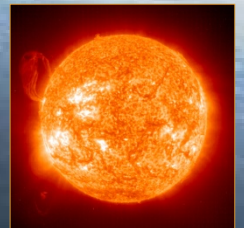
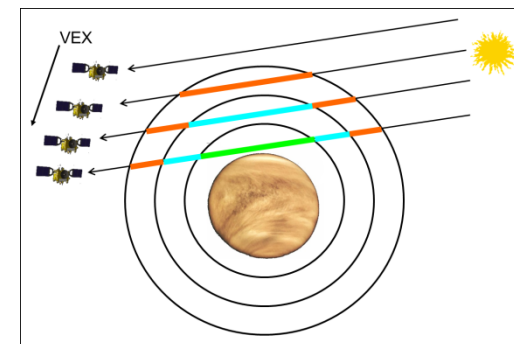
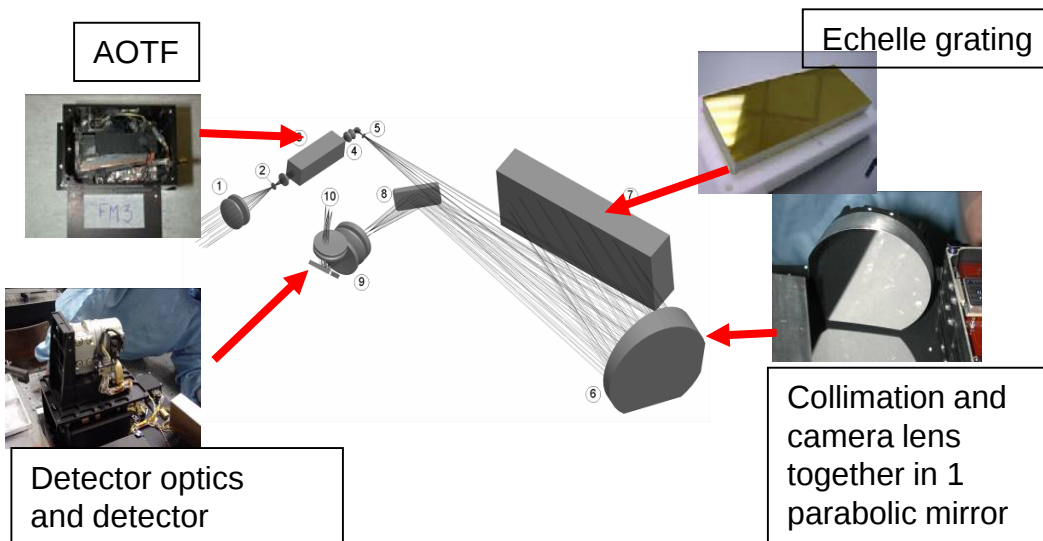
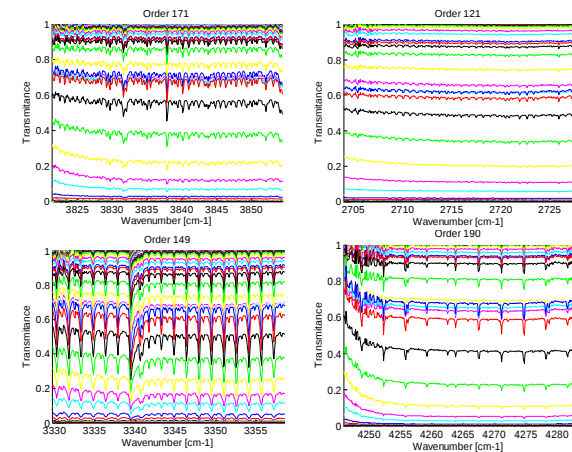
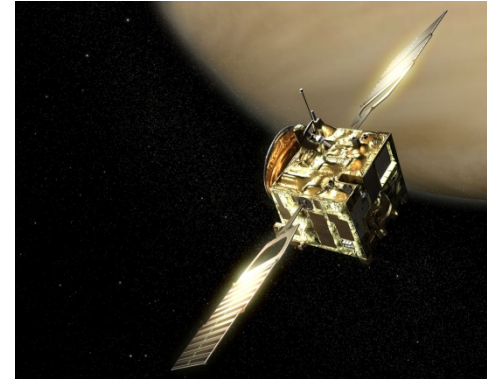


Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Brussels,
Belgium

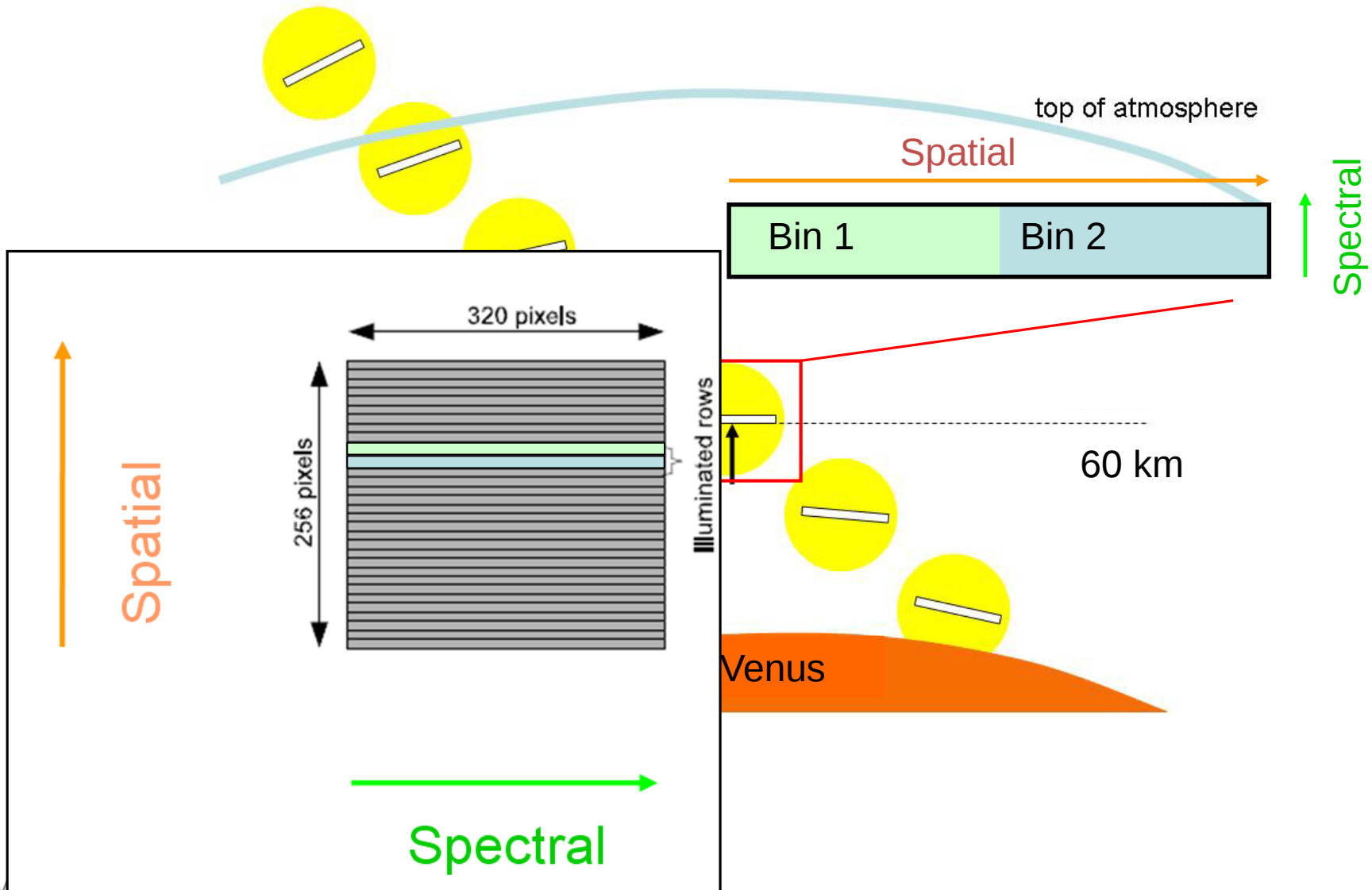


The SOIR instrument

- Venus Express (VEx) - ESA
 - Launch in Baikonur in 2006
 - End in Dec. 2014
- SOIR spectrometer
 - Channel of SPICAV/SOIR on VEx
 - Echelle grating + AOTF
 - 2200 cm^{-1} to 4400 cm^{-1} ($2.2 \text{ }\mu\text{m}$ to $4.4 \text{ }\mu\text{m}$)
 - Divided in 94 diffracting orders
 - Order width: 20 to 37 cm^{-1}
 - Spectral resolution: 0.1 to 0.25 cm^{-1}
- Measures 4 orders per second during an occultation

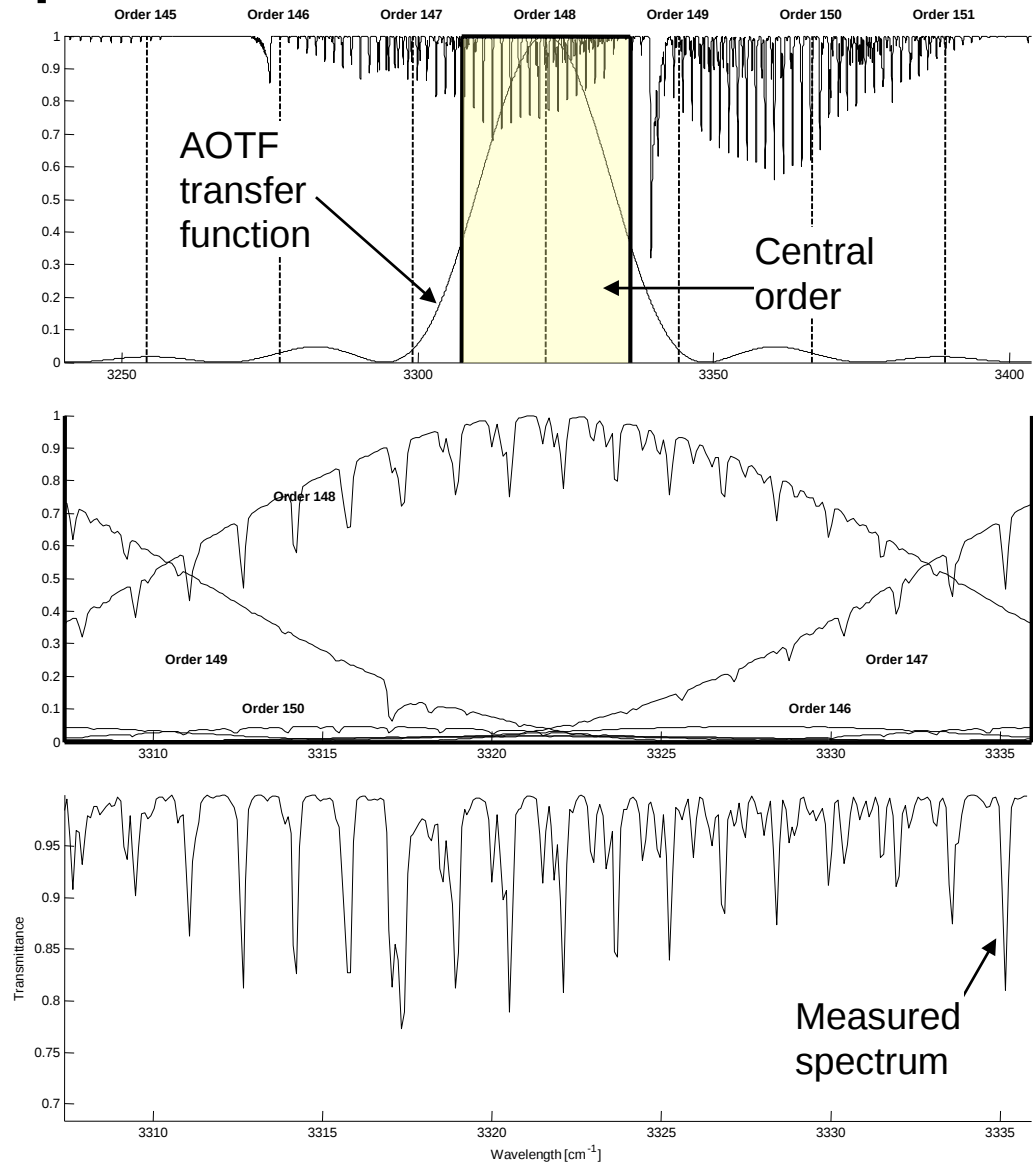


Slit position during an occultation



Measurement principles

- AOTF transfer function:
sinc² like
24 cm⁻¹ full width at mid height
- Mean free spectral range:
19.5 cm⁻¹ (order 101) to 37.4 cm⁻¹ (order 194)
- AOTF transfer function shape determination is critical
- 7 diffraction orders have to be taken into account to correctly reconstruct measurement spectra



A. Mahieux et al., *Applied Optics* 47(13), 2252-2265 (2008)

SOIR measurement modes

- SOIR can send 8 spectra per second to the Earth, at most 4 different AOTF frequencies per second
- → different binning cases

Denomination (binning configuration)	Number of scanned orders	Number of lines in each bin	Number of binning groups
2x16	4	16	2
2x12	4	12	2
4x4	2	4	4
4x3	2	3	4
8x4	1	4	8
8x3	1	3	8

- 2 types of command
 - **Hopping**: selected AOTF frequencies are repeated on a 1 s basis
 - **Stepping**: AOTF frequency is stepped by regular value
- When SOIR is turned on: Precooling for 600 s followed by the measurement
- Detector integration time varies between 1 ms and 150 ms
- Accumulations
 - Made to reduce the signal to noise
 - Vary between 1 and 23
 - Each accumulation is in fact the result of the difference between 2 successive recordings with AOTF ON and AOTF OFF

SOIR measurement modes

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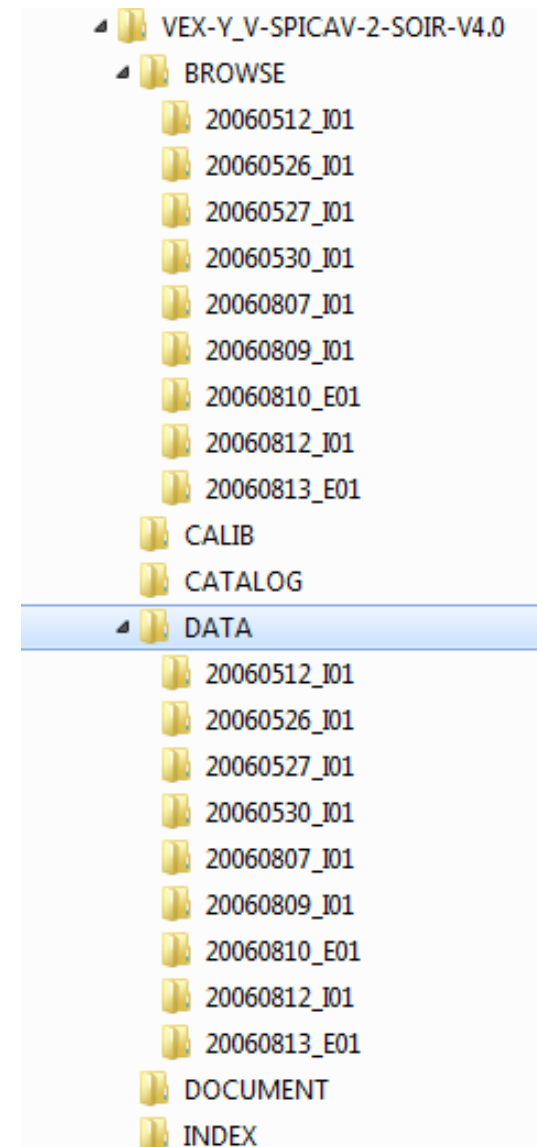
- Different types of measurement are available
- Occultations:
 - o Ingress (hopping) – binning 12 or 16 (I) or binning 3 or 4 (I8)
 - o Egress (hopping) – binning 12 or 16 (E) or binning 3 or 4 (E8)
 - o Atmospheric fullscan (stepping) – any binning
- Nadir (N) – hopping
- Calibration measurements:
 - o Miniscan (M) – stepping with small frequency steps – any binning
 - o Fullscan (F) – stepping with large frequency steps corresponding to 1 order – any binning
 - o Other calibrations (C)

Measurement Type	Acronym
Ingress	I
Egress	E
Sun fullscan	F
Atmosphere fullscan	A
Miniscan	M
Nadir	N
Other calibration	C

SOIR PSA Level 2

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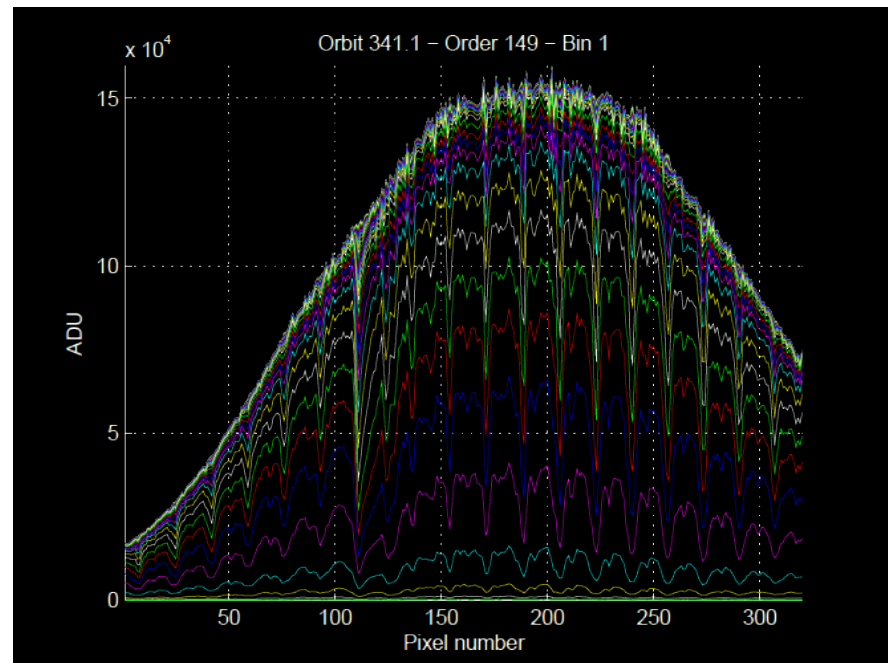
- BROWSE, CALIB, CATALOG, DATA, DOCUMENT and INDEX directories
- DATA directory
 - o Format YYYYMMDD_TNN
 - YYYY: year
 - MM: month
 - DD: day
 - T: type of measurement
 - NN: measurement number of the day
 - o 2 x 2 files in each folder
 - **OBS**: measurement values
 - TC2: telecommand values file 2



SOIR PSA Level 2

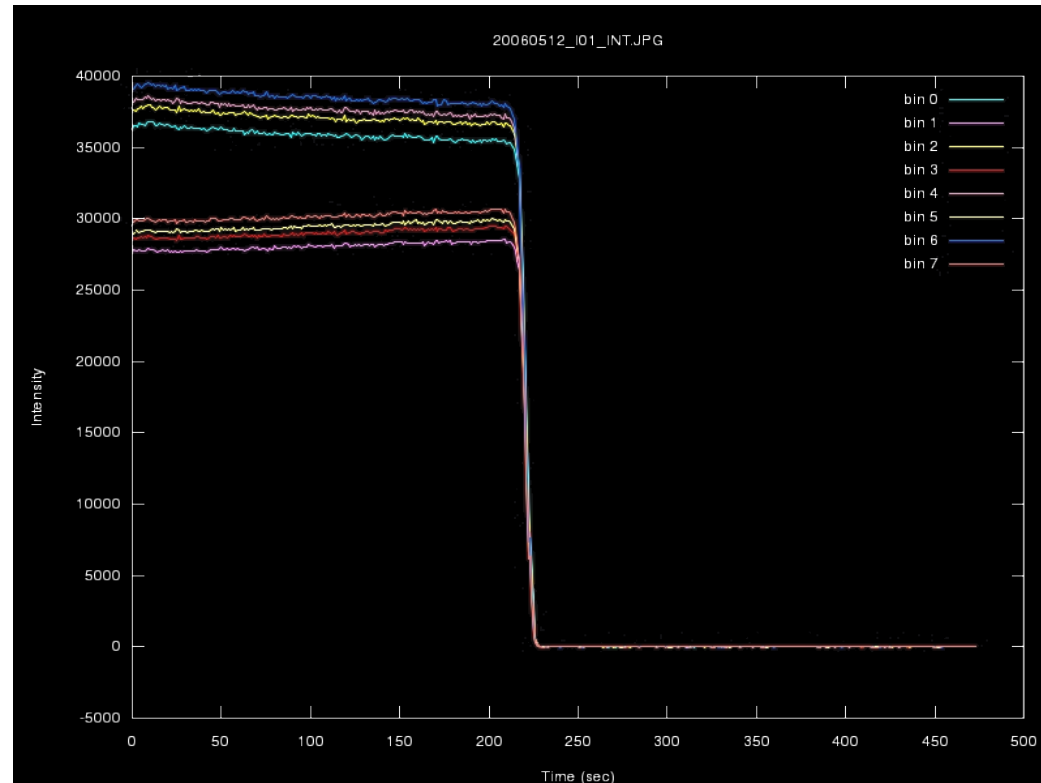
- DATA directory
 - **YYYYMMDD_TNN_OBS.TAB** file contains measurement
 - 1 line per second
 - Fields:
 - Time
 - » One field per scanned order
 - Observations
 - » 320 values x 8 measurement (bins)
 - Housekeeping values
 - » 16 fields: temperatures, voltages, etc.

20060512_I01_OBS.LBL
20060512_I01_OBS.TAB
20060512_I01_TC2.LBL
20060512_I01_TC2.TAB



PSA Level 2

- BROWSE directory
 - o Each folder contains a JPG file
 - o Sum of all the 320 pixels in each bin as a function of time



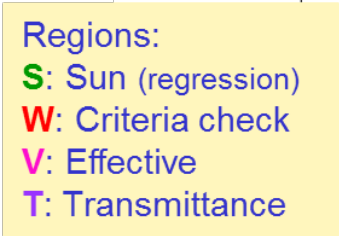
Treatments between Level 2 and Level 3

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- Detector non-linearity correction
 - At low signal, non-linear response of the detector pixels

- Order determination
 - $f_{\text{AOTF}} \rightarrow$ wavenumber
 - Wavenumber compared to wavenumber centre of each diffraction order
 - Minimum value gives the diffraction order

- References
 - Nevejans et al., *Compact high-resolution spaceborne echelle grating spectrometer with acousto-optical tunable filter based order sorting for the infrared domain from 2.2 to 4.3 μm* , Applied Optics, Vol. 45, No. 21, 20 July 2006
 - Mahieux et al., *In-flight performance and calibration of SPICAV SOIR onboard Venus Express*, Applied Optics, Vol. 47, No. 13, 1 May 2008
 - Vandaele et al., *Improved calibration of SOIR/Venus Express spectra*, *Optics Express*, 21 (17), 21148 – 21161 (2013)

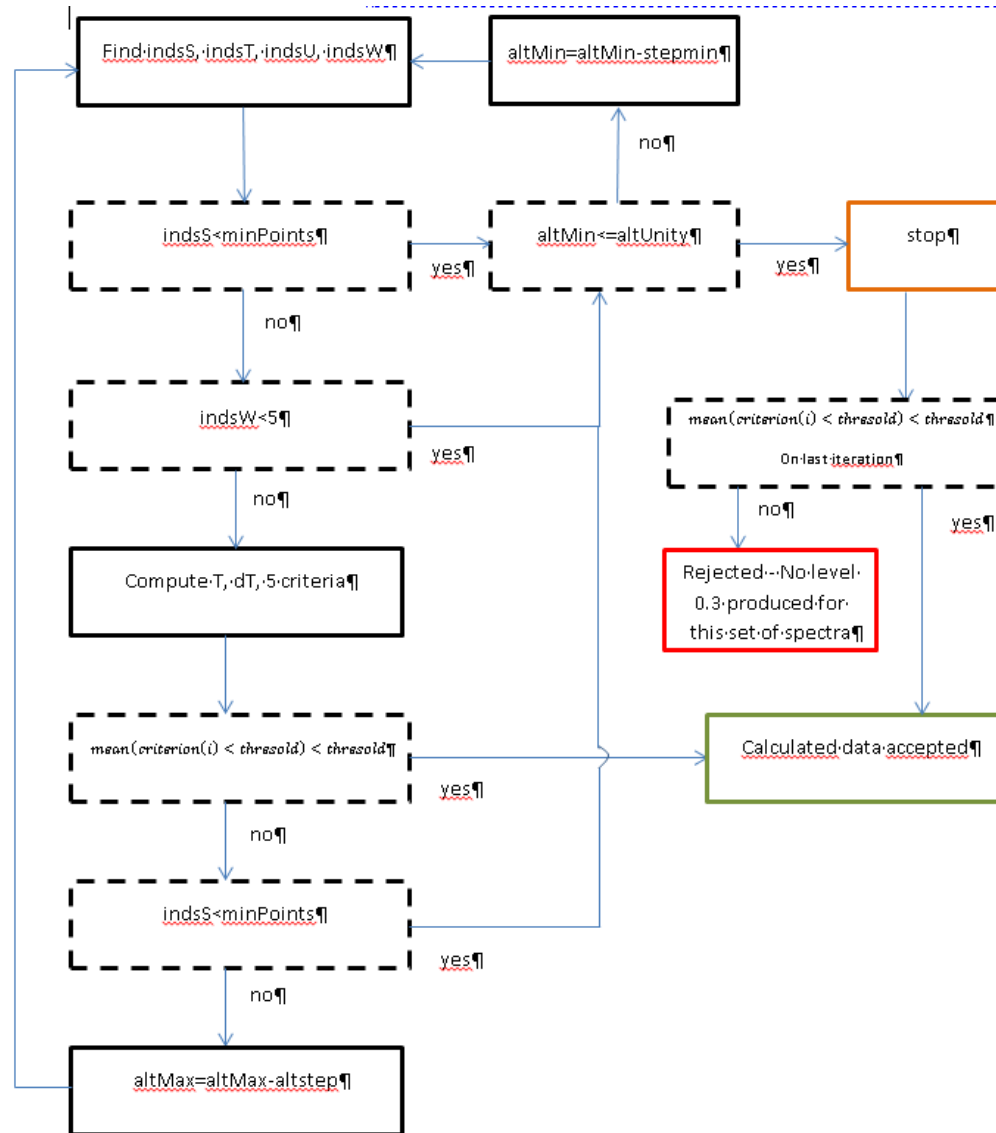


- ## Criteria

1. $\langle |1 - T(i)| \rangle < 2\delta T(i)$, $i \in W$
2. $\delta T(i) < \frac{1}{snrmin}$, $i \in W$
3. $\delta T(i) < \text{std}(T(\text{inds}W))$, $i \in W$
4. $T(i) - 1 < 2\delta T(i)$, $i \in V$
5. $\langle |1 - T(R)| \rangle < 2\delta T(R)$

Transmittance calculation (details)

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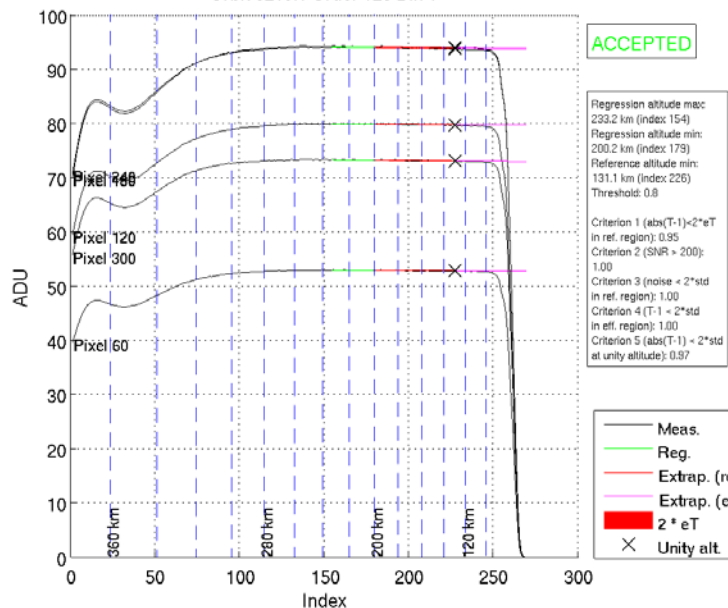


Altitude unity

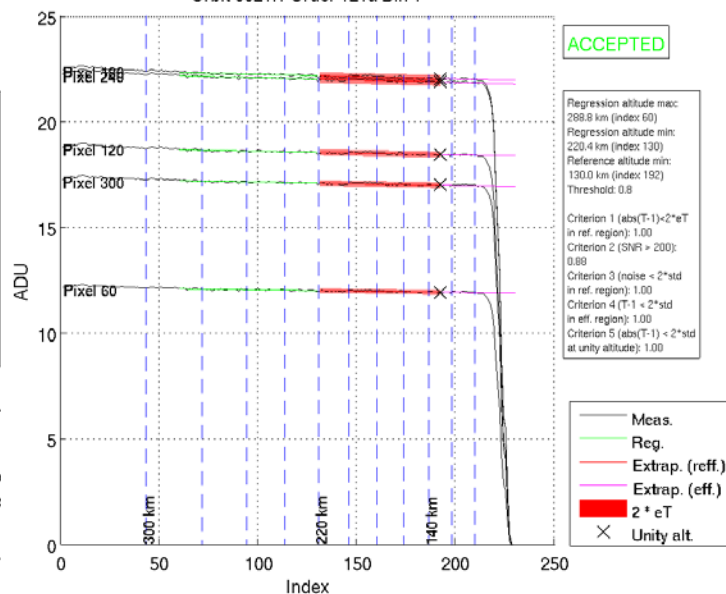
Tangent altitudes (km)	120	130	140	150	160	170
orders	108, 109, 110, 134, 135, 136, 137, 138, 139, 140, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186	114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 141, 142, 143, 144, 145, 146, 147, 152, 153, 154, 170, 171, 172, 173, 174, 175, 187, 188	111, 112, 113, 128, 129, 130, 131, 132, 133, 148, 149, 150, 151, 155, 168, 169, 189, 192, 193, 194.	190, 191	156, 157, 158	101, 102, 103, 104, 105, 106, 107, 159, 160, 161, 162, 163, 164, 165, 166, 167.

Examples

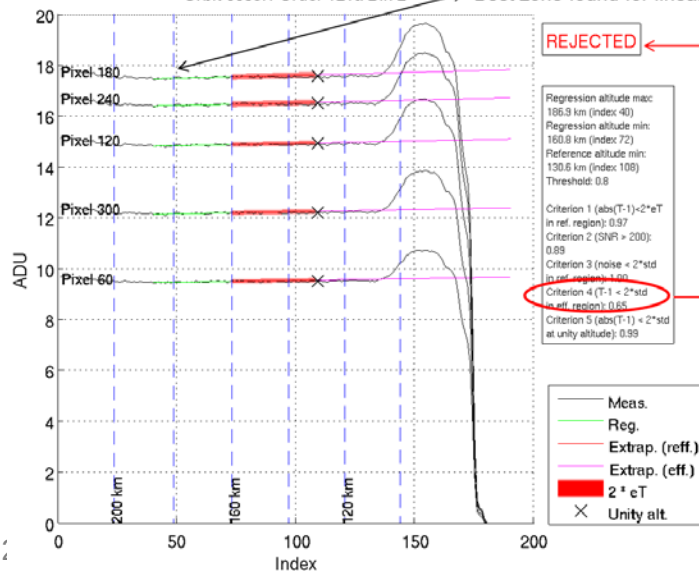
Orbit 0219.1 Order 120 Bin 1



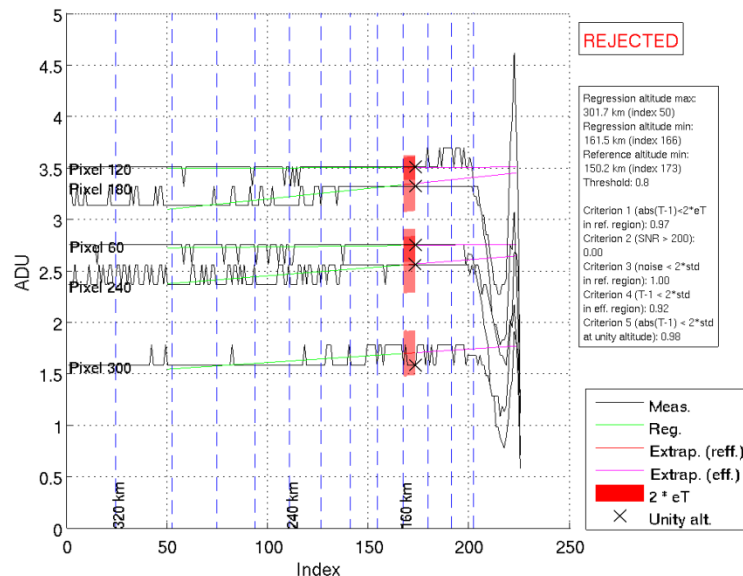
Orbit 0021.1 Order 121a Bin 1



Orbit 0039.1 Order 121a Bin 2 → Best zone found for linear regression



Orbit 0793.1 Order 149 Bin 8



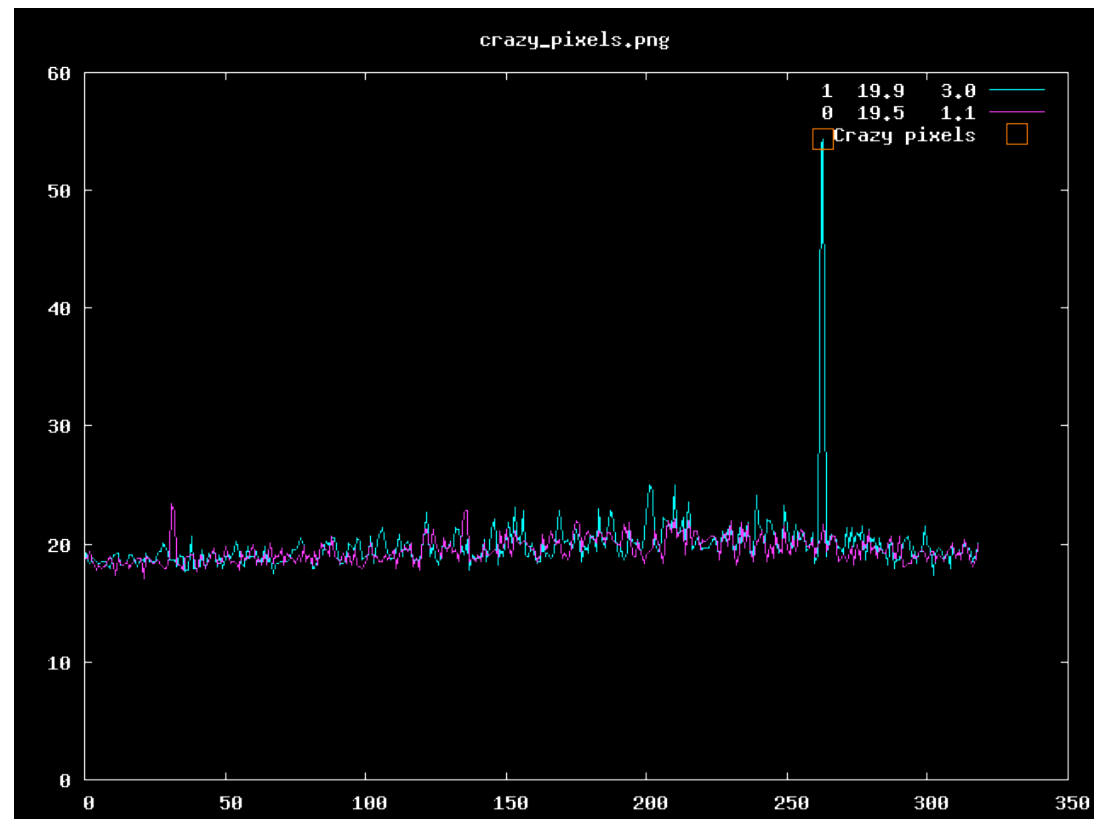
Treatments between Level 2 and Level 3

- Pixel to wavenumber calibration

$$p = \left(a \cdot \left(\frac{\tilde{\nu}}{n} \right)^2 + b \cdot \frac{\tilde{\nu}}{n} + c \right)$$

$$\frac{\tilde{\nu}}{n} = \left(a' \cdot p^2 + b' \cdot p + c' \right)$$

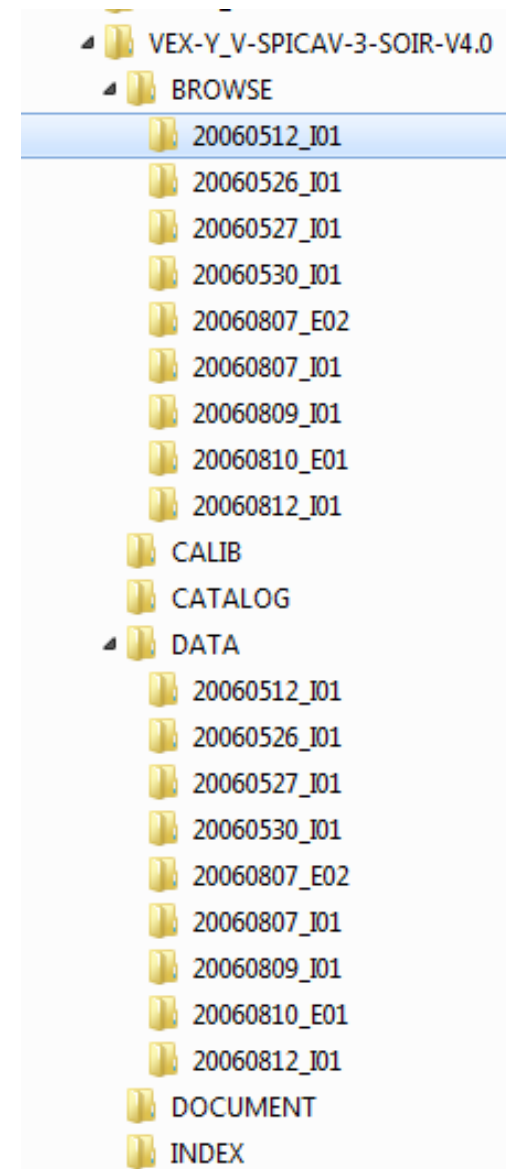
- “Wrong” signal on pixels
 - Corrected by averaging by the two side pixels
 - Example: Orbit 130 (29/08/2006) Order 180 bin 2



PSA level 3

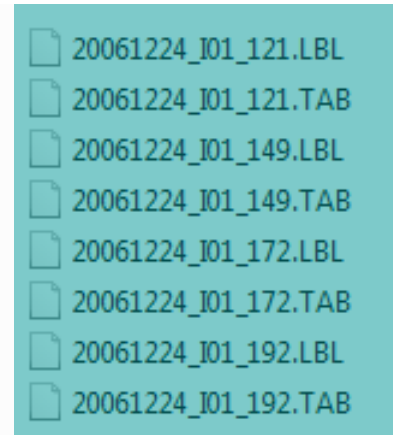
- BROWSE, CALIB, CATALOG, DATA, DOCUMENT and INDEX directories
- DATA directory
 - o Format YYYYMMDD_TNN_OOO
 - YYYY: year
 - MM: month
 - DD: day
 - T: type of measurement
 - NN: measurement number of the day
 - OOO: diffraction order
 - o 4 x 2 files in each folder
 - OOO: measurement values for order OOO

20061224_I01_121.LBL
 20061224_I01_121.TAB
 20061224_I01_149.LBL
 20061224_I01_149.TAB
 20061224_I01_172.LBL
 20061224_I01_172.TAB
 20061224_I01_192.LBL
 20061224_I01_192.TAB



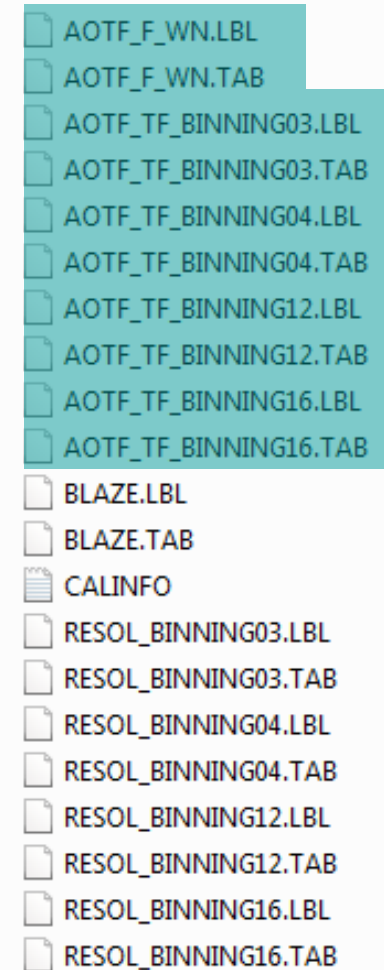
PSA level 3

- DATA directory
 - o YYYYMMDD_TNN_OOO.TAB file contains measurement
 - One file per scanned order
 - If same order scanned twice file format becomes:
 - YYYYMMDD_TNN_OOOP.TAB
 - With *P* a letter
 - 1 line per spectrum
 - Fields:
 - Time
 - Bin
 - Binning
 - Measurement “Attitude”
 - AOTF frequency
 - Detector integration time
 - Pixel to wavenumber polynomial relation
 - Transmittance (320 values)
 - Noise (320 values)
 - Housekeeping values
 - » 16 fields: temperatures, voltages, etc.



PSA Level 3

- CALIB directory
 - o AOTF frequency to wavenumber (tuning curve)
 - Fields:
 - Type (pix $\rightarrow$ wn or wn $\rightarrow$ pix)
 - Binning
 - Bin
 - Relation (2nd order)
 - $\rightarrow$ One for Nominal period and each Extension
 - o AOTF transfer function
 - Fields
 - Order, bin
 - Wavenumber (from -100 to 100 cm^{-1} , steps 0.1 cm^{-1})
 - Values of TF bin (2001 values)
 - One bin / line
 - Only for bins 1 and 2 of binning 12



PSA Level 3

- CALIB directory

- Blaze function

- Fields

- Order

- Wavenumber (from -100 to 100 cm^{-1} , steps 0.1 cm^{-1})

- Values of BF (2001 values)

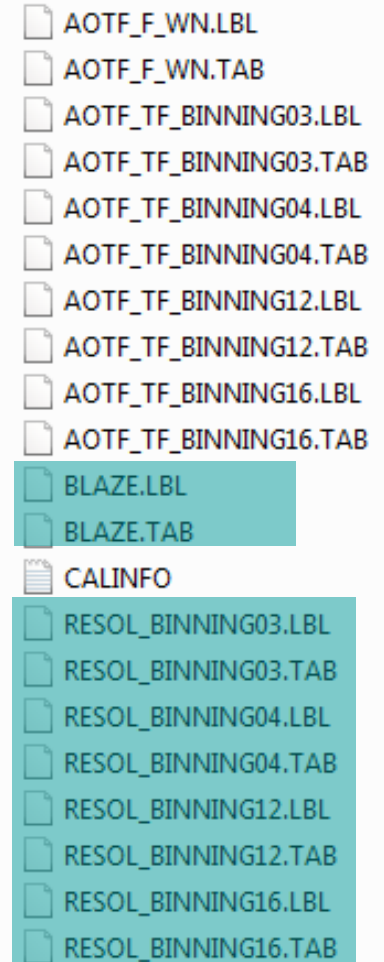
- Same for every binning

- Resolution

- Fields

- Order

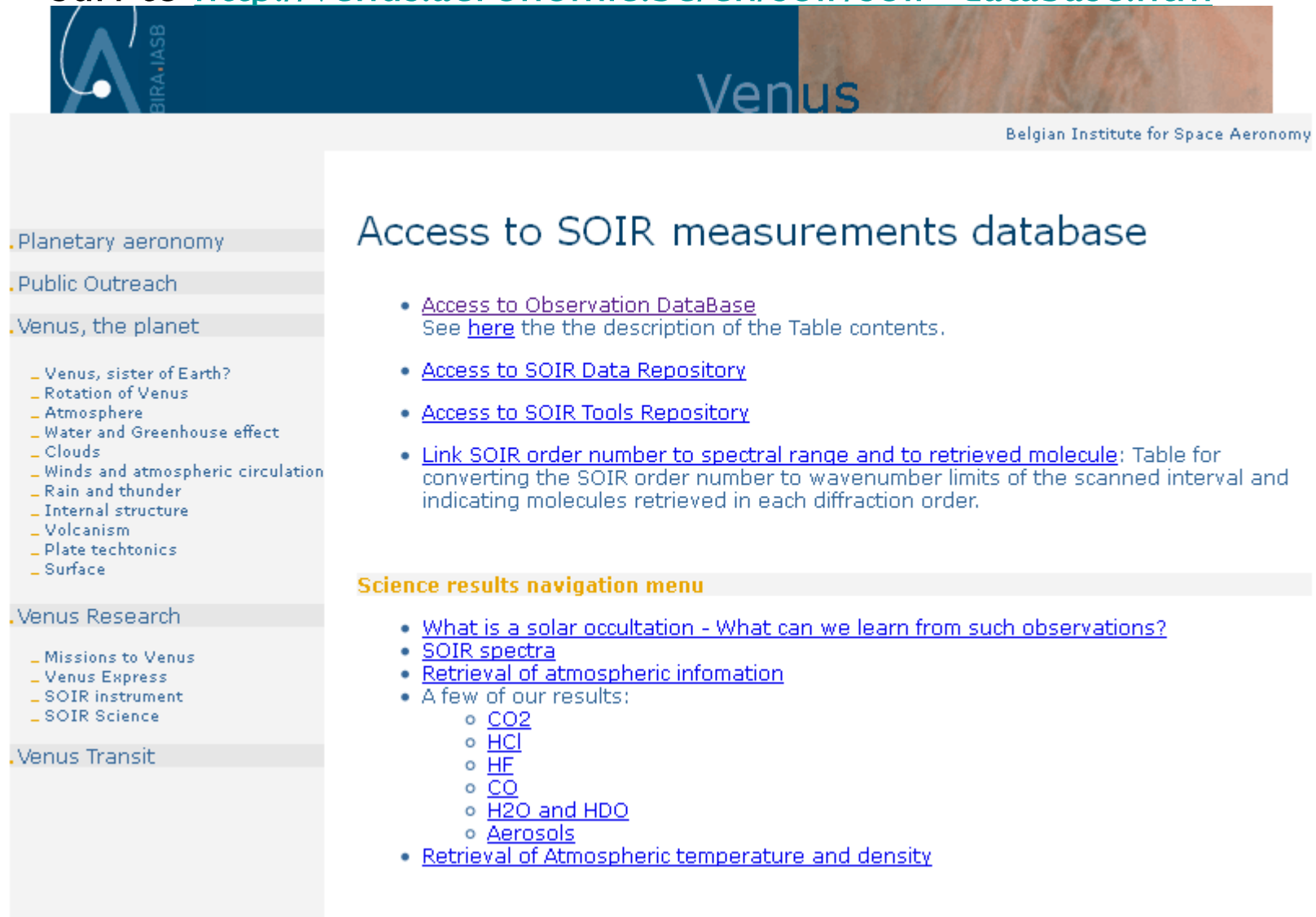
- Value of the resolution for each bin



AOTF_F_WN.LBL
AOTF_F_WN.TAB
AOTF_TF_BINNING03.LBL
AOTF_TF_BINNING03.TAB
AOTF_TF_BINNING04.LBL
AOTF_TF_BINNING04.TAB
AOTF_TF_BINNING12.LBL
AOTF_TF_BINNING12.TAB
AOTF_TF_BINNING16.LBL
AOTF_TF_BINNING16.TAB
BLAZE.LBL
BLAZE.TAB
CALINFO
RESOL_BINNING03.LBL
RESOL_BINNING03.TAB
RESOL_BINNING04.LBL
RESOL_BINNING04.TAB
RESOL_BINNING12.LBL
RESOL_BINNING12.TAB
RESOL_BINNING16.LBL
RESOL_BINNING16.TAB

Online Tool

- Surf to http://venus.aeronomie.be/en/soir/soir_database.htm



The screenshot shows the website for the Venus SOIR database. The header features the BIRA-IASB logo and the word "Venus" in a large, stylized font. Below the header, the text "Belgian Institute for Space Aeronomy" is visible. The main content area is titled "Access to SOIR measurements database". On the left side, there is a navigation menu with the following items: "Planetary aeronomy", "Public Outreach", "Venus, the planet" (which is expanded to show a list of topics including Venus, sister of Earth?, Rotation of Venus, Atmosphere, Water and Greenhouse effect, Clouds, Winds and atmospheric circulation, Rain and thunder, Internal structure, Volcanism, Plate tectonics, and Surface), "Venus Research" (expanded to show Missions to Venus, Venus Express, SOIR instrument, and SOIR Science), and "Venus Transit". The main content area lists four links: "Access to Observation DataBase" (with a note to see the description of the Table contents), "Access to SOIR Data Repository", "Access to SOIR Tools Repository", and "Link SOIR order number to spectral range and to retrieved molecule" (described as a table for converting SOIR order number to wavenumber limits). Below this, there is a "Science results navigation menu" with links to "What is a solar occultation - What can we learn from such observations?", "SOIR spectra", "Retrieval of atmospheric information", "A few of our results:" (which includes a list of molecules: CO₂, HCl, HF, CO, H₂O and HDO, and Aerosols), and "Retrieval of Atmospheric temperature and density".

Access to SOIR measurements database

- [Access to Observation DataBase](#)
See [here](#) the the description of the Table contents.
- [Access to SOIR Data Repository](#)
- [Access to SOIR Tools Repository](#)
- [Link SOIR order number to spectral range and to retrieved molecule](#): Table for converting the SOIR order number to wavenumber limits of the scanned interval and indicating molecules retrieved in each diffraction order.

Science results navigation menu

- [What is a solar occultation - What can we learn from such observations?](#)
- [SOIR spectra](#)
- [Retrieval of atmospheric information](#)
- A few of our results:
 - [CO₂](#)
 - [HCl](#)
 - [HF](#)
 - [CO](#)
 - [H₂O and HDO](#)
 - [Aerosols](#)
- [Retrieval of Atmospheric temperature and density](#)

Overview file

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	% Valid	Phase	Orbit	Case	Day of year	Date [DD/MM/YYYY]	Type	Distance to Venus [km]	Distance to limb (120 km) [km]	Vertical resolution (120 km) [km]	Longitude planet (120 km) [deg]	Latitude planet (120 km) [deg]	Speed to Venus (120 km) [km/s]	LST (120 km) [h]	Distance to limb (65 km) [km]
1															
2	1	mtp00	21	1	132	12/05/2006	IN	269	1363	1	286	86	9	4	1641
3	1	mtp01	35	1	146	26/05/2006	IN	338	1655	1	306	77	8	5	1994
4	1	mtp01	36	1	147	27/05/2006	IN	349	1697	1	308	76	7	5	2051
5	1	mtp01	39	1	150	30/05/2006	IN	401	1885	2	314	71	7	5	2325
6	1	mtp04	106	1	217	05/08/2006	FULLAI	5081	9339	7	333	25	4	18	9340
7	1	mtp04	106	2	217	05/08/2006	FULLAE	2520	6066	5	333	55	4	18	6067
8	1	mtp04	108	1	219	07/08/2006	IN	7060	11568	8	338	5	-4	18	11435
10	1	mtp04	110	1	221	09/08/2006	IN	8514	13193	8	344	-9	-4	18	13109
11	1	mtp04	111	1	222	10/08/2006	E	1463	4287	3	352	73	-8	18	4571
12	1	mtp04	113	1	224	12/08/2006	IN	10214	15050	9	353	-28	-3	18	14993
13	1	mtp04	114	1	225	13/08/2006	E	1282	3961	3	3	78	-8	18	4222
14	1	mtp04	116	1	227	15/08/2006	IN	11479	16409	10	2	-44	-3	18	16364
15	1	mtp04	118	1	229	17/08/2006	E	1162	3734	2	22	83	-9	17	3979
16	1	mtp04	121	1	232	20/08/2006	E	1120	3654	2	43	86	-9	16	3892
17	1	mtp04	124	1	235	23/08/2006	E	1105	3624	2	90	88	-9	14	3858
19	1	mtp05	129	1	240	28/08/2006	E	795	2964	2	187	87	-9	8	3256
20	1	mtp05	130	1	241	29/08/2006	E	805	2987	2	196	86	-9	8	3279
21	1	mtp05	132	1	243	31/08/2006	E	831	3046	2	210	84	-9	8	3340
22	1	mtp05	133	1	244	01/09/2006	E	847	3084	2	216	84	-9	7	3378
23	1	mtp05	134	1	245	02/09/2006	IN	11239	16152	10	242	-47	-3	6	16110
24	1	mtp05	135	1	246	03/09/2006	IN	10880	15767	10	245	-42	-3	6	15722
25	1	mtp05	136	1	247	04/09/2006	E	916	3233	2	231	81	-9	7	3535
26	1	mtp05	137	1	248	05/09/2006	E	946	3299	2	236	80	-8	7	3604
27	1	mtp05	138	1	249	06/09/2006	IN8	9576	14358	9	253	-26	-3	6	14302
28	1	mtp05	139	1	250	07/09/2006	E8	1026	3465	2	244	77	-8	7	3782
29	1	mtp05	140	1	251	08/09/2006	FULLS	-1	-1	-1	-1	-1	-1	-1	-1
30	1	mtp05	141	1	252	09/09/2006	IN	7919	12534	8	262	-8	-4	6	12453
31	1	mtp05	142	1	253	10/09/2006	MINI	-1	-1	-1	-1	-1	-1	-1	-1

overview



Overview file: Search options

venus.aef

(1) Webmail Aeronomie :: Inbox

ase/data.php

Search

☆

↓

⬆

⬇

ABP

S

≡

Webmail Aeronomie Welcome to Facebook AOL Mail: Simple, Free... Outlook - famillepolia... VUB/ULB Webmail Home - PM-CROSS-D... # baptistececoni | vesp...

mtp04	121	1	232	20060820	E	1120.00	3654.00	2.00	43.00	86.00	-9.00	16.00	3892.00	2.00	42.00	86.00	-9.00	1
mtp04	124	1	235	20060823	E	1105.00	3624.00	2.00	90.00	88.00	-9.00	14.00	3858.00	2.00	88.00	88.00	-9.00	1
mtp05	129	1	240	20060828	E	795.00	2964.00	2.00	187.00	87.00	-9.00	8.00	3256.00	2.00	190.00	86.00	-9.00	8
mtp05	130	1	241	20060829	E	805.00	2987.00	2.00	196.00	86.00	-9.00	8.00	3279.00	2.00	199.00	85.00	-9.00	8

Refine search

• Phase: (MTP min: , MTP max:)

• Orbit: (min: , max:)

• Case: (min: , max:)

• Day: (min: , max:)

• Date: (yyyymmdd) (min: , max:)

• Type: (contains: or or)

• Dist to Venus: (min: , max:)

• Dist to limb (120km): (min: , max:)

• Height res (120km): (min: , max:)

• RA planet (120km): (min: , max:)

• DEC planet (120km): (min: , max:)

• Speed to Venus (120km): (min: , max:)

• LT (120km): (min: , max:)

• Dist to limb (65km): (min: , max:)

• Height res (65km): (min: , max:)

• RA planet (65km): (min: , max:)

• DEC planet (65km): (min: , max:)

• Speed to Venus (65km): (min: , max:)

• LT (65km): (min: , max:)

• Binning: (contains: or or)

• Integr: (min: , max:)

• Accum: (min: , max:)

• Order: [A or B] or [C or D]

- A) min: , max:

- B) min: , max:

- C) min: , max:

- D) min: , max:

• Freq: [A or B] or [C or D]

- A) min: , max:

- B) min: , max:

- C) min: , max:

- D) min: , max:

Sorting order

Orbit, Case Increasing

then

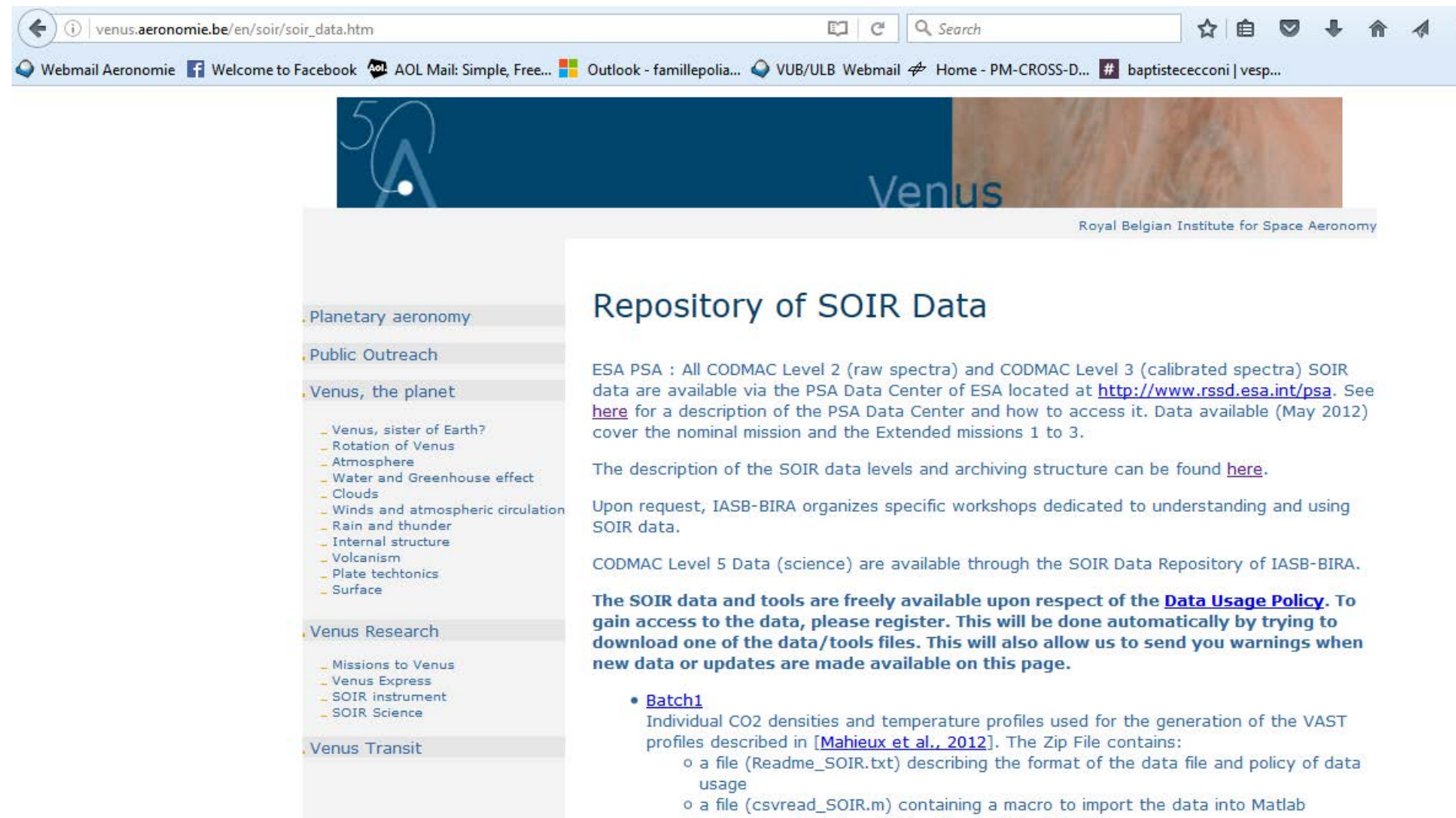
Increasing

Venus 2016, Oxford, UK, 4-8 April (2016)



belspo .be

Access to Data



The screenshot shows a web browser window with the address bar displaying `venus.aeronomie.be/en/soir/soir_data.htm`. The browser's toolbar includes various icons for navigation and search. Below the address bar, a navigation bar contains links for Webmail Aeronomie, Facebook, AOL Mail, Outlook, VUB/ULB Webmail, and a home link. The main content area features a header with a large '50' and the word 'Venus'. A sidebar on the left lists navigation options: Planetary aeronomy, Public Outreach, Venus, the planet (with sub-items like Venus, sister of Earth?, Rotation of Venus, Atmosphere, Water and Greenhouse effect, Clouds, Winds and atmospheric circulation, Rain and thunder, Internal structure, Volcanism, Plate tectonics, Surface), Venus Research (with sub-items like Missions to Venus, Venus Express, SOIR instrument, SOIR Science), and Venus Transit. The main content area is titled 'Repository of SOIR Data' and contains text about ESA PSA data availability, a link to the PSA Data Center, and information about SOIR data levels and archiving. It also mentions workshops organized by IASB-BIRA and provides details about CODMAC Level 5 Data. A section titled 'The SOIR data and tools are freely available upon respect of the Data Usage Policy' includes a list of data batches, with 'Batch1' described as individual CO2 densities and temperature profiles used for VAST profiles, containing a README file and a macro for importing data into Matlab.

ven⁵⁰us

Royal Belgian Institute for Space Aeronomy

Repository of SOIR Data

ESA PSA : All CODMAC Level 2 (raw spectra) and CODMAC Level 3 (calibrated spectra) SOIR data are available via the PSA Data Center of ESA located at <http://www.rssd.esa.int/psa>. See [here](#) for a description of the PSA Data Center and how to access it. Data available (May 2012) cover the nominal mission and the Extended missions 1 to 3.

The description of the SOIR data levels and archiving structure can be found [here](#).

Upon request, IASB-BIRA organizes specific workshops dedicated to understanding and using SOIR data.

CODMAC Level 5 Data (science) are available through the SOIR Data Repository of IASB-BIRA.

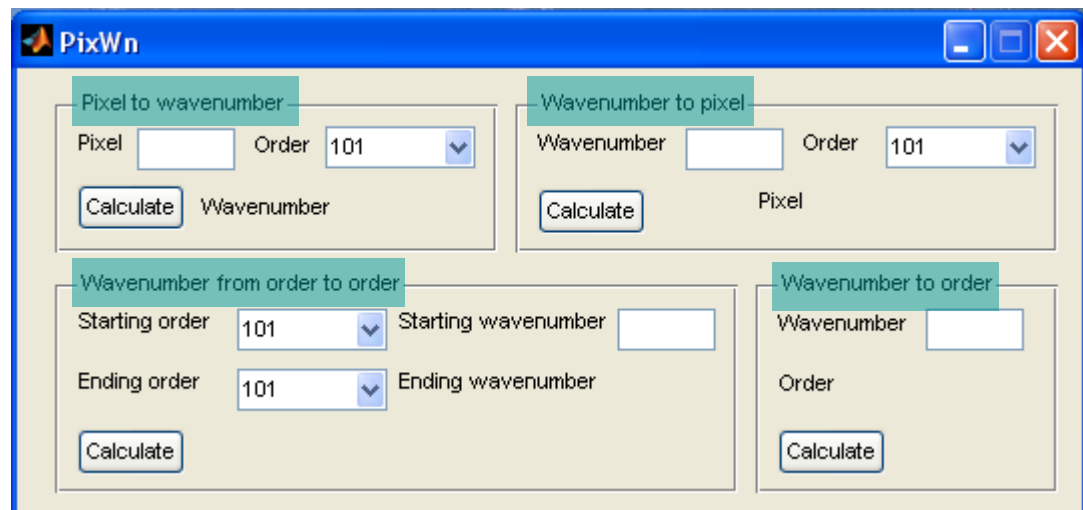
The SOIR data and tools are freely available upon respect of the [Data Usage Policy](#). To gain access to the data, please register. This will be done automatically by trying to download one of the data/tools files. This will also allow us to send you warnings when new data or updates are made available on this page.

- [Batch1](#)
Individual CO₂ densities and temperature profiles used for the generation of the VAST profiles described in [\[Mahieux et al., 2012\]](#). The Zip File contains:
 - o a file (Readme_SOIR.txt) describing the format of the data file and policy of data usage
 - o a file (csvread_SOIR.m) containing a macro to import the data into Matlab

SOIR Wavenumber handle tool

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- Tool to handle wavenumbers, pixels and orders in the SOIR data base
- Possibility to convert
 - o Pixels to wavenumbers in a given order
 - o Wavenumbers to pixels in a given order



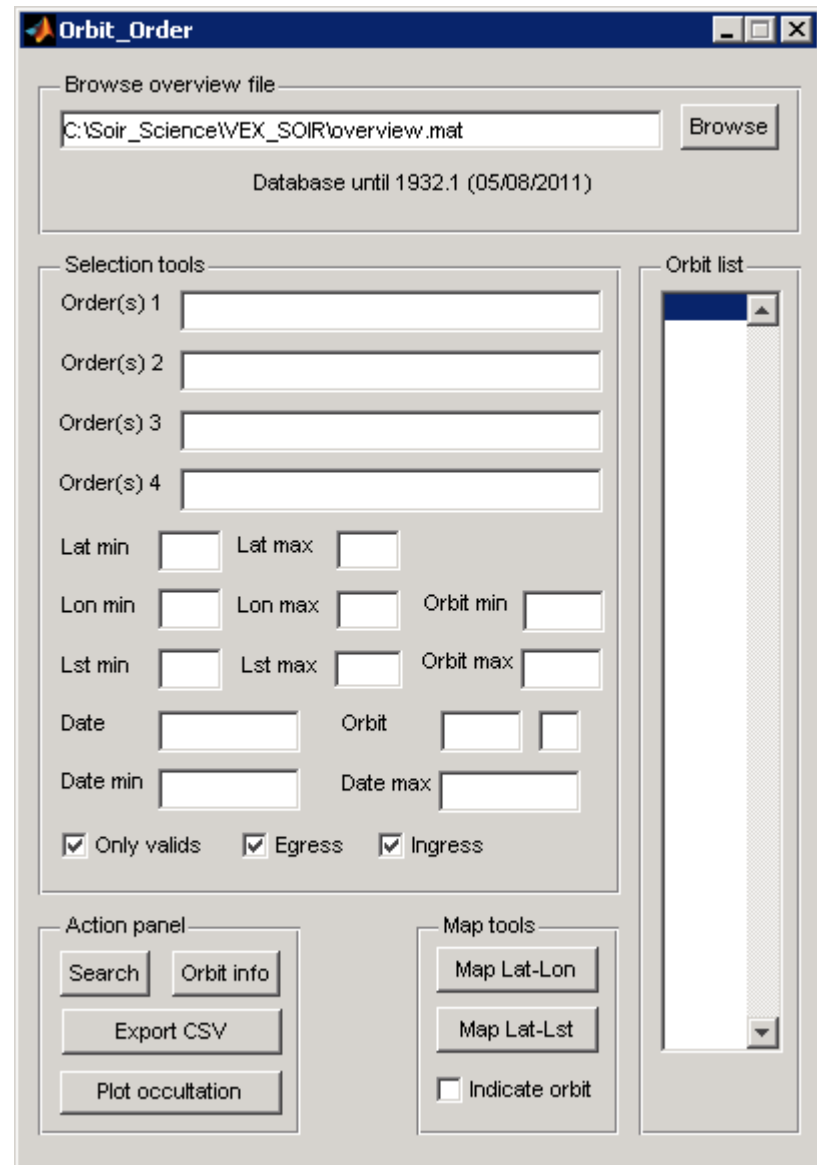
The screenshot shows the 'PixWn' tool interface with four main sections:

- Pixel to wavenumber:** Contains a 'Pixel' input field, an 'Order' dropdown menu set to '101', a 'Calculate' button, and a 'Wavenumber' output field.
- Wavenumber to pixel:** Contains a 'Wavenumber' input field, an 'Order' dropdown menu set to '101', a 'Calculate' button, and a 'Pixel' output field.
- Wavenumber from order to order:** Contains 'Starting order' and 'Ending order' dropdown menus (both set to '101'), 'Starting wavenumber' and 'Ending wavenumber' input fields, a 'Calculate' button, and empty output fields.
- Wavenumber to order:** Contains a 'Wavenumber' input field, an 'Order' output field, and a 'Calculate' button.

- ❑ Possibility to anticipate where a line will be replicated due to the order addition
- ❑ Possibility to find out in which order a given wavenumber is measured

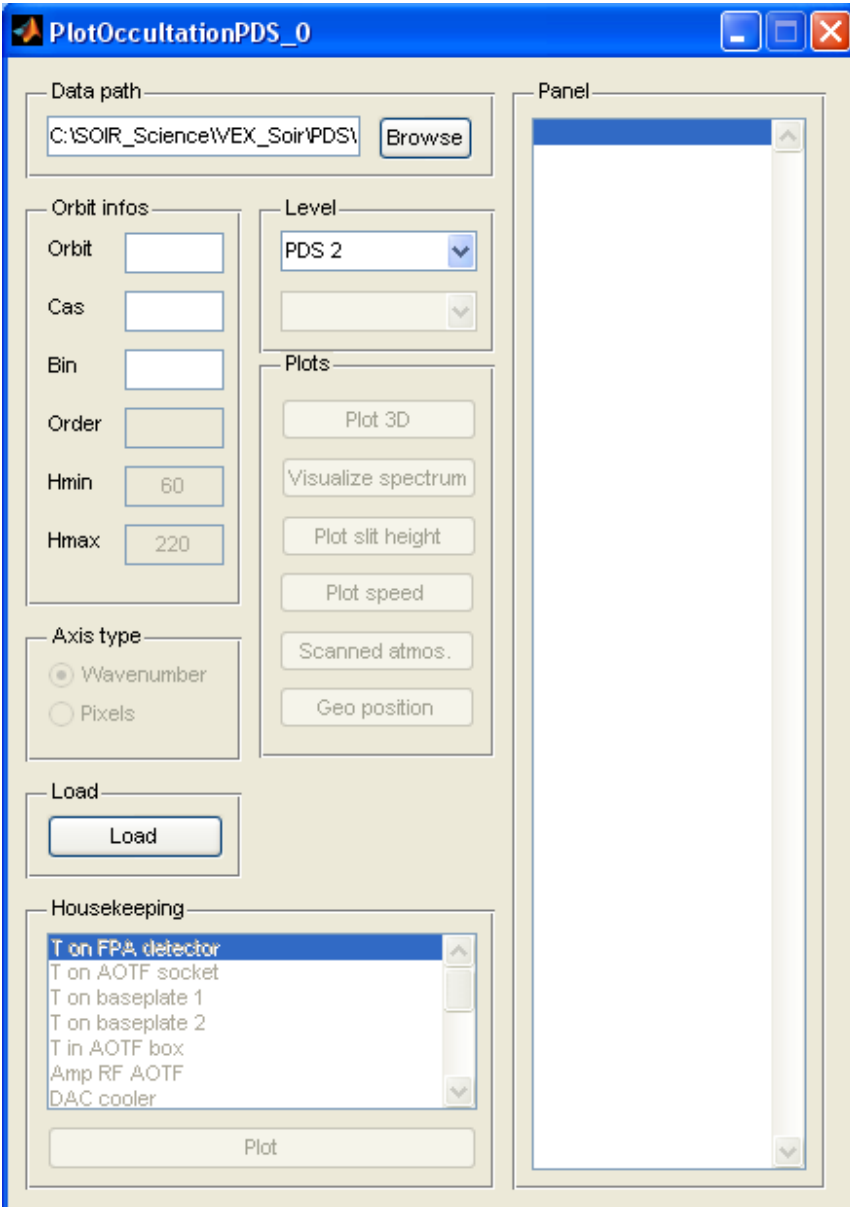
SOIR Data overview tool

- Tool to find an occultation in the SOIR database
- Possibility to search on
 - Order
 - Latitude
 - Longitude
 - Local solar time
 - Orbit number
 - Date
- Returns
 - List of occultations
 - Orbits information
 - Access to Plot occultation tool
 - Maps
- Only for occultations !



The screenshot shows the 'Orbit_Order' application window. It features a 'Browse overview file' section with a text box containing 'C:\Soir_Science\VEX_SOIR\overview.mat' and a 'Browse' button. Below this, it states 'Database until 1932.1 (05/08/2011)'. The 'Selection tools' section includes four input fields for 'Order(s) 1' through 'Order(s) 4', and pairs of input fields for 'Lat min/max', 'Lon min/max', 'Lst min/max', 'Date', 'Orbit', 'Date min', and 'Date max'. There are also checkboxes for 'Only valids', 'Egress', and 'Ingress'. The 'Action panel' at the bottom left contains buttons for 'Search', 'Orbit info', 'Export CSV', and 'Plot occultation'. The 'Map tools' section at the bottom right includes buttons for 'Map Lat-Lon', 'Map Lat-Lst', and an unchecked checkbox for 'Indicate orbit'. On the right side, there is a vertical 'Orbit list' panel with a scroll bar.

Plot occultation tool



The screenshot shows the PlotOccultationPDS_0 application window. It features a blue title bar with standard Windows window controls. The main interface is divided into several sections:

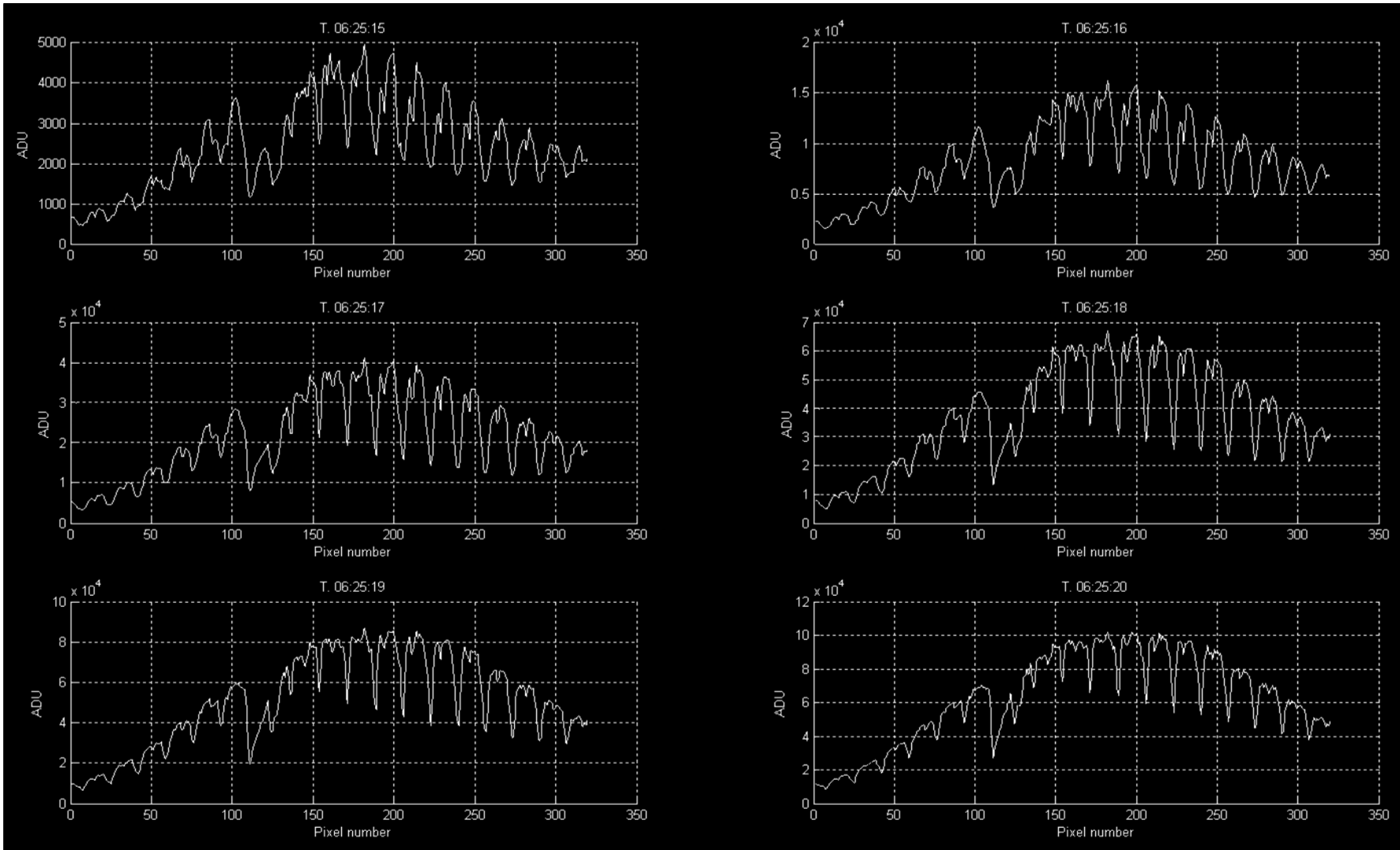
- Data path:** A text box containing 'C:\SOIR_Science\WEX_Soir\PDS\' and a 'Browse' button.
- Orbit infos:** Fields for 'Orbit', 'Cas', 'Bin', 'Order', 'Hmin' (set to 60), and 'Hmax' (set to 220).
- Level:** A dropdown menu currently showing 'PDS 2'.
- Axis type:** Radio buttons for 'Wavenumber' (selected) and 'Pixels'.
- Load:** A 'Load' button.
- Housekeeping:** A list box containing items like 'T on FPA detector', 'T on AOTF socket', 'T on baseplate 1', 'T on baseplate 2', 'T in AOTF box', 'Amp RF AOTF', and 'DAC cooler'.
- Plots:** A vertical stack of buttons: 'Plot 3D', 'Visualize spectrum', 'Plot slit height', 'Plot speed', 'Scanned atmos.', and 'Geo position'.
- Panel:** A large, empty rectangular area on the right side of the window, intended for displaying the plot.
- Plot:** A 'Plot' button at the bottom left of the interface.

- Tool to display
 - o Spectra
 - o Orbits characteristics
 - o Housekeeping data
- PDS/PSA levels 2 and 3
- At start, asks for the repository location
 - needs adequate level 3 data repository

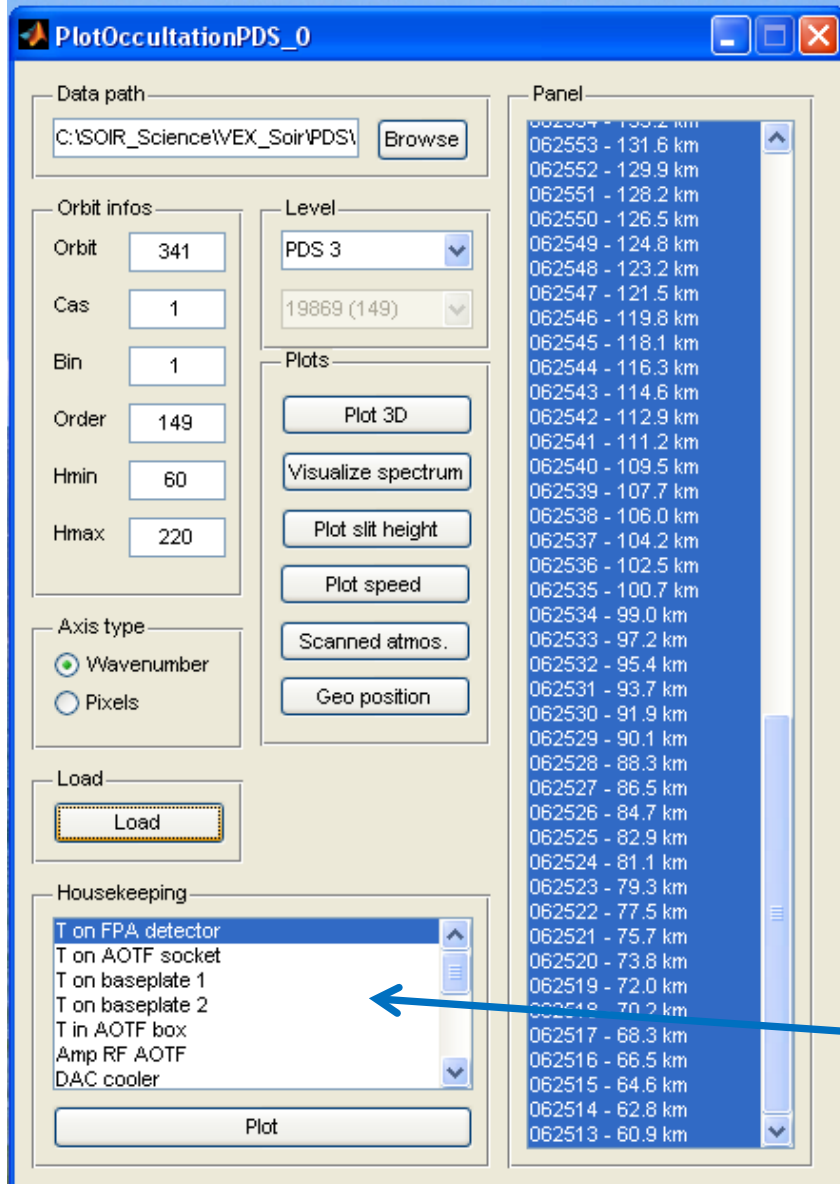
Orbit number	Mission phase
0-529	Nominal mission
530-1135	Extension 1
1136-1583	Extension 2
1584-2451	Extension 3
2452-	Extension 4

Plot occultation tool - Level 2

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Plot occultation tool - Level 3



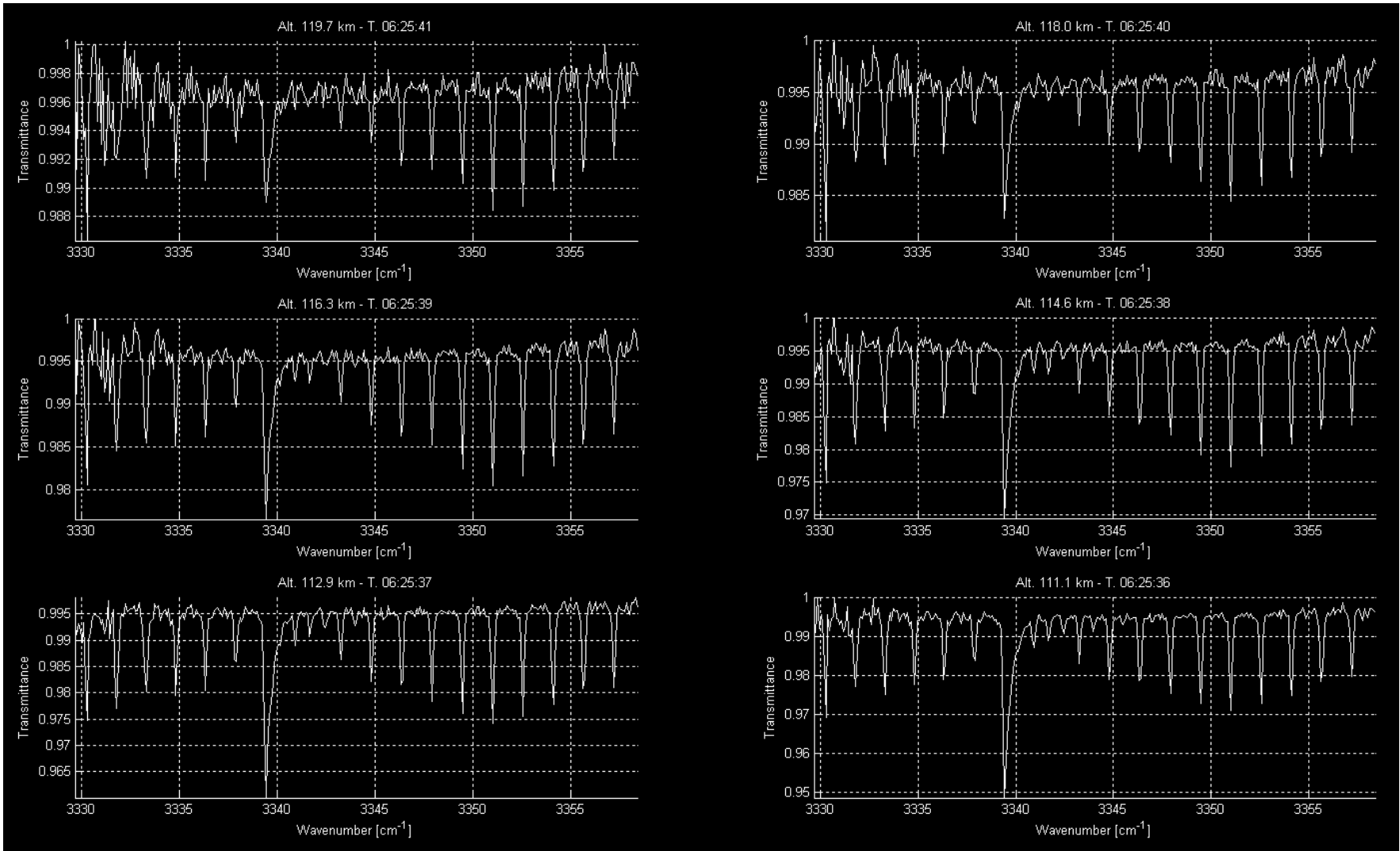
- Select the measurements
 - o Time in HHMMSS
 - o Altitude in km
- 3D-plot of selected spectra
- 2D-plot of selected spectra
- Plot slit height in atmosphere
- Plot VEX speed
- Show scanned atmosphere
- Map geoposition: Longitude vs. latitude

Plot
housekeeping
data

➤ 16 choices

Plot occultation tool - Level 3

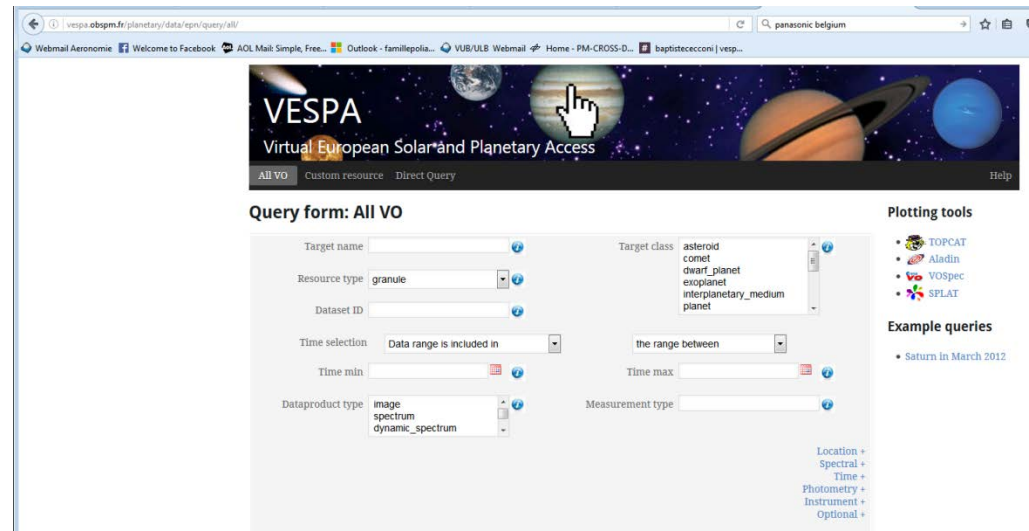
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Higher level data

- We are preparing a complete dataset of all individual profiles and average ones
 - o Density – Temperature profiles
 - o Trace gases vertical profiles
 - o VAST: binned latitudinal averages
- Will be reachable through the EuroPlanet VESPA interface

<http://vespa.obspm.fr/planetary/data/epn/query/all/>



Conclusions

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- 'New' updated transmittances have been delivered to the PSA
- Re-analyse of the updated transmittances is on-going
- Still A LOT to do with this incredible data set
 - o Improve the retrieval from the existing SOIR spectra
 - Include the Detection Limits (OCS, etc)
 - Correlation between the detected species (H_2O , SO_2) and aerosols
 - o Perform comparison/synergy with other VEX datasets and/or with ground-based/HST observations
 - o Validation wrt existing Venus atmosphere Models (GCM, 1-d RT)

Conclusions

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