

Introduction

In order to promote the use of the DORIS products, the International DORIS Service (IDS) has made available on its web site ids-doris.org a new set of tools, called **Plot tools**, to interactively build and display graphs of DORIS station coordinates time series and orbit residuals.

These web tools are:

STCDtool providing station coordinates time series (North, East, Up position evolution) from the IDS Analysis Centers

POEtool providing statistics time series (orbit residuals and number of measurements for the DORIS stations) from CNES (the French Space Agency) Precise Orbit Determination processing.

Complementary data about station and satellites events can also be displayed (e.g. antenna changes, system failures, degraded data...). Information about earthquakes obtained from USGS survey service can also be superimposed on the position time series. All these events can help in interpreting the discontinuities in the time series.

- Library: Highcharts/ Highstock
- Langage: javascript
- Input data in XML format
- Web browsers : Firefox, Google Chrome, Safari, Internet Explorer*

About the data

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Station coordinates time series are generated from the STCD (time series format of IDS) files provided by IDS Analysis Centers and available on the IDS Data Centers.

Orbit performance time series are outputs of the CNES POE processing for the DORIS missions.

Satellite events are extracted from the list of the main events that occurred on the DORIS system elements with the exception of the station network.

Station events are extracted from the list of the main events that occurred on the DORIS station network (new sites, new antennas, removed sites, failures...) with information on data gaps, invalidated data...

Information about recent earthquakes in the vicinity of the DORIS stations are obtained from USGS survey service



Overview

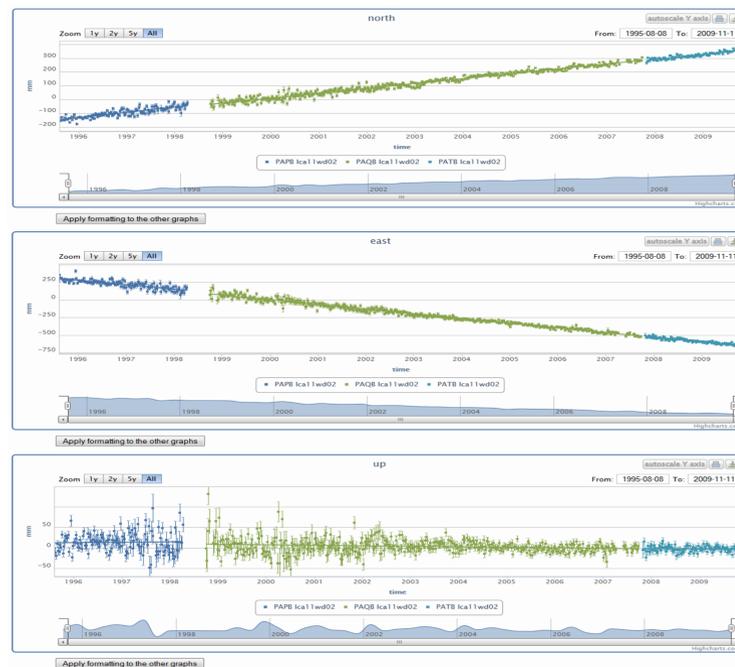
STCD tool and POE tool contain utilities for selecting sites or satellites, displaying time series, editing data, changing plot appearance, specifying scaling, downloading data, plots and graph statistics in several formats.

They are equipped with statistic tools for the calculation of mean, slope and weighted rms.

Several series can be viewed and compared on the same graph. Complementary data about station and satellites events can also be displayed.

A help online is available for both tools.

STCDtool <http://ids-doris.org/plottool/stcd/stcdtool.php>
Example of time series for the site of Papeete (French Polynesia).



POEtool <http://ids-doris.org/plottool/stcd/poetool.php>
Statistics for the HY-2A mission from CNES POD: DORIS orbit residuals for each arc, number of measurements



Future developments

- IDS
- Station time series : ensure that the same position reference is used by the ACs (fix cause of some bias between the time series)
 - Add station combined times series of the IDS Combination Center
 - Dedicated version for outputs from IDS Combination Center (geocenter, scale,...)

CNES/CLS Analysis Centers
•Common tool for DORIS and GNSS time series of the CNES/CLS Acs for IDS and IGS

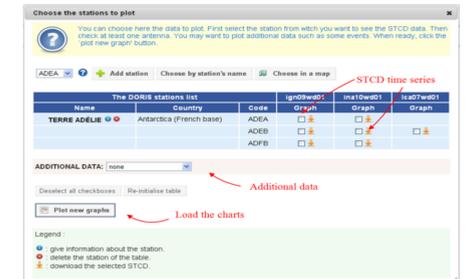
CNES/CLS altimetry CALVAL
• Propose a tool to visualize geodetic, tide gauges and altimetric time series

How to load data?

Selection in a list or Selection on a map



Selection of the time series to plot



Statistics display

The menu bar proposes to get statistics for the displayed series. They are given for the plotted points. They are determined again after each modification of the plots (zoom, data removed, selection...). Hence, it is possible paste series of successive stations of one site and obtained the RMS and slope of the concatenated series

« Statistics » button in the menu bar



Data selection



Statistics for each series and selection

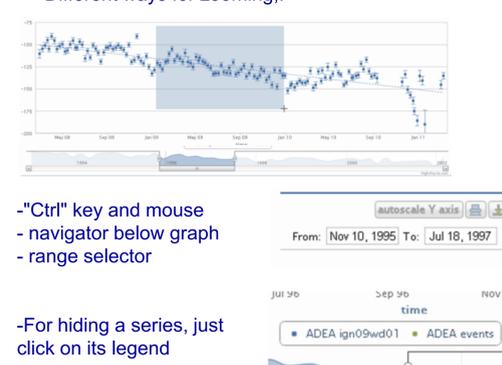
Station	Mean	WRSD	Slope	Period
CRPB Ica11wd02	-1.34mm	8.56mm	0.84+/-0.85mm/year	2004/2/3-2007/4/6
CRPB Ica11wd02	-3.71mm	8.73mm	-5.45+/-1.83mm/year	2007/4/13-2009/9/26
CRPB Ica11wd02	-9.9mm	7.07mm	-3.69+/-0.63mm/year	2009/4/24-2012/5/30
selected	51.73	11.81	7.16+/-0.25	2004/2/17-2012/5/30

Velocity

Complete series from selected points

Plot browsing

Different ways for zooming: :

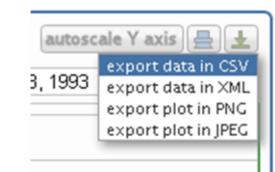


- "Ctrl" key and mouse
- navigator below graph
- range selector

- For hiding a series, just click on its legend

Data and plot export

Data can be uploaded from the list of time series in STCD format but also in CSV (modified series) and XML (complete series) formats. Each plot can be exported in PNG or JPEG format



A PDF report including the North, East and Up plots and the statistics table can be get from the menu bar

