

GEOPAPARAZZI AND GVSIG MOBILE STATE OF THE ART

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HydroloGIS - gvSIG Association

13as Jornadas Internacionales gvSIG

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WHO AM I?

- cofounder of **HydroloGIS**
- HydroloGIS is member of **GvSIG Association**
- **Osgeo** Charter Member and GFOSS advocate
- develop and coordinate **Geopaparazzi**
- develop and coordinate the **HortonMachine** project (former JGrasstools)
- working on integration of the HortonMachine and Geopaparazzi in gvSIG

**I AM A DEVELOPER, BUT I DO
SUVERYS... SOMETIMES ;-)**

...THE RUGGED PANASONIC XPLORE TABLET



...THE ULTRALIGHT ASUS





...THE TRIMBLE JUNO

**BUT NONE OF THEM TURNED OUT
RIGHT FOR US**

**AND THEN ANDROID CAME AND
MADE IT POSSIBLE TO EASILY
SURVEY IN PRACTICALLY...**

A man is sitting on a light-colored tiled floor, leaning against a wooden door frame on the right. He is wearing a tan and dark grey winter jacket and grey pants. He is holding a black smartphone in his left hand and has his right hand near his neck. The scene is overlaid with a digital snow effect, with many small white flakes falling across the frame. The text "ANY CONDITION" is centered in the middle of the image in a green, outlined font.

ANY CONDITION

AND I MEAN: ANY CONDITION



WHAT WILL I TALK ABOUT?

- Geopaparazzi & gvSIG Mobile
- For Users
- For Developers (very short, I promise)
- For Decision Makers

FOR USERS

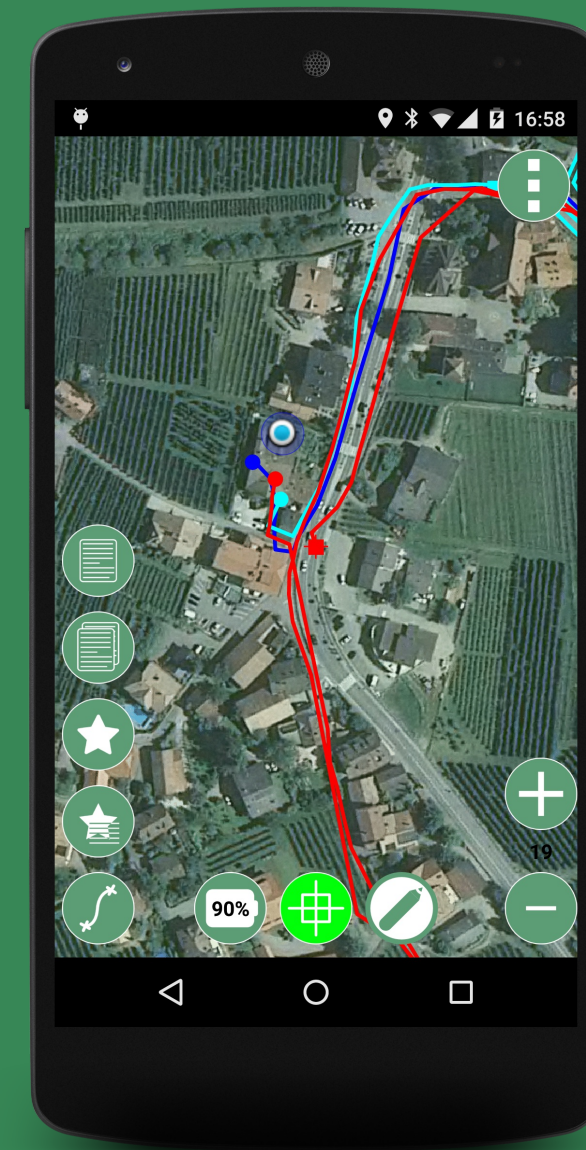


WHAT IS GEOPAPARAZZI?

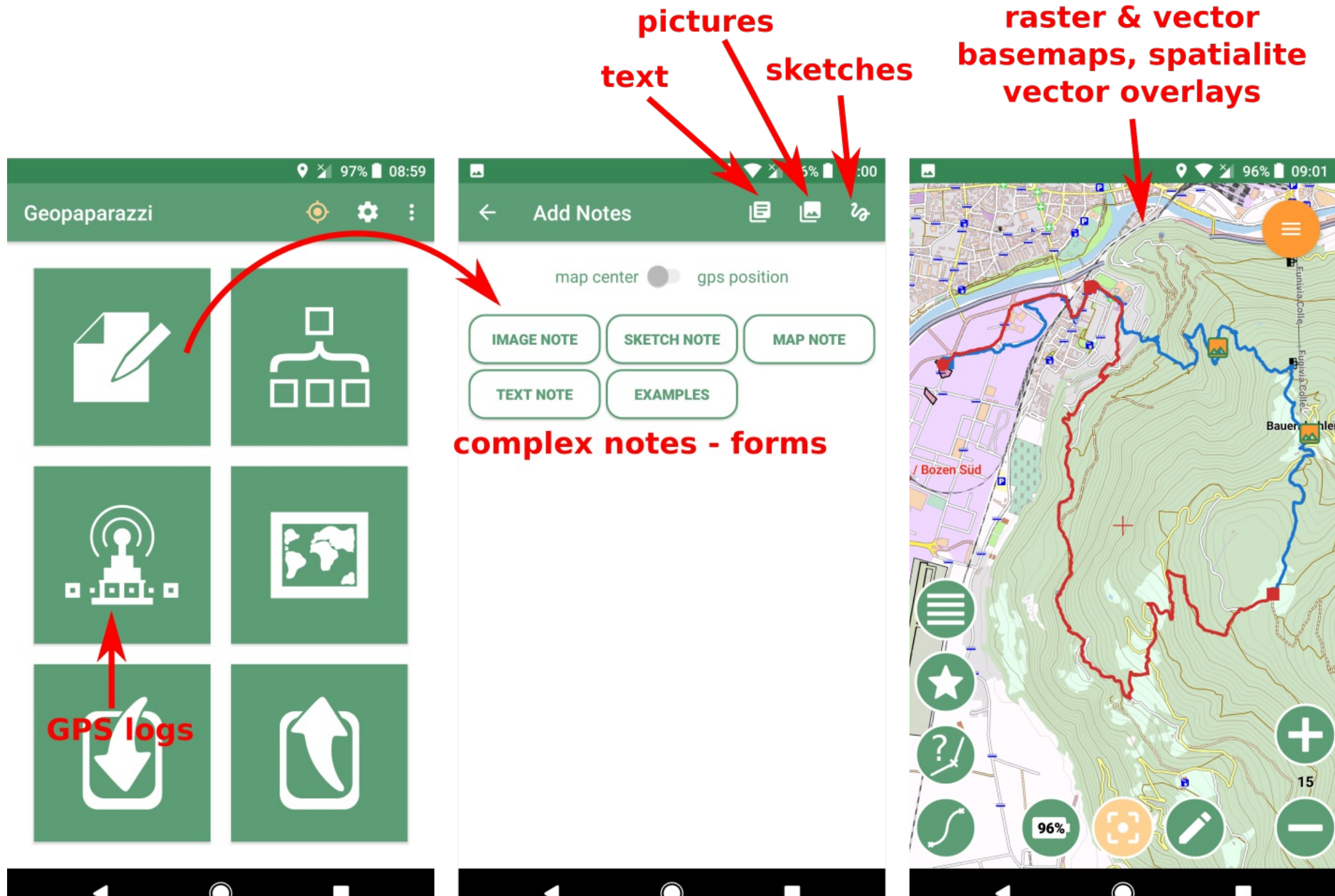
Basically an engineering survey tool but it can be used also for emergency management, general field activities (sport) and tourism. The aims are:

- always at hand when needed
- collect georeferenced pictures, notes and gps logs
- easy to use and intuitive

Nexus 5

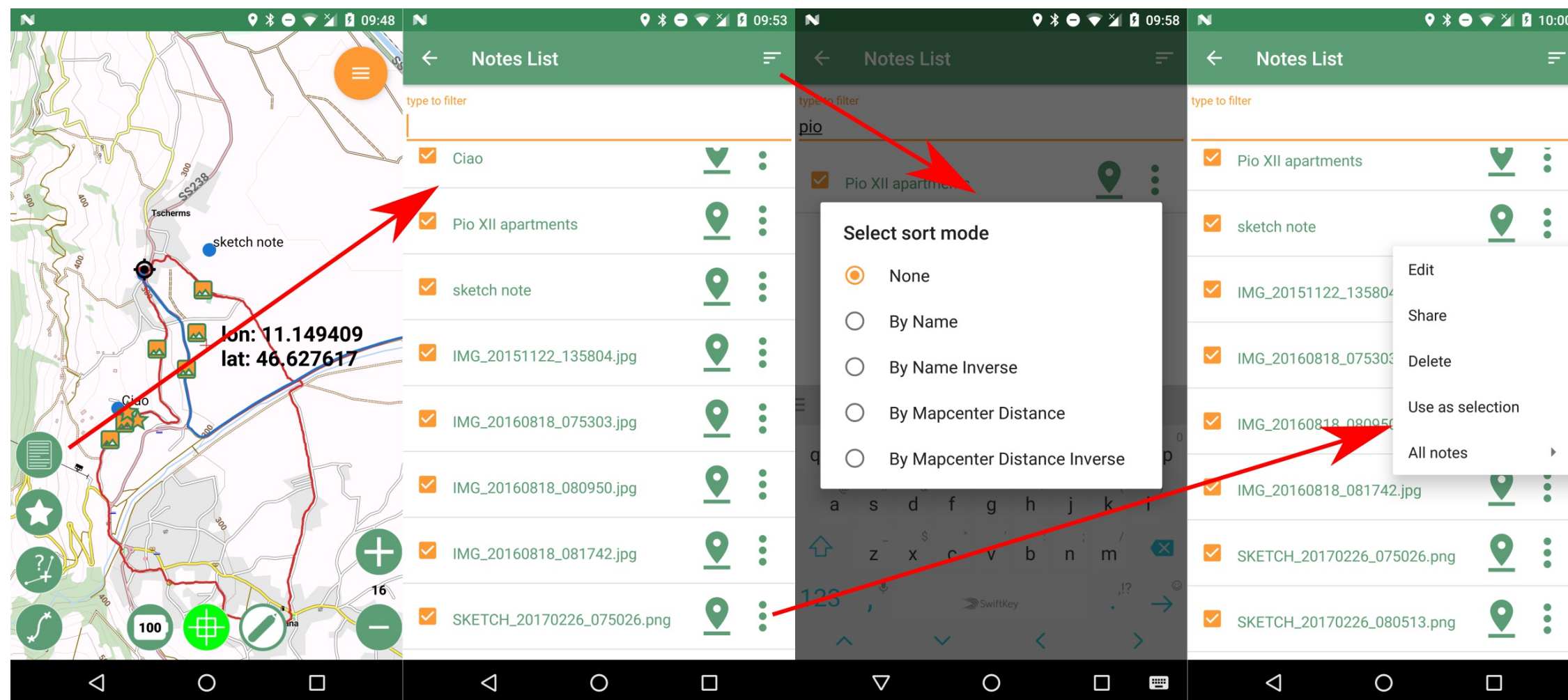


BASE FUNCTIONALITIES



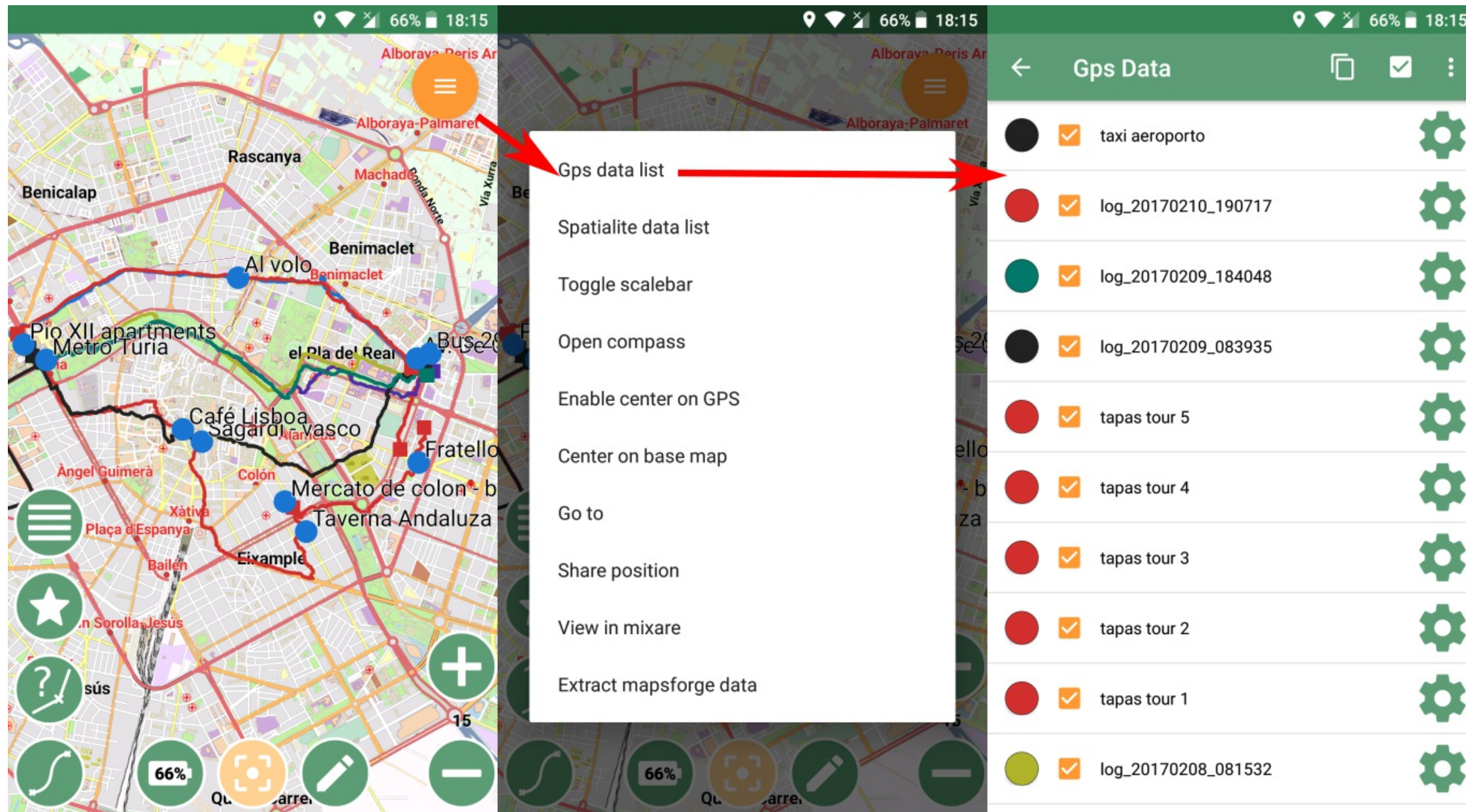
NOTES

Notes can be visualized/zoomed to/edited in a dedicated list view. They can also be sorted by distance from the current position.

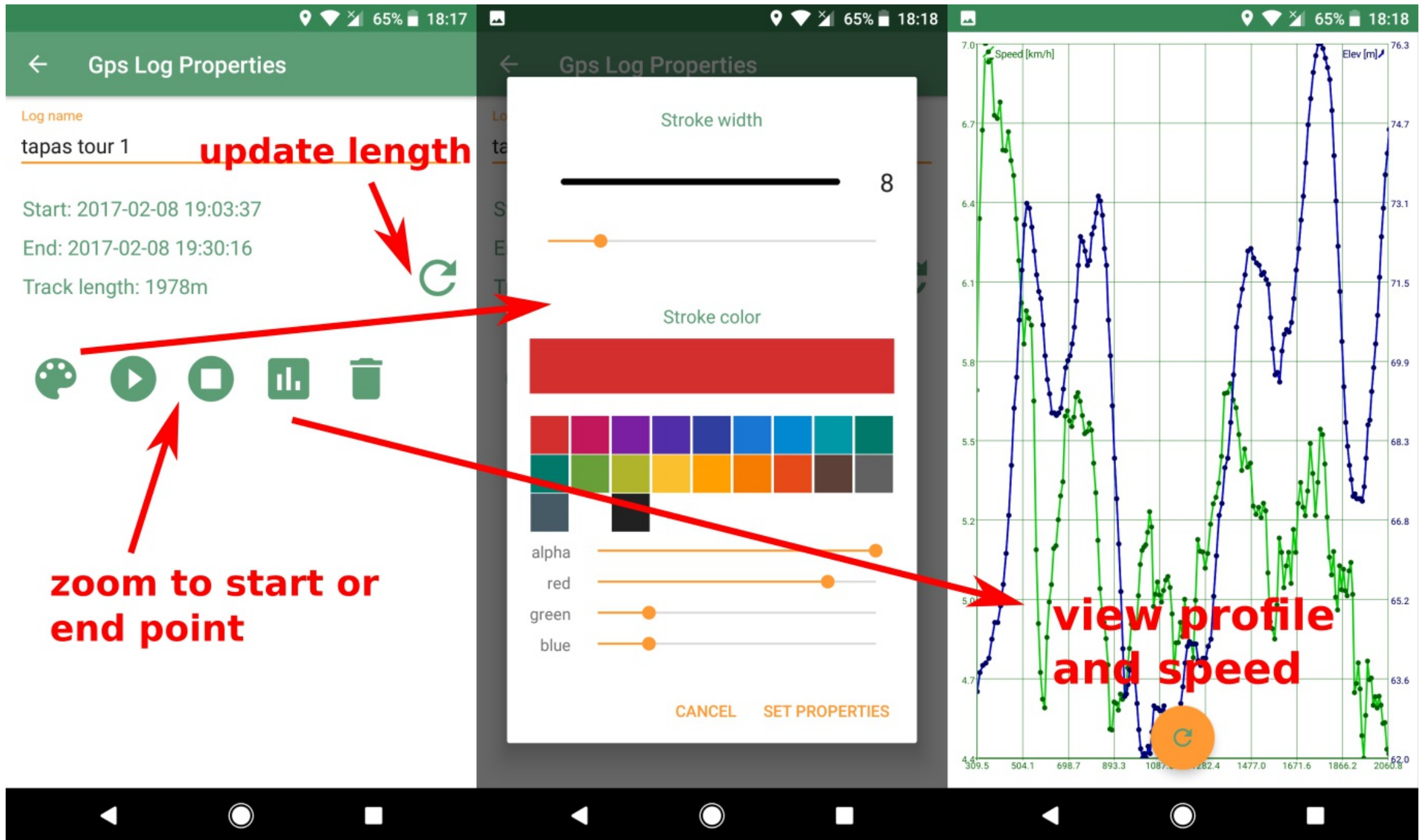


GPS LOGS

GPS tracks can be logged or imported as GPX. It is possible to manage and visualize some basic information.

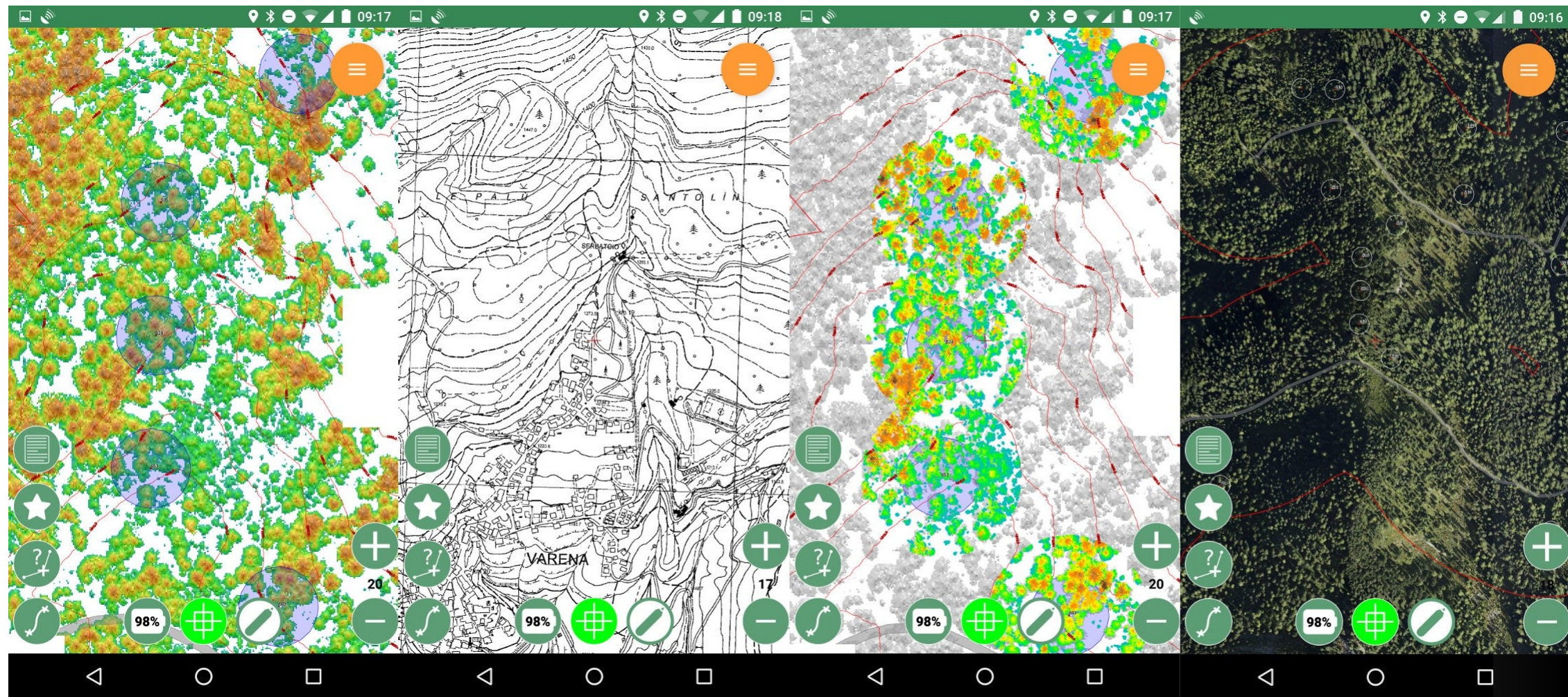


GPS LOGS

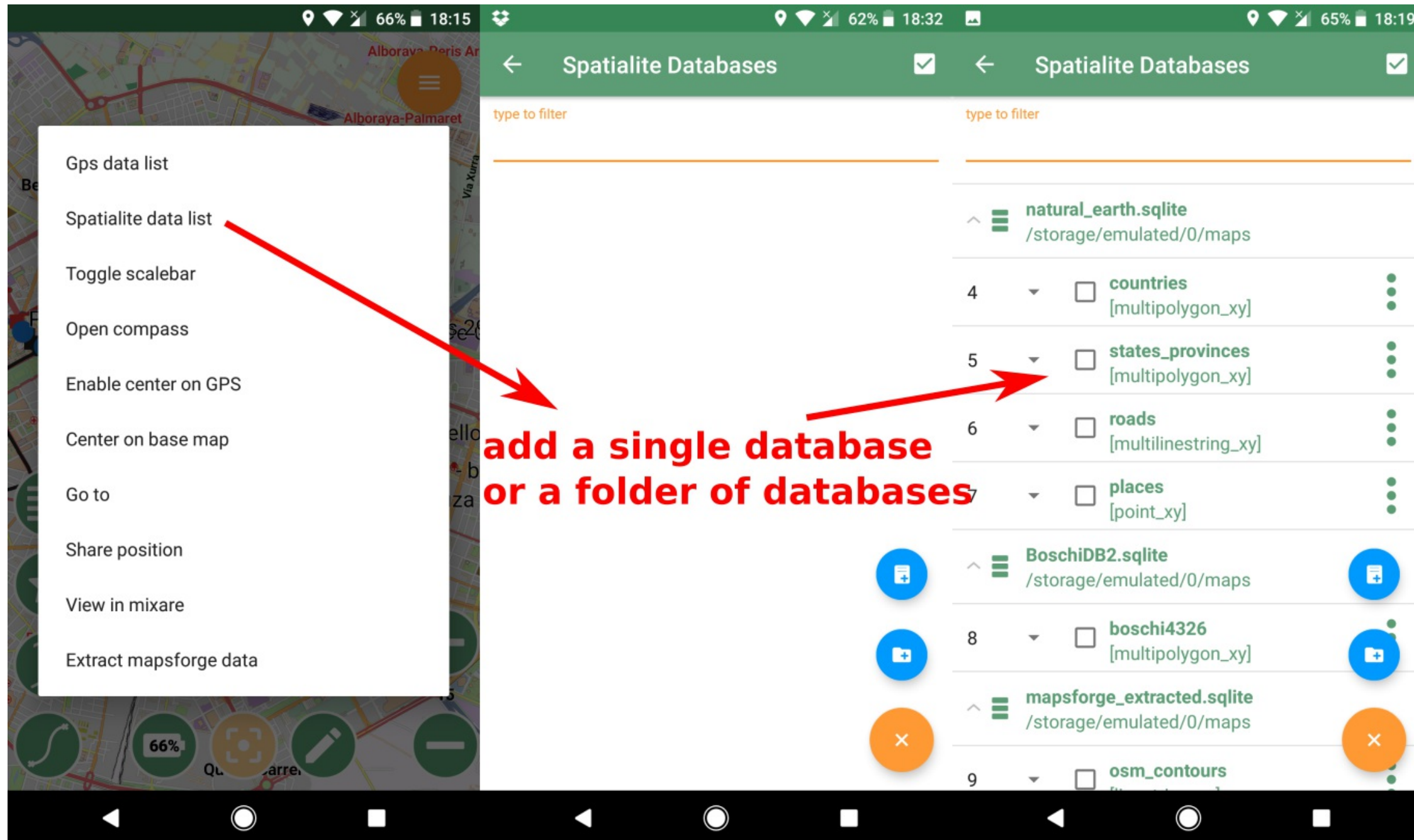


SUPPORTED BASEMAPS

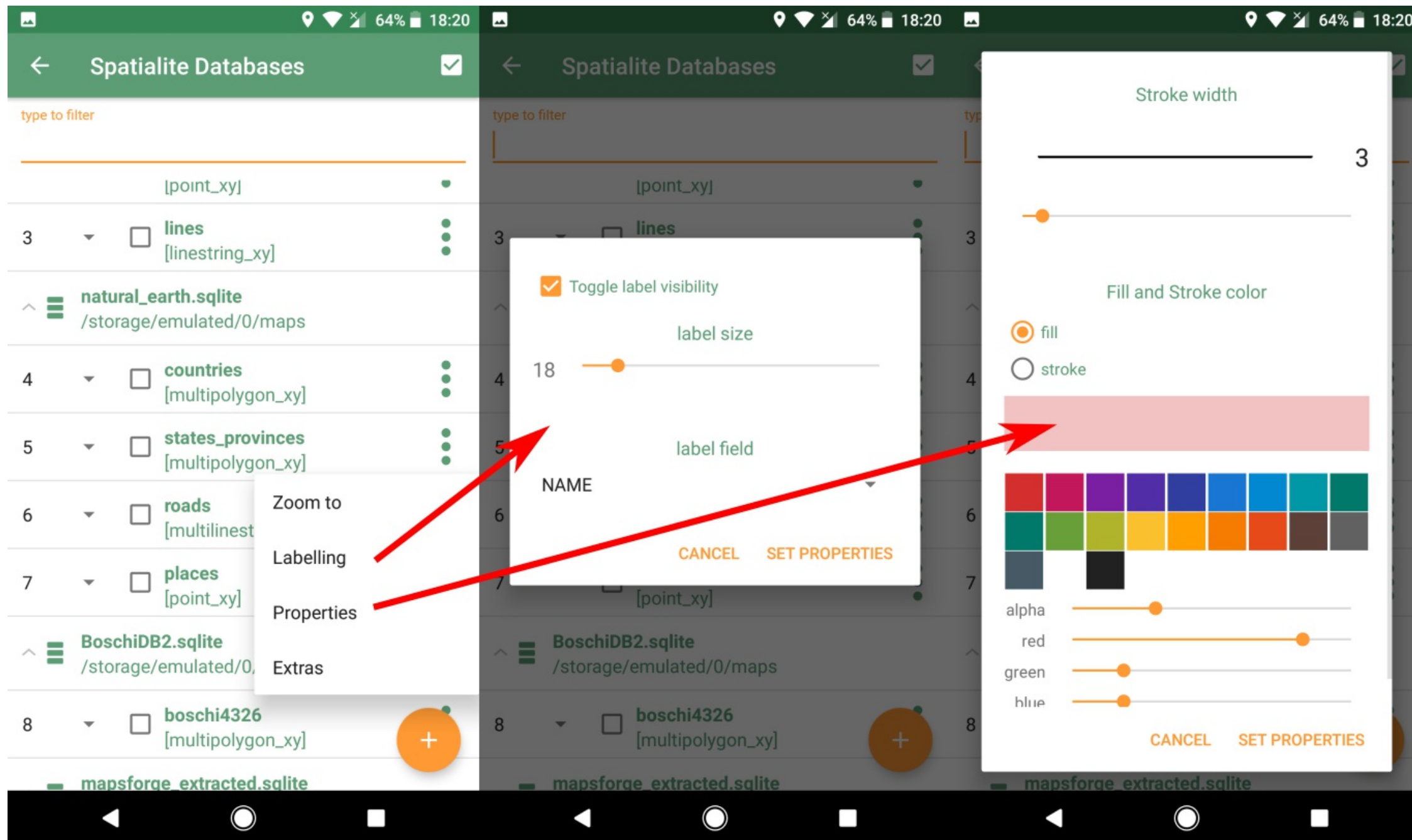
Mapsforge map files (vector, 1 nation in 500MB), MBtiles databases, TMS online/offline, WMS, Rasterlite2 databases




SPATIALITE: LOAD DATABASES



SPATIALITE: STYLE DATASETS

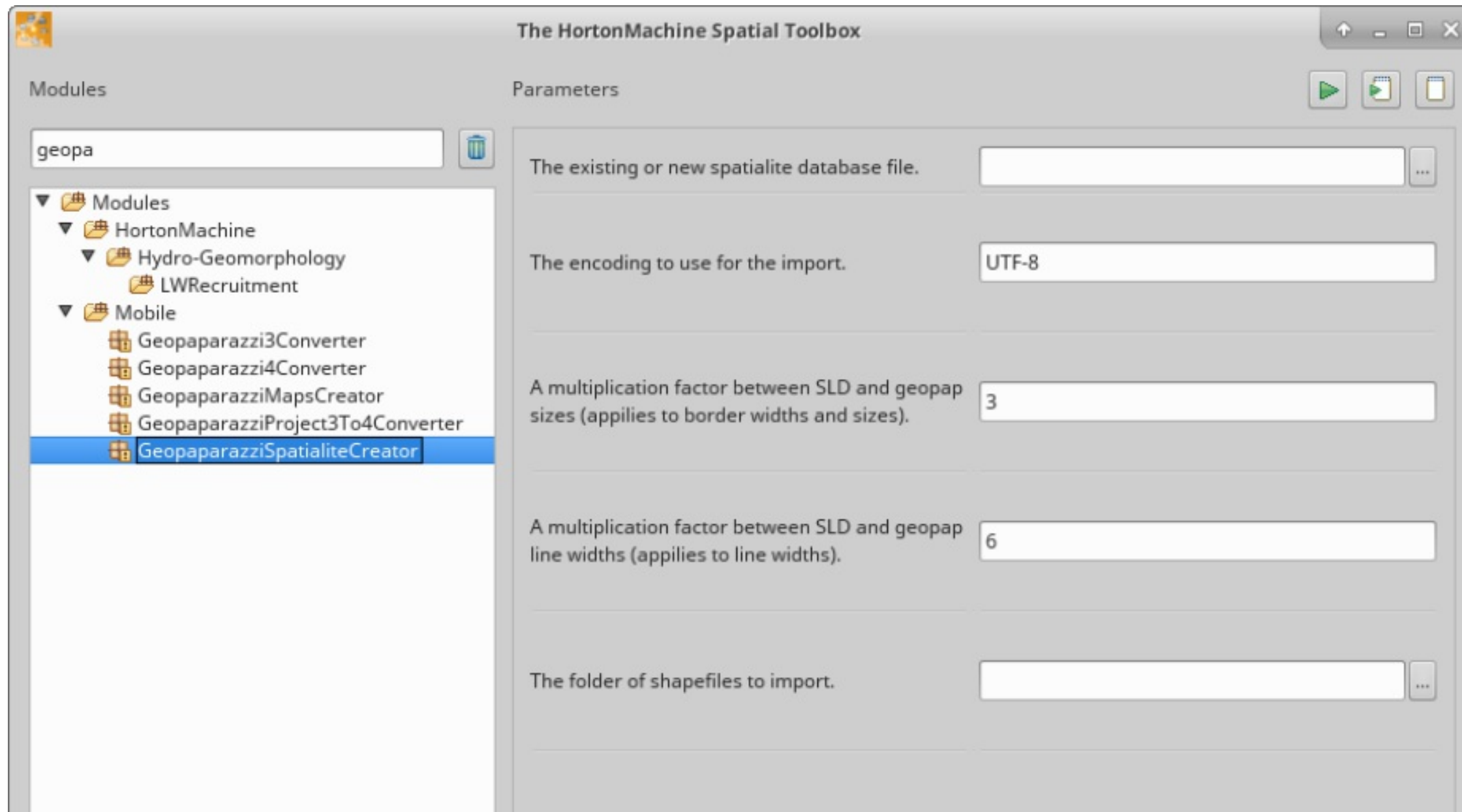


A man and a woman are standing in a river with rapids. The man is wearing a light blue shirt and jeans, and the woman is wearing a red tank top and green pants. They are both looking towards the camera. The river is surrounded by dense green foliage and rocks. The text "FOR ADVANCED USERS" is overlaid in the center of the image.

FOR ADVANCED USERS

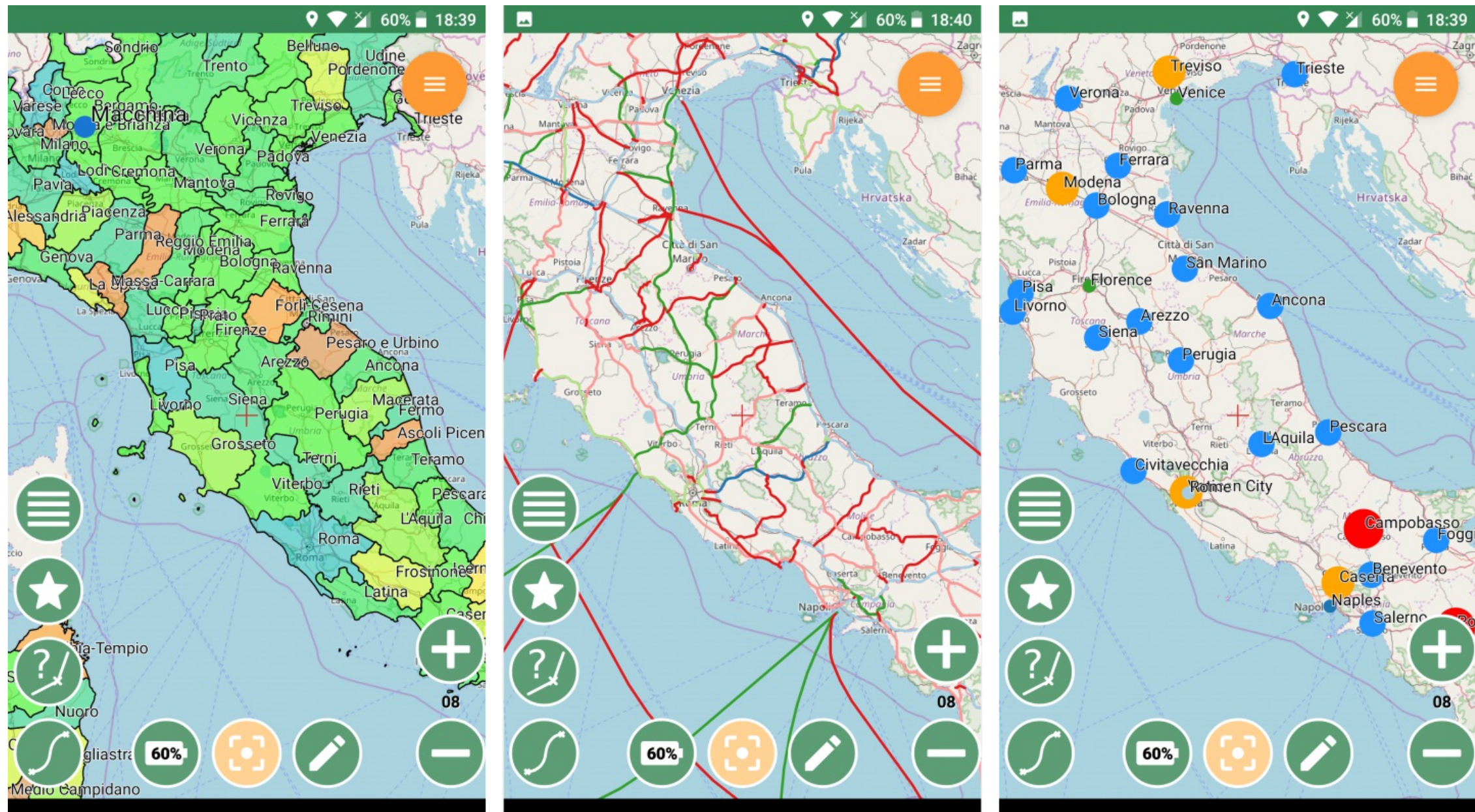
SPATIALITE: THEMATIC STYLING

The Spatialite Creator allows to create a database from a folder of shapefiles, **using their SLD** to style the features.



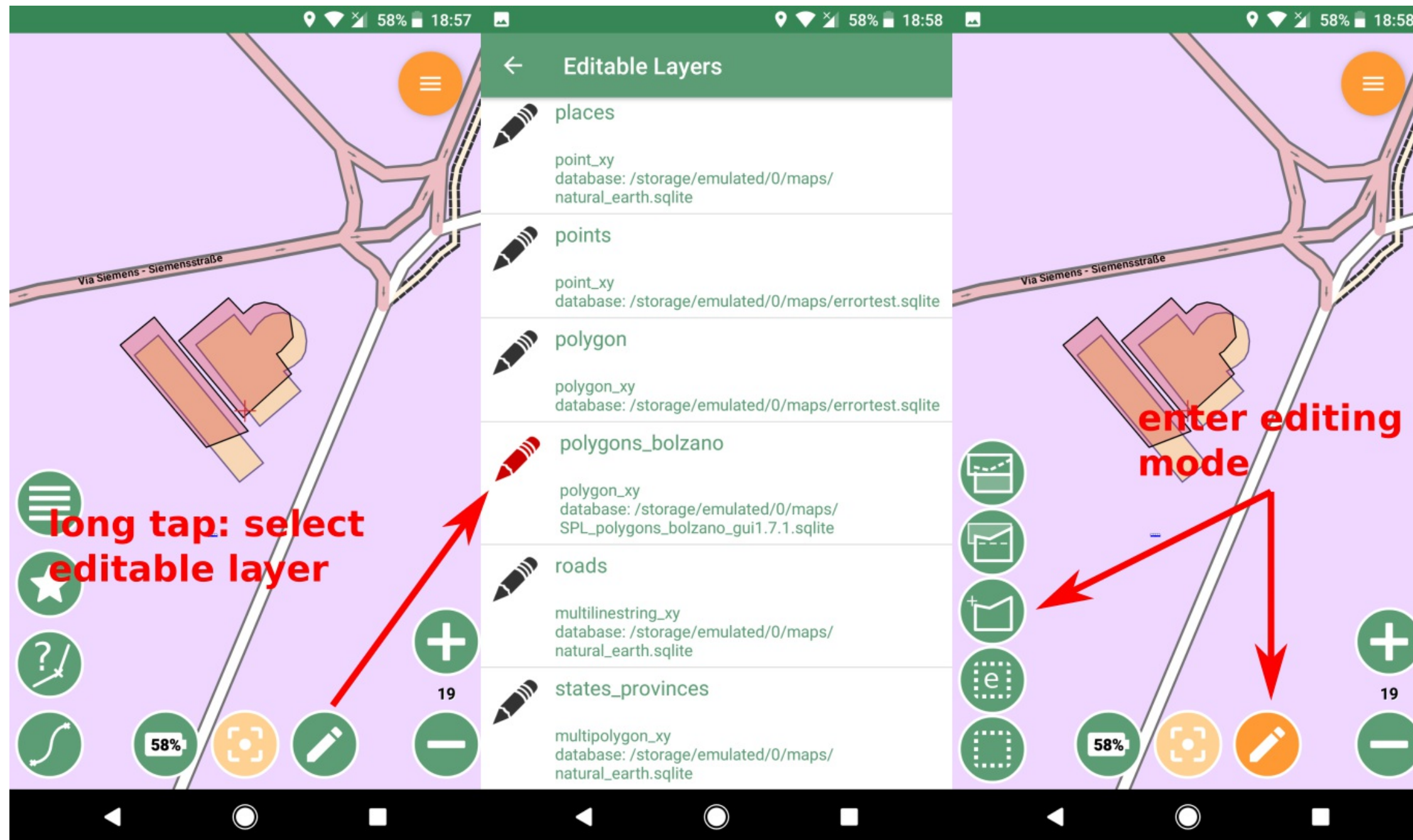
SPATIALITE: THEMATIC STYLING

Support for unique values thematic styling (readonly) for all feature types.



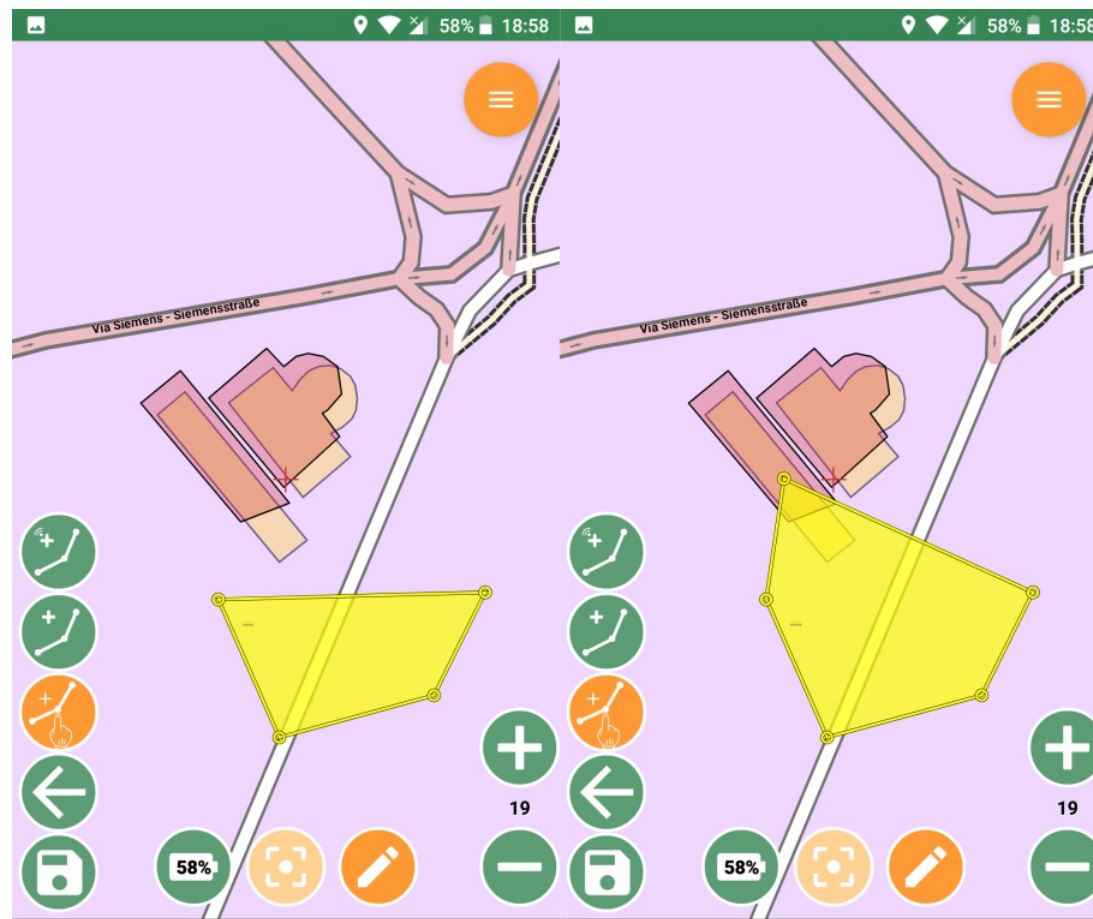
SPATIALITE: EDITING

Editing of spatialite layers is supported with simplified tools.

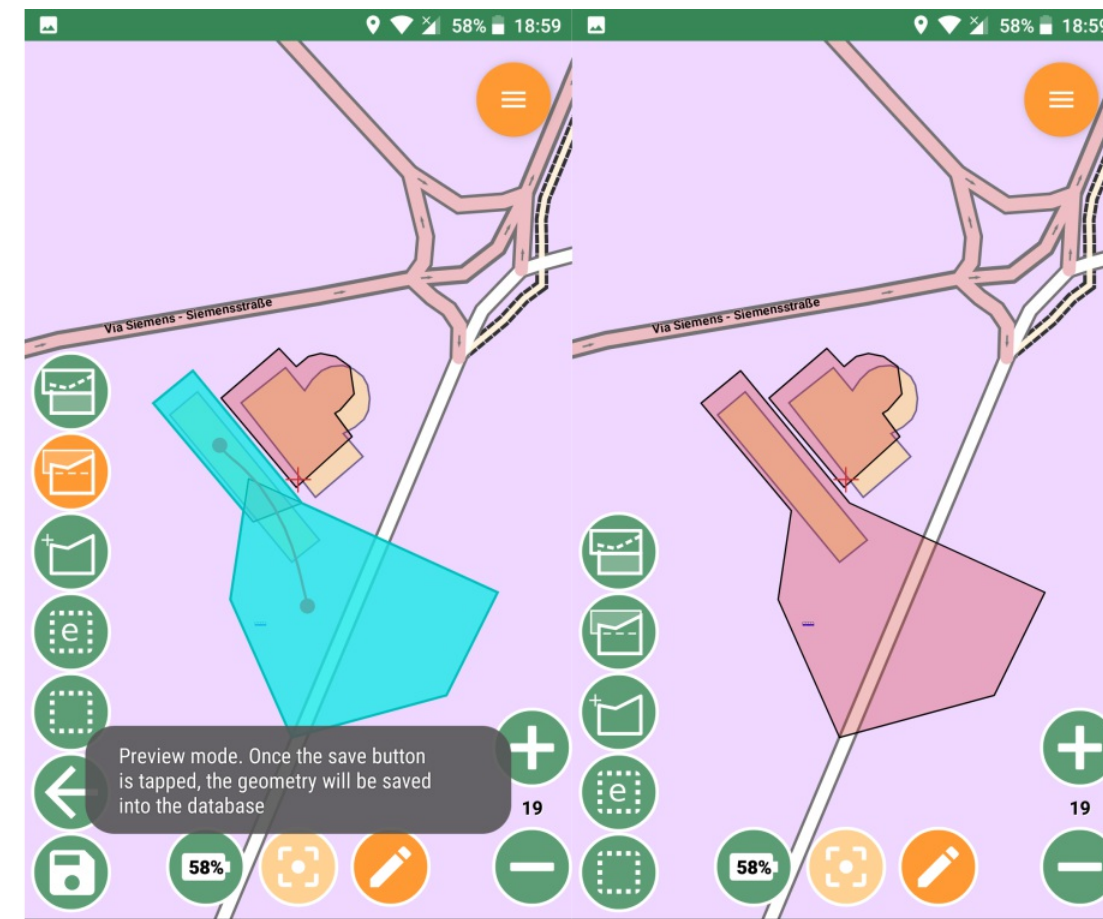


SPATIALITE: POLYGON EXAMPLE

Create a polygon by tapping, from the gps stream or using the map center



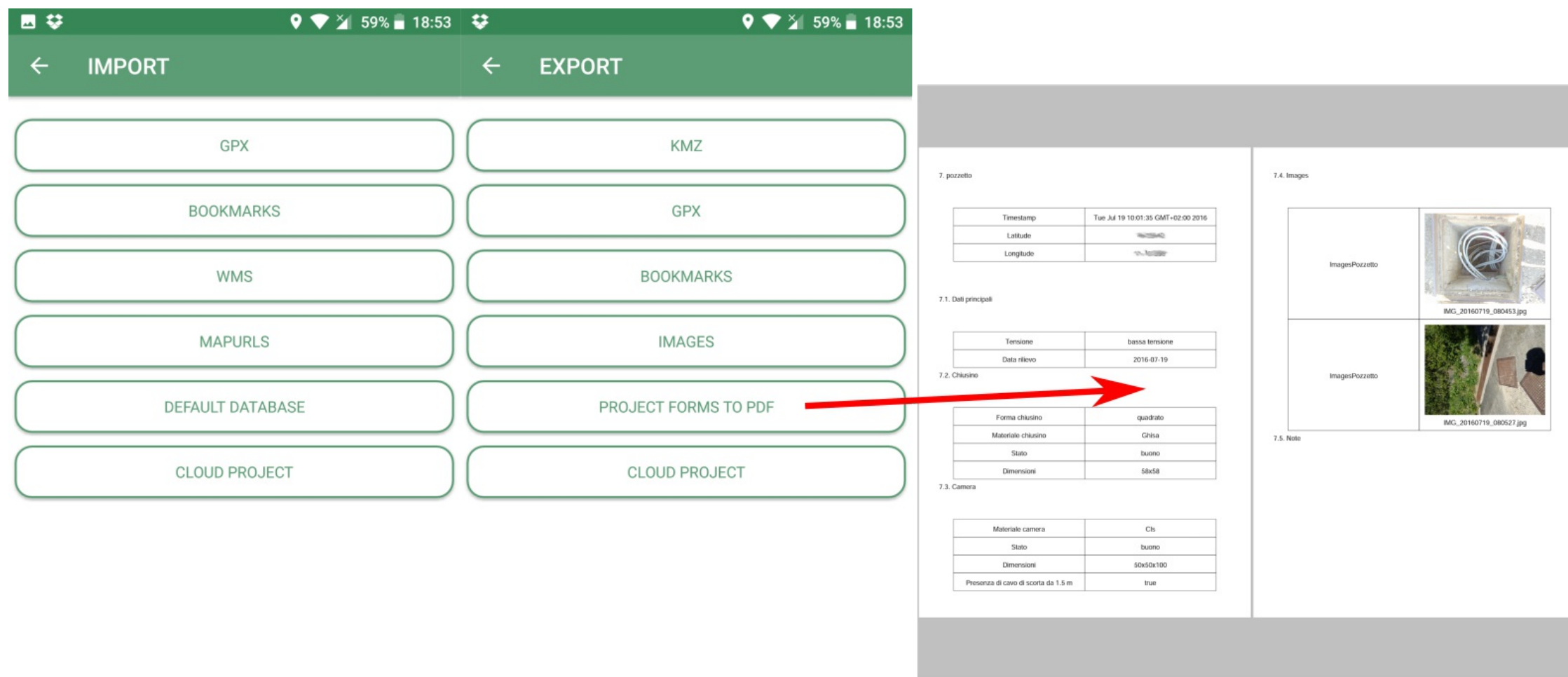
Cut or extend polygons

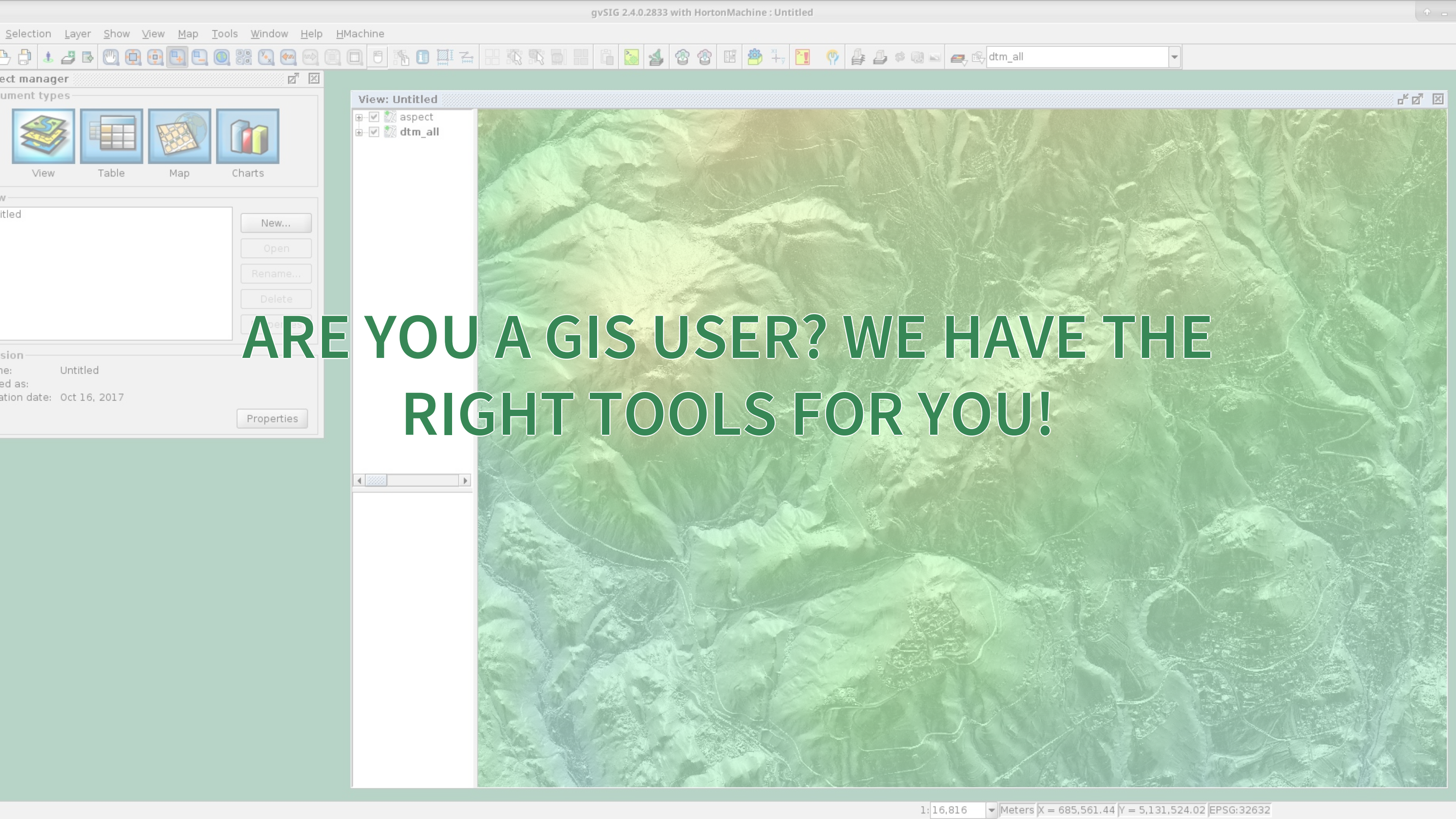


IMPORT / EXPORT

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

NEW: complex notes (forms) can be exported to pdf.





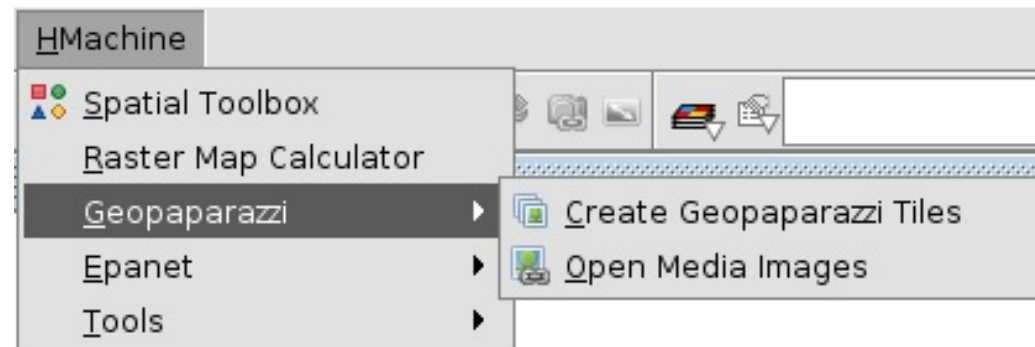
ARE YOU A GIS USER? WE HAVE THE
RIGHT TOOLS FOR YOU!

GEOPARAZZI TOOLS FOR QGIS

- in QGIS it is possible to:
 - create the map background data as .mbtile
 - export all the data contained in the project as shapefiles
 - and browse the images linked in the shapefiles
- the plugins are available in the [github releases page](#) of the project
- updated documentation and an installation guide for the plugins is available at <http://www.hortonmachine.org>

CREATE BACKGROUND MAPS

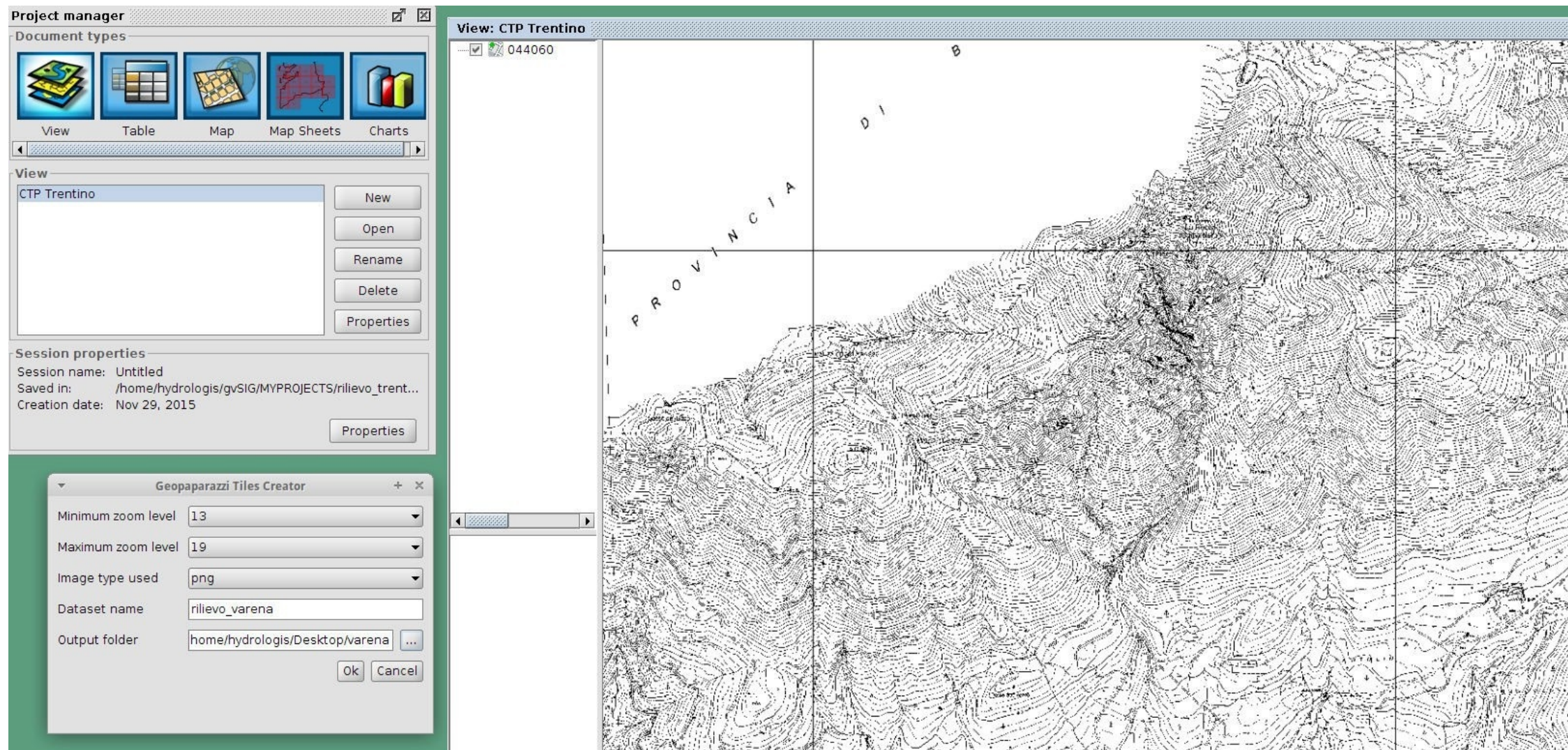
Create Geopaparazzi Tiles is a tool to create background maps for Geopaparazzi:



⚠ Vectors are styled based on the SLD file they have (not the gvSIG legend)!

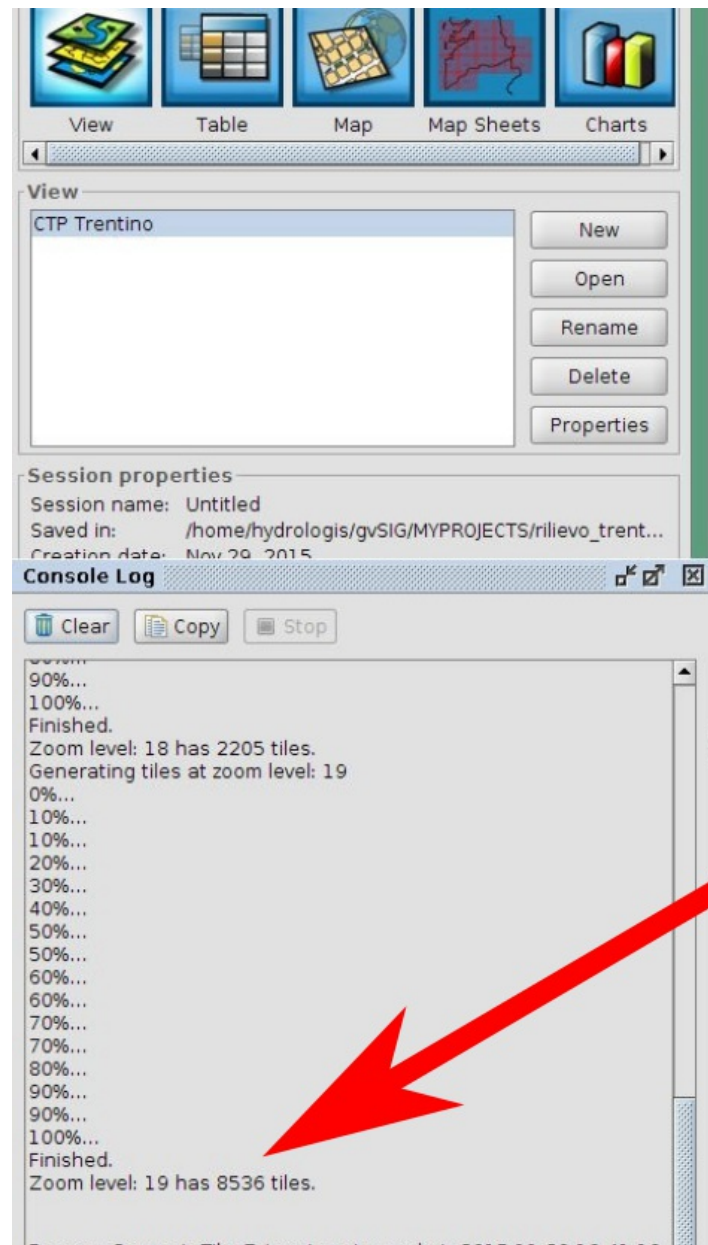
CREATE BACKGROUND MAPS

The user just sets the wanted zoomlevels, a name and an output folder for the database:

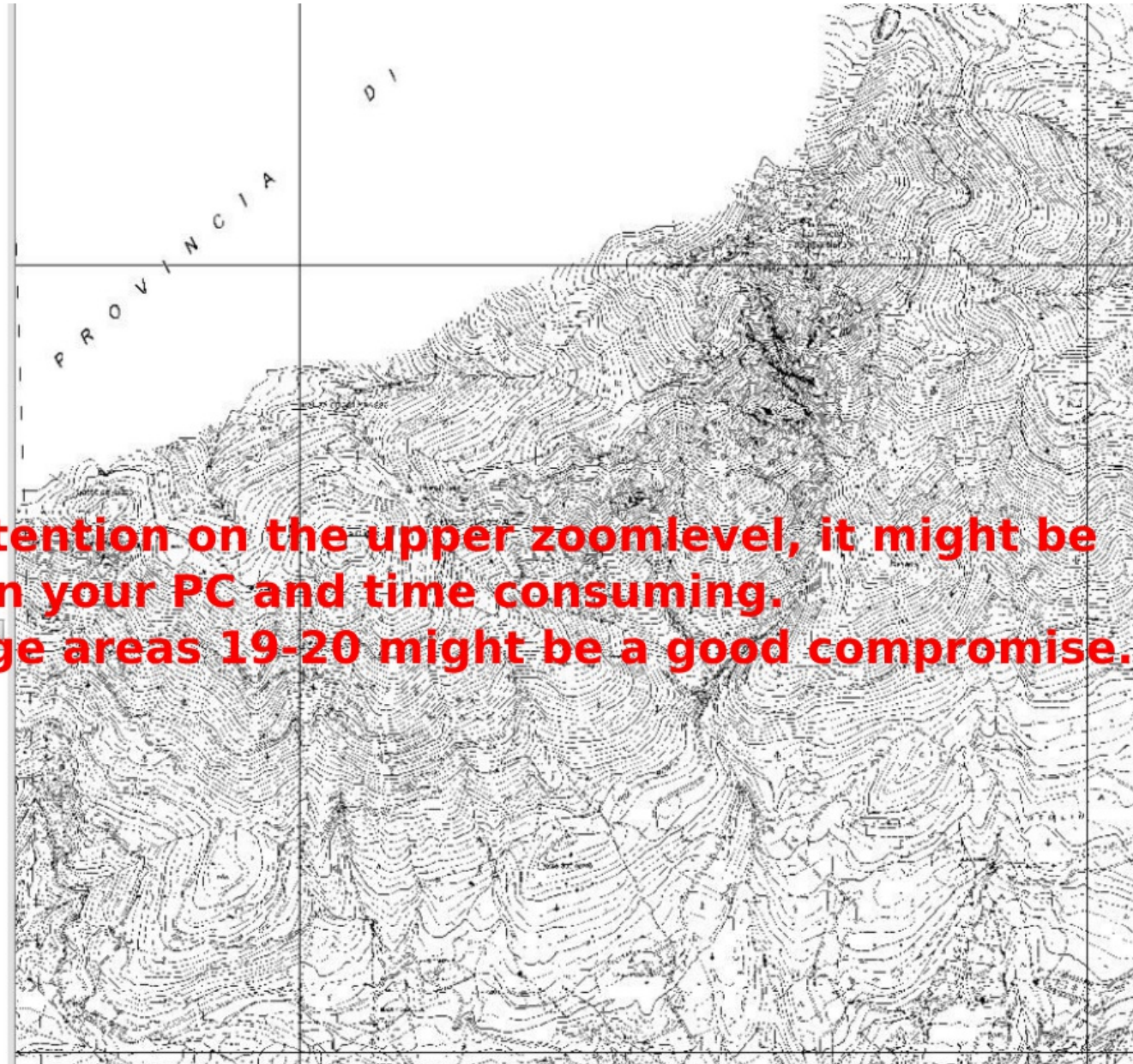


CREATE BACKGROUND MAPS

Once launched it takes the **current view** and **active layers** (rasters & vectors) and generates an mbtiles database.

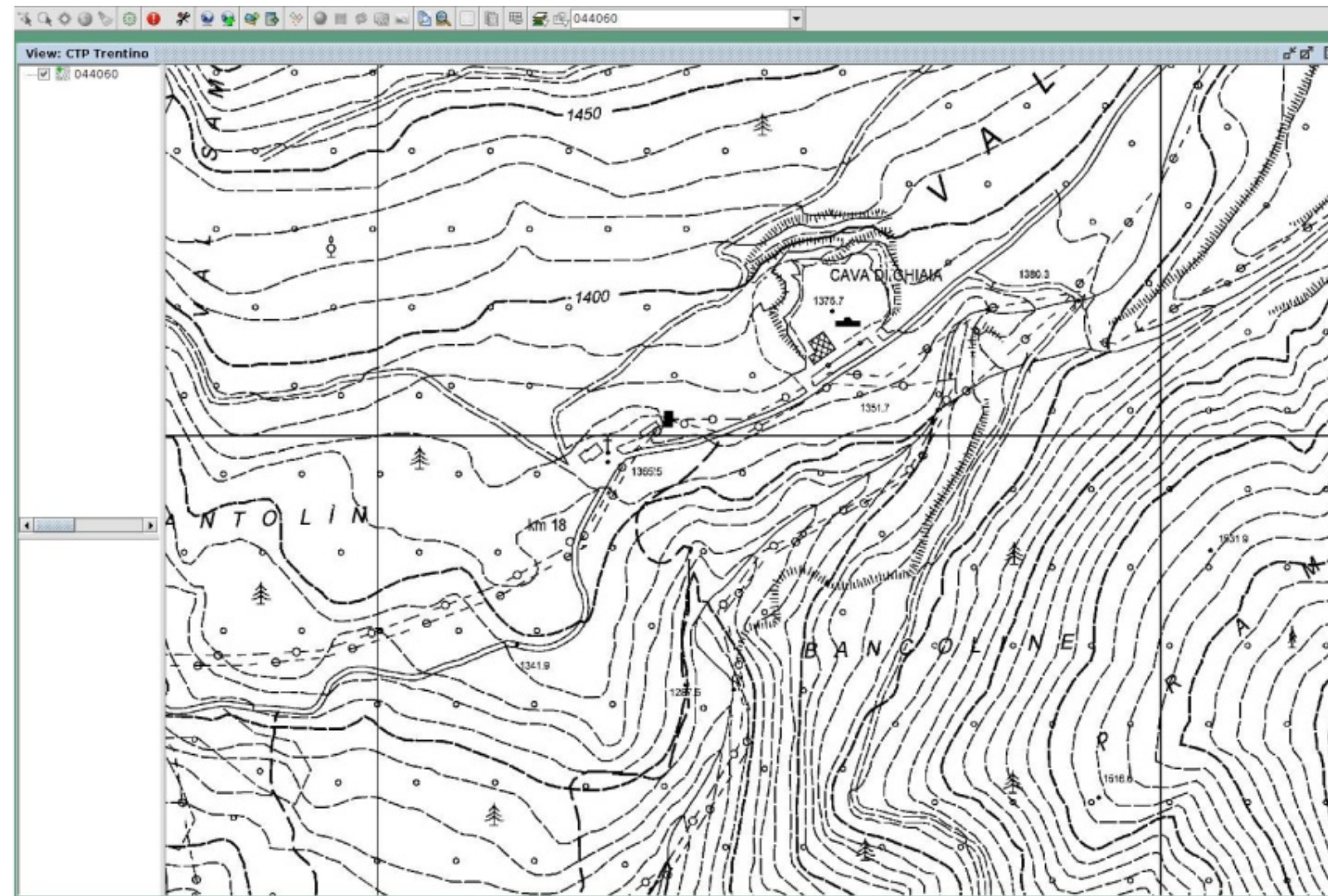
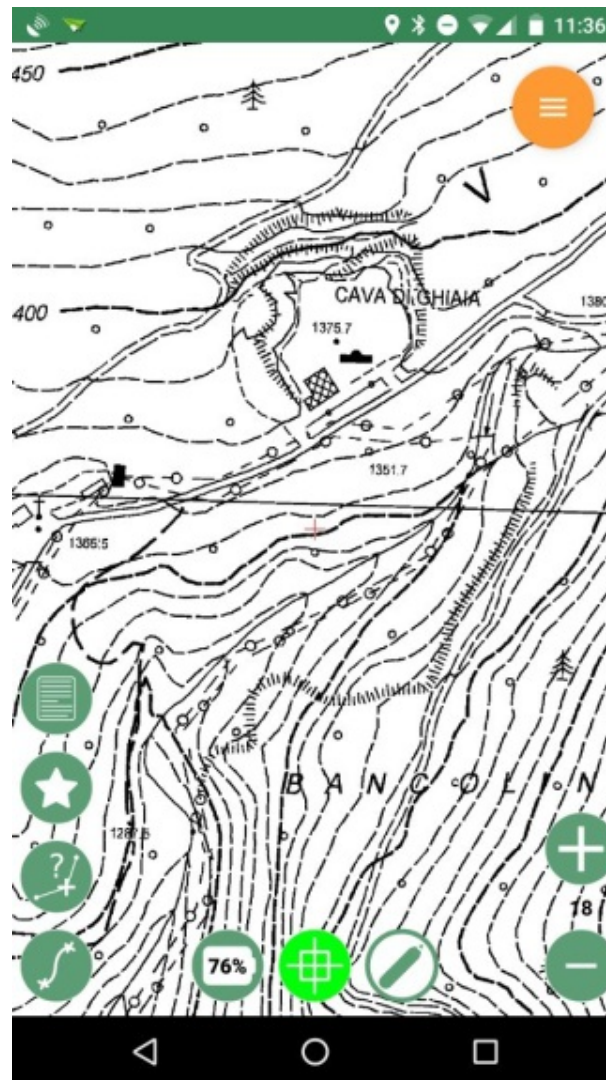


**Pay attention on the upper zoomlevel, it might be hard on your PC and time consuming.
On large areas 19-20 might be a good compromise.**



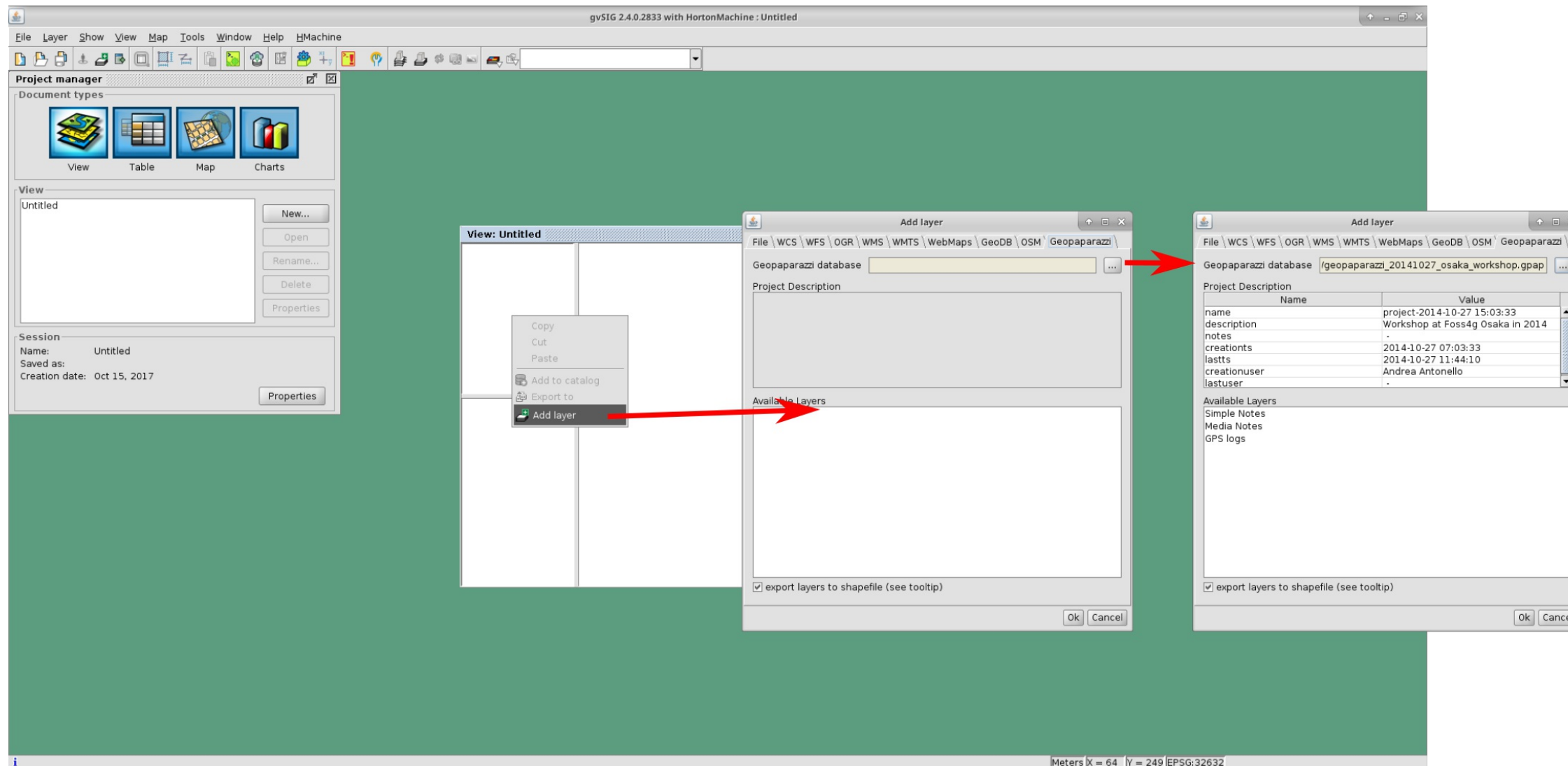
CREATE BACKGROUND MAPS

A quick comparison between mobile and in gvSIG:



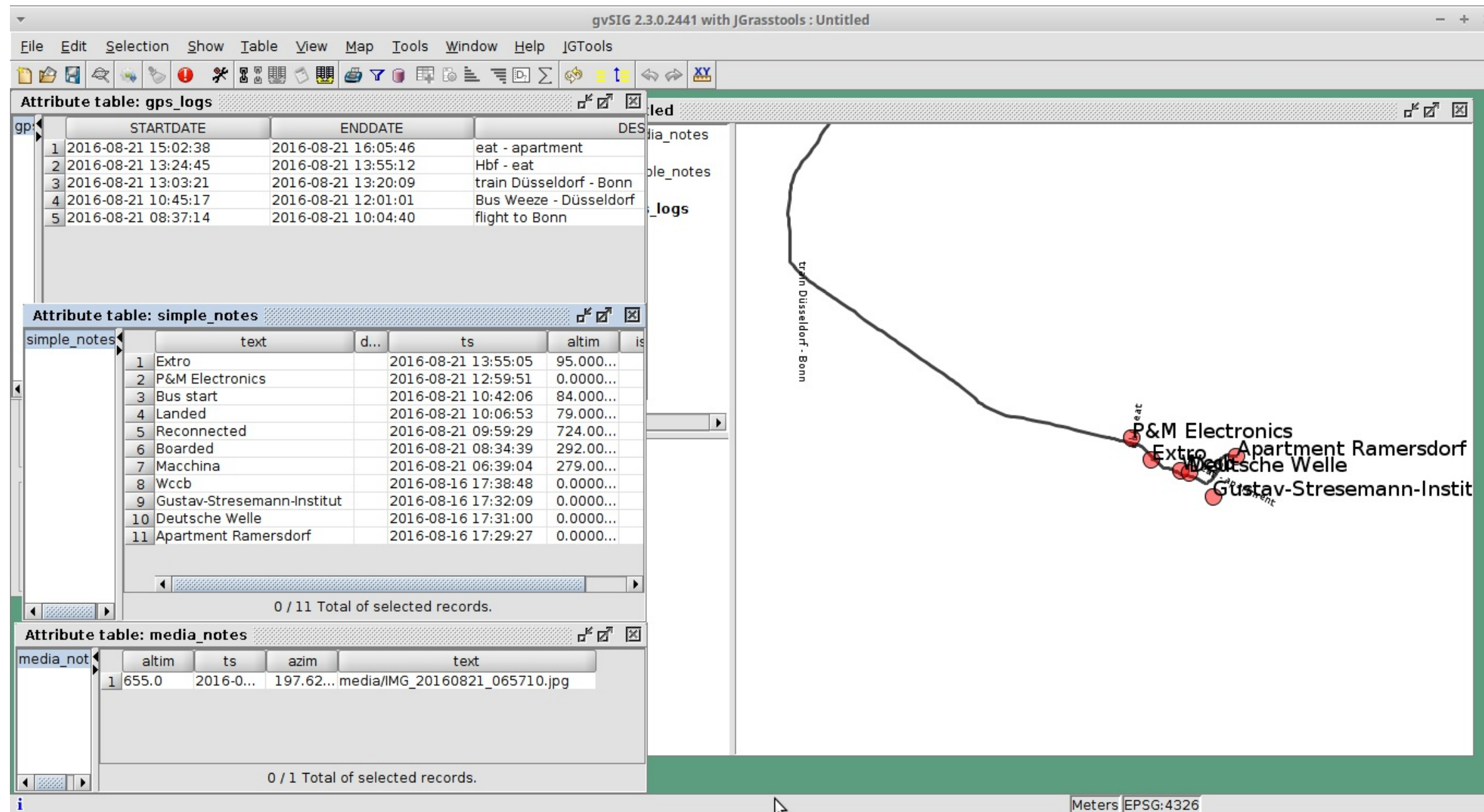
CONVERT A PROJECT TO GIS DATA

In gvSIG the ADD LAYER command will present you Geopaparazzi as an option (new tab).



CONVERT A PROJECT TO GIS DATA

All the data will be exported in different shapefiles + a folder for media files.



CONVERT A PROJECT TO GIS DATA

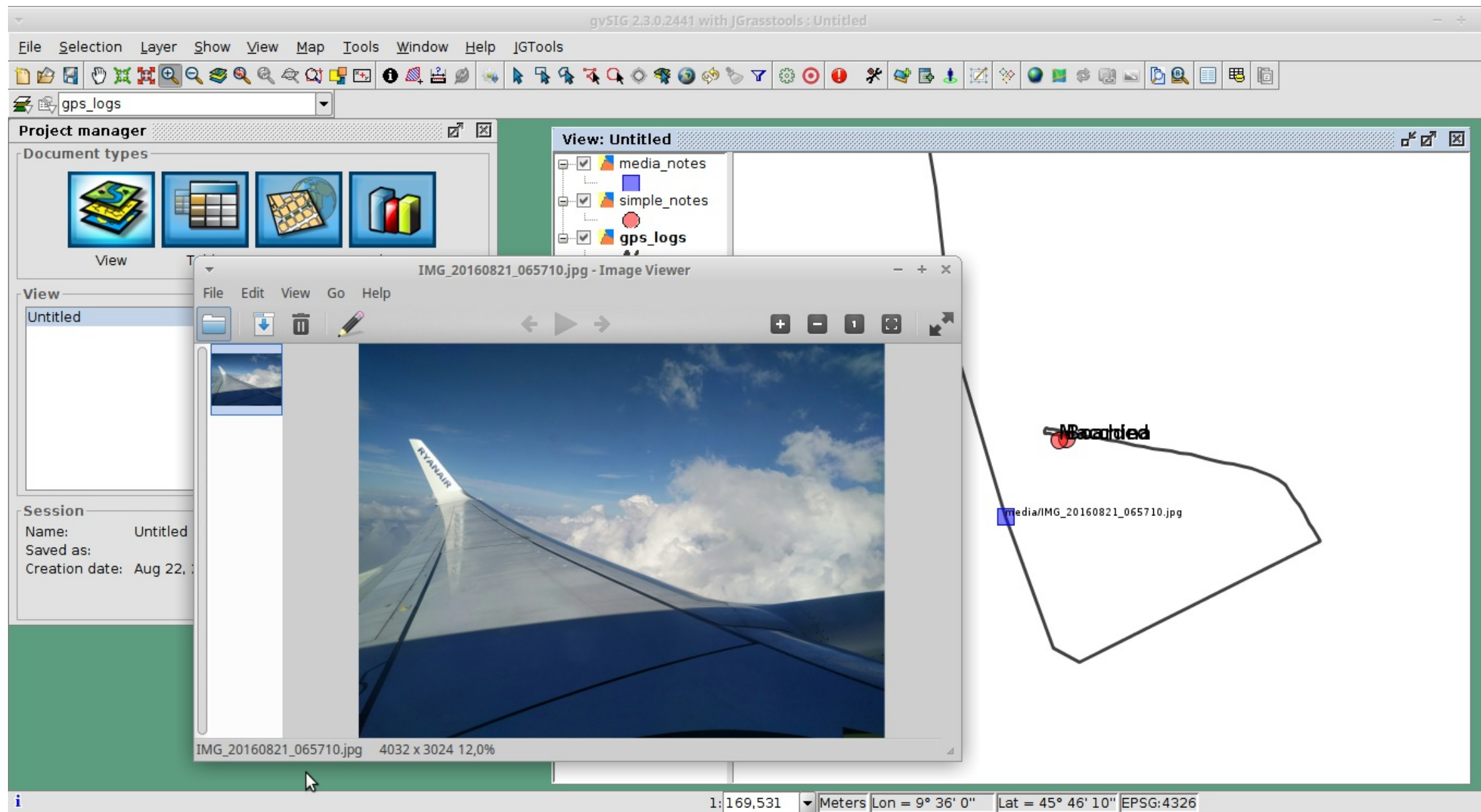
All the collected info are stored as attributes.

The screenshot illustrates the process of converting a project to GIS data. It shows a map view of a road network with various features like 'attraversamento', 'arredo', 'segnaletica_verticale', 'media_notes', 'simple_notes', 'gps_logs', and '044060'. A 'Form Data' window is overlaid on the map, displaying a form for data entry. The form has a tab 'Informazioni generali' and fields for 'Tipo (mandatory)', 'Materiale (mandatory)', 'Parapetto? (mandatory)', 'Note', and 'Foto'. Red arrows point from the form fields to the corresponding columns in the 'Table of attributes: attraversamento' at the bottom. The table lists 16 rows of data, including timestamps, altitudes, dirtiness, types, materials, parapets, notes, and photos.

attraversamento	ts	altim	isdirty	Tipo	Materiale	Parapetto?	Note	Foto
1	2015-06-10 16:57:06	0.000	1	guado	sasso	NO		media/IMG_20150610_145716.jpg;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;m...
9	2015-07-04 12:09:33	0.000	1	guado	sasso	NO		media/IMG_20150704_100943.jpg
10	2015-06-29 16:30:34	0.000	1	guado	sasso	NO		media/IMG_20150629_143052.jpg;media/IMG_20150629_143101.jpg
11	2015-06-21 12:08:30	0.000	1	ponte	legno	NO		media/IMG_20150621_100838.jpg
12	2015-06-21 12:06:44	0.000	1	ponte	legno	NO		media/IMG_20150621_100653.jpg;media/IMG_20150621_100704.jpg
13	2015-06-21 12:04:03	0.000	1	ponte	legno	NO		media/IMG_20150621_100427.jpg
14	2015-06-19 16:30:35	0.000	1	tubo	cemento	NO		media/IMG_20150619_143049.jpg;media/IMG_20150619_143116.jpg;m...
15	2015-06-15 16:57:43	0.000	1	ponte	legno	SI		media/IMG_20150615_145755.jpg;media/IMG_20150615_145810.jpg;m...
16	2015-06-14 12:23:56	0.000	1	ponte	cemento	SI		media/IMG_20150614_102412.jpg;media/IMG_20150614_102424.jpg;m...

CONVERT A PROJECT TO GIS DATA

The images can be selected and browsed directly in the GIS

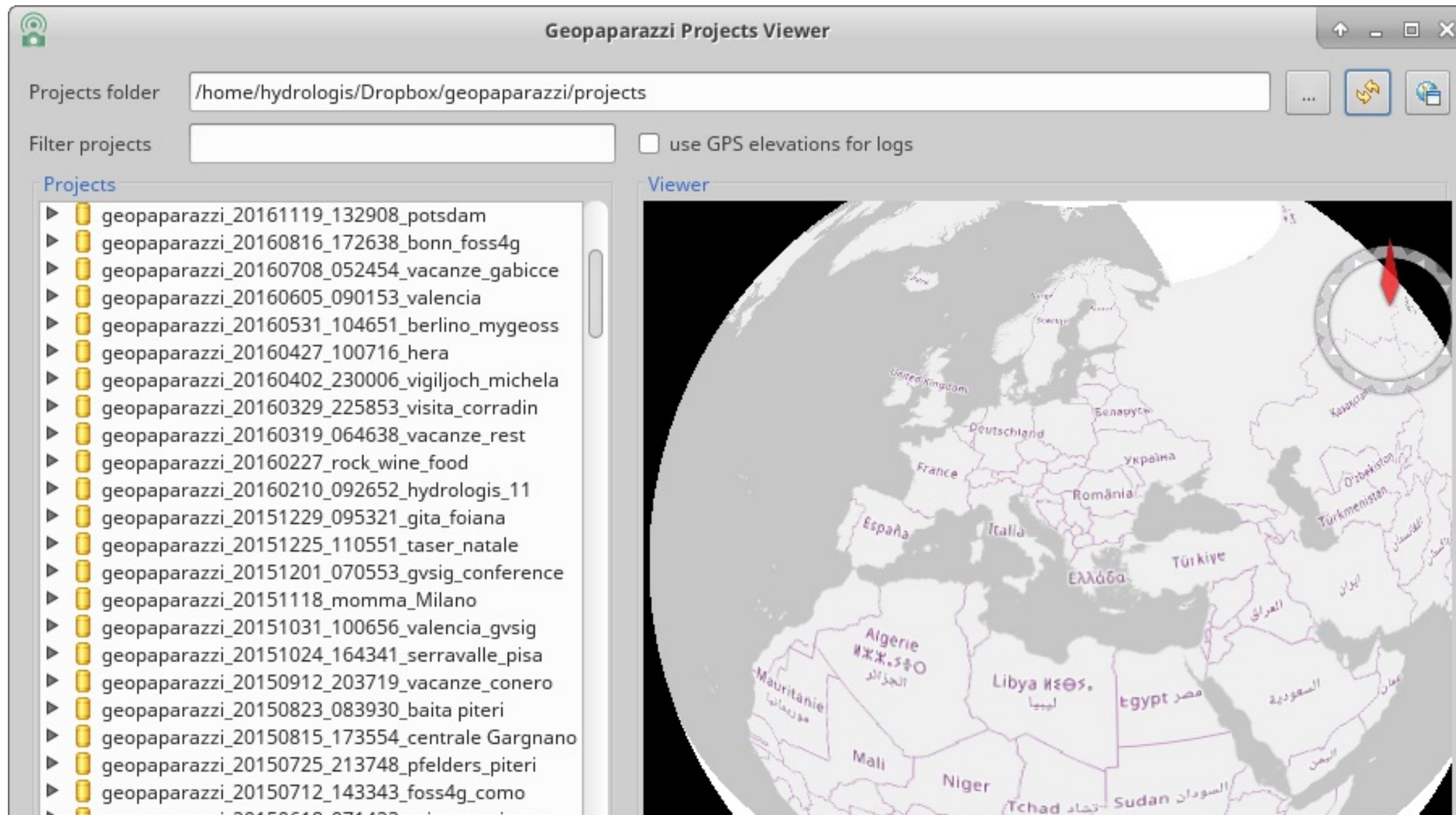


PROJECT BROWSER

- ⚠ Unfortunately this tool didn't make it into this release due to some incompatibilities with the current gvSIG Nasa Worldwind plugin version. We are working on it, time permitting. The following describes how it looks like in the HortonMachine standalone version.

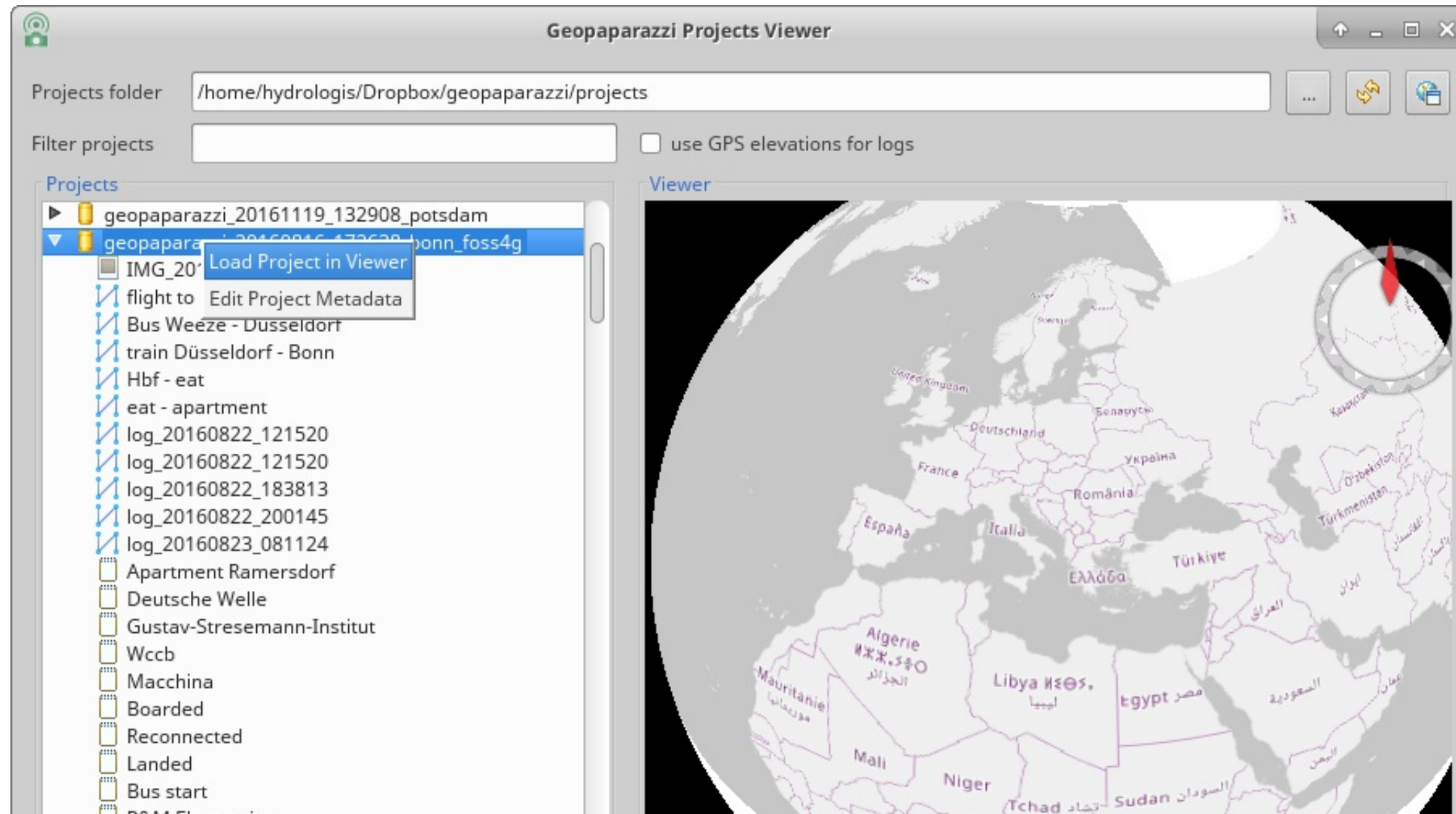
PROJECT BROWSER

The project browser allows to load a folder containing geopaparazzi databases:

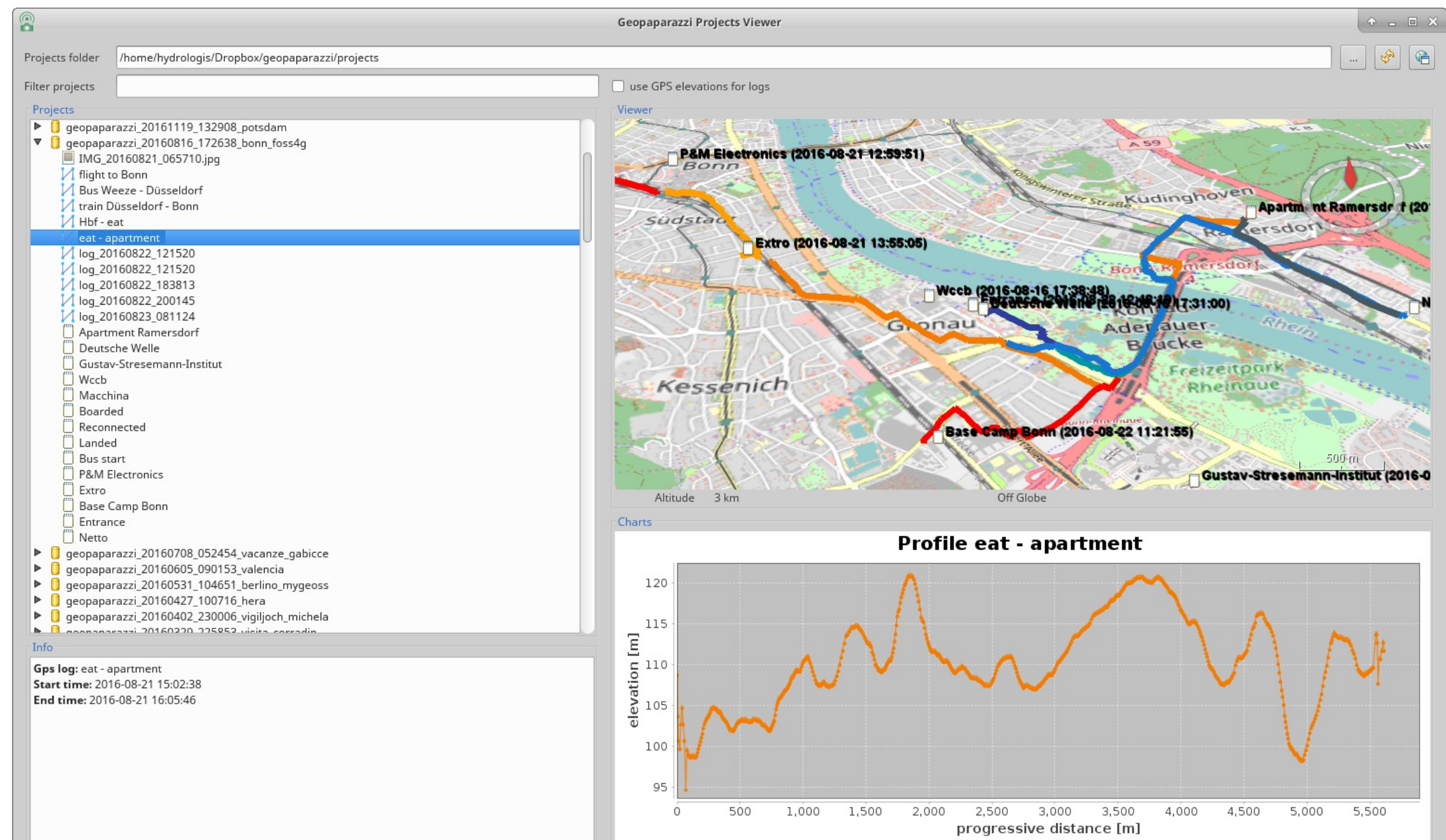


PROJECT BROWSER


Each project can be expanded to show its content in terms of notes, logs and images.



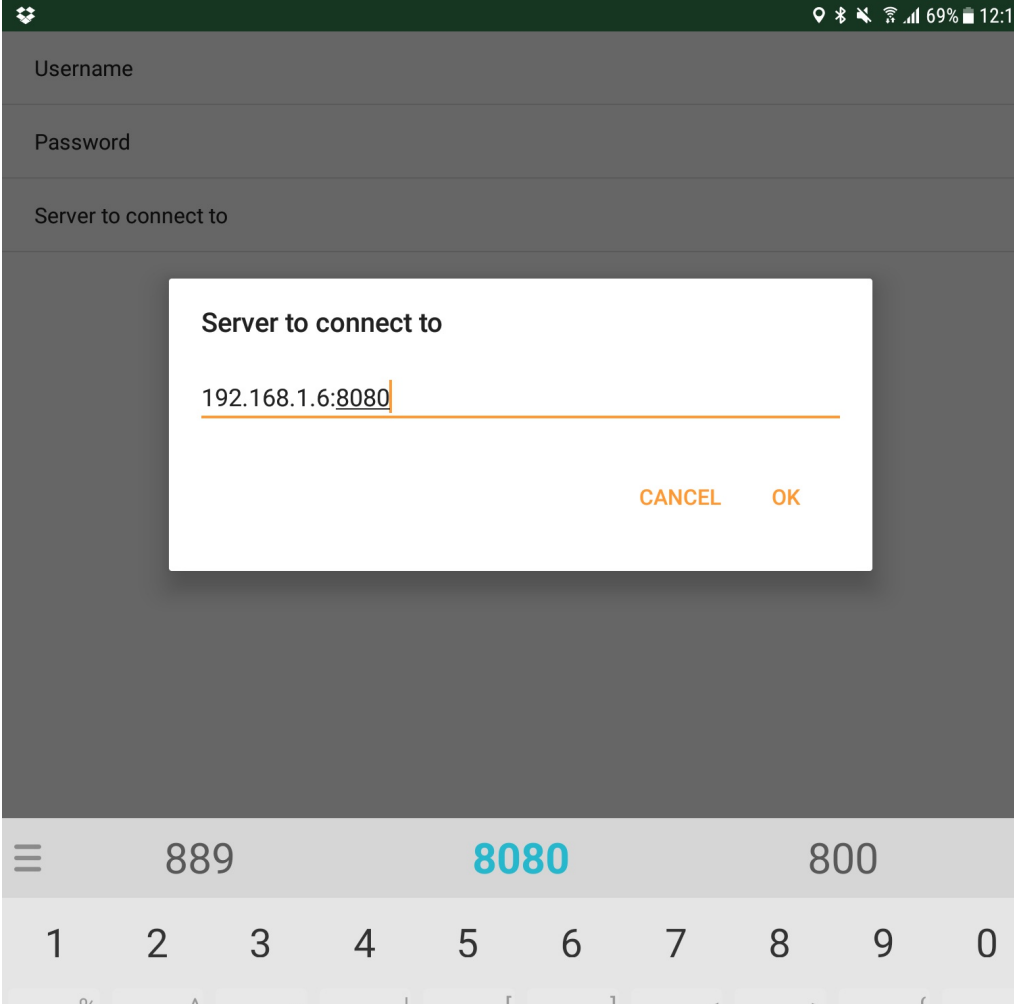
It is also possible to right-click and load the project in the 3D map view, while logs are displayed in a chart view and images are either opened or can be saved to disk.



GEOPARAZZI SERVER

 The most right button enables the server mode. Once pushed it asks for a port to use and then starts a server application that is listening to connections from geopaparazzi.

Settings → Cloud projects sync settings → Server to connect to



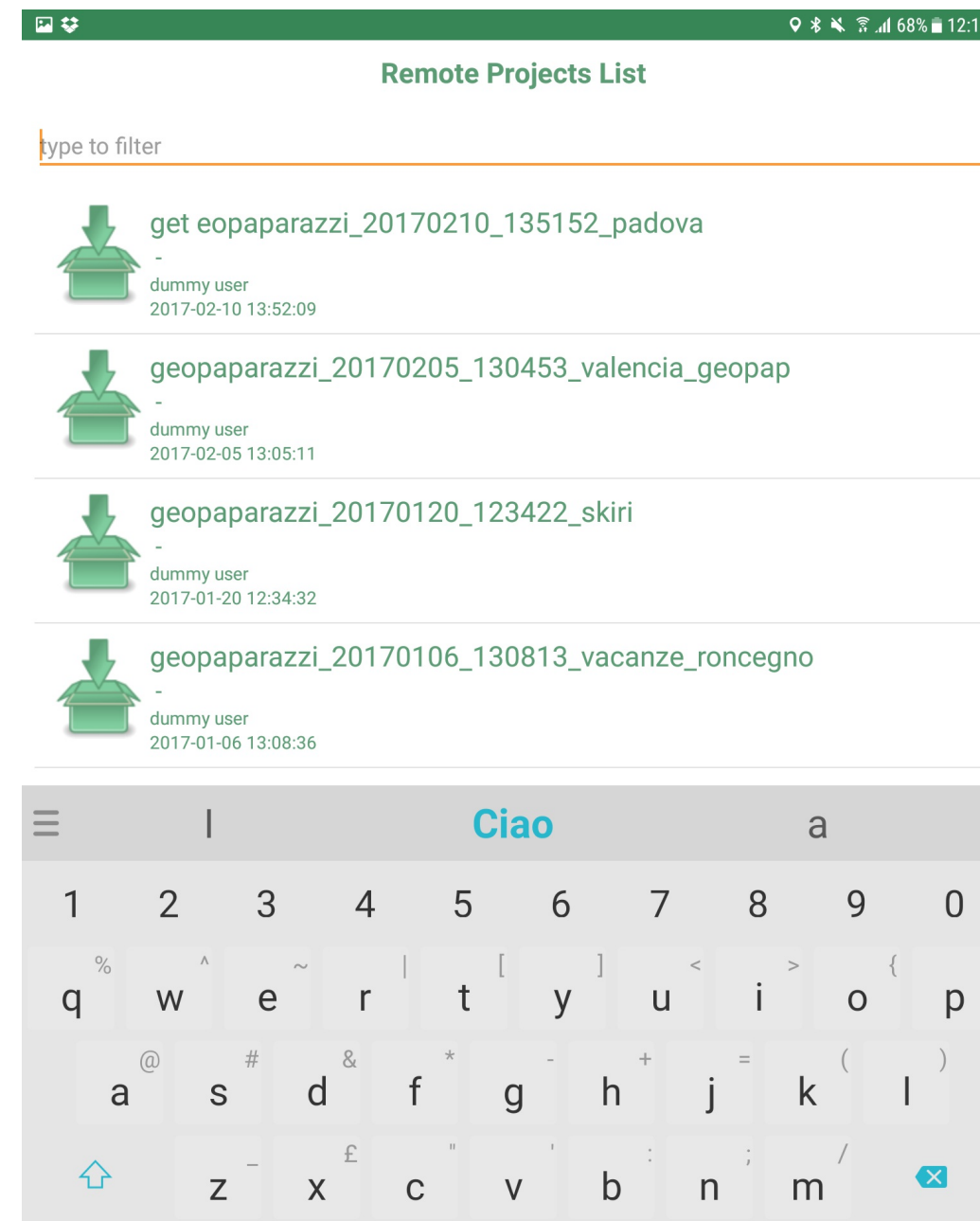
The screenshot shows the Geoparazzi app interface on a mobile device. The top status bar displays the time as 12:14 and battery level at 69%. The app's settings screen is visible, with fields for 'Username', 'Password', and 'Server to connect to'. A modal dialog box is open over the 'Server to connect to' field, titled 'Server to connect to'. It contains a text input field with the value '192.168.1.6:8080' and two buttons at the bottom: 'CANCEL' and 'OK'. The bottom of the screen shows a numeric keypad with digits 1 through 0, and a status bar at the very bottom with the number '889' and '800'.

GEOPAPARAZZI SERVER

Once done, enter the **IMPORT view** and select **CLOUD PROJECT**. By doing so **geopaparazzi** will connect to the server and download the available projects list.

By pushing the download icon the project will be downloaded to the device, ready to be opened.

The Projects list

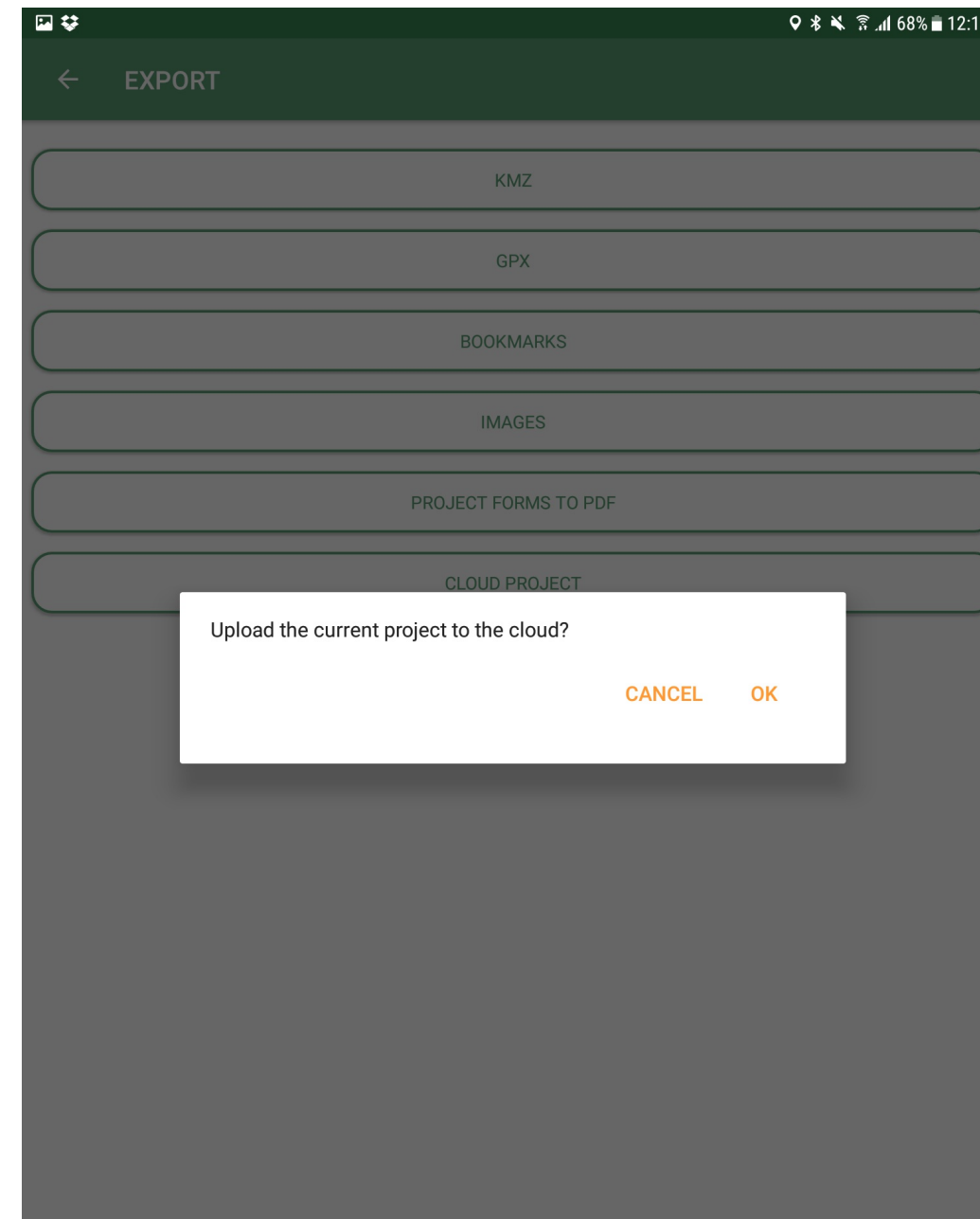


GEOPARAZZI SERVER

It is also possible to upload the current project to the server. Enter the **EXPORT view** and again select CLOUD PROJECT.

This simple server allows to synchronize geoparazzi projects (not the spatialite databases)

The export view



FOR DEVELOPERS



THE NEW PLUGIN SYSTEM

In the last year HydroloGIS and Scolab have worked together to make the geopaparazzi application pluggable.

We are in an early stage but some things can be done already:

- the application can be branded easily
- through plugins we can add entries to the import/export menus

Knowledge Management

What base on

Mobile

Proide - Natural Gas

ux Measurements on

Platform

ter Management

n System

rashMapper

rackoid

our app here

ndbook for developers

duction

Setting the code

uilding and developing

arazzi

ipion of the

zzi Architecture

Modules dependencies

geopaparazzilibrary

geopaparazzi_core

geopaparazzi.app

geopaparazzimapsforge

arazzispatialitelibrary

arazzi_acrylicpaint

wms_nww

ugins

roject Database

atabase tables

d

nalized tags.json of the

on

plete tag.json for the

ase

gradlew

gradlew.bat

local.properties

README.md

settings.gradle

Contents of Geopaparazzi git root folder

While the folders *extra*, *build* and *gradle* are accessory folders, the other folders are all part of the application.

16.2.1. Modules dependencies diagram

The diagram shows the dependencies of the various modules:

THERE IS DOCUMENTATION AT
WWW.GEOPAPARAZZI.EU

«Application»
geopaparazzi.app

«Module»
geopaparazzi_core

«Plugins»
plugins

«Module»
geopaparazzi_acrylicpaint

«Module»
geopaparazzimapsforge

«Module»
geopaparazzispatialitelibrary

«Module»
wms_nww

«Module»
geopaparazzilibrary

«Module»
geopaparazzi_default_export_plugins

«Module»
geopaparazzi_default_import_plugins

«Module»
geopaparazzi_projects_export_plugins

«Module»
geopaparazzi_projects_import_plugins

Figure 69. Diagram of the main modules dependencies.

Figure 70. The official Geopaparazzi plugins

16.2.2. geopaparazzilibrary

AN EXAMPLE

The following lines of code...

```
public class MainGvsigMobileActivity  
    extends GeopaparazziCoreActivity {  
}
```

```
<resources>  
    <string name="my_gvsig_appname">GvSIG Mobile</string>  
</resources>
```

```
<color name="main_background">#FFFFFF</color>  
<color name="main_decorations">#cf7d3c</color>  
<color name="main_decorations_dark">#cf7d3c</color>  
<color name="main_text_color">#00699e</color>  
<color name="main_text_color_neutral">#00699e</color>  
<color name="main_selection">#008fd8</color>  
<color name="main_selection_border">#008fd8</color>
```


AN EXAMPLE

...allow for this branding





FOR DECISIONMAKERS

WHAT IS THE DIFFERENCE BETWEEN GEOPAPARAZZI AND GVSIG MOBILE?

Geopaparazzi

- has been around for about 10 years now
- is experiencing a good response from the open source community. While the most updated plugins are in gvSIG (maintained by the Geopaparazzi developers, there are plugins also for **QGIS** and even for **GRASS**
- has several thousands of active installations
- is and will remaining the generic digital field mapping tool it has always been

WHAT IS THE DIFFERENCE BETWEEN GEOPAPARAZZI AND GVSIG MOBILE?

gvSIG Mobile

- the first release has been in 2017
- see it as the enterprise edition released by the gvSIG Association
- connects to gvSIG Online for spatialite data synchronization
- shares the same codebase, so both projects contribute!

USE CASES EXPLAIN THINGS BETTER

OSAKA: DISASTER MANAGEMENT

Disaster management System of Osaka with Geopaparazzi and MapGuide Open Source



Use case of Disaster Management System by using Geopaparazzi and MapGuide Open Source



FOSS4G2015 Seoul SESSION 9-3: Disaster and Disease

Hirofumi Hayashi, Venkatesh Raghavan, Kozawa Hiroshi

APPLIED TECHNOLOGY CO.,LTD.

GSCC Graduate School for Creative Cities
Osaka City University



OSGeo.JP



Initial Screen (Smart Phone)



THE NEW YORK NATURAL HERITAGE PROGRAM

Mapping invasive species in the iMapInvasives program with Geopaparazzi. → **polygon editing**

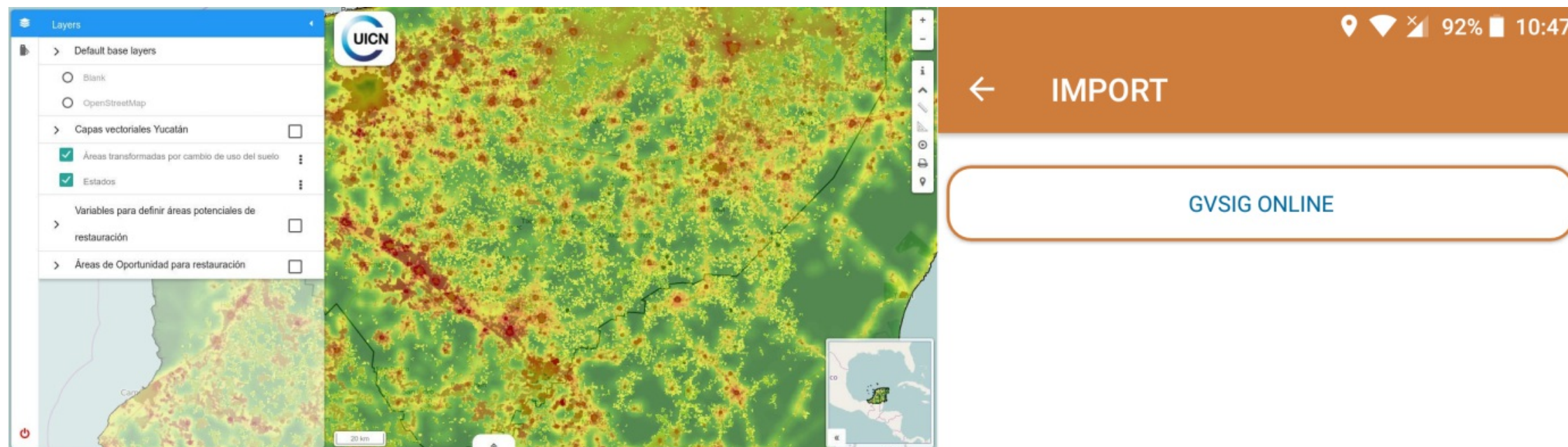


IUCN

gvSIG Online & gvSIG Mobile: SDI for the International Union for Conservation of Nature (IUCN)

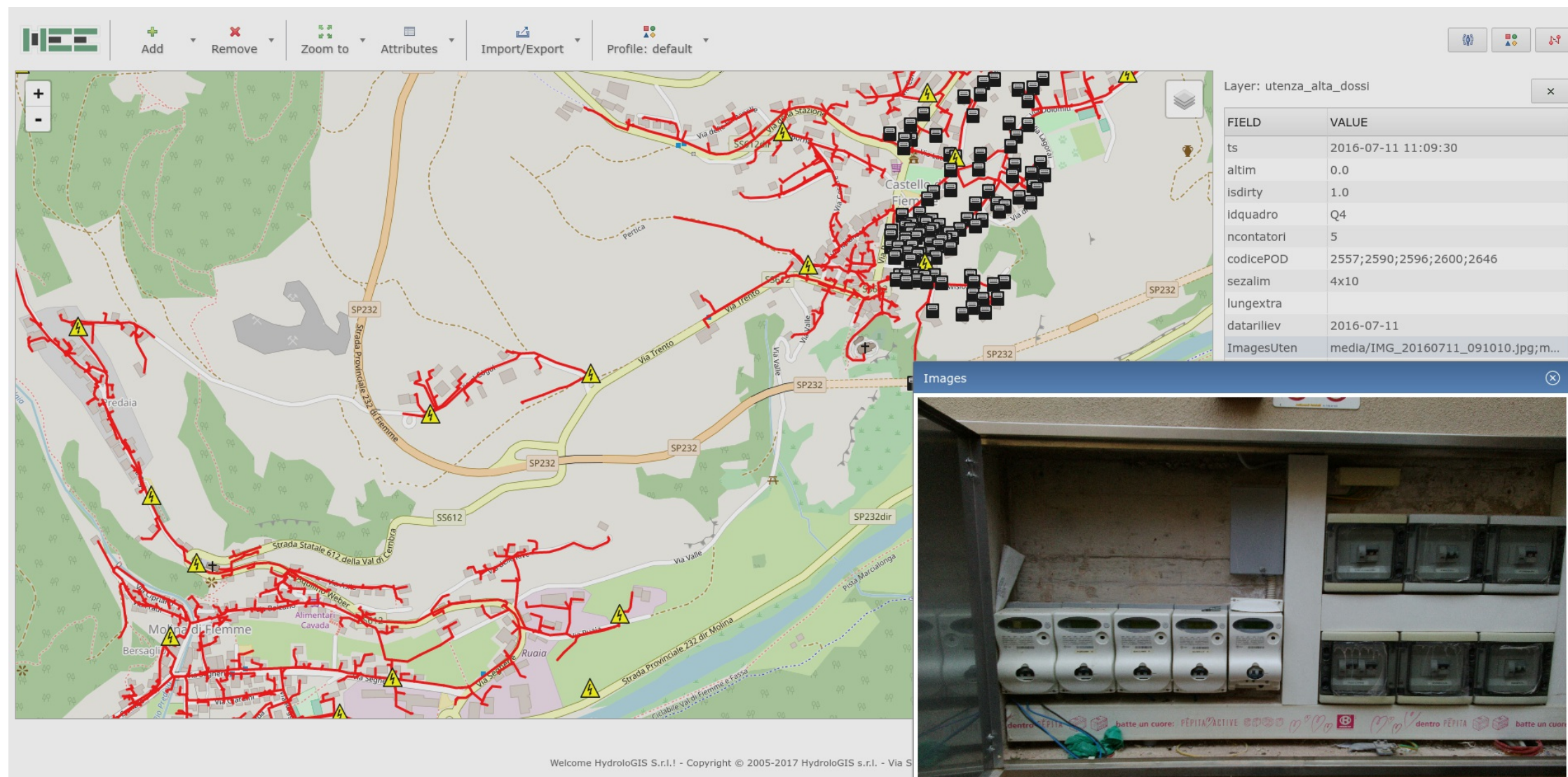
The simple workflow:

download layers list → select layers to download → download the dataset → local editing → upload of modified dataset



RILIEVO ELETTRICO CASTELLO

Survey of the electric network of Castello, use of complex forms for all the connected information and images, direct server upload for its visualization. → **line editing**



INEGI: FIELD DATA COLLECTION

The Instituto Nacional de Estadística y Geografía (INEGI) of Mexico is financing some development to support geological and hydraulics surveys. → beyond other things **pdf export + thematic styling of spatialite layers**

The image displays four screenshots of the INEGI mobile application interface, illustrating its functionality for field data collection.

- Top Left Screenshot:** The main menu of the application, titled "INEGI Móvil". It features a grid of six icons: a document with a pencil (notes), a hierarchical tree (layers), a signal tower (GPS/location), a world map (geography), an upload icon (file upload), and a download icon (file download).
- Top Middle Screenshot:** The "Añadir notas" (Add notes) screen. It includes a header bar with navigation icons and a toggle switch for "map center" and "gps position". Below the toggle is a button labeled "PERFIL_SUELO".
- Top Right Screenshot:** The "Formulario de datos" (Data form) screen. It has a header bar with a save icon and a share icon. The form is divided into sections: "Información general" (General information) with fields for "Condiciones ambientales" (Environmental conditions), "Pendiente" (Slope), "Erosión" (Erosion), "Influencia humana" (Human influence), and "Capa 1: descripción morfológica" (Layer 1: morphological description). Below this is a "Fecha" (Date) field with the value "2017-07-19", followed by "Identificador del perfil" (Profile identifier) and "Clave del perfil WRB 2014" (WRB 2014 profile key) fields.
- Bottom Screenshot:** A detailed view of the "Formulario de datos" screen, showing a list of geographical regions under the "Información general" section. The regions listed are: I Península de Baja California, II Llanura Sonorense, III Sierra Madre Occidental, IV Sierras y Llanuras del Norte, V Sierra Madre Oriental, VI Grandes Llanuras de Norteamérica, VII Llanura Costera del Pacífico, VIII Llanura Costera del Golfo Norte, IX Mesa del Centro, X Eje Neovolcánico, and XI Península de Yucatán.

FAO LANDUSE SURVEY IN ZIMBABWE

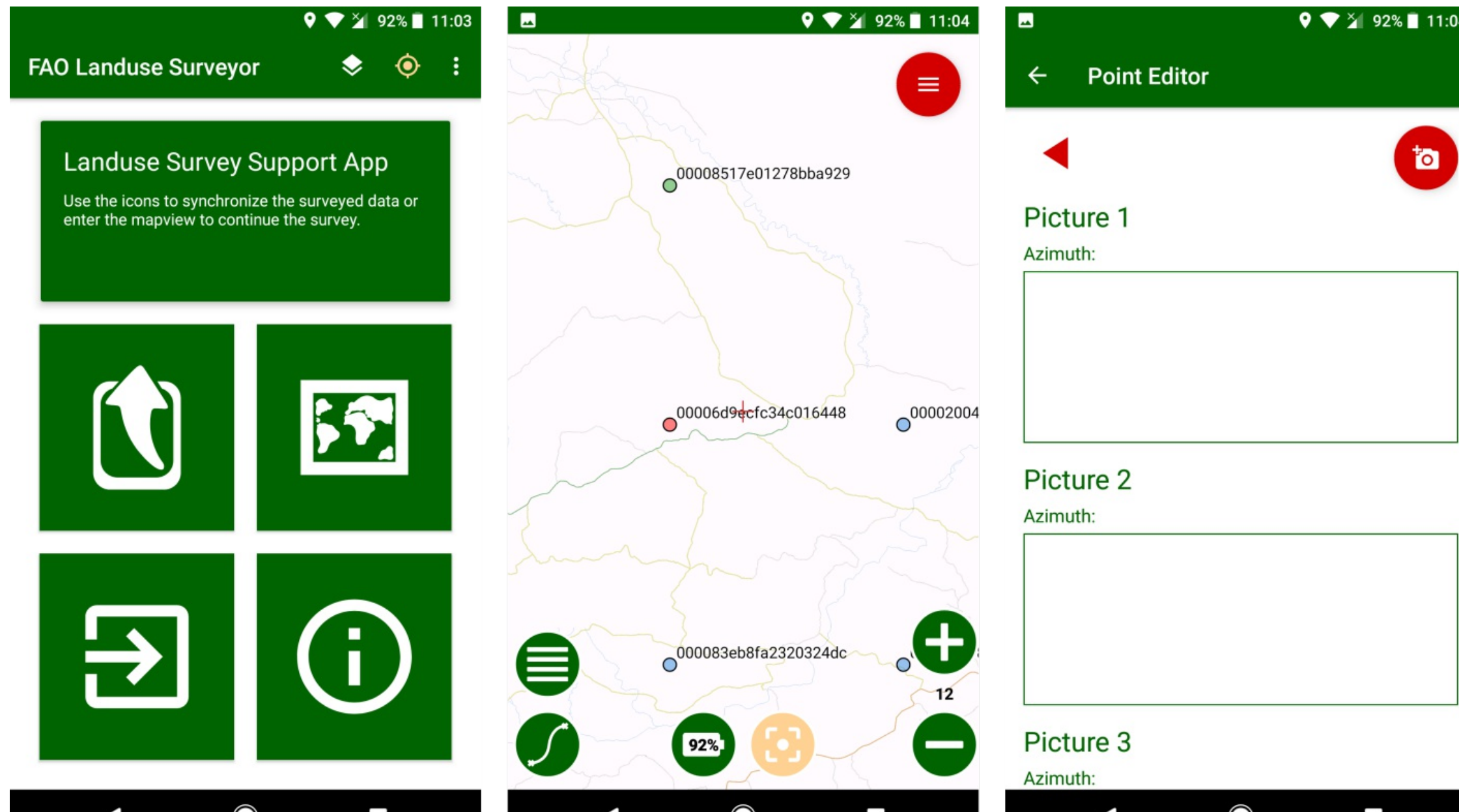
The FAO is investigating apps to use them for the creation of a landuse survey crowdsourcing application.

With this goal they sponsored some geopaparazzi customization to test it.

During the last week the app has been tested in Zimbabwe for this purpose.

FAO LANDUSE SURVEY IN ZIMBABABWE

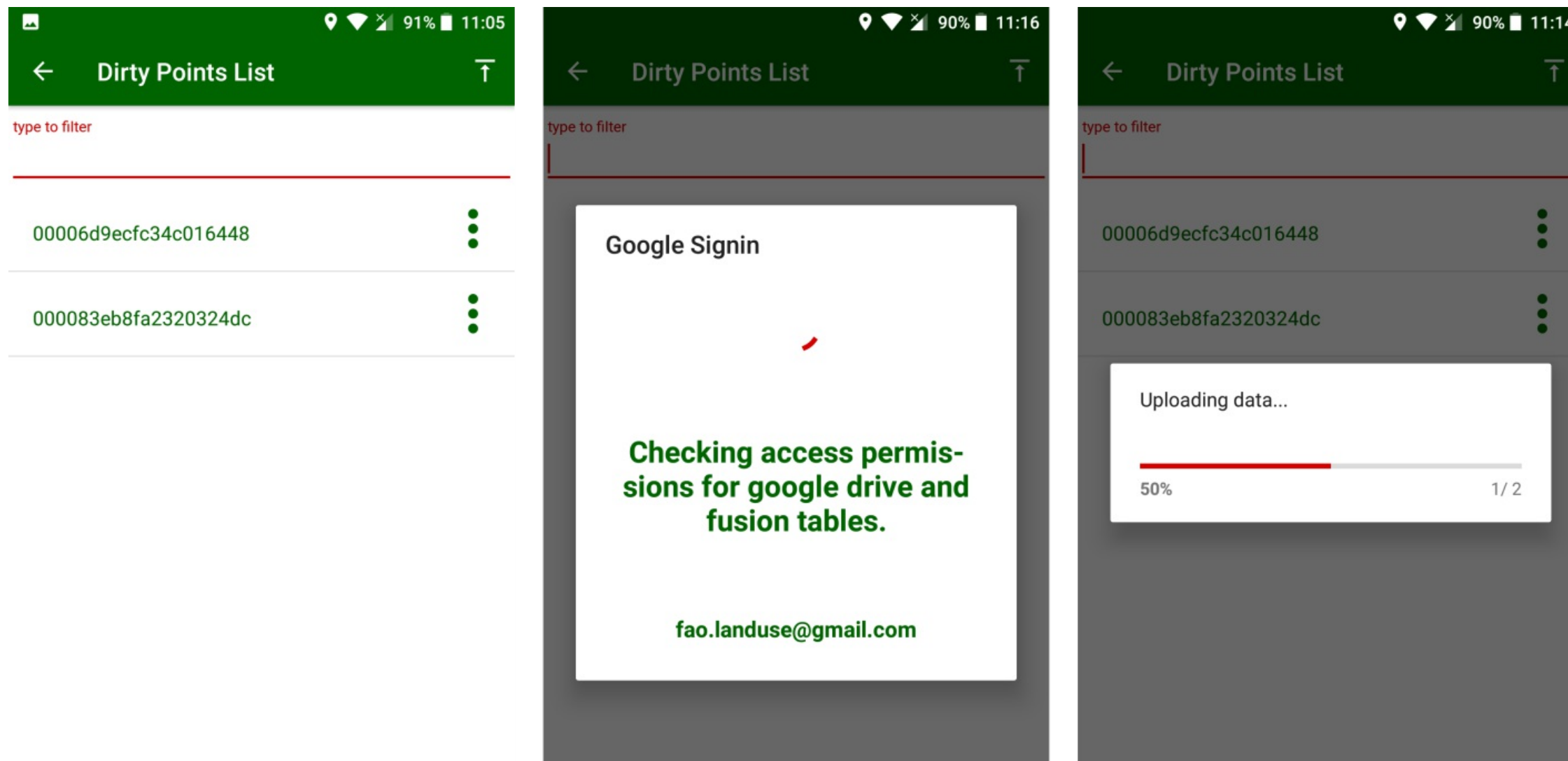
The app gives the possibility to survey form-based data with pictures and insert them in a spatialite database.



FAO LANDUSE SURVEY IN ZIMBABWE

This project is that there is no need for a server.

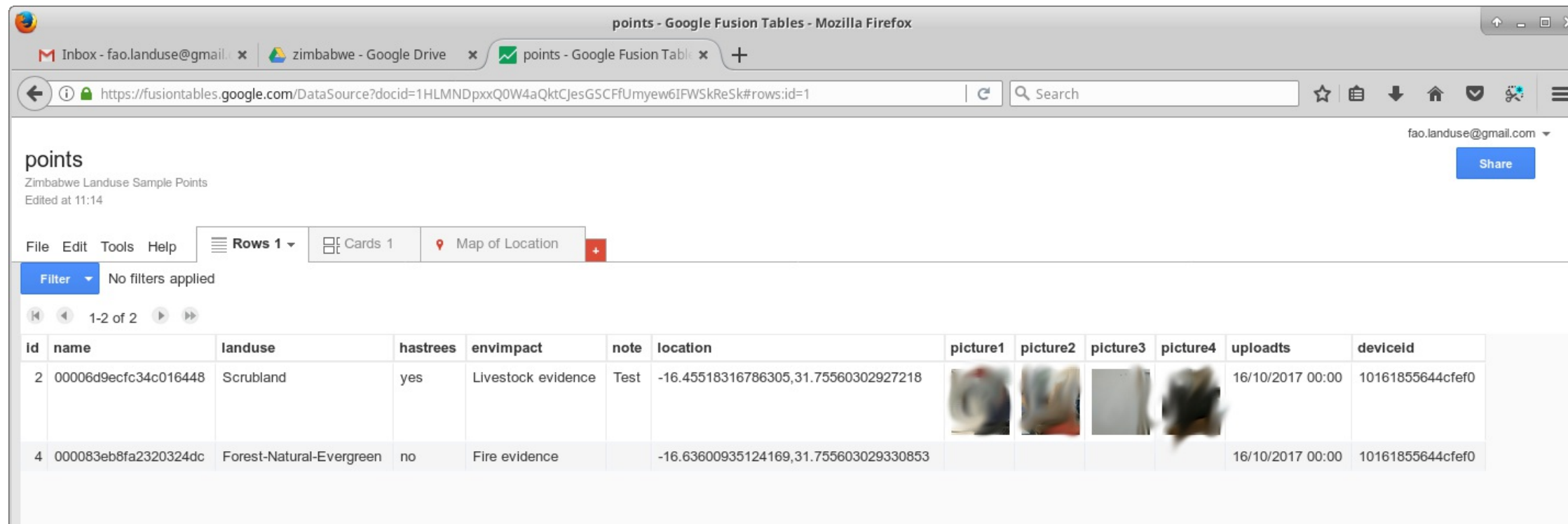
The app loads the data into google fusion tables and the images in google drive, so you just need a google account.











FAO LANDUSE SURVEY IN ZIMBABWE

In the fusion table all the data are available and can be seen in a map.

The timestamp of the upload or modification are shown, as well as the id of the device that did the upload.



The screenshot shows a web browser window with the Google Fusion Tables interface. The title bar indicates the page is 'points - Google Fusion Tables - Mozilla Firefox'. The address bar shows the URL: <https://fusiontables.google.com/DataSource?docid=1HLMNDpxxQ0W4aQktCJesGSCffUmyew6IFWSkReSk#rows:id=1>. The page title is 'points' with a subtitle 'Zimbabwe Landuse Sample Points' and 'Edited at 11:14'. A 'Share' button is visible in the top right. Below the title, there are tabs for 'Rows 1', 'Cards 1', and 'Map of Location'. A 'Filter' button is also present. The main content area displays a table with 13 columns: 'id', 'name', 'landuse', 'hastrees', 'envimpact', 'note', 'location', 'picture1', 'picture2', 'picture3', 'picture4', 'uploadts', and 'deviceid'. Two rows of data are visible, each with four small thumbnail images in the 'picture' columns.

id	name	landuse	hastrees	envimpact	note	location	picture1	picture2	picture3	picture4	uploadts	deviceid
2	00006d9ecfc34c016448	Scrubland	yes	Livestock evidence	Test	-16.45518316786305,31.75560302927218					16/10/2017 00:00	10161855644cfef0
4	000083eb8fa2320324dc	Forest-Natural-Evergreen	no	Fire evidence		-16.63600935124169,31.755603029330853					16/10/2017 00:00	10161855644cfef0

THANKS FOR YOUR ATTENTION!

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Want to translate it in your language?

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

News about Geopaparazzi:

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