The OverPlotter

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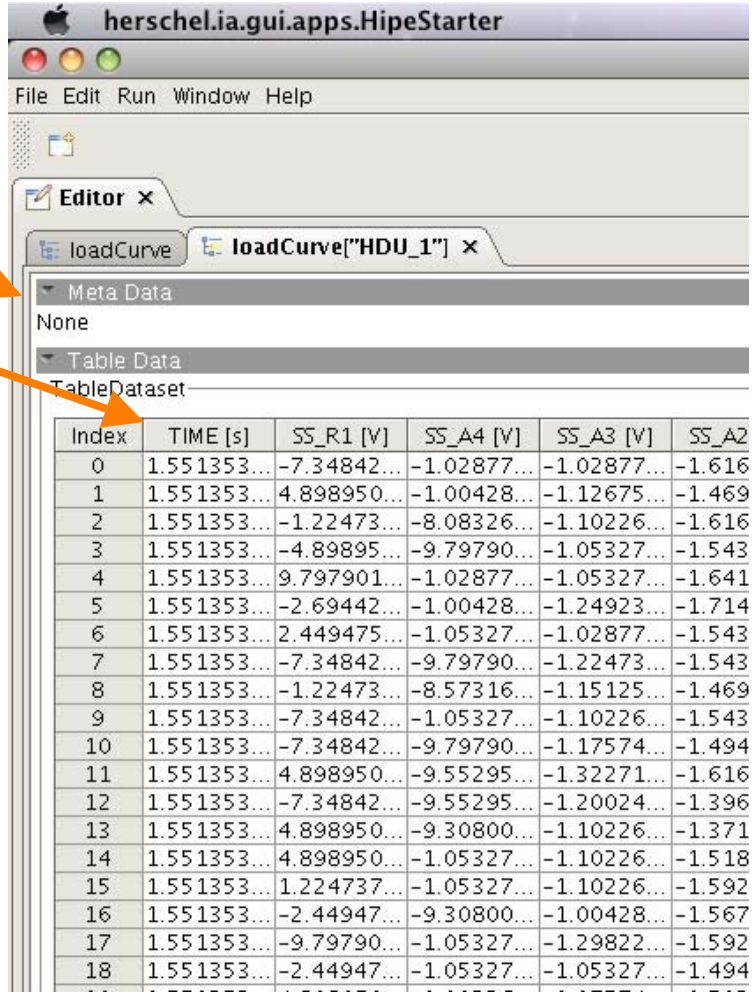
What is OverPlotter?

- OverPlotter is a GUI tool written in Java to support interactive data processing and analysis for the Herschel Space Observatory within the framework of the Herschel Common Science Software (HCSS)
- It allows for rapid interactive graphic display and selection of tabular data
- Comparison of different datasets becomes easy
- The tool is “pluggable” and can be used by other applications as a component

Data Input

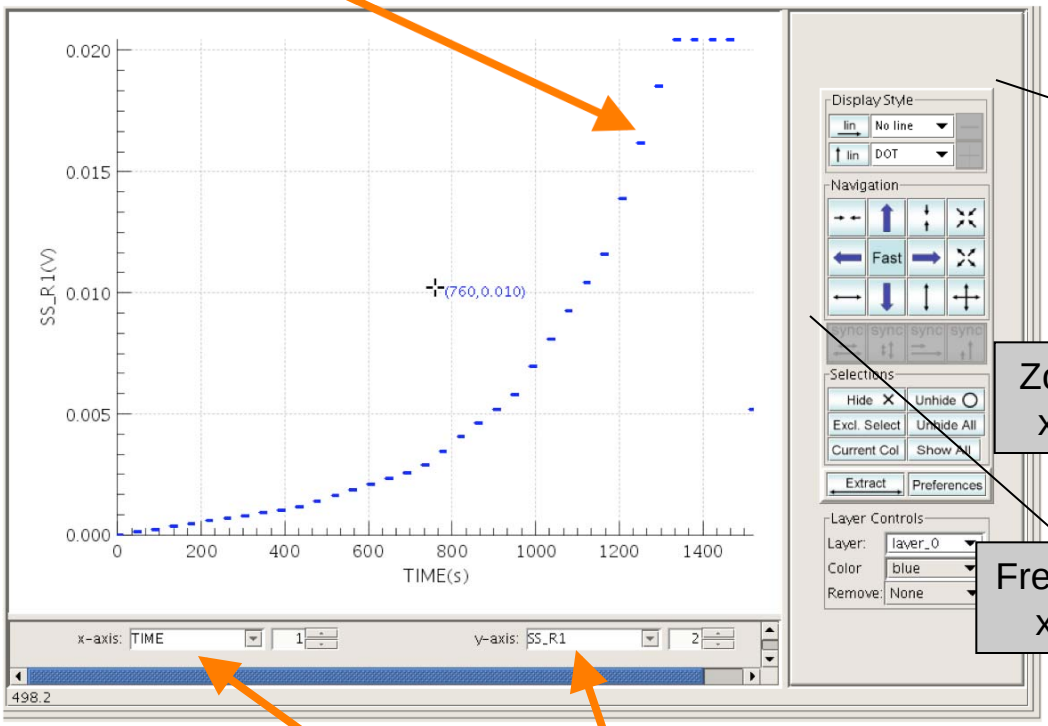
- Two dimensional Table Datasets
  - Header with metadata
  - Several data columns of equal length
- Only numerical data, including complex data
- Data comes directly from an analysis session



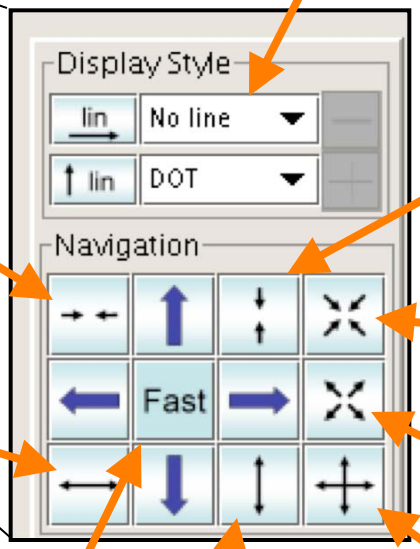
Index	TIME [s]	SS_R1 [V]	SS_A4 [V]	SS_A3 [V]	SS_A2
0	1.551353...	-7.34842...	-1.02877...	-1.02877...	-1.616
1	1.551353...	4.898950...	-1.00428...	-1.12675...	-1.469
2	1.551353...	-1.22473...	-8.08326...	-1.10226...	-1.616
3	1.551353...	-4.89895...	-9.79790...	-1.05327...	-1.543
4	1.551353...	9.797901...	-1.02877...	-1.05327...	-1.641
5	1.551353...	-2.69442...	-1.00428...	-1.24923...	-1.714
6	1.551353...	2.449475...	-1.05327...	-1.02877...	-1.543
7	1.551353...	-7.34842...	-9.79790...	-1.22473...	-1.543
8	1.551353...	-1.22473...	-8.57316...	-1.15125...	-1.469
9	1.551353...	-7.34842...	-1.05327...	-1.10226...	-1.543
10	1.551353...	-7.34842...	-9.79790...	-1.17574...	-1.494
11	1.551353...	4.898950...	-9.55295...	-1.32271...	-1.616
12	1.551353...	-7.34842...	-9.55295...	-1.20024...	-1.396
13	1.551353...	4.898950...	-9.30800...	-1.10226...	-1.371
14	1.551353...	4.898950...	-1.05327...	-1.10226...	-1.518
15	1.551353...	1.224737...	-1.05327...	-1.10226...	-1.592
16	1.551353...	-2.44947...	-9.30800...	-1.00428...	-1.567
17	1.551353...	-9.79790...	-1.05327...	-1.29822...	-1.592
18	1.551353...	-2.44947...	-1.05327...	-1.05327...	-1.494

Plot Features

X-Y scatter diagram



Changeable plot styles, symbols, symbol sizes, and lines



Zoom in y-axis

Zoom in x-axis

Zoom in

Free scale x-axis

Zoom out

Toggle fast/ slow mode

Free scale y-axis

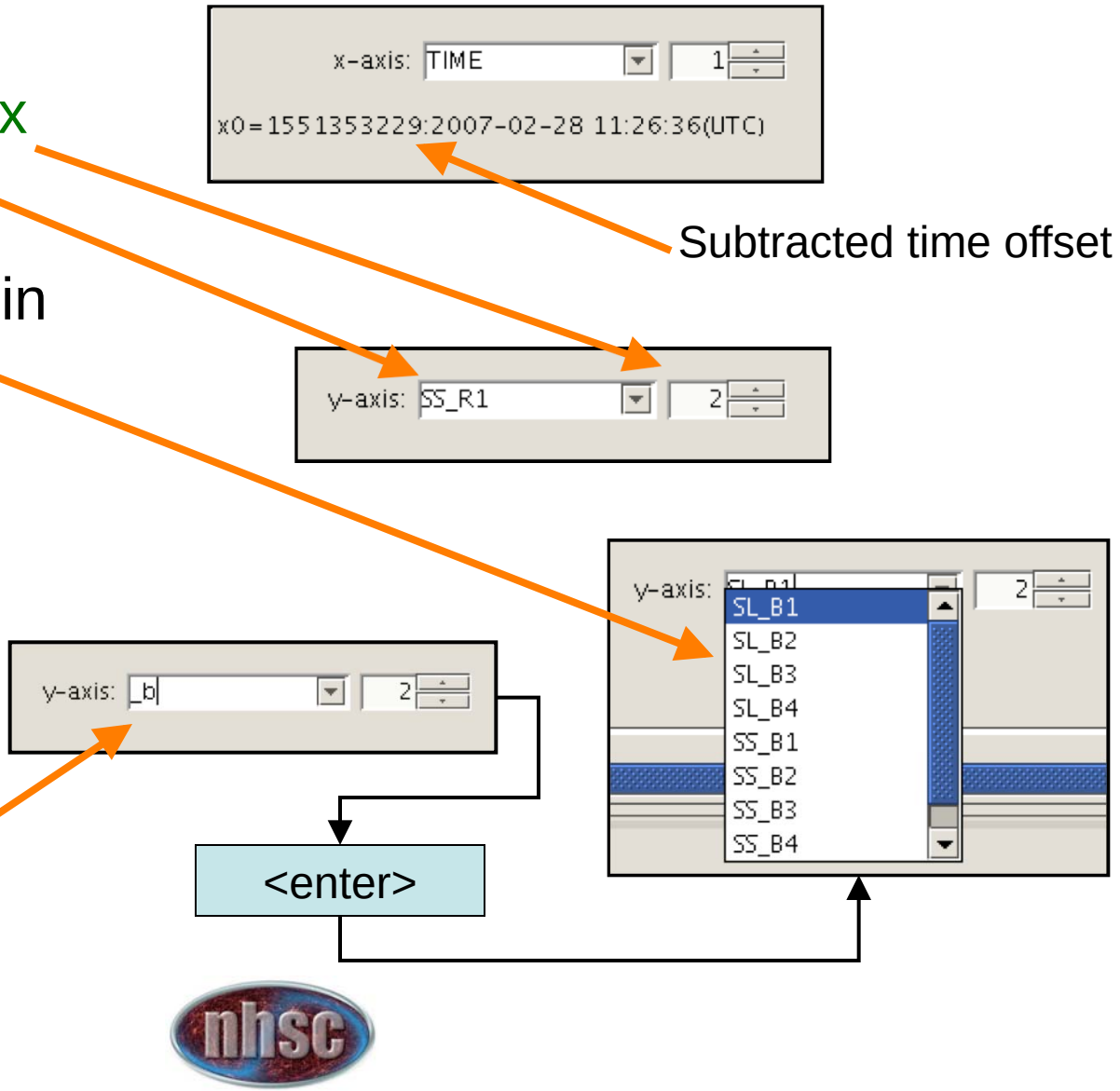
Free Scale

Selectable columns for x- and y-axis

Blue Arrows: Pan x/y

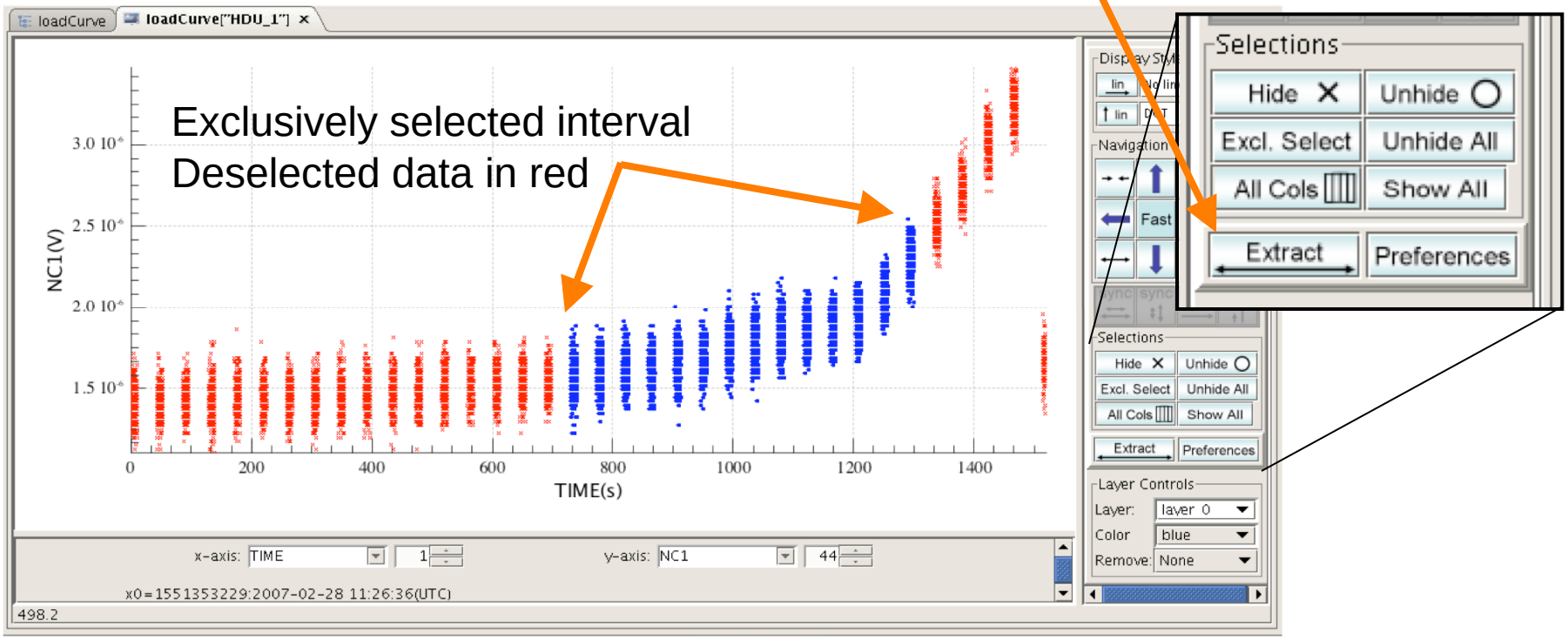
Column Selectors

- Select any column by index or by name
- Show all the column names in the drop down menu
- Sort column names
- Show alphabetically ordered selections of columns by substring



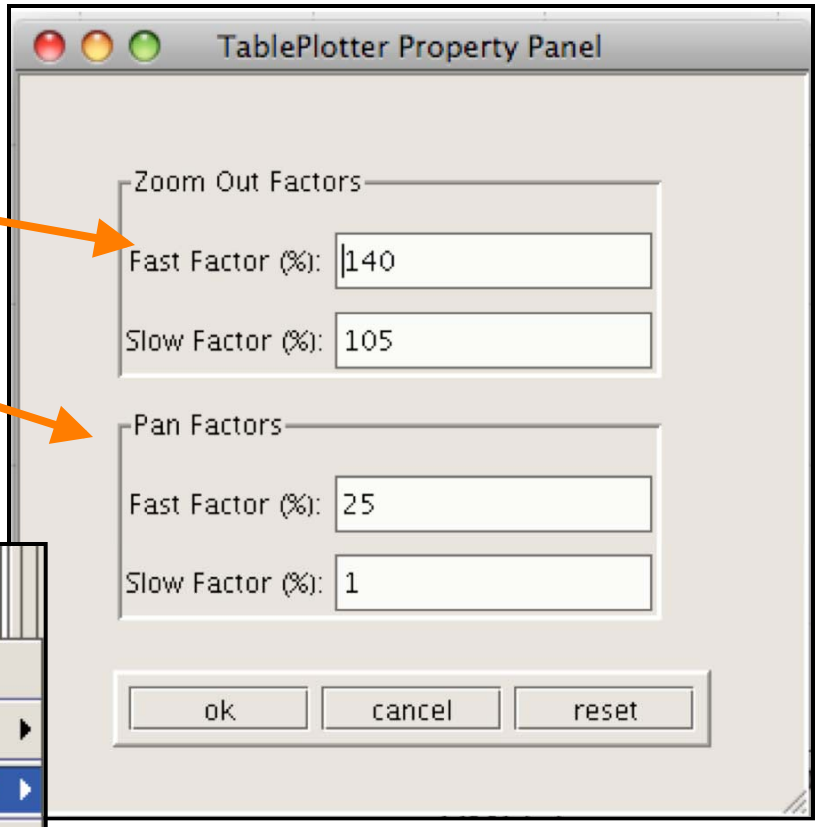
Data Selection and Extraction

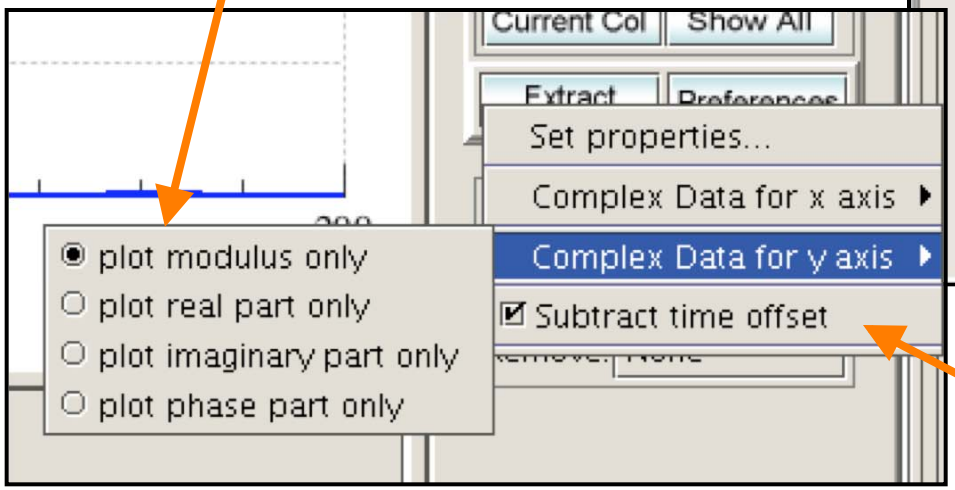
- All columns/current column
- Hide/unhide
- Exclusive select
- Show All/Select only
- Selected data can be extracted as new table back into session



Preferences Menu

- Set fast and slow pan and zoom factors
- Complex data handling

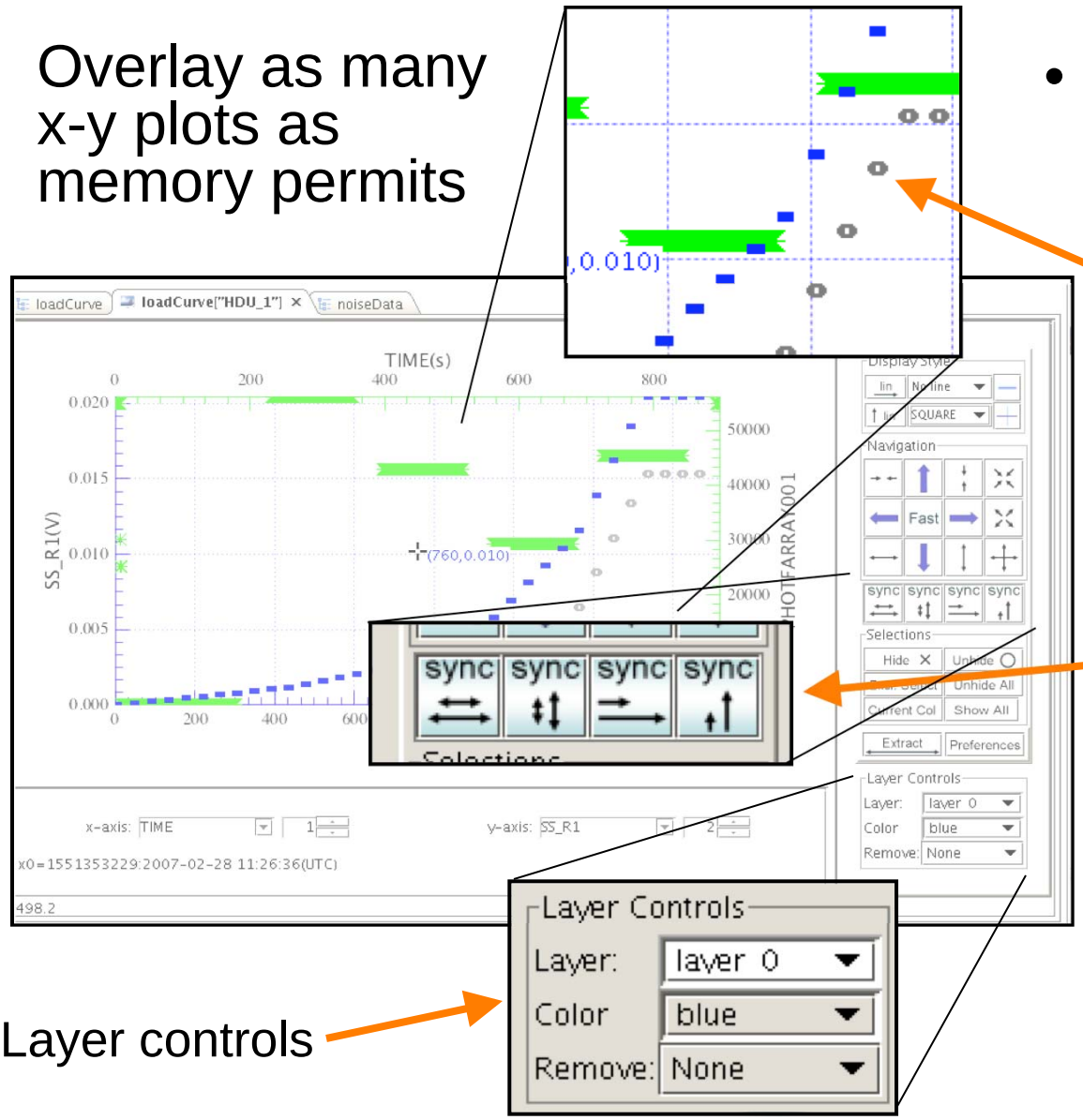




Option to subtract large offsets from x and y-axis (useful for absolute time representations like TAI)

Overplot Features

- Overlay as many x-y plots as memory permits

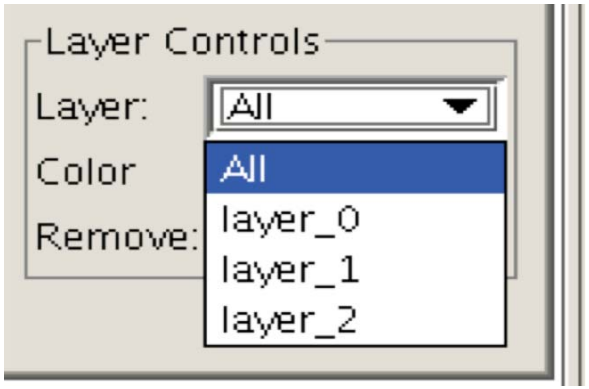


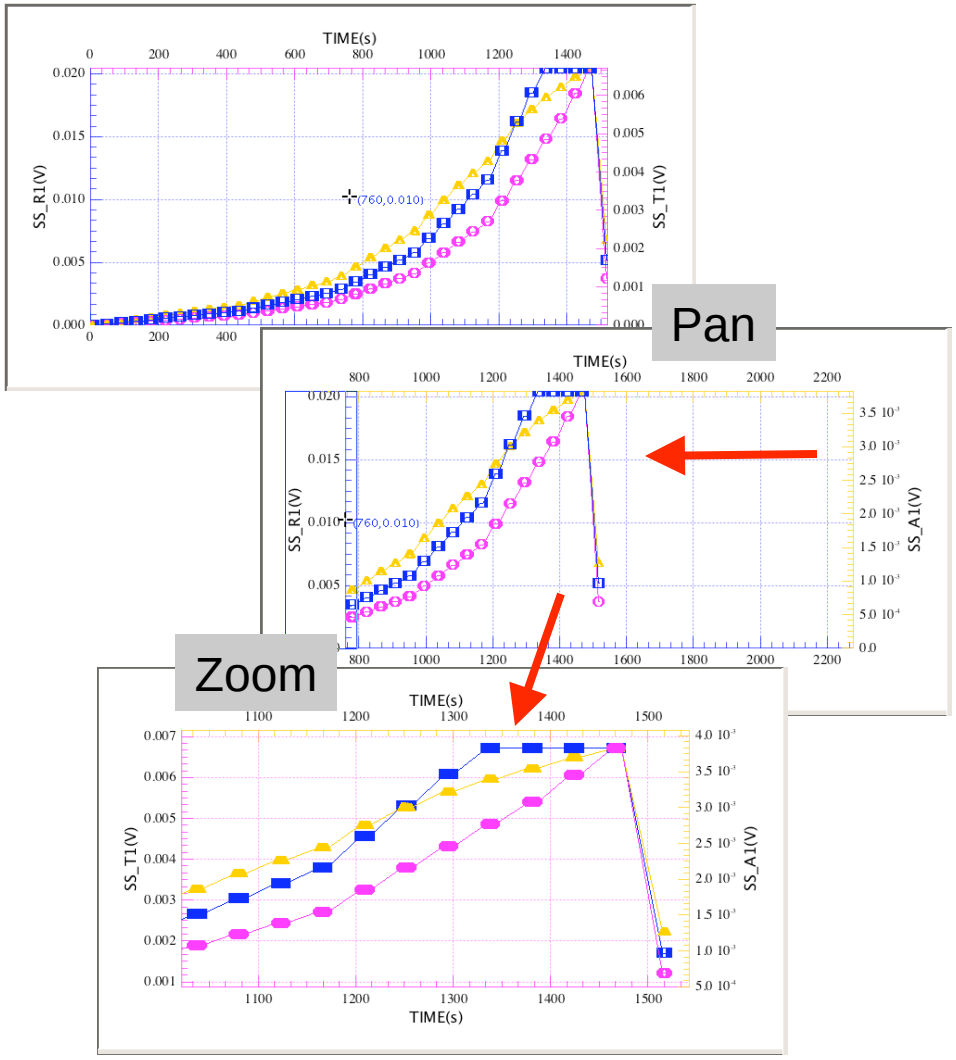
Layer controls

- Single Layer Mode
  - Each x-y plot can be modified individually
  - The properties of each x-y plot layer are saved as “personalities”
  - Different x-y plots can be synchronized to each other
  - Offset and scale can be synchronized individually

More Overplot Features

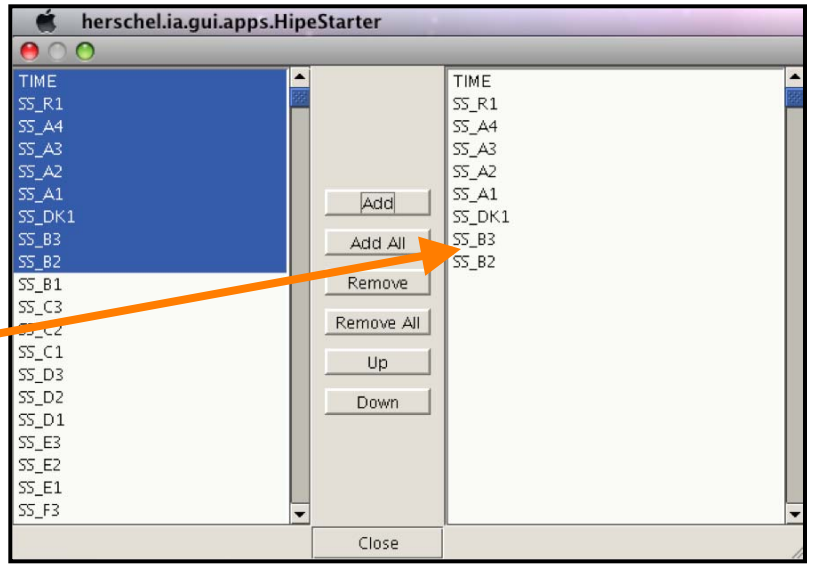
- All Layers Mode
  - All x-y plots can be modified as a whole (like glued together transparencies)
  - Free scale works on all layers simultaneously
- Layers can be added and removed at any time

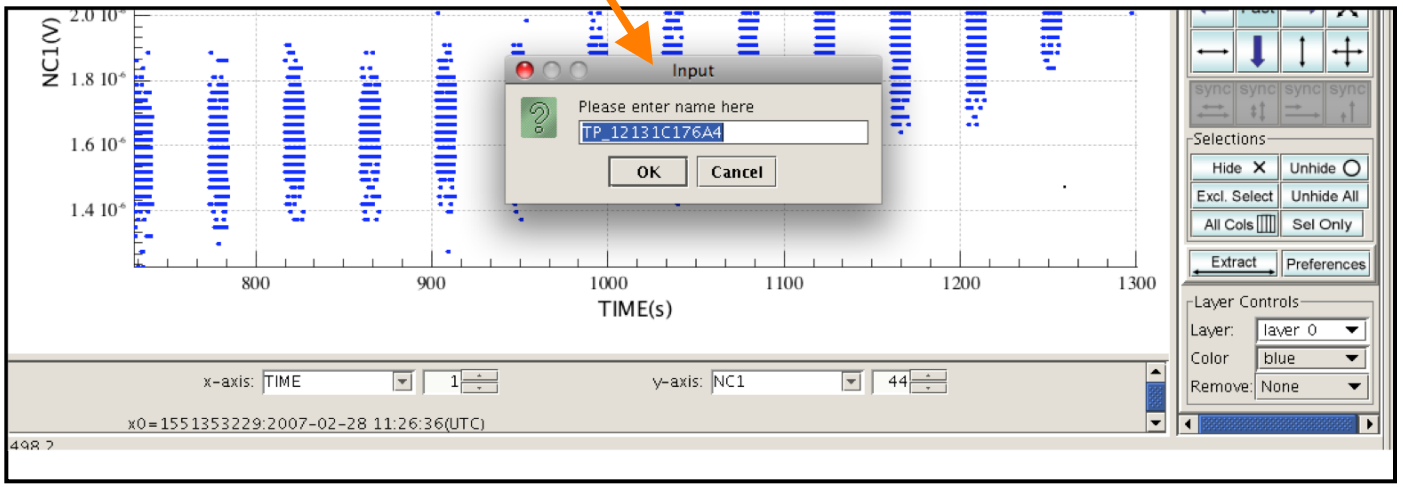




Data Output

- Save the diagram as an image file
- Print the diagram
- Extract selected data to new dataset





Summary

- OverPlotter is a Java based user friendly plotting tool to benefit Herschel scientists to visually analyze tabular data.
- Very useful features include pan, synchronize, zoom, data selection, data extraction, and overlay of multiple plots.
- Through inheritance in Java the tool can be re-used as a component of other programs (pluggable and extendable).