



AQUASURVEY

A software to carry out surveys easily
using mobile devices

User Manual -Version 2.07

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Abstract:

The AQUASURVEY app is a new piece of software designed to help you collect your own data and organise your field campaigns. It brings you through all the necessary steps to collect your own data: from the design of the survey to the concrete collection of data using several mobile devices, and integrates the data collected to allow for their use in GIS or statistical software applications. The main added value is that this process does not necessarily need an Internet connection - the app includes several offline options so that you can overcome Internet connection problems during your field campaign.

This tool allows you to monitor and geo-reference your ongoing survey, and to integrate data collected by different surveyors. It can also produce customised graphs and statistics, which can provide an overview of your dataset in a printable report.

The AQUASURVEY app consists of an easy-to-use application with one component for use by desktops and one for Android devices, with the optional integration of the online GIS on www.aquaknow.net.

This open-source application, developed by the European Commission's Joint Research Centre and EuropeAid, is free of charge.

Revision History

Date	Version	Description	Author
01.07.2015	1.5.8	Editing and Final Revision version 1	Celine Dondeynaz, Gráinne Mulhern, Andrea Iervolino, Iban Amestoy
28.08	2.05	Update according to version 2.07 of Aquasurvey	Celine Dondeynaz

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Introduction

This document contains the User Manual for the release of the AQUASURVEY App (European Commission)

Purpose

The purpose of this document is to help the End User to use the AQUASURVEY software on both desktop computers and mobile devices.

About the Release

Technical overview of delivered software:

About	Version
Desktop version	<i>2.07</i>
Mobile version	<i>2.3</i>

USER MANUAL

I - DESKTOP APPLICATION: Organise your field work

1. Desktop App - First Run and Application Start

First Run. The First Run can take some time, as the application/software needs to prepare the data structure and folders (Fig. 1). When the application has started, the DASHBOARD screen of the Desktop Application is displayed (Fig. 2).



Figure 1: Start screen of AQUASURVEY.

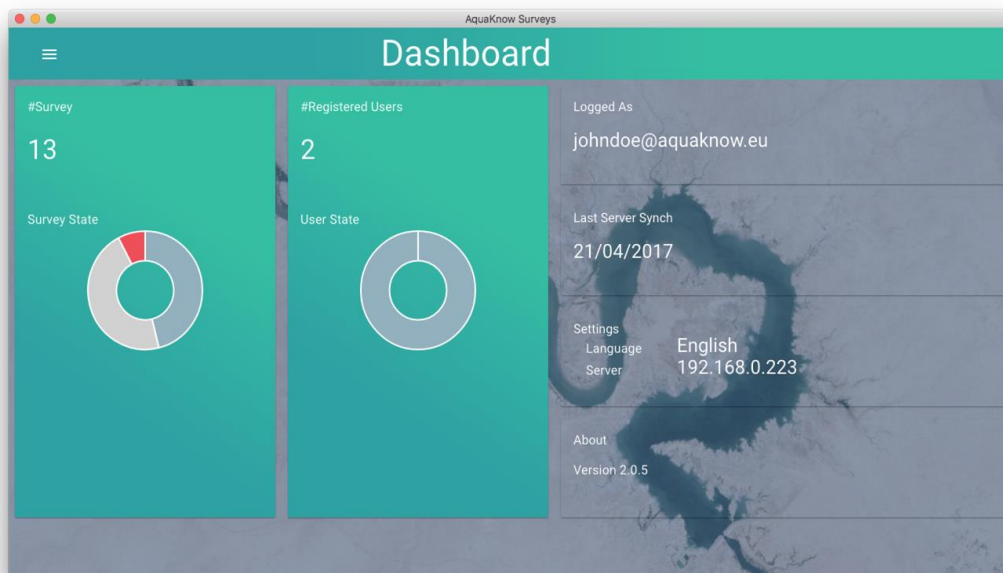


Figure 2: Main menu of AQUASURVEY - desktop component

2. Initial Settings – preparing the application

It is strongly recommended that you update ‘my settings’, by clicking the related button in the main menu.

Five types of settings/information are available:

- Language settings
- User settings
- Online service settings
- Global Administrative Areas (GADM) maps
- Backup and restore option
- Application information.

2.1. Language settings

This option allows the user to select the interface language as English, or Italian.

2.2. User settings

Define your user identification/connection details under the ‘user settings’ section. As you are setting up the desktop application, the user you define in this section is generally the person that will take the role of the survey coordinator. Checking the ‘Admin’ box enables the user to create, publish and delete surveys.

Please provide an ID and a valid email address (Fig. 3). These details will enable the user to retrieve/track results sent from mobile devices to the online server, access the users’ list, and identify the user as the author of forms/questionnaires created.

Figure 3: User settings screen

2.3. Internet service settings

In the editable field, insert the address of the online hosting service (domain or IP). This service allows the user to store surveys as backup – data is not sent directly to the desktop computer but is stored in the online buffer. The same applies to the list of users for each survey, and published standard surveys.

EXAMPLE: Test IP is 139.191.148.170.

An online service can be created by any institution following the manual for the installation of online services. Please download the online-services-installation files at <http://www.aquaknow.net/en/aquasurvey-software>

2.4. Setting GADM maps

The Global Administrative Areas (GADM) feature allows additional geographical administrative boundaries to be uploaded and stored in JSON files. The surveys/results will be displayed on the map (Section myprojects/browse results/mapview) using these geographical boundaries.

As GADM files require a large amount of disk space, they are not included in the installation package of the AQUASURVEY desktop application. Various file formats of boundary shapes by country can be downloaded from <http://www.gadm.org/>.

In order to ensure consistency between countries, it is recommended to upload only “level 2” GDAM files, as not all countries have the same levels of administrative organisation.

2.5. Option Backup/Restore

This option allows you to save all surveys and users created on the desktop application, clicking on backup. A zip file is created, that can be saved on USB key.

In case of need (crash of the hard disk etc...), you can reinstall your AQUASURVEY environment by clicking on “restore” and uploading the ZIP you saved. The form(s) and user(s) you created on another computer are now available.

3. FIRST STEP – Creating and Managing Users on desktop application.

In this section, create a user profile for each person that will collect on-the-field data using a mobile device. The number of user profiles should be equal to the number of field surveyors on your team.

The survey coordinator (user logged on desktop) can add and edit users’ data (Fig. 4), and import users from the online service (as set in ‘Online service settings’, see section 2.3). Only those users created by the survey coordinator are visible and can be imported (Fig. 5).

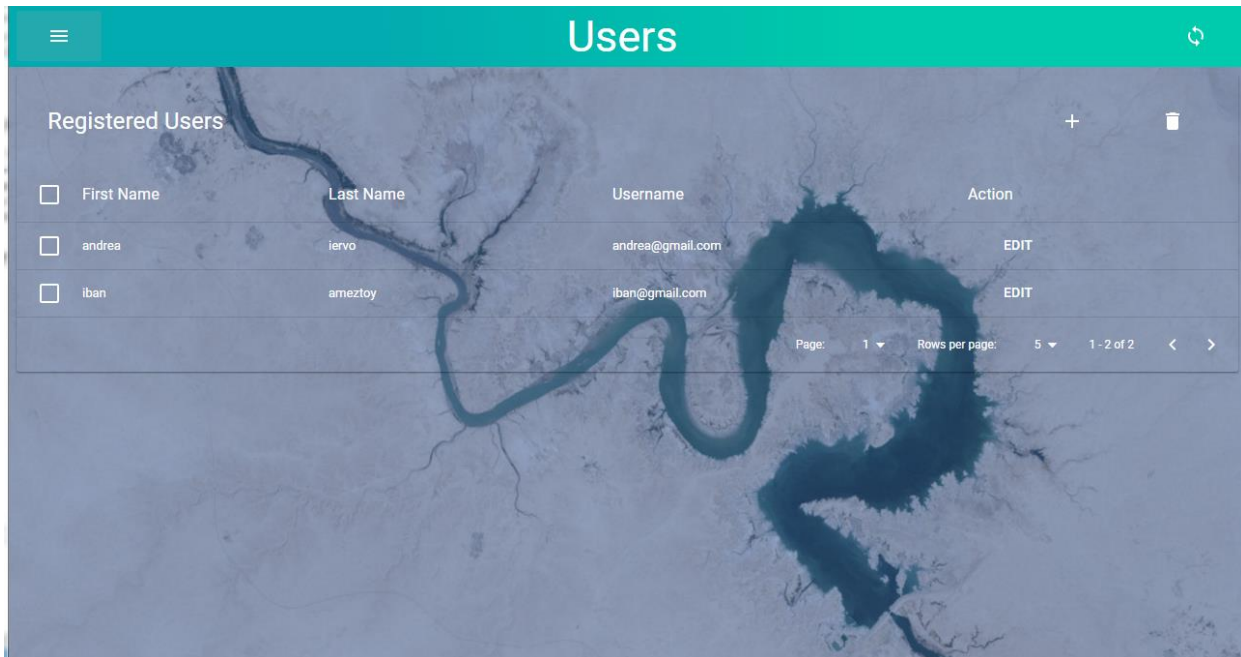



Figure 4: 'Users' screen

The users can be synchronised with the online service host (if any) clicking on  in the top-right corner.

If the desktop computer is offline or/and a particular user is not included in the list, the survey coordinator / Desktop User can add a new user as follows:

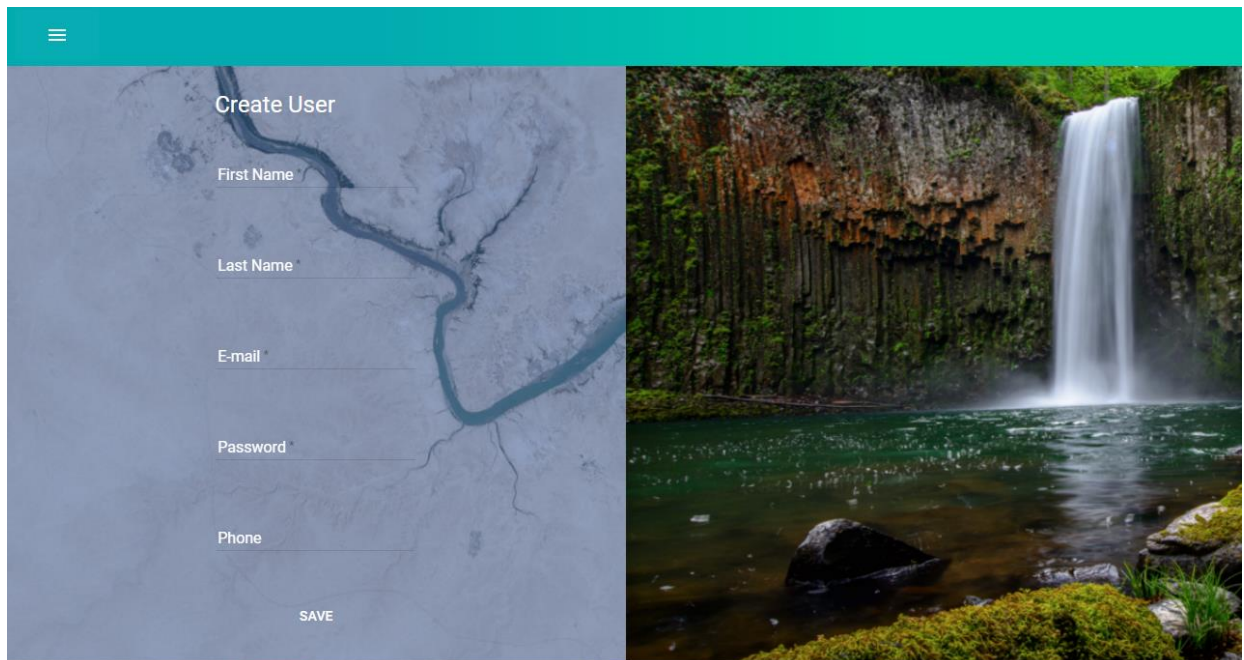




Figure 5: Add a user

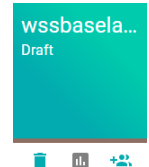
A user has to be created only once. The new user profiles are added to the coordinator's online list of users each time the desktop computer is online, by clicking on the  button.


4. SECOND STEP - Creating your Survey on the desktop application

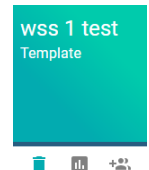
4.1. Select an option to create a new Form (Fig.6)

To create her/his questionnaire, the coordinator can:


- 1) design a new form from scratch, by clicking on 
- 2) take a previously created form and modify it to fit a new survey, by clicking on a saved draft, identifiable with the brown ribbon
- 3) select a standard survey from the list. A standard survey is a set of questions published on the online service by any admin user, identified with a blue ribbon.



By clicking on the  button, the desktop computer 1) downloads the standard surveys from the online service, and 2) only if the user is logged in as 'admin' – publishes the new standard surveys via the online service, and sends the request to delete a related standard survey that already exists.



As non-admin users can only delete standard surveys locally, this does not affect the list of standard surveys (template forms) published on the hosting server.

An Internet connection is required to download standard surveys. If not available, the updated list of standard surveys will be published the next time the Internet is available **and** the user clicks on the button synchronisation .

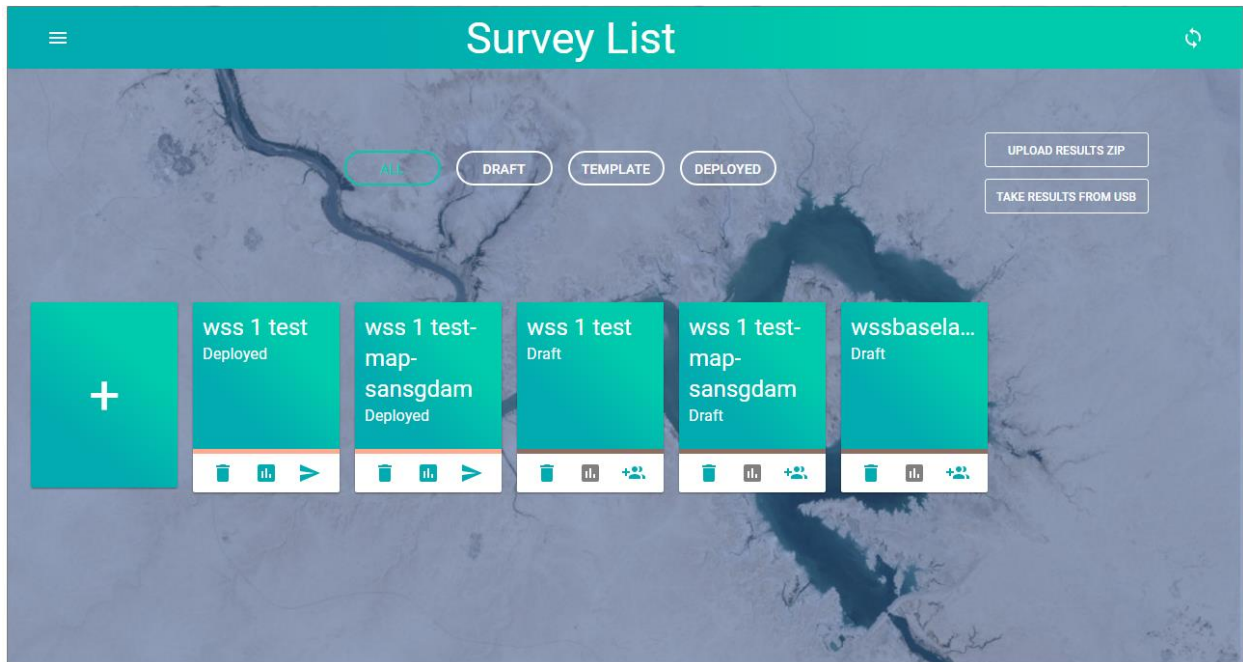


Figure 6: Creating a form for your survey – “create a survey” screen

4.2. Design and edit forms using the Form Editor (fig.7)

Regardless of the option selected to create your new survey, you will use the Form Editor tool:

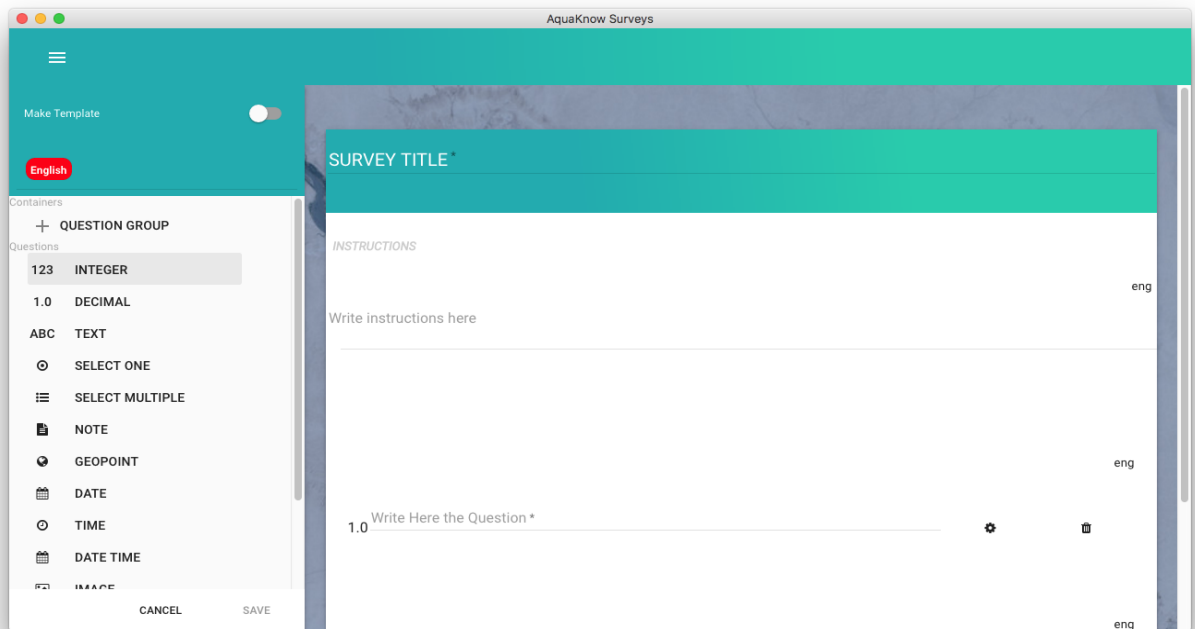
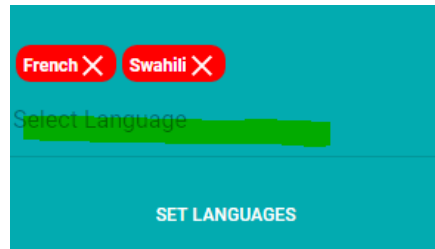


Figure 7: Form Editor tool

The first step is to provide your survey with a name (SURVEY TITLE) and choose one or several languages to be used during your field work. To view the extensive list of available languages (including dialects), start typing a language name, and suggestions of available languages will be displayed (intuitive text field).



It is therefore recommended to set the maximum number of languages at this stage, as the translation of the form in all selected languages is not compulsory to create afterward your project.

IMPORTANT: The related project will be created only in the language(s) for which the form is fully translated.

The screenshot below illustrates three important points to bear in mind when building/editing your form:

1. The language of the element of the form is visible on the right side: for ex “fre” for French , “swa” for Swahili. Click on the name on the language to switch language.
2. The editable field “instruction” is used to provide **initial instructions** for your field surveyor/team – This is **mandatory** for each language.
3. Several types of question call for the following answer formats: number (integer and decimal), text (abc), selecting from a list (single or multiple choice), location (geopoint), date, time, a form of media (image, audio, video) and barcode.

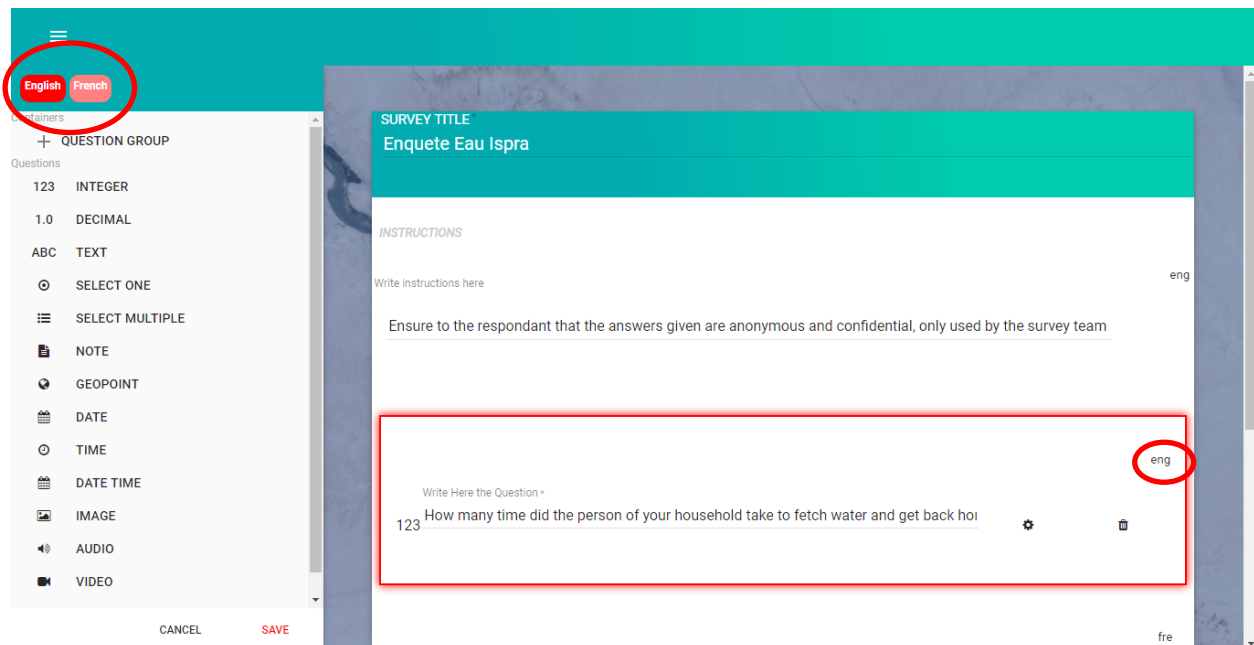



Figure 8: Fulfilling the form in several languages

For single and multiple choice questions, please insert the names of the different options clicking on the question parameters :

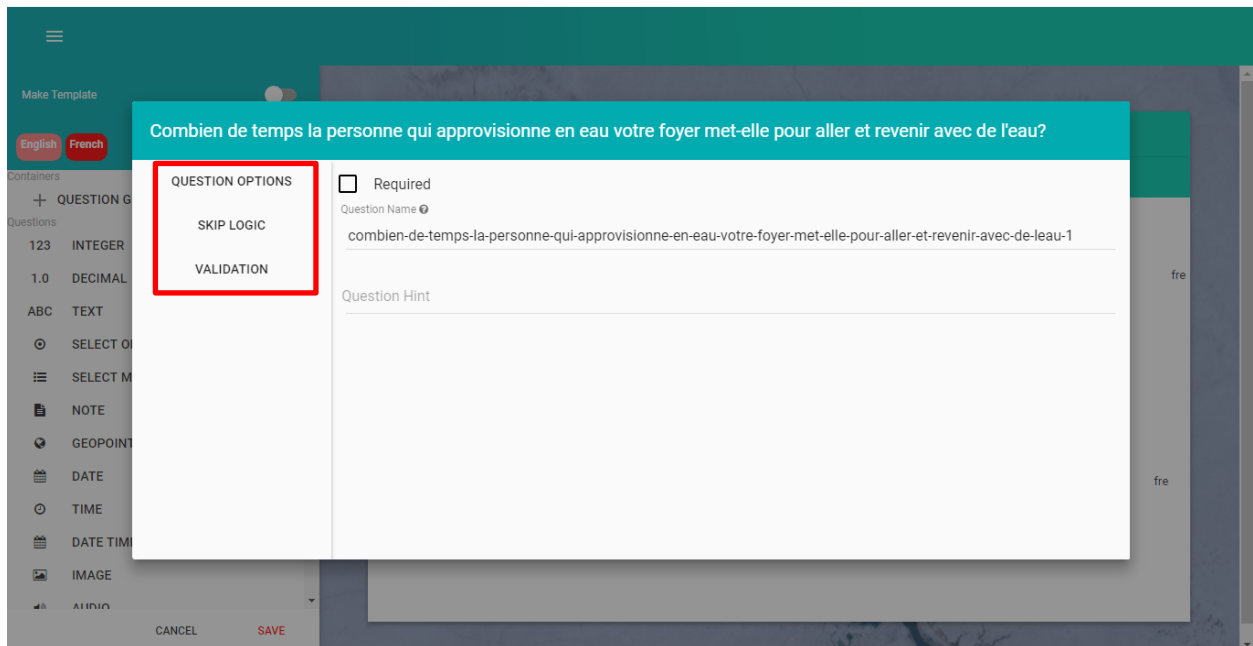


Figure 9: Single and multiple question completion- example

There are advanced options, click on the different elements on the left side (in red in Fig 9.) to parameter your question:

- **Hint:** Provide an explanation or more details to help the surveyor to select the most appropriate answer. E.g.: for the question “How long does it take you or a member of your family to fetch water?” the Hint could be” Consider the time to get to the water source, fetch water and get back home”.
- **Skip logic:** The skip logic defines which question will be displayed based on answers given to previous questions = criteria. In the 'skip logic' section, select one of the list of previous questions, select an operator (=, >, <...) and a possible answer to that question, which sets the criterion (the condition to be fulfilled for a certain question to be displayed). **If this criterion is met**, this question will be displayed when fulfilling the form. **If the criterion is not met**, this question will be skipped.
Example: “your-main-water-supply” = “Bottled water”
- **Validation** This section allows you to set a requirement to be fulfilled by the answer in order to proceed to next question.
Example: For a question for which there is only one answer, you can set a criteria “=” or “!=” to a text or a number

Groups of questions can be compiled by clicking on “+QUESTIONS GROUP”. This creates a container for questions with its own name and previously set options (hint, skip logic, etc.), which adds structure to your form.


TIPS:

- Change the automatic-given machine name for a smaller one. The machine name will be the name of the corresponding column in the database.
- Make your group of questions container before creating the question(s) belonging to this group.
- Do not forget to translate the options of the questions (in case of MCQ) in all languages

Note that it is not possible to **create a standard survey directly from an existing standard survey**. You should first change the title and then save it as a new template. This is to avoid overwriting an existing standard survey. The “Save” option is visible to all users, but if you click in “settings” the check box “admin”, the saved form can be saved as template (with a blue ribbon). Both ‘Save’ buttons are disabled until the user fulfils all mandatory fields required to generate a valid form.

When editing an existing draft, you can save it either with the same name/title, which will overwrite the latest version, or change its name/title to create a copy, thereby creating a new draft.

5. **THIRD STEP - Deploying your Project: Setting online or offline maps, Assigning users, and Creating packages on the desktop application**

After creating your form, you can deploy a project by going into the “Survey List” menu and clicking on “”. This will launch a process whereby you can (fig.10):

- 1) select your field team from among your users;
- 2) define your working area using online maps or uploading Map tiles;
- 3) assign areas or points to be visited;
- 4) create packages for each field surveyor/user, which will be transferred to the mobile devices.

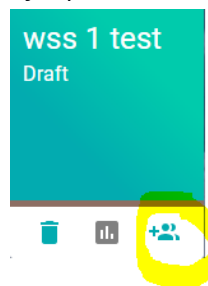



Figure 10: “My survey list” menu and “Deploy as new project” button

NOTE that you can create several projects from one draft survey. However, it is recommended to save each form with a different name, and to use a separate form for each new project deployed. This is to avoid making mistakes as a result of identical project names.

5.1. Selecting your field team

During the deployment process, you must select users from within the list of users you created during step 1. If a surveyor is missing from the list, please go back to the “Users” menu (see section 3).

After clicking on , please select the option of deployment (Fig. 11).

Option 1: “WITH MAP” side

By clicking on the “WITH MAP” button, packages including 1) offline maps and 2) geographical destinations will be assigned to each surveyor. The desktop computer must be online to download maps of your working area from Open Street Maps, Google maps, etc., or a zip file with map tiles must be uploaded (this needs to be processed beforehand with external tools: Map Tiler, Mobile Atlas Creator or gdal2tiles, see Appendix A).

Option 2: “ WITHOUT MAP” side

If you have no Internet connection or raster maps, and you are not able to get Map tiles of your working area, you can still collect data using the form you created clicking on “Without map” side.

This option processes the packages without using maps, and thus contains no destinations for surveyors. This has the advantage of allowing users to collect data through an IT tool that can integrate them into one dataset and limits read/write errors. The only extra items each surveyor would need would be a list of destinations and possibly a paper map. While this is the fastest way to create a project, not all of the GIS data collected can be visually displayed.

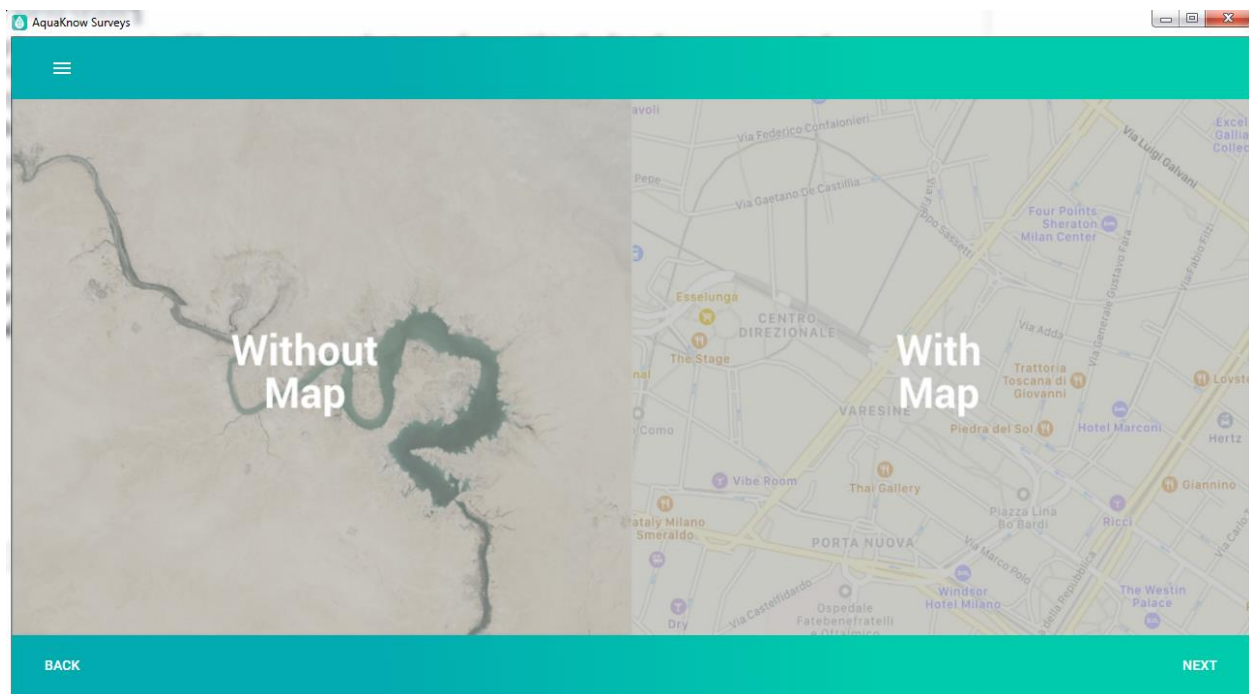



Figure 11: Selecting the mode of deployment

5.2 Setting your working area

By selecting the first option, “WITH MAP”, you can display different types of maps (Figs. 12 and 13). Select a base layer from the top-right corner of the map widget.

If you are offline, no map will be visible until you upload a zip file previously processed with Map Tiles (see Appendix A). Once the tiles are uploaded, you can view the maps using the map widget. If the map does not display your **working area**, **zoom out using the “-” minus button several times, in order to display a wider area.**

In both cases, once you can visualise your working area (one for all surveyors), draw a rectangle ( icon on the left-hand menu) over your tiled area to select your working area.

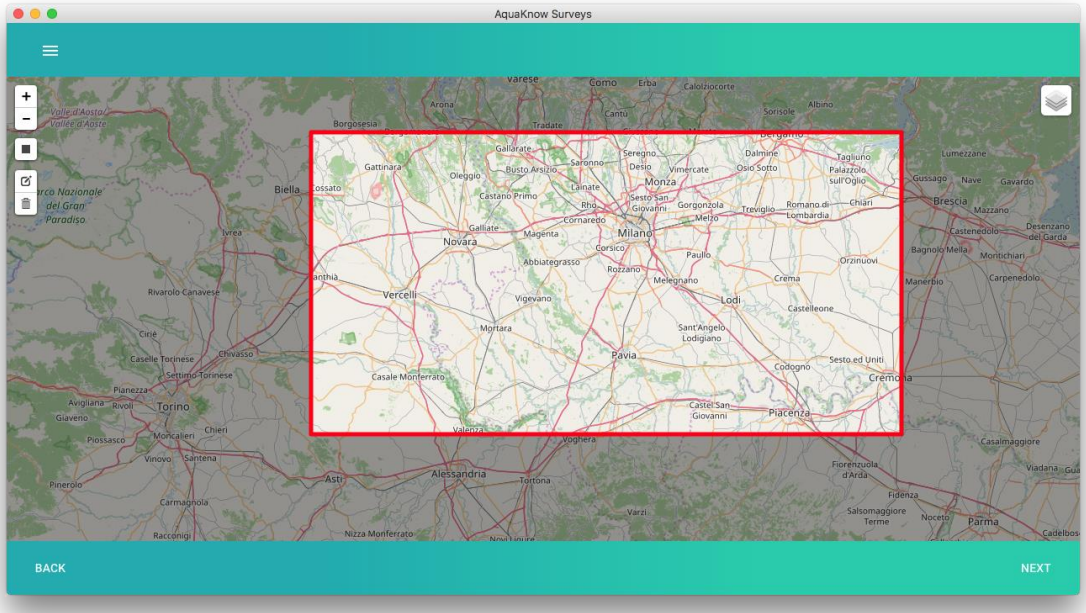


Figure 12: Setting your working area – Google terrain

TIP: select the smaller possible your working area

Then, select all the users from your list who will make the field campaign and assign to each of them place to visit.

5.3 Assigning destinations/places to visit to each surveyor (Fig 13 and 14)

Once the working area has been selected, you must define and list the locations that each member of your field team will survey. To do so, click on the member's name within the user list (below the Map) and draw points or areas to define locations (smaller rectangle, polygon, etc. available to the left of the map widget) that the selected surveyor will survey.

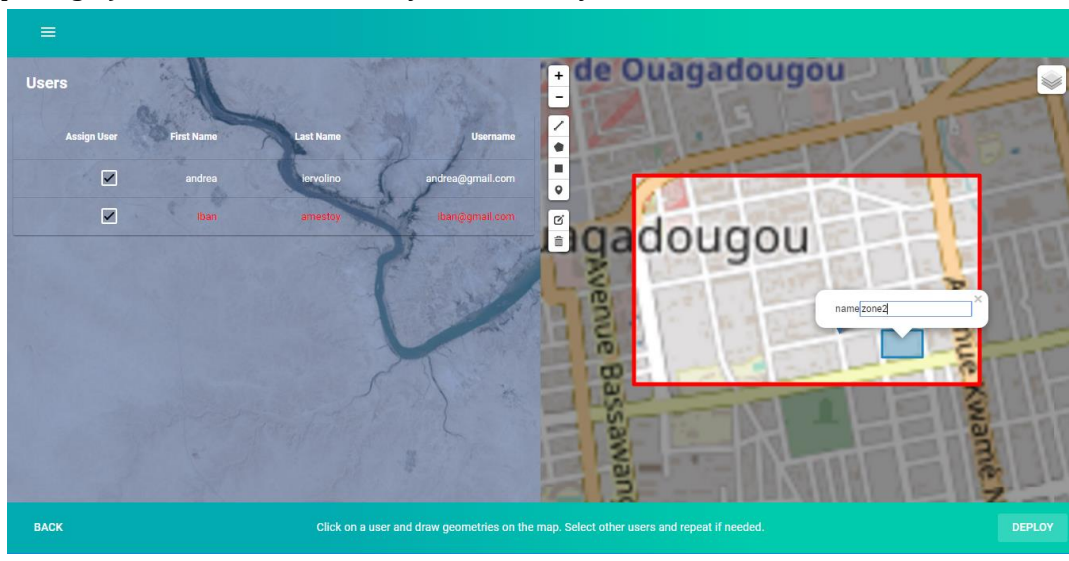


Figure 13: Assigning place to visit to each user

The name in red in the list of user is the one you are drawing geometries (in Fig 13 zone 2 is associated to user Iban).

It is strongly advised to assign a name to each location that you have selected. An editable text field will appear where you can input this location name (Fig13).

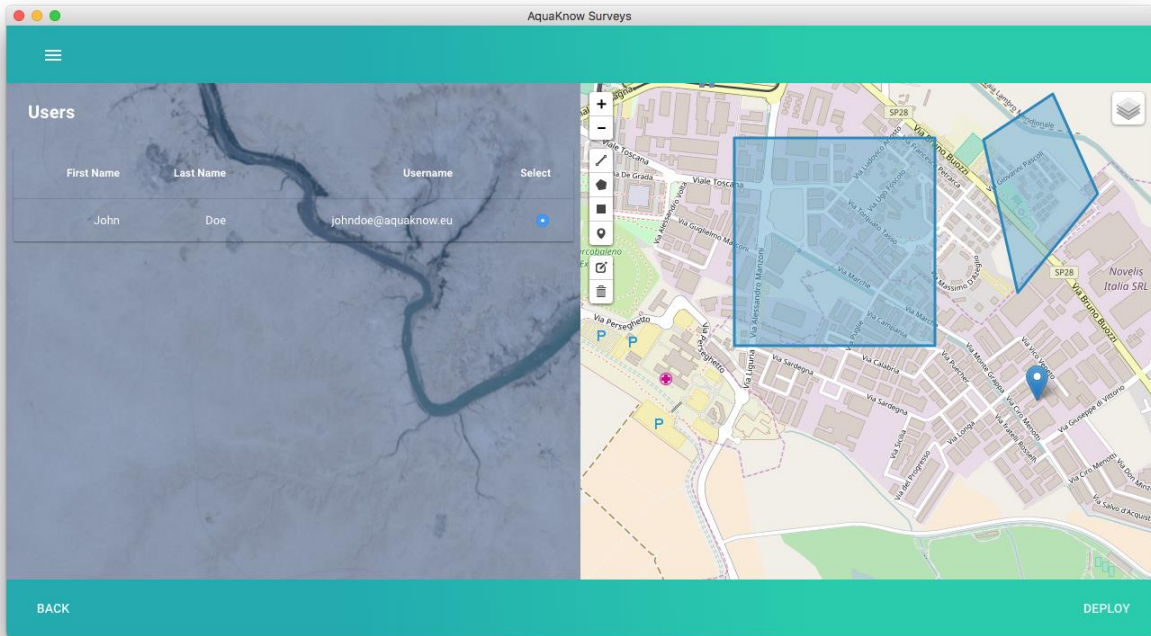


Figure 14: Setting the list of areas/places where John Doe has to go and carry out a survey

CONGRATULATIONS, your new survey project is completed and successfully processed within the Desktop component! You can now provide each surveyor of your field team with his/her package.

II-MOBILE APPLICATION – from getting forms to sending back the collected results

1.Connecting desktop and mobile devices

AQUASURVEY provides several online and offline options to transfer the necessary package from your desktop computer to the mobile device for the surveyor to collect data. After the data have been collected, the results are sent back to the desktop application for integration with data collected by other surveyor using the same connectivity options.

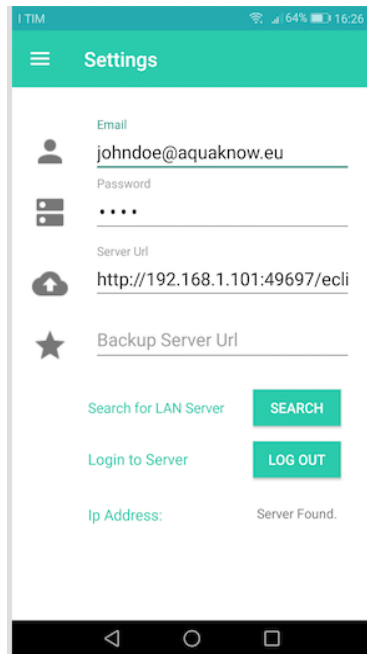
OPTION 1: Wi-Fi, tethering options

This option can involve either the synchronisation of the mobile device with the server (using the online service) through an Internet connection, or the synchronisation between the desktop and the mobile devices using a local Wi-Fi.

In order to properly download surveys using an Internet connection (Transmission Control Protocol-TPC connection), your Server and Mobile Phone must be connected to the same network.

There are at least two ways in which this can be done:

- **Online:** Connect your PC and Mobile device to a standard router with a DHCP server protocol.



- **Tethering mode:** Switch on your mobile hotspot/tethering on Android device. This converts your mobile phone into a router using DHCP. The option to be activated for mobile hotspot/tethering should be available in the 'Wireless & network' section of the System Options menu. You can now connect your PC to your mobile hotspot.

In the "Settings" menu (Fig 15), under the condition that one of the above connectivity options is functional and that the mobile and desktop devices are on the same network (as indicated by the field named DEVICE IP on the first line on top of the screen) click "Search for LAN server".

The mobile App then starts to search for your desktop computer in the local network. This can take some time.

When the process is completed, the message "Server Found" will be displayed and a new URL corresponding to your Desktop application will appear in the URL field.

Advanced users can manually change this IP address in the URL field if, for example, more than one desktop application is working on the same network.

Figure 15: Login & Options screen on mobile component

Configuration of the online service to send results

A Backup Server can be used to send the results collected by mobile devices back to the Desktop, using the online service as a buffer to store the results. This option is useful if your mobile device has an Internet connection, and you are far away from the Survey Coordinator's desktop.

- ⇒ Proper Backup Server settings look like: http://<domain_or_IP_of_online_services_host>:49697/eclipse-aggregate-MySQL. For test purposes, the online service uses the address: "http:// 139.191.148.170:49697/eclipse-aggregate-MySQL",

- ⇒ Troubleshooting: if these test settings do not work, please ask your Local Administrator to make sure that the TCP ports 8080, 49697 and 30316 are open in your Windows environment as well as in your local Wi-Fi network.

What to do if...

If the message “server NOT found” is displayed when using “search for LAN server” feature, please check that:

- 1) your AQUASURVEY desktop application is running.
- 2) your mobile device is connected to the same network as the Desktop (selecting the same Wi-Fi).
- 3) the type of network settings within your Windows (the network types under Windows 8 are "Private" and "Public". In previous versions of Windows, the networks are named "Home, Corporate, Public")

The “Search for LAN server” function will not work if your Windows network is set to "Public Network", but will work if it is set to "Private network" or Home network".

How to change your network type:

- 1) Set a password in the ‘mobile hotspot / tethering’ settings; open networks are assumed to be public
- 2) Select the type of network

A: If you use Windows 7 and older: in the "Network and Sharing Centre" section of the “Control Panel” menu, set the network type to "Home".

B: if you use Windows 8 and later: a) select the type "Private"; b) in the network settings, set "Find computers, devices, and content and automatically establishes a connection ..." to ON/Enabled. These options can be found in the "Network and Sharing Centre" section of the “Control Panel” menu.

NOTE: Some local networks and office networks may have security policies that do not allow some HTTP applications to work on a port other than port 80. Our application currently works on port: 49697. If you are unsure or if this port is blocked on your local network, please contact your network administrator.

WORK AROUND for advanced users: If you know the IP of your desktop, you can start the mobile app using the android system button menu to access “general settings”, then “platform settings”, and setting the address to <http://ipOfYourDesktop:8080/eclipse-aggregate-mysql> (inserting your own IP address).

OPTION 2: USB cable / manual file transfer synchronisation

This option may appear to be a more complicated option for the user but it is a robust way of transferring files that overcomes all connectivity problems, and it also can be used to migrate packages and results offline.

The USB option is optimised for ease of use, and solves some issues on new Android devices that are known to be affected by MTP file management bugs.

OPTION 3: USB cable / automatic file transfer synchronization option

To make this option available, the following elements need to be installed:

- Install ADB drivers: <https://adb.clockworkmod.com> . If that doesn't work, try installing your manufacturer's drivers.

- Enable the DEBUGGING mode on your phone
- Set your USB mode to PTP

2. Transferring packages from a desktop computer to a mobile device

After the deployment on the desktop application, you come to the following screen which allows you to manage your deployed projects.

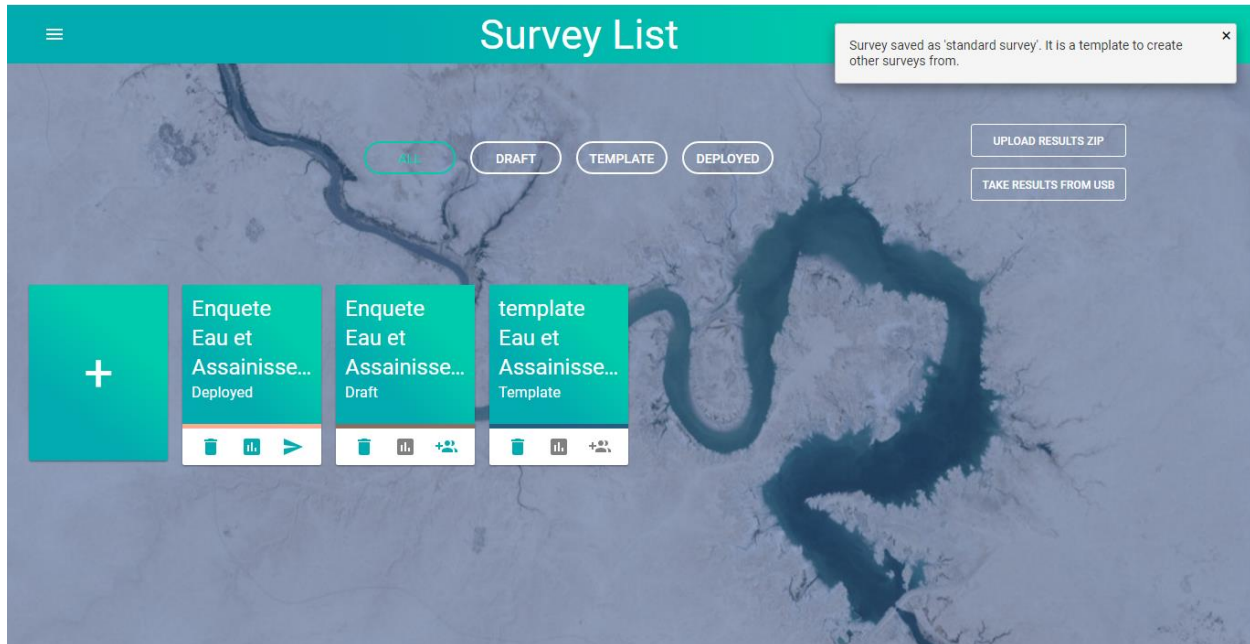


Figure 16: My survey List

2.1. Getting a package through a Wi-Fi/tethering connection

From the “New FORM” menu, the surveyor can download her/his package(s) by clicking on “NEW” (Fig. 19) – This only works if the connection to the desktop using **Wi-Fi, tethering options has been successful** (refer to Part I - section 1).

If the process has been completed correctly, the following message is displayed: "Finished scanning. All forms loaded".

On the mobile, packages already downloaded are displayed in a Project list:

=> Clicking on the “name” of the form launches the display of the related map

=> Clicking on the “X” icon deletes a form from the list in the local memory.

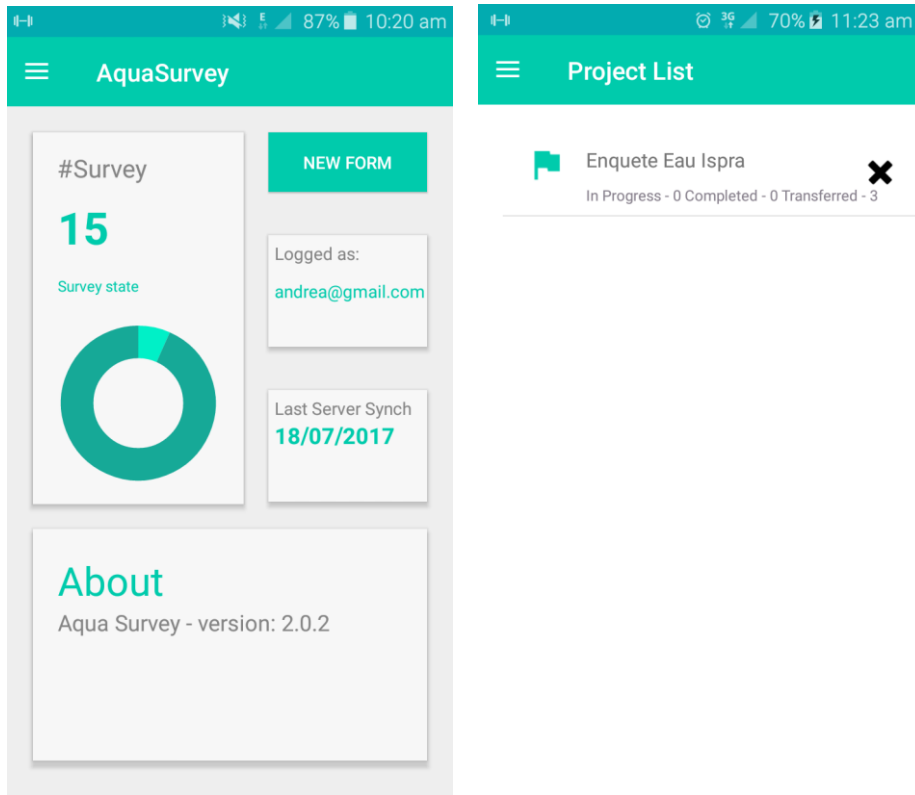
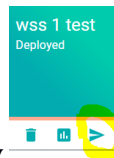


Figure 17: Download packages via WIFI/Tethering mode

2.2 Getting a package using USB Cable manually

Please follow the next nine steps:

- 1) In the Desktop Application, go to the “Survey List” menu and access the list of deployed survey



- 2) Click on the button of the appropriate survey
- 3) From the drop-down list, select the user you need. This opens an explorer window where you can save a zip file on your disk (that contains the xml form file and associated maps/locations). **UNZIP THIS FILE.** (Fig. 18 et 19)

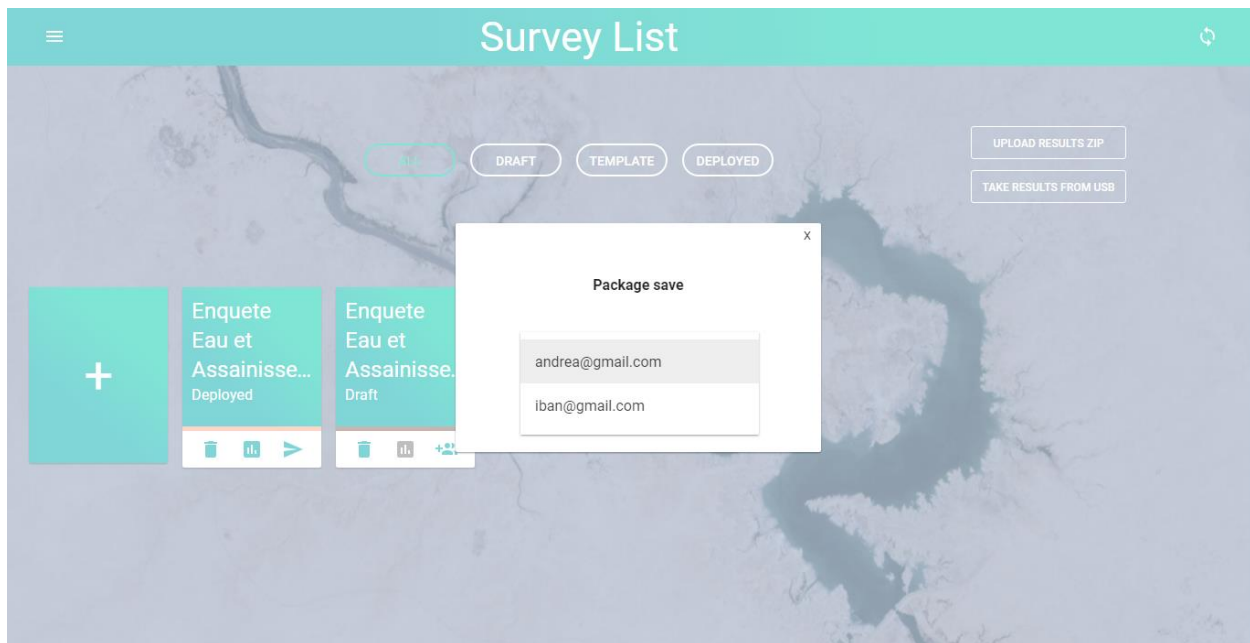


Figure 18: Select the user to whose mobile device you want the package to be transferred

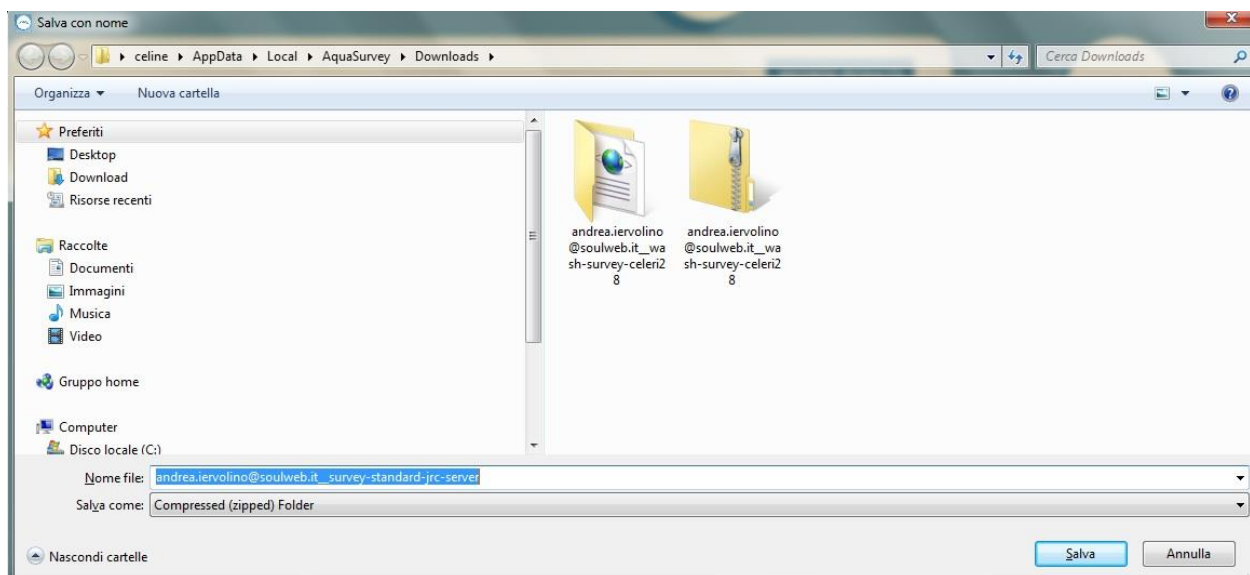
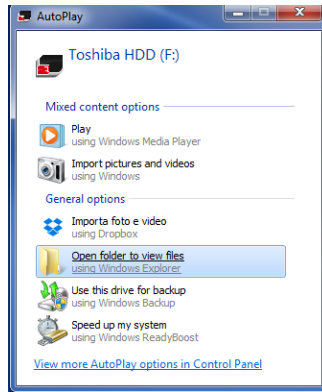
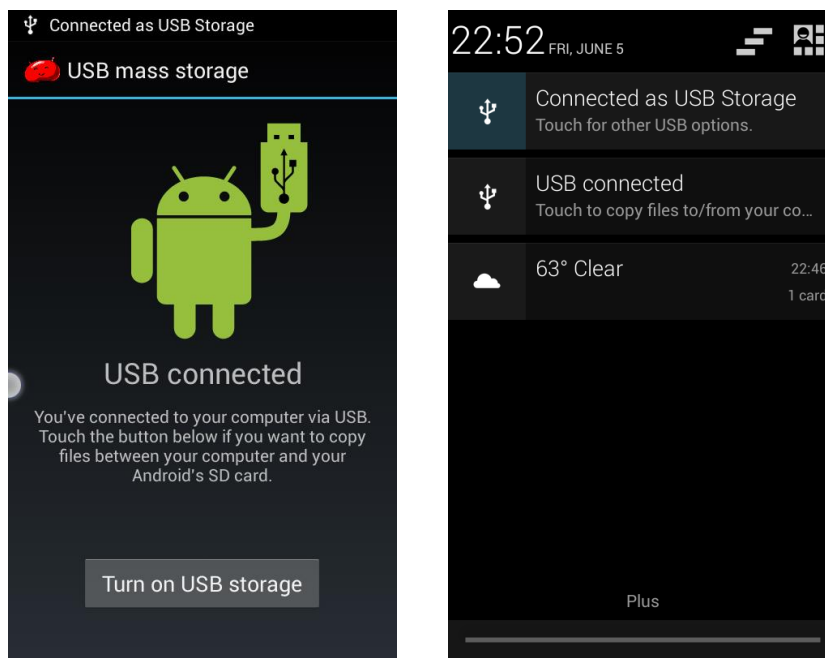


Figure 19: Save the package on the desktop disk and unzip it

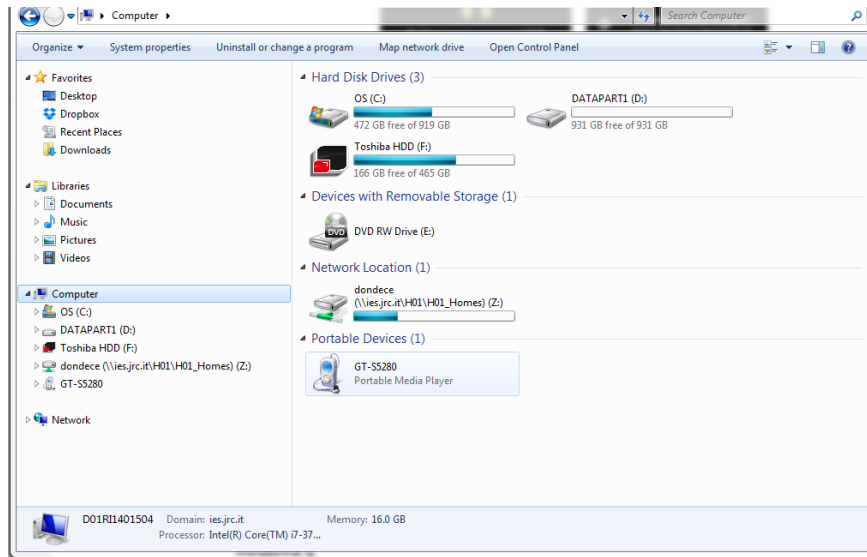
- 4) Connect your Android device to the desktop computer with a USB cable. From the AutoPlay menu, select "Open folder to view files":



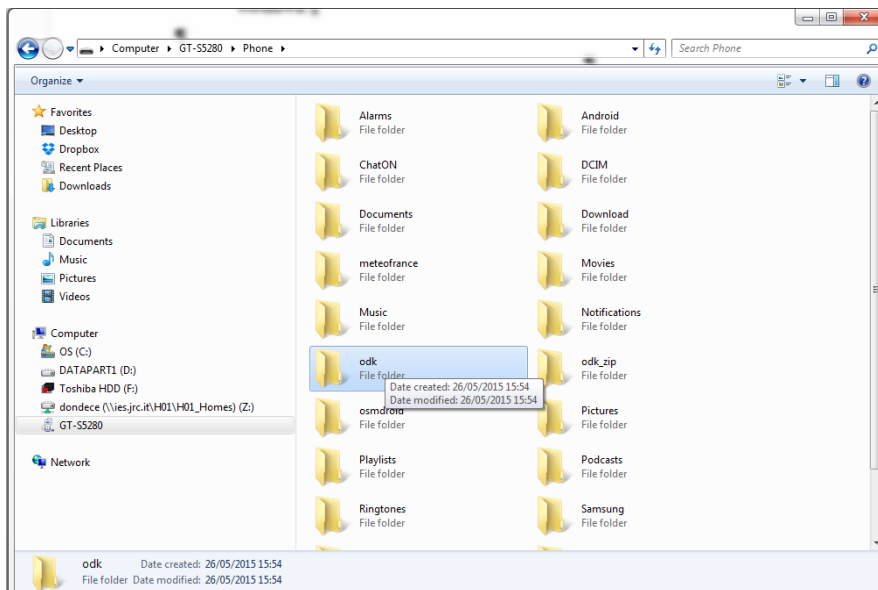
If nothing happens, please check whether your phone requires your permission to connect in USB mass storage mode.



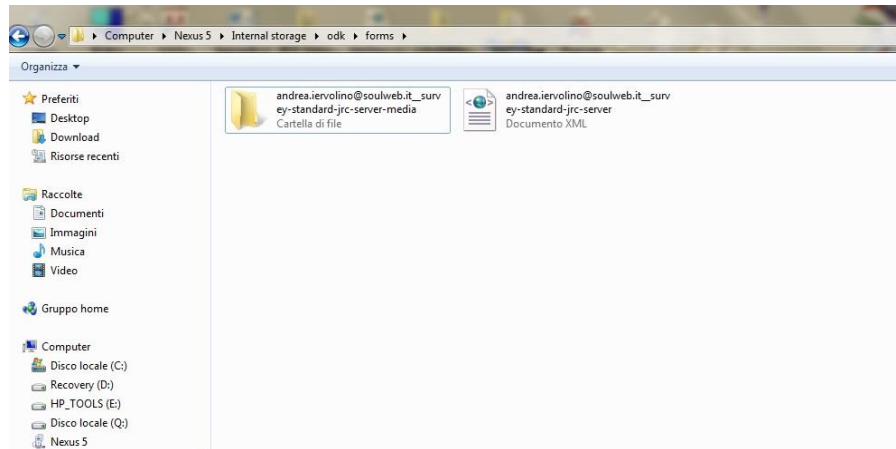
If you still cannot explore the device files from the desktop explorer, open a windows explorer, and then click on your device or mass storage.



- 5) Find the "odk" Directory. It is quite common for mobile devices to have more than one main storage disk or an additional SD card. Please check both external drives that appear in your desktop explorer.



- 6) Open the "odk" folder, and copy your entire unzipped content file into the "forms" sub-folder (form xml file and folder with the same name appended with "-media").



7) Remember to unplug your device safely

This completes the steps to be carried out on the desktop computer.

8) Open AQUASURVEY app on your mobile device

9) Click on “Project list”. Check the form list stored in the mobile - if a package file with the new form has been correctly transferred, your new survey should be displayed.

2.3 Getting a package using USB Cable automatically

This option assumes that the ADB drivers are installed on the desktop (see section Part II – Option 3) Once done, this option allows to move a package automatically to a mobile device when an internet connection is not available.

1) 1 Go to Survey List

2) Click on the chosen draft form

3) Select the User and click on TRANSFER USB.

4) Remember to unplug your device safely

This completes the steps to be carried out on the desktop computer.

5) Open AQUASURVEY app on your mobile device

6) Click on “Project list”. Check the form list stored in the mobile - if a package file with the new form has been correctly transferred, your new survey should be displayed.

3.Navigation and managing destinations

Clicking the “name” of the survey leads to a map with the geographical information about the surveyor’s tasks and destinations. Three tabs on the top of screen provide access to

“Map”, “Stats”, “List” (Fig.20)

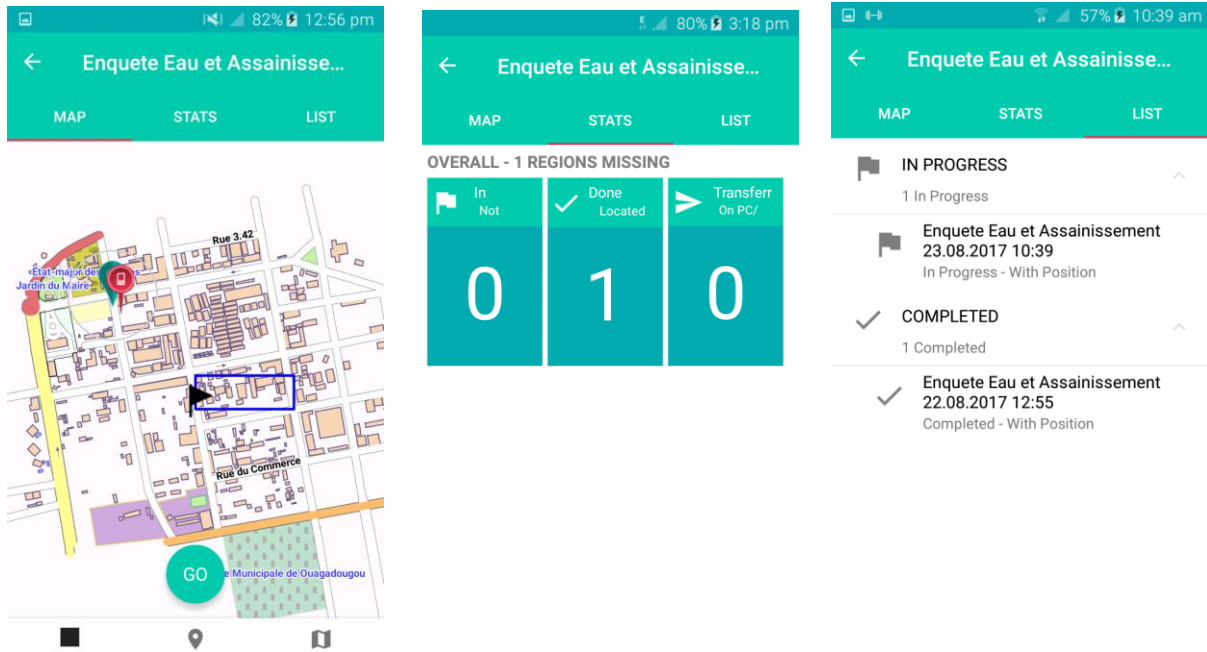





Figure 20: Main screen of the mobile application

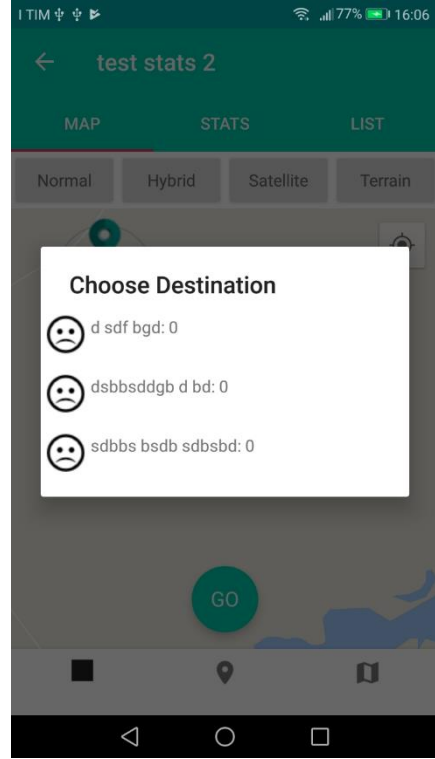
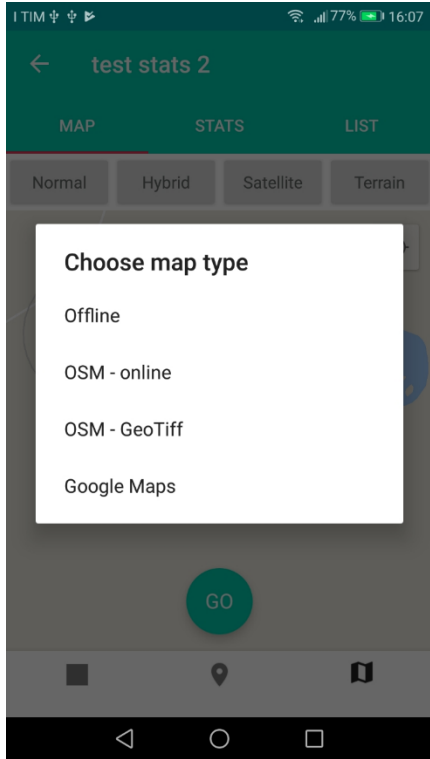
The three buttons at the bottom of the screen represent (from left to right):

-  “Destinations” (assigned to the user)
-  “Locate me”
-  “Switch base map layer”

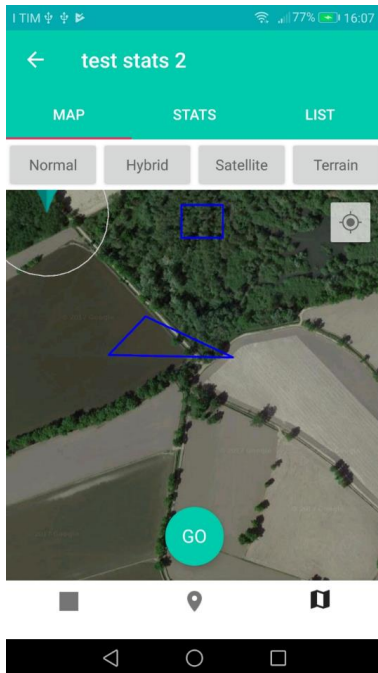


Click on  to initiate to fulfill a form.

On the screens below, you can choose your destinations (left screen) and the base map layer (right screen).



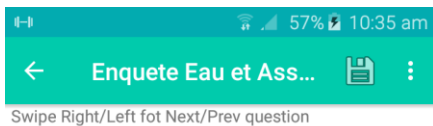
On maps, destinations are represented by blue polygons and green icons (which are numbered with the associated number displayed in the destination list). The places visited when collecting answers are indicated with red icons. The destination currently chosen is additionally marked by a flag icon. For the osm-online base map option, a red line shows the shortest distance between the user's current location and the destination selected.



The availability of map layers depends on the processing of the packages- if they were built using OSM, Map Tiles (geotiff) or without map. If connected to the Internet, the surveyor can check his/her location on the online map.

The screen on the left shows three additional buttons ("Map", "Satellite" and "Terrain") for each type of Google map available.

4. Collecting the answers fulfilling a form



instruction for surveyor

Assurer le repondant que ces responses sont anonymes et confidentielles, utilisees uniquement par l'equipe d'analyse.

This step is user friendly and easy to complete. Each form contains mandatory instructions for the surveyor at the beginning and mandatory geotag question (to get the geo-reference of the location at which the form is collected) at the end. The form is displayed according to the template design within the desktop application (refer to part I, section 4)

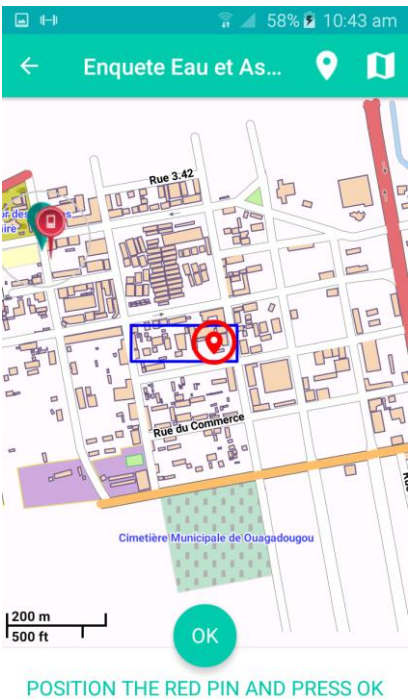
The progress bar at the bottom of the screen is filled according to the number of questions answered. Some questions are skipped if this was defined in the skip logic during the design phase of the form (desktop application).

If the survey coordinator has set a validation condition (e.g. the value cannot be 0) to a question and this condition is not met, an alert message will be displayed. Until the condition has been met, the form will not proceed to the next question.


If you have planned to collect a bar code (for instance to identify a water sample), please note that you need to install a barcode scanner and voice recording service for Android. Apps providing such services can be found in the Google Play Store.

To change the language of the form (assuming you have set more than one language during the design phase), click on the three vertical dots in the top-right corner of the screen, and select the appropriate language. On some older phones, this menu button may appear on the bottom sidebar, next to the Android system 'home' button.

If the option for changing the language is not displayed, this means that the form is only available in one language.



The screenshot to the left is of the screen whereby the surveyor can set a latitude / longitude localisation to the form (geotag question). There are two options:

⇒ The  button uses the GPS or network localisation feature to provide the coordinates and click record location when the accuracy of the measure is sufficient. This can take up to 10 minutes, depending on whether it uses GPS, or “GPS cold start”.

⇒ If automatic localisation is not available or not enough accurate, the surveyor can marked his/her position directly on the map using the “Mark Location” button. When the map appears, please mark your location with one short but strong click on the screen. A black marker indicates the selected position. If it is incorrect, touch the screen again and confirm the new position.

5. Managing results within “List” tab

In this version, the management of all results (forms that the surveyor has completed or has started to complete) on one screen with two tabs :“Stats” and “list”. The “Stats” gives an overview of the work done with the number of completed, uncompleted and transferred forms. Tab “list” is where the surveyor send out the results to the desktop for integration.

From the “List” tab, the user can select all or some of the surveys in the list and indicate how they will be pushed to the coordinator’s desktop application. “Send to Server” has three options:

- **Main** – the results will be sent directly to the desktop over a Wi-Fi connection (if configured correctly).
- **Backup** – the results will be sent to the online storage system from which they can be pulled into the desktop application (the survey coordinator needs to have a unique user ID to access the results).
- **Zip** – a zip file containing the selected results will be generated in the odk_zip folder of the mobile device; the results are not actually “sent”, but the zip file can be uploaded to the desktop application using a USB cable (see below).

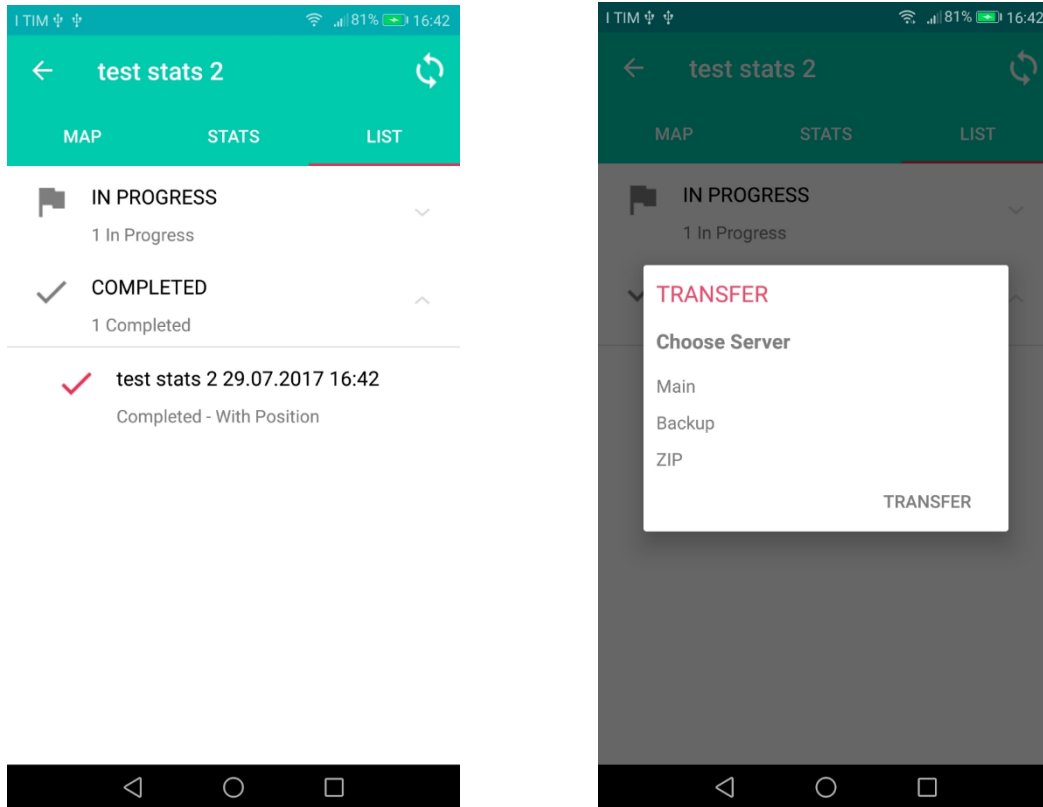


Figure 21: send back the results to the desktop

HOW TO transfer results to the desktop application using a USB cable

This option has been redesigned and more developed towards an efficient use and solves of problems on new Android devices affected by known MTP file management bug. As a great improvement, the Upload Results feature (section “browse results” in “my projects” menu of desktop application) requires a zip file including many results. This zip file is generated by the mobile app to facilitate the transfer of files from mobile to desktop application => under COMPLETED tabs in “edit forms” menu.

1. Click “Send to server”, and select “zip”. Connect your mobile to the desktop computer.
2. Look for the "odk_zip" folder on your mobile device, and select your zip file.
3. Transfer the selected zip file to your desktop computer.
4. On your desktop computer, go to “My Projects” and click "Upload results" to the right of the list of projects.
5. Find and open the zip file you have copied on your desktop disk. The file is uploaded when you click “open”. The results uploaded will be those found in the zip file. Any surveys with the same name that have already been uploaded will be overwritten. To avoid this, please rename the files before transferring – you can check the total number of collected results using the “Monitor Work” feature.

NOTE: In an online transfer mode, you cannot upload the same results twice (the upload will occur,

and surveys that are already uploaded survey will be skipped), or upload the results of surveys that are not available in “my projects” list.

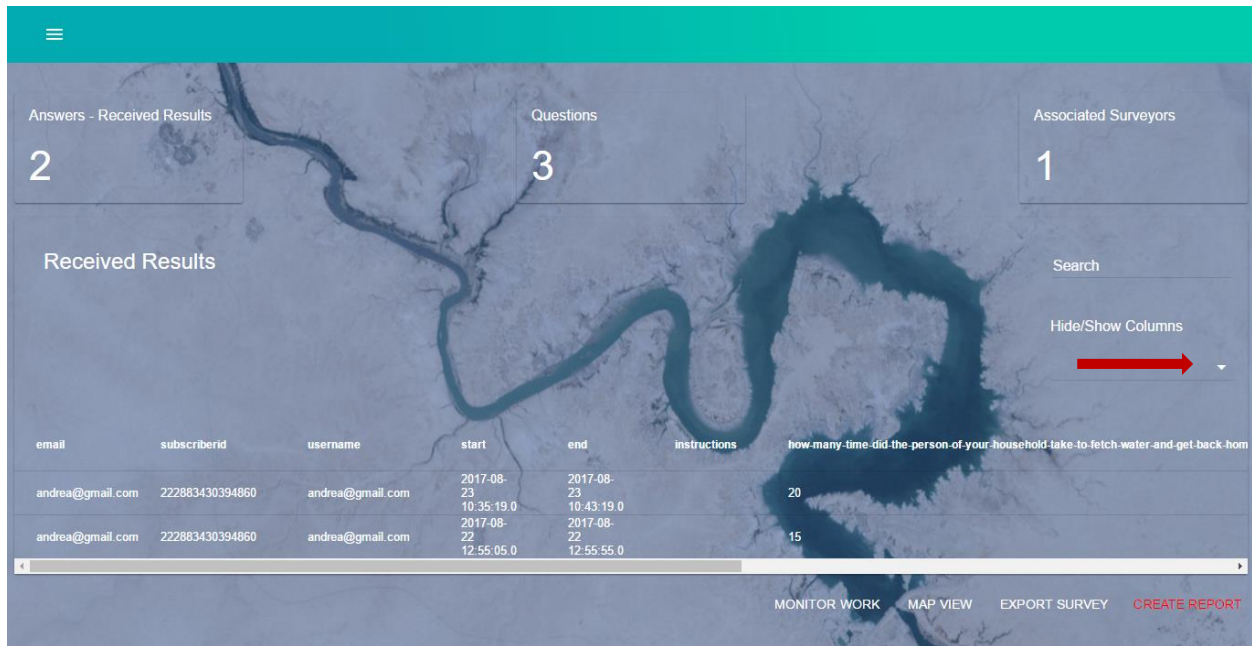
6. Click "Upload". After a successful upload, you can review and make preliminary statistics and reports of your results by clicking “Browse Results”.

6. *Browsing collected results.*

Click on  of the selected deployed survey to explore your data in the “Survey list”.

6.1. Table view

The table view displays your raw data. Select the columns you wish to display.



email	subscriberid	username	start	end	instructions	how many time did the person of your household take to fetch water and get back hom
andrea@gmail.com	222883430394860	andrea@gmail.com	2017-08-23 10:35:19.0	2017-08-23 10:43:19.0		20
andrea@gmail.com	222883430394860	andrea@gmail.com	2017-08-22 12:55:05.0	2017-08-22 12:55:55.0		15

Figure 22: Select the columns you wish to display

6.2. Map View

Tick the check box” points to see the location of each form collected

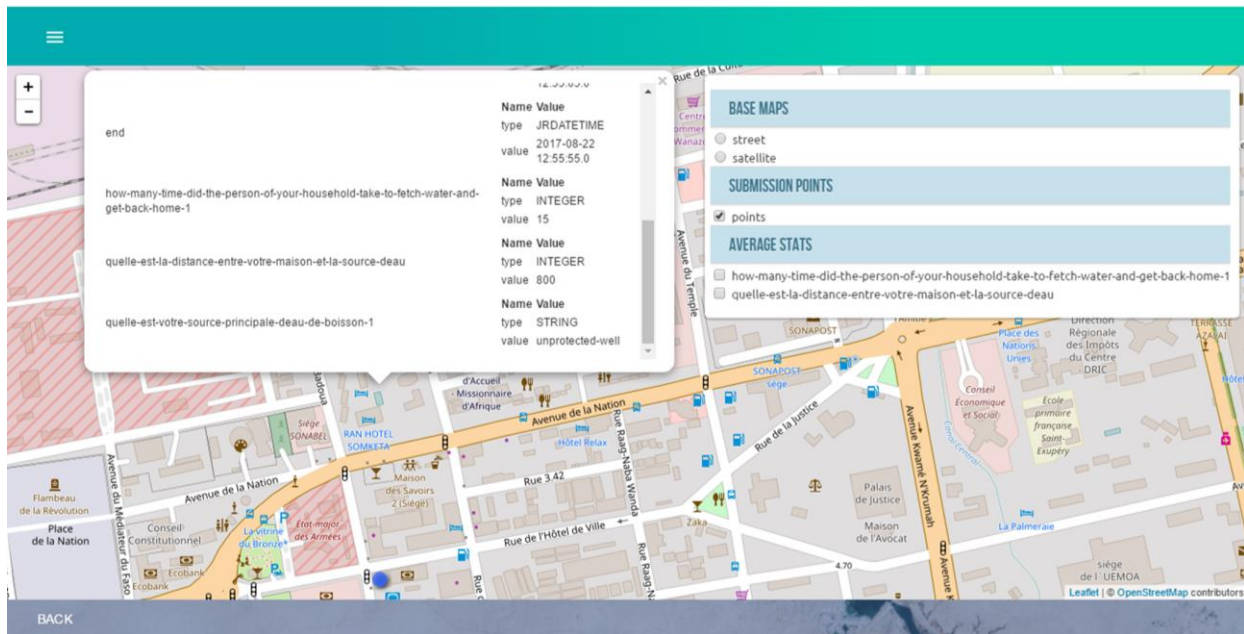


Figure 23: Map view of your survey data

Several features are available in this view:

- Select your base maps (street/satellite view)
- The blue dots show where surveys has been carried out (checking the box “points” in the right-hand side menu)
- Clicking on the icon, a pop-up window shows the values given for each variable of your form for this specific area.

6.4 Export Surveys

This process can take some time. The export files will be visible when the windows explorer opens at the location where the files are stored; Programmi(*86)\Aquasurvey\reports.

The folder with the project name (in this exemple “enquête-eau-et-assinissement) contains subfolders with the project name and the date of generation– each subfolder contains results in csv and shp formats, and a folder with media elements. Csv and dbf inside shp contain relative paths to files in the media folder.

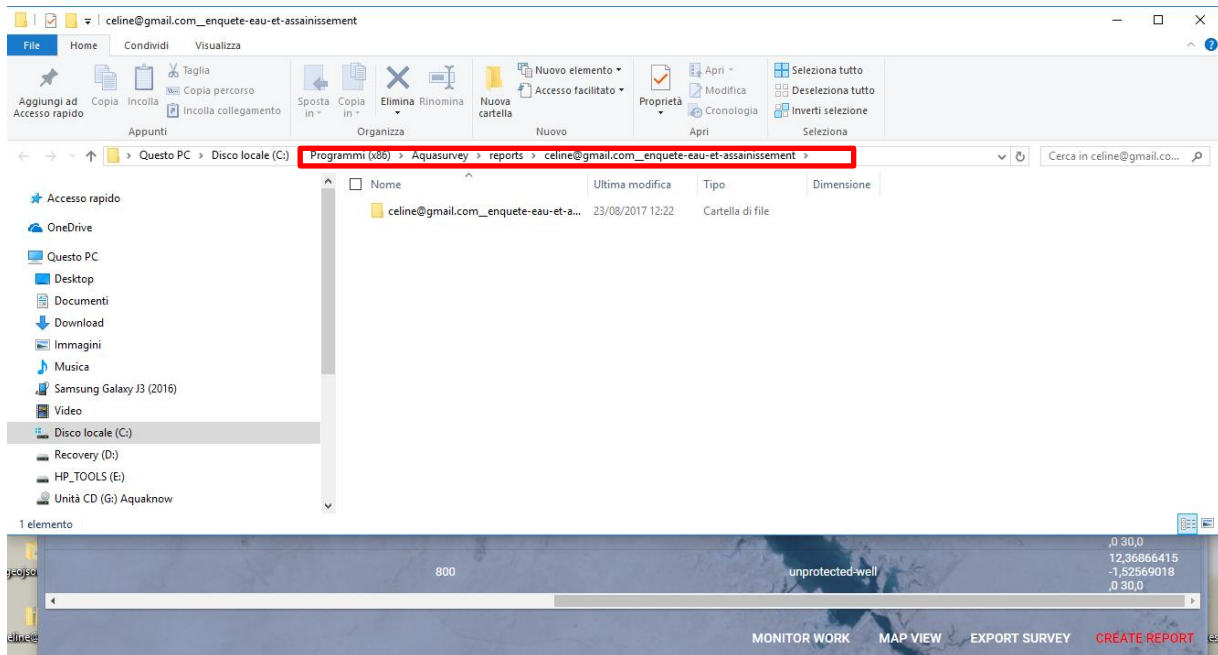


Figure 24: Saving the DB in csv

6.3. Create a Pdf Report



This screen allows you to define the types of basic statistics to use for analysing each question (to select one or more option in the statistics column, check the box on the left side of the variable name – Fig. 25).

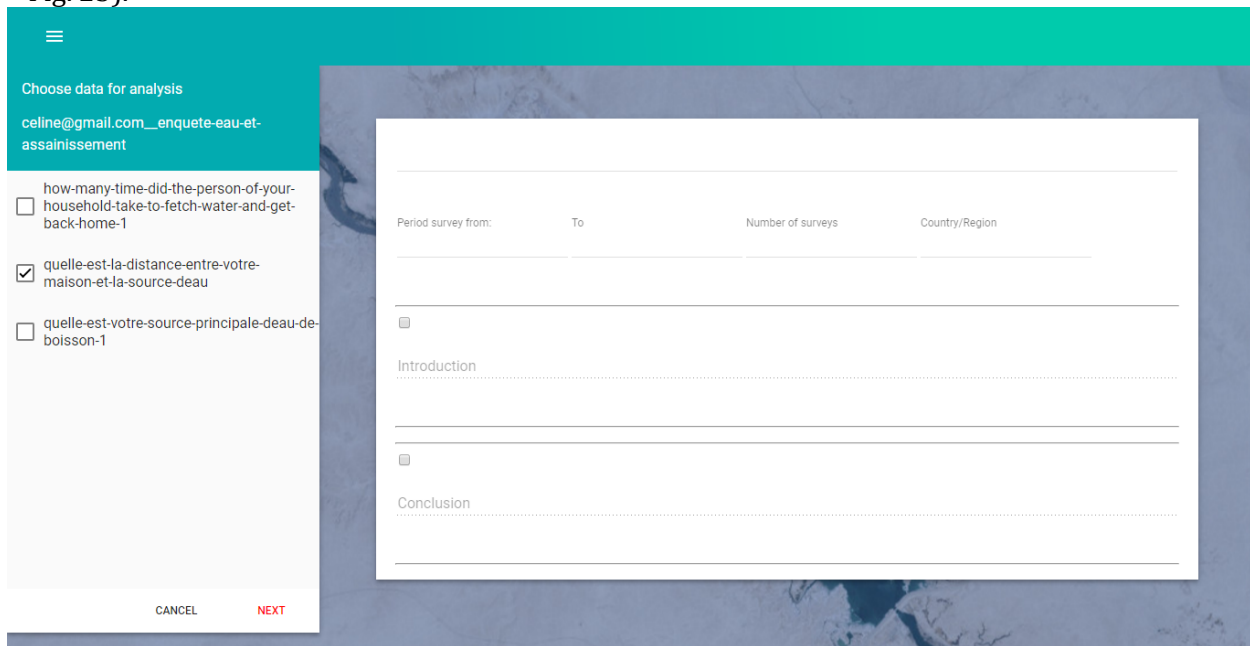


Figure 25: “Create report” screen – starting point for making preliminary statistics of your survey data.

Select the question and set parameters of the statistics to be calculated: mean, frequency, mode... and graphics (pie, line and bars charts) and click next to preview the pdf report (Fig26).

The selected statistics and charts will be displayed as a report, which can be customised before being saved in a printable version (pdf): you can include titles, comments, conclusions, etc.

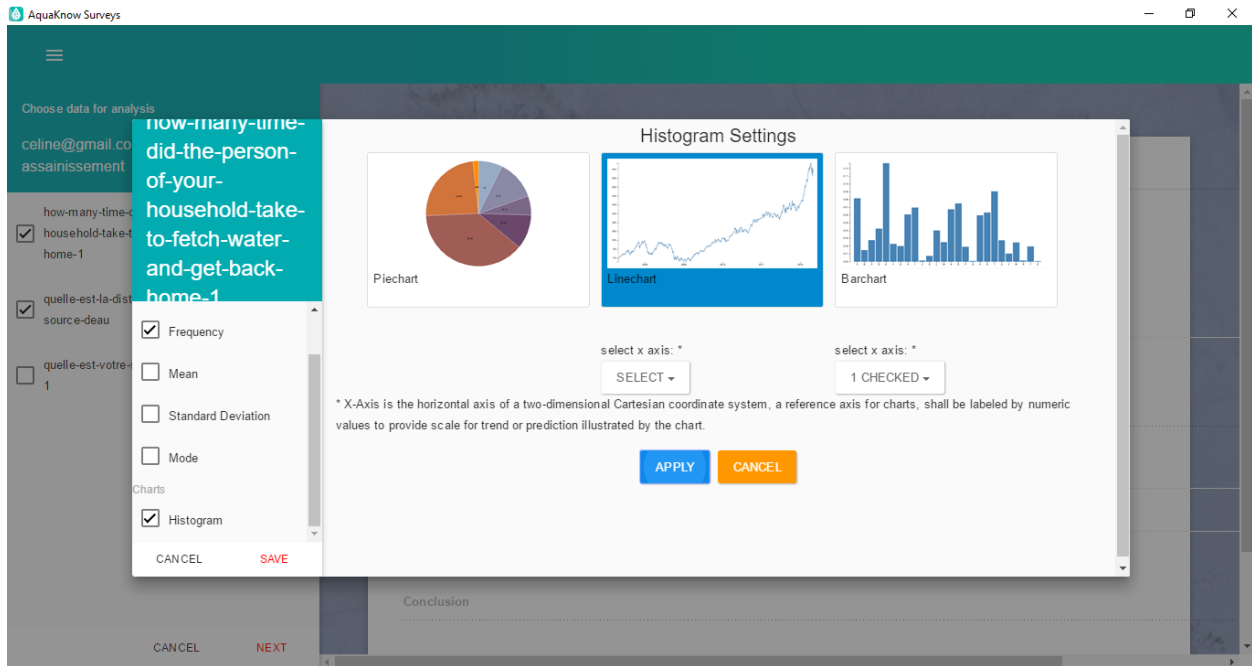


Figure 26: Defining the parameters of chart

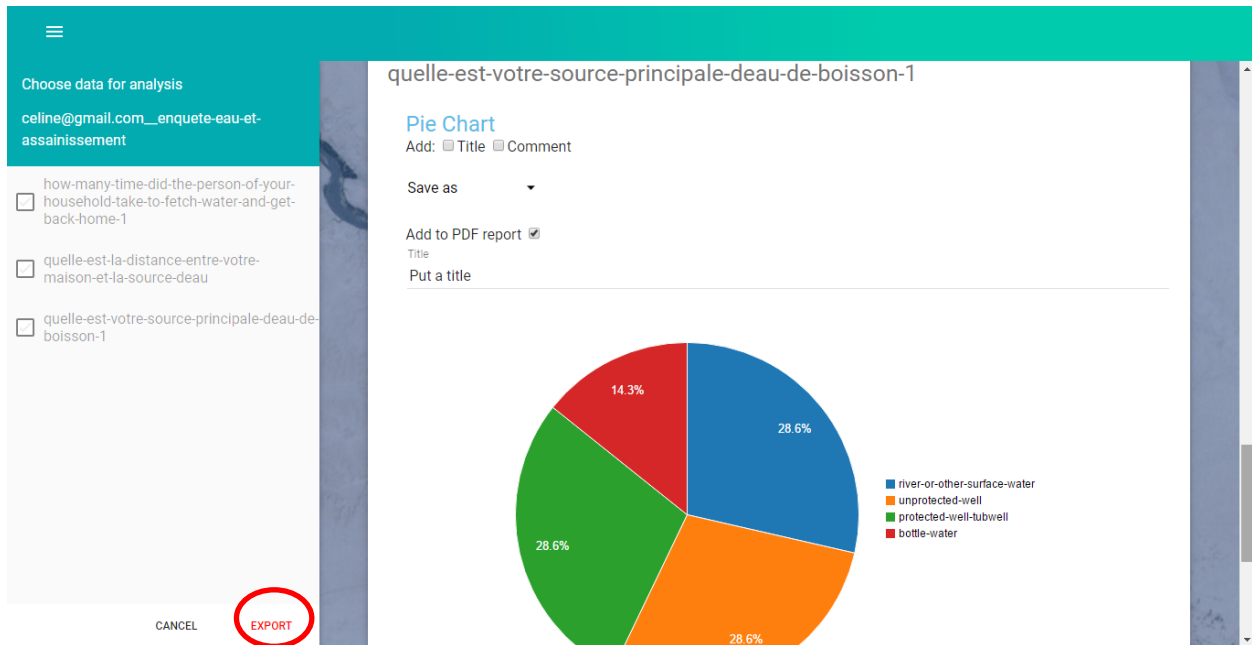


Figure 27: finalising the pdf report

Click „export” to save the pdf report on your local hard disk.

Appendix A. Preparing MapTiles in an example from GeoTiff. Adding a raster map from files when deploying a project (Created from GeoTiff)

Valid zip file with tiles structure for Aquasurvey.

Zip folder structure

```
<ZipFileName>.zip
  MapQuest
    <tile layer folder>
      <tile layer subfolder>
      <tile layer subfolder>
    <tile layer folder>
      <tile layer subfolder>
      <tile layer subfolder>
    <tile layer folder>
      <tile layer subfolder>
      <tile layer subfolder>
```

MapTiler

To prepare the tiles from geotiff you need a tiling tool such as mapTiler (freely available from maptiler.com).

This tool generates a directory containing further directories.

- 1) Create a folder called MapQuest (the name is very important)
- 2) Copy the files generated by MapTiler into that folder
- 3) Zip that folder with any name

Upload the zip file to the desktop application.

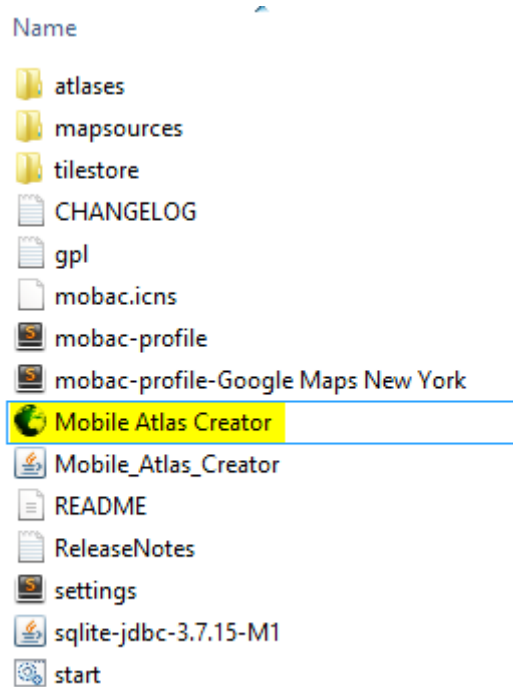
AquaSurvey	Version:2.07
USER MANUAL	

Mobile Atlas Creator

1. Installation:

Go to <http://sourceforge.net/projects/mobac/> and download the correct version for your Windows Operating System.

Unzip the archive and Run the *Mobile Atlas Creator* app:

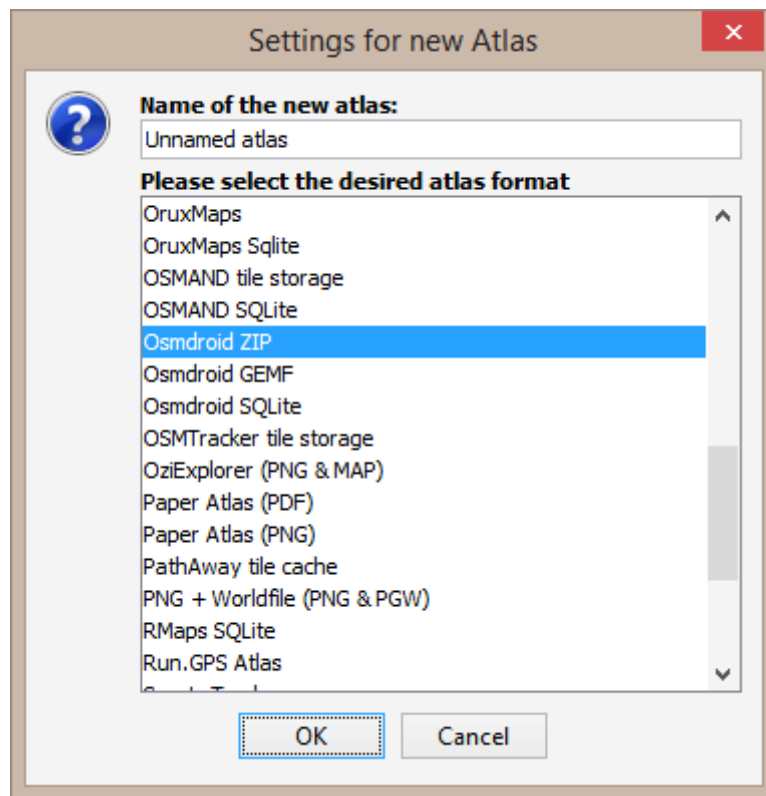


2. Use

1. Configure the atlas settings:

- 1.1 Select the map tiles source. Note that the sources vary in quality and/or coverage.
- 1.2 Select the desired zoom level. Check all boxes from 0 to the desired map zoom (the current zoom is displayed in the upper left-hand corner of the map preview).
- 1.3 Check the *Recreate/adjust map tiles* box
- 1.4 Switch the *tile format* to .png
- 1.5 Add a new atlas and select *Osmdroid ZIP*:

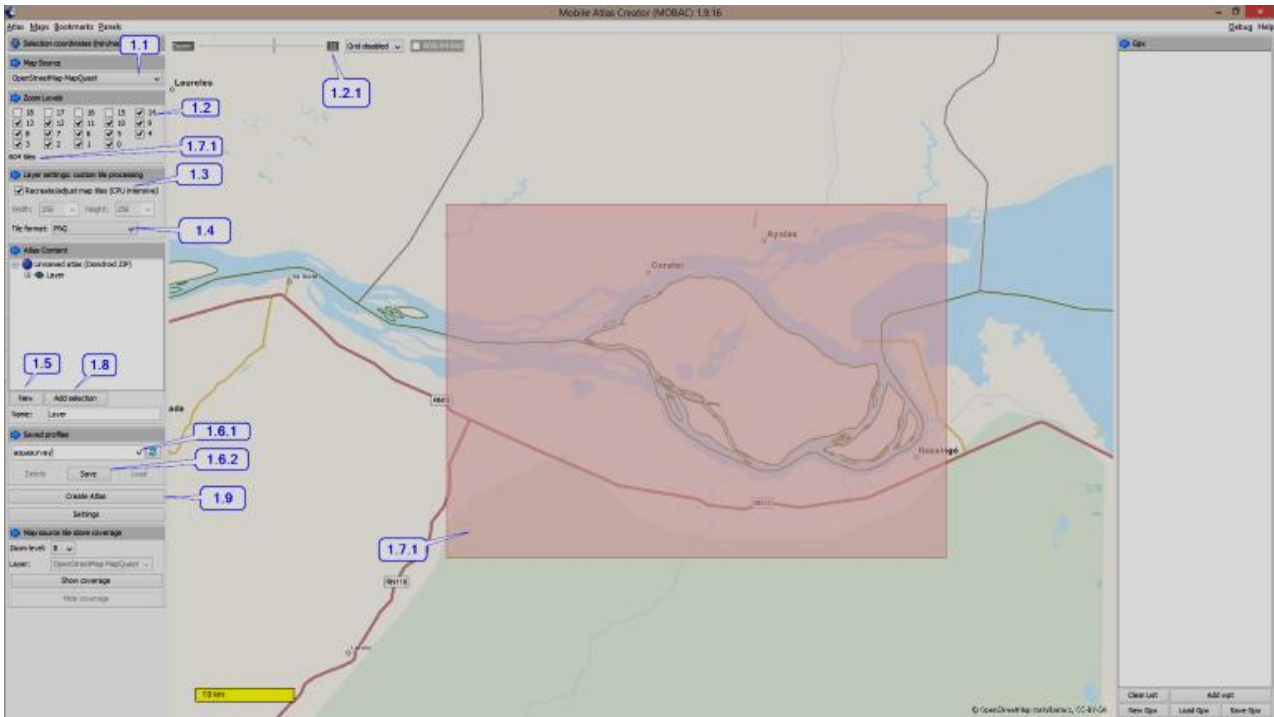
AquaSurvey	Version:2.07
USER MANUAL	



1.6 Name and save the atlas profile for later use. Use the cursor to select an area to download. Note that large areas may contain a lot of tiles to be downloaded. Check their number under the *Zoom Levels* section.

1.7 Click *Add selection*.

AquaSurvey	Version:2.07
USER MANUAL	



1.8 Create atlas by clicking *Create Atlas* (1.9)

MapTiler and GDAL2Tiles

Objective: To assess the number and sizes of tiles generated using Gdal2tiles.

Example: Two different images were processed to create tiles required to generate reference maps for AquaSurvey:

- Landsat (Geotiff format - Natural Colour. 30 m). Source: glovis.usgs.gov
 - o Approx. 185 x 185 km
 - o Original EPGS: 32632 WGS84 / UTM zone 32N
- An Orthophoto (ecw format - 25 cm). Source: www.geoeuskadi.eus
 - o Approx. 2.3 x 1.1 km after clipping.
 - o Original EPGS: 25830 ETRS89 / UTM zone 30N reprojected to WGS84.

An alternative to using GDAL2Tiles is to install Maptiler (<http://www.maptiler.com/>), which allows you to freely process and generate tiles but with some limitations:

- It calculates the most appropriate zoom levels, but the free version does not allow custom zoom levels.
- Maximum image size in pixels is 10 k x 10 k. The unlimited option is only available under the pro version.
- Watermarks are added to the tiles.

On the other hand, Gdal2Tiles is also available under the GDAL framework, which can be easily downloaded following <http://trac.osgeo.org/osgeo4w/> recommendations.

- 32-bit and 64-bit OSGeo4W (windows) installers can be found at:
 - o <http://download.osgeo.org/osgeo4w/osgeo4w-setup-x86.exe>
 - o http://download.osgeo.org/osgeo4w/osgeo4w-setup-x86_64.exe

AquaSurvey	Version:2.07
USER MANUAL	

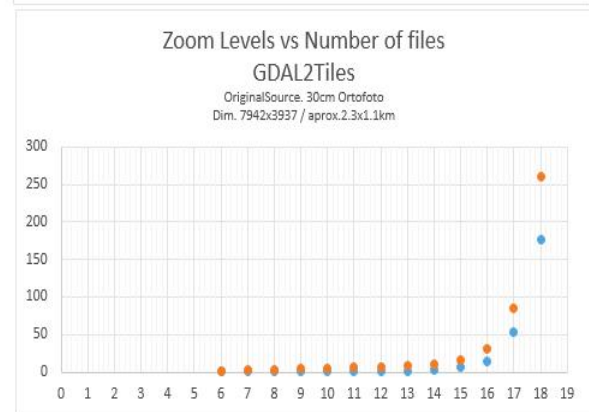
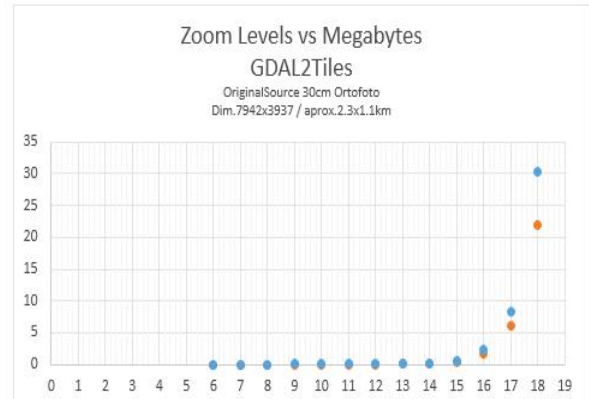
More info about GDAL can be found at <http://www.gdal.org/>
 More info about the sizes of the files is explained below:

Ortofoto 2013 25cm // Original ecw format file reprojected from ETRS89 n30N to WGS84 and converted to tif
 Source> <http://www.geo.euskadi.eus/>
http://www.geo.euskadi.eus/s69-geodir/es/contenidos/ds_geograficos/md_ideeu_ortofoto_2013/es_def/index.shtml



Zoom Level	Mb	n.files	sum.mb	sum.n.files
6	0.00391	1	0.00391	1
7	0.00391	1	0.00782	2
8	0.00391	1	0.01173	3
9	0.00391	1	0.01564	4
10	0.00391	1	0.01955	5
11	0.00391	1	0.02346	6
12	0.01172	1	0.03518	7
13	0.03125	1	0.06643	8
14	0.11719	2	0.18362	10
15	0.4375	6	0.62112	16
16	1.62	15	2.24112	31
17	6.11	54	8.35112	85
18	21.9	176	30.25112	261

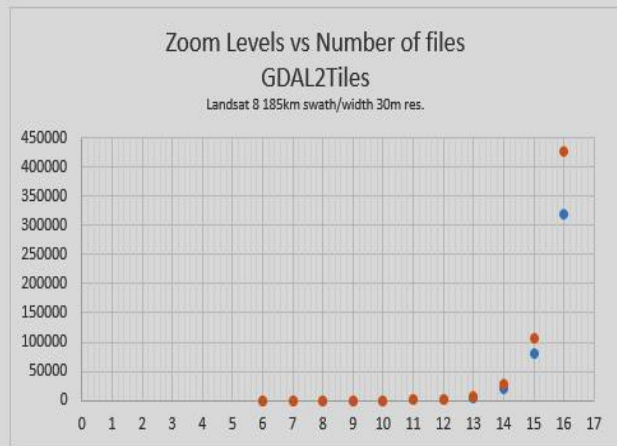
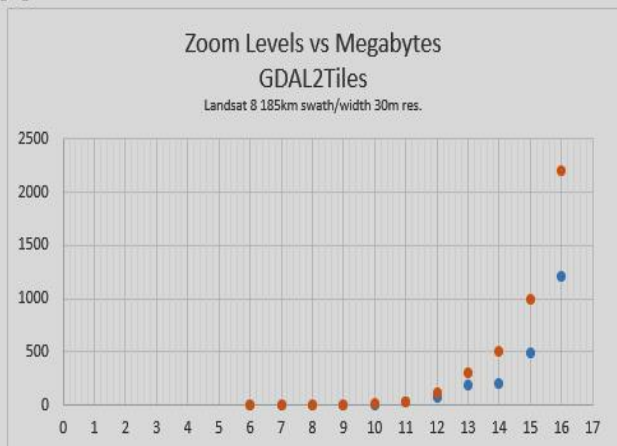
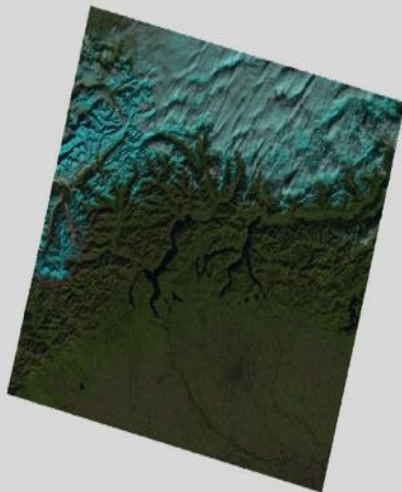
MapTiler ZL



Landsat Image Landsat Look Natural Color 9.8Mb Source> <http://glovis.usgs.gov/>

MapTiler ZL

Zoom Level	Mb	n.files	sum.mb	sum.n.files
6	0.03906	2	0.03906	2
7	0.14453	6	0.18359	8
8	0.50781	12	0.6914	20
9	1.88	30	2.5714	50
10	6.76	90	9.3314	140
11	24.6	342	33.9314	482
12	78.1	1296	112.0314	1778
13	187	5112	299.0314	6890
14	208	20164	507.0314	27054
15	486	79,806	993.0314	106860
16	1210	319,224	2203.031	426084



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Joint Research Centre



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