

HelioPy 0.15.0

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HelioPy guide

Community

Development

Data import (**heliopy.data**)

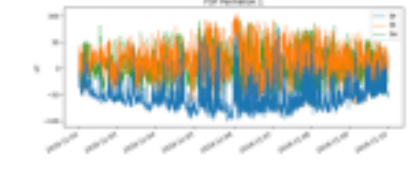
SPICE (**heliopy.spice**)

Heliosphere (**heliopy.models**)

Examples



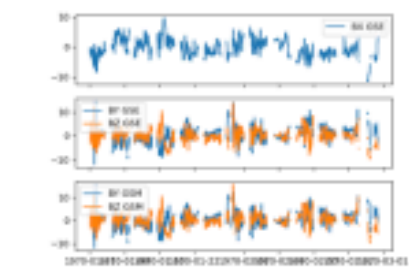
Speeding up file import



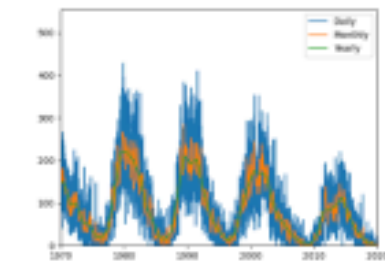
Parker Solar Probe peihelion 1



TimeSeries Plotting Example



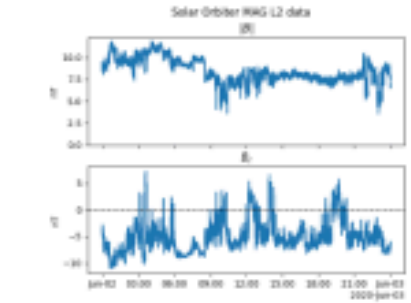
Plotting OMNI Data



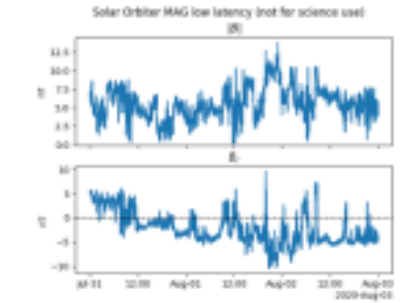
Importing sunspot data



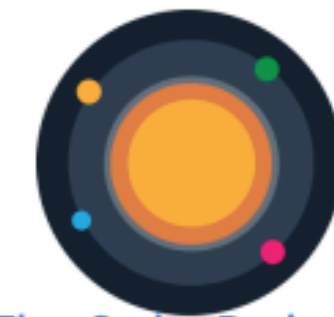
Local data inventory



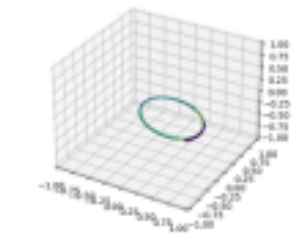
Solar Orbiter MAG data



Solar Orbiter low latency data



TimeSeries Basics



SPICE orbit plotting

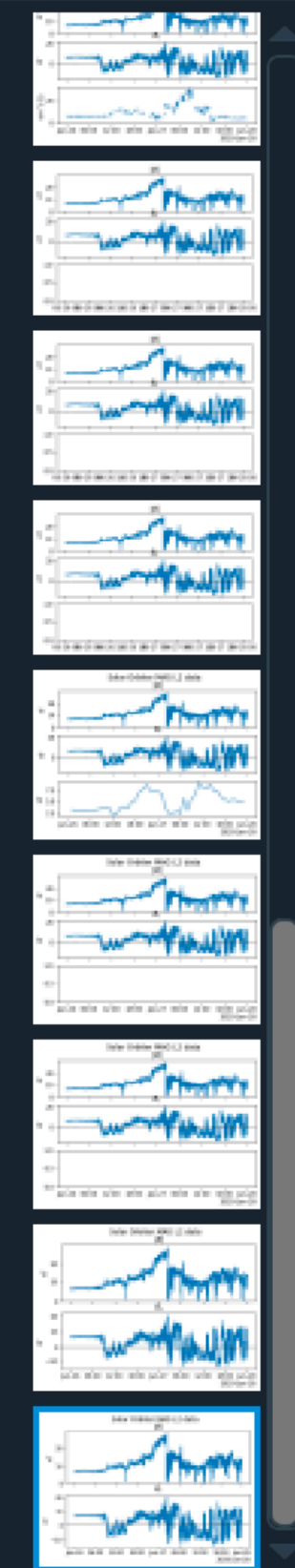
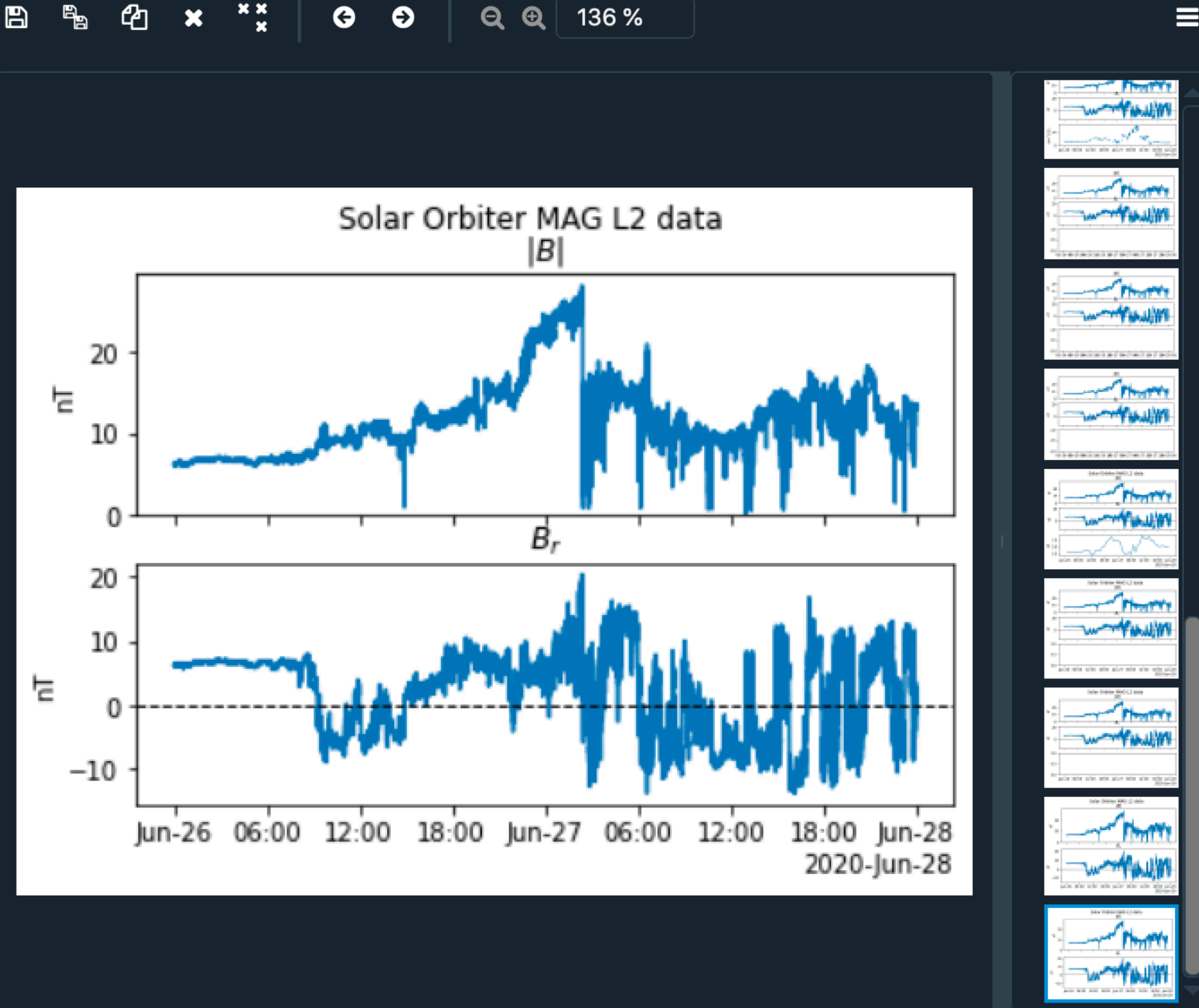
Download all examples in Python source code:
auto_examples_python.zip

Download all examples in Jupyter notebooks:
auto_examples_jupyter.zip

```

1  # -*- coding: utf-8 -*-
2  """
3  Solar Orbiter MAG data
4  =====
5
6  Downloading and plotting MAG data from Solar Orbiter.
7  """
8
9  #####
10 # Import the required modules
11 from datetime import datetime
12
13 import matplotlib.pyplot as plt
14 from matplotlib import dates as mdates
15 import numpy as np
16
17 from heliopy.data.solo import download
18
19 #####
20 # Download some magnetic field data
21
22 data = download(datetime(2020, 6, 26), datetime(2020, 6, 28), 'MAG-RTN-NORMAL', 'L2')
23 print(data.columns)
24
25 #####
26 # Calculate the magnetic field magnitude
27 modB = np.sqrt(data.quantity('B_RTN_0')**2 +
28                data.quantity('B_RTN_1')**2 +
29                data.quantity('B_RTN_2')**2)
30 data = data.add_column('modB', modB)
31
32 #####
33 # Plot the data
34 fig, axs = plt.subplots(2, 1, sharex=True)
35
36 ax = axs[0]
37 ax.plot(data.index, data.quantity('modB'))
38 ax.set_ylabel('nT')
39 ax.set_title(r'$|B|$')
40 ax.set_ylim(bottom=0)
41
42 ax = axs[1]
43 ax.plot(data.index, data.quantity('B_RTN_0'))
44 ax.set_ylabel('nT')
45 ax.set_title(r'$B_{r}$')
46 ax.axhline(0, color='black', linewidth=1, linestyle='--')
47
48 #import heliopy.data.omni as omni
49 #import matplotlib.pyplot as plt
50 #from datetime import datetime
51
52 #starttime = datetime(2020, 6, 26)
53 #endtime = datetime(2020, 6, 28)
54
55 #omni_data = omni.h0_mrg1hr(starttime, endtime)
56
57 #ax=axs[2]
58 #ax.plot(omni_data.index, omni_data.quantity('ABS_B1800'),label='B')
59 #ax.set_ylabel('nT')

```



Variable explorer Help Plots Files

Console 1/A

```

Downloading http://soar.esac.esa.int/soar-sl-tap/data?
retrieval_type=PRODUCT&product_type=SCIENCE&data_item_id=solo_L2_mag-rtn-normal_20200628 to /Users
amasson/Documents/Python/heliopy/data/solar_orbiter/MAG-RTN-NORMAL/L2/solo_L2_mag-rtn-
normal_20200628.cdf
100.0% 10854400 / 10852618

['B_RTN_0', 'B_RTN_1', 'B_RTN_2', 'VECTOR_TIME_RESOLUTION', 'VECTOR_RANGE', 'QUALITY_BITMASK',
'QUALITY_FLAG']

In [23]:

```