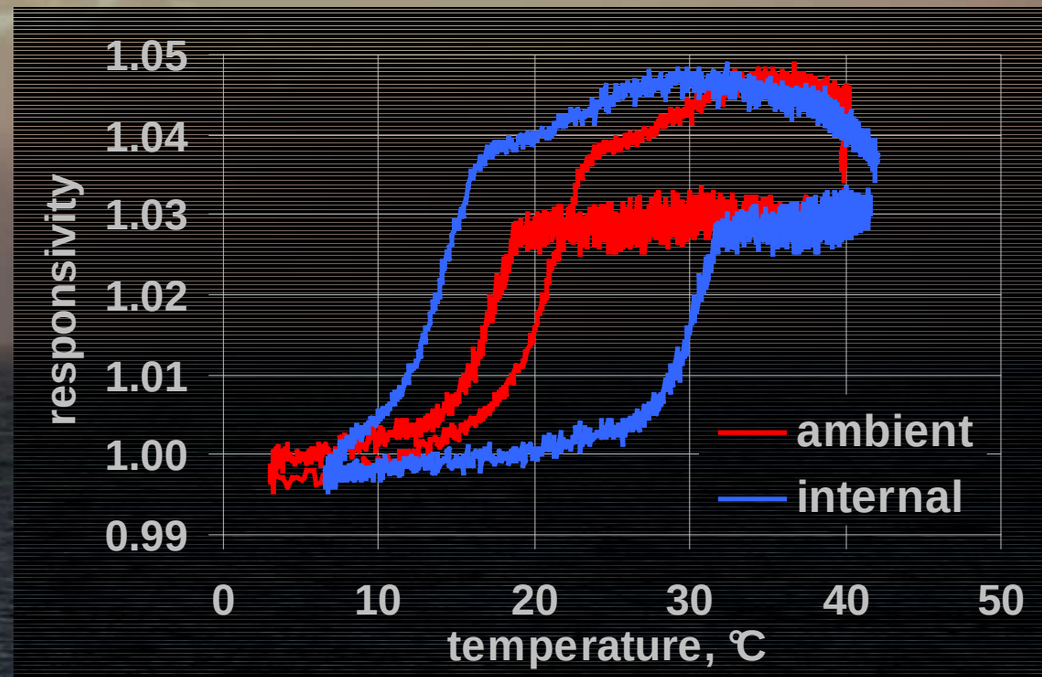


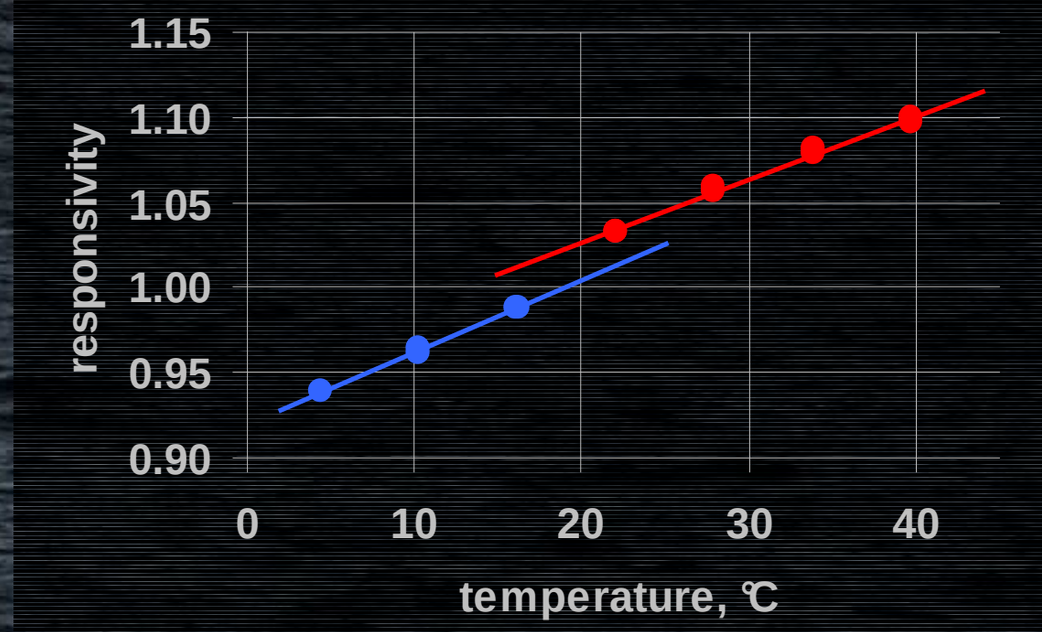


Thermal response



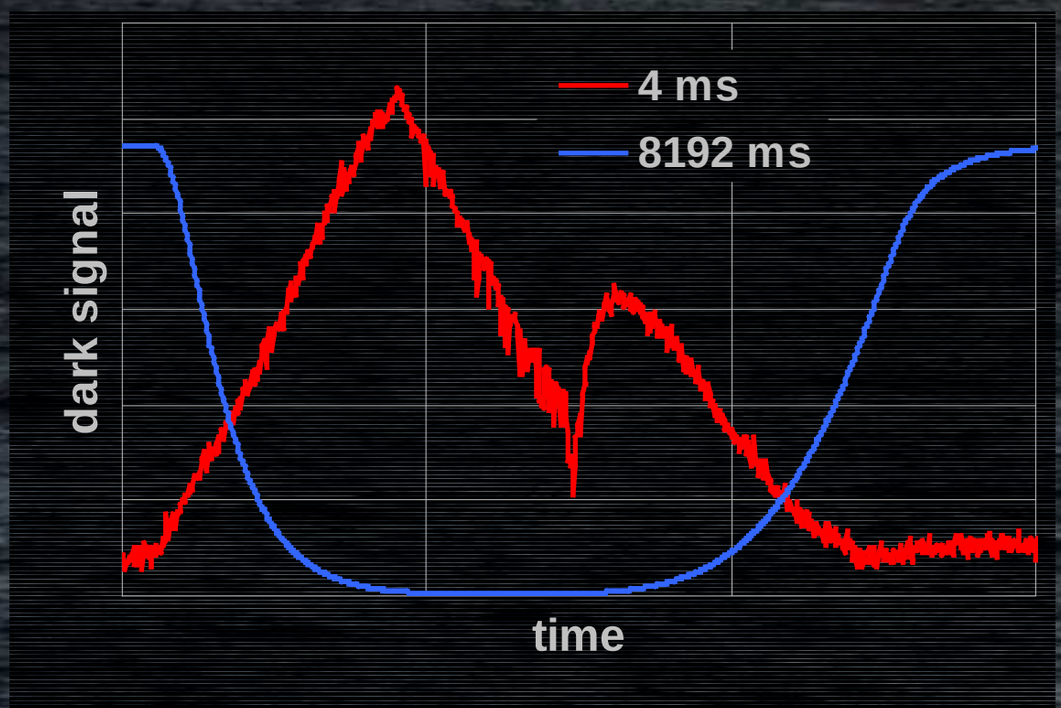


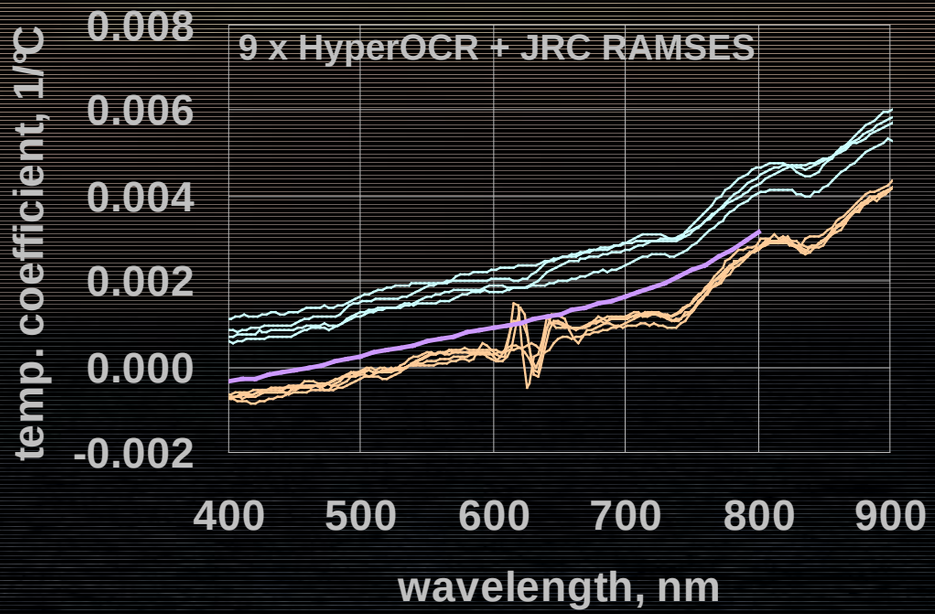


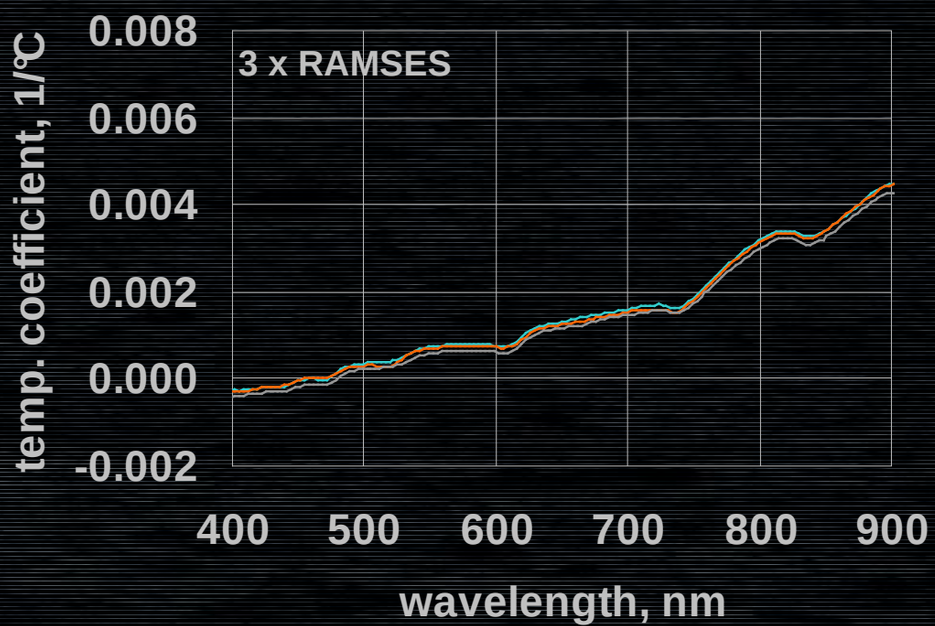


Thermal response

Reviewers applicability of dark signal opaque pixels vs. shutter

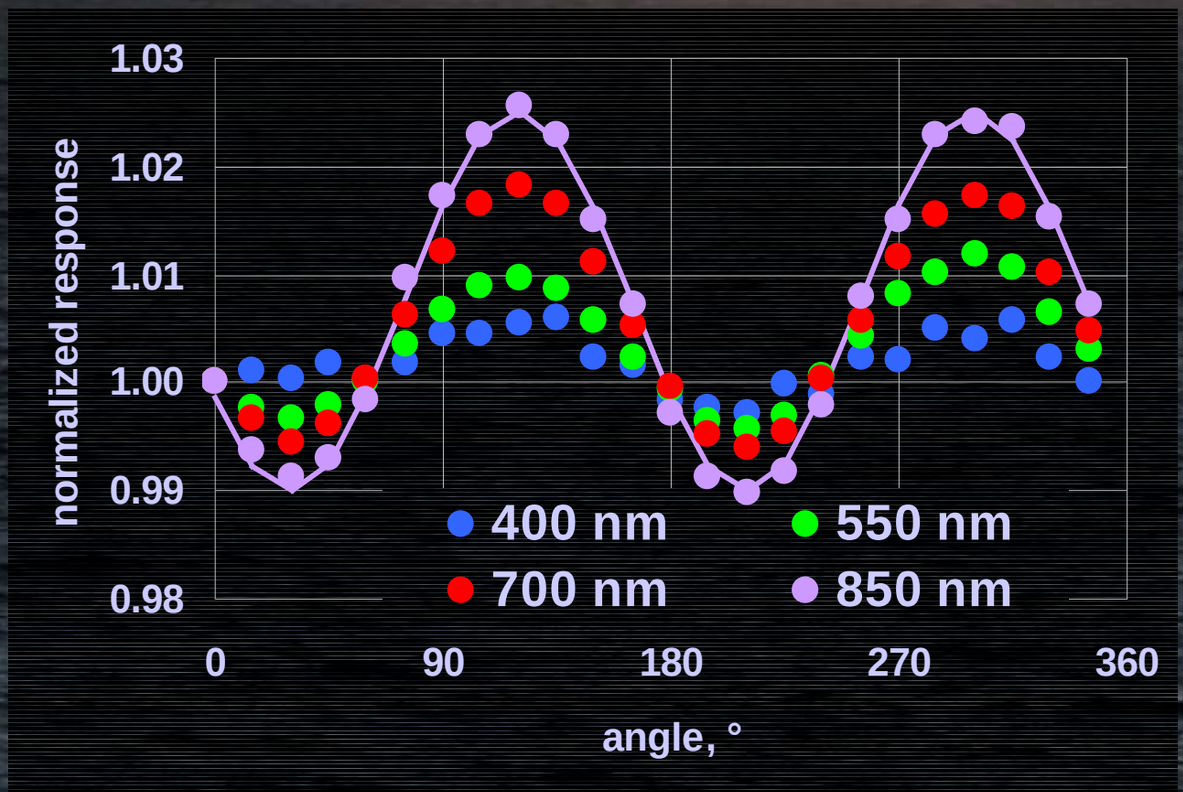


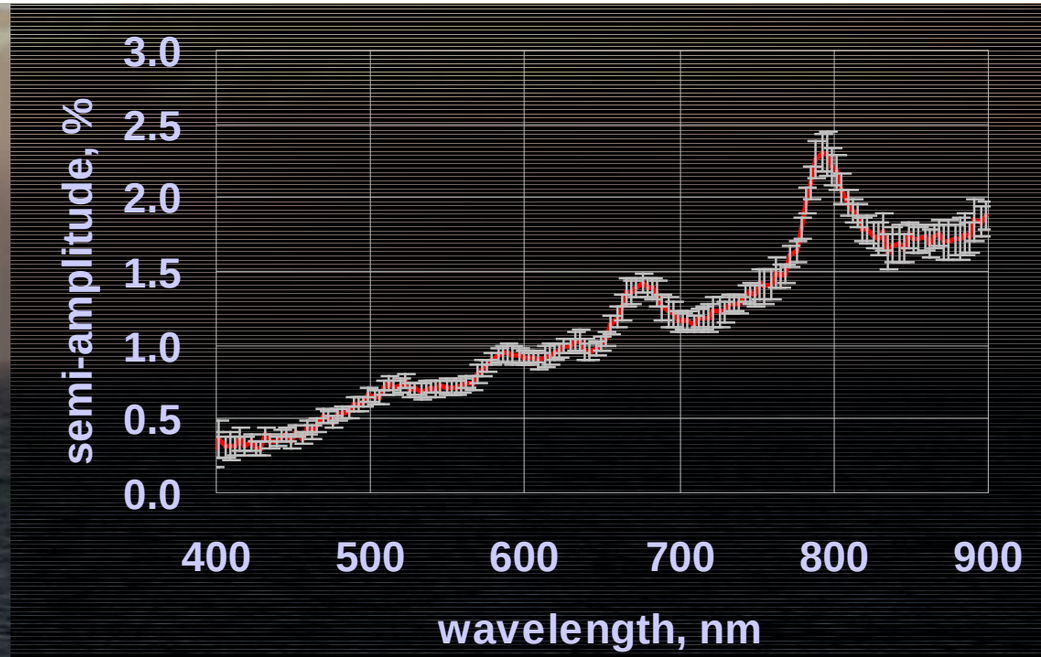


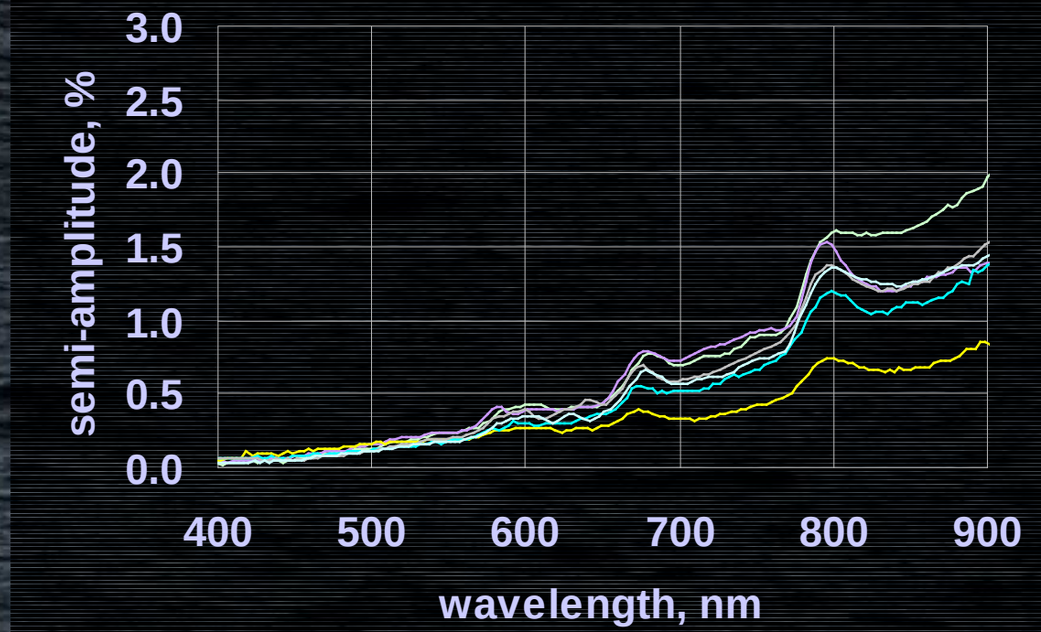


Polarization sensitivity

Reviewers more technical details

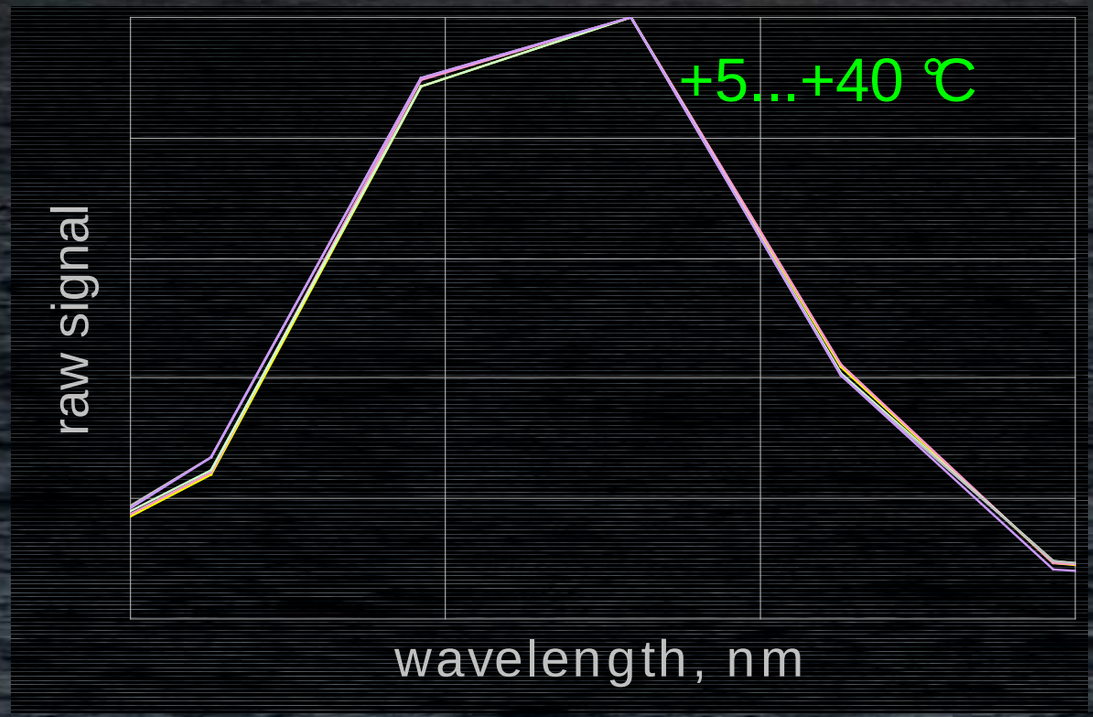


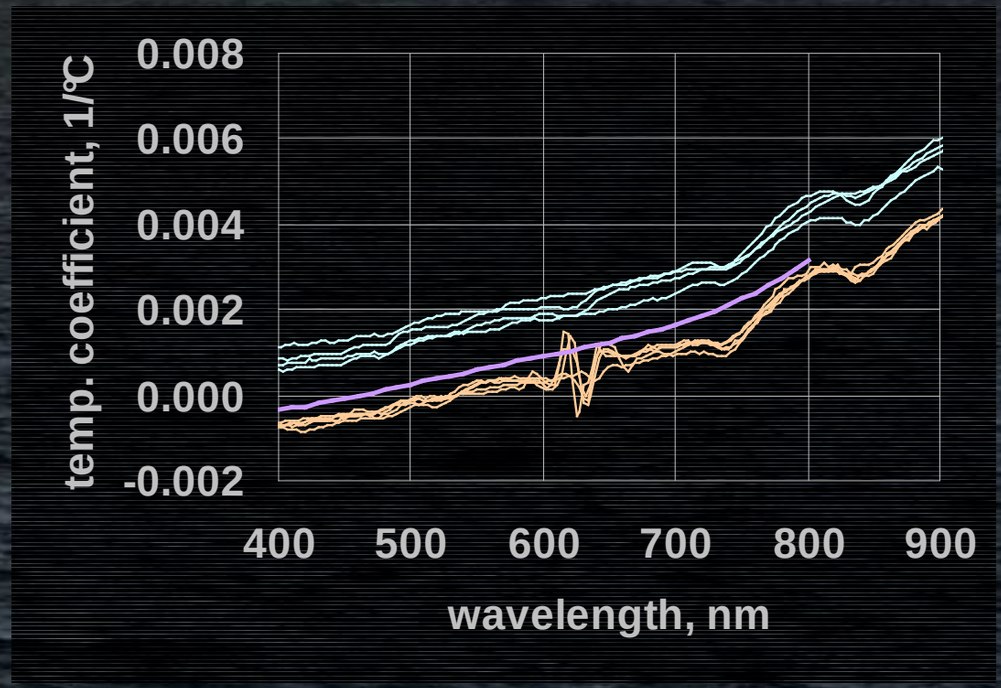




Wavelength scale

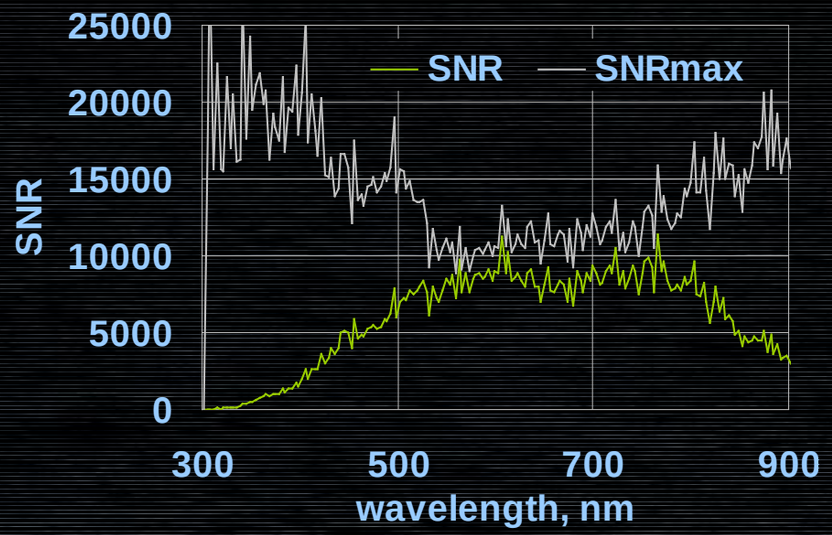
Reviewers temperature dependence with line source

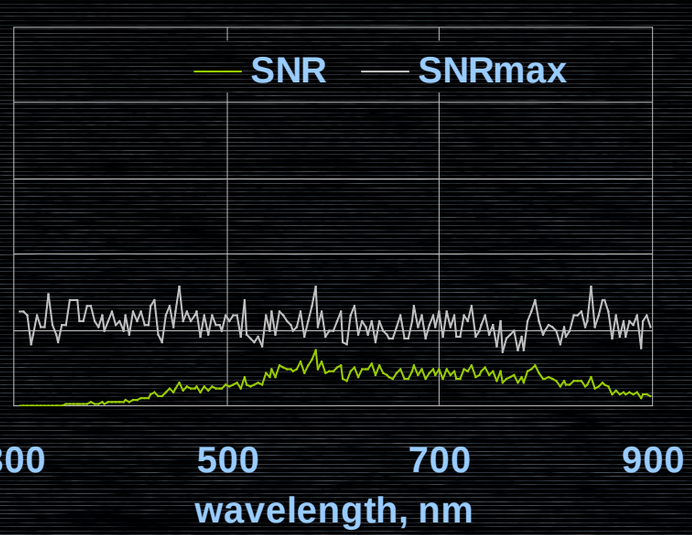


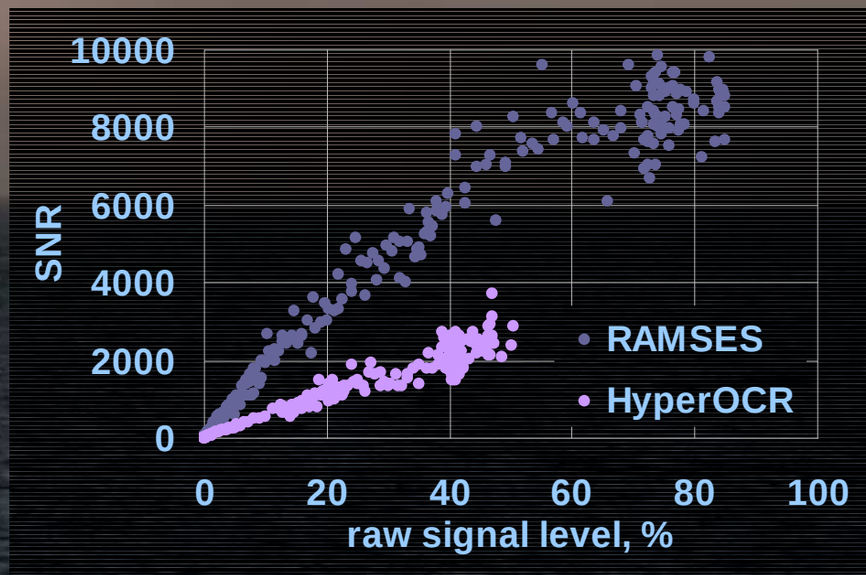


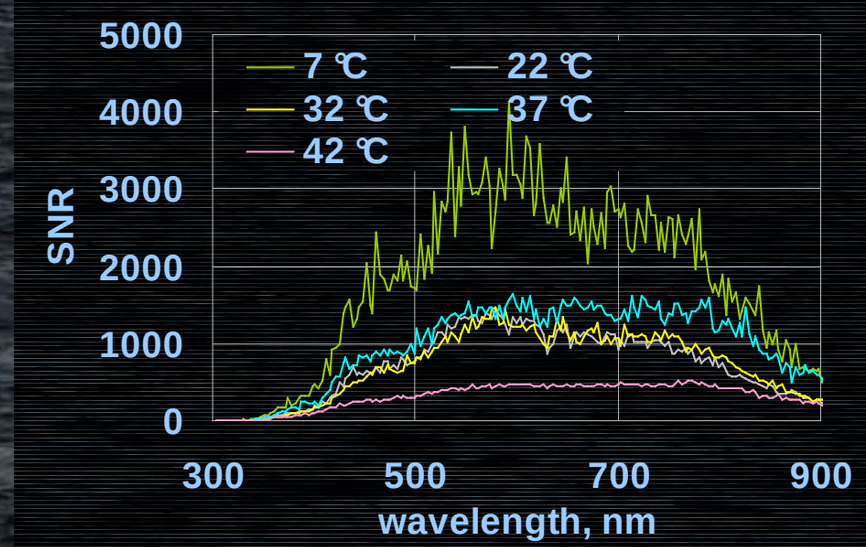
Signal-to-noise ratio

Reviewers differences between RAMSES and HyperOCR









General notes from reviewers

Deeper discussion on the self-heating mechanisms
On the measurement equations and application to the results
On the field conditions/practices vs. uncertainty
Key contributors to the uncertainty
Instrument selection guide for users
Technical parameters of the linear sensor
Missing acronyms
Figure captions
Missing references

Conclusions

The instrument characterization results cannot be directly converted into the uncertainty of the OC products as the measurement conditions and properties of the measurand affect the result

Most contributing components and individual/class behaviour need comprehensive calculations

The number and the motivation of the labs regarding the opto-electronical characterizations are insufficient for smooth intercomparisons

Cooperation with manufacturers to improve the instrument parameters

The reference radiometer still needed