VIRTIS archive review

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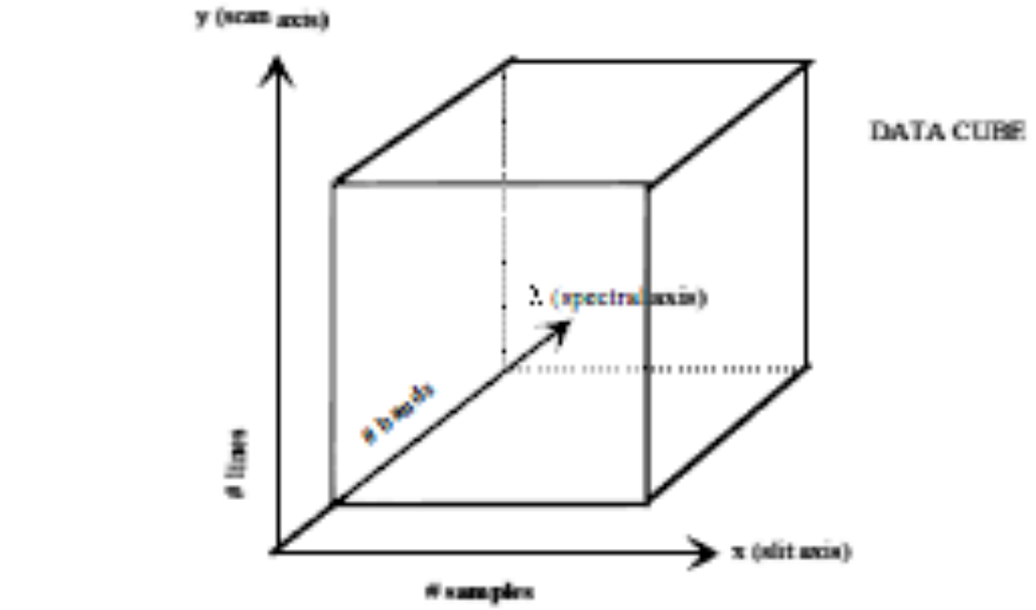
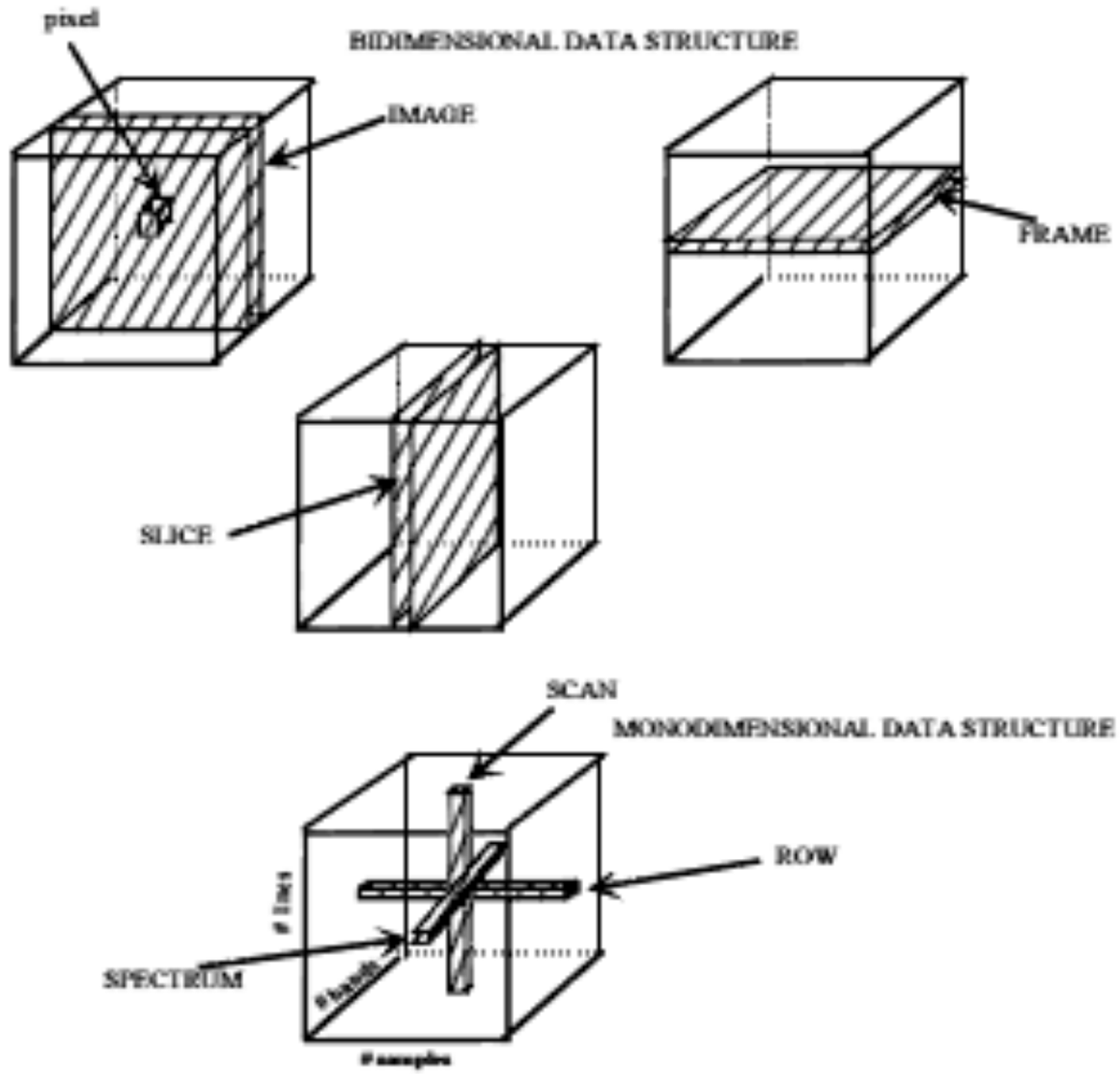
VIRTIS

- Imaging spectrometer
- datacubes



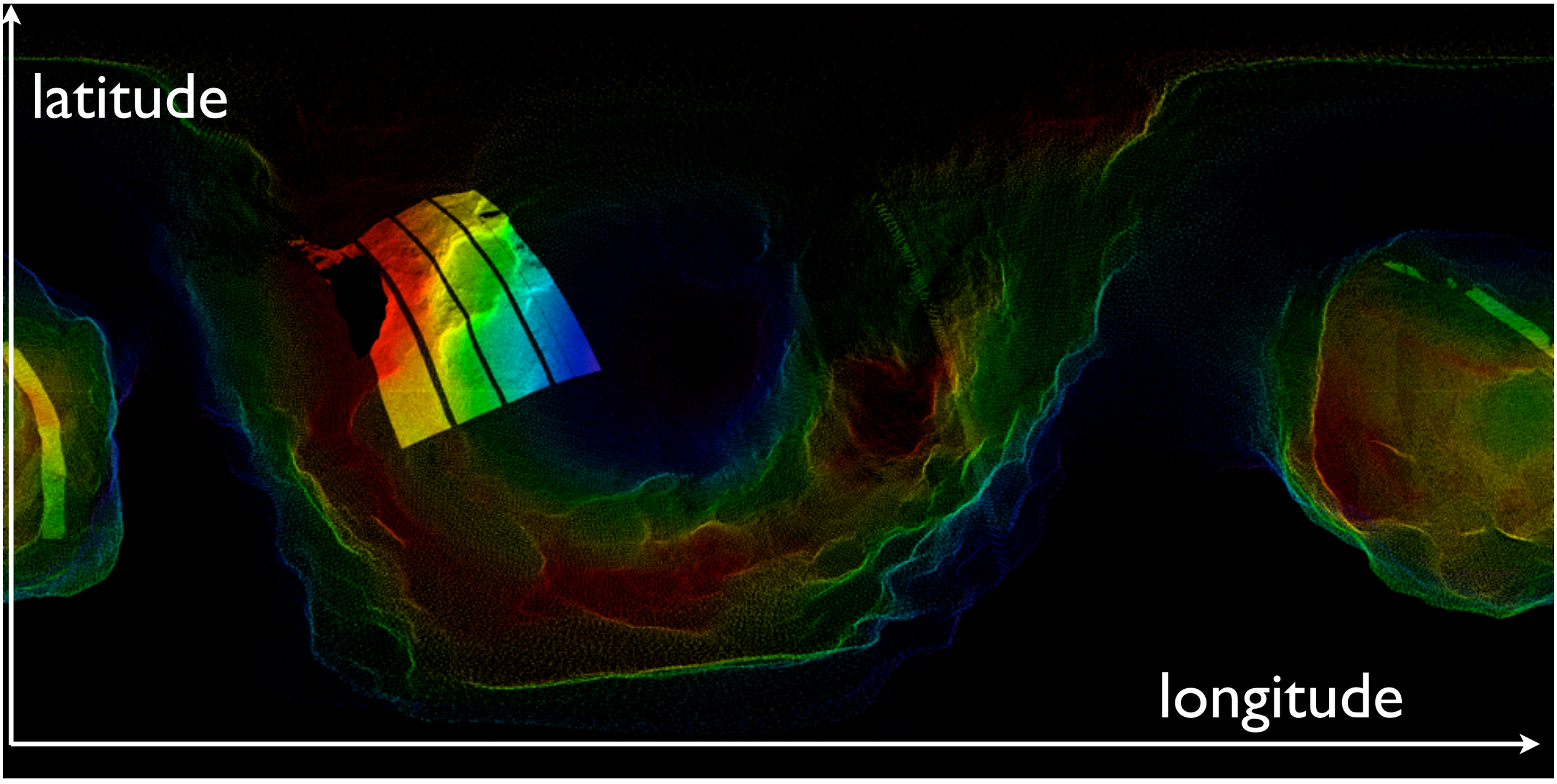


Dataset

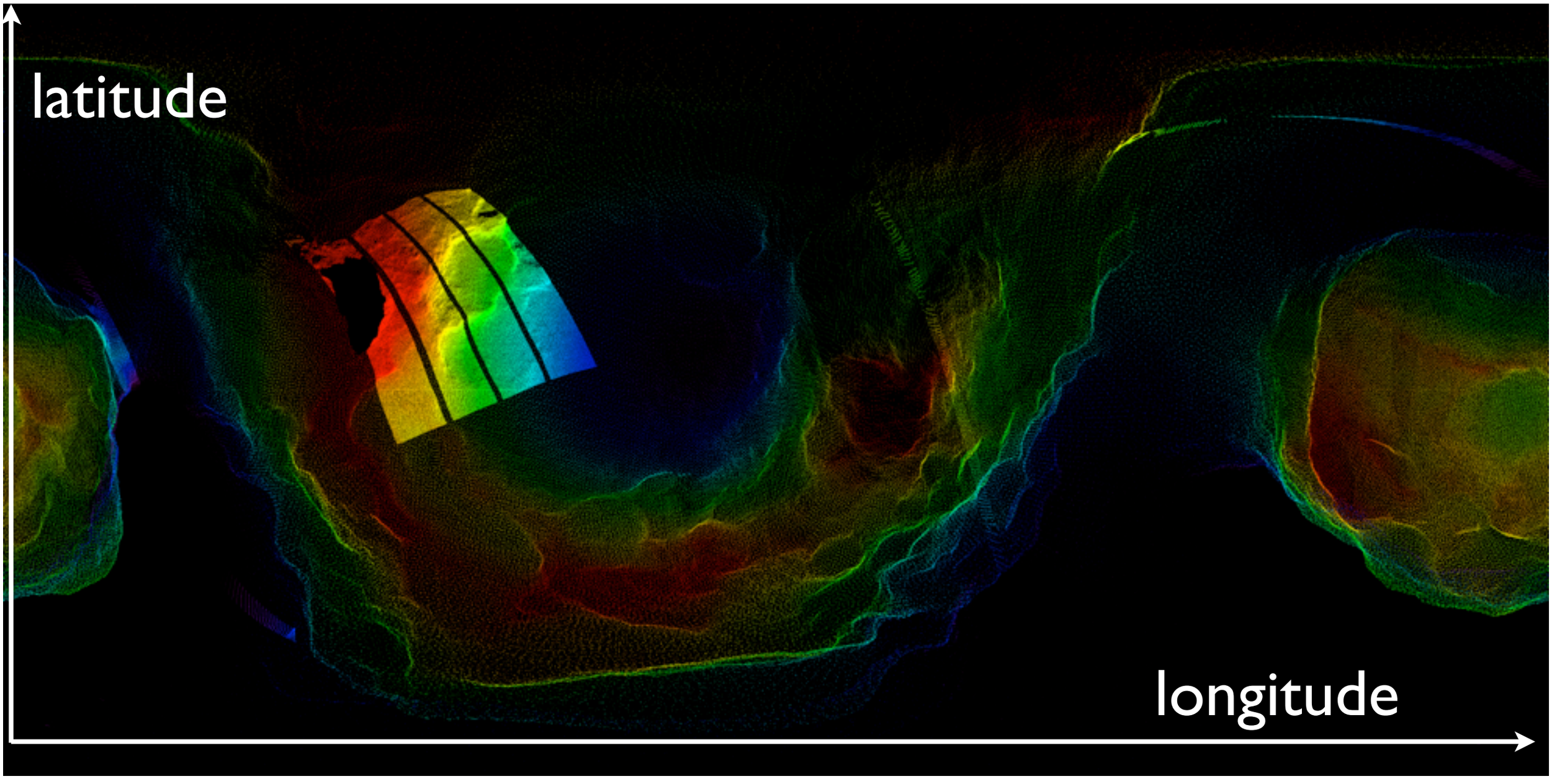
- sequence : MTP13 and MTP24, Level 3
  - RO-C-VIRTIS-3-ESC1-MTP013-V3.0 (~6 Gb)
    - 51 cubes M VIS, 51 cubes M IR, 27 cubes H
  - RO-C-VIRTIS-3-ESC4-MTP024-V3.0 (~24 Gb)
    - 328 cubes M VIS, 0 cubes M IR, 29 cubes H

Exercise 1 : Geometry

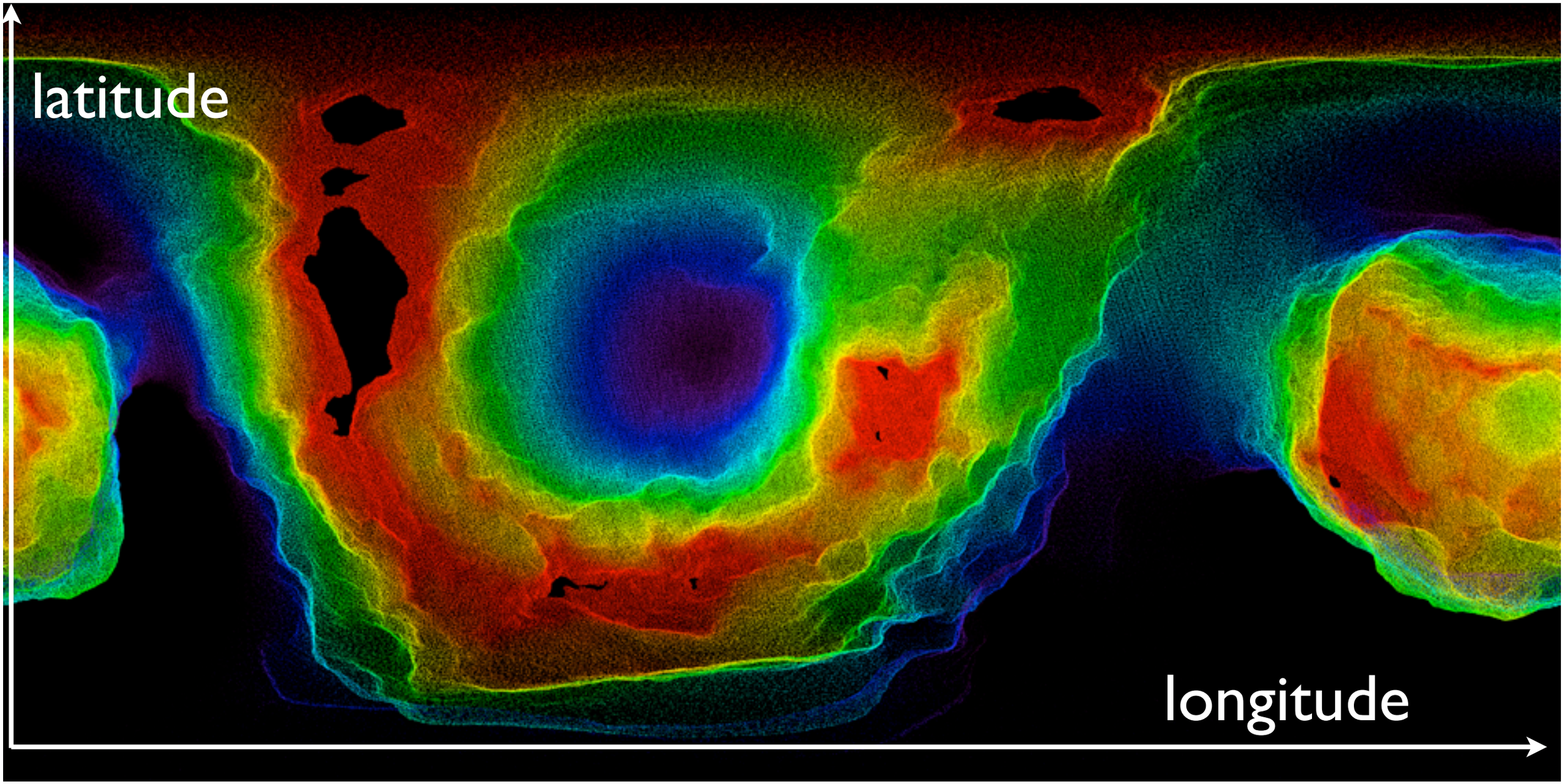
- Check the geometry
  - projection of 67P altitude for all pixel in a latitude longitude map



VIRTIS_M_VIS, altitude of 67P, MTP13

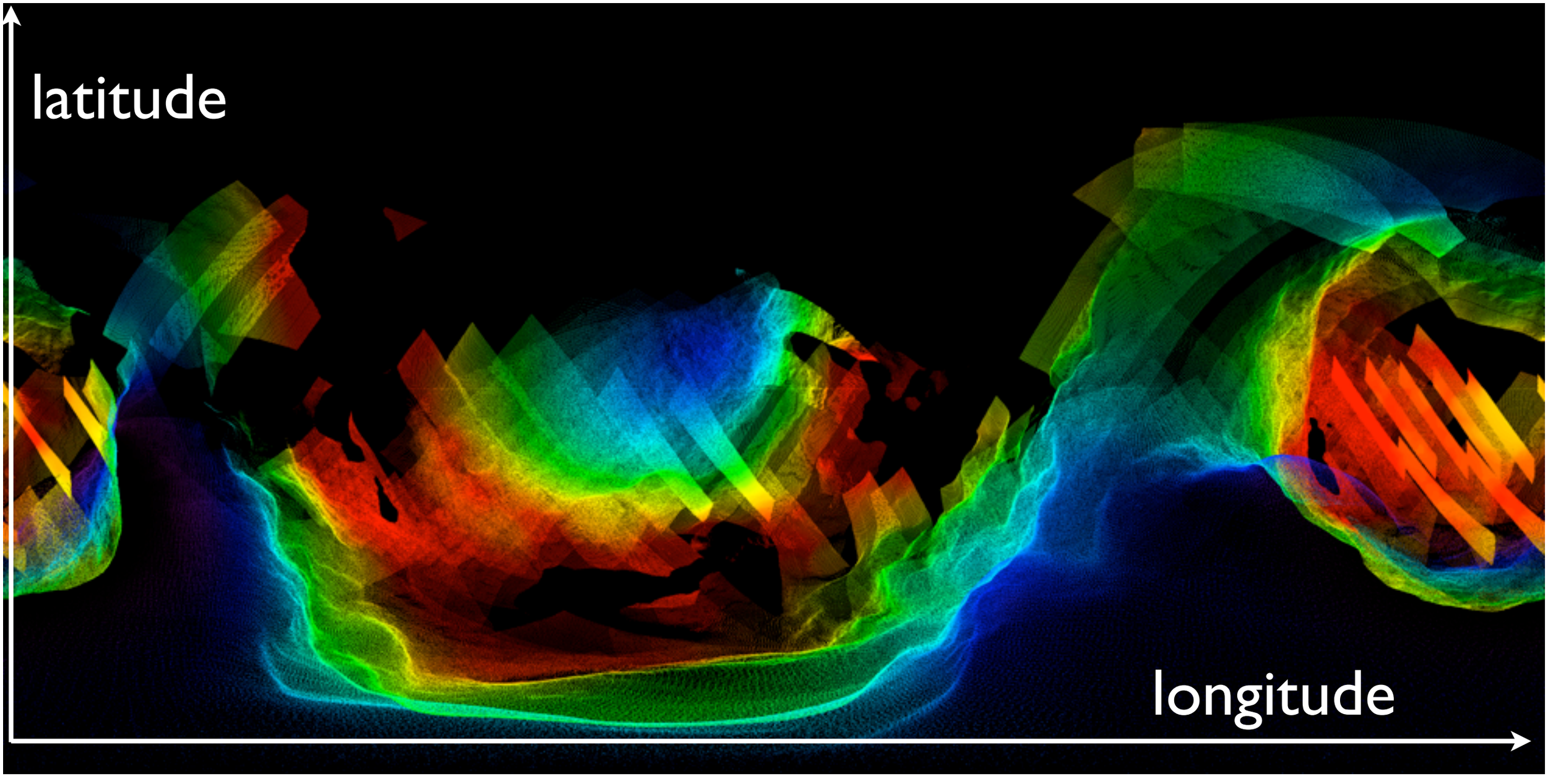


VIRTIS_M_IR, altitude of 67P, MTP13



VIRTIS_M_VIS, altitude of 67P, MTP24

PREVIOUS REVIEW



VIRTIS_M_VIS, altitude of 67P, MTP10

Exercise 1 : Geometry

- Check the geometry
  - projection of 67P altitude for all pixel in a latitude longitude map

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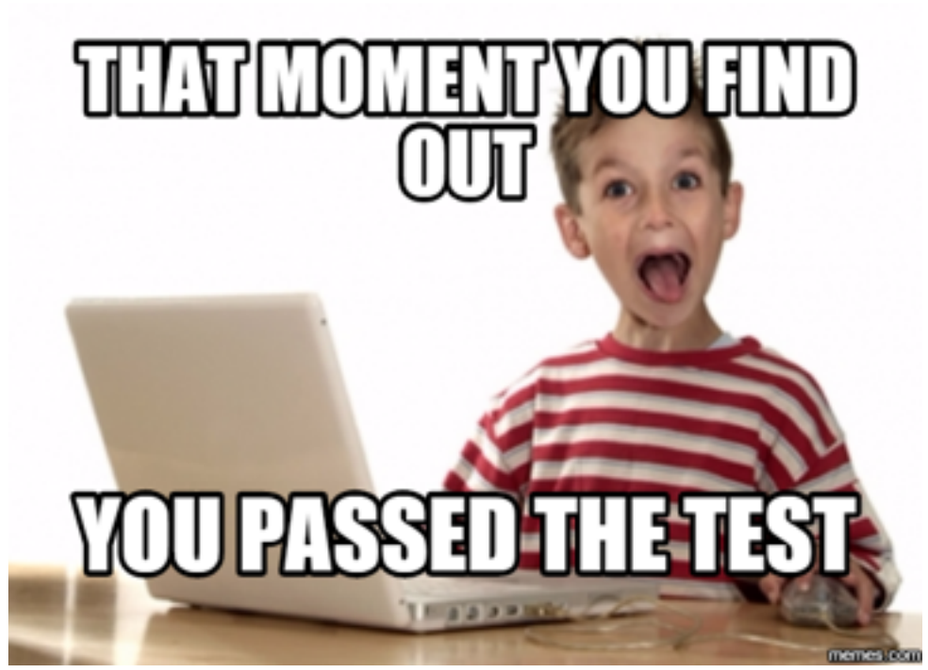
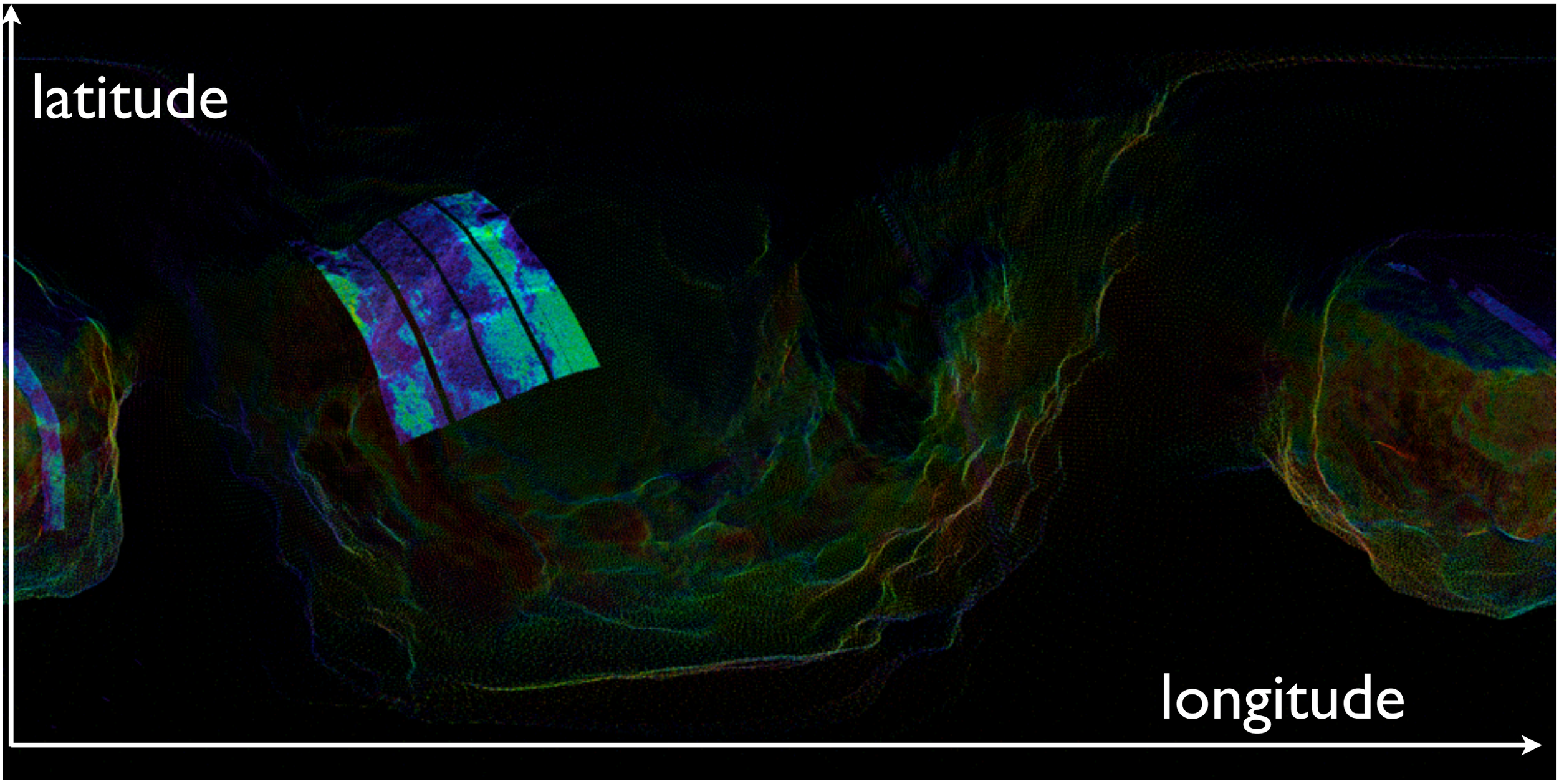
- Check the geometry
  - projection of 67P altitude for all pixel in a latitude longitude map

- Spatial coherence
- Temporal coherence

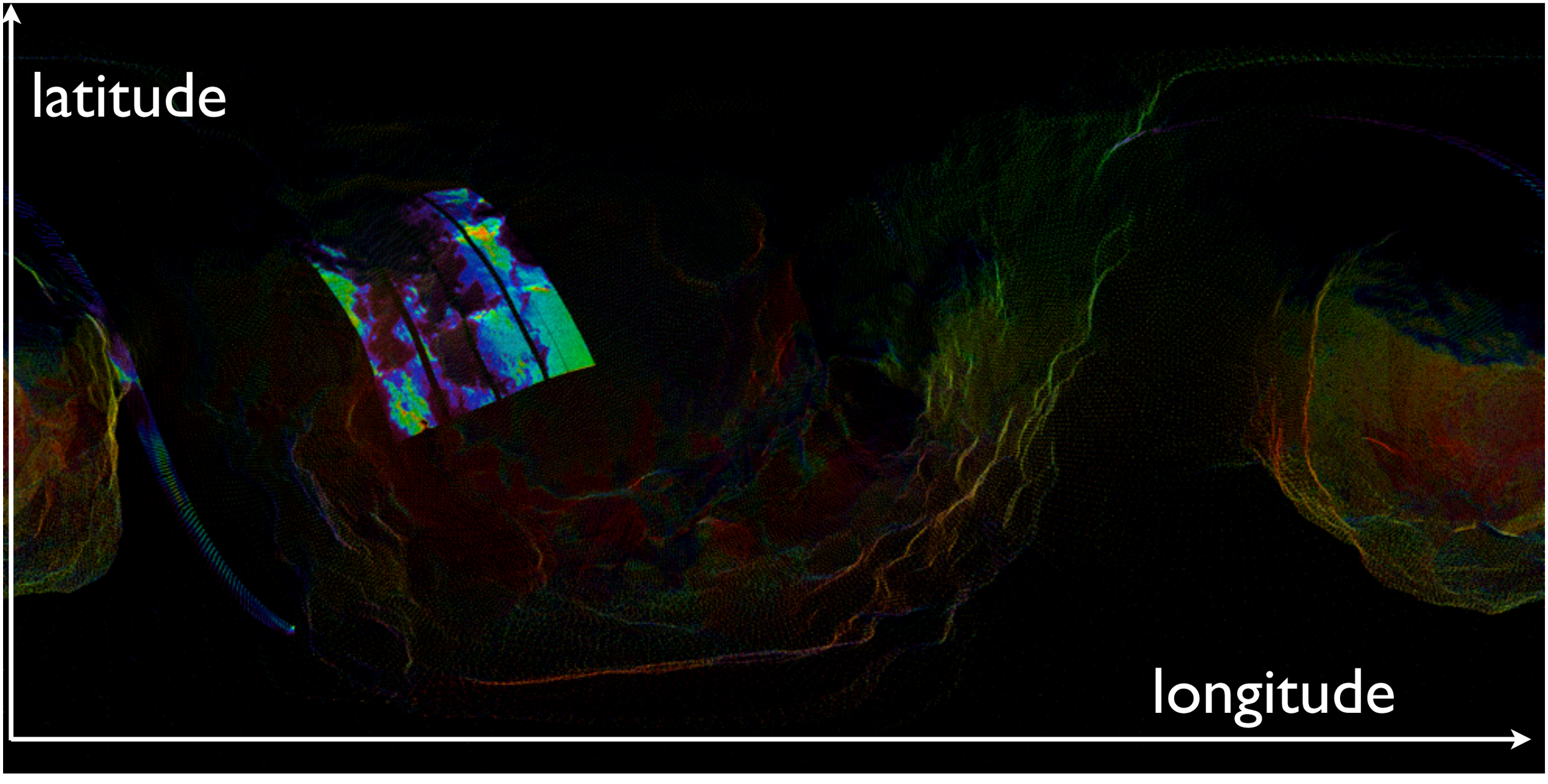


Exercise II : Photometry

- Check the cross calibration and mapping
  - VIRTIS_M_VIS vs VIRTIS_M_IR
  - 1 microns



VIRTIS_M_VIS @1microns, MTP13



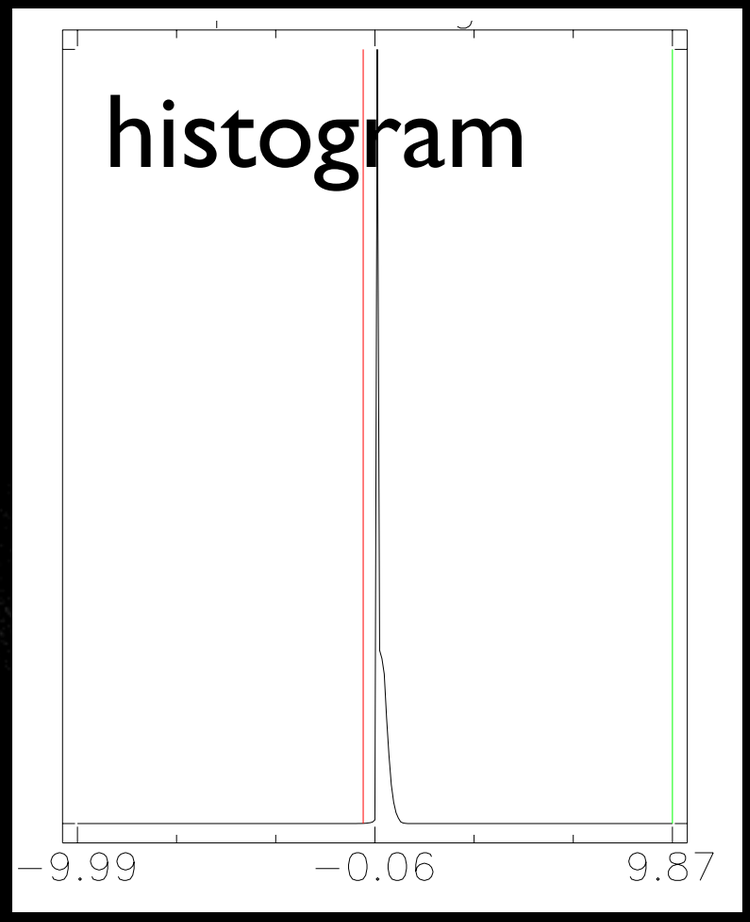
VIRTIS_M_IR @1microns, MTP13

VIRTIS_M_VIS @1microns, MTP24

latitude

788 pixel with values >10 or <-10. Mainly are aberrant values up to plus or minus 10^35

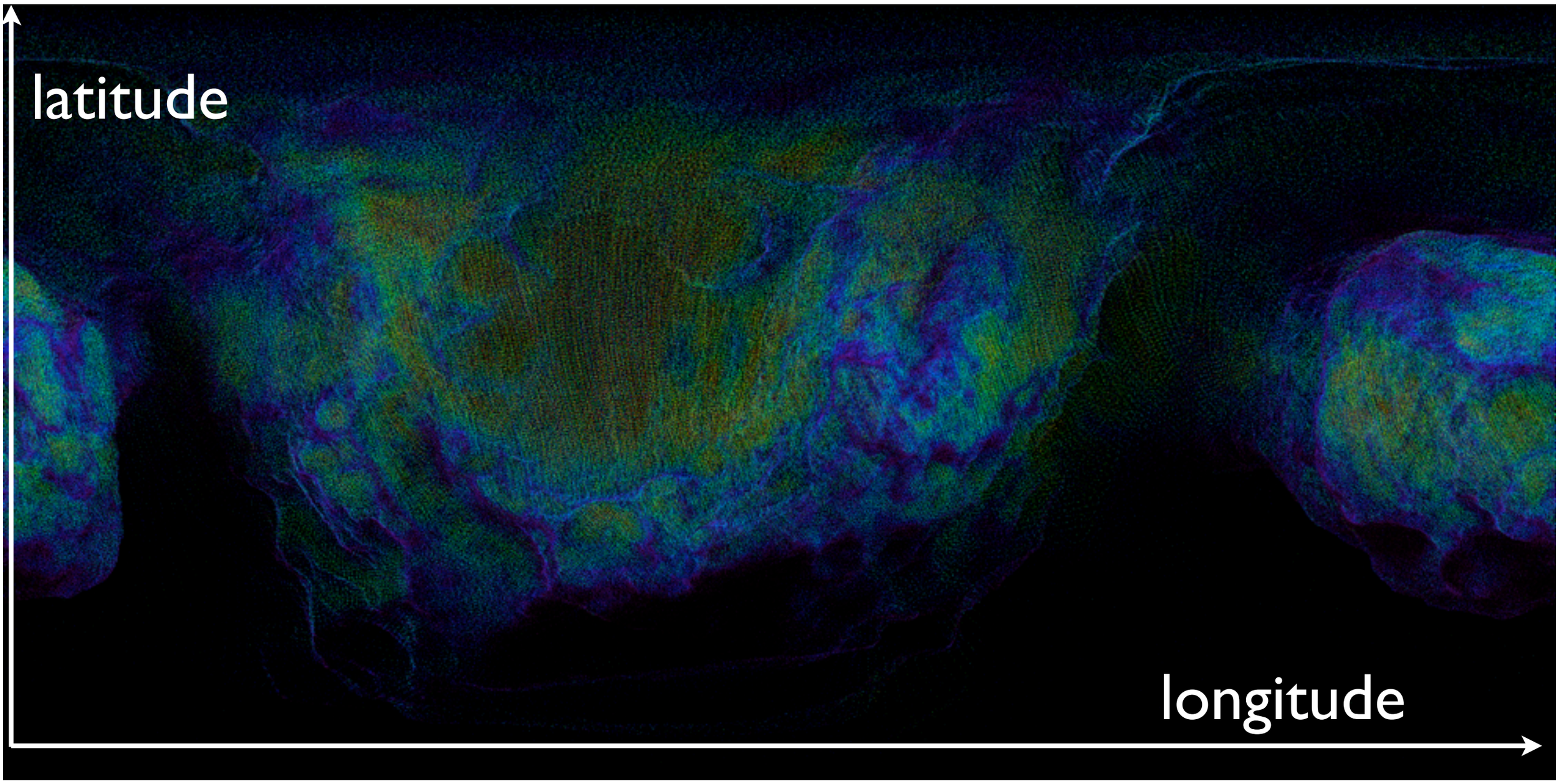
From -999 to 1000 in the documentation



longitude

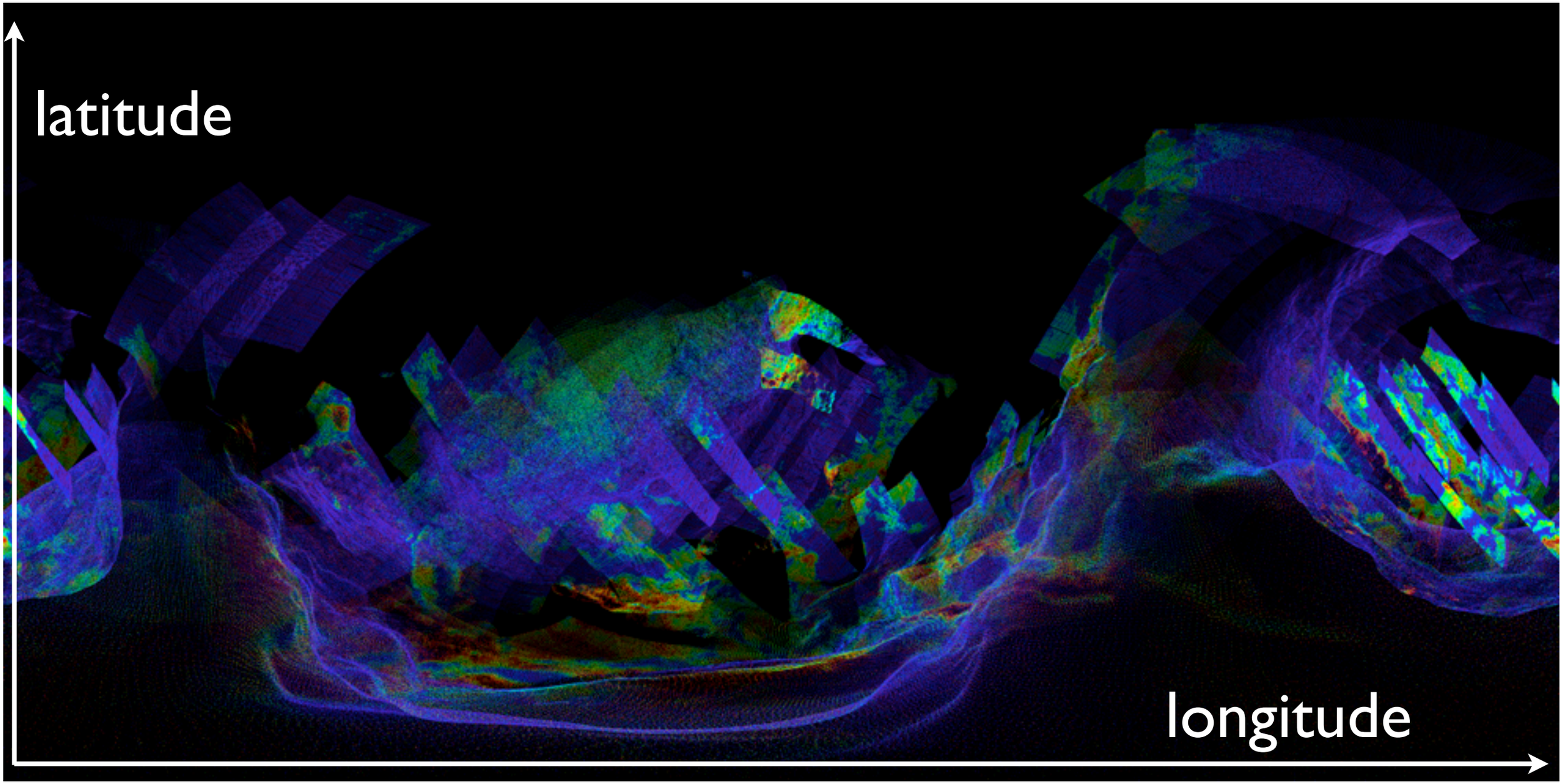
VIRTIS_M_VIS @1microns, MTP24

FILTERED



VIRTIS_M_VIS @1microns, MTP24

PREVIOUS REVIEW



VIRTIS_M_VIS @1microns, MTP10

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  - @ 1 microns

- Spatial coherence
- RID: filtering incoherent values

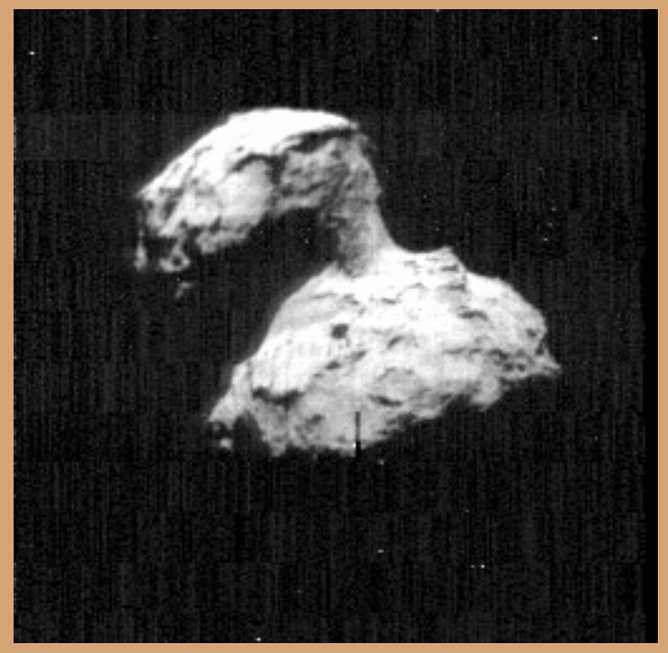
Exercise III : Spectroscopy

- Check the cross calibration spectroscopy and reflectance
- VIRTIS_M_VIS vs VIRTIS_M_IR
- VIRTIS_H
- reflectance unit I/F

Mapping

@1micron

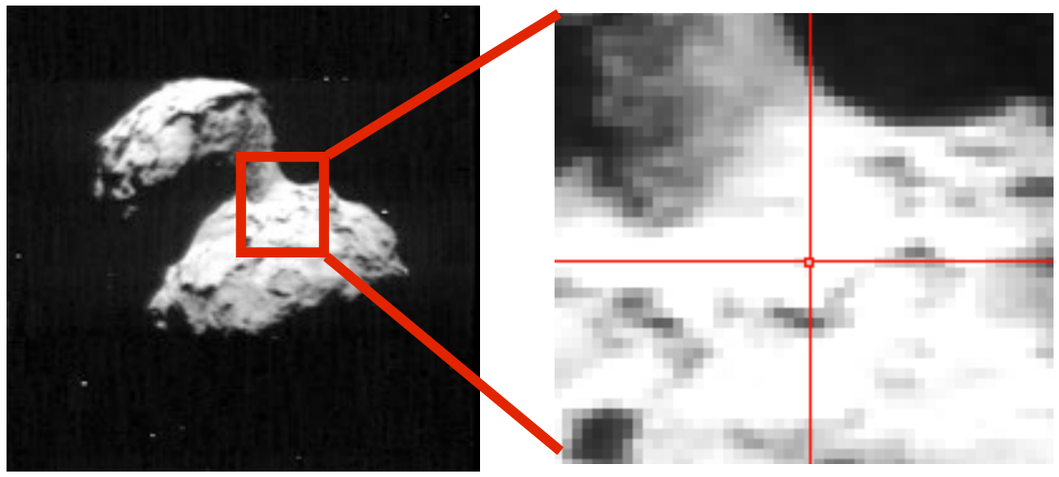
VIRTIS_M_VIS
VI_0038373 1111.CAL



@1micron

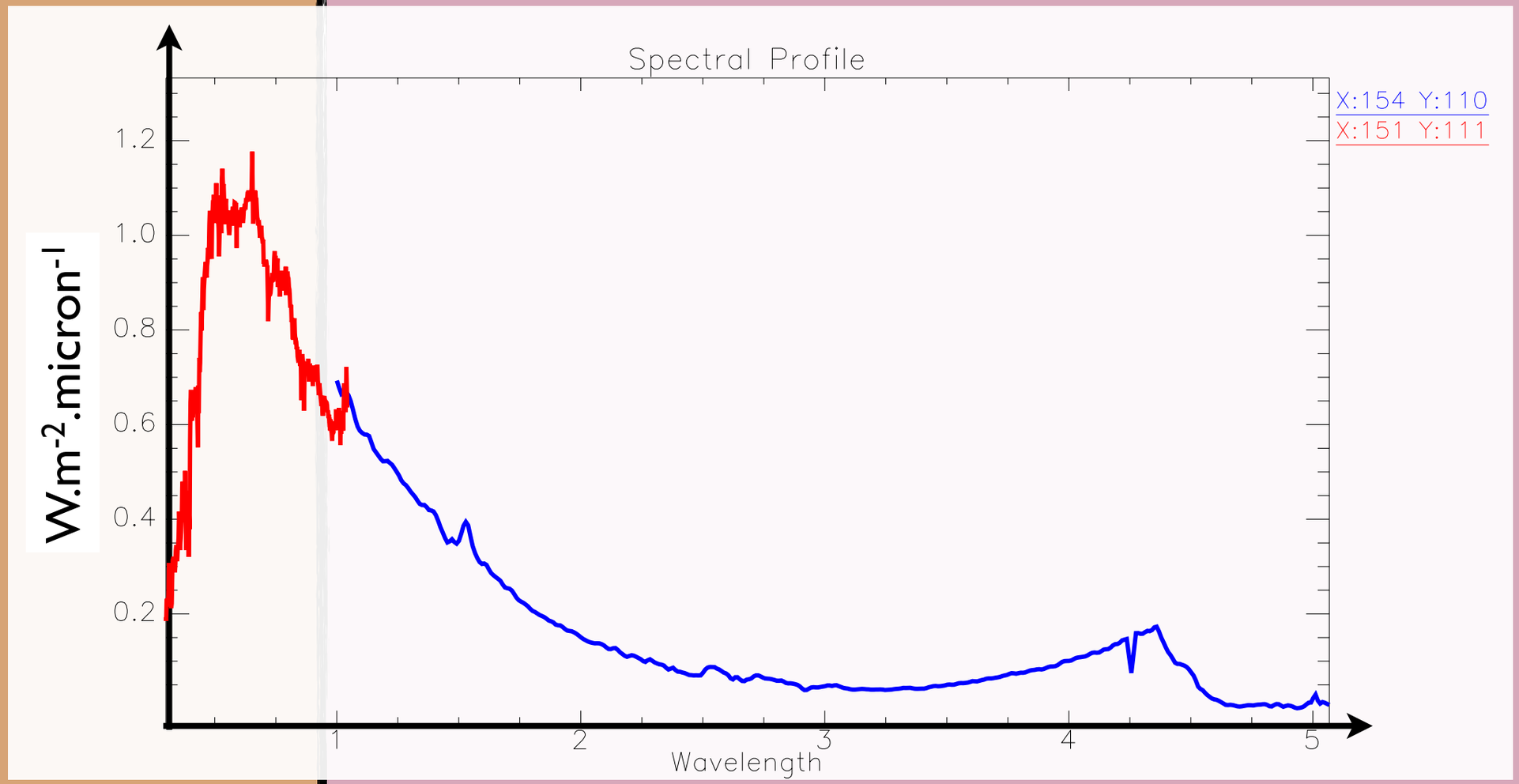
VIRTIS_M_IR
II_0038373 1109.CAL

Flux Spectra

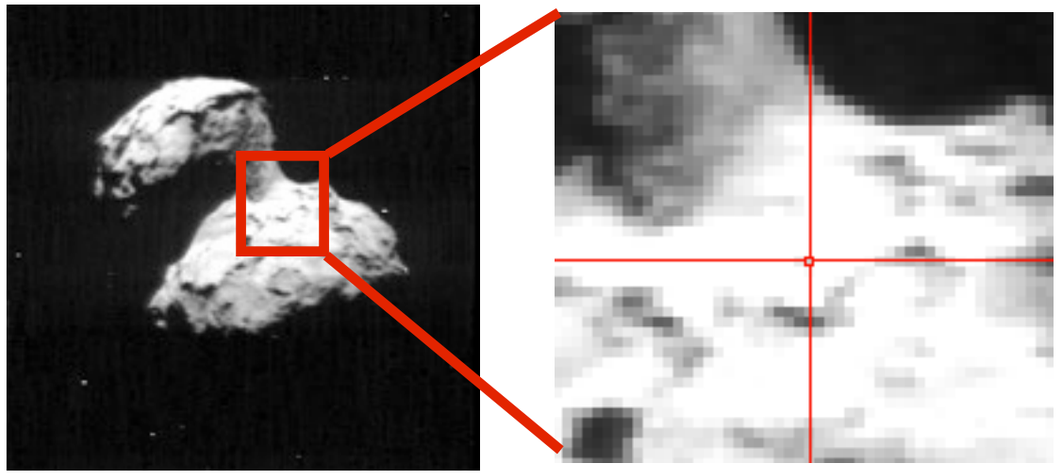


VIRTIS_M_VIS
VI_00383731111.CAL

VIRTIS_M_IR
II_00383731109.CAL

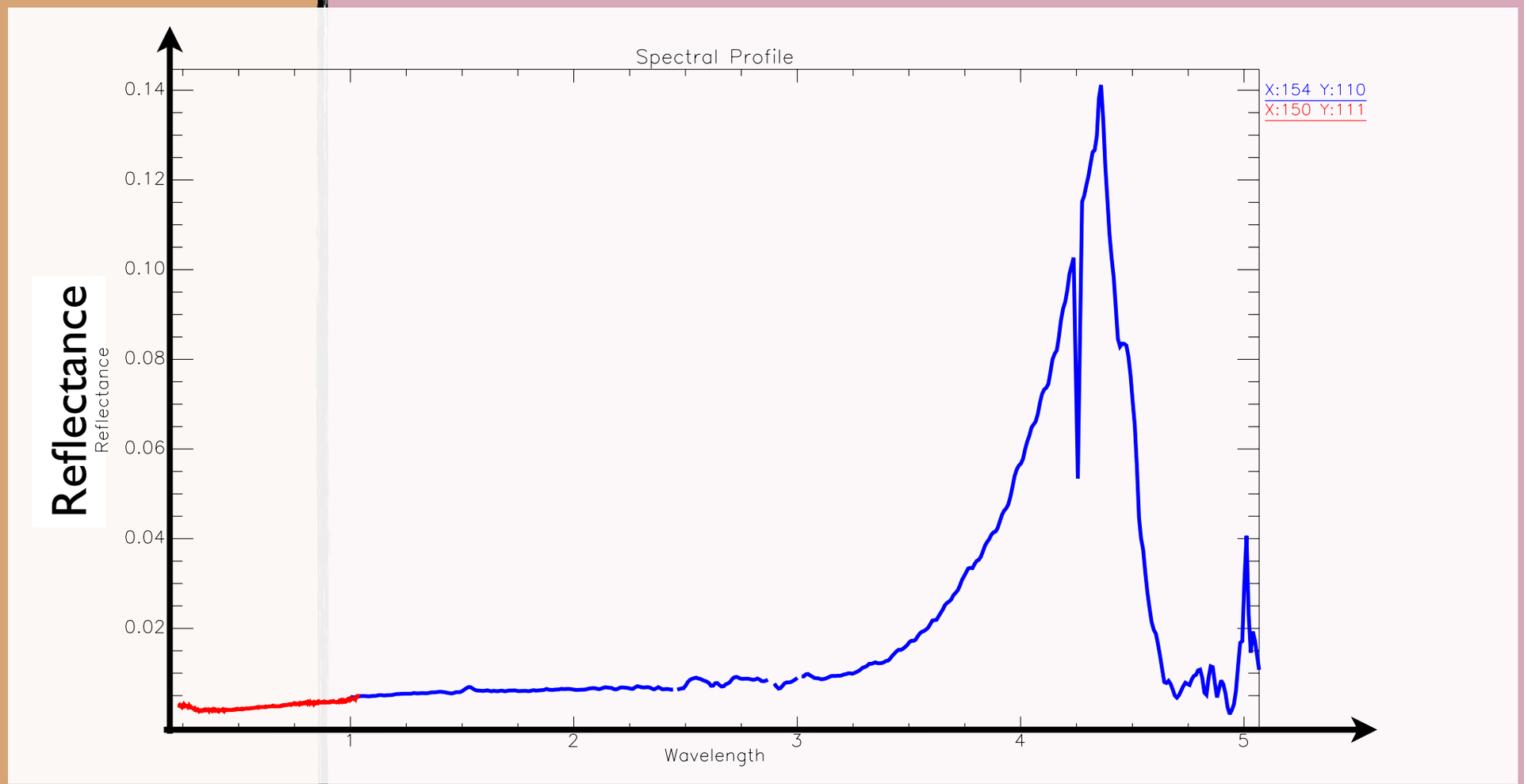


Reflectance Spectra

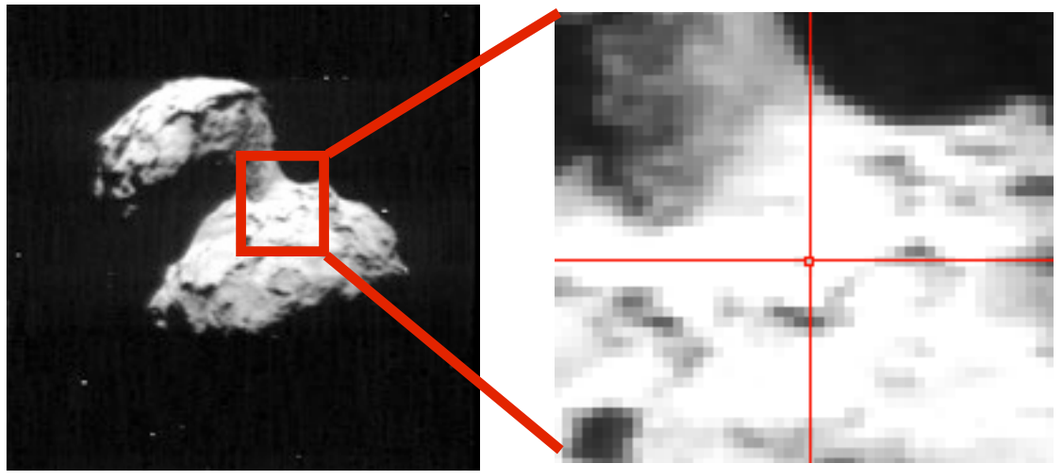


VIRTIS_M_VIS
VI_0038731111.CAL

VIRTIS_M_IR
II_0038731109.CAL

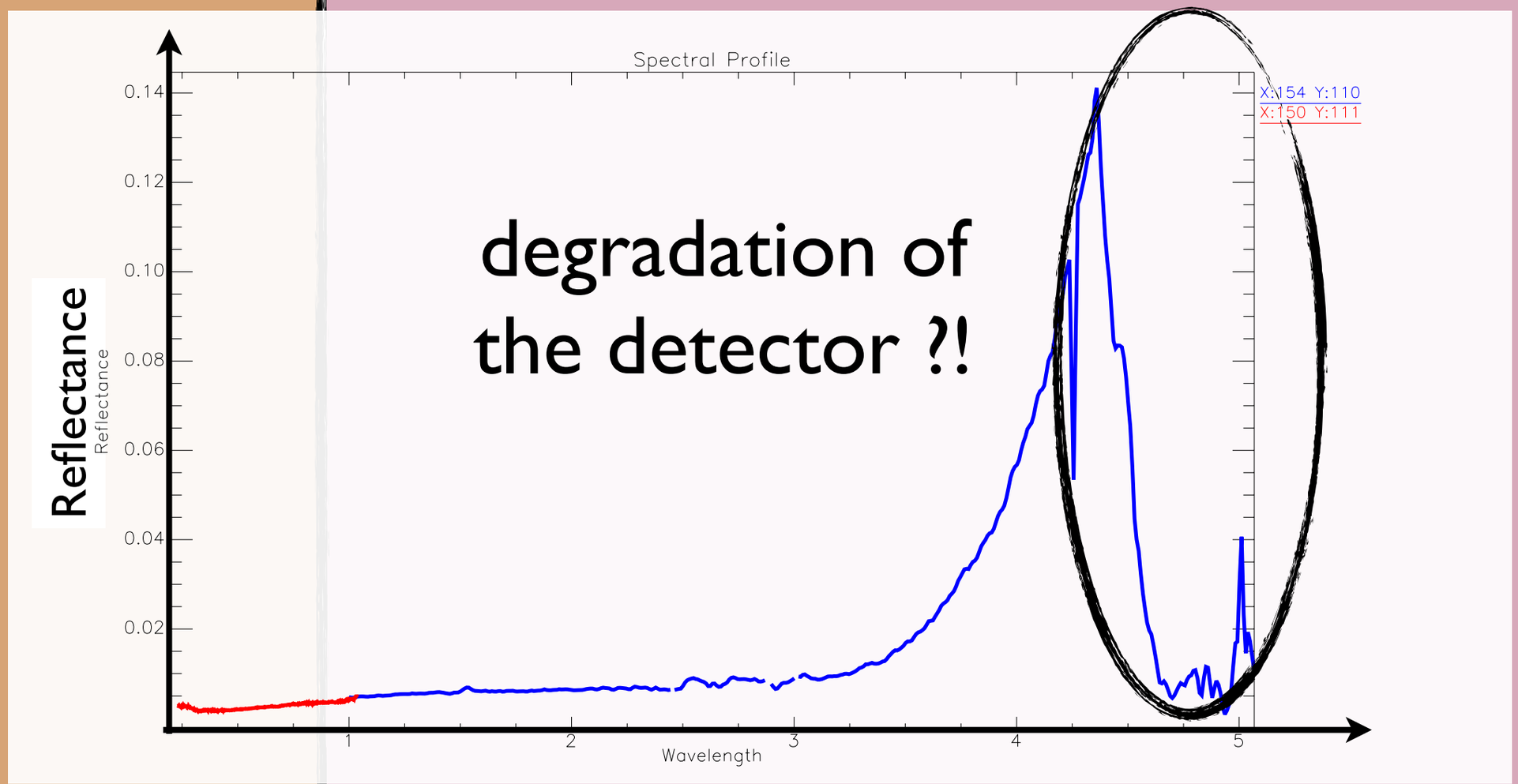


Reflectance Spectra



VIRTIS_M_VIS
VI_0038731111.CAL

VIRTIS_M_IR
II_0038731109.CAL

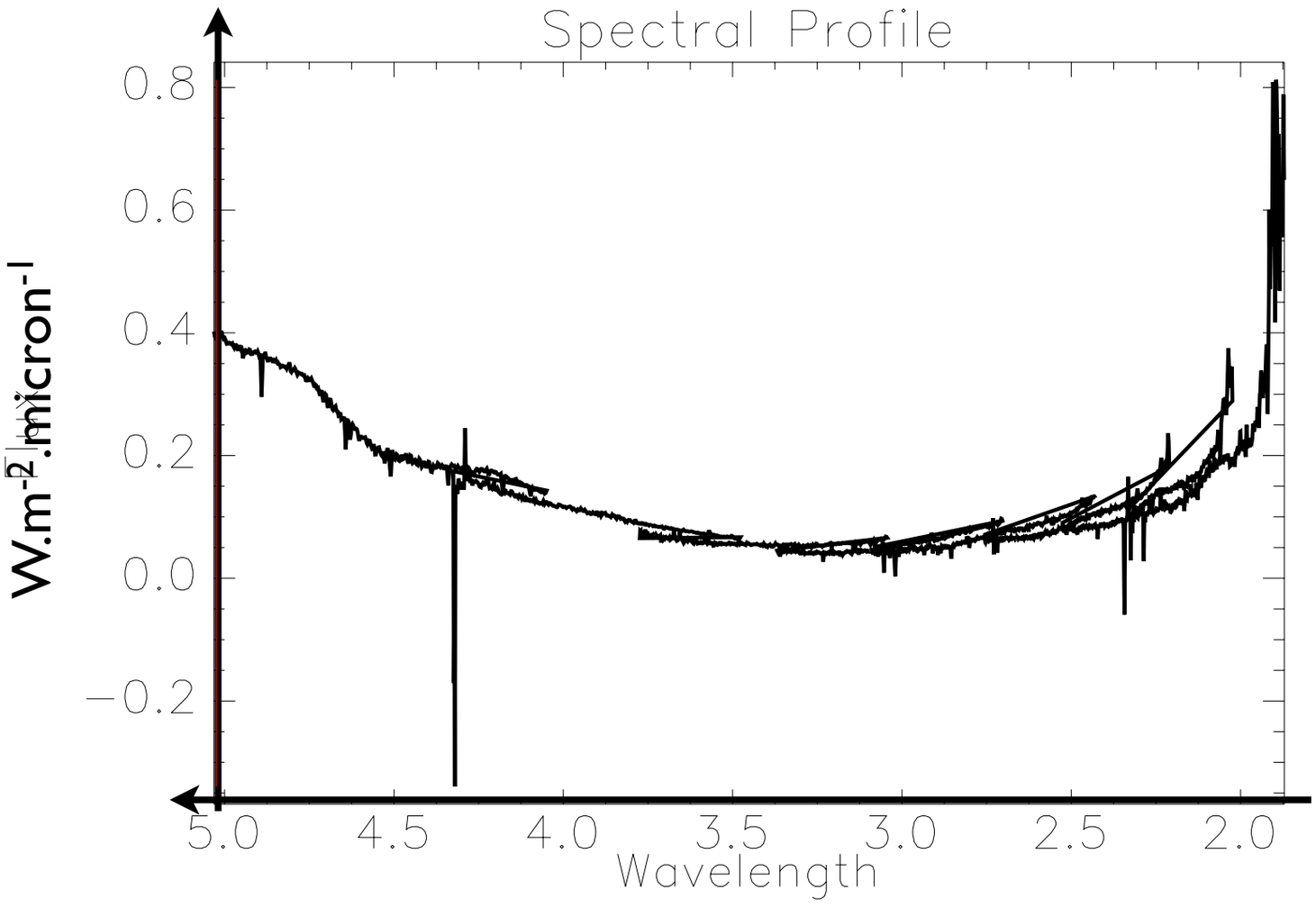


degradation of the detector ?!

VIRTIS_H

TI_00383726505.CAL

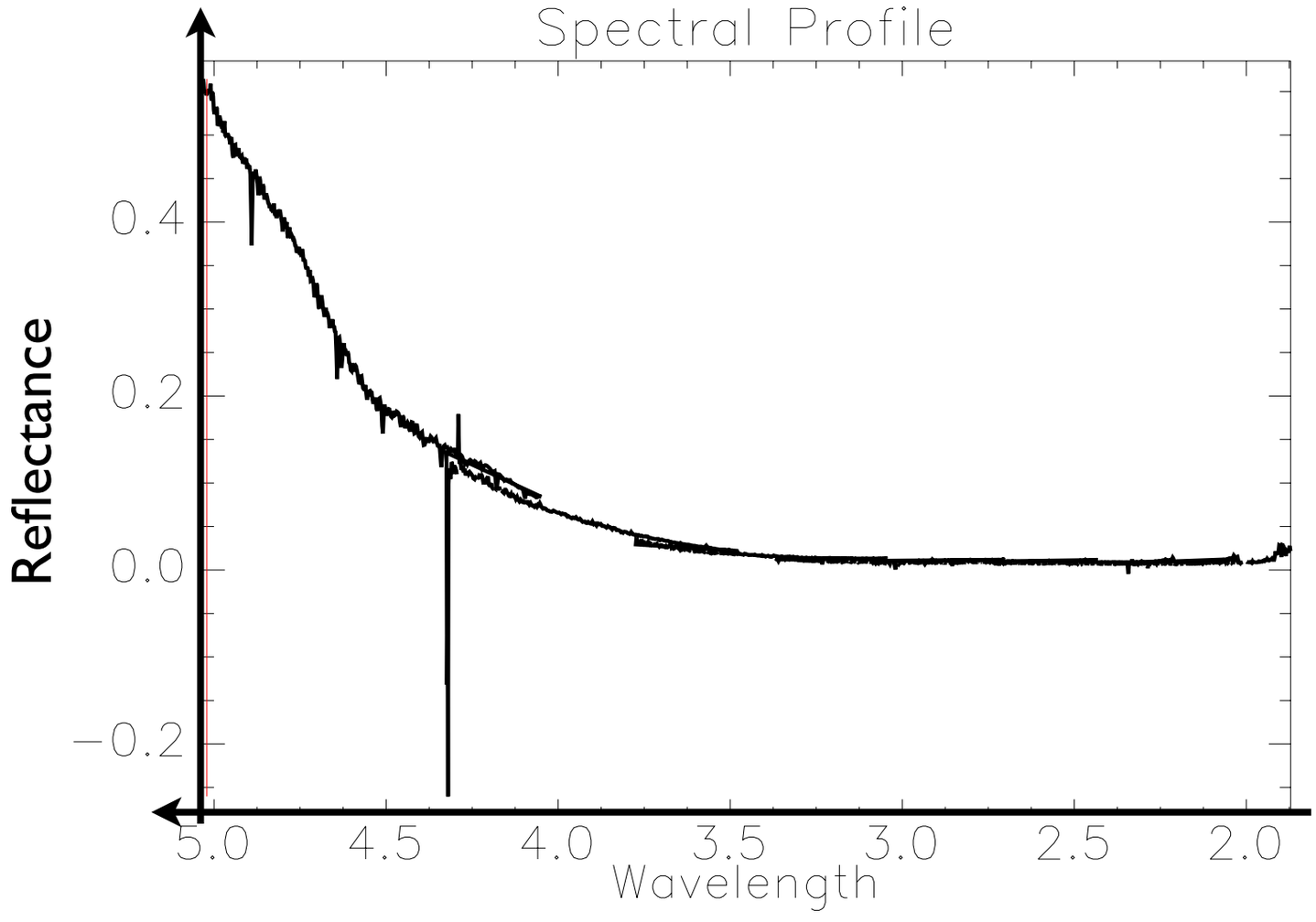
- almost coherent between order



VIRTIS_H

TI_00383726505.CAL

- almost coherent between order



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  - VIRTIS_M_VIS vs VIRTIS_M_IR
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- Reflectance unit I/F
- Good continuity of the dataset
- problem of degradation of VIRTIS_M_IR to be written
- **anomalies within the solar calibration files**

Anomalies (not in POLARIS/ECLIPSE)

- VIRTIS solar flux calibration file
  - VIRTIS_M
  - VIRTIS_H

Solar calibration VIRTIS M

CALIB/VIRTIS_RES_IR_HIGH_V10.TAB
CALIB/VIRTIS_RESAMPLED_VIS_HIGH.TAB

- Incoherent wavelength from dataset (428 bands) and solar calibration (423 bands) at positions :
  - 155, 200, 201, 214, ? [IDL format, starting from 0]
  - There is information in the cubes at this bands !

=> provide a solar spectra sampled at the corresponding 428 bands !

Solar calibration VIRTIS H

- Incoherent wavelength from dataset and solar calibration at positions :
  - 3347, 3348, 3349, 3350, 3351, 3352, 3353, 3354, 3433 [IDL format, starting from 0]

CALIB/HSOLEILROS2014.TAB

Solar calibration VIRTIS H

- Problem in the list of wavelength

CALIB/HSOLEILROS2014.TAB

wavelength	solar flux
2.01140	114.70900
2.01020	115.02900
2.09000	115.29600
2.07800	115.64400
2.06600	114.47100
2.05400	115.09200
2.04200	114.57500
2.03000	115.26600
2.01700	116.60500
2.00500	117.02500
1.99930	116.72200
1.99810	115.01300
1.99690	116.66000

Solar calibration VIRTIS H

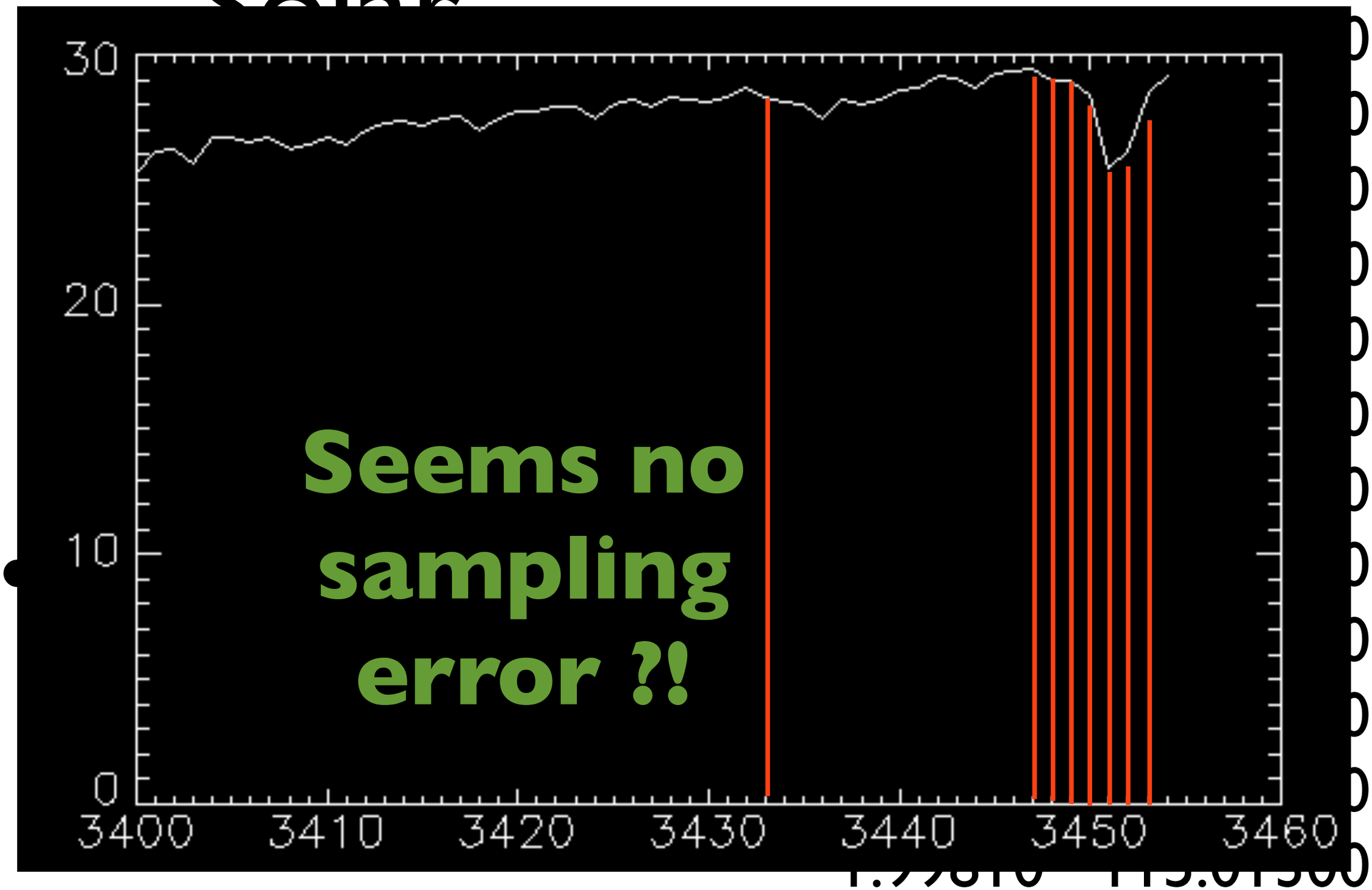
- Problem in the list of wavelength

CALIB/HSOLEILROS2014.TAB

=> rewrite the wavelength column correctly

wavelength	solar flux
2.01140	114.70900
2.01020	115.02900
2.00900	115.29600
2.00780	115.64400
2.00660	114.47100
2.00540	115.09200
2.00420	114.57500
2.00300	115.26600
2.00170	116.60500
2.00050	117.02500
1.99930	116.72200
1.99810	115.01300
1.99690	116.66000

Solar



1.99690 116.66000

Conclusion

- VIRTIS
  - huge and beautiful dataset
  - almost well calibrated and documented

- no map included (level 4) in the dataset reviewed ?!
- calibration pipeline not available ?!