BeeGIS
Anatomy of a Field Mapping

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Digital Field Mapping

vs.
on the field with a paper map
vs.
on the field with a GIS

interpretation
(ex. depending on expertise)

over time data reviews
(ex. scale)

uncertainty
-
information loss

WE NEED HISTORY

The example survey

Objective: verification and update of datasets needed for the evaluation of the environmental impact of the production of hydro-electricity

Aim is to collect information about:

- datasets of dams, intakes, offtakes, channels
- correctness of the existing data
- integration of missing data

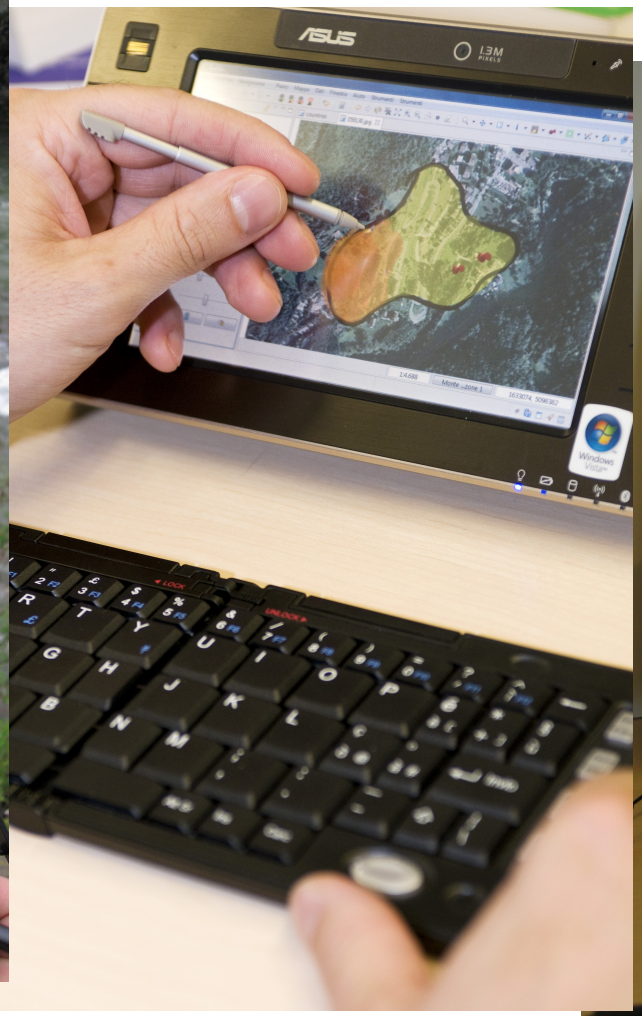
Part I: preparing for the field

- import available base datasets that can help to support the survey: ortophoto, tecnical basemap, cadaster maps
- import existing layers of information that have to be checked and updated, like for example dams, intakes, offtakes, channels
- check the projections of the different datasets and reproject them to a common reference system
- do a first check based on comparison of the data with the ortophoto, cadaster and even paper design projects. Find cases of missing data, wrong data, double data.

Identify critical situations

Part II: during the survey - BeeGIS

Tranfer the datasets as they are on the mobile units.



Part II: during the survey - BeeGIS

I want to collect the most possible information out in the field. Anything that can help me to keep history, to lower uncertainty.

1) activate the gps to have a complete log of the survey

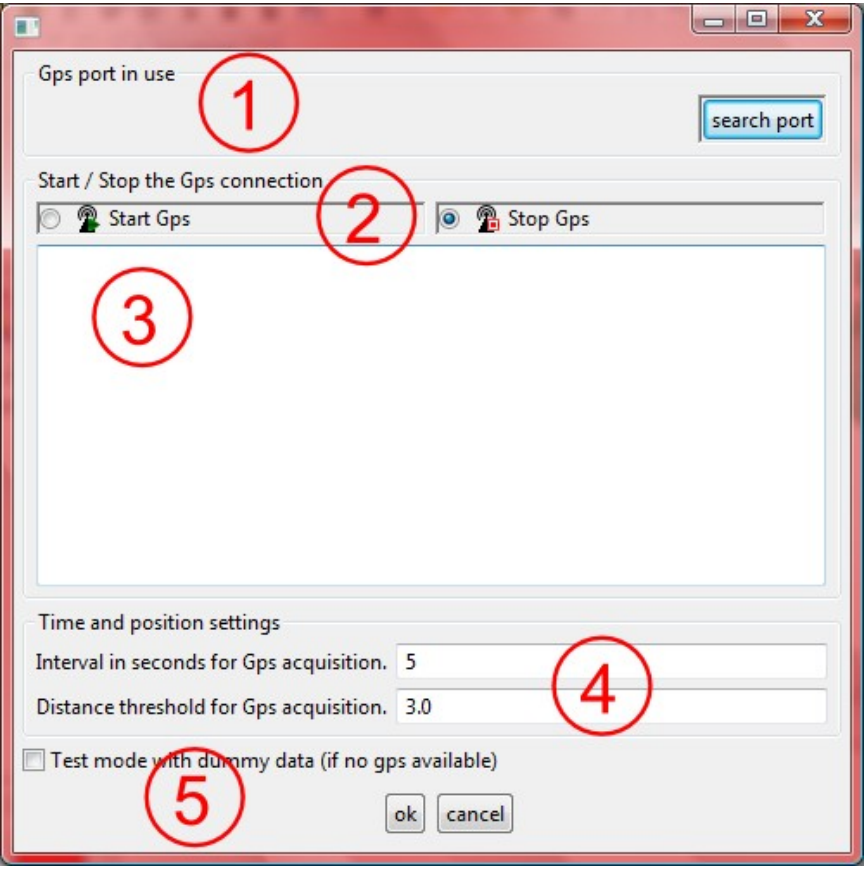
The gps toolbar

Part II: during the survey - BeeGIS

-  GPS settings - opens the gps settings dialog
-  Toggle logging - toggles between activating and deactivating data acquisition

Part II: during the survey - BeeGIS

The gps settings dialog



1. the gps port section
2. once the port has been selected, the gps connection can be performed by pushing on the start gps radio button.
3. if the gps connection properly occurred, the textarea in this section will show a sample NMEA string
4. two parameters: the data acquisition interval in seconds and the minimum distance between two subsequent gps point
5. simulate a virtual gps without the need of being connected to a real gps

Part II: during the survey - BeeGIS

2) use the gps to create shapes on the map

-  Manually add point - adds a point to the selected layer from the current gps position
-  Add geonote - adds a new Geonote placed at the current gps position
-  Automatic point acquisition - toggles automatic point acquisition from gps, adding the points
-  Toggle center on gps - toggles the centering on the current gps position, whenever the gps would get out of the map's viewport
-  New point layer - creates a new point layer with default attributes
-  New line layer - creates a new line layer with default attributes
-  New polygon layer - creates a new polygon layer with default attributes.

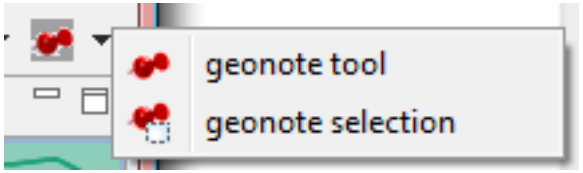
Part II: during the survey - BeeGIS

3) use geonotes to place any type of information on the map like a postit note

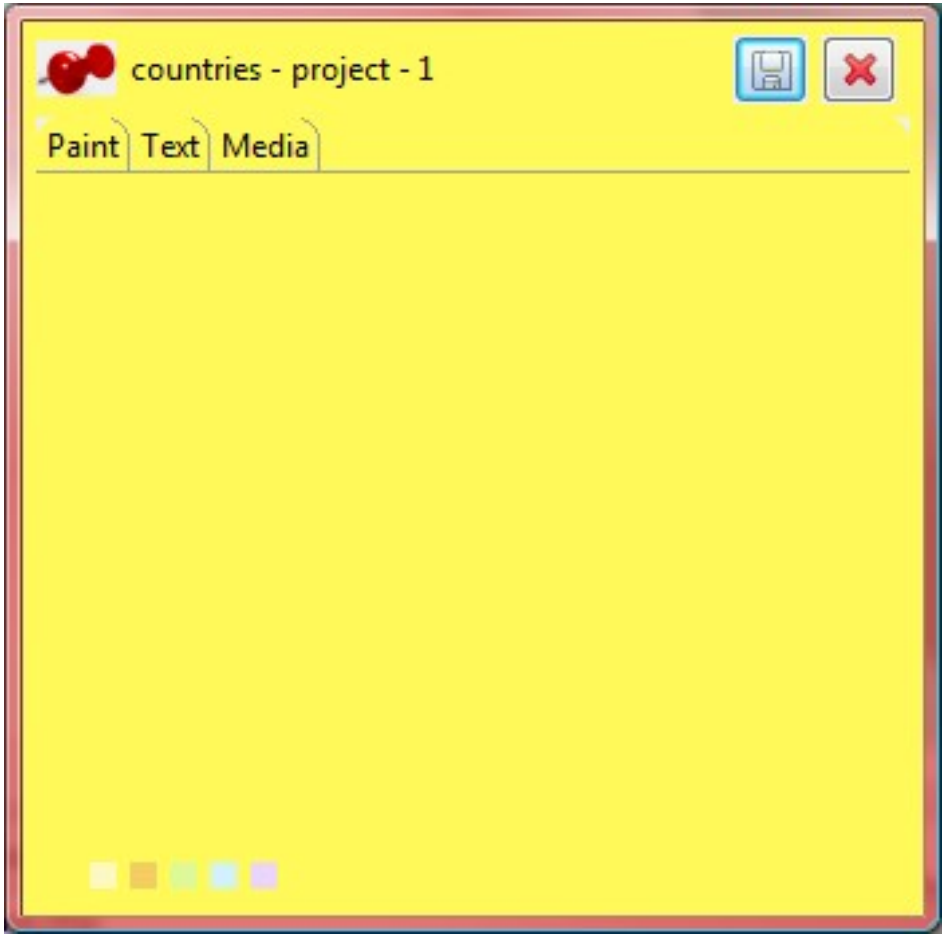
- place geonotes from the gps position to give a name to a particular artifact, describe a situation or to draw a schema of a work to remember it
- place geonotes on the map manually based on the underlying ortophoto and the discussion with the administration technitian for example to describe places that can't be reached easily

Part II: during the survey - BeeGIS

The geonote toolbar:

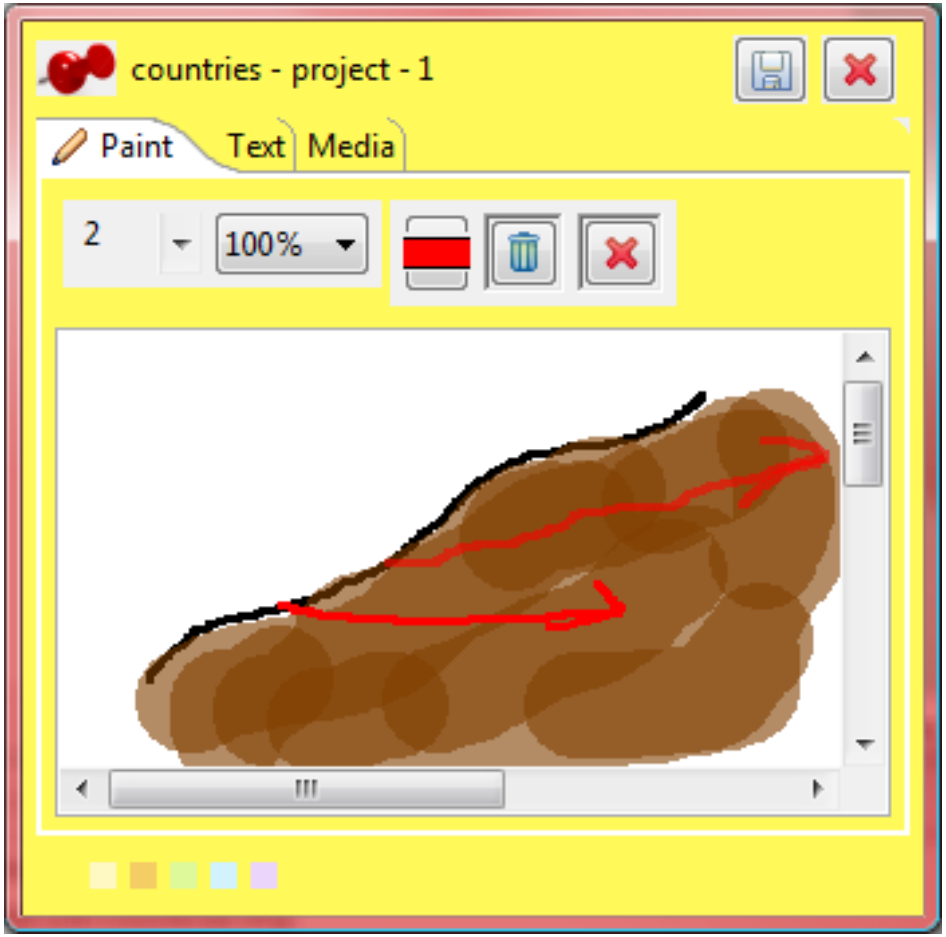


The default geonote:



Part II: during the survey - BeeGIS

The paint box: draw sketches to remember interpretations of the environment, schemas of the underground channels they explain you...

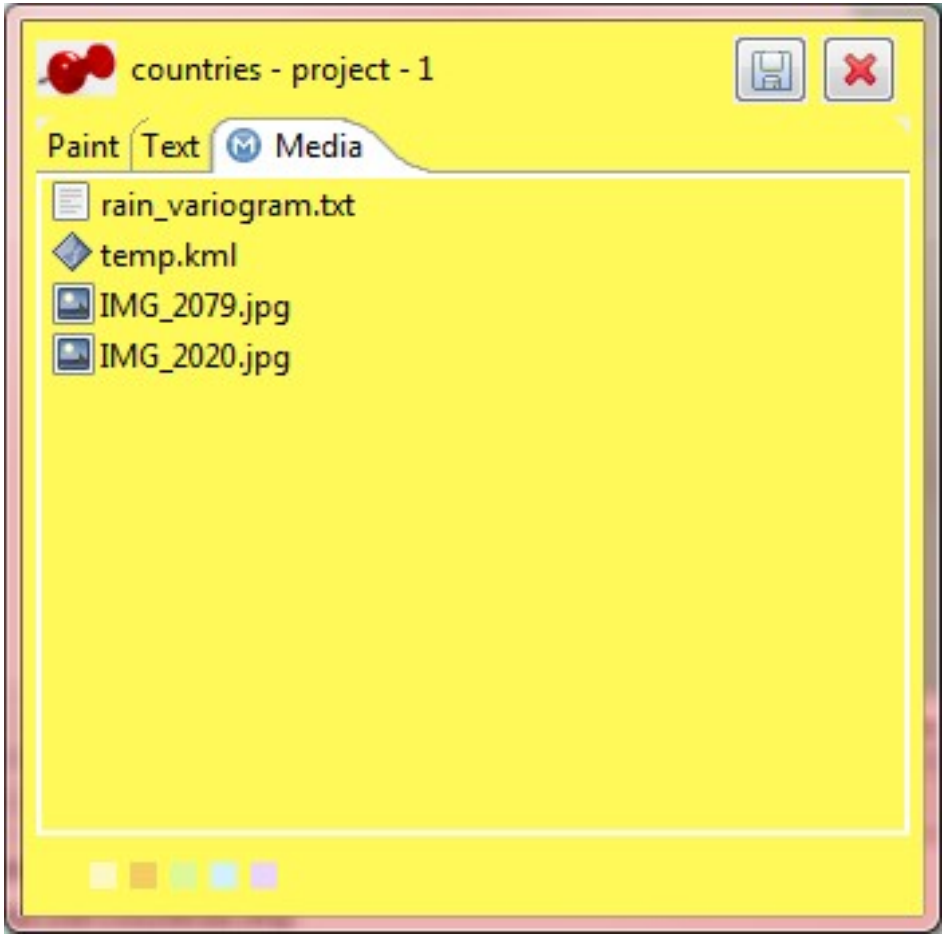


Part II: during the survey - BeeGIS

The text box: write information in text, in order to be able to export it later in digital format

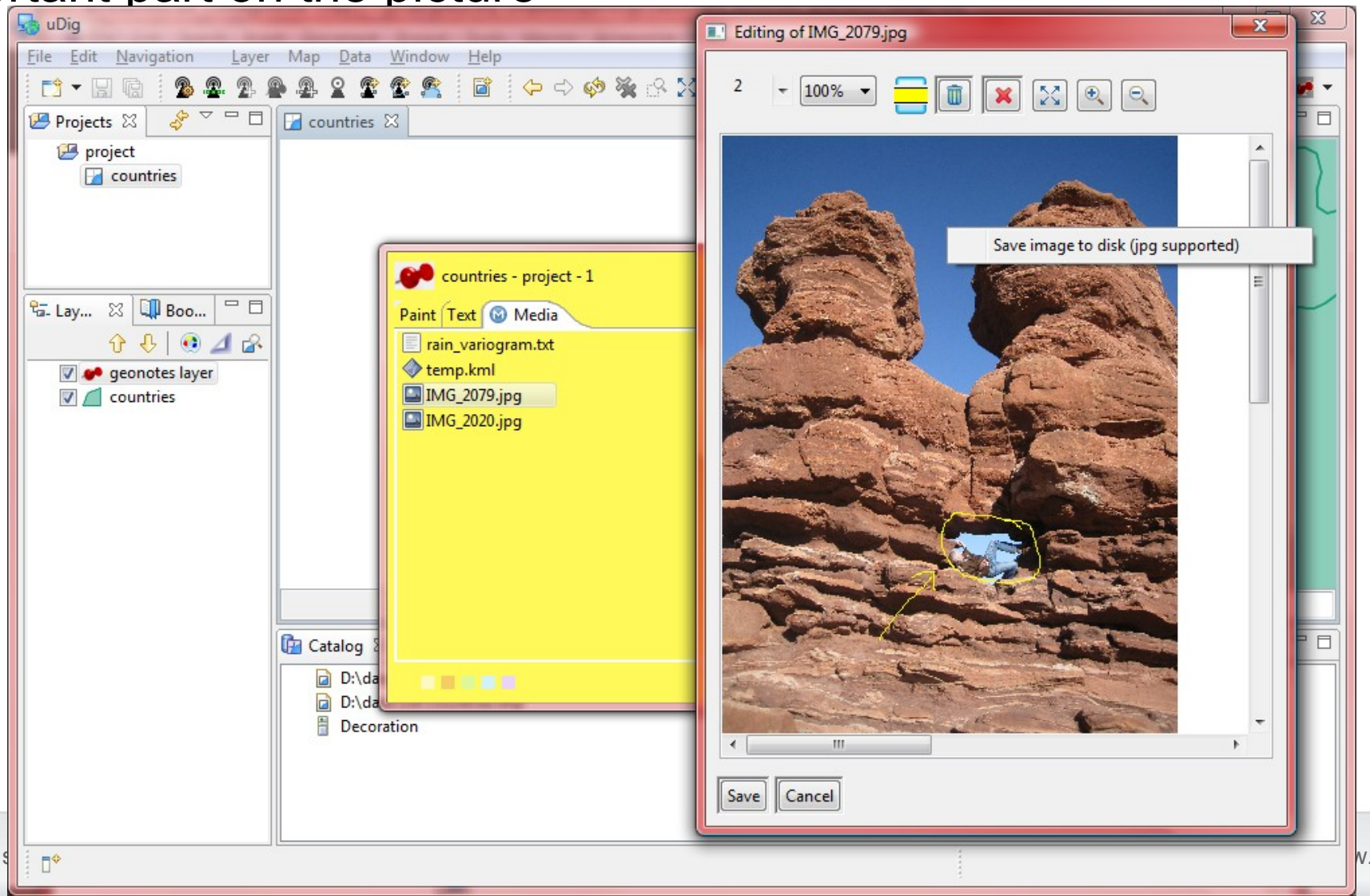
Part II: during the survey - BeeGIS

The media box: drag any type of multimedia file into the note



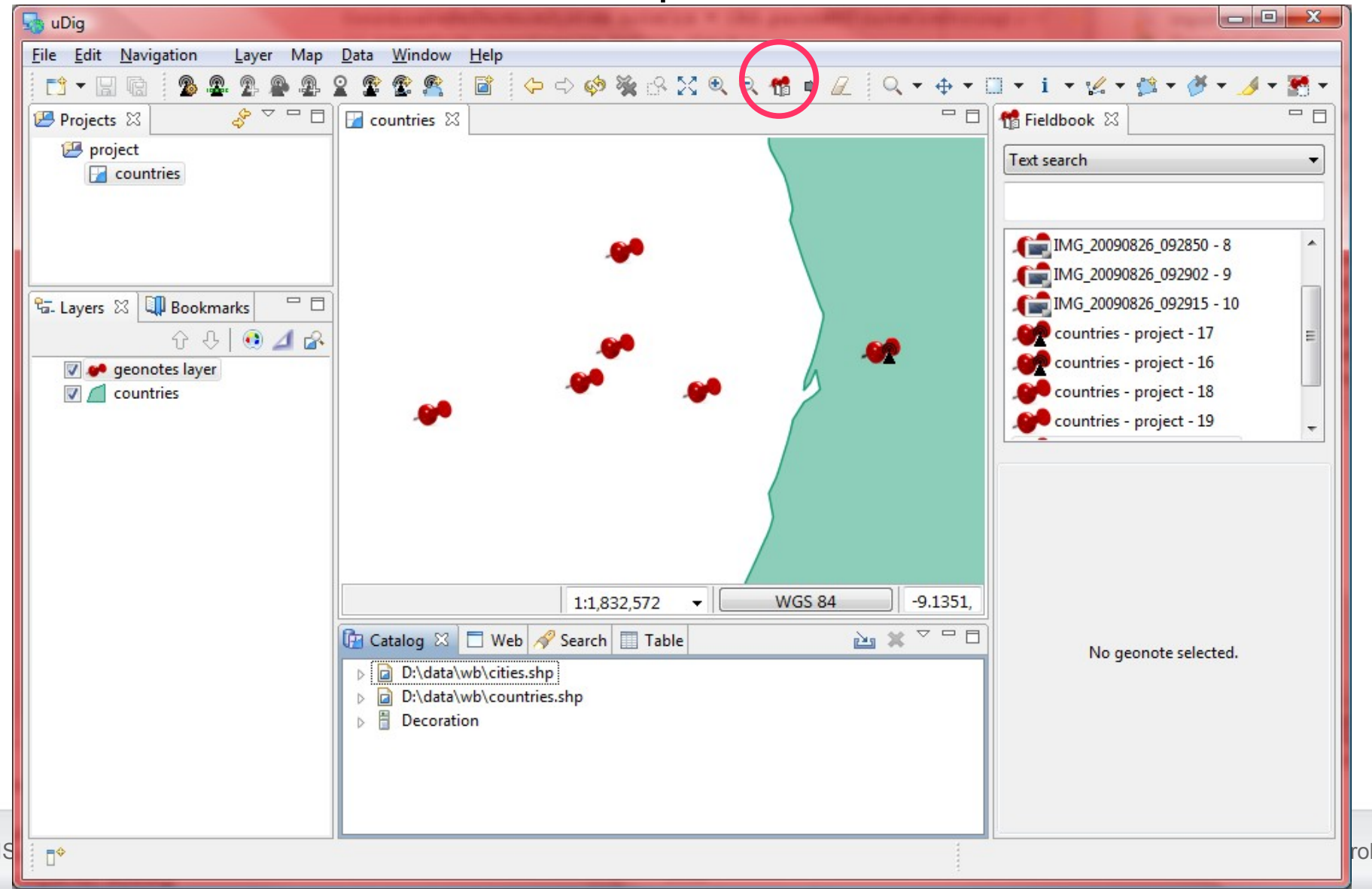
Part II: during the survey - BeeGIS

The media box image editor: take a picture during the survey, drag it into the note and open it with the internal editor in order to annotate important part on the picture



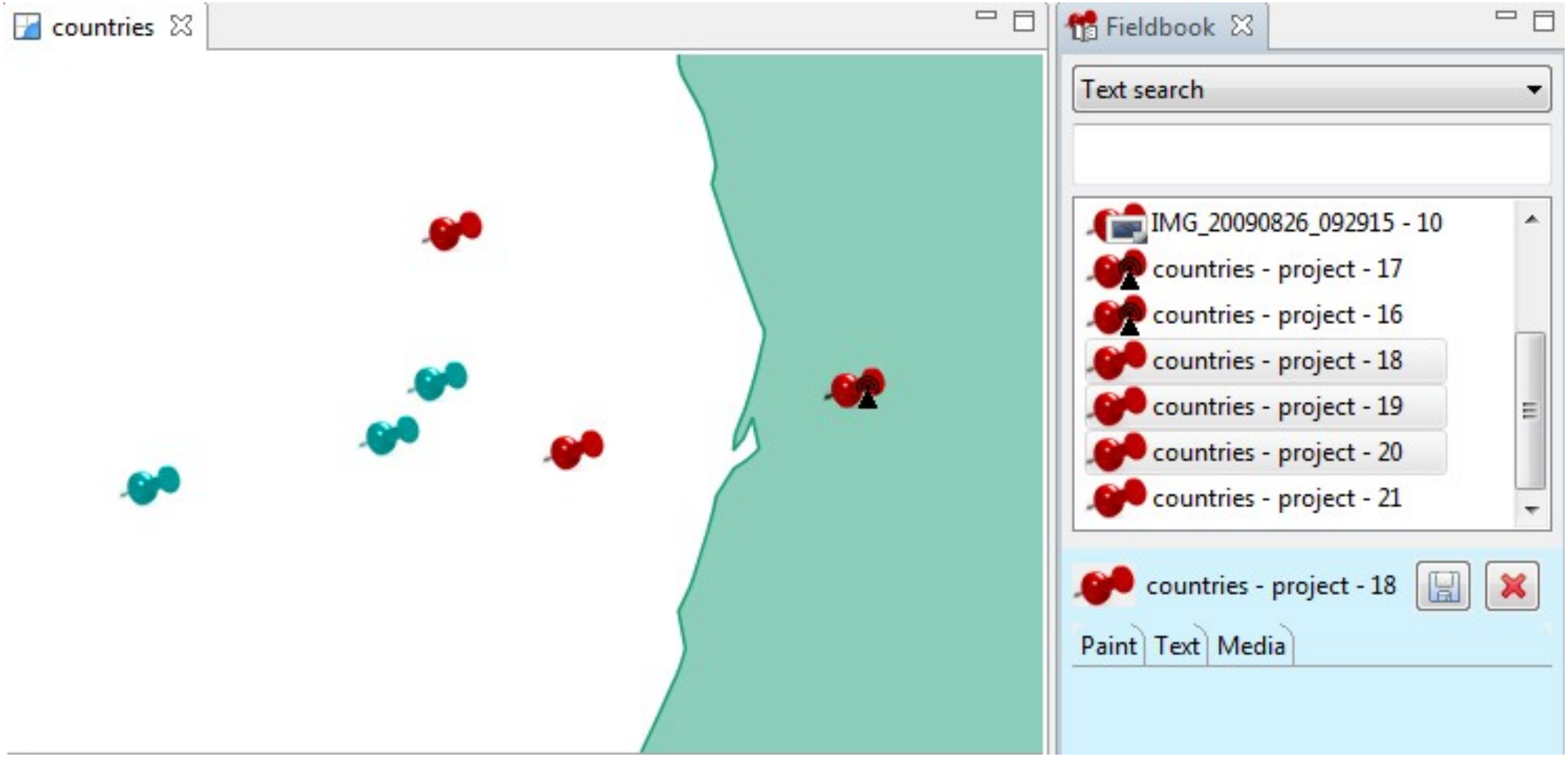
Part II: during the survey - BeeGIS

The fieldbook: a container in which the geonotes can be browsed, searched, selected, zoomed to, exported, sent via email



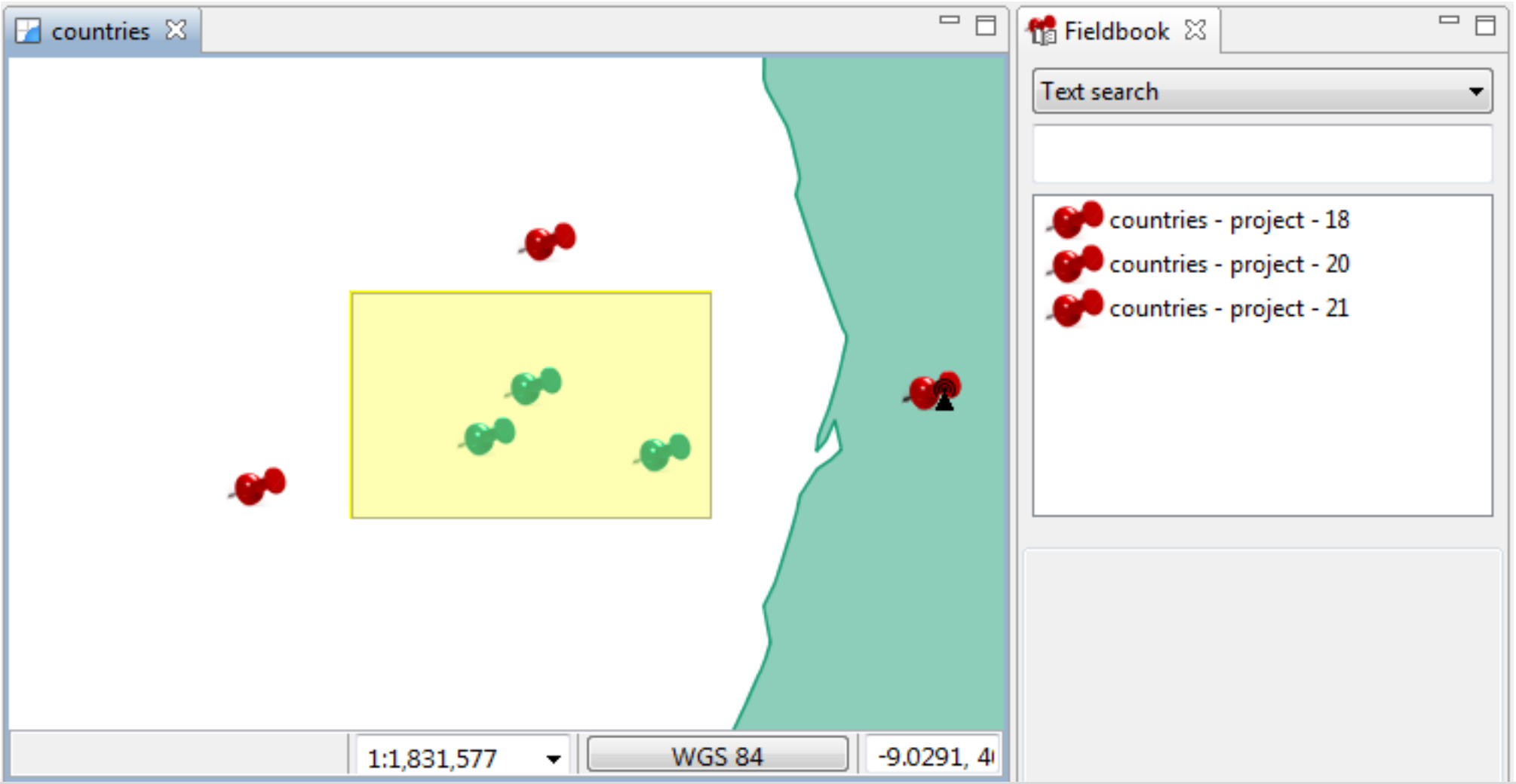
Part II: during the survey - BeeGIS

The fieldbook: Geonotes selected in the fieldbook are highlighted on the map.



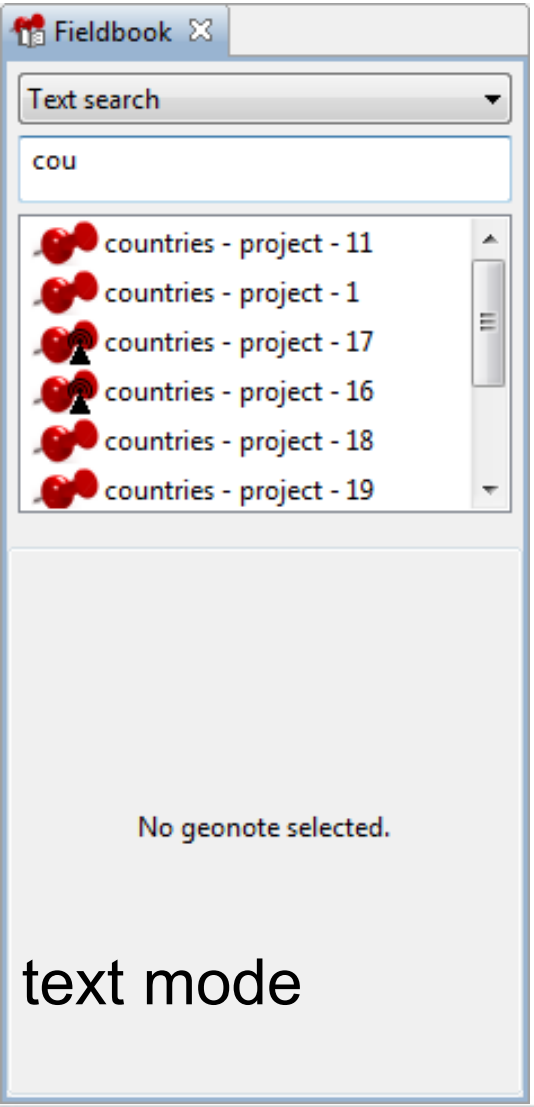
Part II: during the survey - BeeGIS

The fieldbook: Geonotes selected on the map through the selection tool, are filtered in the fieldbook panel.



Part II: during the survey - BeeGIS

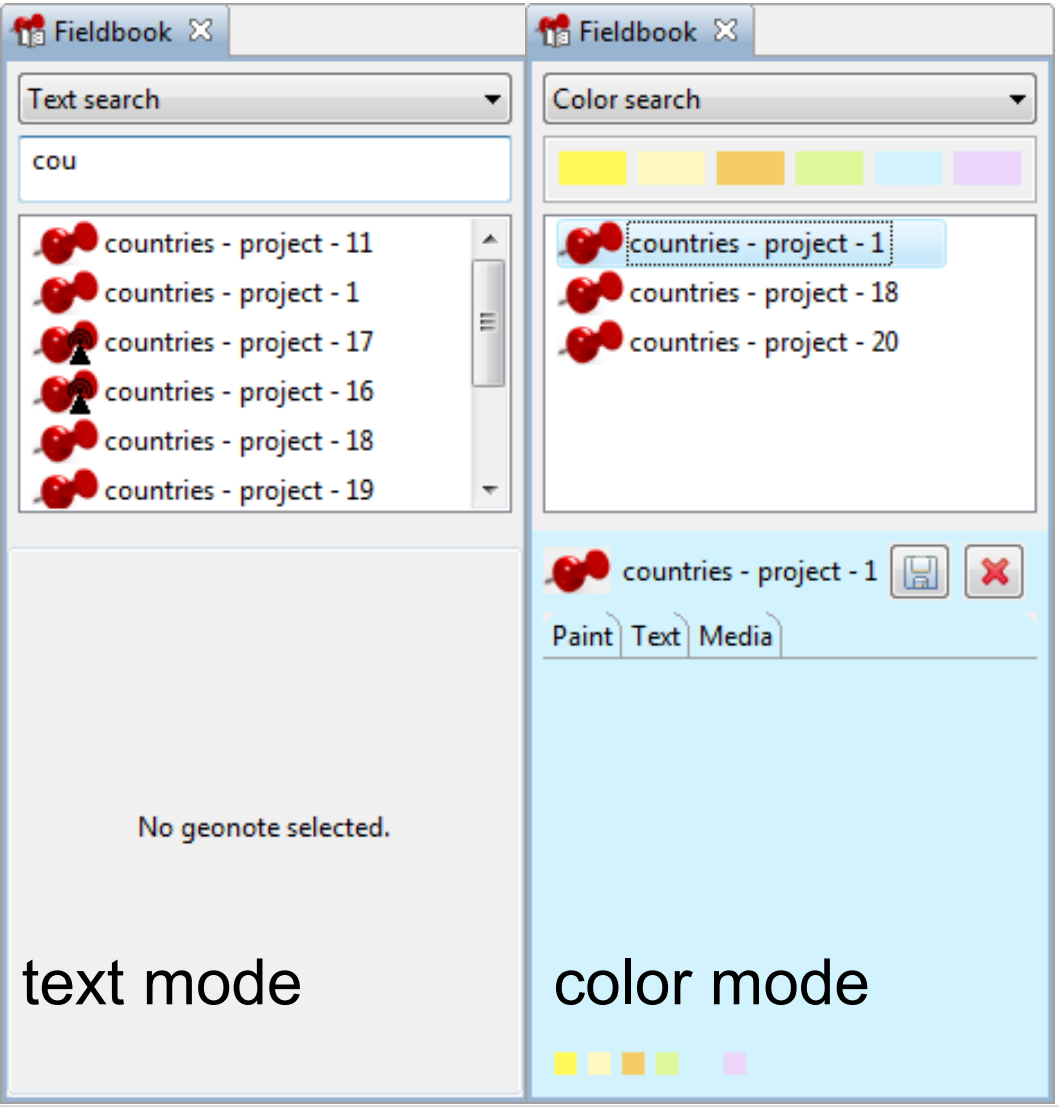
The fieldbook: search modes



text mode

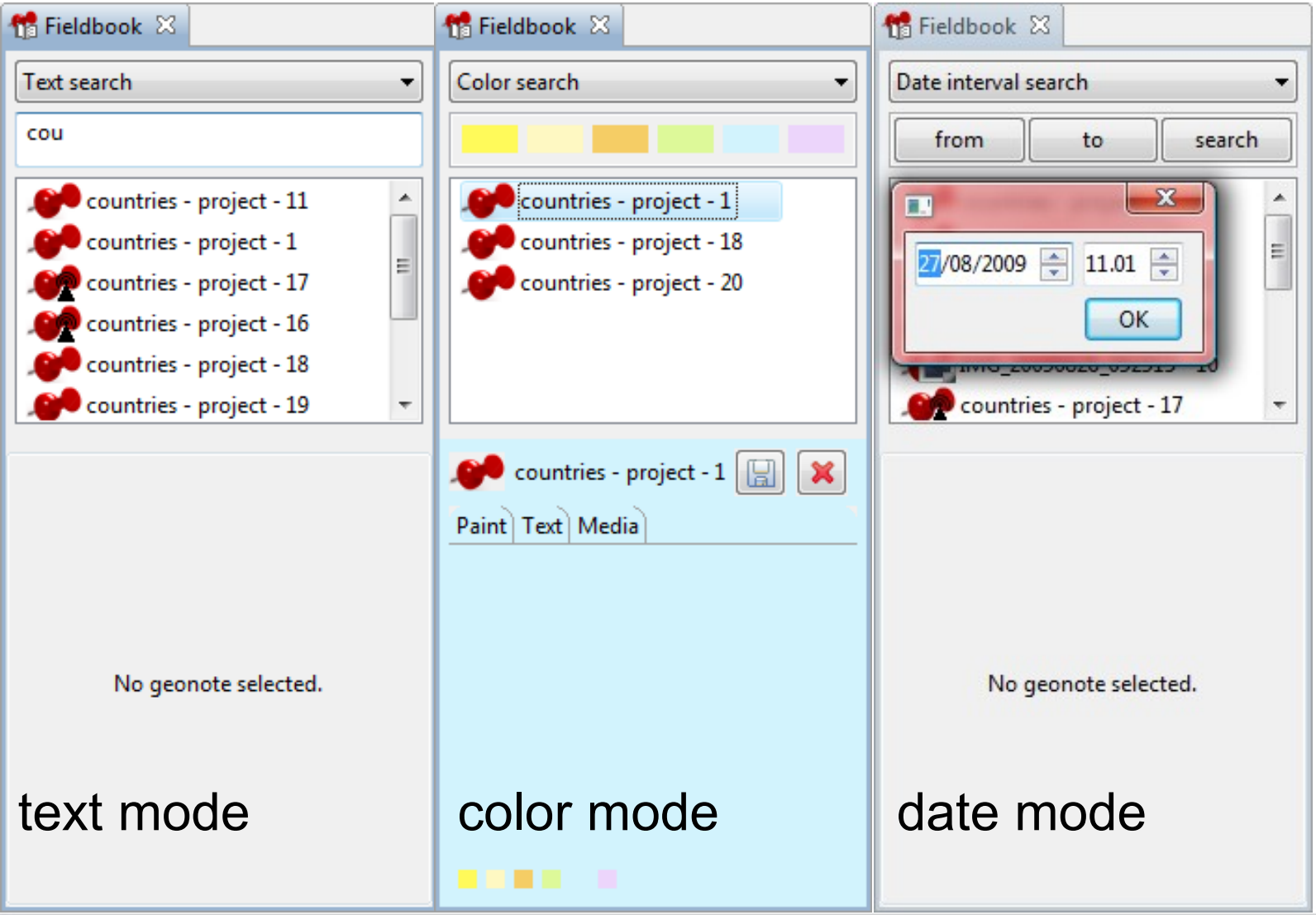
Part II: during the survey - BeeGIS

The fieldbook: search modes



Part II: during the survey - BeeGIS

The fieldbook: search modes



Part II: during the survey - BeeGIS

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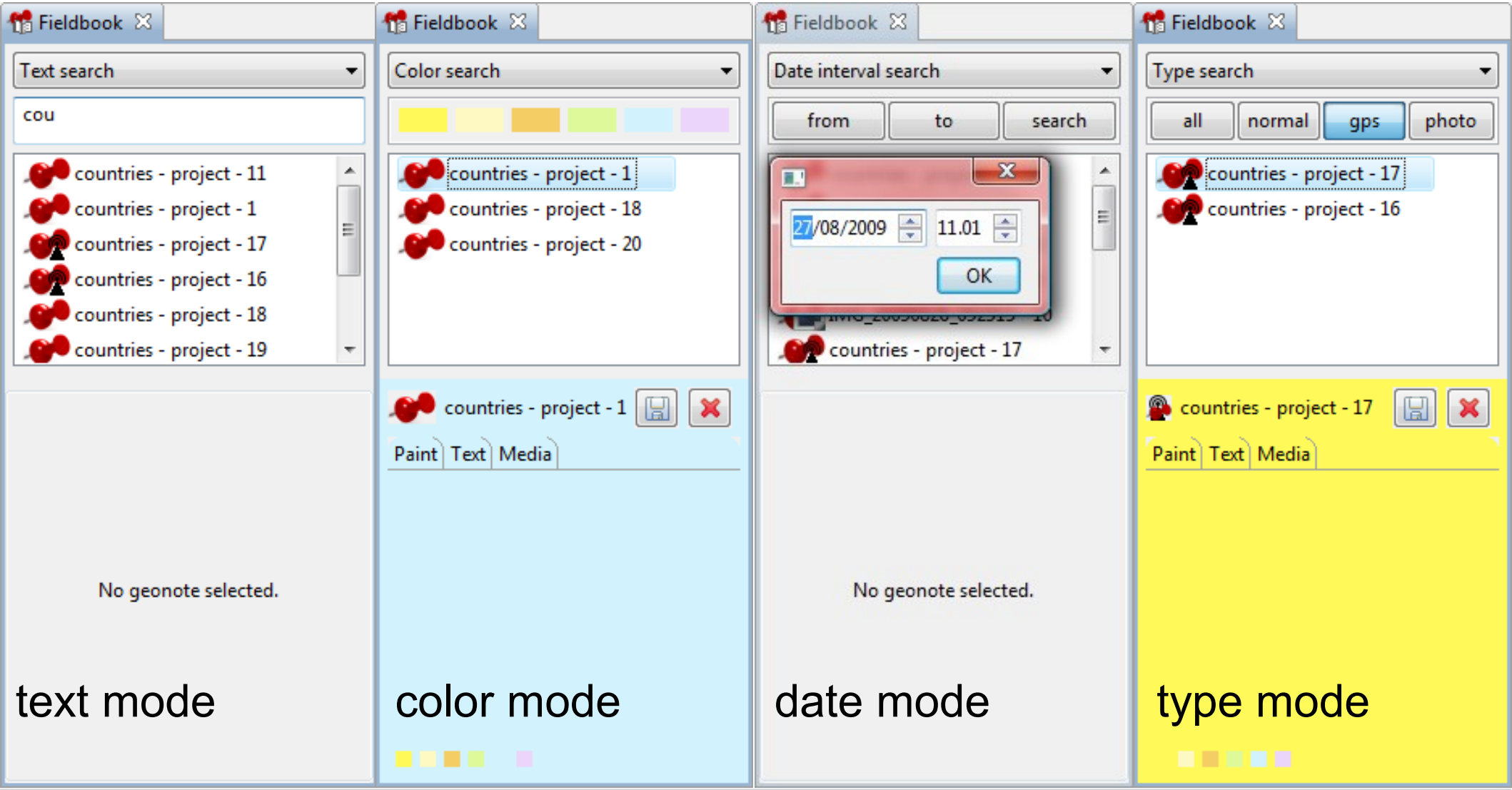
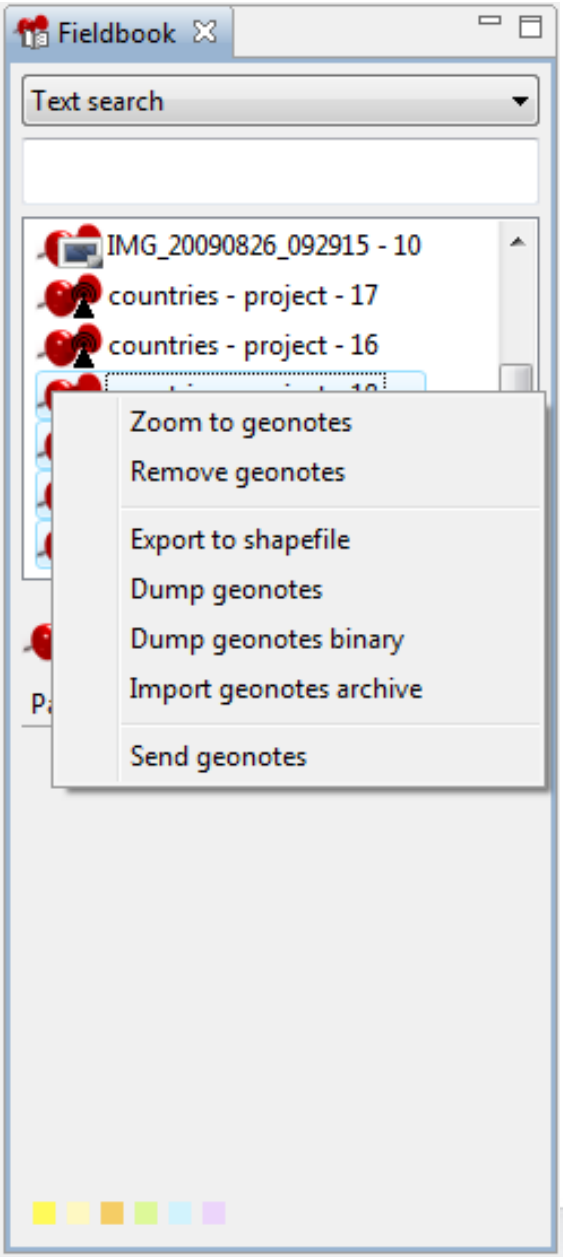


Part II: during the survey - BeeGIS

The fieldbook: context menu



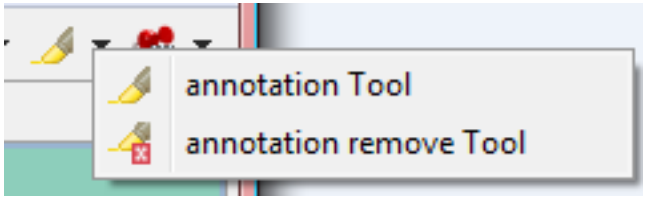
Part II: during the survey - BeeGIS

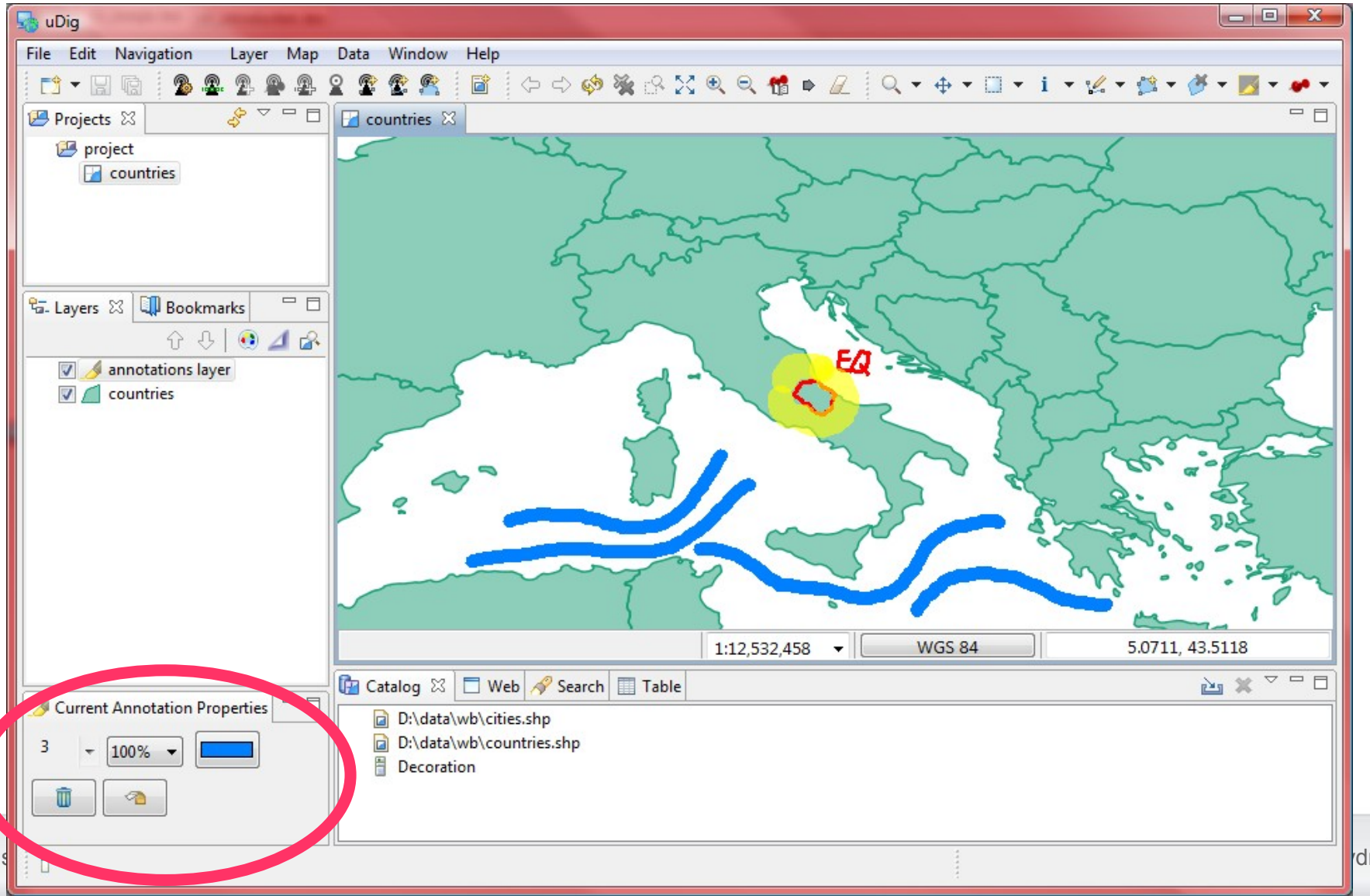
4) use annotations to draw quick sketches on a map

- in hydro-geomophologic surveys you are interested in highlighting some boundaries, like those of a landslide
- you can highlight a particular region and describe a vegetation type or soil type
- draw whatever comes to your mind to add information that doesn't fit in the other tools to the survey

Part II: during the survey - BeeGIS

The annotations layer: draw free on the map





Part II: during the survey - Geopaparazzi

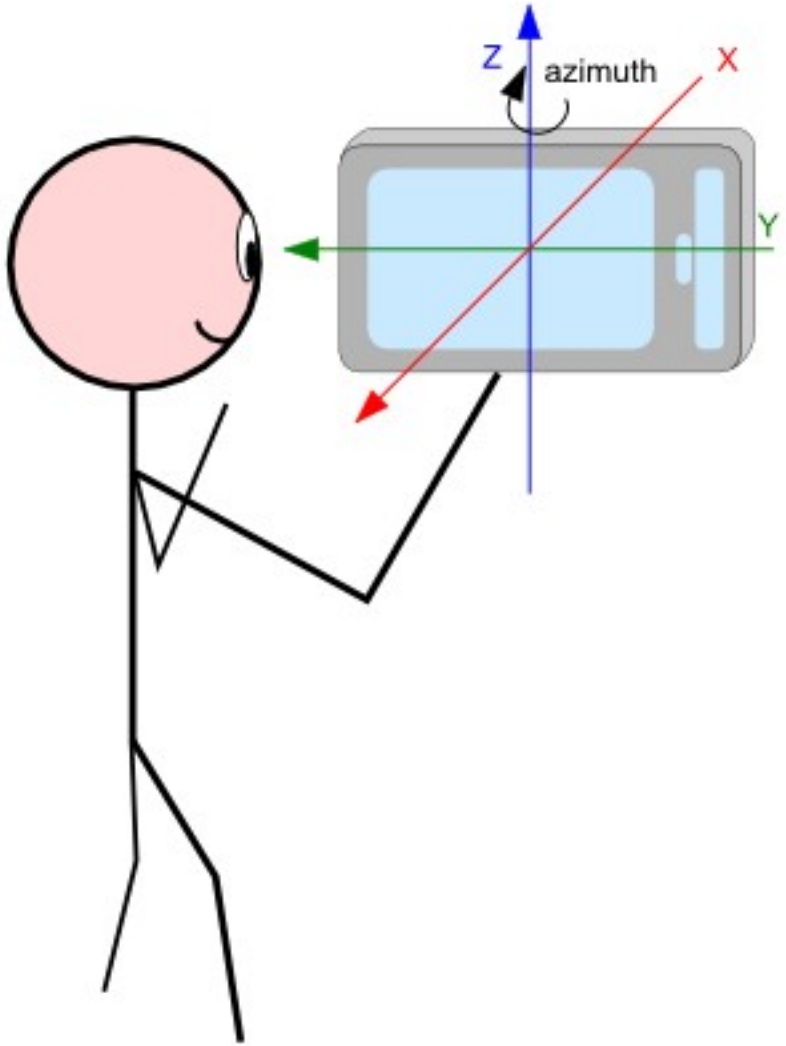
Geopaparazzi: the lightweight solution for Android phones

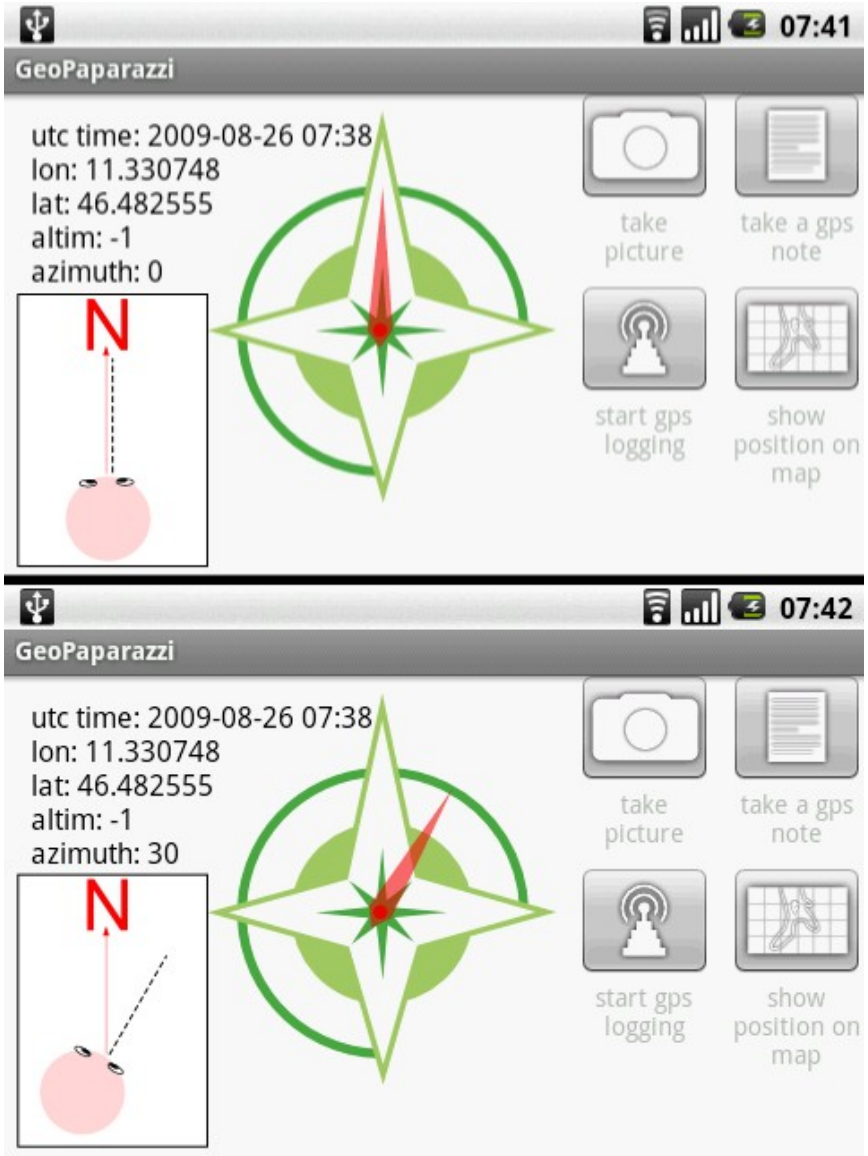
Part II: during the survey - Geopaparazzi

Geopaparazzi: georeferenced notes, gps logging

Part II: during the survey - Geopaparazzi

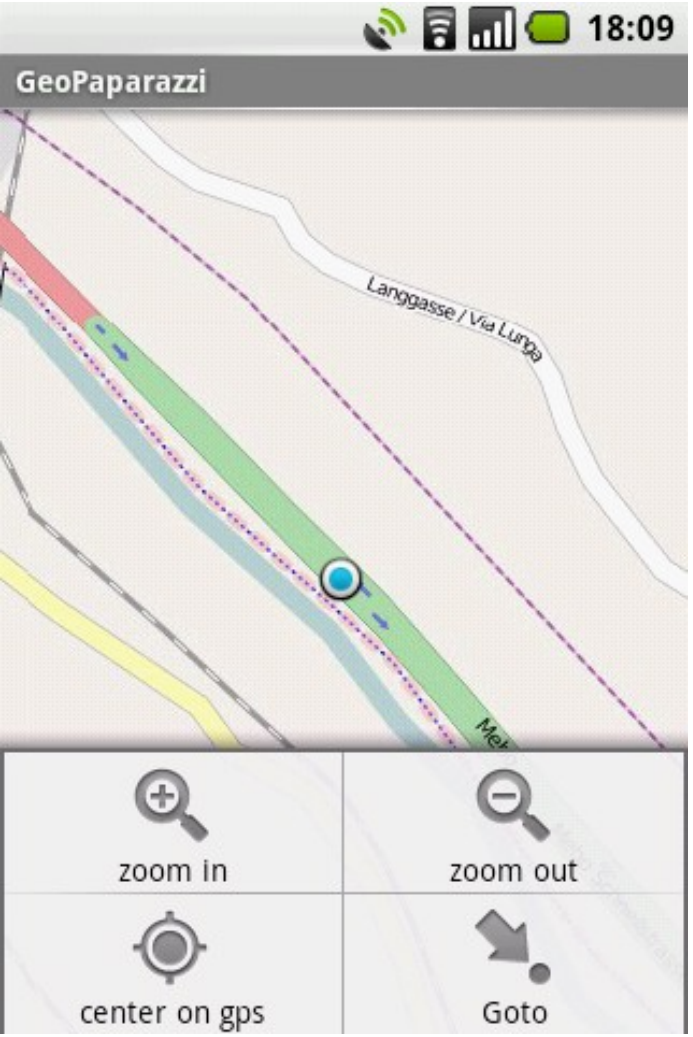
Geopaparazzi: georeferenced and oriented pictures

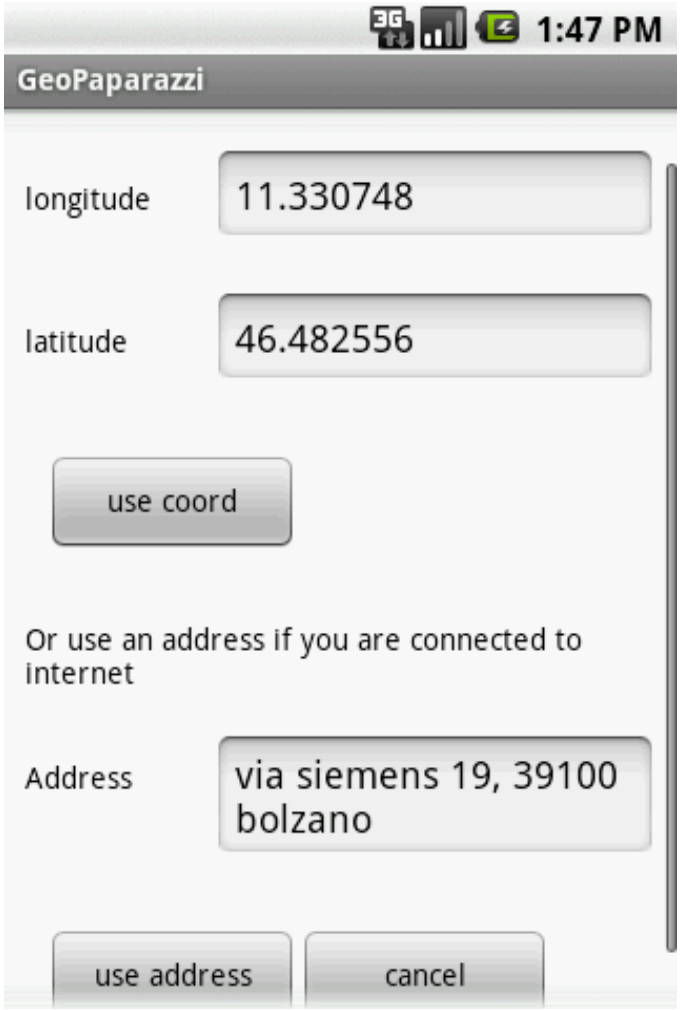


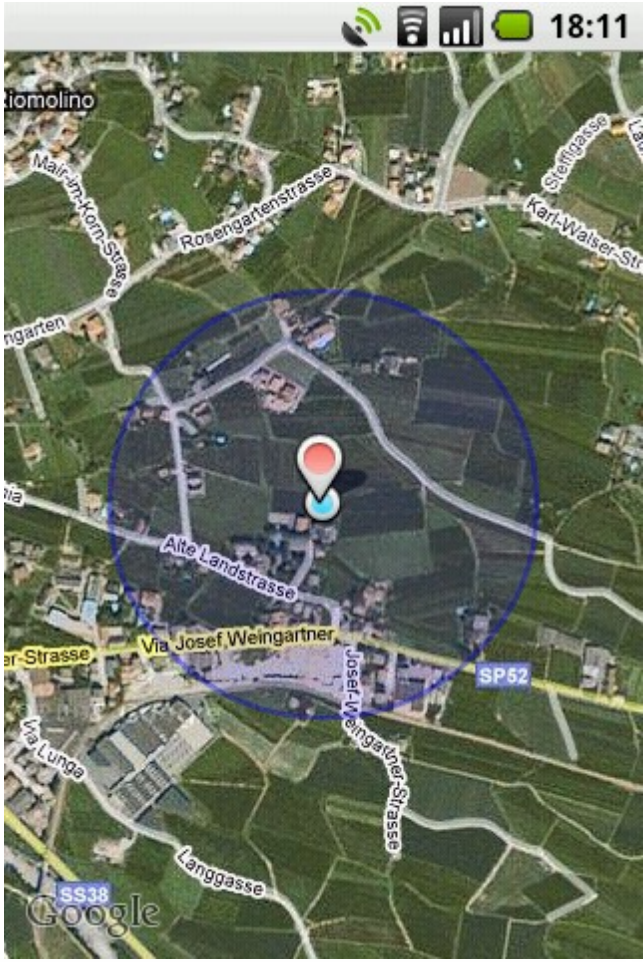


Part II: during the survey - Geopaparazzi

Geopaparazzi: openstreetmap vs. google map







Part III: back in the office

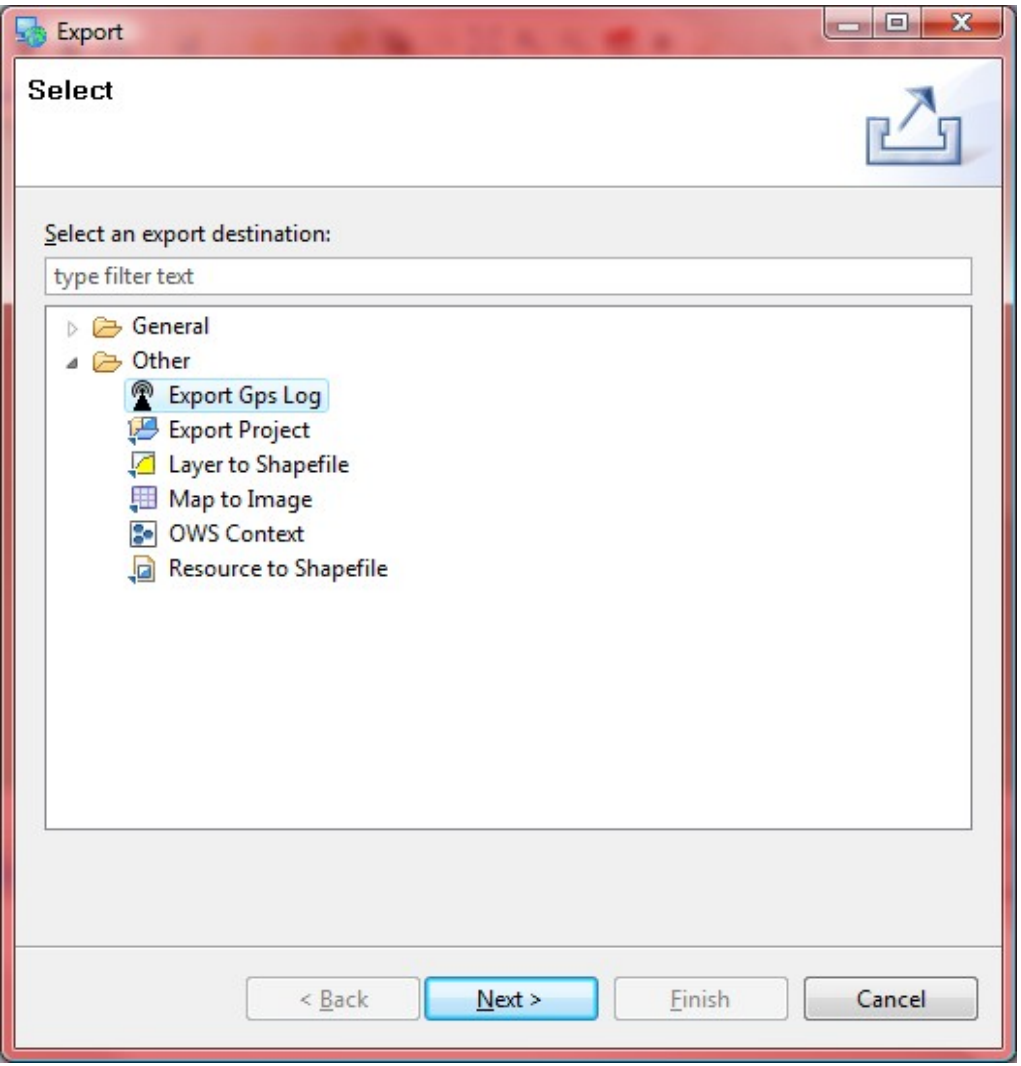
5) transfer the survey on the office pc and update the original data

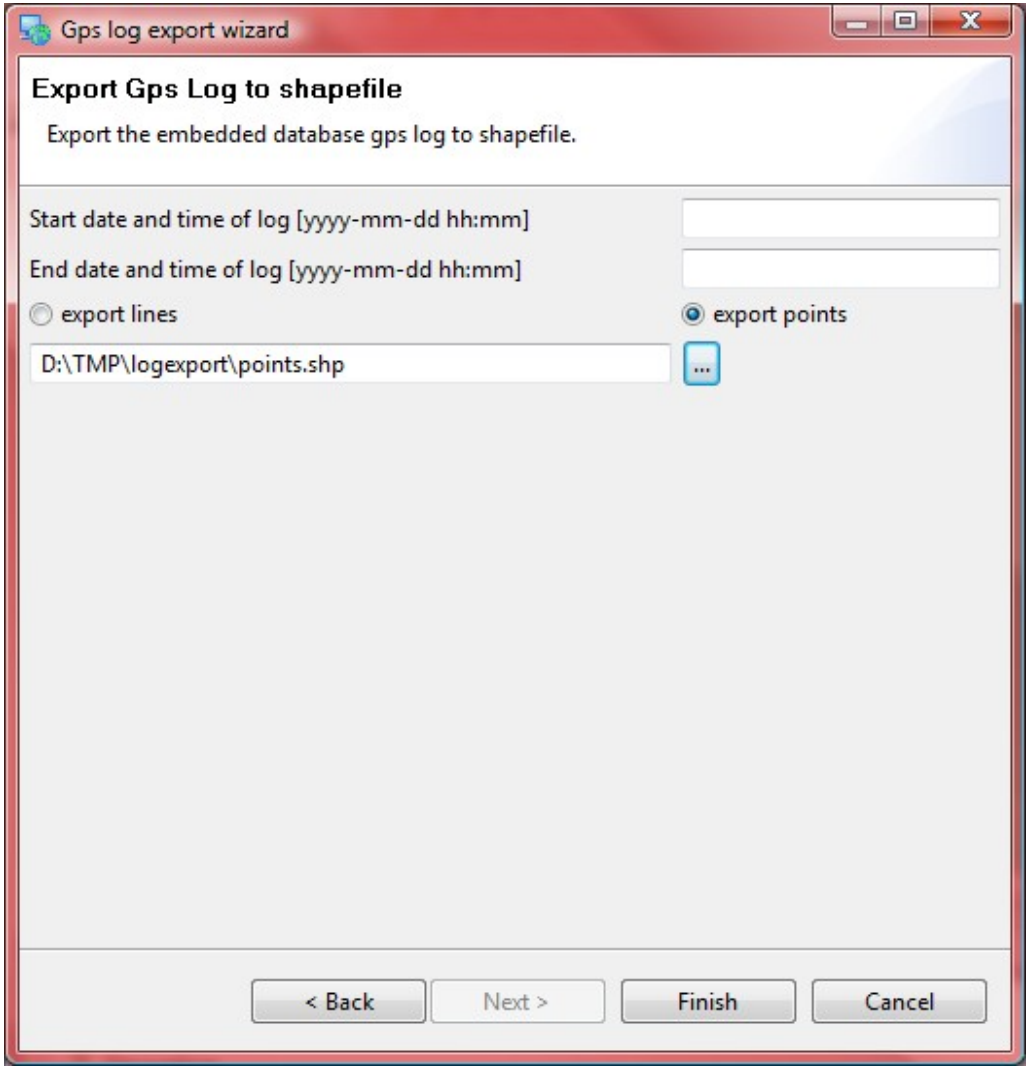
- original data can be corrected or updated based on the information taken during the survey (geonotes content, annotations, shapes on new created layers)
- import of pictures in the workspace
- visualization of the gps log
- import of geopaparazzi data

RESULT:
updated and correct data to use for further processing

Part III: back in the office

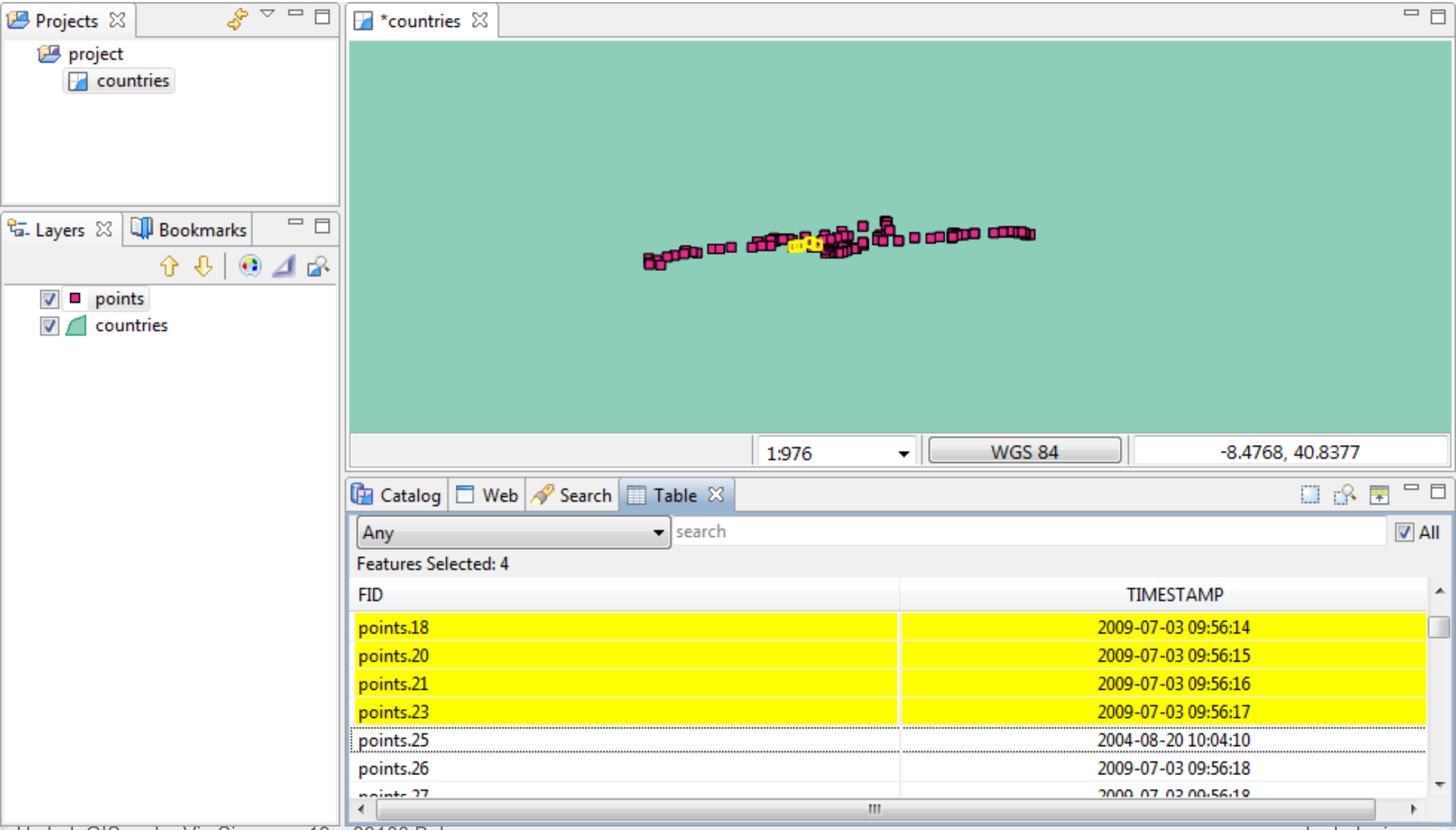
Export gps log as shapefile





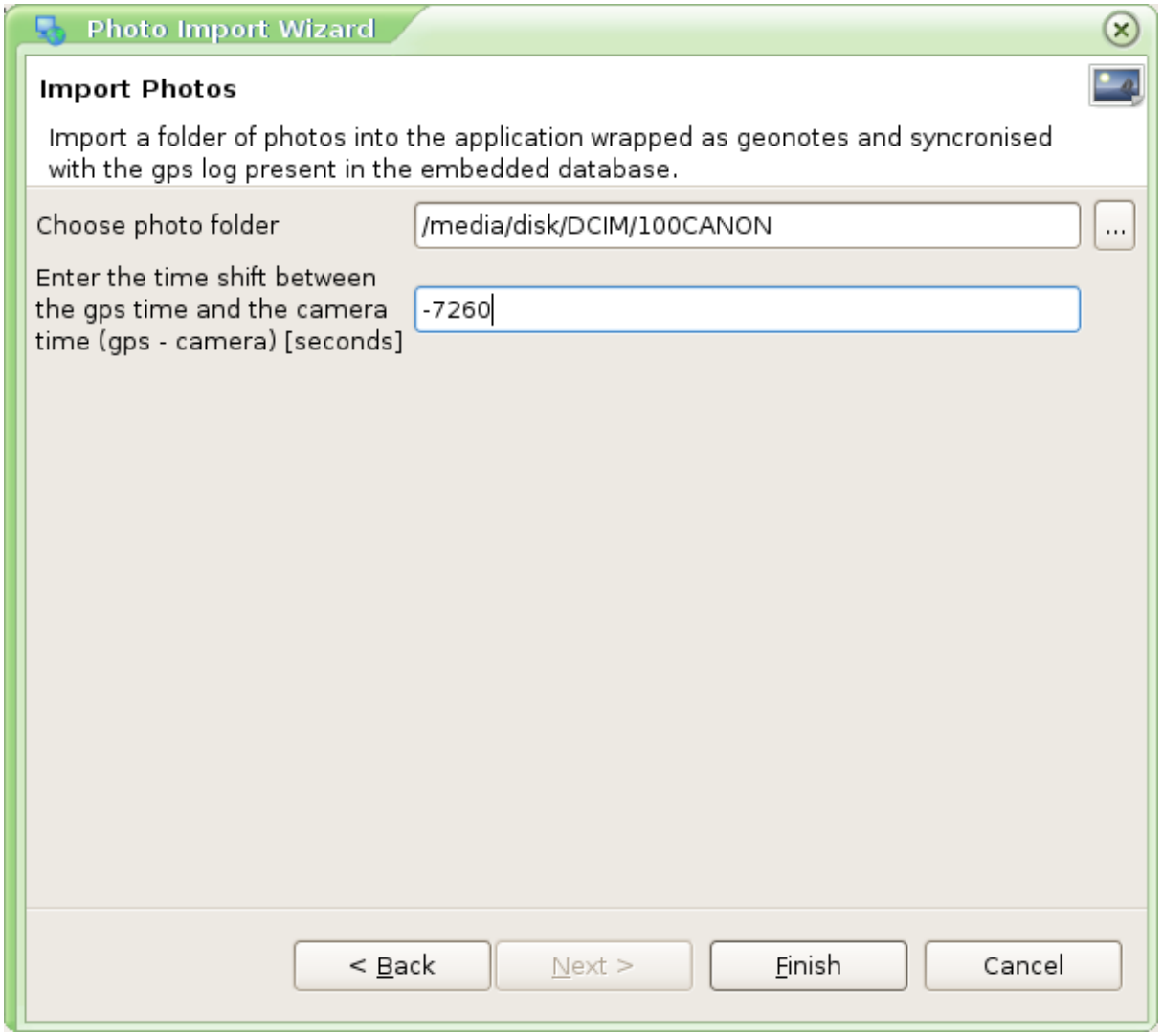
Part III: back in the office

Export gps log as shapefile



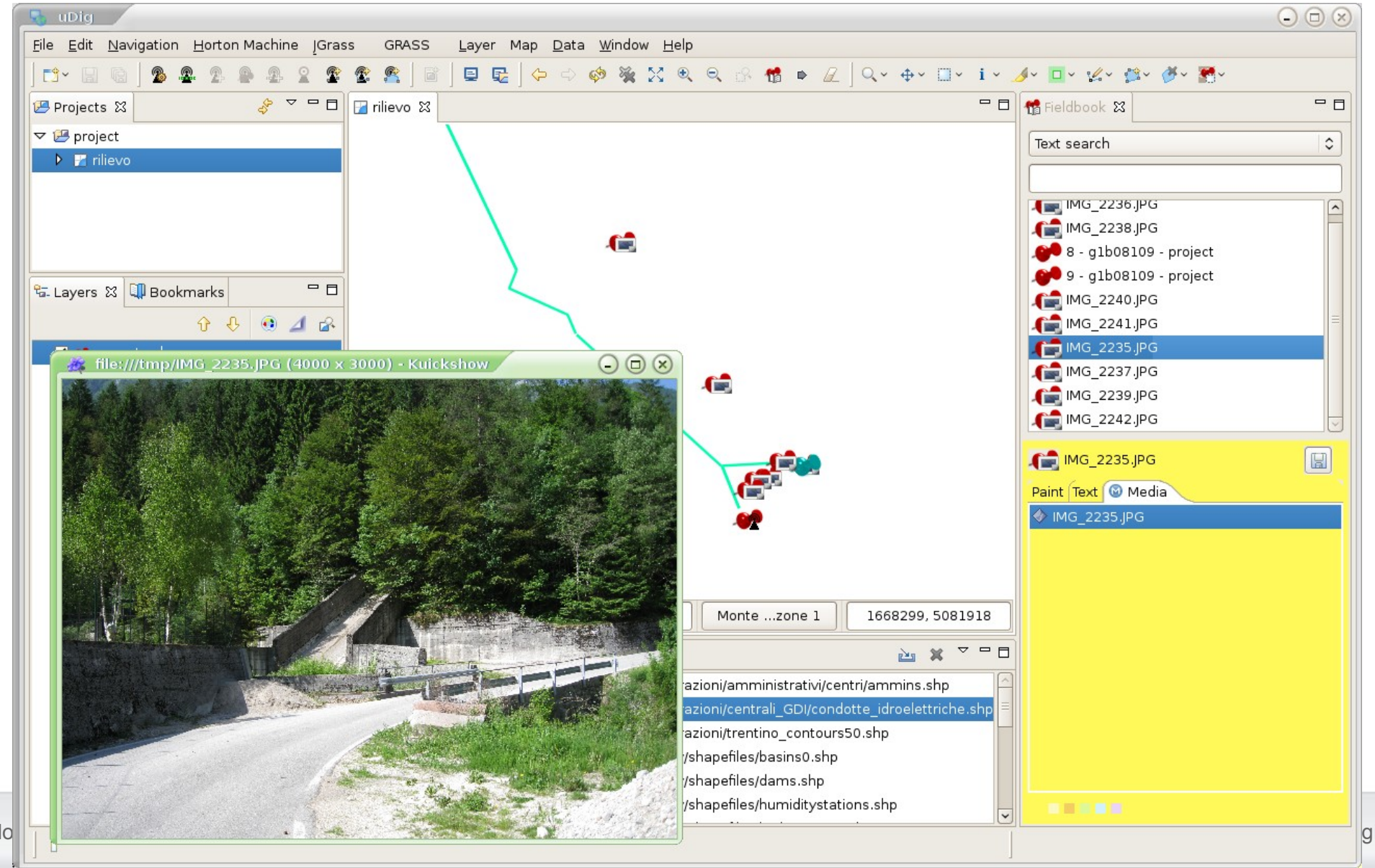
Part III: back in the office

Import pictures taken during the survey: sync with the gps log timestamps



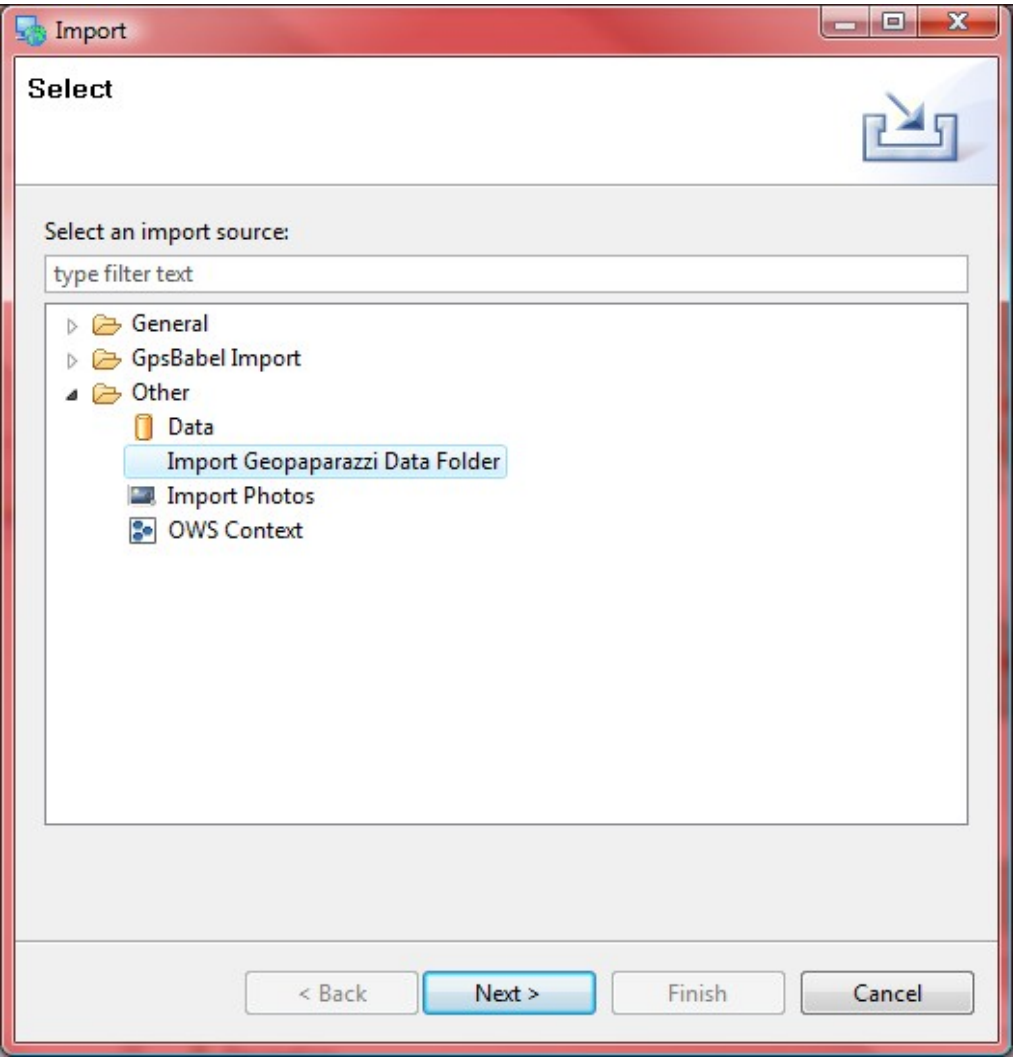
Part III: back in the office

Import pictures taken during the survey: sync with the gps log timestamps



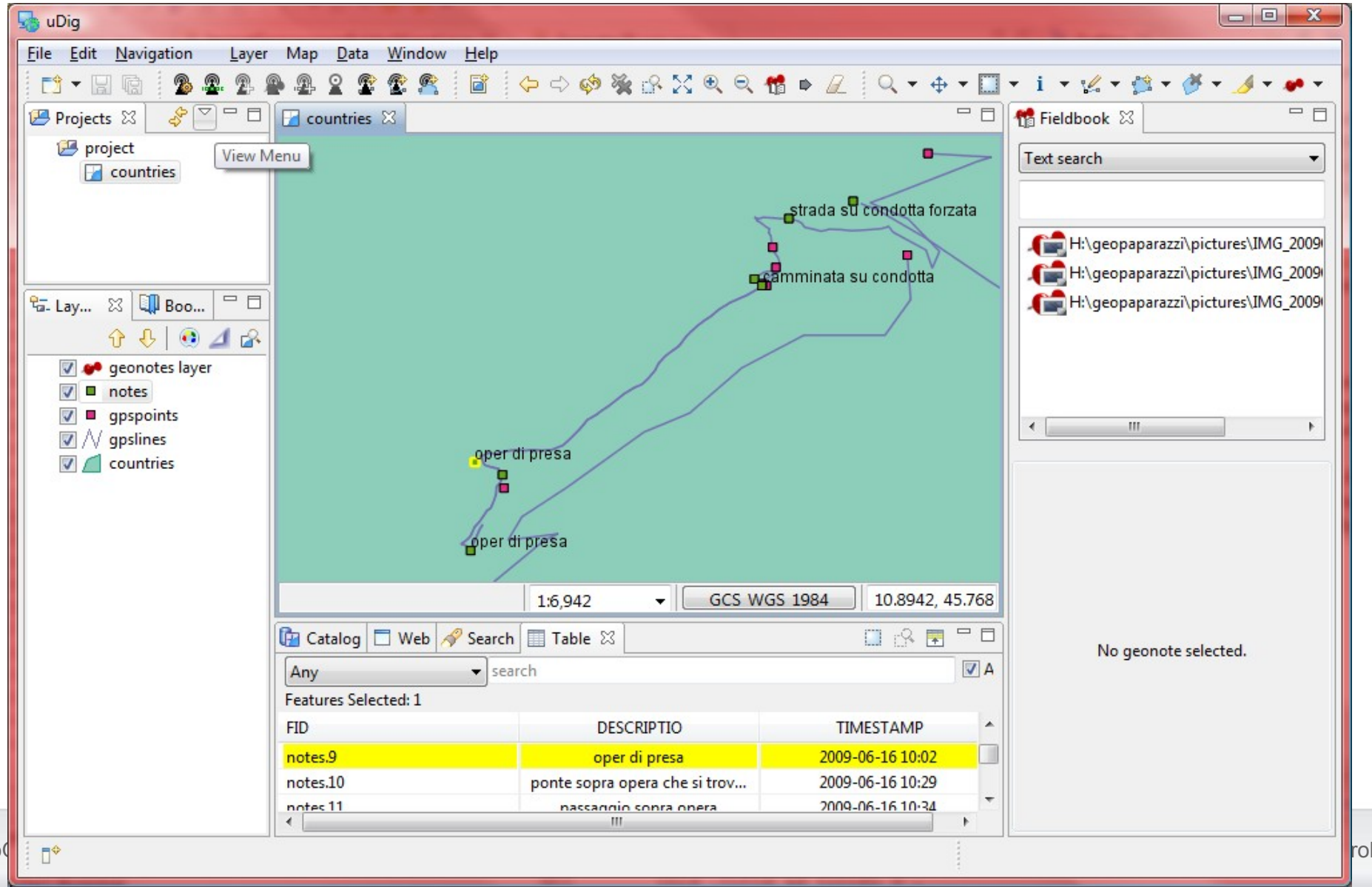
Part III: back in the office

Import Geopaparazzi data



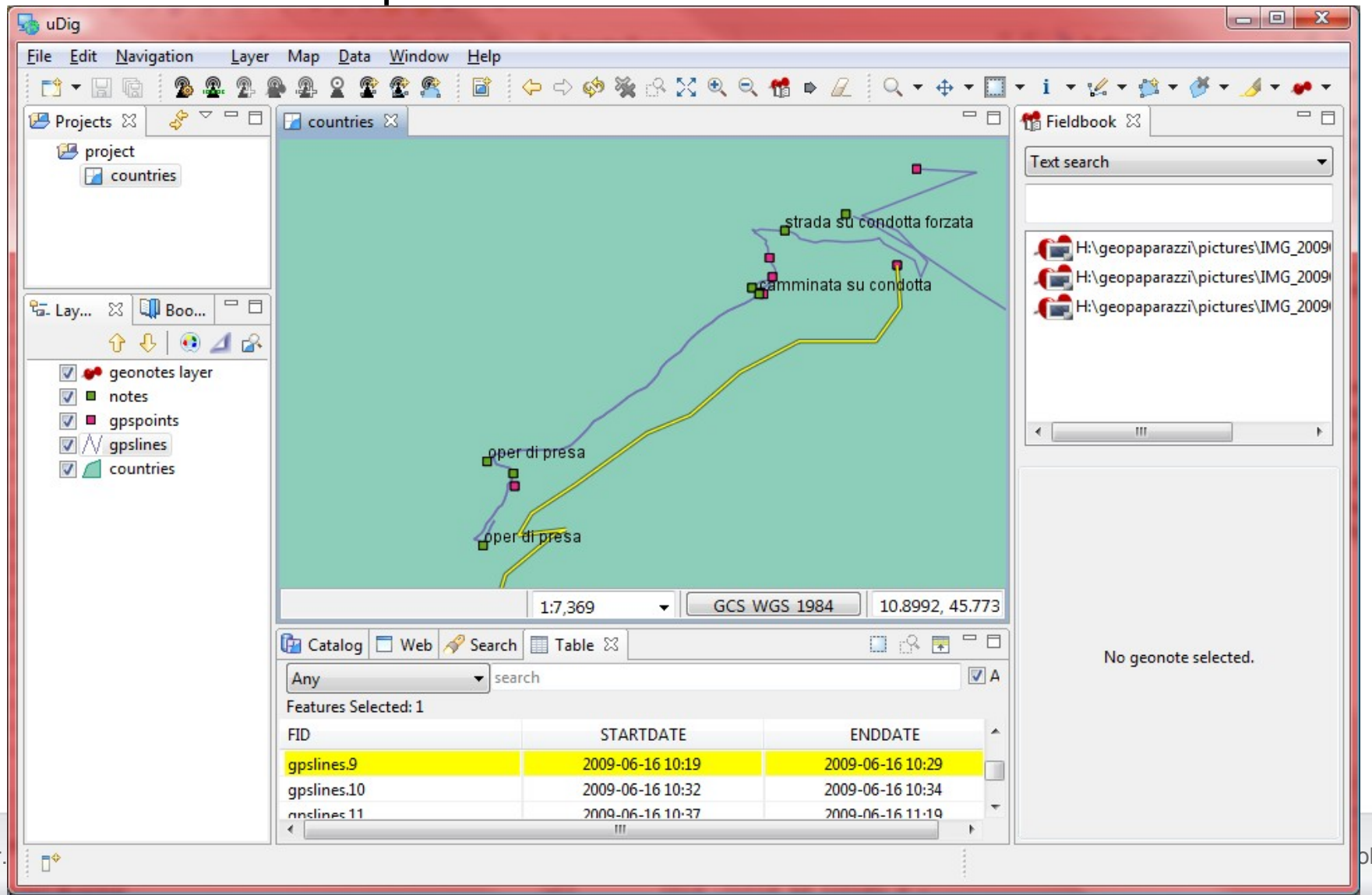
Part III: back in the office

Import Geopaparazzi data: Notes are imported as a shapefile with a description and a timestamp attribute.



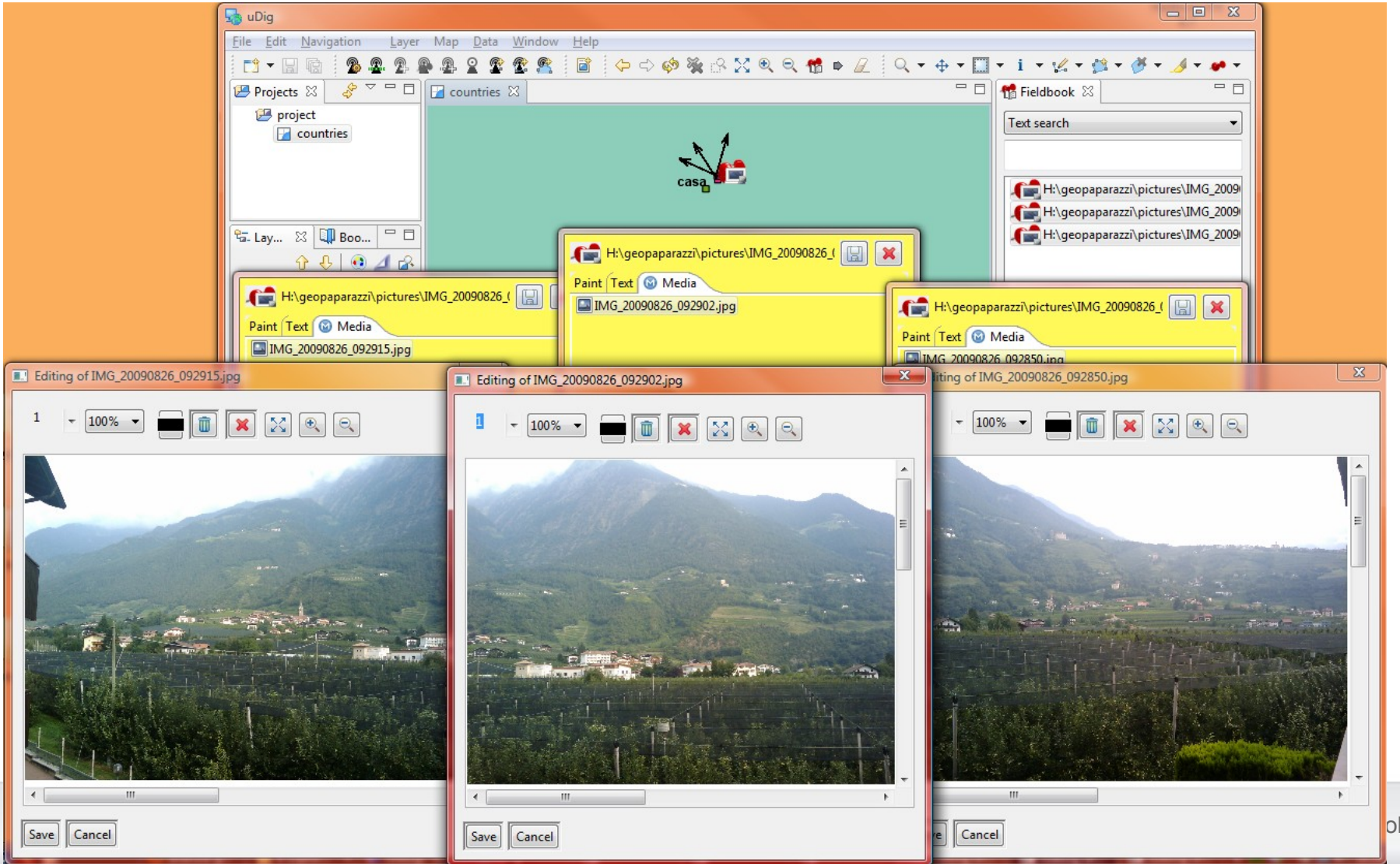
Part III: back in the office

Import Geopaparazzi data: Gpslogs are imported as two shapefiles, one with points and a timestamp attribute and one with lines and a start and end timestamp attribute.



Part III: back in the office

Import Geopaparazzi data: For every imported picture a geonote is created and the picture is stored inside the mediabox of the Geonote (the geonote has the orientation of the picture taken).



Part III: back in the office

RESULT

- updated and correct data to use for further processing
- a lot of information that can be persisted together with the final result of a further processing. In any moment it will be possible to review certain decisions made on teh base of interpretations done during the survey

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