

CarThema 5.0



Project CarThema 5.0

Thematic Charting Tool

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Overview

- Project goals
- Architecture
- Usage examples
- Directions of further development

Project goals

- CarThema project continuum
- Migration to Java and open source
- Exploit and extend well-known solution
- Multi-platform support (esp. OS X)
- Multi-language support
- Scripting console
- Extensibility

Why open source?

- Advantages
 - Lower development costs
 - GPL
 - Community of developers and users
 - Existence of specific functionalities
 - Independence from manufacturer

Open source minuses

- Variety and incompatibility of versions
- Constant improvements need to be monitored – consulting needed
- Documentation

Opensource GIS

- Candidate solutions

- GRASS
- QuantumGIS
- Kosmo
- GvSig
- uDig

- Criteria

- Supported data sources
- User-friendliness
- Adaptability
- Extensibility
- Variety of functionalities

GvSig

- Scripting capabilities
- User friendly GUI
- Multi-language support
- Multi-platform orientation
 - Windows, Linux, OS X
- Extensibility
- Documents creation capabilities
- www.gvsig.gva.es



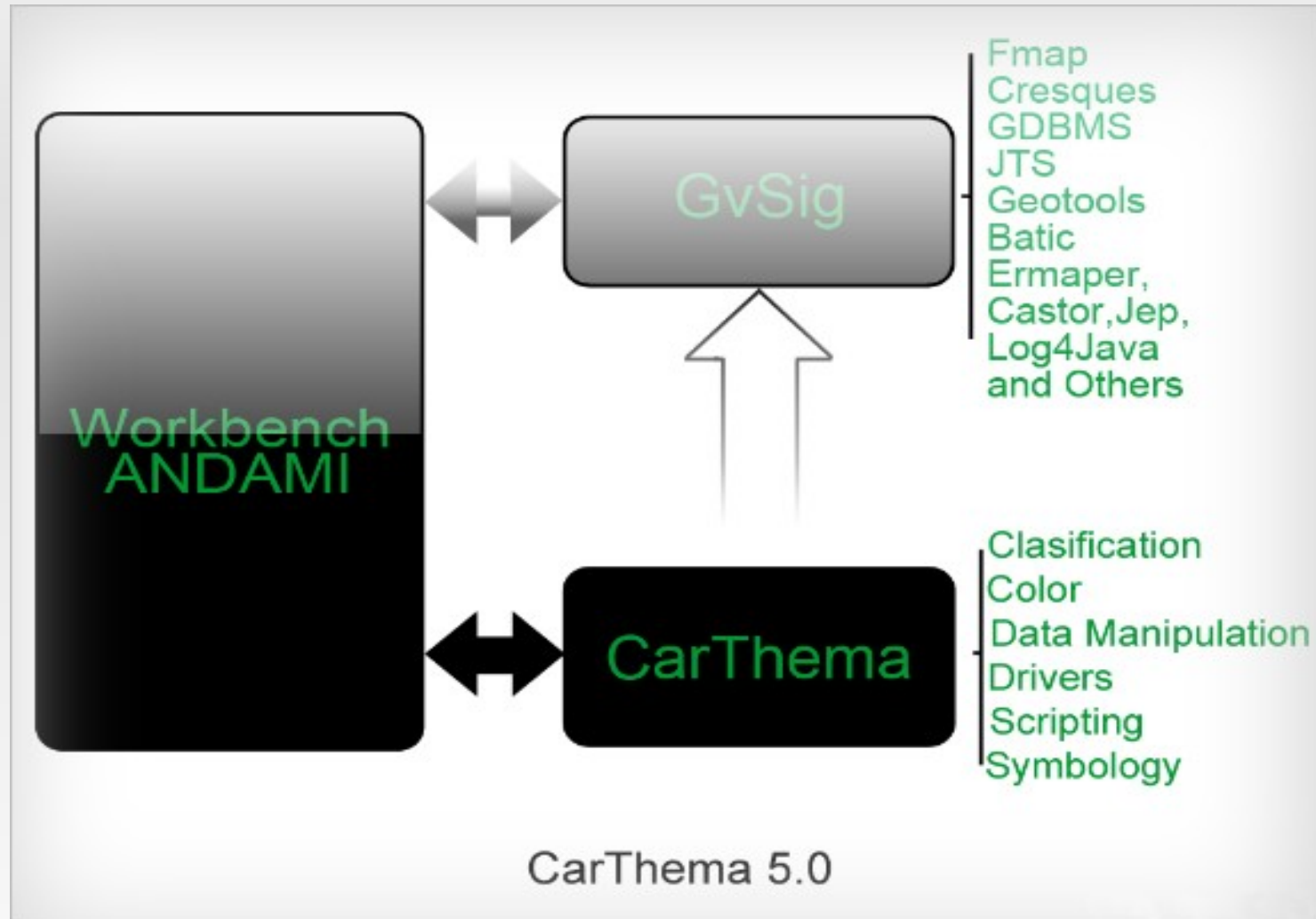
CarThema 5.0 extensions

- Jython scripting console
 - CarThema command language scripts
- BNA file driver
- Data management
 - New columns creation
 - Join

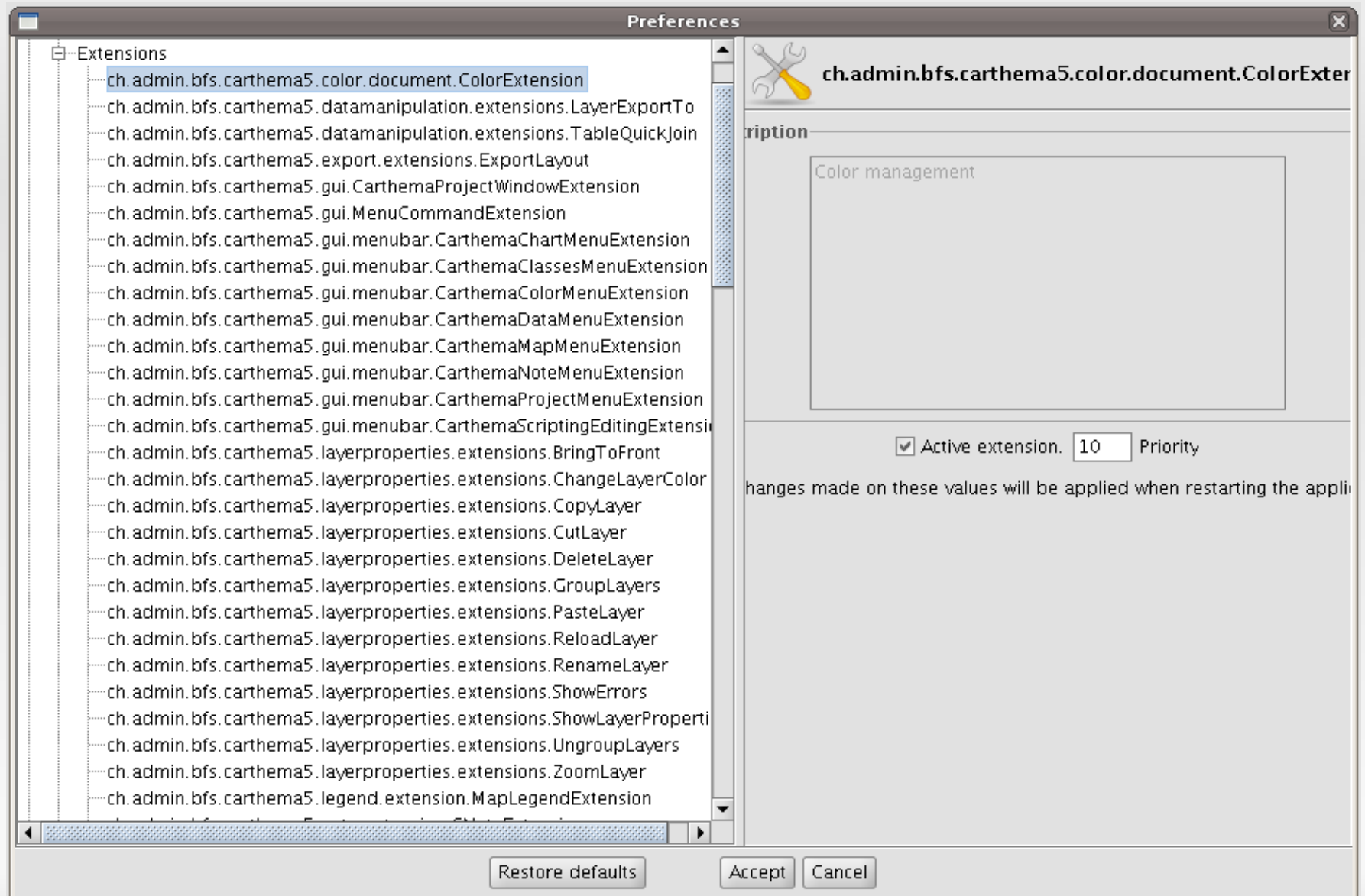
CarThema 5.0 extensions

- Data classification
- Color management
- Charts and legends
- Layout properties edition
- .ai export

Application architecture



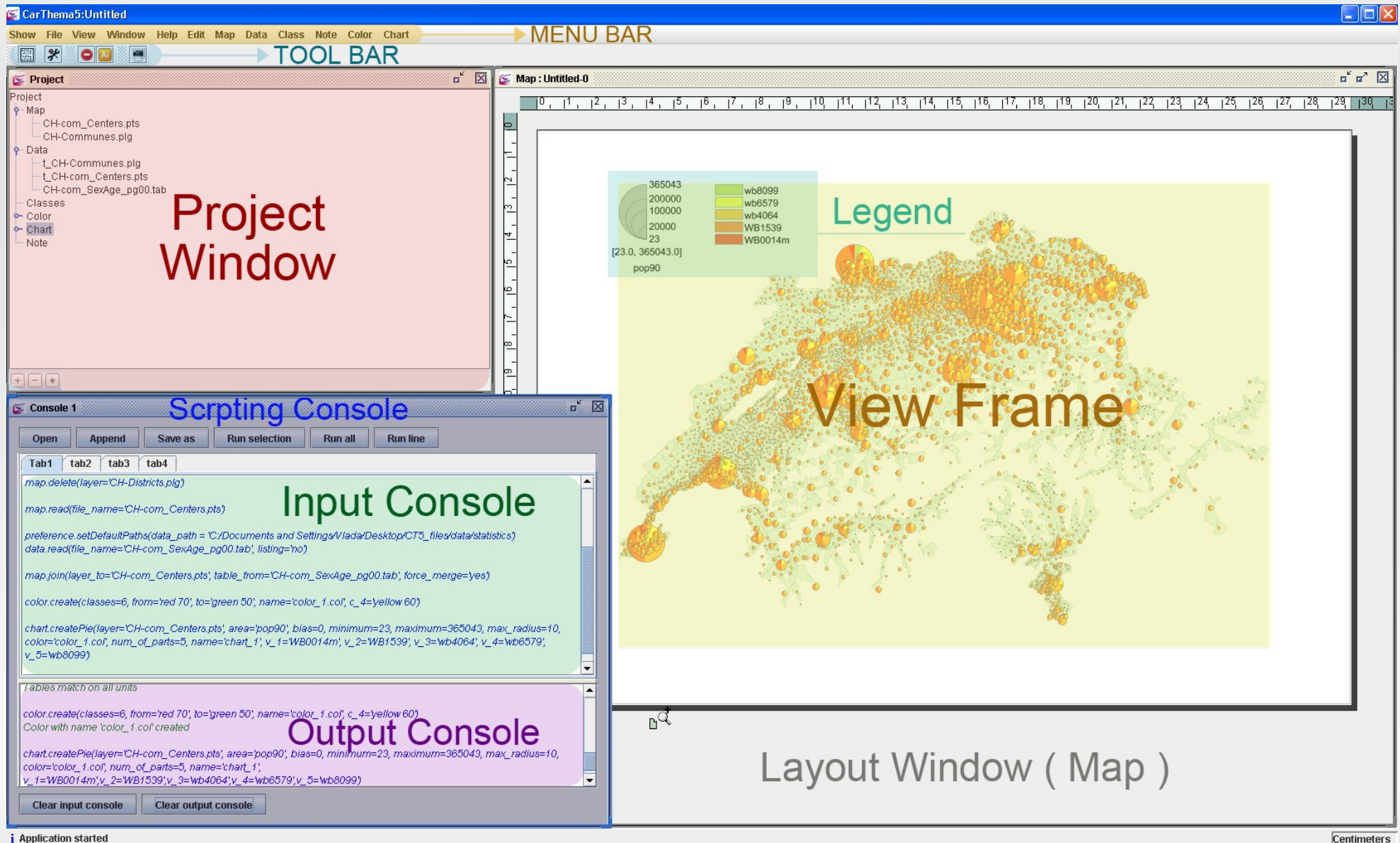
Extensions



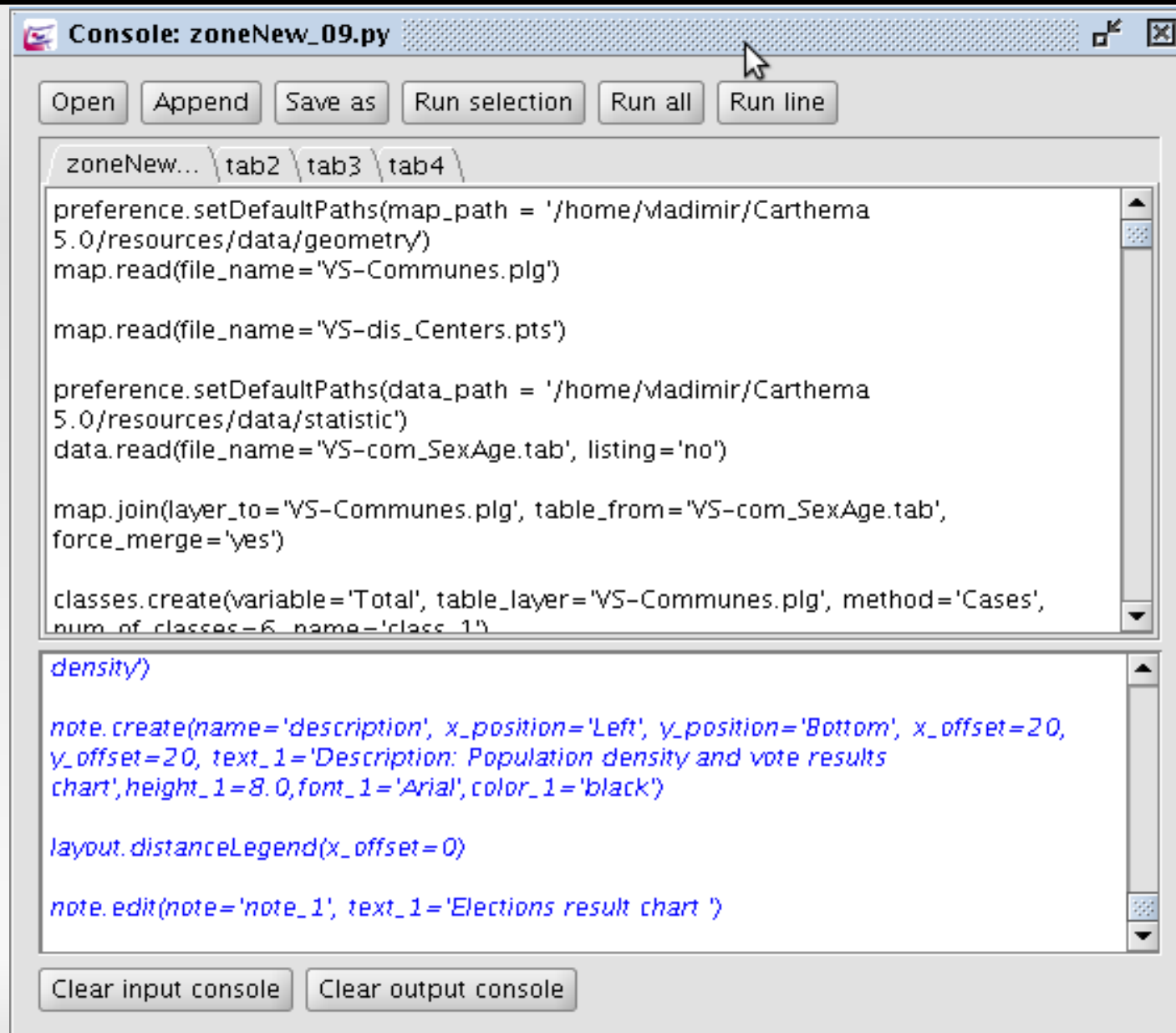
CarThema 5.0: Key features

- Thematic charting tool
- BNA file format support
- Scripting capabilities
- Read/write scripts to file
- Additional map legends
- Labels (notes) management
- .ai format export extension

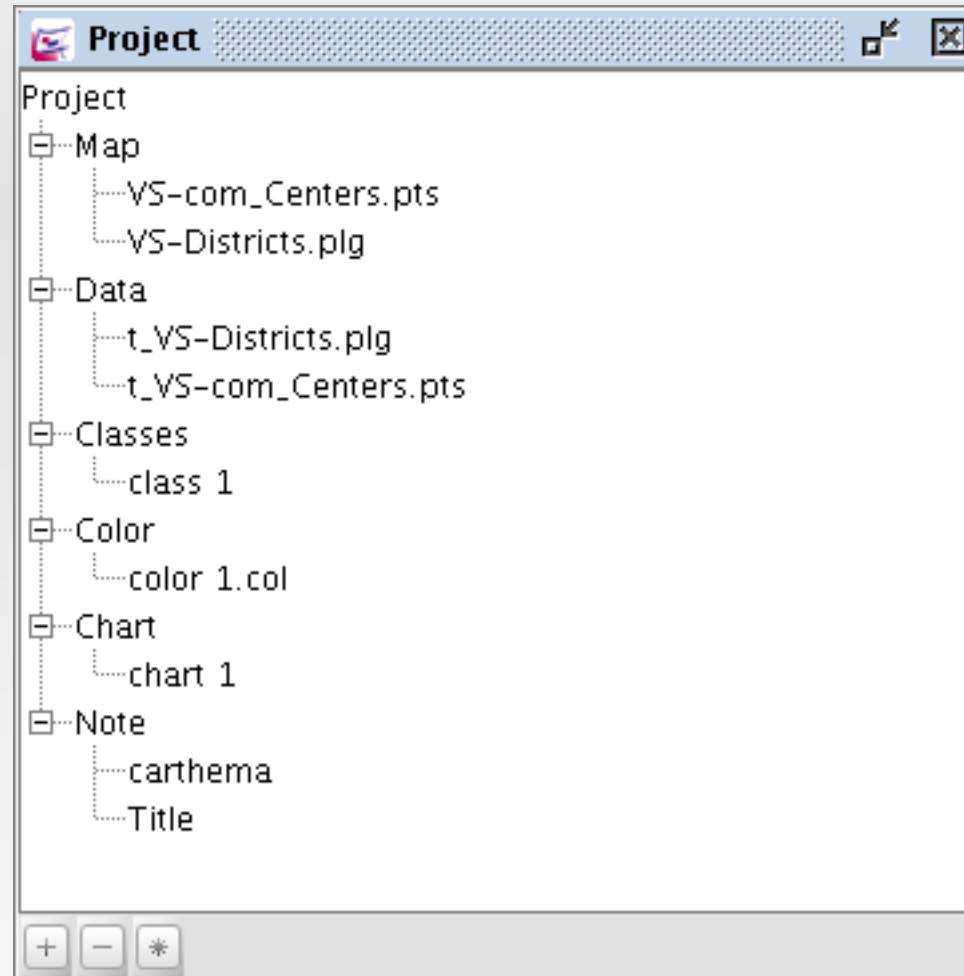
GUI overview



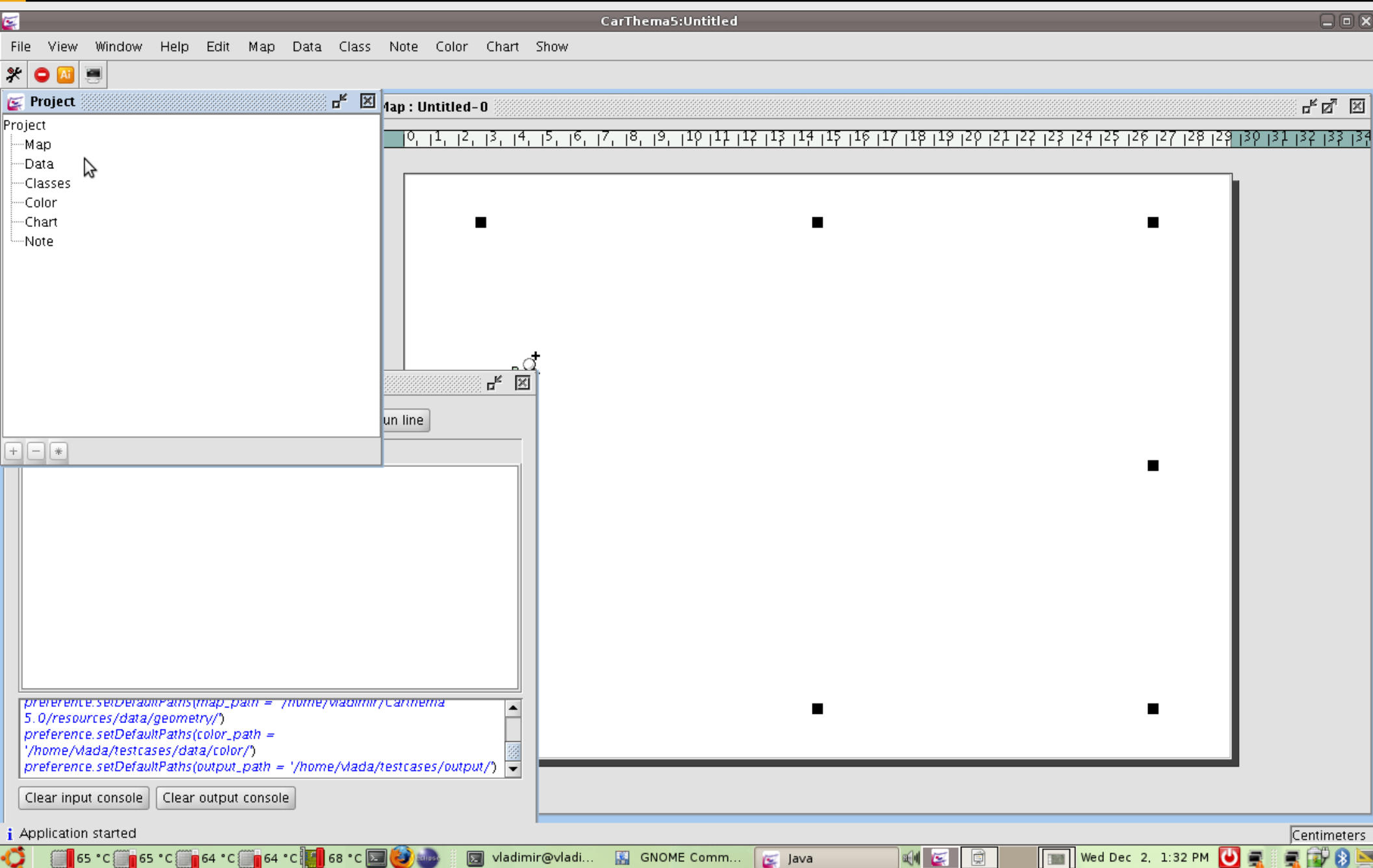
Scripting console



Project dialog



Usage example



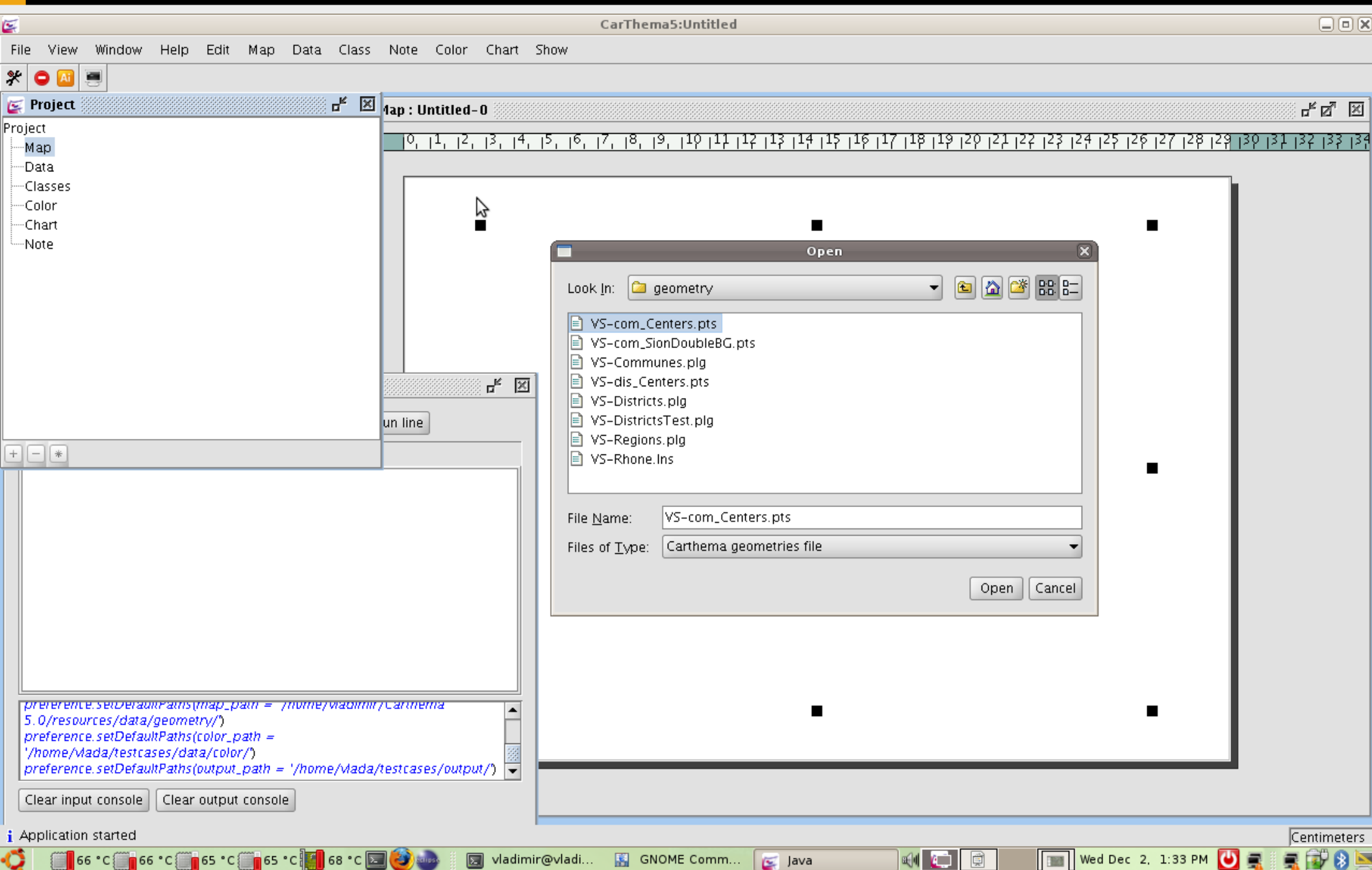
Geometry file read

The screenshot displays the CarThema5 software interface, titled "CarThema5:Untitled". The main window shows a map titled "Map : Untitled-0" with a coordinate grid from 0 to 34 on both the x and y axes. Several black square points are plotted on the map. A context menu is open over the "Project" panel, listing actions: Read, List All, Delete All, Get Points, Get Centers, Extract, Append, and Aggregate. The "Read" option is highlighted. Below the map, there is a console area with the following text:

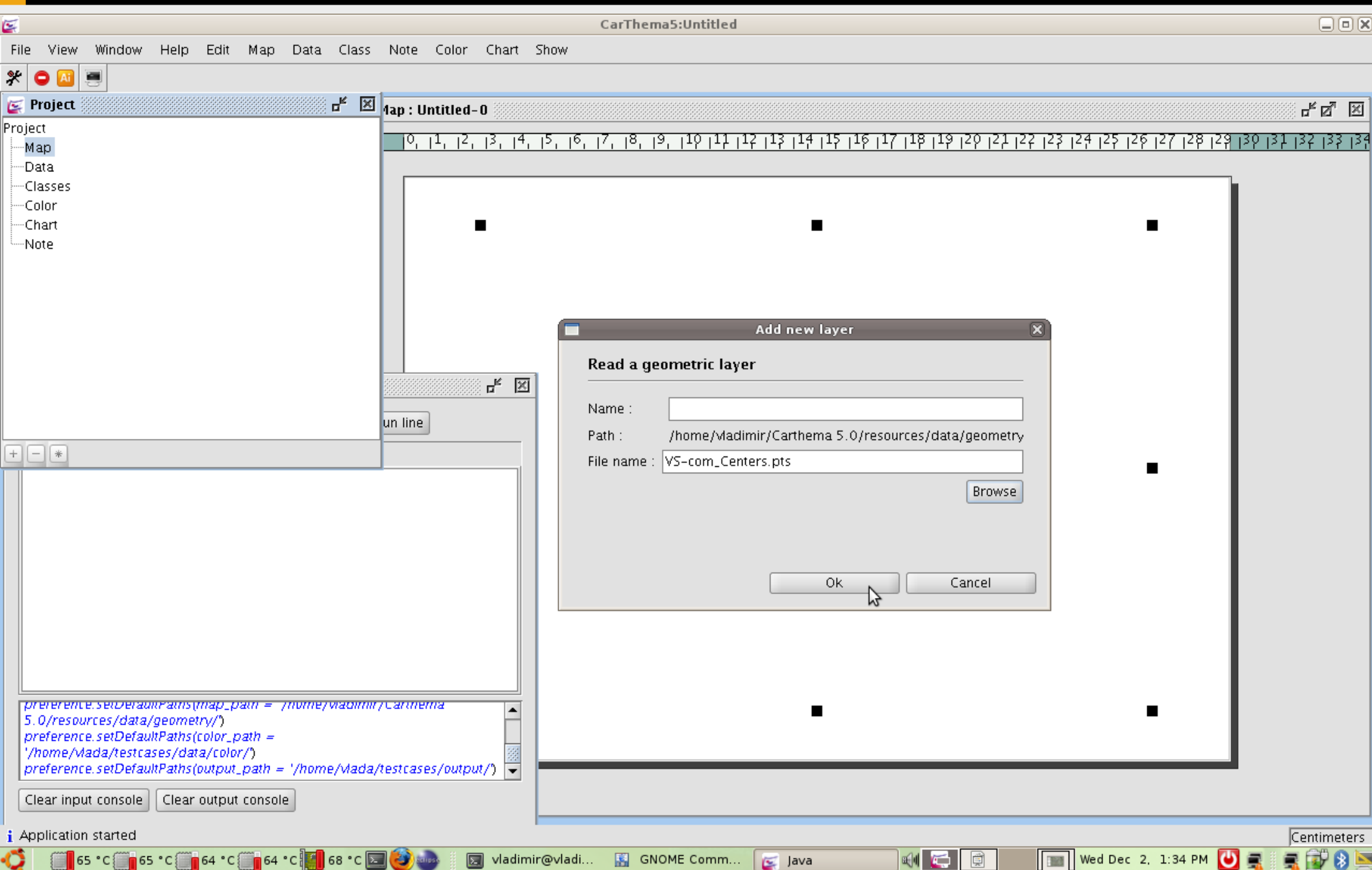
```
preference.setdefaultPaths(map_path = '/home/vladimir/CarThema5.0/resources/data/geometry/')
preference.setdefaultPaths(color_path = '/home/vlada/testcases/data/color/')
preference.setdefaultPaths(output_path = '/home/vlada/testcases/output/')
Clear input console Clear output console
```

The bottom status bar indicates "Application started" and shows system information: "Wed Dec 2, 1:33 PM". The taskbar at the very bottom includes icons for temperature, system clock, and various applications like "vladimir@vladi...", "GNOME Comm...", "Java", and "Centimeters".

Geometry file read



Geometry file read



Geometry file read

The screenshot displays the CarThema5 application window, titled "CarThema5:Untitled". The interface includes a menu bar (File, View, Window, Help, Edit, Map, Data, Class, Note, Color, Chart, Show) and a toolbar with icons for various functions.

The main workspace is divided into three panels:

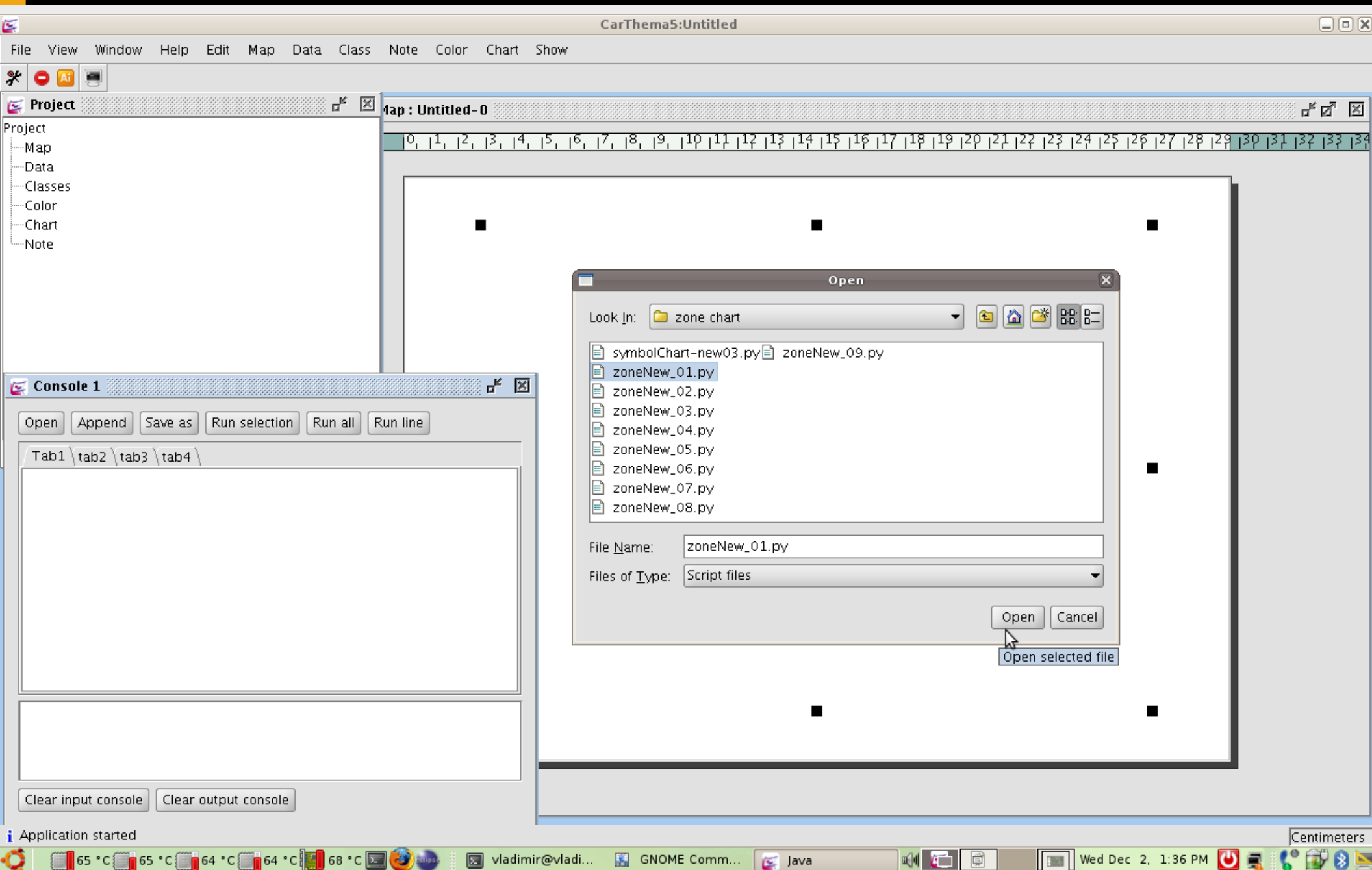
- Project Panel (Left):** Shows a tree view of the project structure. The "Map" folder is selected, containing "Data", "Classes", "Color", "Chart", and "Note".
- Map Panel (Top Right):** Displays a map titled "Map : Untitled-0". The map features a coordinate grid (0 to 34) and a series of green points forming a path. Several black squares are also visible on the map.
- Console Panel (Bottom Left):** Contains a text area for code execution. The code shown is:

```
tab1 | tab2 | tab3 | tab4 |
preference.setDefaultPaths(map_path = '/home/vladimir/Carthema
5.0/resources/data/geometry/')
map.read(file_name='VS-com_Centers.pts')

preference.setDefaultPaths(output_path = '/home/vlada/testcases/output/')
preference.setDefaultPaths(map_path = '/home/vladimir/Carthema
5.0/resources/data/geometry/')
map.read(file_name='VS-com_Centers.pts')
```

The bottom status bar indicates the application has started and shows system information, including temperature (71 °C, 70 °C, 68 °C), time (Wed Dec 2, 1:34 PM), and a "Centimeters" scale.

Script file read



Execution of a script file

The screenshot displays the CarThema5 software interface, titled "CarThema5:Untitled". The interface includes a menu bar (File, View, Window, Help, Edit, Map, Data, Class, Note, Color, Chart, Show) and a toolbar with icons for various functions.

The main workspace is divided into three panes:

- Project Pane (Left):** Shows a hierarchical tree structure with the following items: Project, Map, Data, Classes, Color, Chart, and Note.
- Map Pane (Top Right):** Displays a map titled "Map : Untitled-0". The map area is mostly blank, with a few small black squares visible. A toolbar at the top of the map pane shows a grid of numbers from 0 to 34.
- Console 1 Pane (Bottom Left):** Contains a script for executing a map. The script includes the following commands:

```
zoneNew... | tab2 | tab3 | tab4 |
map.read(file_name='VS-Districts.plg')
data.read(file_name='VS-dis_SexAge.tab')
map.join(layer_to='VS-Districts.plg', table_from='VS-dis_SexAge.tab',
force_merge='yes')
classes.create(variable='Pop90', table_layer='VS-Districts.plg',
method='Cases', num_of_classes=6, name = 'Pop')
color.read(file_name='Jaune-Vert7.col')
chart.createZone(layer='VS-Districts.plg', classification='Pop',
color='Jaune-Vert7.col', name='Population')

preference.setDefaultPaths(script_path = '/home/Madimir/Carthema
5.0/resources/script/chart/zone chart/')
```

Below the script in the console pane are buttons for "Open", "Append", "Save as", "Run selection", "Run all", and "Run line". The "Run selection" button is currently selected. At the bottom of the console pane are buttons for "Clear input console" and "Clear output console".

The bottom status bar shows the application started, the current user is "vladimir@vladi...", the system is running "GNOME Comm...", the date is "Wed Dec 2, 1:36 PM", and the temperature is "65 °C".

Execution of a script file

CarThema5:Untitled

File View Window Help Edit Map Data Class Note Color Chart Show

Project

- Map
- Data
- Classes
- Color
- Chart
 - chart_1
- Note

Map : Untitled-0

Population density chart

Total [23.0, 25336.0]

16	3268
25	1437
40	598
41	275
25	98
16	
0	Missing

km
0 10

```
layout.frame(top=14, left=14, bottom=14, right=14)

layout.distanceLegend(x_offset=-4, y_offset=20.1)
note.edit(note='note_1', x_offset=-4.5, y_offset=197.1)
chart.delete(chart='chart_2')
chart.delete(chart='chart_3')
layout.frame(top=14, left=14, bottom=14, right=14)
```

Clear input console Clear output console

Application started

62 °C 62 °C 61 °C 61 °C 65 °C

vladimir@vladim... GNOME Comma... Java Thu Dec 3, 12:41 AM

Centimeters

Data management

The screenshot displays the CarThema5 software interface. The main window is titled "CarThema5:Untitled" and features a menu bar (File, View, Window, Help, Edit, Map, Data, Class, Note, Color, Chart, Show) and a toolbar. On the left, a "Project" panel shows a tree view with folders for "Map", "Data", "Classes", "Color", "Chart", and "Note". The "Data" folder is expanded, showing "t_VS-Districts.plg" and "VS-dis_SexAge.tab". Below the project panel, a console window contains the following code:

```
map.join(layer_to='VS-Districts.plg', table_from='VS-dis_SexAge.tab',
force_merge='yes')

classes.create(variable='Pop90', table_layer='VS-Districts.plg',
method='Cases', num_of_classes=6, name = 'Pop')

color.create(classes=7, from='red', to='white', name='Jaune-Vert7.col')

chart.createZone(layer='VS-Districts.plg', classification='Pop',
color='Jaune-Vert7.col', name='Population')

chart.createZone(layer='VS-Districts.plg', classification='Pop',
color='Jaune-Vert7.col', name='Population')

data.show(table='t_VS-Districts.plg')

data.show(table='VS-dis_SexAge.tab')
```

Buttons for "Clear input console" and "Clear output console" are at the bottom of the console window.

In the center, a table titled "Table: VS-dis_SexAge.tab" is displayed, showing 13 records with columns: ID, DiName, Pop90, WB0014, WB1539, WB4064, WB6579, WB8099, and Females. The data is as follows:

ID	DiName	Pop90	WB0014	WB1539	WB4064	WB6579	WB8099	Females
2301	Brig	21537.0	4257.0	8494.0	6099.0	2150.0	537.0	10968.0
2302	Conthey	18485.0	3674.0	7339.0	5249.0	1789.0	434.0	9144.0
2303	Entremont	10425.0	2183.0	3917.0	2807.0	1174.0	344.0	5110.0
2304	Goms	4523.0	973.0	1624.0	1167.0	597.0	162.0	2224.0
2305	HDrens	8515.0	1538.0	3085.0	2608.0	1041.0	243.0	4335.0
2306	Leuk	11094.0	2078.0	4476.0	3063.0	1221.0	256.0	5568.0
2307	Martigny	30674.0	6006.0	12124.0	8569.0	3133.0	842.0	15561.0
2308	Monthey	29708.0	5854.0	12234.0	8336.0	2478.0	806.0	14708.0
2309	Raron	9656.0	1877.0	3789.0	2696.0	1013.0	281.0	4776.0
2310	St-Maurice	10018.0	1981.0	3920.0	2799.0	1016.0	302.0	4894.0
2311	Sierre	37683.0						
2312	Sion	33976.0						
2313	Visp	23523.0						

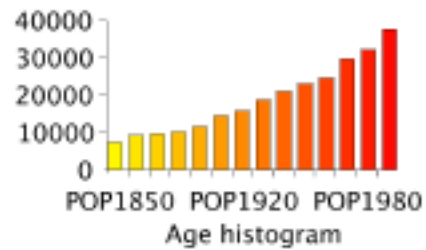
Below the table, it indicates "0 / 13 Total of selected records." A "Create new variable" dialog box is open in the foreground, titled "Create a new calculated variable". It contains the following fields:

- Name: Females_percentage
- Table: VS-dis_SexAge.tab
- Operation: Females / Pop90 * 100

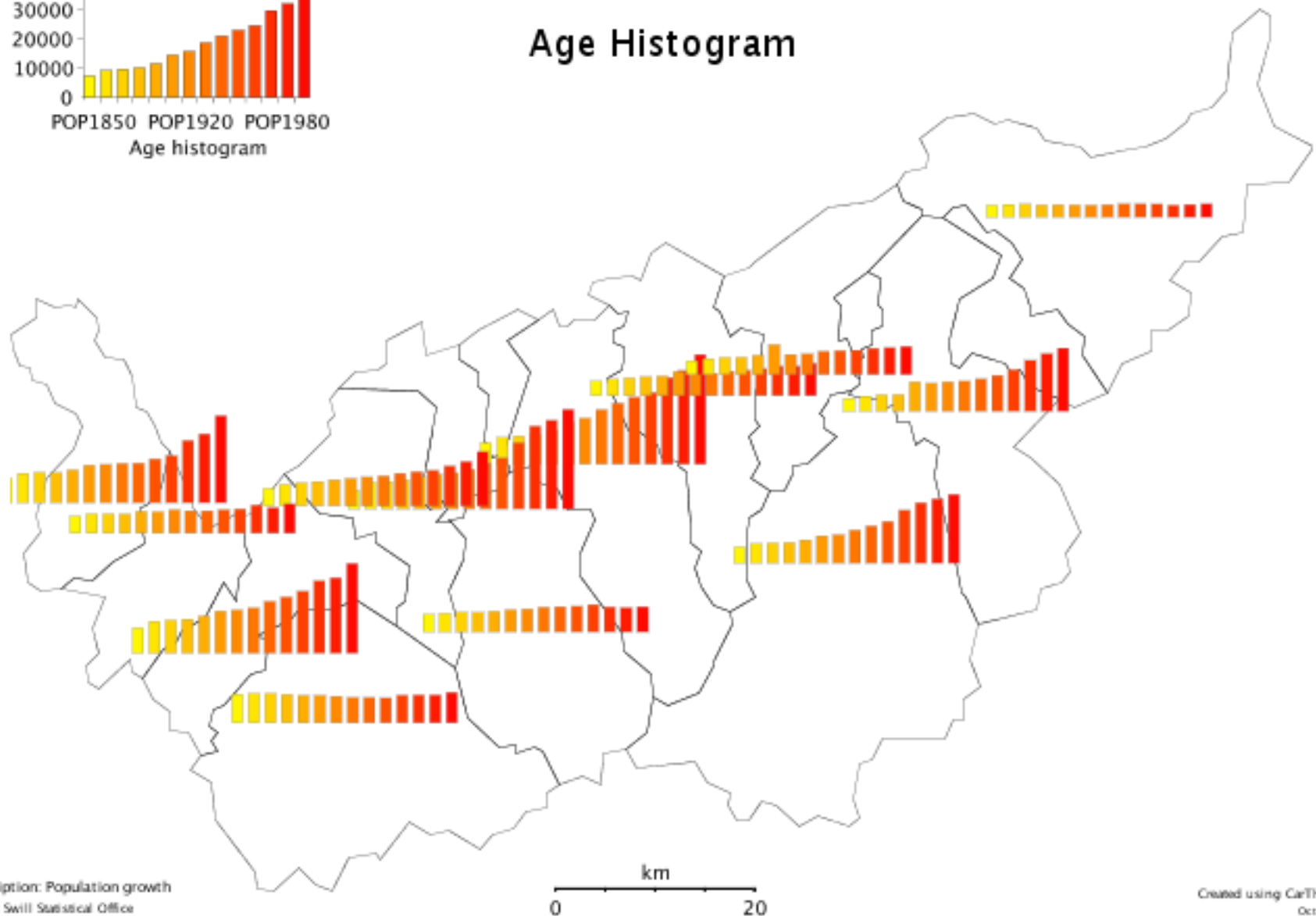
The dialog has "OK" and "Cancel" buttons at the bottom right.

The bottom of the screen shows a taskbar with various icons, including a clock showing "Wed Dec 2, 1:46 PM" and a "Centimeters" unit indicator.

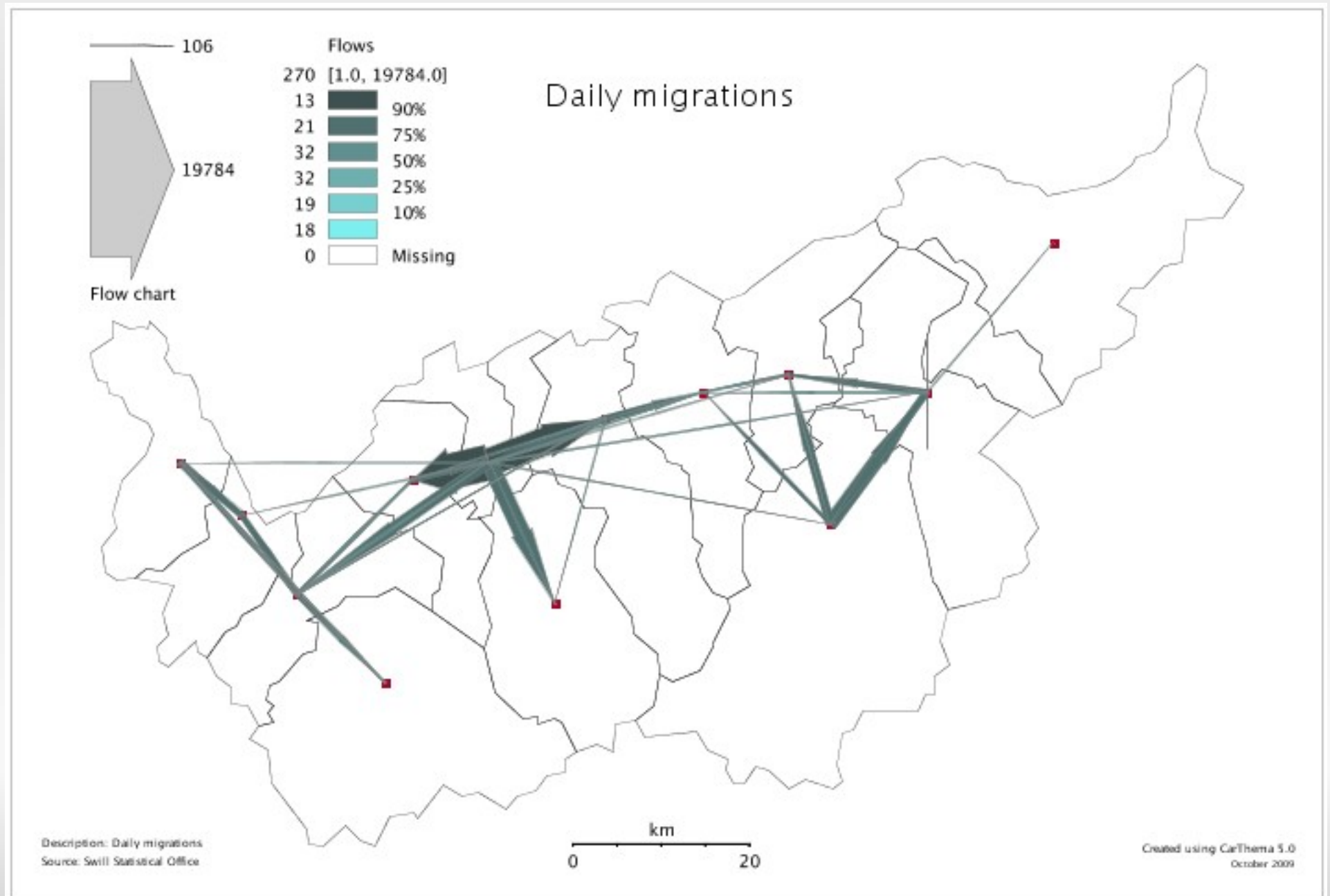
Bar chart



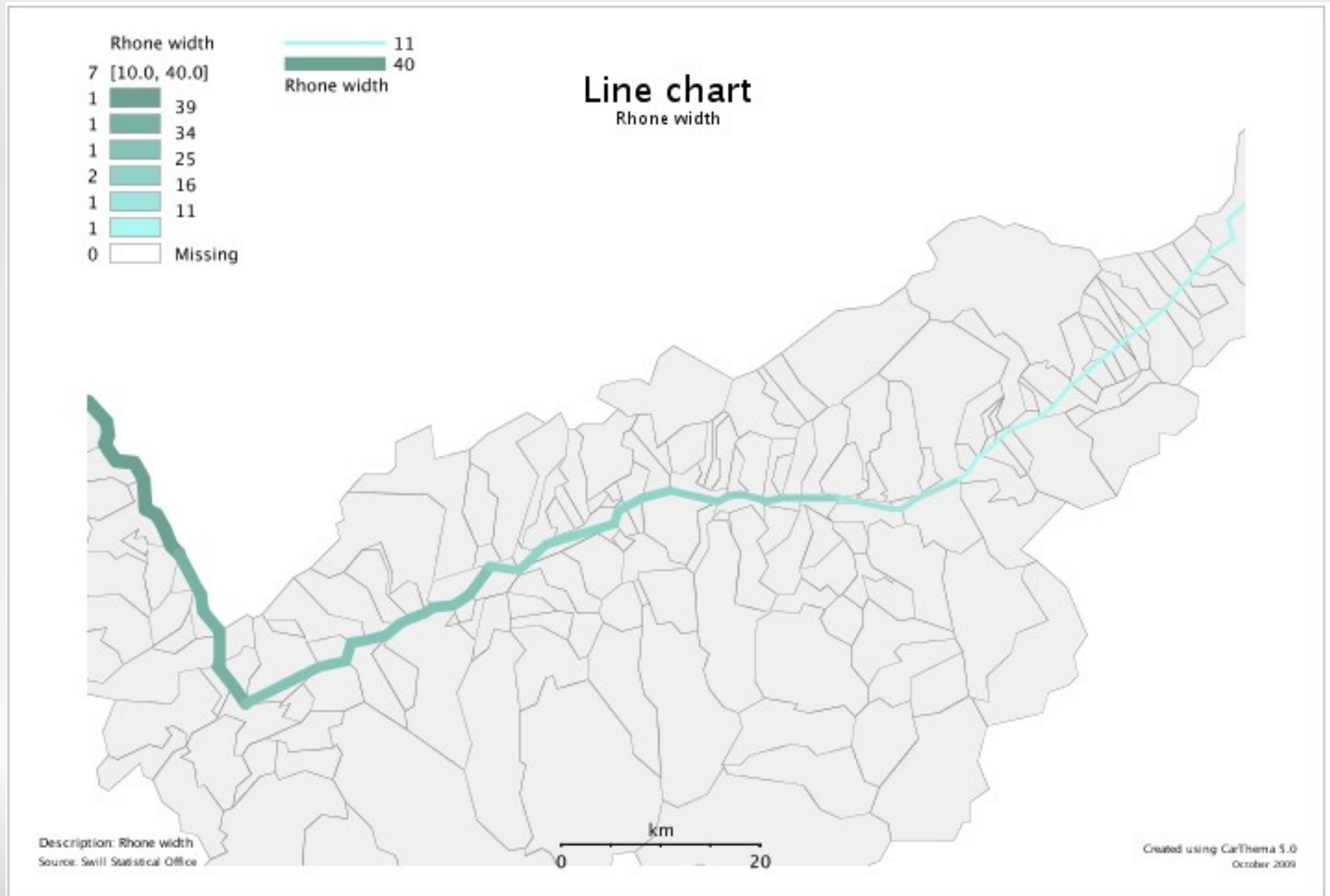
Age Histogram



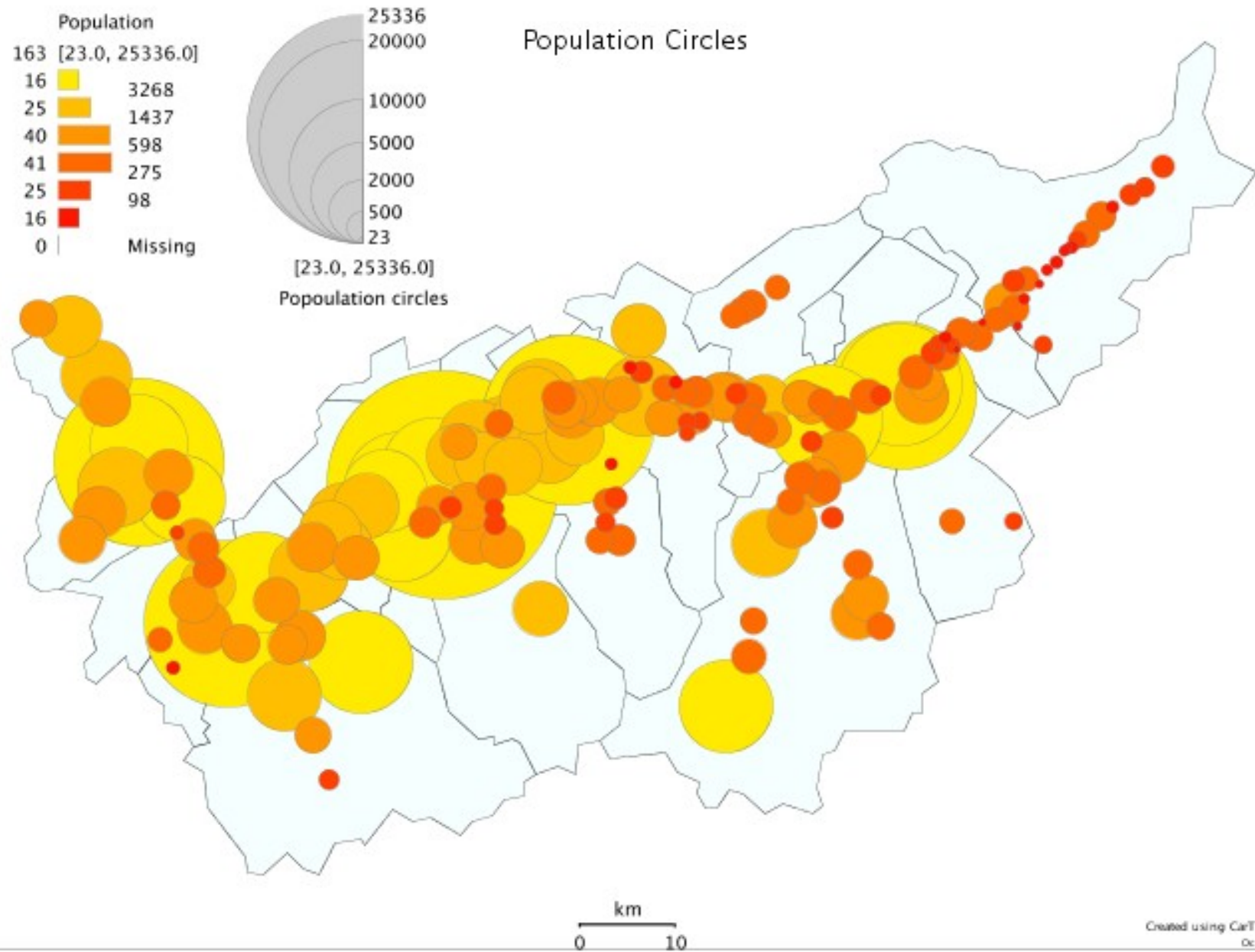
Flow chart



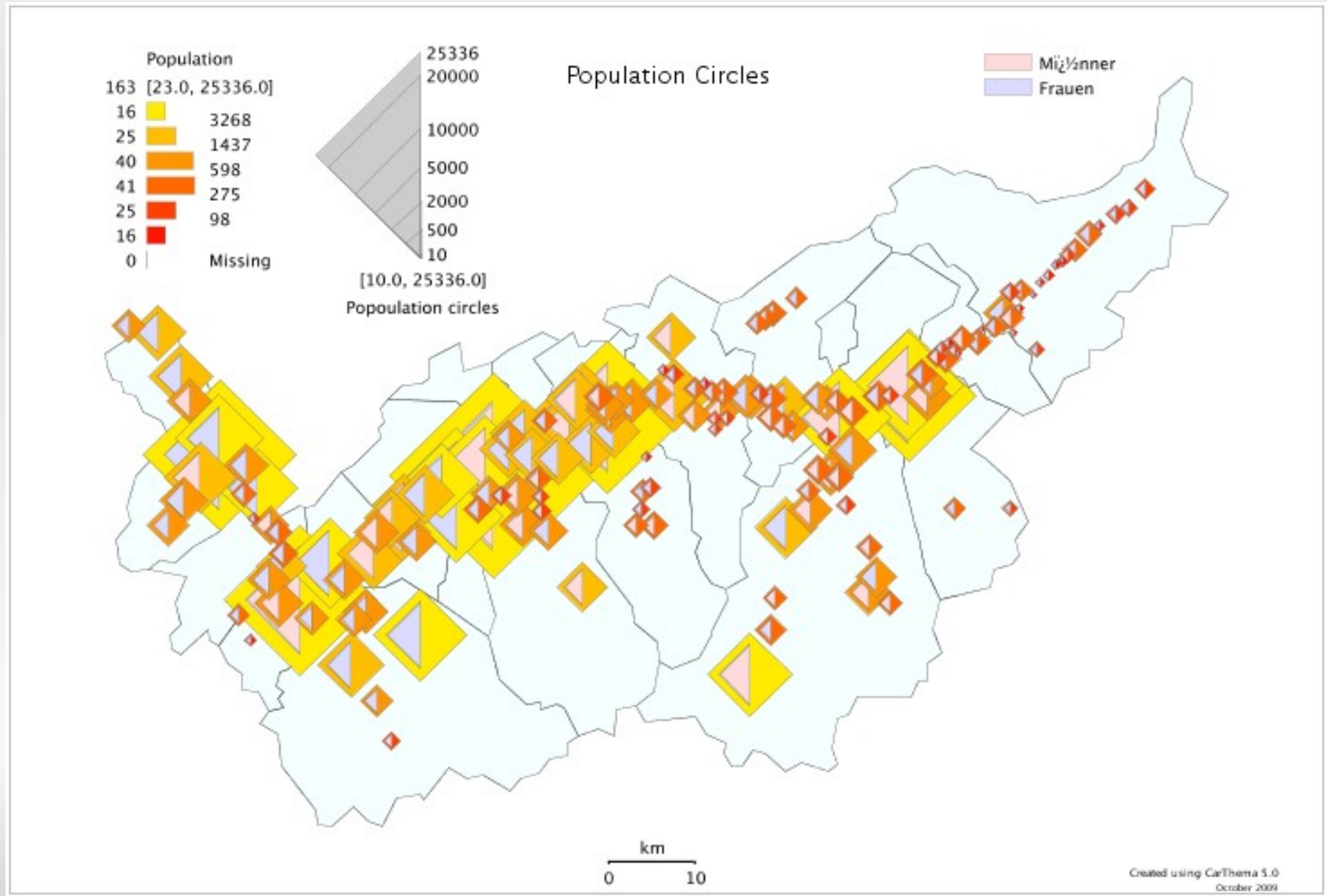
Line chart



Symbol chart

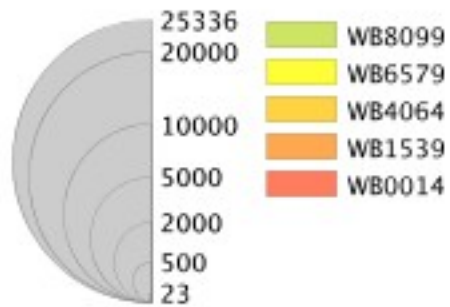


Overlaid symbols



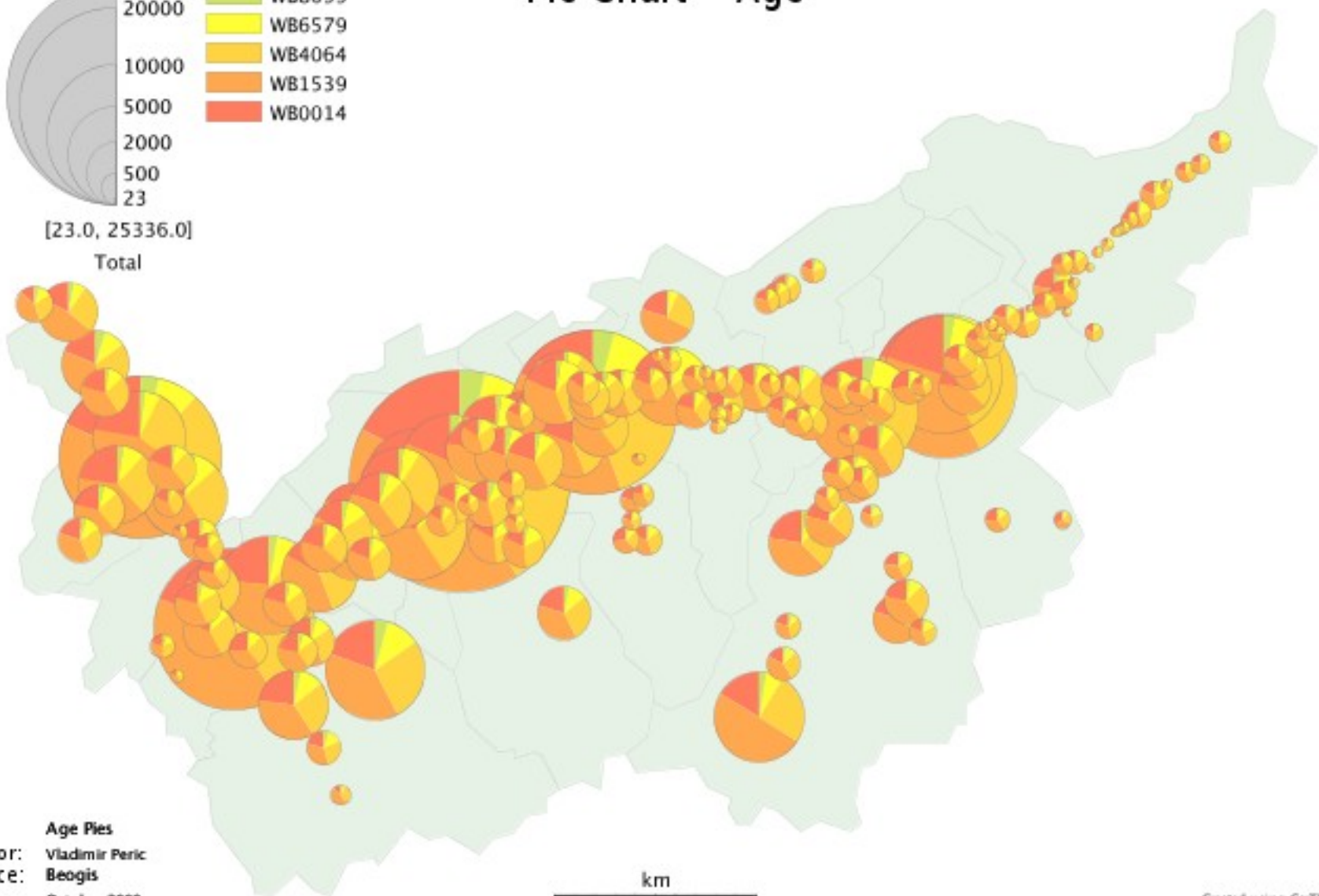
Pie chart

Pie Chart – Age



[23.0, 25336.0]

Total

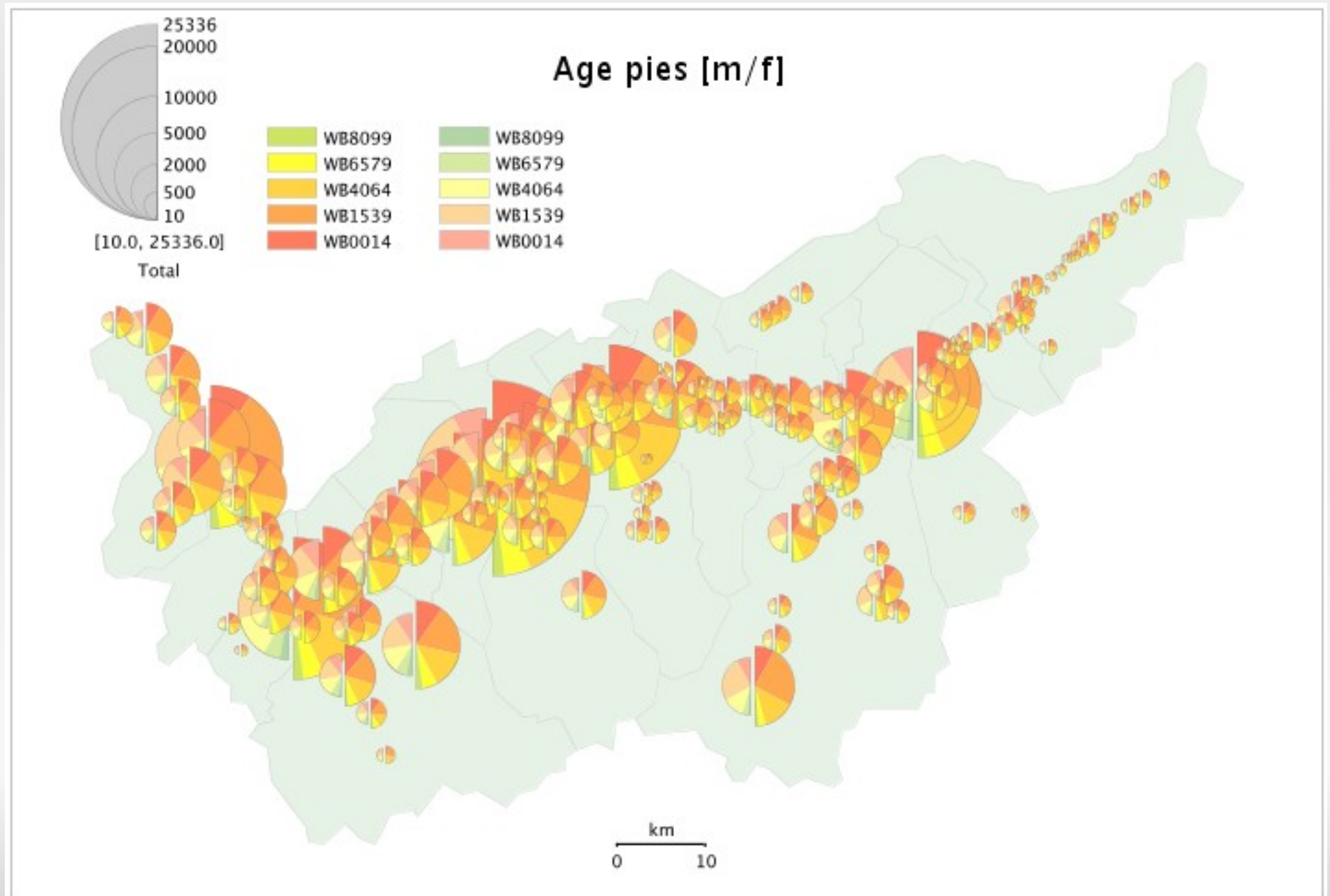


Title: Age Pies
Author: Vladimir Peric
Source: Beogis
Date: October 2009

km
0 20

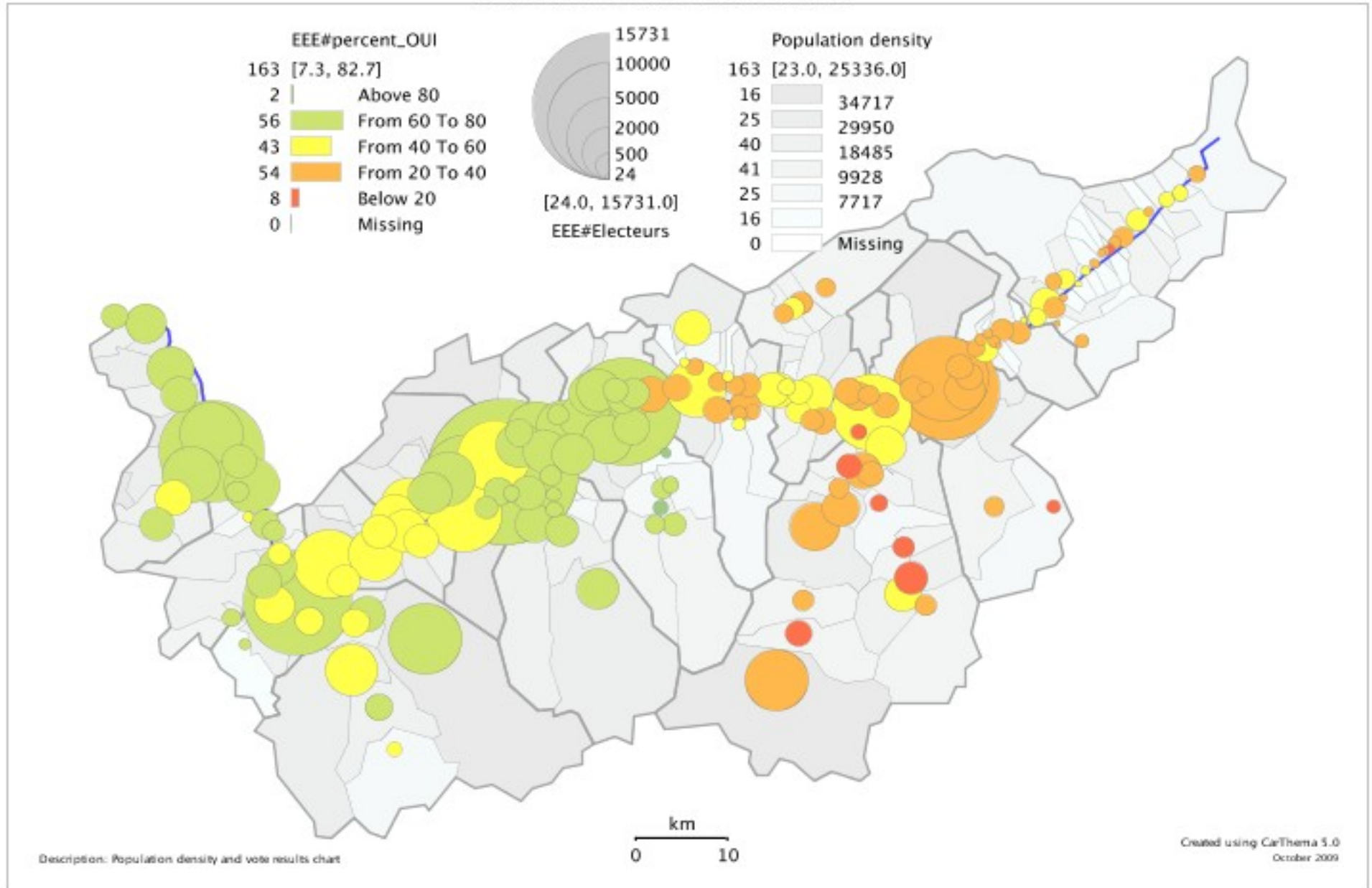
Created using CarThema 5.0
CarThema 5.0 is open source project developed under GPL licence

Juxtaposed pie chart



Combined charts

Elections result chart



Futher development directions

- Integration with new version of GvSig
- Produce charts out of any data source
- Revert to user interface that GvSig user is more familiar with

Thank you!

More info about the CarThema 5.0 project can be found on site:

<http://carthema.iict.ch/carthema5-trac>