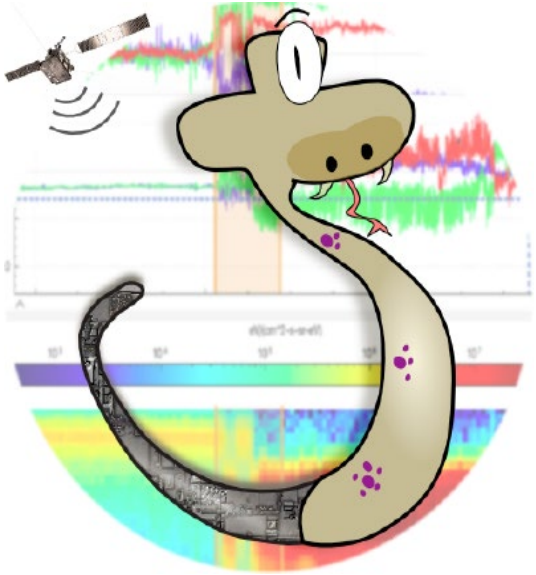

SciQLop

An overview for the non developers

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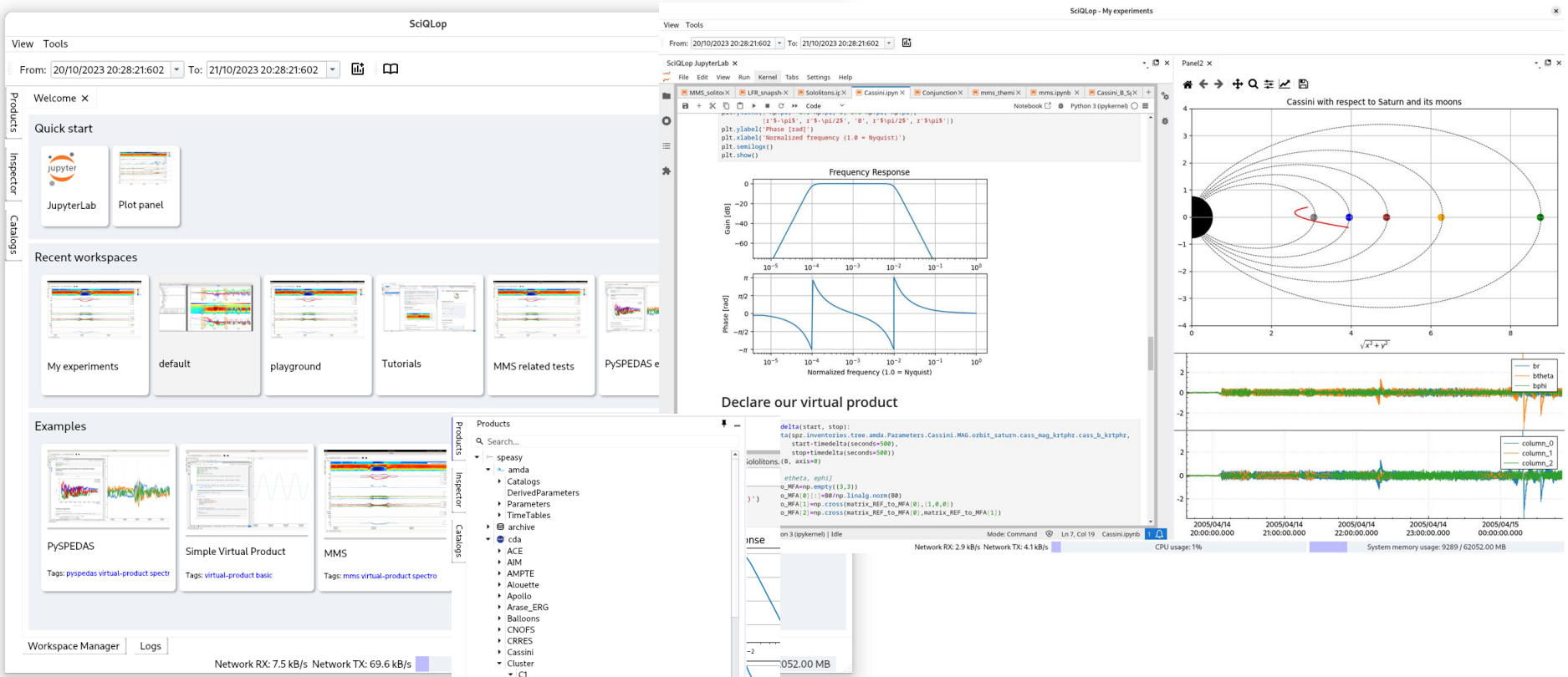
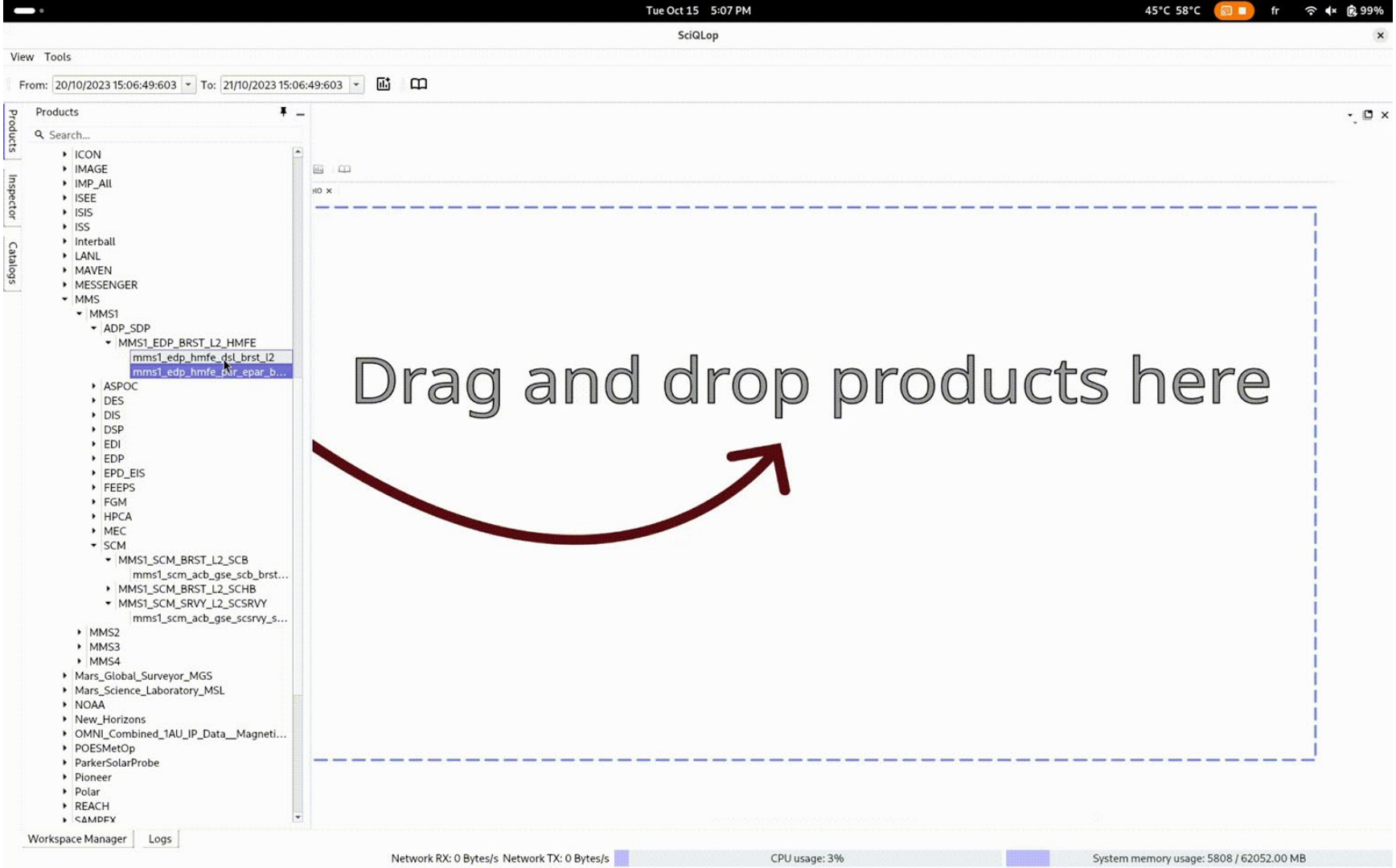
SciQLop brief description

- Cross platform desktop application
- C++/Python
- Fast (in-situ) time series visualisation tool
- An event catalog browsing and editing tool
- An highly customizable visualisation tool
  - Jupyterlab built-in
  - Workspaces to isolate specific studies
  - Plots any python function that takes a time range and returns a time serie


SciQLop
View Tools
From: 20/10/2023 20:28:21:602 To: 21/10/2023 20:28:21:602
Products
Inspector
Catalogs
Welcome
Quick start
JupyterLab
Plot panel
Recent workspaces
My experiments
default
playground
Tutorials
MMS related tests
Examples
PySPEDAS
Tags: pyspedas virtual-product spectr
Simple Virtual Product
Tags: virtual-product basic
MMS
Tags: mms virtual-product spectro
Workspace Manager
Logs
Network RX: 7.5 kB/s Network TX: 69.6 kB/s
Products
Search...
speasy
amda
Catalogs
DerivedParameters
Parameters
TimeTables
archive
cda
ACE
AIM
AMPTE
Alouette
Apollo
Arase_ERG
Balloons
CNOFS
CRRES
Cassini
Cluster
C1
ASP
C1_PP_ASP
I_ion__C1_PP_ASP
Status__C1_PP_ASP
CIS
FIELDNAM: Ion Current
LABLAXIS: I_ion
UNITS: uA
CATDESC: Ion Current
spz_shape: 1
start_date: 2000-12-09 00:00:03
stop_date: 2008-06-30 23:59:58
dataset: C1_PP_ASP
uid: C1_PP_ASP/I_ion__C1_PP_ASP
components: ['I_ion']
provider: cda
SciQLop - My experiments
From: 20/10/2023 20:28:21:602 To: 21/10/2023 20:28:21:602
SciQLop JupyterLab
File Edit View Run Kernel Tabs Settings Help
Frequency Response
Gain [dB]
Phase [rad]
Normalized frequency (1.0 = Nyquist)
Declare our virtual product
Panel2
Cassini with respect to Saturn and its moons
br
btheta
bphi
column_0
column_1
column_2
Network RX: 2.9 kB/s Network TX: 4.1 kB/s
CPU usage: 1%
System memory usage: 9289 / 62052.00 MB


Tue Oct 15 5:07 PM
45°C 58°C
fr
99%
SciQLop
View Tools
From: 20/10/2023 15:06:49:603
To: 21/10/2023 15:06:49:603
Products
Inspector
Catalogs
Products
Search...
ICON
IMAGE
IMP_All
ISEE
ISIS
ISS
Interball
LANL
MAVEN
MESSENGER
MMS
MMS1
ADP_SDP
MMS1_EDP_BRST_L2_HMFE
mms1_edp_hmfe_dsl_brst_l2
mms1_edp_hmfe_dsr_epar_b...
ASPOC
DES
DIS
DSP
EDI
EDP
EPD_EIS
FEEPS
FGM
HPCA
MEC
SCM
MMS1_SCM_BRST_L2_SCB
mms1_scm_acb_gse_scb_brst...
MMS1_SCM_BRST_L2_SCHB
MMS1_SCM_SRVY_L2_SCSRVY
mms1_scm_acb_gse_scsrvy_s...
MMS2
MMS3
MMS4
Mars_Global_Surveyor_MGS
Mars_Science_Laboratory_MSL
NOAA
New_Horizons
OMNI_Combined_1AU_IP_Data__Magneti...
POESMetOp
ParkerSolarProbe
Pioneer
Polar
REACH
SAMPEX
Drag and drop products here
Workspace Manager
Logs
Network RX: 0 Bytes/s Network TX: 0 Bytes/s
CPU usage: 3%
System memory usage: 5808 / 62052.00 MB

Plots python functions (**f(***start, stop***)**) so what?

As long as you can write some basic python code you can:

- Visualize any data from any file format from any source
- Visualize any computed quantity (remember Speasy slides)

```
def mms1_cos_theta_vb(start, stop):
    B,V=spz.get_data([
        spz.inventories.tree.cda.MMS.MMS1.FGM.MMS1_FGM_BRST_L2.mms1_fgm_b_gse_brst_l2_clean,
        spz.inventories.tree.cda.MMS.MMS1.DIS.MMS1_FPI_BRST_L2_DIS_MOMS.mms1_dis_bulkv_gse_brst
                  ], start, stop)

    B = B['Bx GSE', 'By GSE', 'Bz GSE']
    V = interpolate(B,V)
    cos_theta_vb = np.einsum('ij, ij->i', V, B)
             /(np.linalg.norm(B, axis=1)*np.linalg.norm(V, axis=1))

    return cos_theta_vb
```

- Build complex data pipelines and visualize the output
- Setup a custom visualisation panel

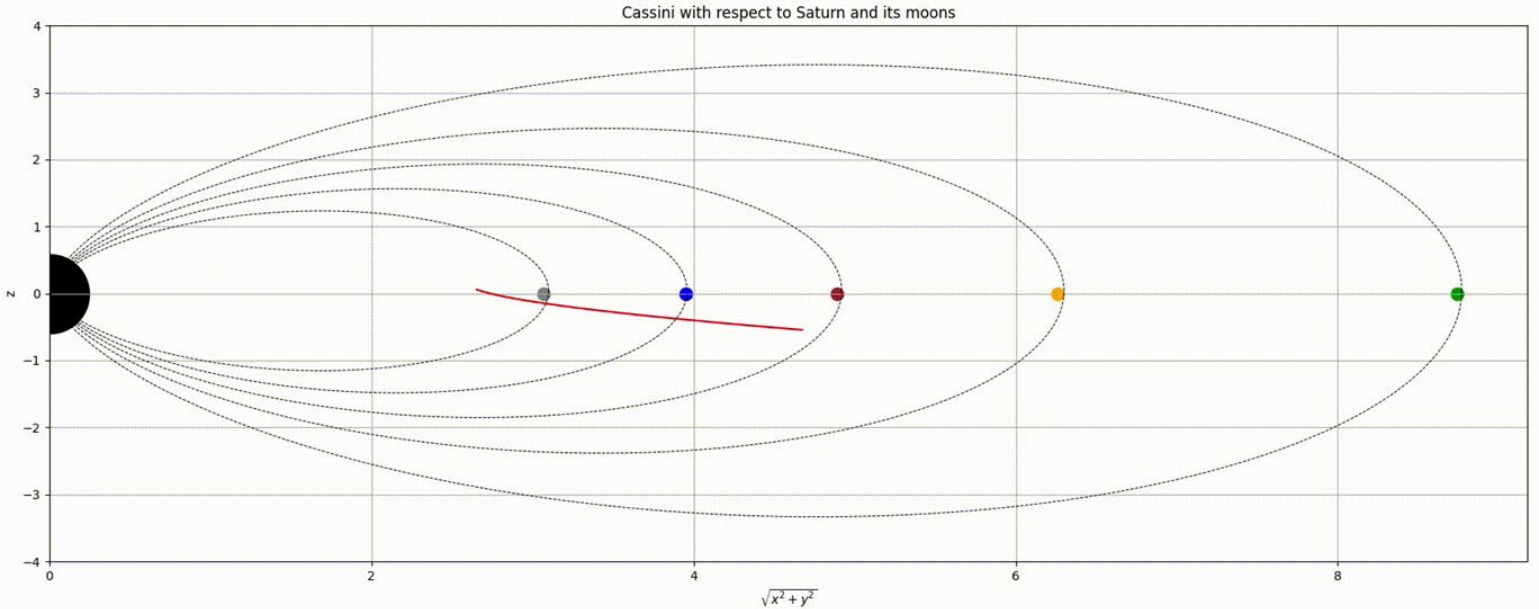
SciQLop - My experiments

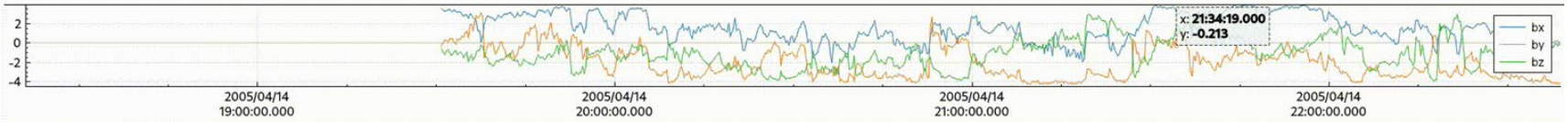
View Tools

From: 06/08/2023 16:05:47:321 To: 07/08/2023 16:05:47:321

Products Inspector Catalogs

Welcome SciQLop JupyterLab Panel0



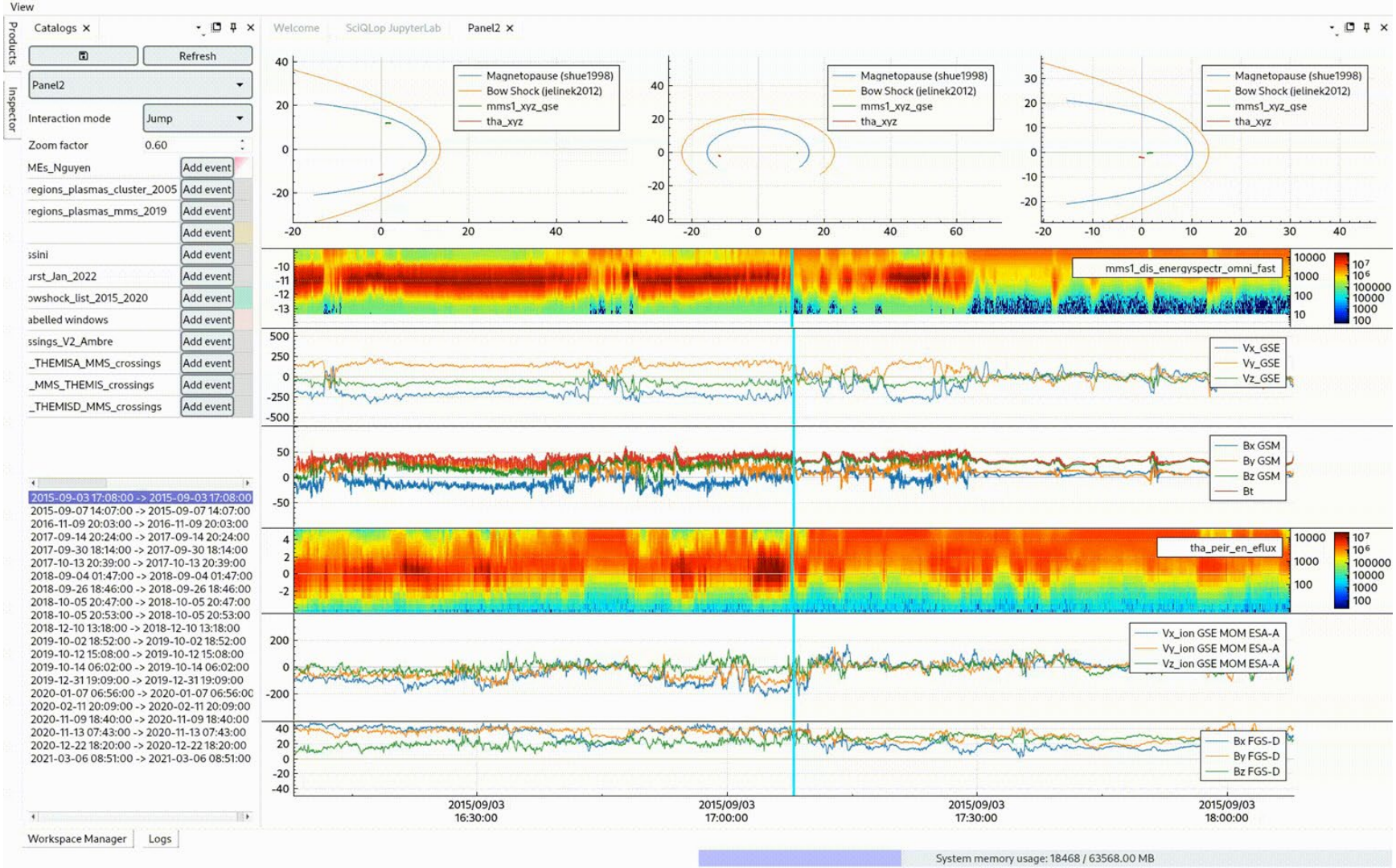


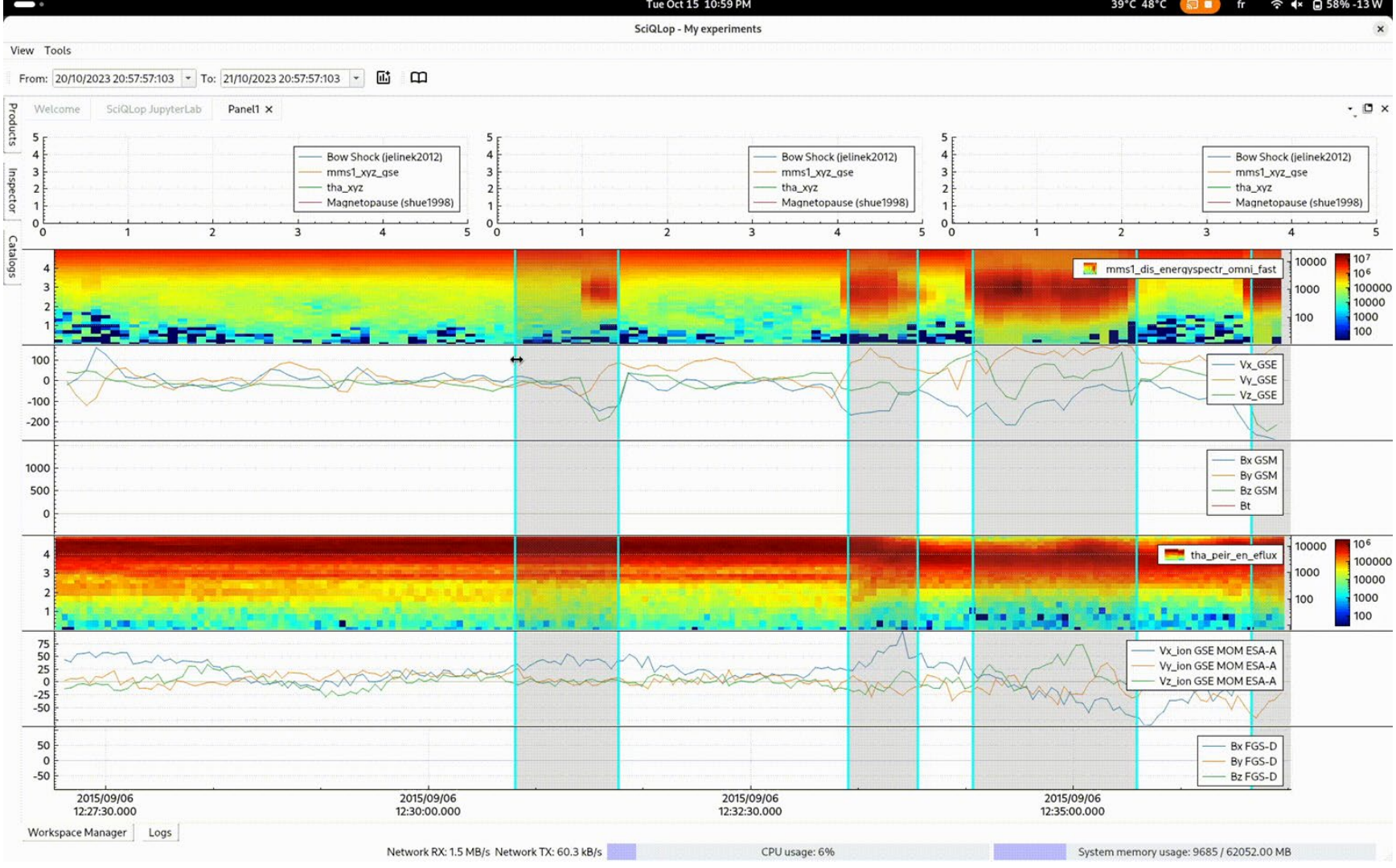
Workspace Manager Logs

Catalogues visualisation and edition

SciQLop was developed to make possible large statistical studies which implies:

- Being able to **quickly** create a big enough test and train sets for ML algorithms
- Being able to **quickly** browse thousand of detected events
- Being able to **quickly** label manually enough data for the study if ML doesn’t work
- Being able to share catalogues


View
Products
Inspector
Catalogs
Refresh
Panel2
Interaction mode
Jump
Zoom factor
0.60
MEs_Nguyen
regions_plasmas_cluster_2005
regions_plasmas_mms_2019
ssini
urst_Jan_2022
owshock_list_2015_2020
abelled windows
ssings_V2_Ambre
_THEMISA_MMS_crossings
_MMS_THEMIS_crossings
_THEMISD_MMS_crossings
Add event
2015-09-03 17:08:00 -> 2015-09-03 17:08:00
2015-09-07 14:07:00 -> 2015-09-07 14:07:00
2016-11-09 20:03:00 -> 2016-11-09 20:03:00
2017-09-14 20:24:00 -> 2017-09-14 20:24:00
2017-09-30 18:14:00 -> 2017-09-30 18:14:00
2017-10-13 20:39:00 -> 2017-10-13 20:39:00
2018-09-04 01:47:00 -> 2018-09-04 01:47:00
2018-09-26 18:46:00 -> 2018-09-26 18:46:00
2018-10-05 20:47:00 -> 2018-10-05 20:47:00
2018-10-05 20:53:00 -> 2018-10-05 20:53:00
2018-12-10 13:18:00 -> 2018-12-10 13:18:00
2019-10-02 18:52:00 -> 2019-10-02 18:52:00
2019-10-12 15:08:00 -> 2019-10-12 15:08:00
2019-10-14 06:02:00 -> 2019-10-14 06:02:00
2019-12-31 19:09:00 -> 2019-12-31 19:09:00
2020-01-07 06:56:00 -> 2020-01-07 06:56:00
2020-02-11 20:09:00 -> 2020-02-11 20:09:00
2020-11-09 18:40:00 -> 2020-11-09 18:40:00
2020-11-13 07:43:00 -> 2020-11-13 07:43:00
2020-12-22 18:20:00 -> 2020-12-22 18:20:00
2021-03-06 08:51:00 -> 2021-03-06 08:51:00
Workspace Manager
Logs
Welcome
SciQLop JupyterLab
Panel2
Magnetopause (shue1998)
Bow Shock (jelinek2012)
mms1_xyz_gse
tha_xyz
mms1_dis_energyspectr_omni_fast
Vx_GSE
Vy_GSE
Vz_GSE
Bx GSM
By GSM
Bz GSM
Bt
tha_peir_en_eflux
Vx_ion GSE MOM ESA-A
Vy_ion GSE MOM ESA-A
Vz_ion GSE MOM ESA-A
Bx FGS-D
By FGS-D
Bz FGS-D
2015/09/03
16:30:00
17:00:00
17:30:00
18:00:00
System memory usage: 18468 / 63568.00 MB


Tue Oct 15 10:59 PM
39°C 48°C
fr
58% -13 W
SciQLop - My experiments
View Tools
From: 20/10/2023 20:57:57:103 To: 21/10/2023 20:57:57:103
Products
Inspector
Catalogs
Welcome
SciQLop JupyterLab
Panel1
Bow Shock (jelinek2012)
mms1_xyz_qse
tha_xyz
Magnetopause (shue1998)
mms1_dis_energyspectr_omni_fast
Vx_GSE
Vy_GSE
Vz_GSE
Bx GSM
By GSM
Bz GSM
Bt
tha_peir_en_eflux
Vx_ion GSE MOM ESA-A
Vy_ion GSE MOM ESA-A
Vz_ion GSE MOM ESA-A
Bx FGS-D
By FGS-D
Bz FGS-D
2015/09/06 12:27:30.000
2015/09/06 12:30:00.000
2015/09/06 12:32:30.000
2015/09/06 12:35:00.000
Workspace Manager
Logs
Network RX: 1.5 MB/s Network TX: 60.3 kB/s
CPU usage: 6%
System memory usage: 9685 / 62052.00 MB

First SciQLop workshop in 2024 (Workshlop!)

- Two days event with presentation and hands on
- 26 in person participants, interns, PHD students, Scientists and emeritus!
- Now SciQLop ships with tutorials
- A lot of feedbacks (big backlog)
- Request for new Workshlops

First SciQLop workshop in 2024 (Workshlop!)

SciQLop future

- Workshlop™ at next MMS community workshop in Paris
- Plugins and workspaces “app store” like interface
  - Grading system based on peer review
- A central collaboration tool for our community?
- Used to validate instrument calibration updates in our lab
- Real time collaborative catalog editing (PyCRDT like JupyterLab)
- Used for SITL in future missions?