

BotoSeis: A user-friendly graphical interface for SU

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OUTLINE

1. What is the BotoSeis?
2. The main processing interface
3. Interactive tools
4. Conclusion and perspectives

What is the BotoSeis?

The BotoSeis is a simple graphical user interface created to teach seismic processing using the Seismic Un*x package.

What mean BotoSeis?

Boto is the legendary Amazonian dolphin.

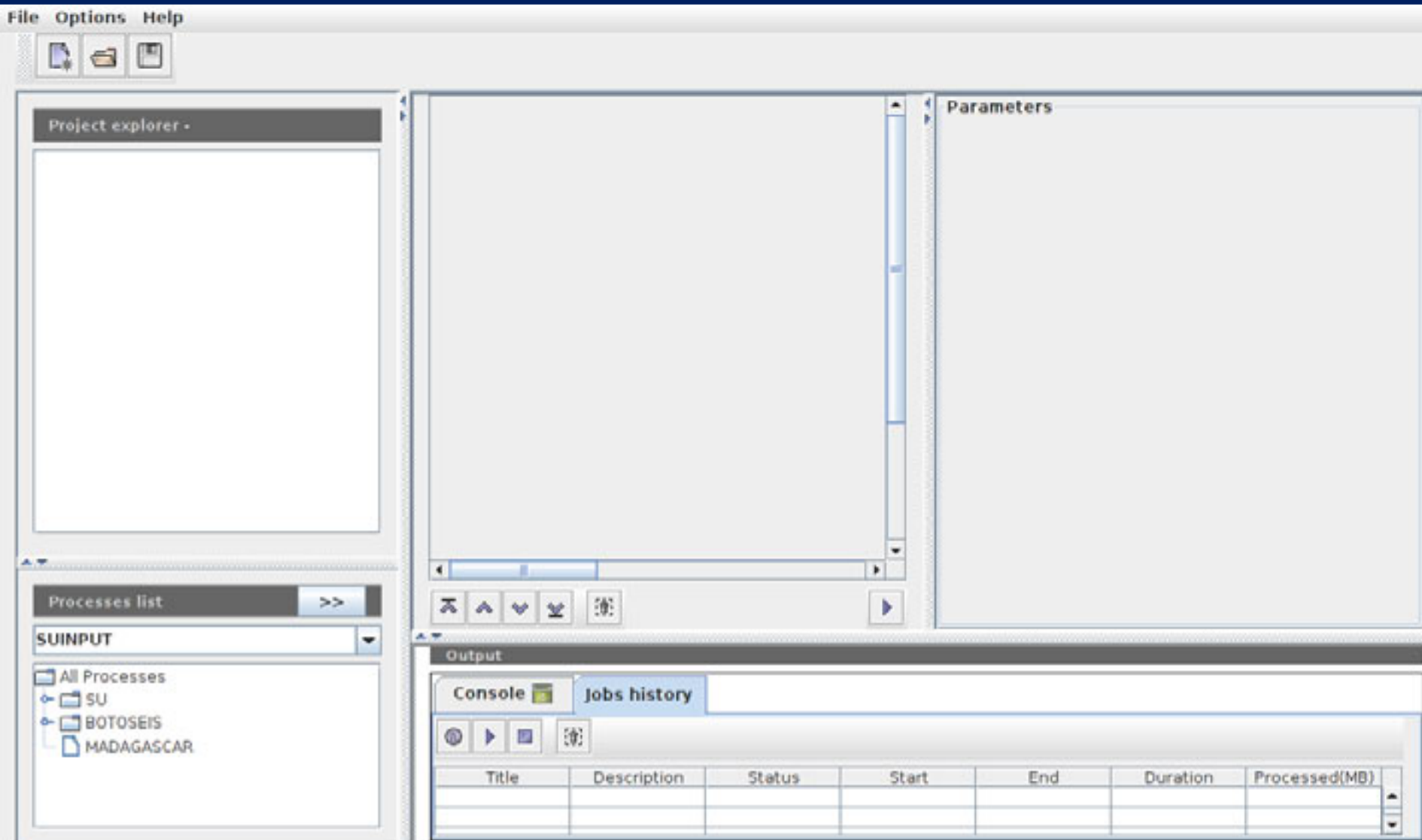


Federal University of Para (UFPA) / Brazil



http://en.wikipedia.org/wiki/Amazon_river_dolphin

2. The main graphical interface of BotoSeis

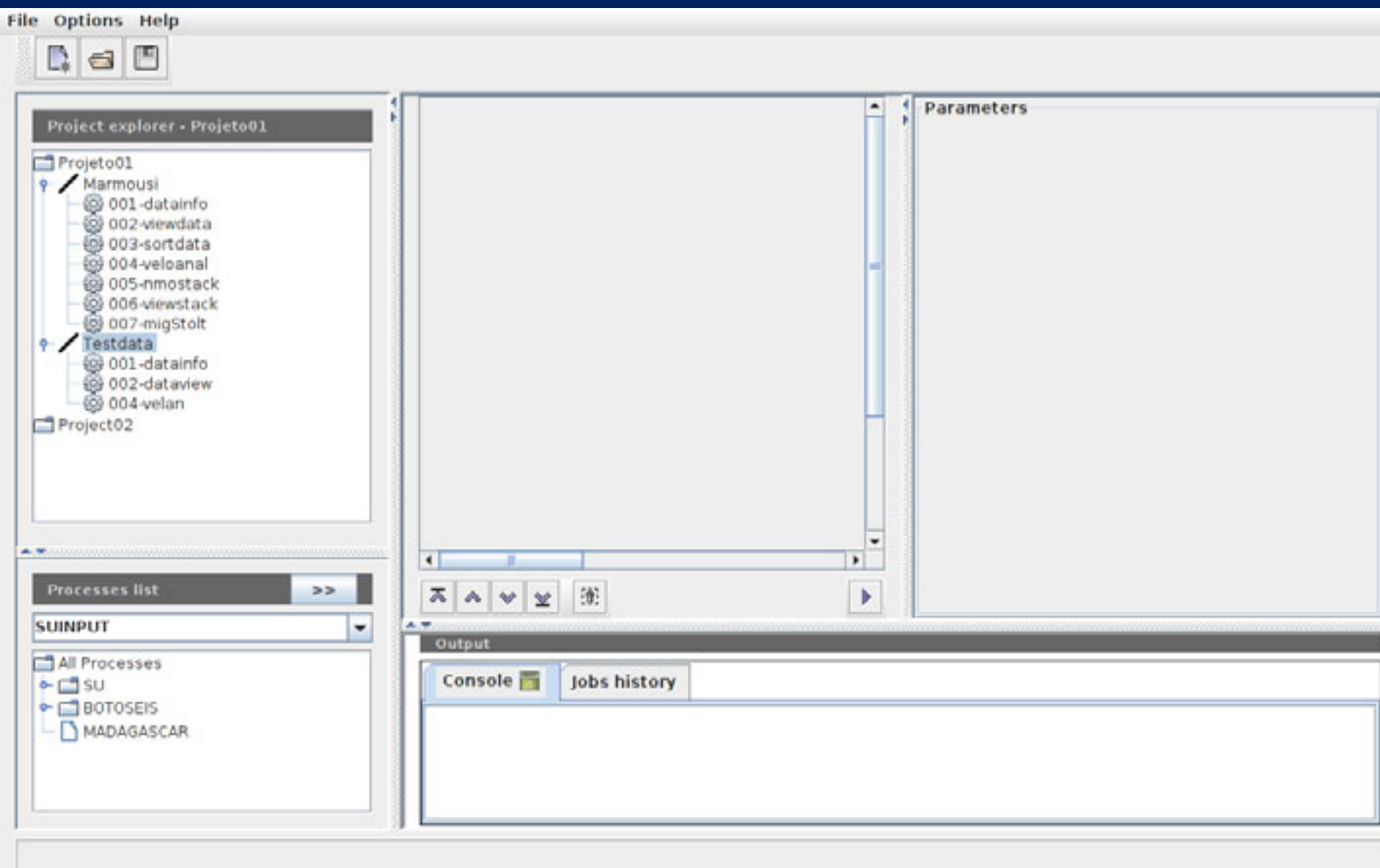


2. The main graphical interface of BotoSeis

Options to handle projects, lines and workflows:

- ✓ Create and save a project
- ✓ Load projects
- ✓ Create and load several lines for a project
- ✓ Create and load several workflows for a line
- ✓ Rename a project, line and workflow
- ✓ Delete project, line and workflow

2. The main graphical interface of BotoSeis



2. The main graphical interface of BotoSeis

Options to build workflows:

- ✓ Move up and move down a process
- ✓ Insert a process in any place
- ✓ Comment a process
- ✓ Deleting a process

2. The main graphical interface of BotoSeis

The screenshot displays the BotoSeis graphical user interface. At the top, there is a menu bar with 'File', 'Options', and 'Help'. Below the menu bar are icons for file operations. The main interface is divided into several panels:

- Project explorer - Projeto01:** A tree view showing the project structure. Under 'Projeto01', there are two folders: 'Marmousi' and 'Testdata'. 'Marmousi' contains files 001-datainfo, 002-viewdata, 003-sortdata, 004-veloanal (highlighted), 005-nmostack, 006-viewstack, and 007-migStolt. 'Testdata' contains files 001-datainfo, 002-dataview, and 004-velan. 'Project02' is also listed.
- Processes list:** A dropdown menu currently showing 'SUINPUT'. Below it, a tree view shows 'All Processes' with sub-items 'SU', 'BOTOSEIS', and 'MADAGASCAR'.
- Workflow Diagram:** A central area showing a vertical flow of process boxes: 'SUINPUT' (top), 'SUFILTER' (middle, highlighted with a red border), 'SUGAIN', and 'botoVelan' (bottom). Arrows indicate the flow from top to bottom.
- SUFILTER Configuration:** A panel on the right for configuring the 'SUFILTER' process. It includes a title 'SUFILTER', a label 'optional', and three input fields: the first contains '6,10,40,60' with a label 'f - array of filter frequ', the second is empty with a label 'amps - array of filter an', and the third contains '0.004' with a label 'dt - if dt is not set in header, then dt is m'.
- Output Panel:** A panel at the bottom right with tabs for 'Console' and 'Jobs history'. The 'Console' tab is active, showing a large empty text area.

2. The main graphical interface of BotoSeis

Running options and information of a workflow:

- ✓ Log file
- ✓ Stop the job execution
- ✓ Status of a job
- ✓ Start time and end time
- ✓ Used memory

2. The main graphical interface of BotoSeis

The screenshot displays the BotoSeis graphical interface with the following components:

- Project explorer - Projeto01:** A tree view showing project folders and files. The file '003-sortdata' is selected.
- Processes list:** A dropdown menu showing 'SUINPUT' and a tree view of processes including 'SU', 'BOTOSEIS', and 'MADAGASCAR'.
- Diagram:** A flow diagram showing 'SUSORT' (highlighted with a red border) pointing to 'SUOUTPUT'.
- SUSORT configuration:** A panel with 'required' and 'optional' sections. The 'required' section shows a path and 'Input file'. The 'optional' section shows a key-value pair: '[[+ -]key1 [+ -]key2 ...]'. The 'required' section contains the text: `/home/german/BotoseisExample ... Input file`. The 'optional' section contains the text: `[[+ -]key1 [+ -]key2 ...]`.
- Output:** A panel with 'Console' and 'jobs history' tabs. The 'jobs history' tab is active, showing a table of job execution details.

Title	Description	Status	Start	End	Duration	Processed(MB)
001-datainfo	german - /home/...	Completed	15/06/2011 03:00	15/06/2011 03:00	1.00 sec	68.82
002-viewdata	german - /home/...	Stopped	15/06/2011 03:00	15/06/2011 03:01	17.00 sec	9.54
003-sortdata	german - /home/...	Error	15/06/2011 03:01	15/06/2011 03:01	0.00 sec	0.00
003-sortdata	german - /home/...	Completed	15/06/2011 03:01	15/06/2011 03:01	0.00 sec	68.82

2. The main graphical interface of BotoSeis

Options to add and edit programs:

- ✓ Interactive addition of a new program from SU, MADAGASCAR,...
- ✓ Interactive edition of any added program

2. The main graphical interface of BotoSeis

The screenshot displays the BotoSeis graphical user interface. On the left, there is a 'Project explorer - Project02' and a 'Processes list' showing a tree view of processes under 'All Processes', including 'SU' and its sub-processes like 'SUINPUT', 'SU', 'SU Data', etc. The main window is titled 'Available processes' and shows a list of processes under the 'Filtering' group: 'SUFILTER', 'SUBFILF', 'SUCONV', 'SUXCOR', and 'SUPEF'. The 'SUFILTER' process is selected, and its properties are shown in the 'Process general properties' section:

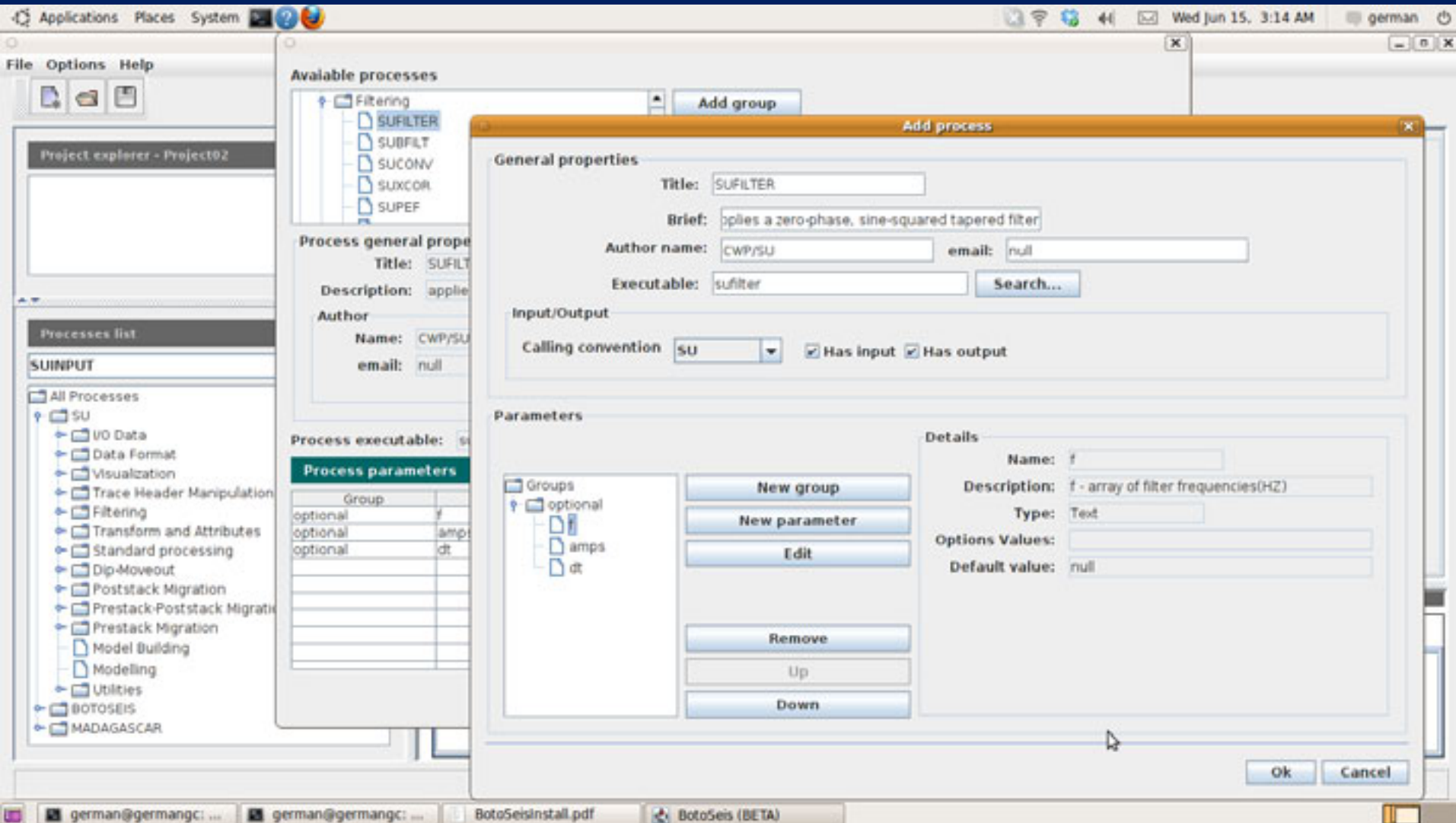
- Title:** SUFILTER
- Description:** applies a zero-phase, sine-squared tapered filter
- Author:**
 - Name:** CWP/SU
 - email:** null
- Process executable:** sufilter

Below the general properties is a 'Process parameters' table:

Group	Name	Type	Values	Brief	Default
optional	f	Text		f - array of filter fre...	null
optional	amps	Text		amps - array of fit...	null
optional	dt	Numeric		dt - if dt is not set i...	null

At the bottom of the window are 'Ok' and 'Cancel' buttons. The system tray at the bottom shows the user 'german@germang' and the application 'BotoSeis (BETA)'.

2. The main graphical interface of BotoSeis



3. Interactive tools of BotoSeis

The BotoSeis Project also has objective to develop interactive tools for some processes, such as:

- ✓ Geometry
- ✓ Data visualization
- ✓ Velocity analysis
- ✓ Spectral analysis
- ✓ F-K filter
- ✓ etc.

3. Interactive tools of BotoSeis

BotoView : Interactive data visualization tool

The screenshot displays the BotoSeis (BETA) software interface, which is divided into several panels. On the left, there is a 'Project explorer - Projeto01' panel showing a tree structure of data files, with '002-viewdata' selected. Below it is a 'Processes list' panel showing 'SUINPUT' as the active process. The main central area contains a flowchart with 'SUINPUT' at the top and 'botoView' below it, connected by arrows. At the bottom of this central area is an 'Output' panel with a 'Console' tab and a 'jobs history' table.

Title	Description	Status
002-viewdata	german - fhom...	Stop
002-viewdata	german - fhom...	Start

On the right side of the interface is a large plot window titled 'BotoView'. The plot shows seismic data with 'FFID' (1 to 90) on the x-axis and 'Time (s)' (0.50 to 2.50) on the y-axis. The plot displays multiple traces, with a 'TRACF' label at the top right. The plot area includes navigation controls like 'Gain' and 'Clip'. At the bottom of the plot window, there is a status bar with the text: 'fid: 1 tracf: 2 cdp: 2 ep: 0 offset: -2550 time: 1.80 amp: -107.1303711'. The overall window title is 'BotoSeis (BETA)'.

3. Interactive tools of BotoSeis

BotoView : Interactive data visualization tool

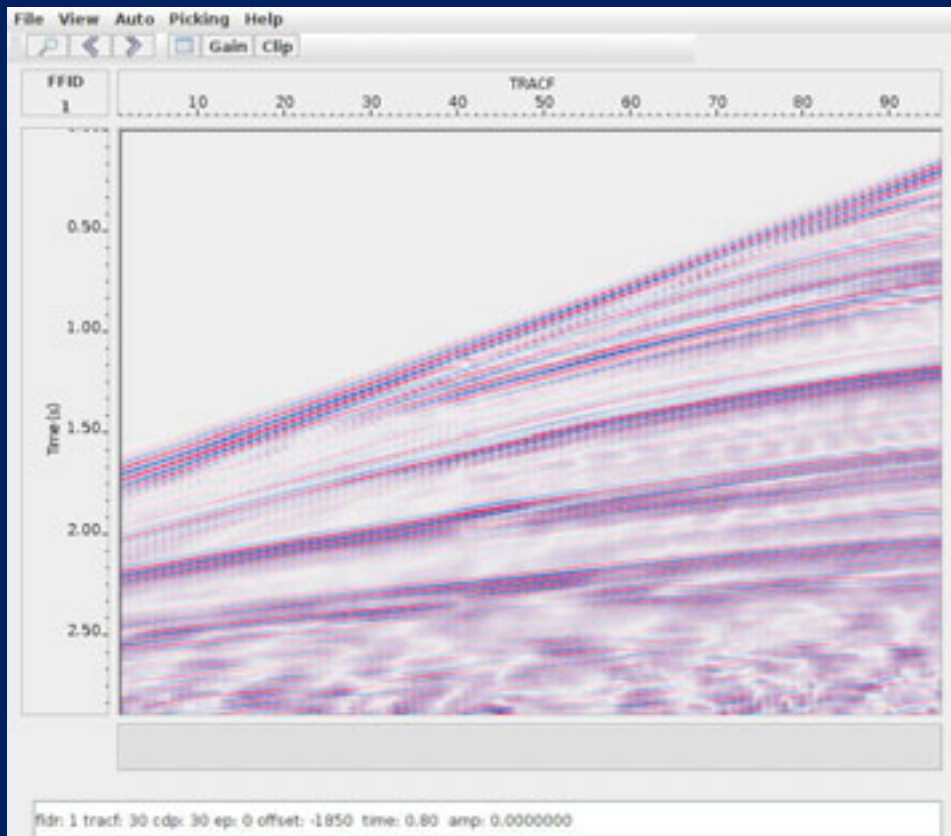
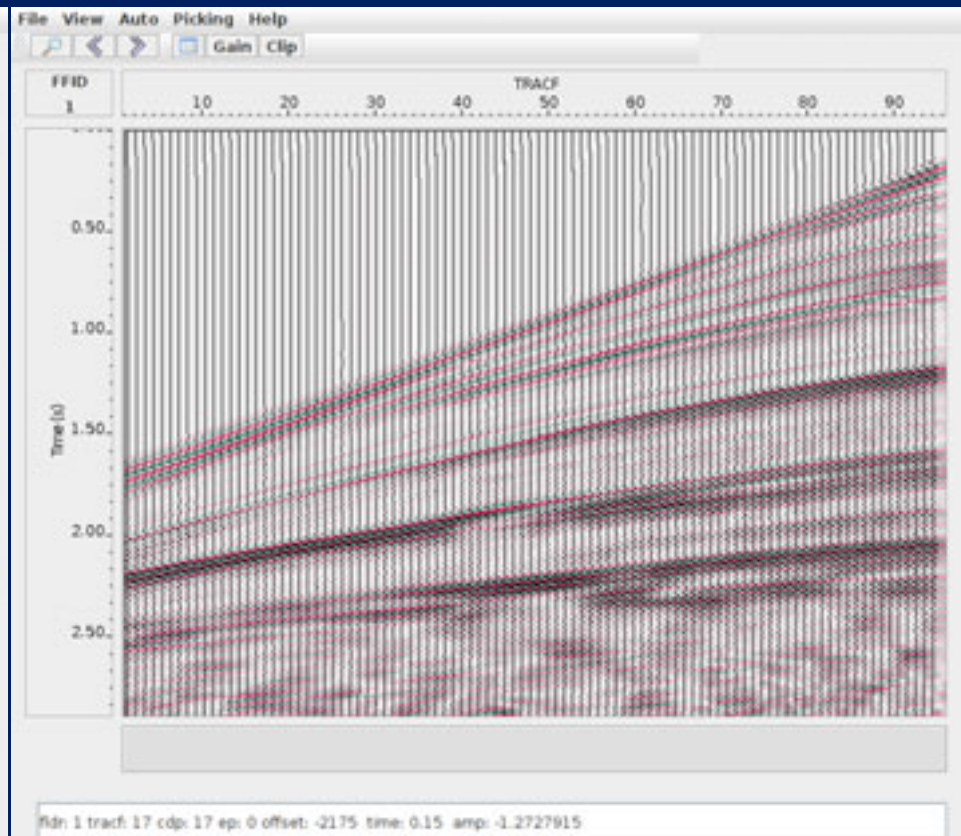


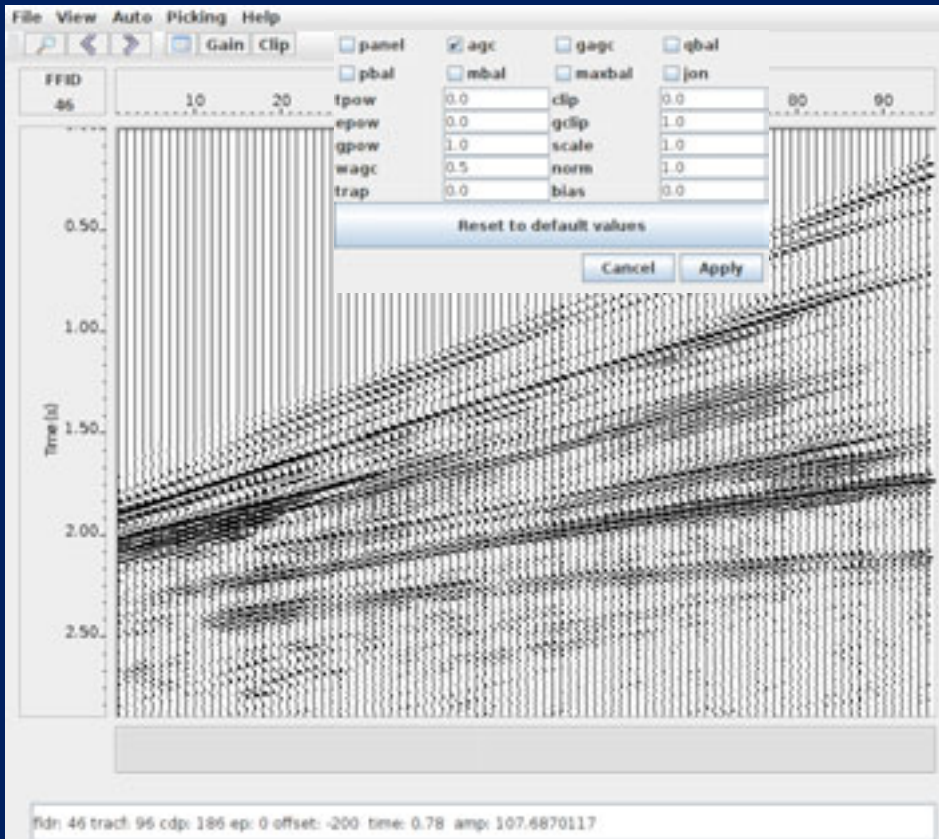
Image mode



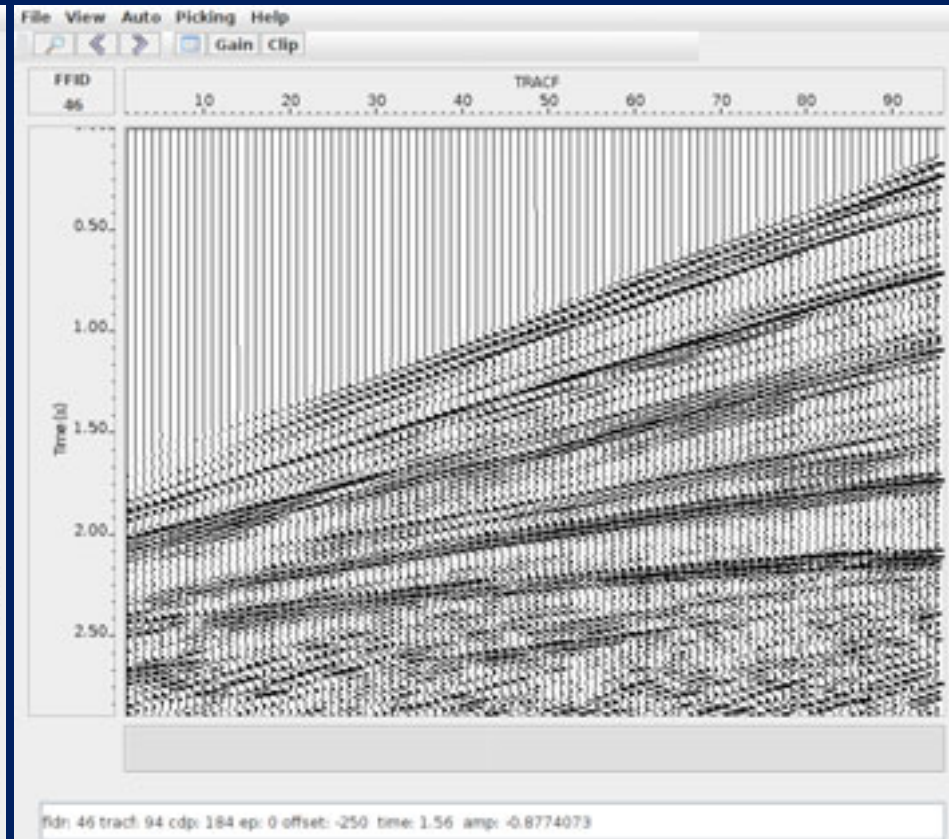
Image+wiggle mode

3. Interactive tools of BotoSeis

BotoView : Interactive data visualization tool



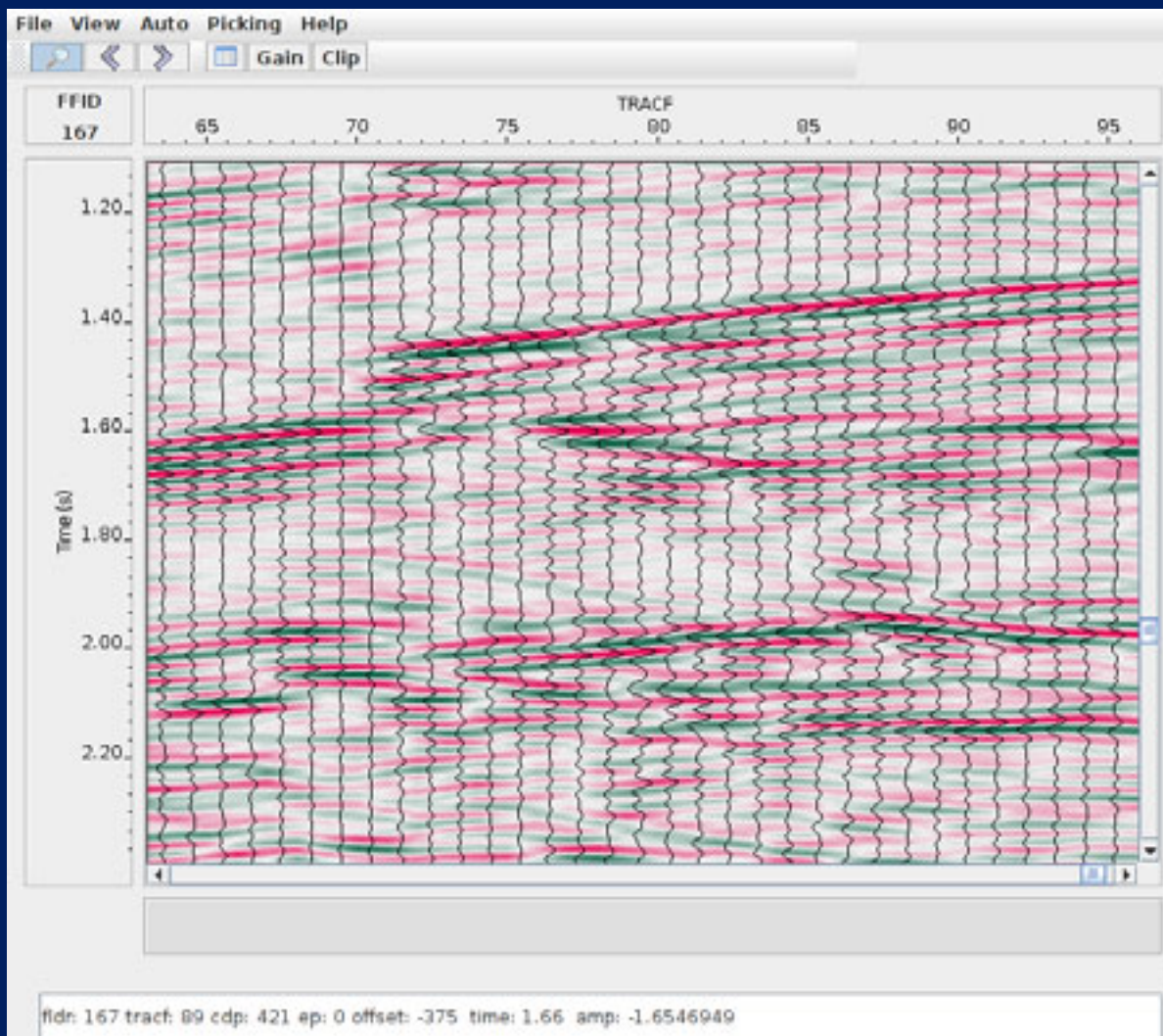
Gain option



AGC gain

3. Interactive tools of BotoSeis

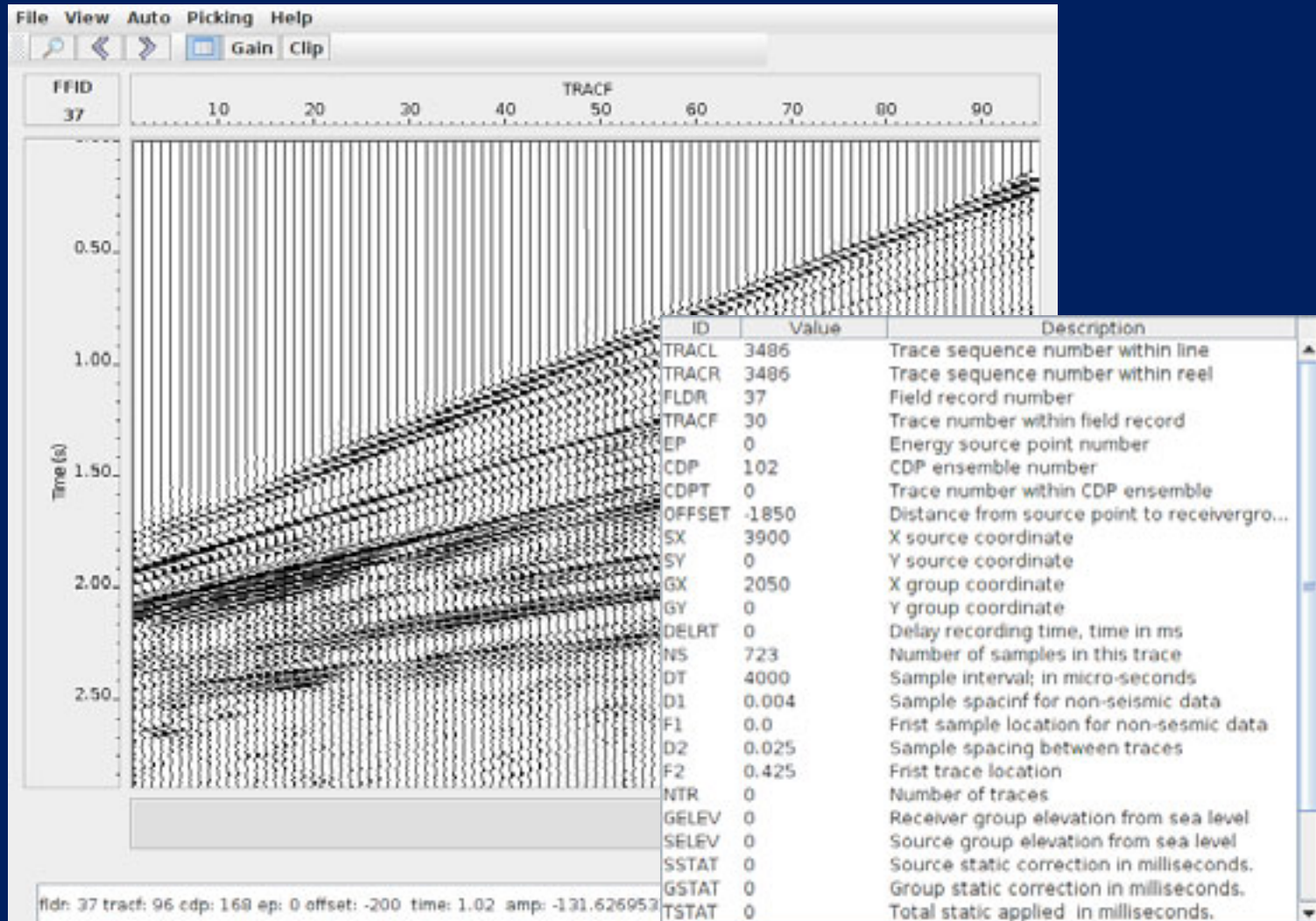
BotoView : Interactive data visualization tool



Zoom option

3. Interactive tools of BotoSeis

BotoView : Interactive data visualization tool



Headers information

3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool

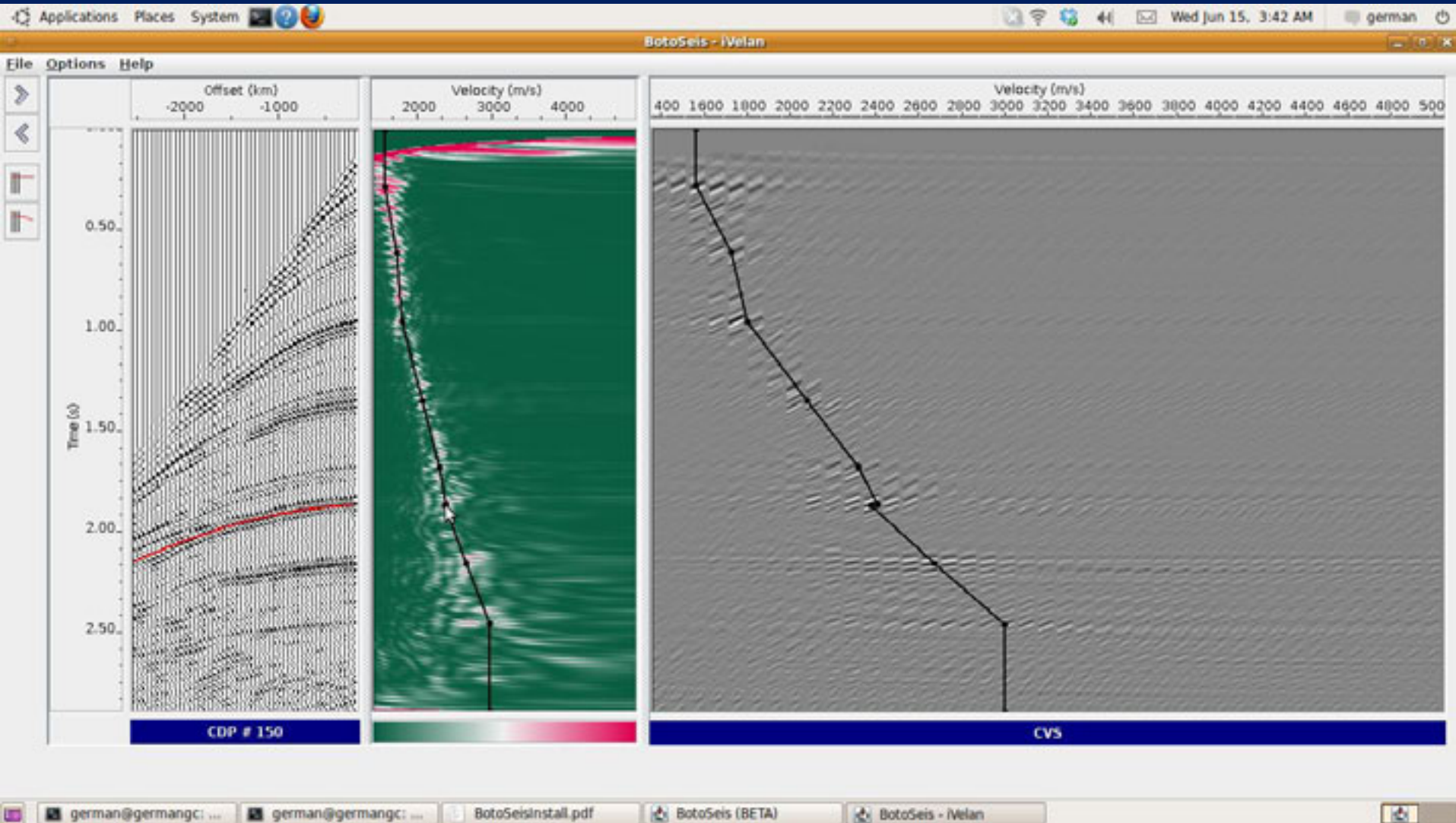
The screenshot displays the BotoSeis software interface, which is organized into several panels:

- Project explorer - Projeto01:** A tree view showing the project structure. Under "Projeto01", there are two main folders: "Marmousi" and "Testdata". "Marmousi" contains sub-items: 001-datainfo, 002-viewdata, 003-sortdata, 004-veloanal (highlighted), 005-nmostack, 006-viewstack, and 007-migStolt. "Testdata" contains: 001-datainfo, 002-dataview, and 004-velan.
- Workflow Diagram:** A central diagram showing a vertical flow of three process boxes: "SUINPUT" at the top, "SUGAIN" in the middle, and "botoVelan" at the bottom. The "botoVelan" box is highlighted with a red border. Arrows indicate the flow from SUINPUT to SUGAIN, and from SUGAIN to botoVelan.
- botoVelan Configuration Panel:** A panel on the right side of the workflow diagram, titled "botoVelan", containing various configuration options:
 - output:** A text field with the value "/home/german/BotoseisExample" and a "File path for out" label.
 - CDPOpt:** A section with five input fields:
 - 50 First CDP
 - 500 Last CDP
 - 50 Number of CDPs to skip
 - 0.0 Time min.
 - 2.9 Time max.
 - semblance:** A section with three input fields:
 - 1400.0 First velocity value
 - 5000.0 Last velocity value
 - 161 Number of velocity values
 - CVSOpt:** A section with two input fields:
 - 7 Number of cdps for windowing
 - 41 Number of CVS panels
- Processes list:** A panel at the bottom left showing a list of processes. The "SUINPUT" process is selected. Below it, a tree view shows "All Processes" with sub-items: SU, BOTOSEIS, and MADAGASCAR.
- Output Panel:** A panel at the bottom right with tabs for "Console" and "Jobs history". The "Jobs history" tab is active, displaying a table of job execution records.

Title	Description	Status	Start	End	Duration	Processed(MB)
002-viewdata	german - /home/...	Stopped	15/06/2011 03:18	15/06/2011 03:18	38.00 sec	0.37
002-viewdata	german - /home/...	Stopped	15/06/2011 03:18	15/06/2011 03:29	10.10 min	0.37
002-viewdata	german - /home/...	Stopped	15/06/2011 03:29	15/06/2011 03:29	0.00 sec	0.00

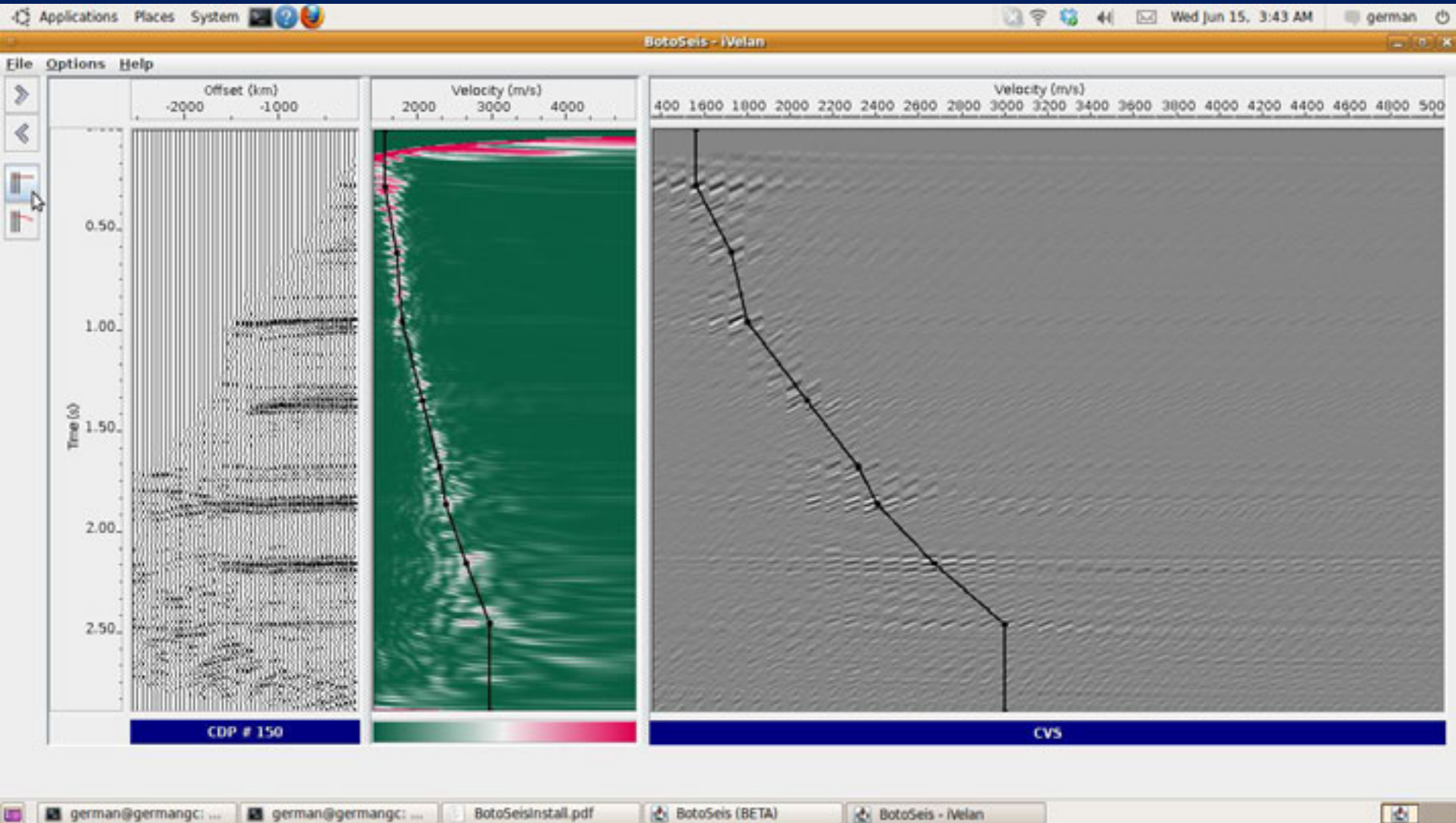
3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool



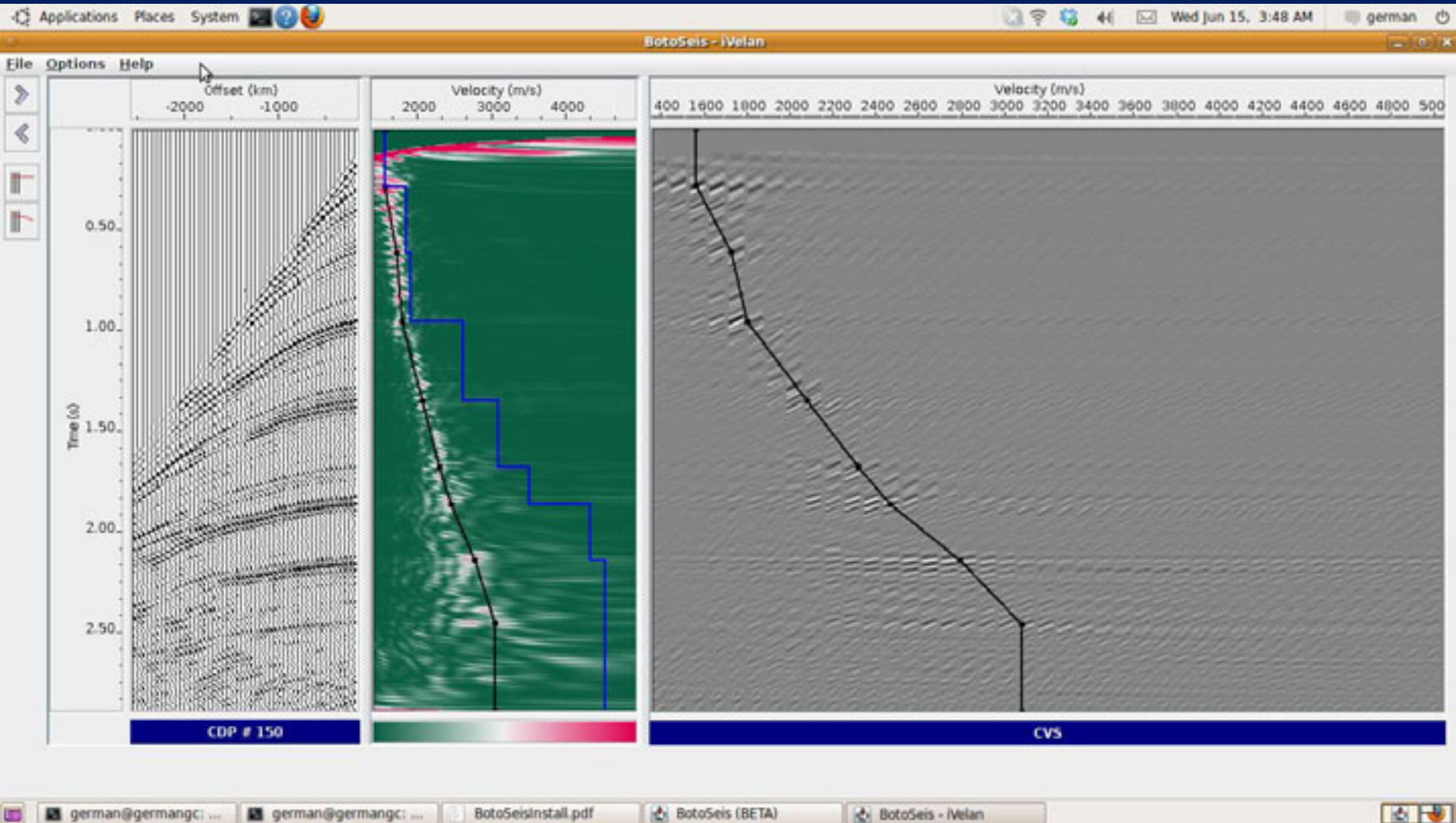
3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool



3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool



3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool

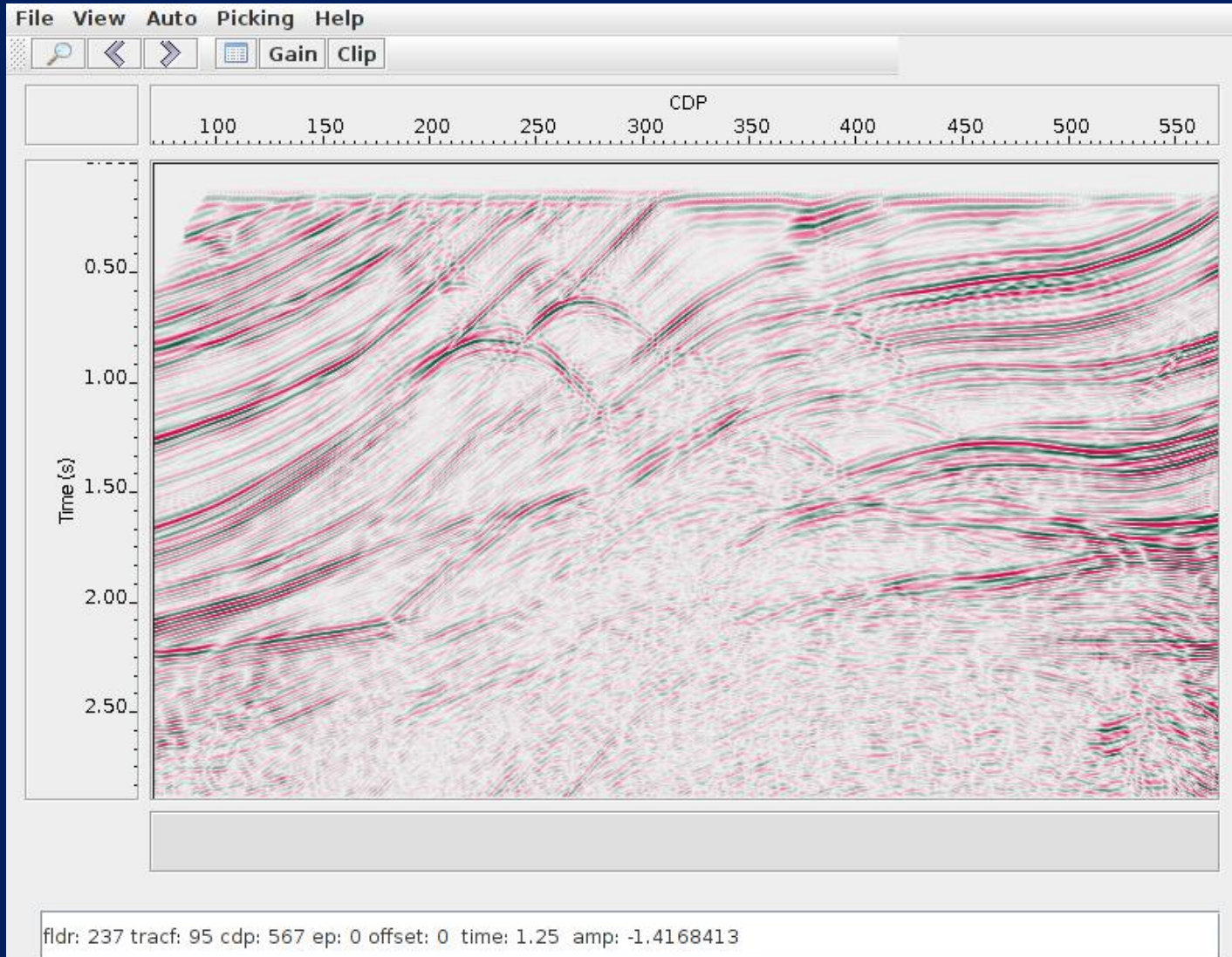
The screenshot displays the BotoSeis software interface. On the left, the 'Project explorer' shows a tree structure for 'Projeto01' with subfolders 'Marmousi' and 'Testdata'. The 'Processes list' shows 'SUWIND' selected. The main workspace contains a vertical workflow diagram with steps: SUINPUT, SUGAIN, SUNMO, SUSTACK, SUOUTPUT, and botoView. The 'botoView' step is highlighted with a red box. To the right, the 'botoView' configuration panel shows 'is stack data?' set to 'yes', 'Saves sections' checked, 'cdp' as the 'Primary key', and 'trac' as the 'Secondary key'. At the bottom, the 'Output' window shows a 'Jobs history' table with two rows of job data.

Title	Description	Status	Start	End	Duration	Processed(MB)
005-nmostack	german - /home/...	Stopped	15/06/2011 15:44	15/06/2011 15:44	4.00 sec	1.76
005-nmostack	german - /home/...	Stopped	15/06/2011 15:44	15/06/2011 15:44	9.00 sec	6.78

Using the picked velocities for stack

3. Interactive tools of BotoSeis

BotoVelan : Interactive velocity analysis tool



NMO stack section

4. Conclusions and perspectives

- The BotoSeis is a simple and useful way to use interactively the SU package and others as MADAGASCAR.
- The two interactive tools of BotoSeis simplify enough the data visualization and velocity analysis.
- We will continue developing new interactive tools and improving the existing tools incorporating elements like in the commercial packages.

Please, download the BotoSeis from:

<http://sourceforge.net/projects/botoseis/>

Have fun using it !!!

Thanks