



# Digital field mapping with Geopaparazzi and gvSIG

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## Who am I?

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- cofounder of HydroloGIS ([www.hydrologis.com](http://www.hydrologis.com))
- HydroloGIS is member of GvSIG Association
- **Osgeo** Charter Member and GFOSS advocate
- develop and coordinate **Geopaparazzi**  
([www.geopaparazzi.eu](http://www.geopaparazzi.eu))
- develop and coordinate the **JGrasstools** project  
([www.jgrasstools.org](http://www.jgrasstools.org))
- started integrating JGrasstools and Geopaparazzi  
in gvSIG

## What is Geopaparazzi?



Basically an engineering survey tool

...if necessary, something to just have in your pocket...

...to easily map the important professional targets...

...and in general important things in life...

# Geopaparazzi in few words...

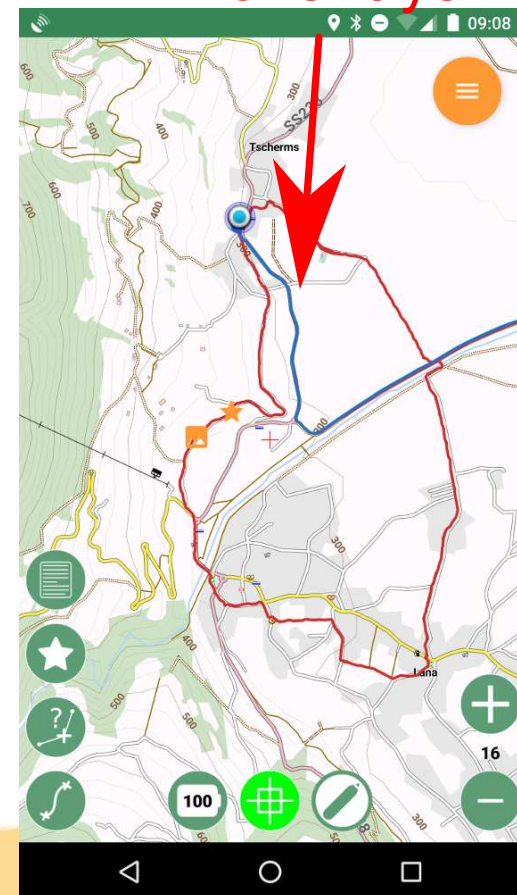
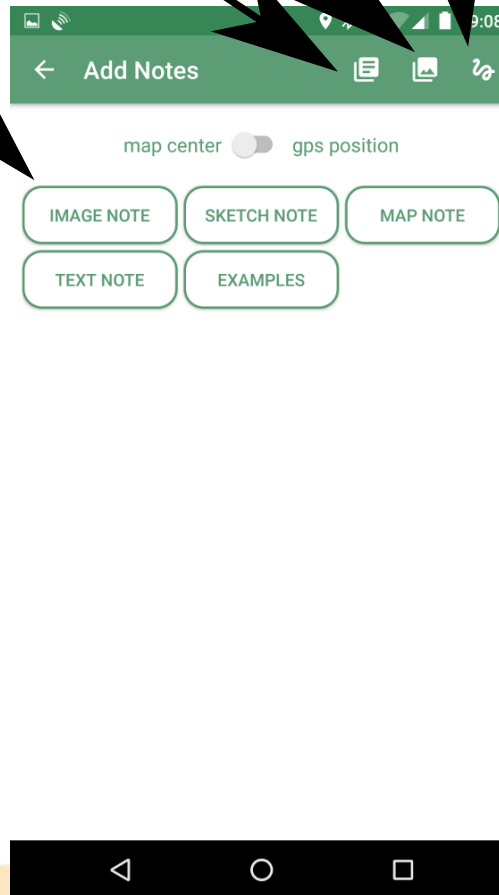
raster or mapsforge  
vector basemaps  
spatialite vector  
overlays

notes

text

sketch  
picture

gps logs



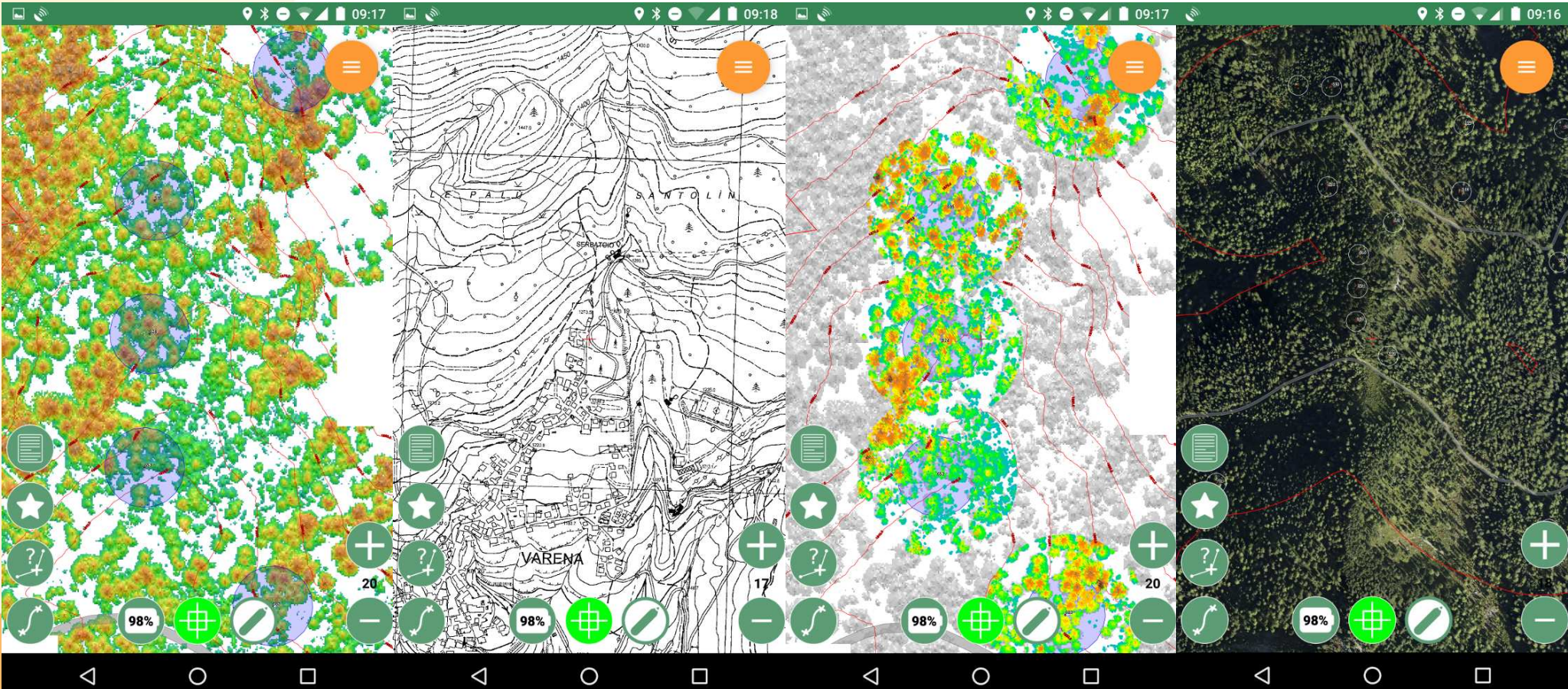


# Supported basemaps

Geopaparazzi supports the following basemap sources:

- Mapsforge **offline** map files
- MBtiles **offline** databases

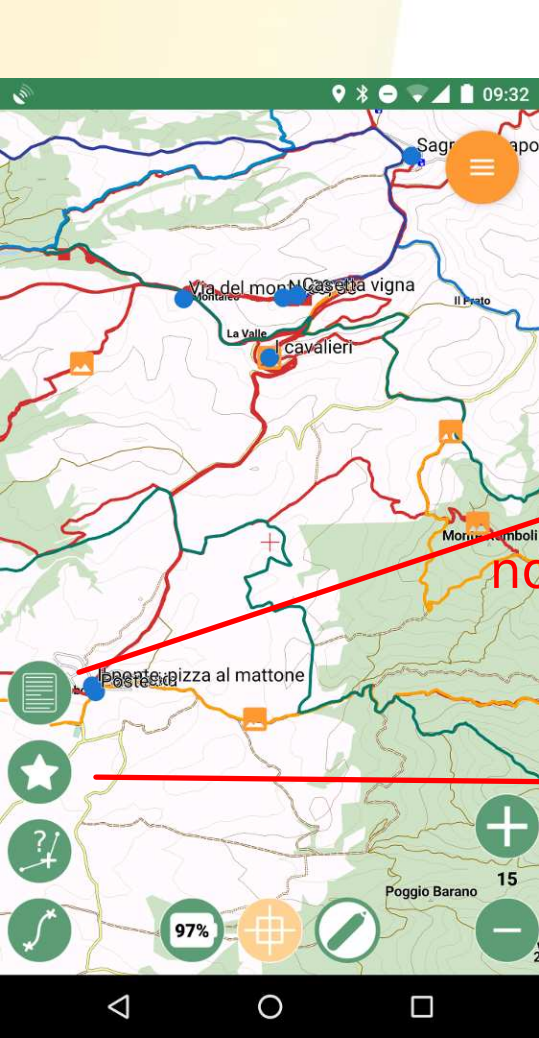
- Mapurl config files
  - \* TMS **offline** tiles folders
  - \* TMS online sources
  - \* WMS online sources
- Rasterlite2 **offline** databases



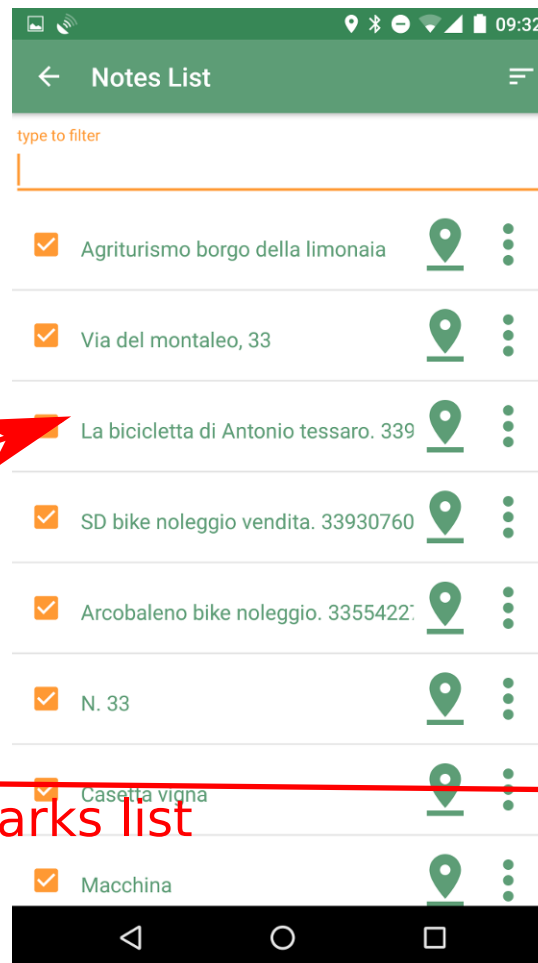


# Notes and bookmarks

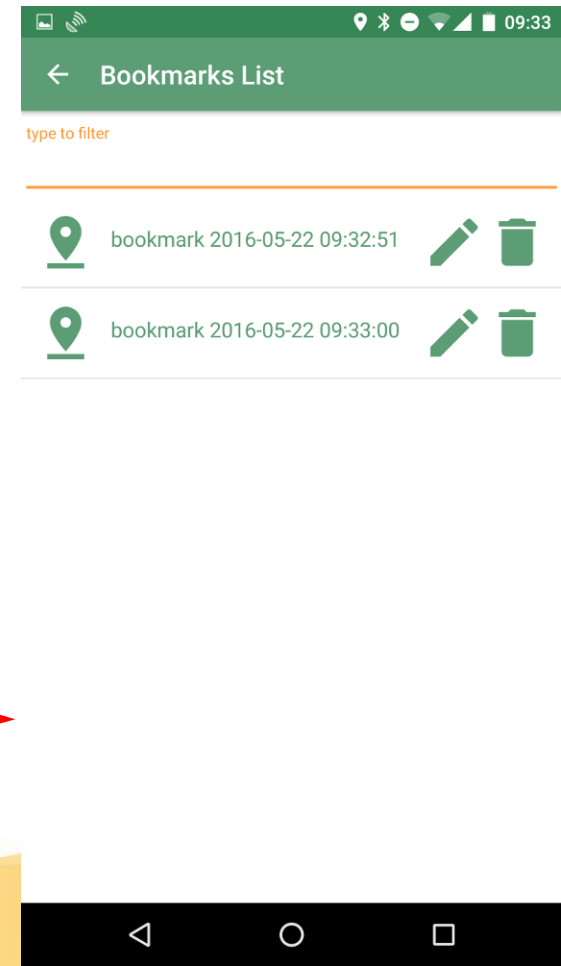
Notes and bookmarks can now be visualized/zoomed to/edited in a dedicated list view.



notes list



bookmarks list



# GPS logs

**TAP OPENS MENU**

**LONG TAP HERE  
OPENS TOOLS**

- Gps data list
- Spatialite data list
- Toggle scalebar
- Open compass
- Enable center on GPS
- Center on base map
- Go to
- Share position
- View in mixare
- Extract mapsforge data

Gps Data

- Backhome
- log\_20130906\_203317
- Gran sfondo
- gran\_fondo\_etruschi\_maraton
- Home-mare macchina
- mare bibbona - home via monte 3
- Home-mare bibbona via monte
- Volterra-home
- Volterra
- Home-volterra

# GPS logs properties

← Gps Log Properties

Log name  
log\_20160410\_154434

Start: 2016-04-10 15:44:35  
End: 2016-04-10 17:25:20  
Track length: 5788m

Refresh icon

Icons: Share, Play, Stop, Chart, Delete

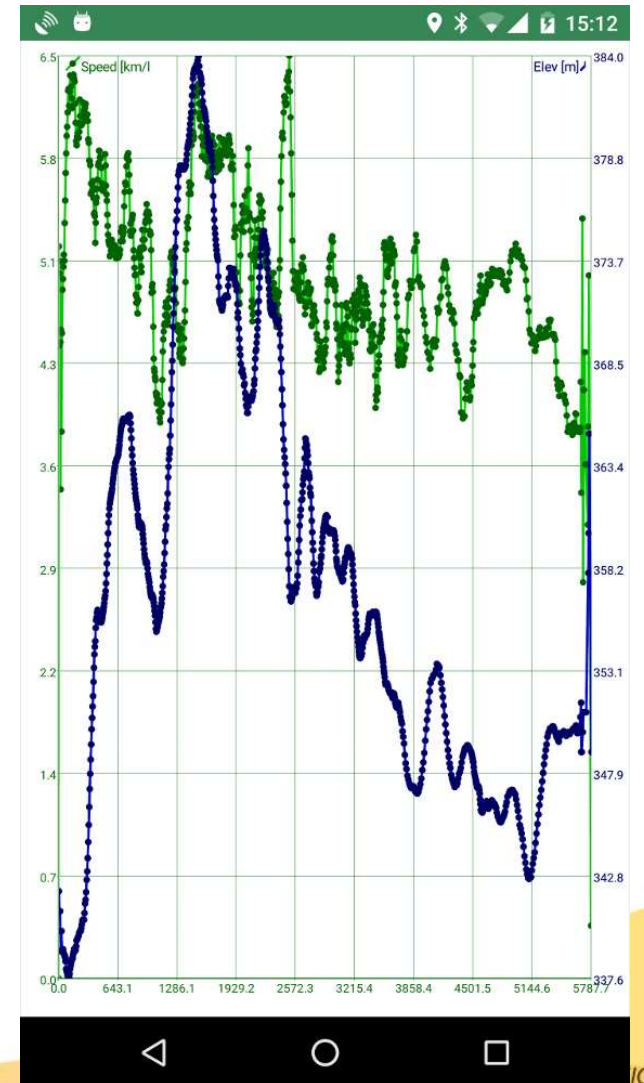
← Gps Log Properties

Stroke width: 8

Stroke color: [Color palette]

alpha, red, green, blue sliders

CANCEL SET PROPERTIES





# Spatialite databases

**TAP OPENS MENU**

**LONG TAP HERE  
OPENS TOOLS**

- Gps data list
- Spatialite data list
- Toggle scalebar
- Open compass
- Enable center on GPS
- Center on base map
- Go to
- Share position
- View in mixare
- Extract mapsforge data

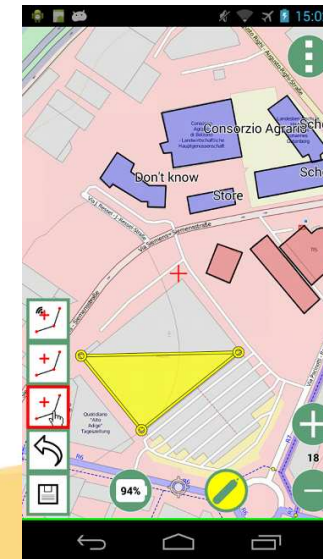
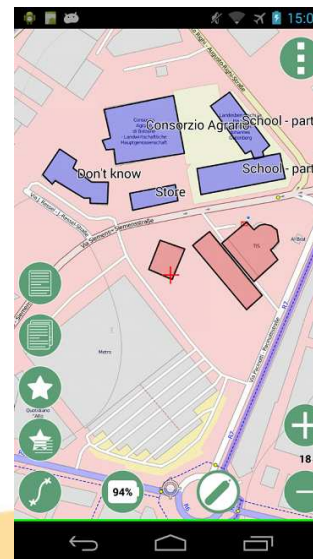
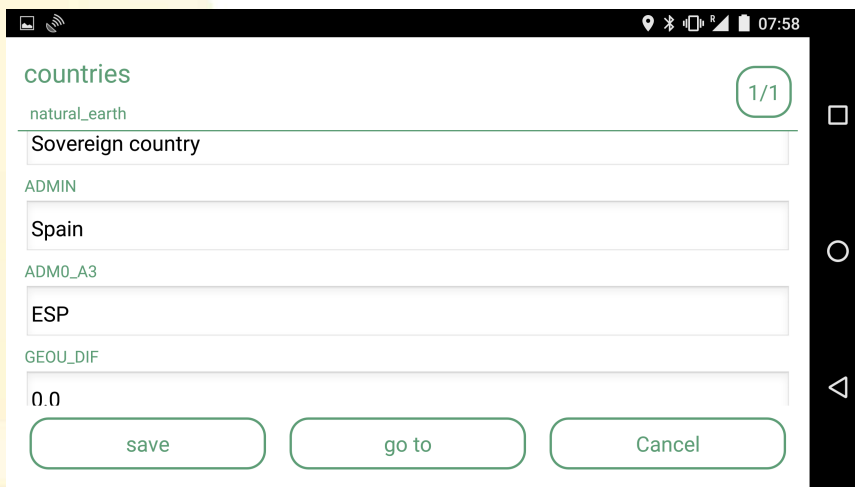
Spatialite Databases

type to filter

6	<input checked="" type="checkbox"/>	osm_roads [linestring_xy]	⋮
7	<input checked="" type="checkbox"/>	osm_contours [linestring_xy]	⋮
natural_earth.sqlite /storage/emulated/0/maps			
2	<input type="checkbox"/>	states_provinces [multipolygon_xy]	⋮
3	<input type="checkbox"/>	roads [multilinestring_xy]	⋮
4	<input type="checkbox"/>	places [point_xy]	⋮
5	<input type="checkbox"/>	countries [multipolygon_xy]	⋮
SPL_polygons_bolzano_gui1.7.1.sqlite /storage/emulated/0/maps			
1	<input checked="" type="checkbox"/>	polygons_bolzano [polygon_xy]	⋮

# Polygon editing

Editing has been funded by the Research Foundation for State University of New York.



# Line editing

Added to the Geopaparazzi 5 release.

Adding/removing + continuing lines is supported.

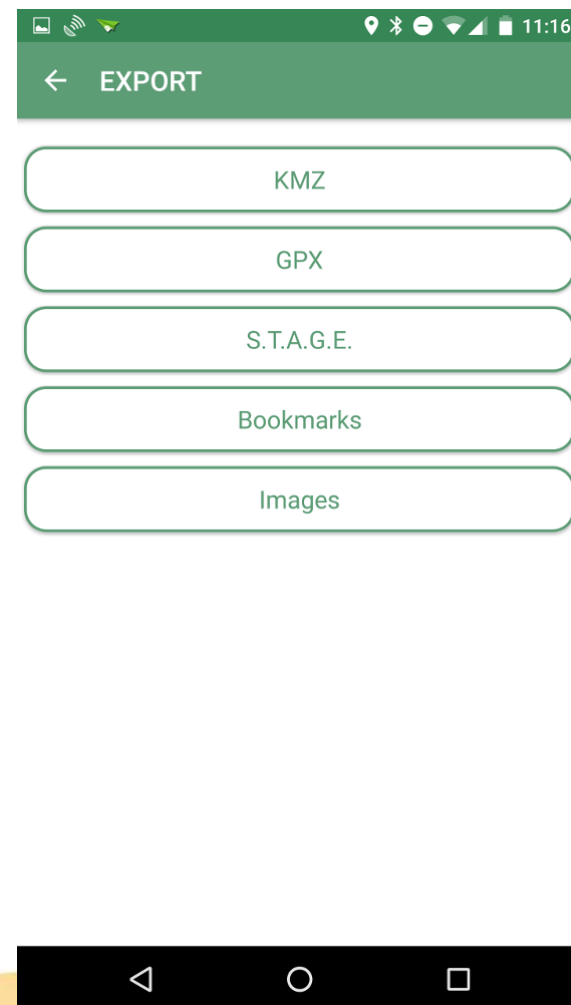
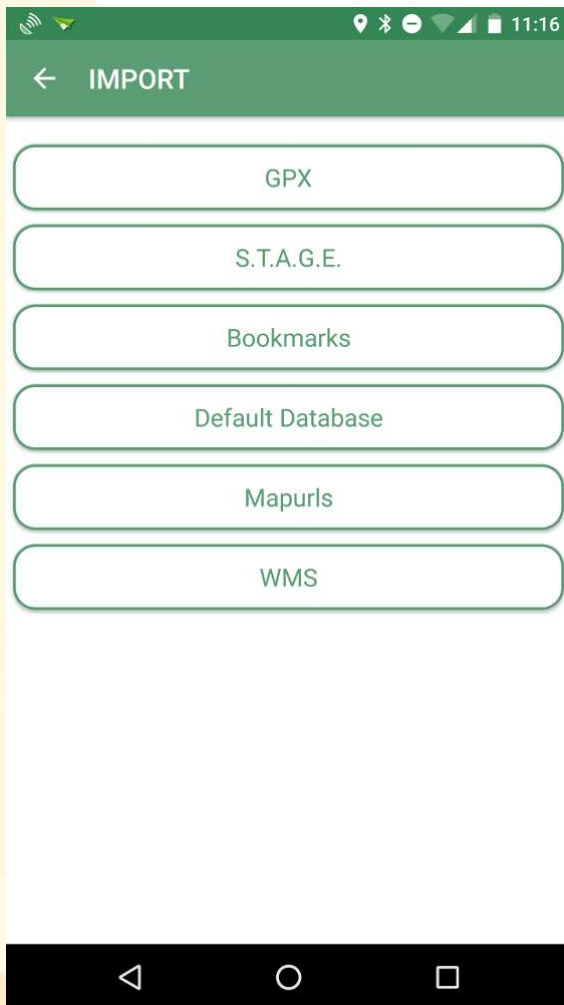
Moving vertexes is NOT supported.





# Import / Export

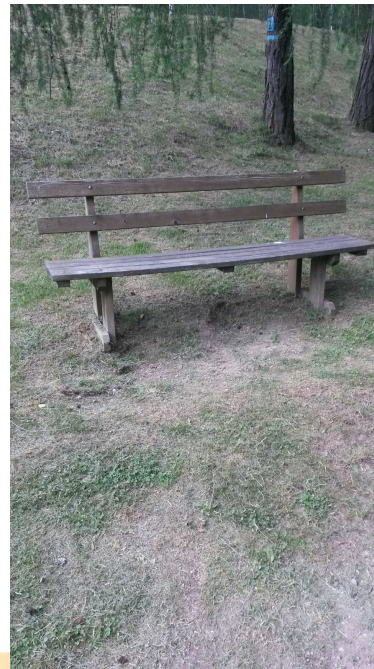
Geopaparazzi supports some simple import - export directly from the device:



## Example: census of trail tracks

The job is to create a census of trails in order to create a database:

- of the trail markings and works
- of the tracks
- identify what needs maintenance



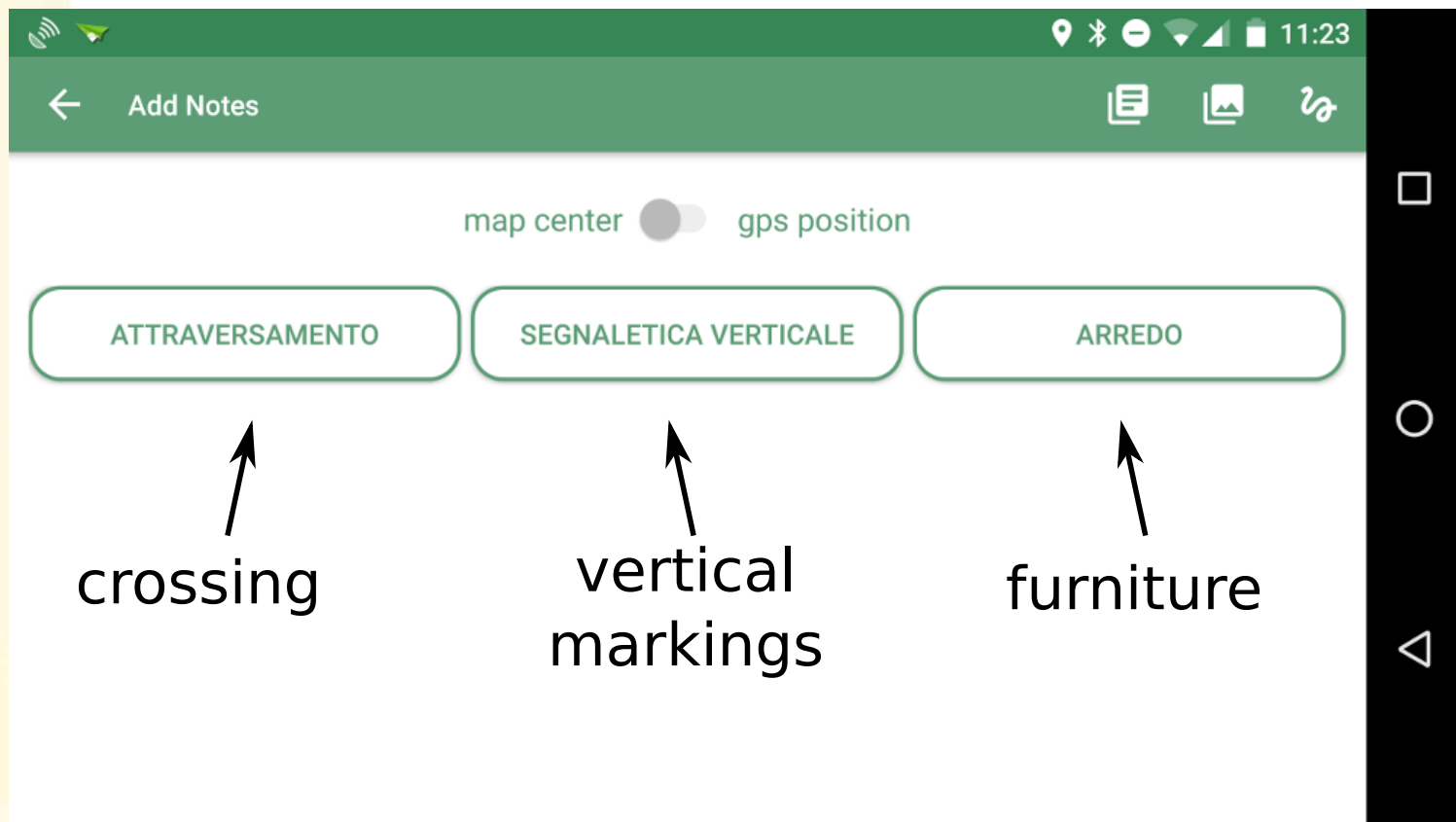
## Step 1

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# Create the survey forms

## Step 1: create forms

Form based notes appear as buttons in the **insert note view**:



# Create forms - vertical markings

The forms are created to standardize the survey and make it less error prone:



numeric/date/string inputs

validated inputs

fixed inputs in combo boxes

embedded pictures or sketches

logical subdivision of the forms



# Create forms - crossings/furniture

Form Data

Informazioni generali

Note

Foto

Tipo ( mandatory )  
ponte

Materiale ( mandatory )  
metallo

Parapetto? ( mandatory )  
SI

crossings

Form Data

Informazioni generali

Note

Foto

Tipo ( mandatory )  
area sosta

Materiale ( mandatory )  
legno-plastica

Numero panchine ( mandatory )  
2

Numero tavoli ( mandatory )  
1

Manutenzione ( mandatory )  
SI

furniture

## Step 2

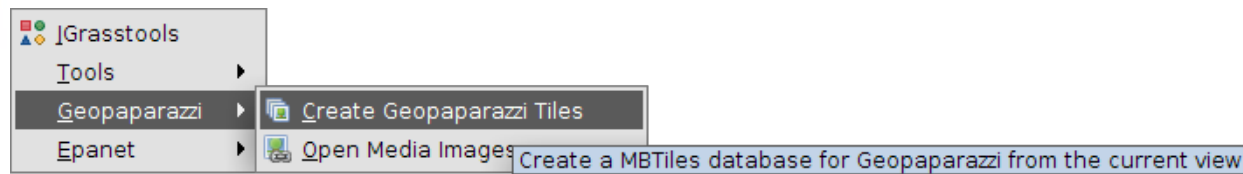
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# Create back-ground maps

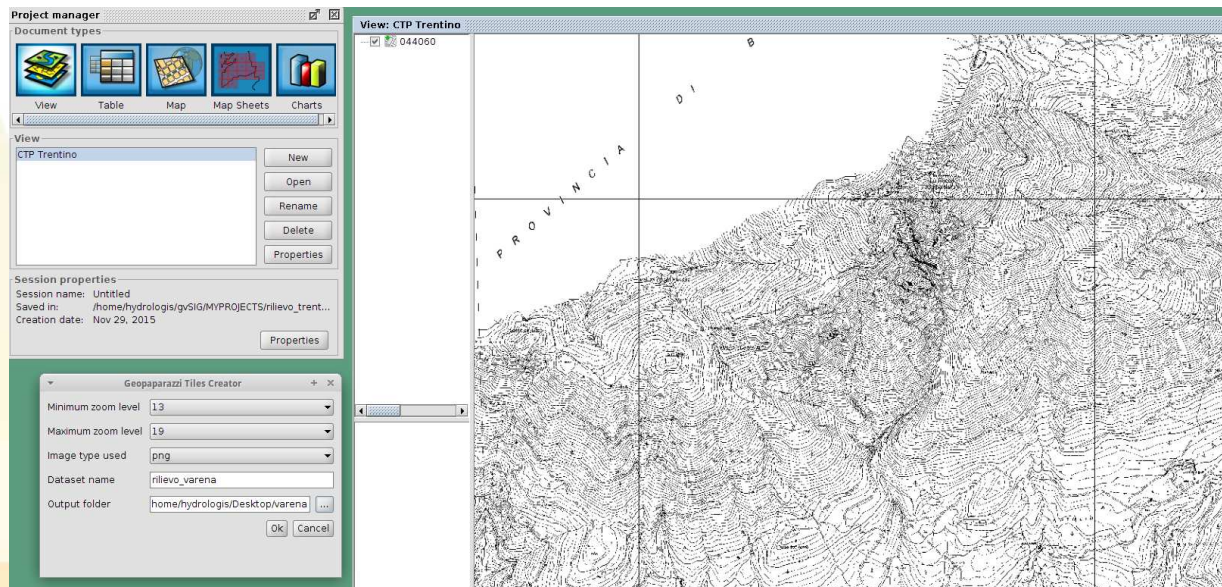


# Create background maps

In gvSIG now there is a nice tool to create background maps for Geopaparazzi:

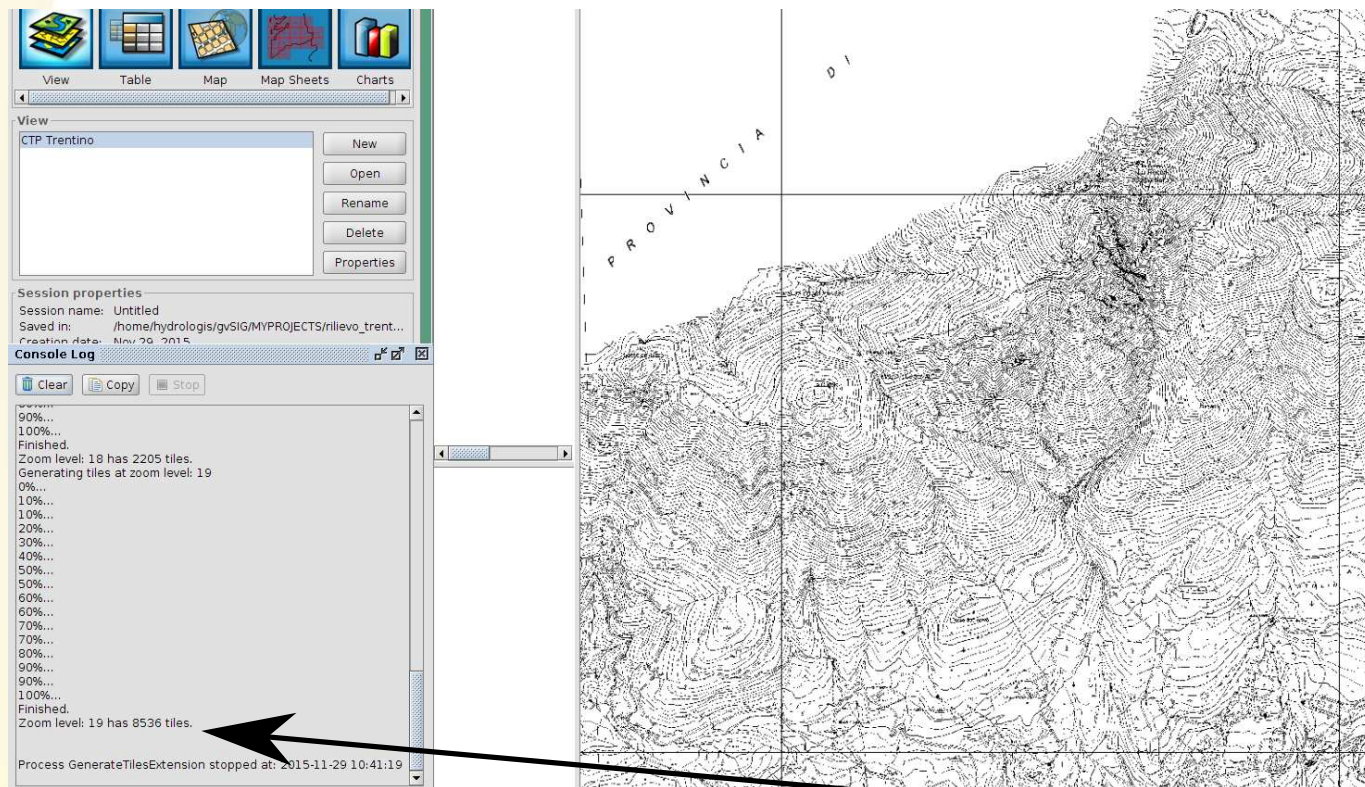


The user just sets the wanted zoomlevels and a name and output folder for the database. In this example we wanted to have a technical map as background:



## Create background maps

Once launched it takes the current view and layers and generates an mbtiles database for Geopaparazzi:

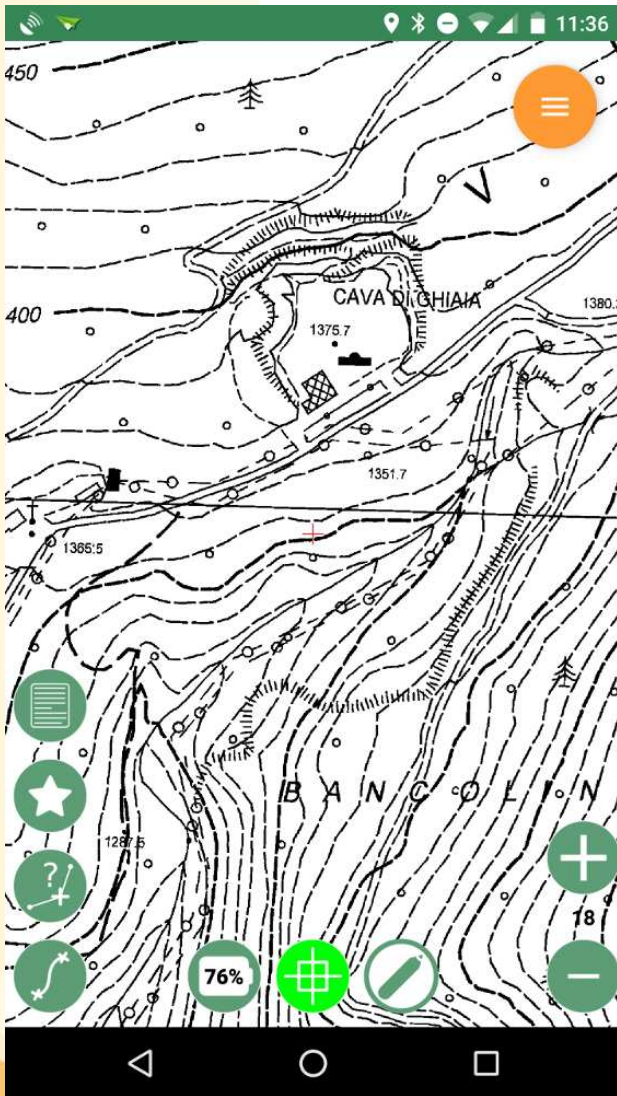


Pay attention on the upper zoomlevel, it might be hard on your PC and time. On large areas 19 might be a good compromise.

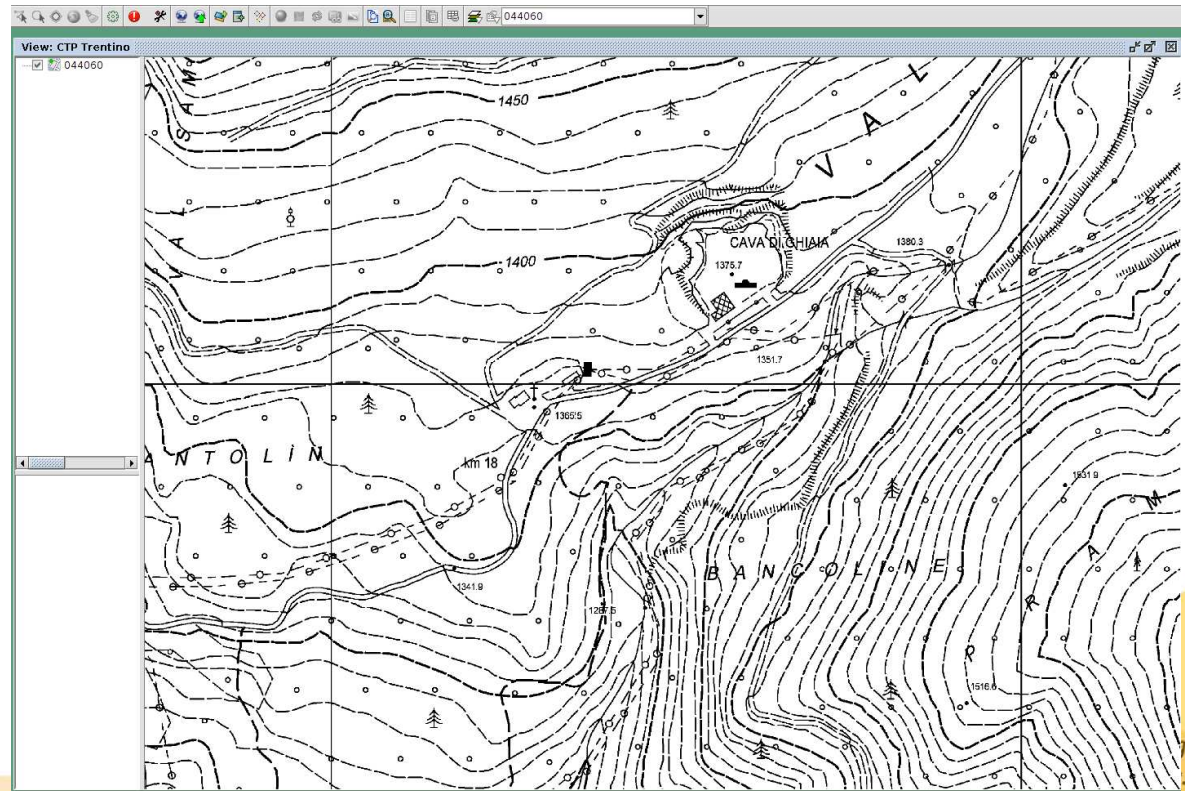


# Background maps on the device

On the device that will then look like the following:



Versus the same region on gvSIG:





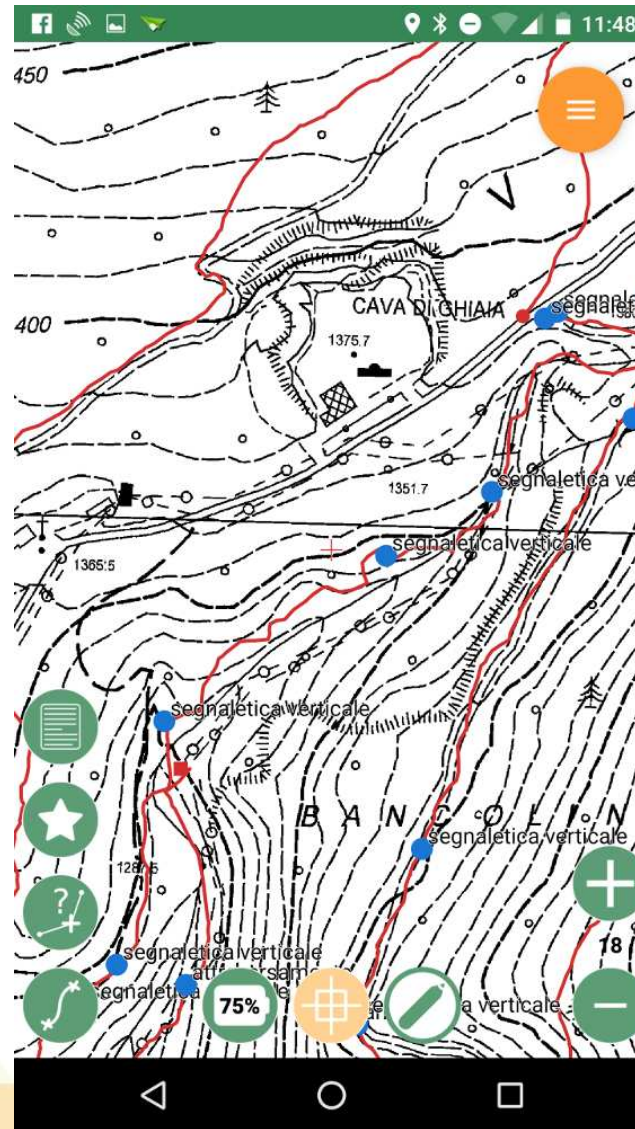
## Step 3: do the survey!





## Step 3: survey

After the survey we have a ton of data on the device:



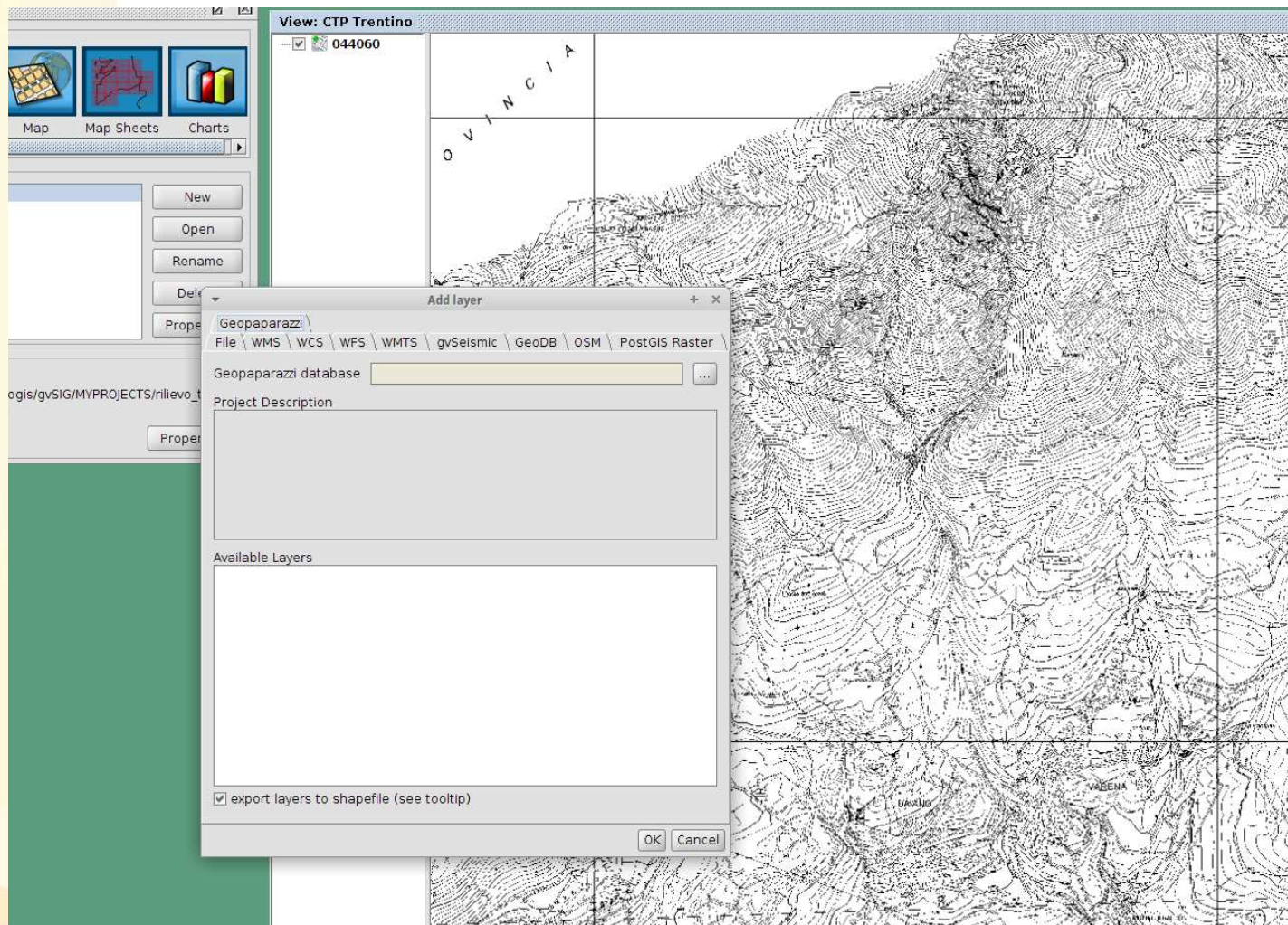
## Step 4

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# Get the data into the GIS

## Step 4: get the data into the GIS

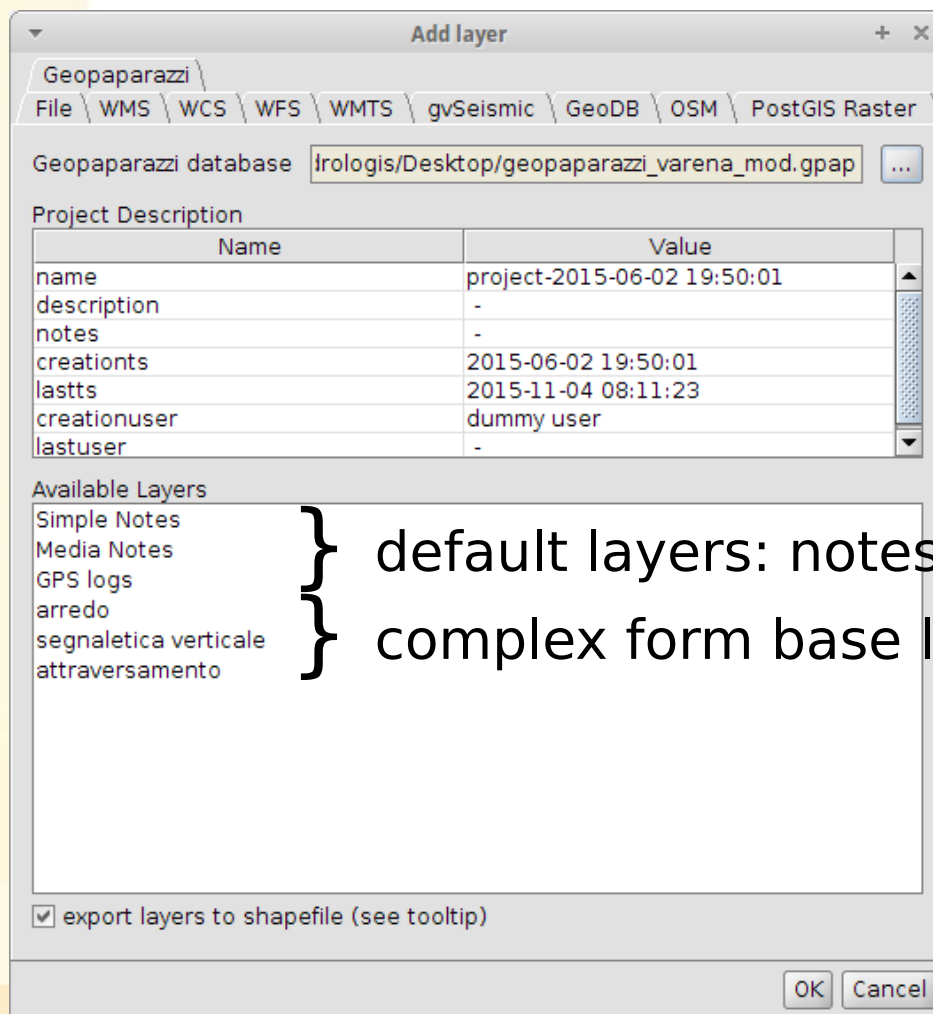
gvSIG now supports Geopaparazzi databases in the **add layer** section:





# Step 4: get the data into the GIS

Before loading the data (in this case 820 megabytes), informations about the content are given:



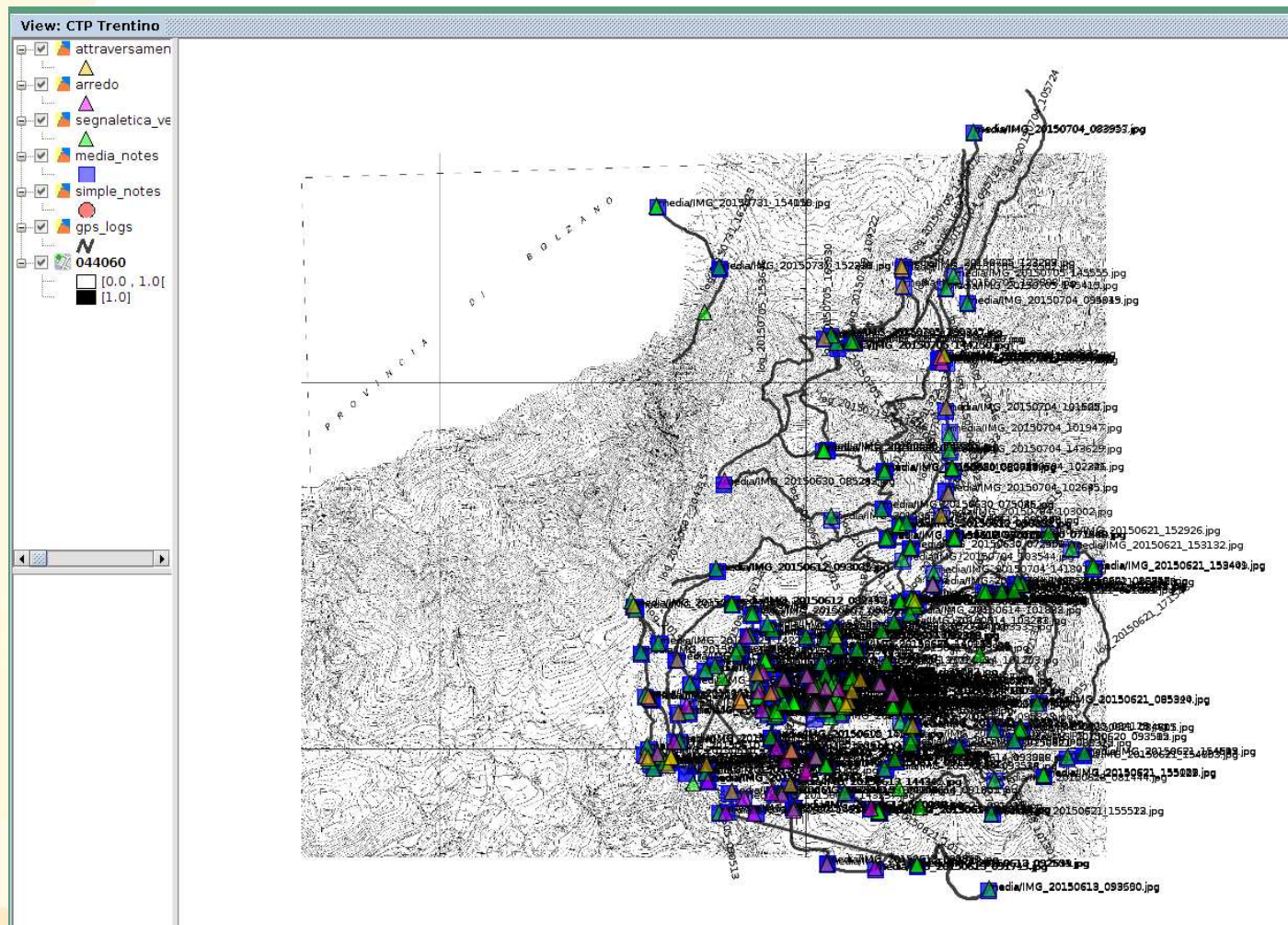
} Basic metadata of the project inserted by the user

} default layers: notes, image and gpslogs

} complex form base layers, one for each

# Step 4: get the data into the GIS

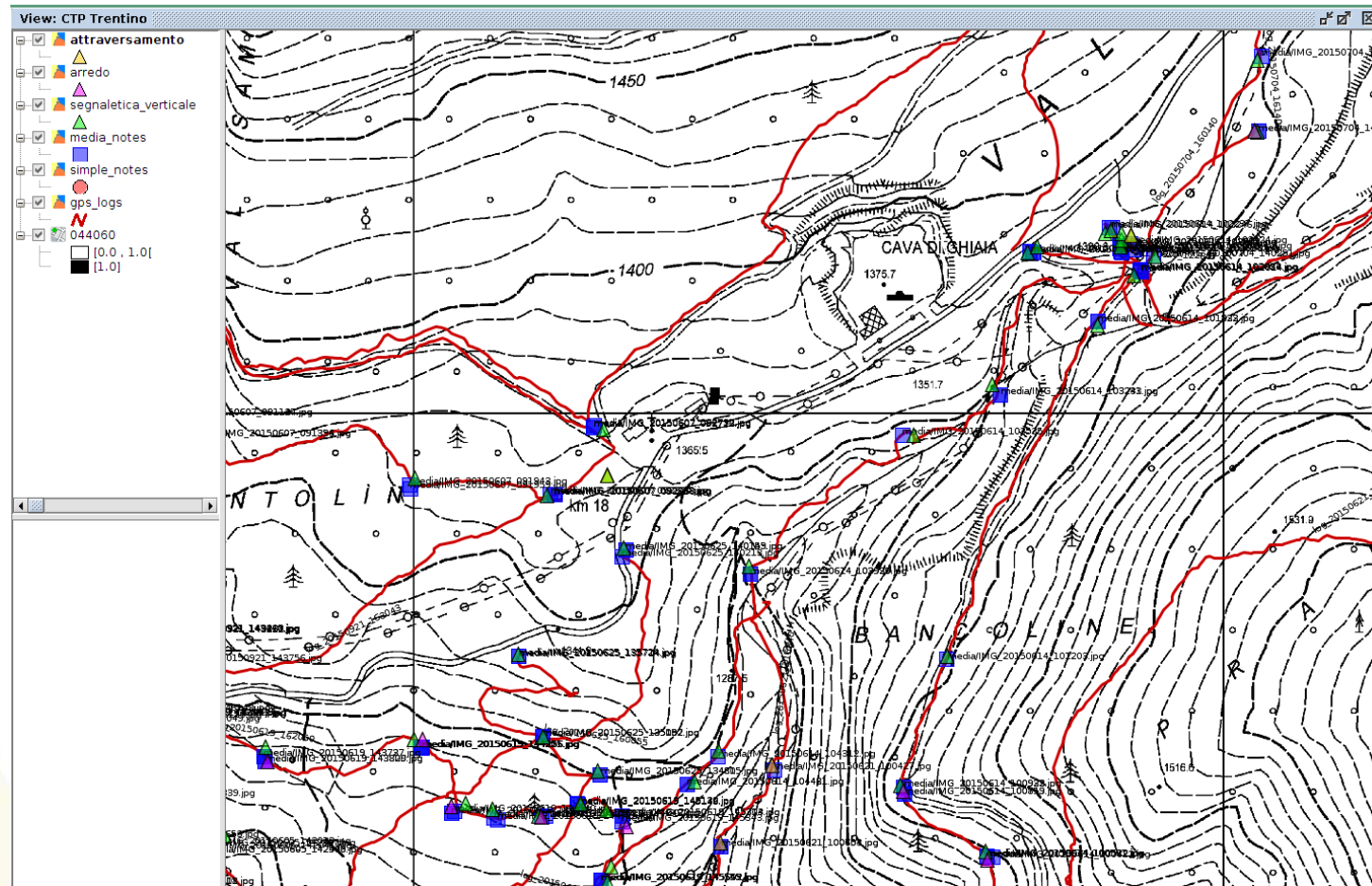
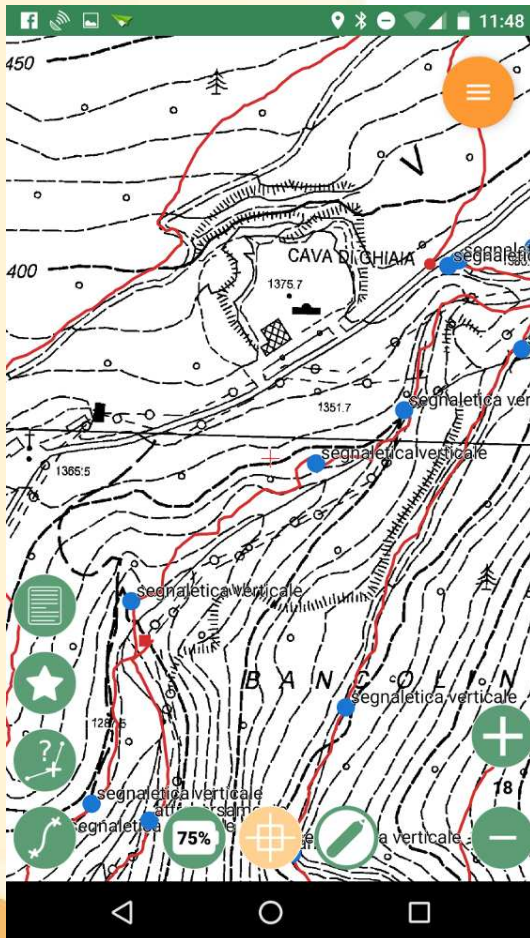
Once the import starts, shapefiles for each layer are created, with all the information in the attribute table:





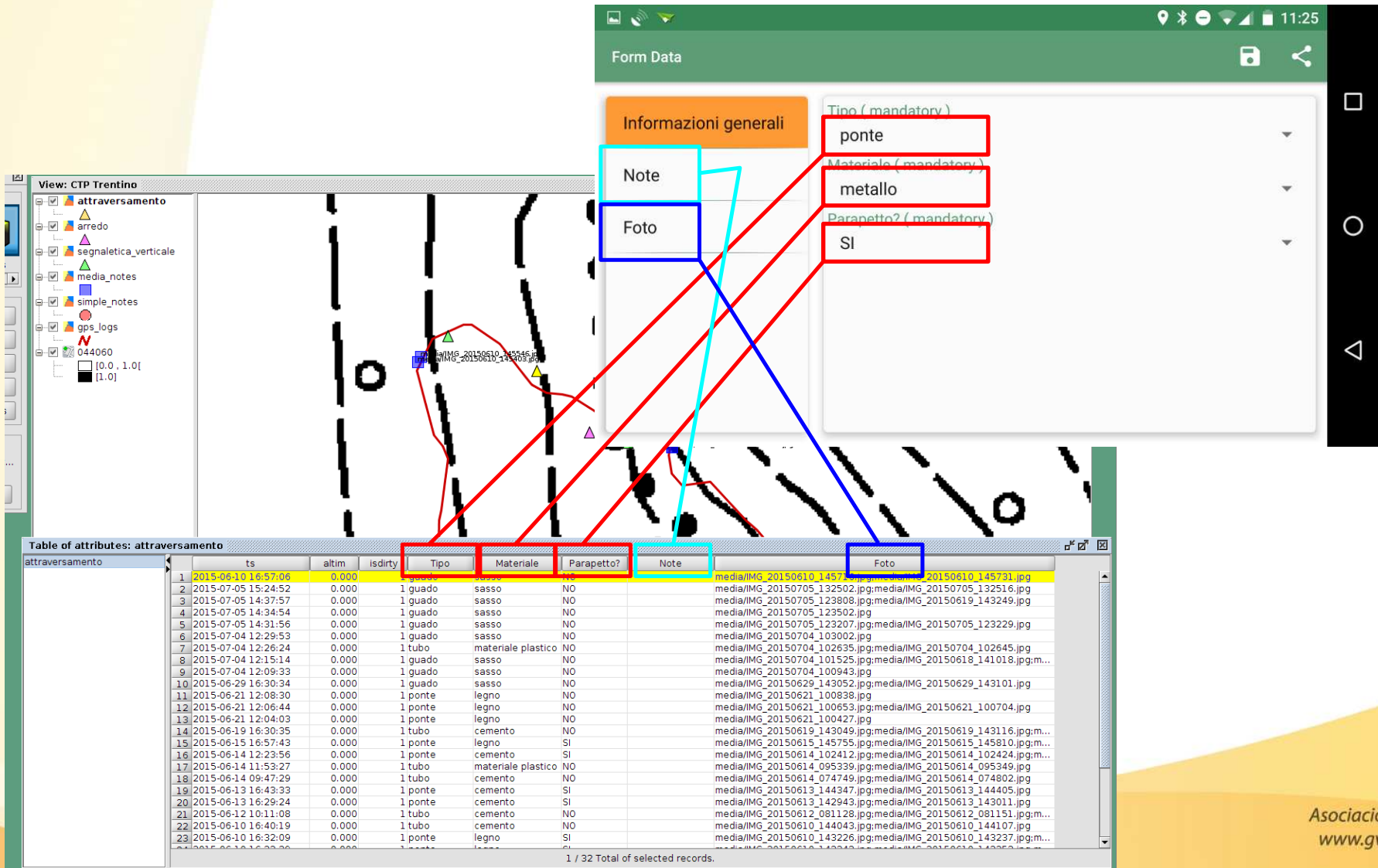
# Step 4: get the data into the GIS

Survey on device vs. survey in gvSIG:



# Step 4: get the data into the GIS

Info in the attributes table:



The screenshot shows the gvSIG interface with a map of 'CTP Trentino' and a 'Form Data' window. The form has fields for 'Tipo (mandatory)', 'Materiale (mandatory)', and 'Parapetto? (mandatory)'. Below the map is a 'Table of attributes: attraversamento' with columns for 'ts', 'altim', 'isdirty', 'Tipo', 'Materiale', 'Parapetto?', 'Note', and 'Foto'. Red boxes highlight the 'Tipo', 'Materiale', and 'Parapetto?' columns in the table and the corresponding dropdown menus in the form. Blue boxes highlight the 'Note' and 'Foto' columns in the table and the corresponding text input fields in the form. Lines connect the table columns to the form fields, illustrating the data flow.

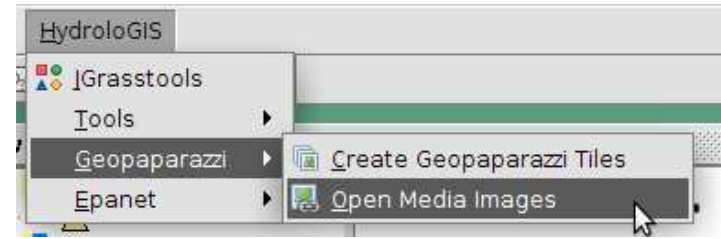
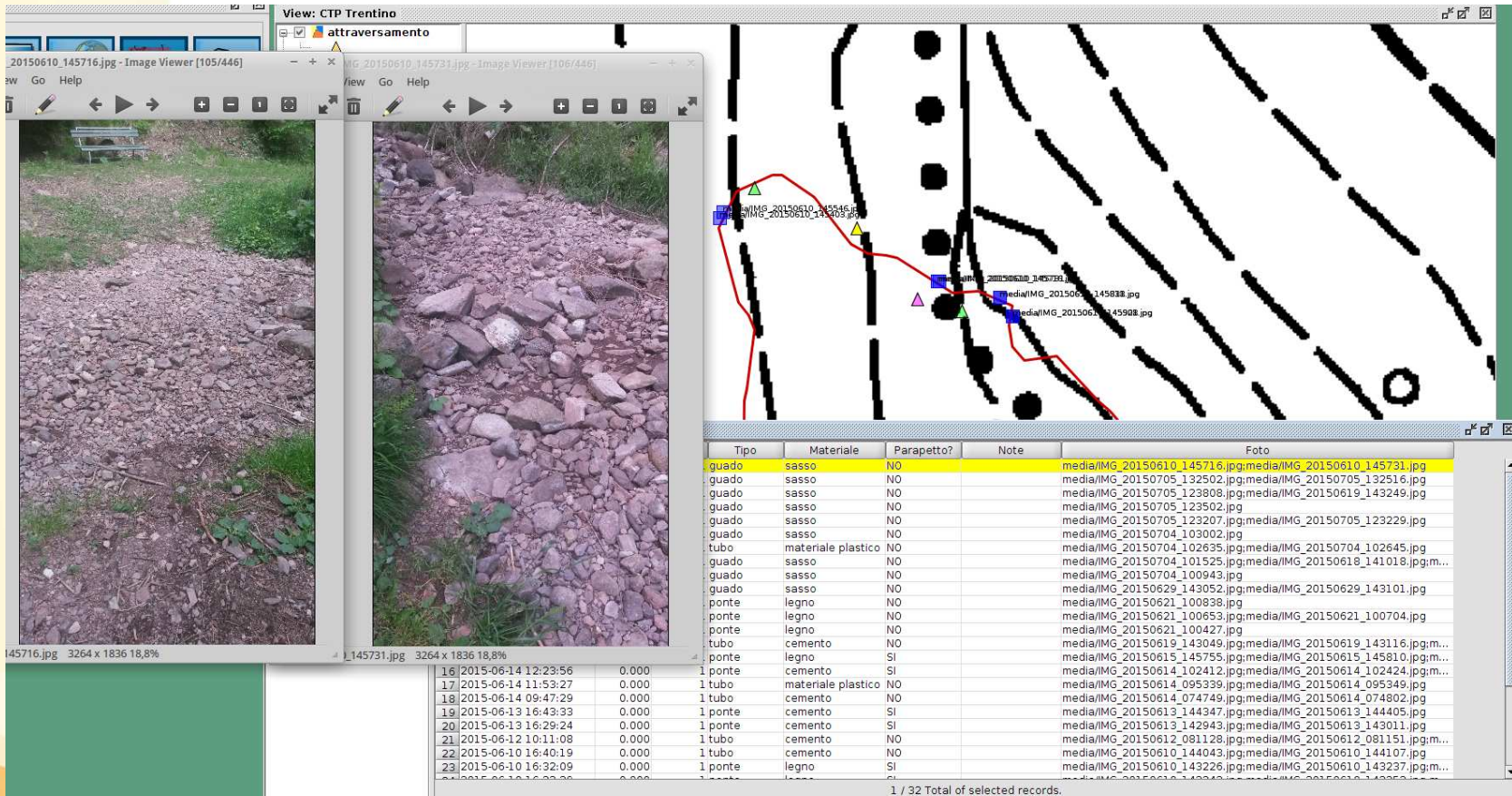
ts	altim	isdirty	Tipo	Materiale	Parapetto?	Note	Foto
1 2015-06-10 16:57:06	0.000		1 guado	sasso	NO		media/IMG_20150610_145731.jpg
2 2015-07-05 15:24:52	0.000		1 guado	sasso	NO		media/IMG_20150705_132502.jpg;media/IMG_20150705_132516.jpg
3 2015-07-05 14:37:57	0.000		1 guado	sasso	NO		media/IMG_20150705_123808.jpg;media/IMG_20150619_143249.jpg
4 2015-07-05 14:34:54	0.000		1 guado	sasso	NO		media/IMG_20150705_123502.jpg
5 2015-07-05 14:31:56	0.000		1 guado	sasso	NO		media/IMG_20150705_123207.jpg;media/IMG_20150705_123229.jpg
6 2015-07-04 12:29:53	0.000		1 guado	sasso	NO		media/IMG_20150704_103002.jpg
7 2015-07-04 12:26:24	0.000		1 tubo	materiale plastico	NO		media/IMG_20150704_102635.jpg;media/IMG_20150704_102645.jpg
8 2015-07-04 12:15:14	0.000		1 guado	sasso	NO		media/IMG_20150704_101525.jpg;media/IMG_20150618_141018.jpg;media/IMG_20150704_100943.jpg
9 2015-07-04 12:09:33	0.000		1 guado	sasso	NO		media/IMG_20150629_143052.jpg;media/IMG_20150629_143101.jpg
10 2015-06-29 16:30:34	0.000		1 guado	sasso	NO		media/IMG_20150621_100838.jpg
11 2015-06-21 12:08:30	0.000		1 ponte	legno	NO		media/IMG_20150621_100653.jpg;media/IMG_20150621_100704.jpg
12 2015-06-21 12:06:44	0.000		1 ponte	legno	NO		media/IMG_20150621_100427.jpg
13 2015-06-21 12:04:03	0.000		1 ponte	legno	NO		media/IMG_20150619_143049.jpg;media/IMG_20150619_143116.jpg;media/IMG_20150615_145755.jpg;media/IMG_20150615_145810.jpg;media/IMG_20150614_102412.jpg;media/IMG_20150614_102424.jpg;media/IMG_20150614_095339.jpg;media/IMG_20150614_095349.jpg
14 2015-06-14 12:23:56	0.000		1 ponte	cemento	SI		media/IMG_20150614_074749.jpg;media/IMG_20150614_074802.jpg
15 2015-06-14 11:53:27	0.000		1 tubo	materiale plastico	NO		media/IMG_20150613_144347.jpg;media/IMG_20150613_144405.jpg
16 2015-06-14 09:47:29	0.000		1 tubo	cemento	NO		media/IMG_20150613_142943.jpg;media/IMG_20150613_143011.jpg
17 2015-06-13 16:43:33	0.000		1 ponte	cemento	SI		media/IMG_20150612_081128.jpg;media/IMG_20150612_081151.jpg;media/IMG_20150610_144043.jpg;media/IMG_20150610_144107.jpg
18 2015-06-13 16:29:24	0.000		1 ponte	cemento	NO		media/IMG_20150610_143226.jpg;media/IMG_20150610_143237.jpg
19 2015-06-12 10:11:08	0.000		1 tubo	cemento	NO		
20 2015-06-10 16:40:19	0.000		1 tubo	cemento	NO		
21 2015-06-10 16:32:09	0.000		1 ponte	legno	SI		



# Step 4: get the data into the GIS

How to view connected image?

An **Open Media Images** selection tool is available:

Tipo	Materiale	Parapetto?	Note	Foto
guado	sasso	NO		media/IMG_20150610_145716.jpg;media/IMG_20150610_145731.jpg
guado	sasso	NO		media/IMG_20150705_132502.jpg;media/IMG_20150705_132516.jpg
guado	sasso	NO		media/IMG_20150705_123808.jpg;media/IMG_20150619_143249.jpg
guado	sasso	NO		media/IMG_20150705_123502.jpg
guado	sasso	NO		media/IMG_20150705_123207.jpg;media/IMG_20150705_123229.jpg
guado	sasso	NO		media/IMG_20150704_103002.jpg
tubo	materiale plastico	NO		media/IMG_20150704_102635.jpg;media/IMG_20150704_102645.jpg
guado	sasso	NO		media/IMG_20150704_101525.jpg;media/IMG_20150618_141018.jpg;media/IMG_20150704_100943.jpg
guado	sasso	NO		media/IMG_20150629_143052.jpg;media/IMG_20150629_143101.jpg
ponete	legno	NO		media/IMG_20150621_100838.jpg
ponete	legno	NO		media/IMG_20150621_100653.jpg;media/IMG_20150621_100704.jpg
ponete	legno	SI		media/IMG_20150621_100427.jpg
tubo	cemento	NO		media/IMG_20150619_143049.jpg;media/IMG_20150619_143116.jpg;media/IMG_20150615_145755.jpg;media/IMG_20150615_145810.jpg;media/IMG_20150614_102412.jpg;media/IMG_20150614_102424.jpg;media/IMG_20150614_095339.jpg;media/IMG_20150614_095349.jpg
guado	sasso	NO		media/IMG_20150614_074749.jpg;media/IMG_20150614_074802.jpg
guado	sasso	SI		media/IMG_20150613_144347.jpg;media/IMG_20150613_144405.jpg
guado	sasso	SI		media/IMG_20150613_142943.jpg;media/IMG_20150613_143011.jpg
ponete	legno	NO		media/IMG_20150612_081128.jpg;media/IMG_20150612_081151.jpg;media/IMG_20150610_143226.jpg;media/IMG_20150610_143237.jpg
ponete	legno	SI		media/IMG_20150610_143226.jpg;media/IMG_20150610_143237.jpg

# Questions?

Homepage: <http://www.geopaparazzi.eu>

Need help? **Join the Mailinglist.**

<http://groups.google.com/group/geopaparazzi-users>

Have cool userstories to share?

Facebook: **Geopaparazzi Users Around The World!**

<https://www.facebook.com/groups/350587351732480/>

Want to translate it **in your language?**

<https://www.transifex.com/projects/p/geopaparazzi/>

Useful links:

<http://jgrasstehtips.blogspot.it/search/label/geopaparazzi>

<http://www.slideshare.net/search/slideshow?q=geopaparazzi>