WISE-SoE WQ Data Request

Version 1.1

Data Input Tool for the WISE-SoE#3
"State and Quantity of Water Resources"

User Manual

European Environment Agency

WISE-SoE WQ Data Request

This software product is suitable for the reporting of the "State and Quanity of Water Resources" under the WISE-SoE#3 Data Reporting.

It has been developed for the European Environment Agency (EEA) from the Laboratory of Hydrology and Water Resources Management of the National Technical University of Athens (NTUA).

WISE-SoE WQ Data Request

This user manual is published from:
National Technical University of Athens

The material on this manual is to the best of our knowledge comprehensive and scientifically sound. Our goal is to keep this information timely and accurate. If errors are brought to our attention, we will try to correct them.

Athens, July 2010

Editor *Maggie Kossida (mkossida@chi.civil.ntua.gr) , National Technical University of Athens*

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Part

1 INTRODUCTION

This help manual holds the technical specifications for the Water Quantity data requested in the current reporting tool in reference to the WISE-SoE reporting obligations.
The purpose of this manual is to support countries in reporting good quality data, providing the full details of the data requested on the state and quantity of water resources in the SoE reporting sheet#3, also in alignment with the Eurostat JQ IWA (Joint Questionnaire on Inland Waters) and containing detailed specifications in a structured format.
Suggestions from users on how to improve the document are welcome.

Main issues covered:

Which type of data are requested (water availability, water abstraction, water use)

What spatial and temporal scale to report

How to start running the application (.exe)

How to use the wizard to enter data

How to save files and reload them to continue the reporting

How to import data from CSV files

How to upload to the CDR the final file

1.1 General Information

General information for WISE-SoE Reporting: Water Quantity dataset

Short name	WISE-SoE: Water Quantity
Registration Status	WISE-SoE WQ Data Reporting Tool v.1.1 and Help Manual: Released 22 July 2010 Water Quantity Data Manual v.2.0: Released 22 July 210
Reference URL	Principle repository CDR (http://cdr.eionet.europa.eu/)
Name	WISE-SoE Reporting: Water Quantity
Keyword	Water availability, water balance, water abstraction, water use
EEA issue	Water quantity, water scarcity

Definition	Data on freshwater resources availability, abstraction and use at regional spatial scale will be collected annually through the annual data flow. Data and information obtained through the Eionet-Water annual data flow are primarily used to formulate indicators (associated with the EEA's Core Set Indicators) and assess the state and trends of the water resources and associated pressures, and monitor the progress with European policy objectives. The information needed in relation to water quantity is generally described as drivers, pressures, state, impact, response. In general there is a need for coherent European indicators describing water availability/scarcity in connection with water use and water use efficiency to assess the extent and intensity of the problem, and of the impact of particular socio-economic sectors on water abstraction (e.g. water abstraction by agriculture). Data collected through the Eionet-WISE SoE Water annual data flow are also published in Waterbase, a series of water topic-specific databases and web pages, publicly accessible via the EEA Data Service's web site. Data on the status and quantity of collected Europe's water resources can from May 2010 be viewed, analyzed and downloaded from Waterbase at: **http://dataservice.eea.europa.eu/dataservice/available2.asp?type=findkeyword&theme=waterbase** Full details of the data requested on the state and quantity of water resources are presented in the current document and include data on freshwater resources availability, abstraction and use.
Contact information	The ETC Water contact person for the Eionet-Water Quantity data and help manuals is Maggie Kossida, based at National Technical University of Athens (NTUA), Greece. If you have any questions about the format and content of the data request please contact her at: Maggie Kossida National Technical University of Athens Laboratory of Hydrology & Water Resources Management 5, Iroon Polytechniou str., 15780 Athens, Greece Tel: +30 210 7723325, Email: mkossida@chi.civil.ntua.gr
Planned Update Frequency	Annual
Version	v.1.1 (July 2010) © NTUA Software developed by: George Karavokyros (gkaravo@chi.civil.ntua.gr) Context developed by: Maggie Kossida (mkossida@chi.civil.ntua.gr), Ifigeneia Koutiva (ikoutiva@chi.civil.ntua.gr), Christos Makropoulos (cmakro@chi.civil.ntua.gr)

Significant changes in release 1.1 compared to the previous release 1.0	▪ All the stations (precipitation, streamflow, reservoir, groundwater well) reported so far in the previous reporting have been integrated in the current version 1.1. Users do not need to retype the stations characteristics. Known stations can be selected from the wizard and the specific view of stations characteristics appears pre-filled. The user can always edit on the view if he wants to change or add something on the characteristics. ▪ A default coordinate and projection system can be specified for all stations in the country in the first window which opens when running the tool (namely the "WISE-SoE WQ Data Request" view). New stations entered in the tool are pre-filled with this default coordinate system which if desired may be changed on the station level. ▪ The country's regions (RBD, SU, NUTS) that are pre-filled in the tool can be viewed all together in a list (Select: Tools/Lists/Regions from the menu of the "WISE-SoE WQ Data Request" view). ▪ A direct link to the newly developed internet application "WQ WISE DREAMS" is included (wq.wise-dreams.eu). This application can be used for searching, locating and downloading time series reported for the different stations in 2009. ▪ Additional validation checks detecting logical errors have been implemented. A list of all the "error" and "warning" messages is provided in the last section of this help manual. ▪ The following additional fields for water use have been included in the manufacturing industry (NACE C) in order to be streamlined with Eurostat JQ IWA: Paper and paper products Chemicals, refined petroleum, etc. Other manufacturing industry The above fields apply for the following parameters: Total Volume of Freshwater used Total Volume of Freshwater used provided by Public Water Supply Systems (PWSS) Total Volume of Freshwater used provided by Self-Supply ▪ The field "Groundwater Abstraction for self supply used for hydropower generation" has been removed. ▪ The XML Schema Definition for saving the reporting data into files has been updated. Backwards compatibility with previous versions has been preserved. ▪ Year 2009 as the default reporting year is pre-filled. The user can always change it from the pull down menu.
Identifier	Water Quantity

Table 1: Basic metadata

1.2 The WQ Reporting Tool

Basic information on the WISE-SoE WQ Reporting Tool

Short name	WQ Reporting Tool
Registration Status	WQReportingTool v.1.1: Released 22 July 2010
Reference URL	Eionet Circa/ WISE SOE reporting/Water quantity reporting 2009 http://eea.eionet.europa.eu/Public/irc/eionet-circle/water/library?l=/wise_reporting_2009/quantity_reporting&vm=detailed&sb=Title
Name	WISE-SoE Water Quantity Data Reporting Tool

Keyword	water quantity data, reporting, tool, input
EEA issue	Water quantity, water scarcity
Definition	The current application is a Reporting Tool for the WISE-SoE#3 data reporting on the "State and Quantity of Water Resources". The reporting tool "WQReportingTool.exe" (windows based application) is an executable able to run on all current PC configurations (minimum XGA display resolution and Windows 2000/ XP/VISTA are required). The WQ Reporting tool integrates all the parameters presented in the Water Quantity Data Manual v.2.0 (Released 22 July 2010) and is also accompanied by a Help Manual and includes Online Help. The purpose of the tool is to facilitate the water quantity data entry and provide flexibility in the reporting.
Planned Update Frequency	Annual
Version	v.1.1 (July 2010) © NTUA developed by: George Karavokiros (gkaravo@chi.civil.ntua.gr)
Identifier	Water Quantity

Table 2: Basic information on the WQ Reporting Tool

1.3 Requested Data Overview

In general the data requested are described in this manual under three main categories: Water Availability, Water Abstraction, and Water Use.

<table>
<tr><th>Water Availability</th><th>Water Abstraction</th><th>Water Use</th></tr>
<tr><td>Components of the Water Balance as spatially aggregated data on a specific reporting unit (e.g. RBD)
▪ Area Precipitation (P)
▪ Potential Evapotranspiration (PET)
▪ Actual Evapotranspiration (ETa)
▪ Internal Flow (D = P - ETa)
▪ Total actual external inflow (Q_i)
▪ Total actual outflow (Qo)
▪ Aquifer Recharge (Re)
Hydrometeorological Parameters
▪ Snowpack
▪ Changes in Reservoir storage (ΔSW_s)
▪ Changes in Groundwater storage (ΔGW_s)
Storage
▪ Return flow (before/after use)
▪ Reused water (and leakages)
▪ Desalinated water
▪ Water imports
▪ Water exports
▪ Bottled water
▪ Artificial groundwater recharge
Additional Water Resources
Point data (individual measurements within the specific reporting unit)
▪ Streamflow (Q) at selected gauges
▪ Reservoir inflow/outflow
▪ Groundwater level (H) at selected wells
▪ General info on rain gauge stations</td><td>▪ Total Volume of freshwater abstraction (from both SW + GW)
▪ Total Volume of freshwater abstraction for public water supply systems (from both SW + GW)
▪ Total Volume of freshwater abstraction (from both SW + GW) for self-supply and breakdown per sector (according to NACE classes)
▪ Groundwater available for annual abstraction
▪ Evaporation Losses (during transport and use)
▪ Non freshwater sources (marine and brackish water) and breakdown per sector (according to NACE classes)</td><td>▪ Total Volume of freshwater used and breakdown by sector (according to NACE classes)
▪ Total volume of freshwater used provided by public water supply systems and breakdown by sector (according to NACE classes)
▪ Total volume of freshwater used provided by self-supply and breakdown by sector(according to NACE classes)
▪ Volume of freshwater (from both SW + GW) used per large item (based on 3 classes categorization for cities, industries and agricultural units)
▪ Recycled water</td></tr>
</table>

Figure 1: Water Quantity datasets (in summary)

1.4 Methodology & Guidelines

Methodology

The data requested through the WISE-SoE data collection process should be derived from existing national and/or regional monitoring networks within each EEA Member Country. Member Countries are asked to provide data on freshwater availability, abstraction and use according to the SoE reporting sheet#3 as accepted by the SCG November 2008, and as detailed in this data request.
It is expected that these data should provide a general overview, based on truly comparable data, of the state of water resources and associated pressures at a European level. It is recognised that whilst Member Countries already report data under various obligations of the WFD there may be information gaps in the data supplied in terms of the requirements of the EEA (e.g. regarding the requested parameters, temporal scales etc.).

It is indented that all relevant reporting initiatives are streamlined in one data flow and incorporated into WISE. For the moment Member States report data on water resource and water abstraction at country level via the "Eurostat/OECD Joint Questionnaire on Inland Waters" (JQ iWS). The methodology used in the Eurostat/OECD JQ IWA has been reflected in this reporting and further alignment between the two data requests is incorporated in the current reporting tool (regarding the parameters which relate to water quantity) in order not to duplicate reporting.

To reflect the spatial variability of water resources the current requested information has been scaled down to each particular RBD and sub-unit. Additionally, the minimum proposed time step is monthly to allow distinguishing seasonal patterns and assessing dry periods within a hydrological year.

It is recognised that some information may not be available in first years of reporting in the level of detail ideally required. A phased and flexible approach has therefore been adopted with summary information at the RBD level required in the first years, and the flexibility to report at different regional and temporal spatial scales. It is assumed that detailed information will be available after 2010 and should be supplied by electronic means at this time.

Guidelines

Please consider the following guidelines when compiling your data delivery:

1. Submit water quantity data up to and including 2009. Do not supply any data for 2010.
In case that the 2009 data are not available yet, please **REPORT THE LATEST AVAILABLE YEAR** between the given range (1998-2009). You have the flexibility to change the reported year between the different datasets (e.g. you may have the "regional water balance" datasets for 2009, but for some reason this may not be the case for the "water use" datasets. In this case you may report the "regional water use" for another year which is the most recent available for this dataset).
You could also report more than one years. This means that besides the most recent available year you may want to provide data for past years as well. In this case you will provide the extra years as separate data files, meaning that you will create a different file each time.

2. Please do not resend the same data as last year. A complete list of all water quantity data reported last year is given in the file WQ_statistics_2009.xls which is also released together with the tool. If you are unsure which data you have reported last year please check this file.

3. Provide data for as many parameters and as many stations (where requested) as possible. Fill in any gaps in existing data.

4. Select the spatial reporting scale: regarding the spatial unit for which you report the spatially aggregated data (tables: water balance, water abstraction, water use), you have the flexibility to report at different scales: River Basin District (RBD), sub-unit (SU), Administrative Region (ADR). Please report at the **SMALLEST available spatial scale**. In case that through your reporting you did not mange to cover the entire territory of your country (e.g. your country has 10 RBDs but you only reported data for 9 of them, thus you have not covered the entire territory of your country) it is requested to also report country level data in order to ensure continuation of the representation of your country.

5. Select the temporal reporting scale: regarding the temporal resolution for which you report the data, you have the flexibility to report at different scales: Monthly, Seasonal and Annual. Please report at the **LOWEST available temporal scale**. In case that through your reporting you did not mange to cover the entire year (e.g. the year has 12 months but you only reported data for 8 of them, thus you have not covered the entire year) it is requested to also report annual data in order to ensure continuation of the representation of your country.

6. Remember to refer to the pre-filled example which is provided together with the input tool.

7. The titles of all mandatory fields are in red font. If you do not fill these mandatory fields you will get an [Error] message and can not submit the respective data. In case of missing information in some other non-mandatory field you may get a [Warning] message but submission is accepted.

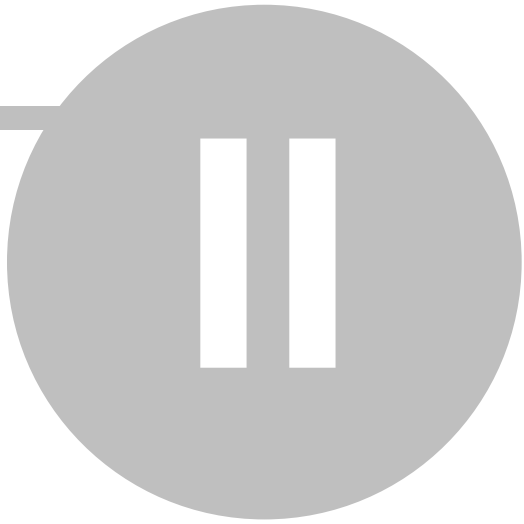
8. Provide additional information based on your judgment (e.g. what was the calculation method used in the water balance table) in the field "Calculation method-Other remarks" which is provided at the bottom of all the data entry views. This is very useful during the data quality assurance process.

9. Longitude and Latitude values where requested must be provided. Additional information is requested on the coordinate and projection systems which they refer to, as well as the EPSG SRID (if known).

10. Use the current definitions and specifications to guide you in formatting and collating your data delivery. Be aware that you need to pay emphasis in the definitions as some of them may slightly differ from the Eurostat JQ IWA definitions (e.g. reused water).

11. The input tool will at the end create two files, an XML file (.wqd) and its compressed representation (. zip). Details for the xml files are provided in the CDR site. Upload your created compressed data file (.zip) to your nominated repository: the Central Data Repository at http://cdr.eionet.europa.eu or your national Eionet server.

Part



2 GENERAL INSTRUCTIONS

This section contains general information of how to run the reporting tool application. Specifically the following chapters describe how to:

- start-up the application
- run the application
- save the reported data
- modify and/or delete the reported data
- perform bulk data import through import routines

2.1 Getting started

The WQ Reporting tool aims to facilitate the water quantity data entry and provide flexibility in the reporting.
To start using the WQ Reporting Tool download and uncompress to a local directory in your PC the "WQReportingTool.zip" from the EIONET CIRCA site, and then run the executable "WQReportingTool.**exe**". No further installation steps are needed.

This application allows you to:
- enter new regional and point data by using the wizard
- save the reported data
- modify/update and delete your entries
- import data from CVS files (bulk upload)

When you run the application (.exe) the first window which opens up is the "WISE-SoE WQ Data Request" view as demonstrated below. Please enter all the requested information and click on the WIZARD button on the top (or Tools/Wizard... from the main menu) to proceed to the next view
Note: This view contains an OVERVIEW table of the data you have reported. When you first open the application this table is blank, and as you fill in the data a summary of what you have reported will appear in this table. When you want to delete and/or edit some set of data that you have already reported you can also access it through this table by double-clicking on the respective cell.

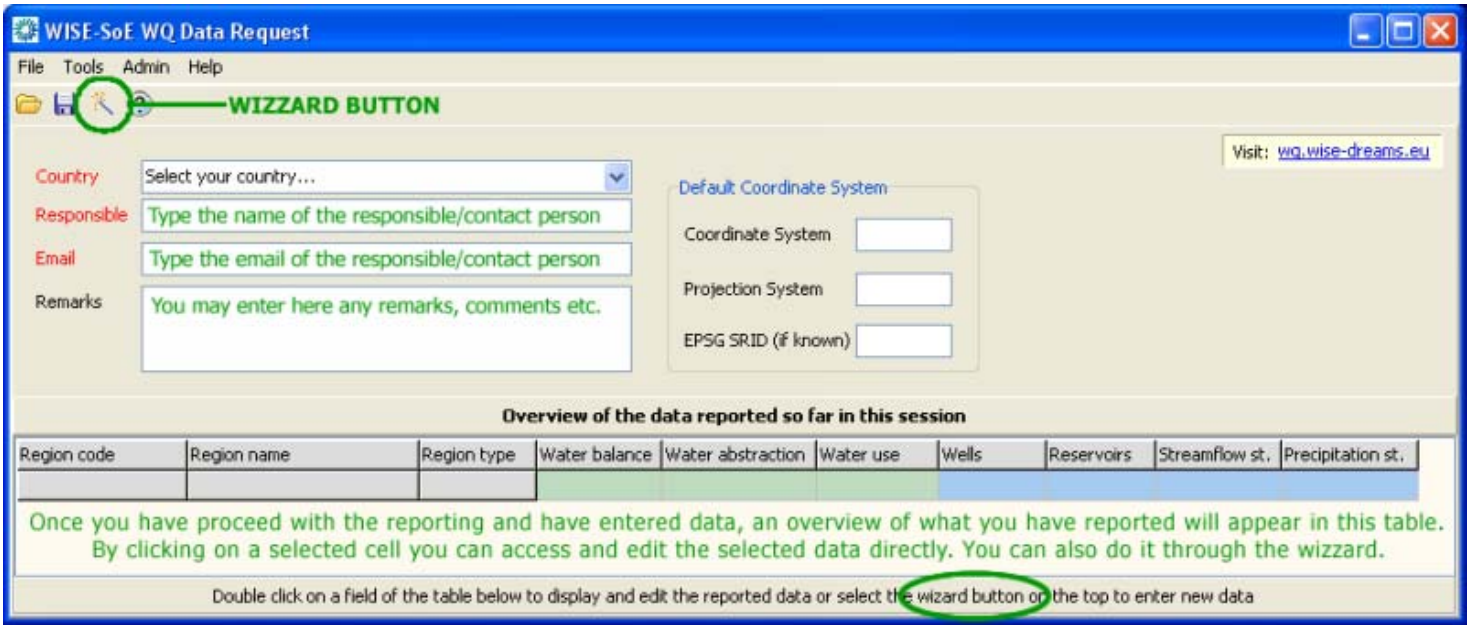


Figure 2A: "WISE-SoE WQ Data Request" view

When you select your country, if you have reported point data for stations (precipitation, reservoirs, streamflow, wells) last year this information will automatically appear (Figure 2B).
If you wish to view immediately which are these stations that you have reported last year, you can select Tools/Lists/Groundwater level (or Reservoirs, Streamflow, Precipitation accordingly).
The same list of known stations appears also when you use the wizard for data entry (see Using the wizard). You may select one station from these lists and the appropriate form (view with the stations characteristics) will appear pre-filled with all known information so that you will only have to update the time series data for the reporting year. Alternatively you may enter from the wizard view new stations/ reservoirs if not listed or if this is your first reporting year.

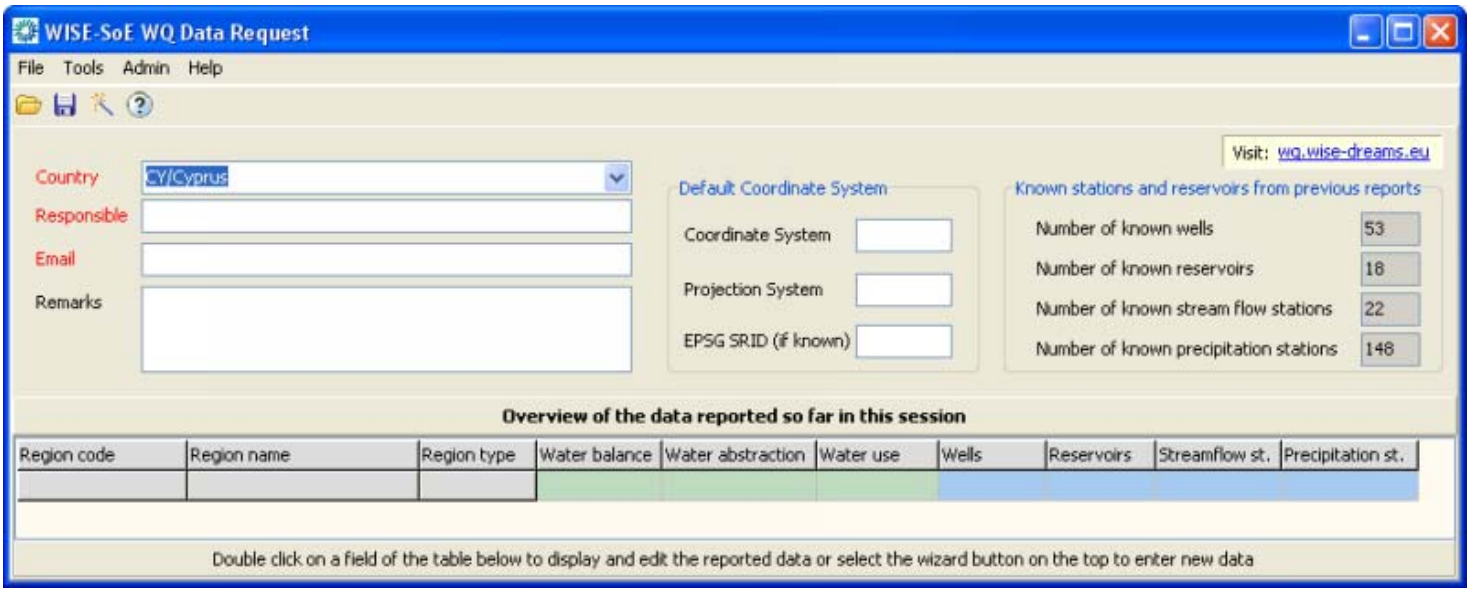


Figure 2B: "WISE-SoE WQ Data Request" view for countries with known stations and/or reservoirs (e.g. Cyprus)

NOTE:
You may also follow the link to wq.wise-dreams.eu which is a database and a web application designed to store and manage water quantity data reported for the European Environmental Agency. Currently this site may be used to search, locate and download water quantity information related to precipitation (only station data), groundwater level and streamflow reported last year. Please note that this site is still under development and shows only part of the reported data categories. A complete list of all water quantity data reported last year is given in the file WQ_statistics_2009.xls which is released together with this tool.

While using the application keep in mind the following general guidelines:

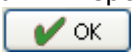
- The titles of all mandatory fields are in **red** font. If you do not fill these mandatory fields you will get an [Error] message and can not submit the respective data. In case of missing information in some other non-mandatory field you may get a [Warning] message but submission is accepted. An analytical description of the error & warning messages is provided in the last section of this help manual.
- A default **coordinate** and **projection** system can be specified for all stations in the country in the first window which opens when running the tool (namely the "WISE-SoE WQ Data Request" view). Start by specifying your country's coordinate and projection system. After that, all new station forms (station characteristics view) will be pre-filled with this default data and you do not need to enter it again. It is also possible to change a stations coordinate and projection system if it differs from the country's default. A Spatial Reference System Identifier (SRID) is a unique value used to unambiguously identify projected, unprojected, and local spatial coordinate system definitions. It is used in GIS applications, most of which use the **EPSG SRID** implementation (maintained by the International Association of Oil & Gas Producers Surveying & Positioning Committee). See http://www.epsg-registry.org/ for the online registry. If you know your country's SRID please add this information in the appropriate field. Otherwise, the ETC/W data manager will find it based on the reported coordinate and projection system.
- When you have completed the data input, or at the end of a session do not forget to save your data. All the data files are saved with the regional settings (i.e. decimal separator) of your PC.
  The application will create two files:
  A wqd-file which stores all your data in an XML format. Use this file to reload your data in case you want to modify/edit etc.
  A zip file, which is a compressed file of the above xml. **Upload this file** to your nominated repository when finished (the Central Data Repository at http://cdr.eionet.europa.eu or your national Eionet server).
- It is suggested to keep the filename proposed by the application which consists of the Country code and the date (format: COUNTRY CODE_DD_MM_YYYY)
- If you want to modify your data it is strongly advised not to edit any of the created xml files directly (with your editor). You may produce inconsistencies and loose all your data. Use the input tool instead to reload the wqd-file and do the modifications in the appropriate views.
- When reporting point data (reservoirs, streamflow, wells, precipitation) select the smallest possible spatial scale (region) which your reported data will be referring to i.e. the sub unit (SU) if known, then the RBD and as a last option the Country. In some countries where SU and RBD are not coded NUTS1/2/3 may be selected. Again, select the smallest possible spatial scale which your reported data will be referring to i.e. NUTS3 before NUTS2 before NUTS1 before Country.
- You may **copy/paste** your data from another spreadsheet application into any grid of the data entry tool. Just right click **with your mouse** on the top-left cell where your data should be transferred and then select "Paste" from the pop-up menu. Please note that the Ctrl+C, Ctrl+V functions of the keyboard are not active.
- For some data types (well, reservoirs, streamflow stations, precipitation stations) import routines from CSV-files are provided for bulk data upload.

2.2 Using the Wizard

Once you have clicked the WIZARD in the "WISE-SoE WQ Data Request" view, the next view which pops-up is the "Date Entry Wizard" view. You may use the wizard in two ways:

- To enter new data (regional data, or data for new stations not reported in previous years). In this case the wizard will guide you to select the data category and region for reporting new data.
- To enter data for known stations and/or reservoirs i.e. stations and reservoirs which have been reported last year and thus their characteristics are known and pre-filled in the tool. In this case the wizard will help you to find the station/reservoir and will pre-fill the data form with all known information on their characteristics.

The different following views which open up depending on the Data Type you have selected to report are described in the following sections (along with analytical information on guidelines and definitions).
Each view comprises several Tabs. Through these tabs you will report the different data.

When you enter data remember to click the "OK" button 

at the bottom of each tab/view in order to save the data.

The views (and the tabs which they comprise) are presented in summary in the table bellow:

Data Type (as in the "Data Entry Wizard" view)	Name of the related View which opens-up	# Tabs in this View
Wells measuring groundwater level	"Groundwater level"	1. "Well characteristics" 2. "Data"
Reservoirs	"Reservoir"	1. "Reservoir characteristics" 2. "Data"
Stations measuring streamflow	"Streamflow"	1. "Station characteristics" 2. "Monthly data" 3. "Daily data"
Stations measuring precipitation	"Rain gauge station"	no tabs
Regional water balance	"Water balance"	1. "Hydrometeorological parameters" 2. "Water storage" 3. "Returned water" 4. "Reused water" 5. "Desalinated water" 6. "Other additional water resources"
Regional water abstraction	"Water abstraction"	1. "Total volume of freshwater abstraction" 2. "Freshwater abstraction for public supply systems" 3. "Freshwater abstraction for self-supply (by source)" 4. "Surface water abstraction for self-supply (by sector)" 5. "Groundwater abstraction for self-supply (by sector)" 6. "Non-freshwater resources" 7. "Other data"

Data Type (as in the "Data Entry Wizard" view)	Name of the related View which opens-up	# Tabs in this View
Regional water use	"Water use"	1. "Total volume of freshwater used" 2. "Freshwater used provided by public water supply systems" 3. "Freshwater used provided by self-supply" 4. "Large items" 5. "Recycled water"

Table 3: Data entry Views of the reporting tool

2.2.1 Entering new data

Once you have clicked the WIZARD in the "WISE-SoE WQ Data Request" view, the next view which pops-up is the "Date Entry Wizard" view.

First specify the data type which you want to report (Figure 3A)

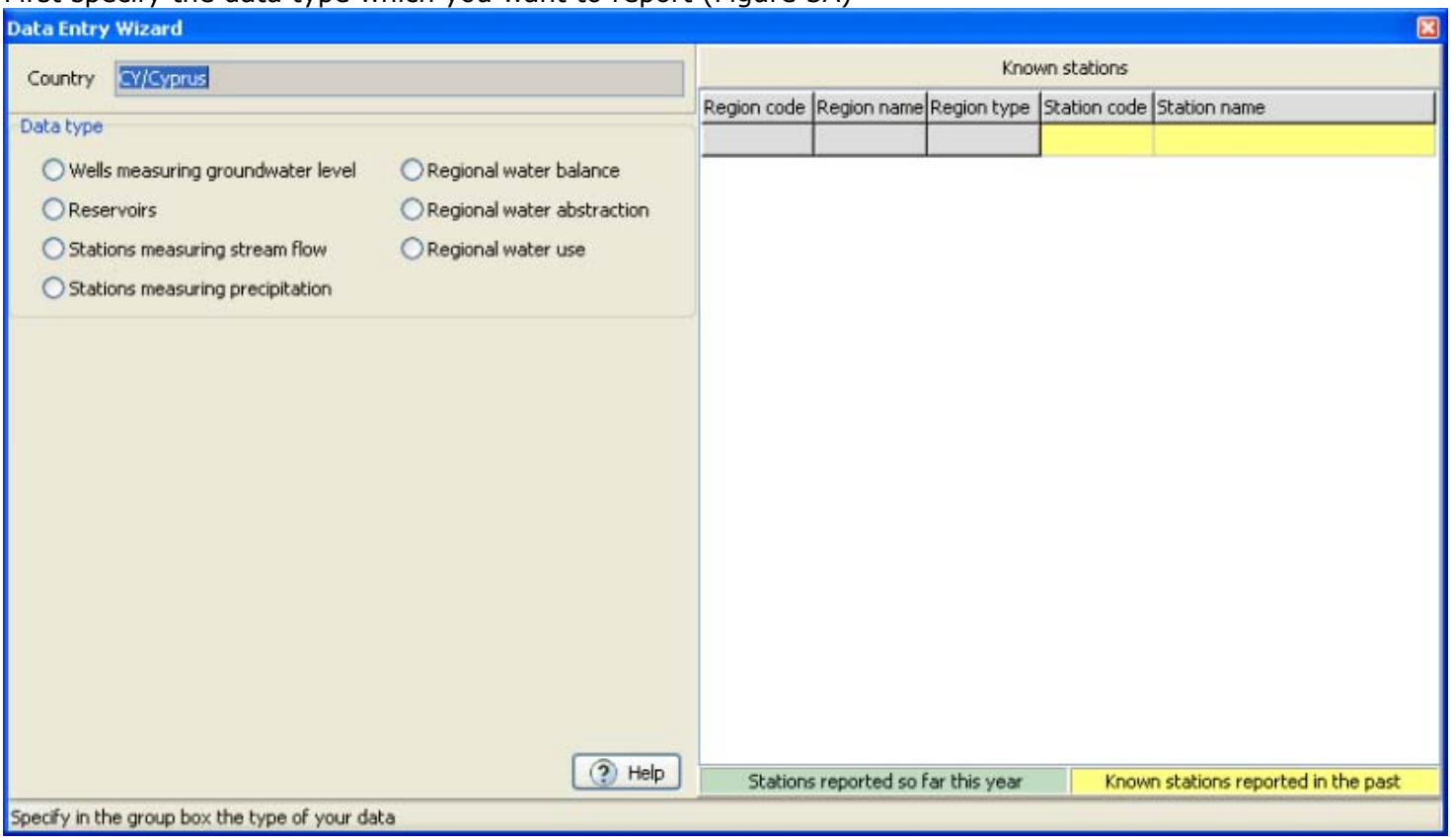


Figure 3A: Data Entry Wizard - Data type selection

On the right side of the view a list of known stations/reservoirs of the selected category appears as long as they have been reported last year (Figure 3B). You may select one of these stations/reservoirs by double-clicking on the specific name and add data or edit (see Selecting from known stations/reservoirs).

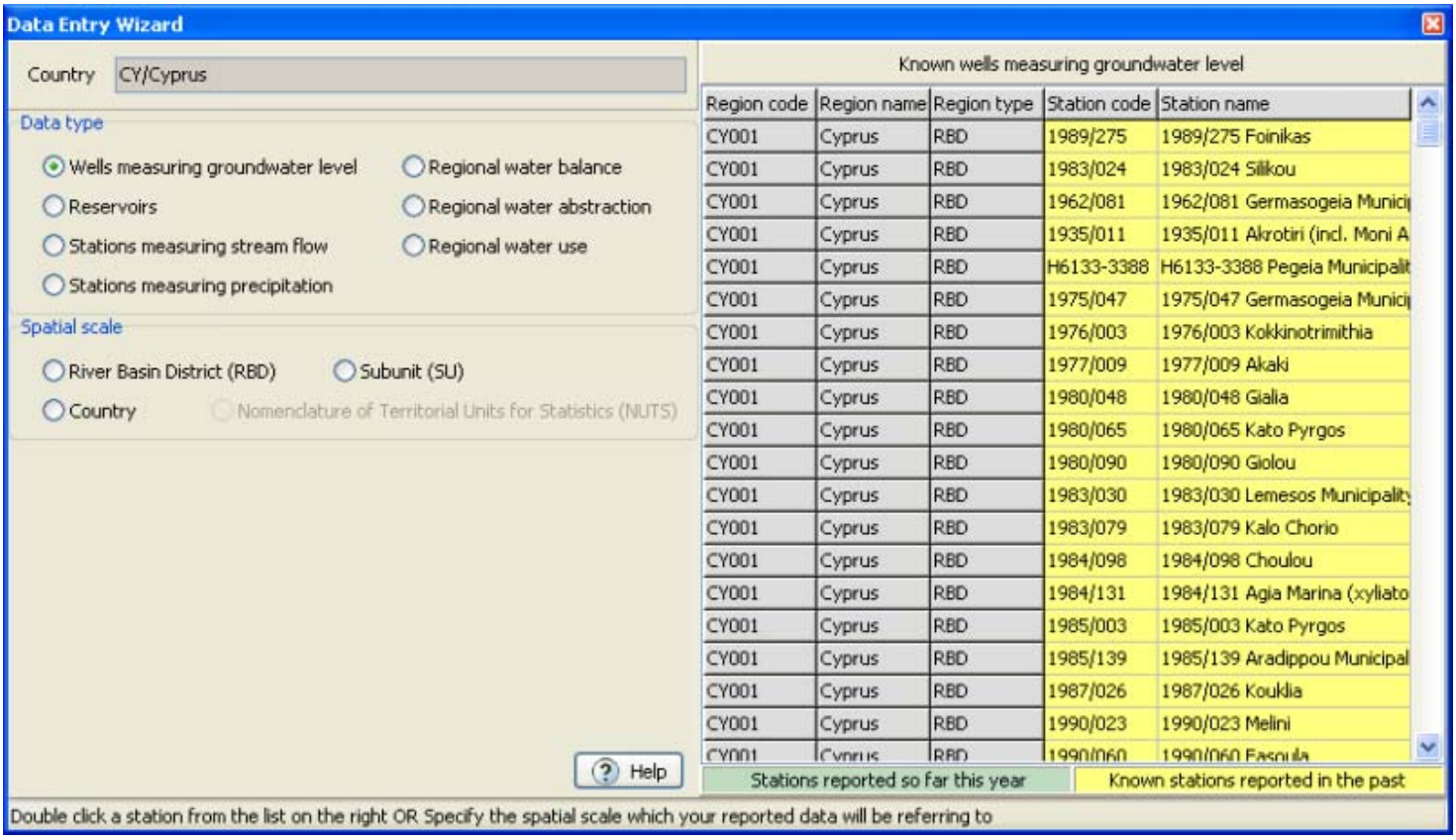


Figure 3B: Data Entry Wizard - Spatial scale selection

If your stations/reservoir does not appear on the list (or if this is your first reporting year and thus no stations are pre-filled) proceed by specifying the spatial scale which your reported data will be referring to.

- Based on the spatial scale you have selected in the previous step, a drop down list will appear (Figure 3C). Select from this list the region for which you will report the data.

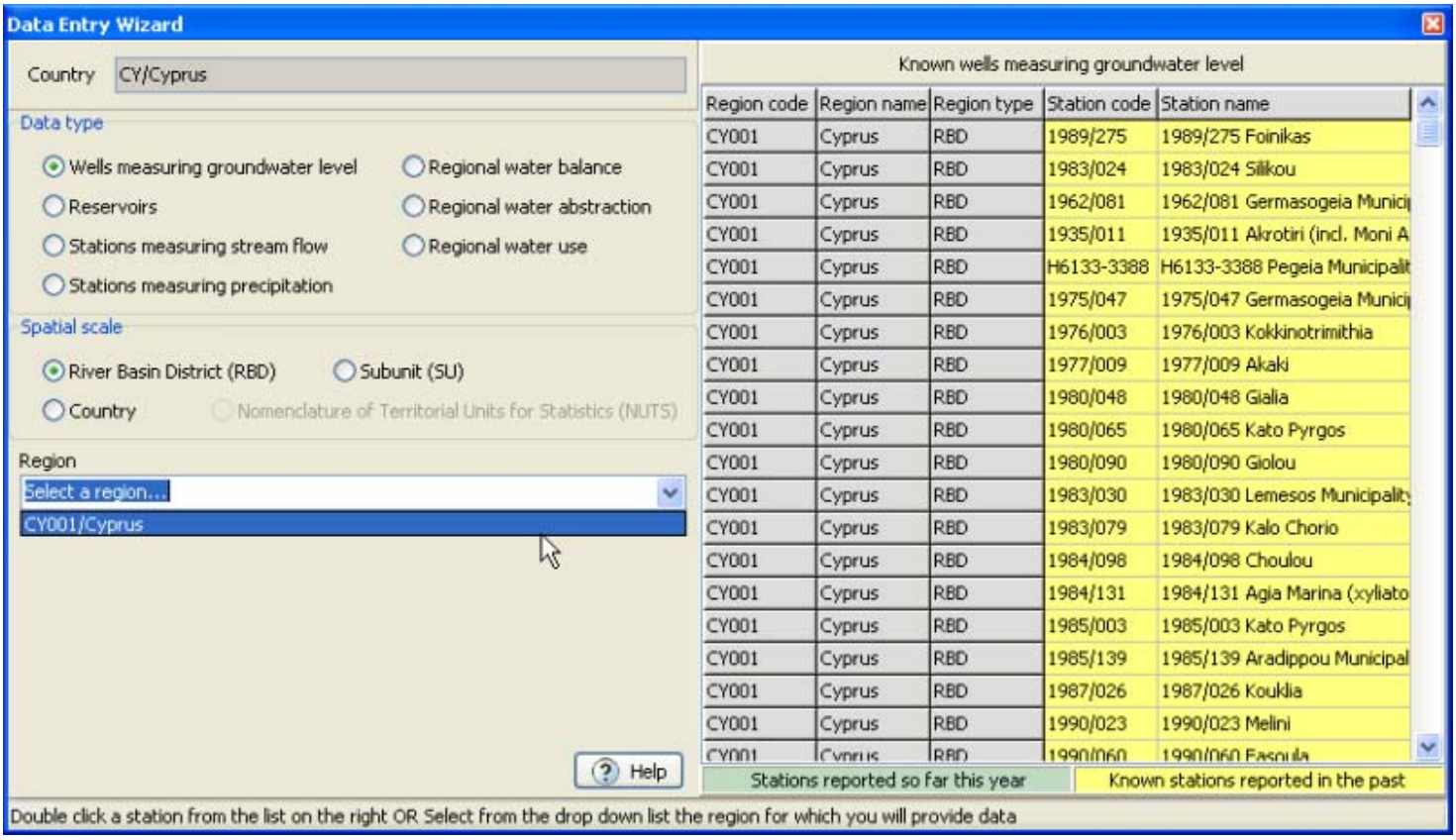


Figure 3C: Data Entry Wizard - Region selection

- Once you have selected the region, you are asked to specify whether you intend to provide new data or update existing data (Figure 3D).

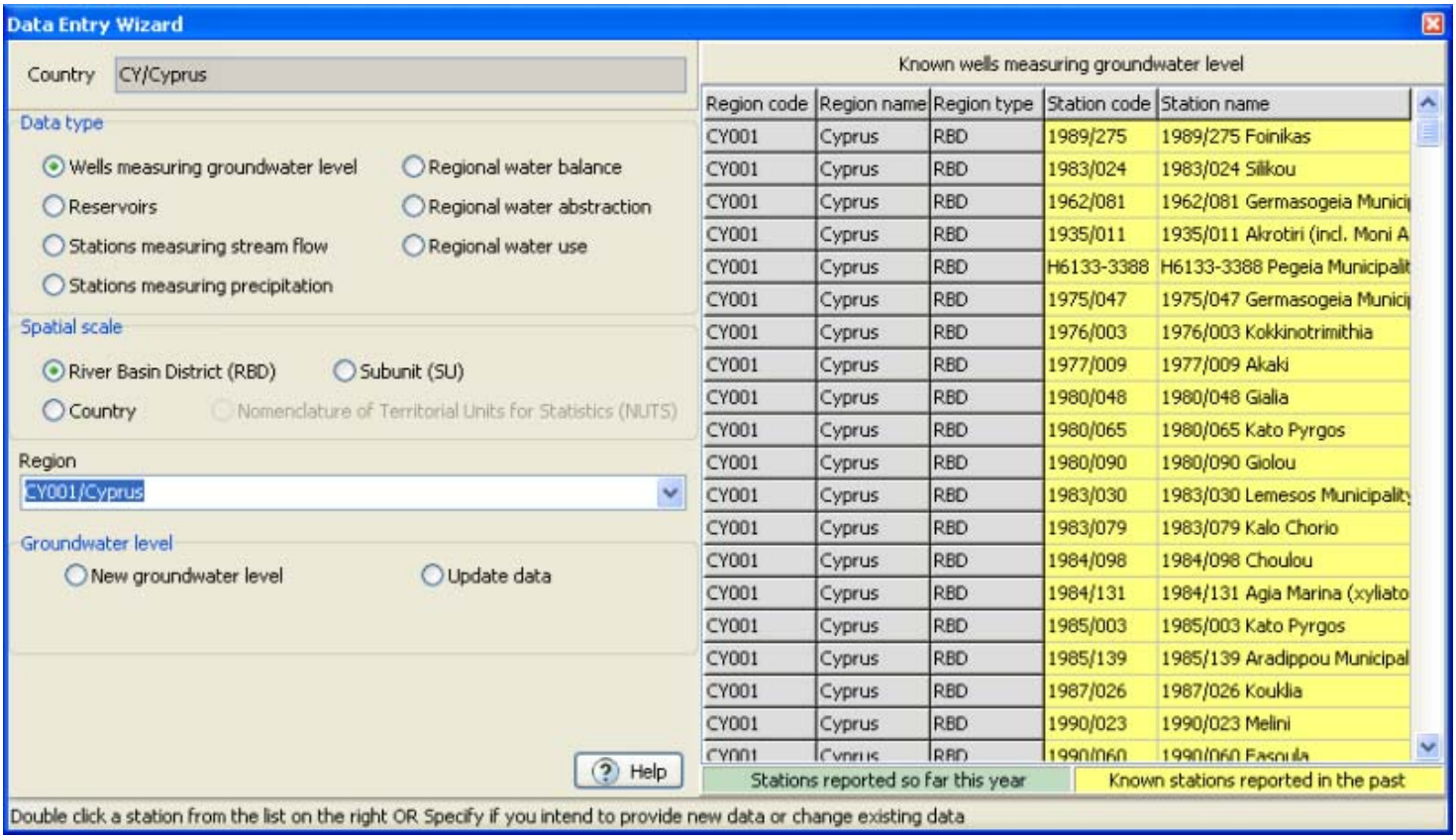
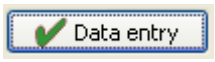


Figure 3D: Data Entry Wizard - New or update data selection

Click on the respective box: If you choose to enter new data, a data entry 

button will appear and by clicking it you will go to the next view.

If you choose to update (or modify) data a pull down menu with the stations you have already entered will appear and by choosing a station you can update its data.

2.2.2 Selecting from known stations/reservoirs

This topic describes how to select stations and reservoirs that have been reported in the past year (or in this year but need to be modified).

Once you have clicked the WIZARD in the "WISE-SoE WQ Data Request" view, the next view which pops-up is the "Date Entry Wizard" view. After specifying the data type for which you want to report (Figure 3E) a list of known stations/reservoirs of the selected category appears on the right side of the view as long as they are known i.e. they have been reported last year, or imported from a file, entered to or modified by the WQ Reporting tool during the current session.

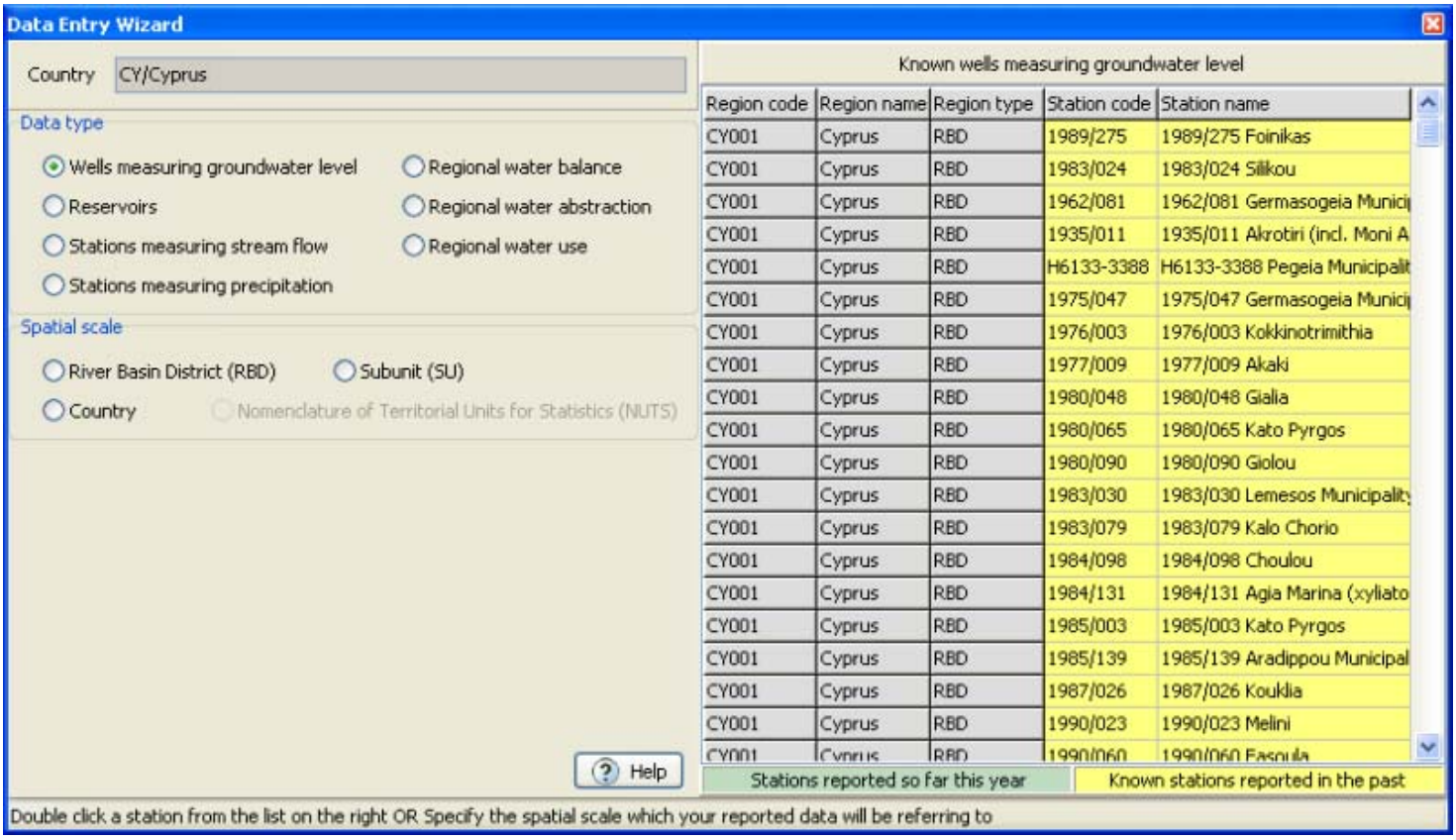


Figure 3E: List of known stations reported in the past

You may select one of the listed stations/reservoirs by double-clicking on the specific name. You may also enter a new station/reservoir by selecting the spatial scale which your reported data will be referring to on the left side of the view (see Entering new stations/reservoirs). Be aware that the WQ Reporting tool will prevent you from entering a second station/reservoir with the same code/ID.

All stations/reservoirs which have been reported in the past appear with yellow background.
All stations/reservoirs which have been imported from a file, entered to or modified by the WQ Reporting tool during this session appear with green background. Consequently, by selecting a station reported last year and entering this years' data (timeseries) the background color of the station changes from yellow to green, as shown in figure 3F for a number of stations.

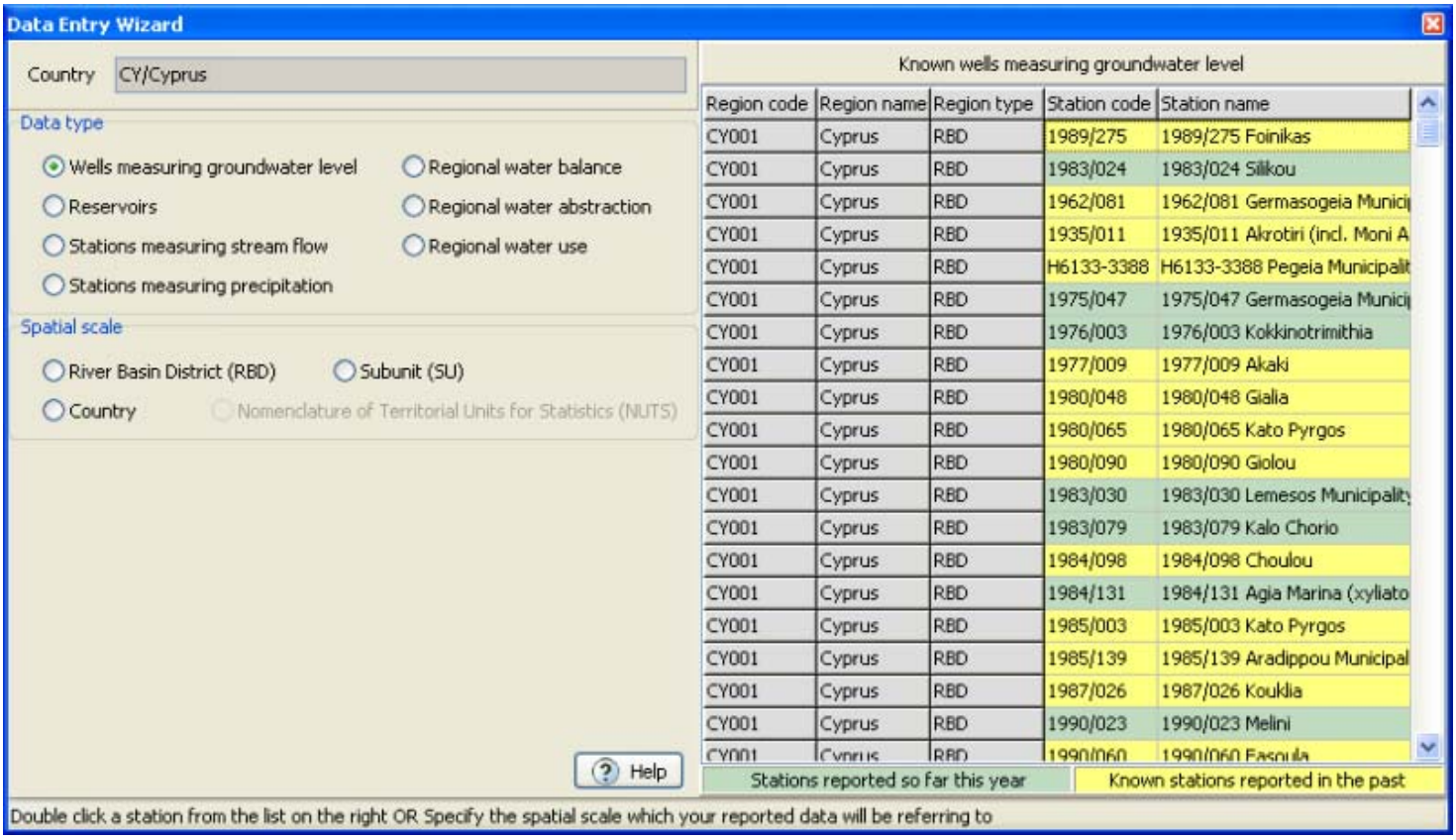


Figure 3F: List of known stations reported in the past and stations reported this year

2.3 Saving and Loading files

Saving a file

At the end of a session do not forget to **save** your data. From the main menu in the "WISE-SoE WQ Data Request" view select File/Save As... (as demonstrated in the Figure below).
It is suggested to keep the filename proposed by the application which consists of the Country code and the date: "country code_YYYY_MM_DD.wqd"

Keep in mind that the application will create two files:

- A wqd-file which stores all your data in an XML format. Use this file to reload your data in case you want to modify/edit etc.
- A zip file, which is a compressed file of the above xml. This file is for upload to your nominated repository when the reporting is completed and finished (the Central Data Repository at http://cdr.eionet.europa.eu or your national Eionet server).

All the data files are saved with the regional settings (i.e. decimal separator) of your PC.

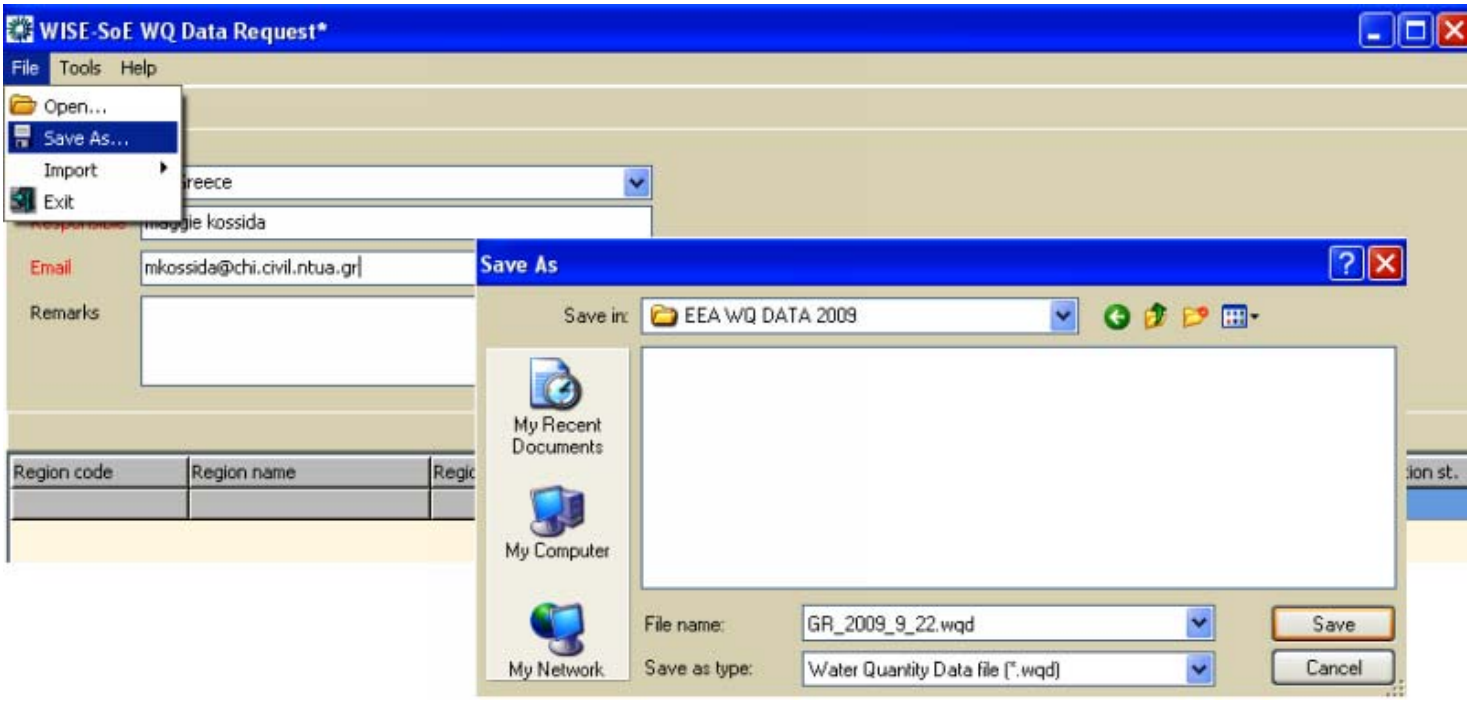


Figure 4: Saving the data files

Loading an existing file

You may want to **reload** the wqd-file that you have saved and continue with the data input at a later time. To do so, from the main menu in the "WISE-SoE WQ Data Request" view select File/Open... (as

demonstrated in the Figure below), and then select the desirable file.

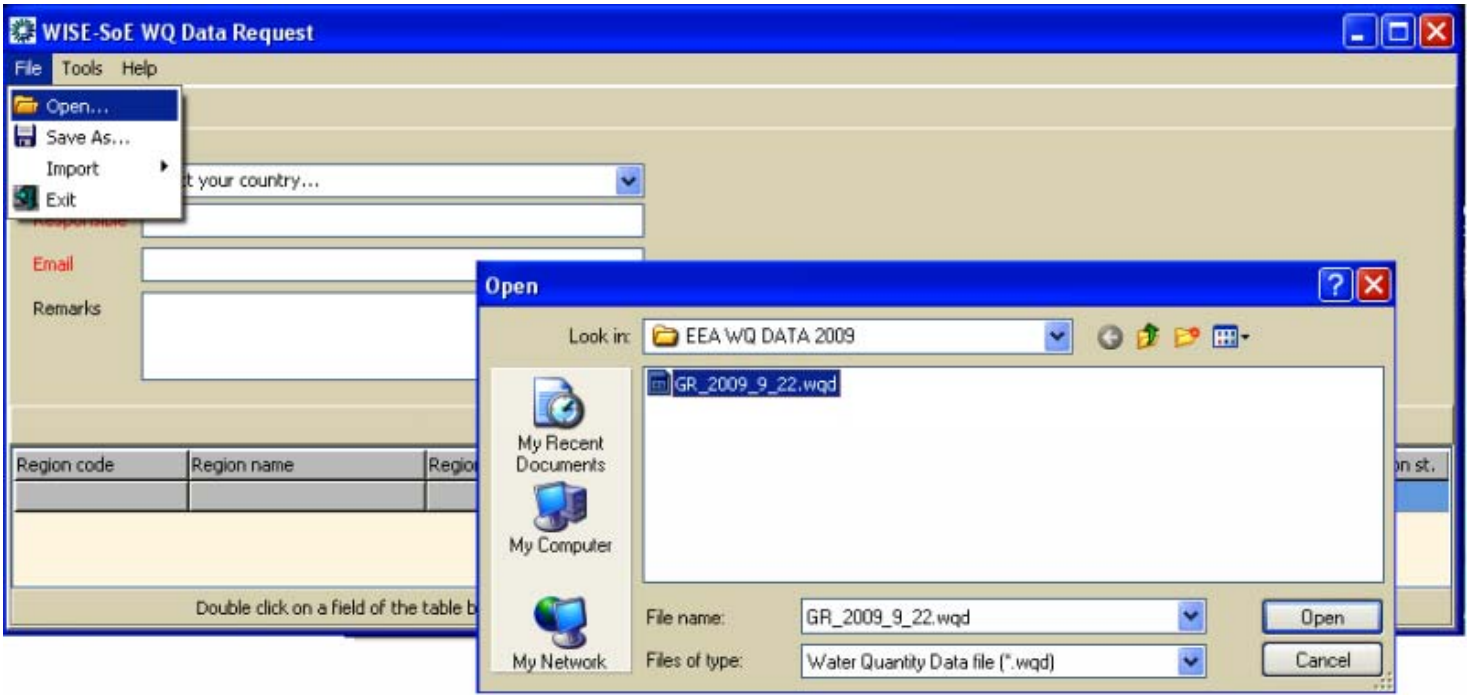


Figure 5: Loading existing data files

Uploading a file to the CDR

When you have completed the data input upload the **compressed zip-file** to your nominated repository (in the CDR). It is suggested again to keep the filename proposed by the application which consists of the Country code and the date: "country code_YYYY_MM_DD.wqd"

You could also report more than one years for the same region (spatial scale) or station. This means that besides the most recent available year you may want to provide data for past years as well. In this case you will provide the extra years as separate files, meaning that you will create a different file each time. For example, if for a specific station (or region) you have reported data for 2008 but also for 2005, you will save and upload 2 separate zip-files (with different names). In this case please take care that the data provided in the two files do not overlap.

2.4 Modifying & Deleting reported data

Modifying reported data

- In order to modify/update a station (applicable for the views: "Groundwater level", "Reservoir", "Streamflow", "Rain gauge station")
  step 1: double click the appropriate field in the table "overview of data reported so far" in the "WISE-SoE WQ Data Request" view or select from the main menu Tools/Lists/...
  step 2: select the station from the list and double-click to open up the respective data view where you can modify the data in the different tabs

Refer to the example below for Streamflow stations:

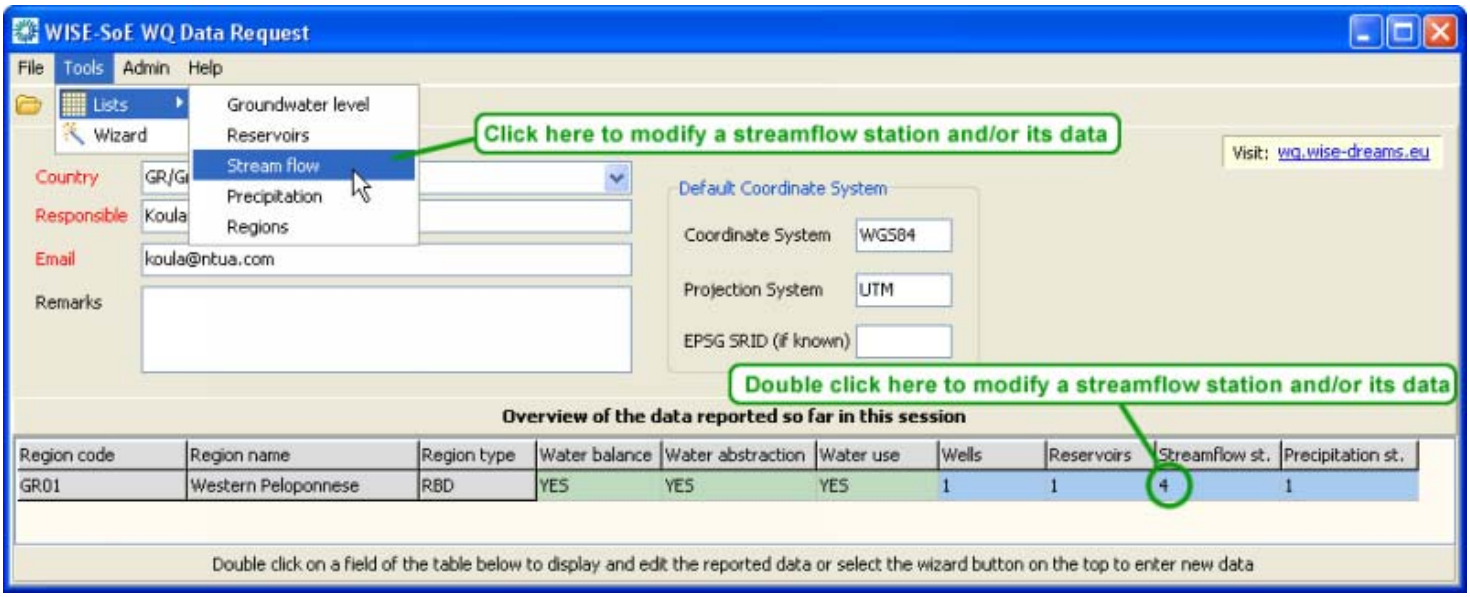


Figure 6: Modifying reported data for a station -step 1

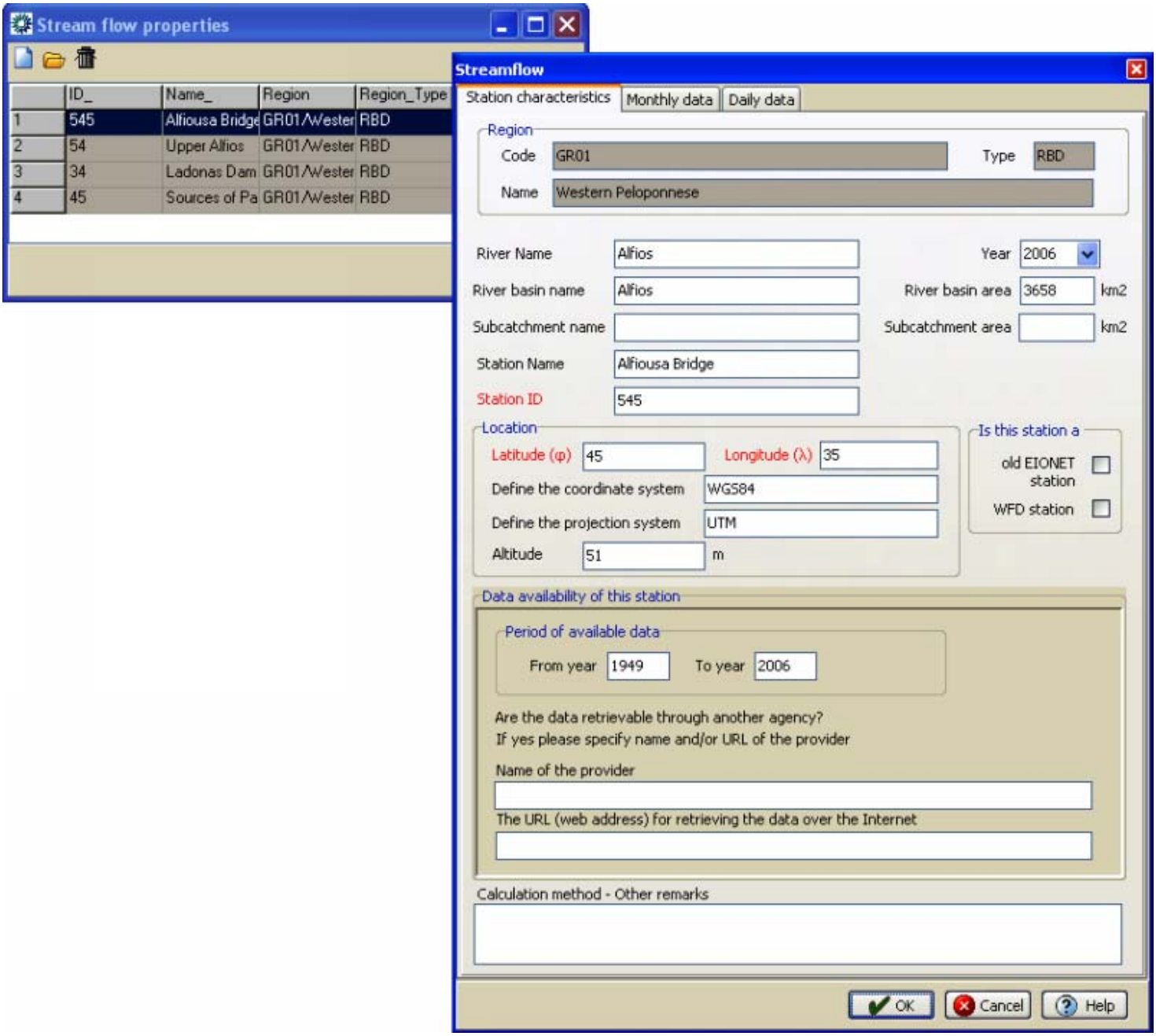
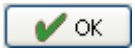


Figure 7: Modifying reported data for a station -step 2

- In order to modify/update regional data (applicable for the views: "Water balance", "Water abstraction", "Water use")
  step 1: double click the appropriate field in the table "overview of data reported so far" in the "WISE-SoE WQ Data Request" (as shown in Figure 6)
  step 2: In the view which opens up, modify the data in the different tabs as desired and then the "OK" button 

Deleting reported data

- In order to delete a station (applicable for the views: "Groundwater level", "Reservoir", "Streamflow", "Rain gauge station")
  step 1: double click the appropriate field in the table "overview of data reported so far" in the "WISE-SoE WQ Data Request" view or select from the main menu Tools/Lists/...
  step 2: select the station from the list
  step 3: Press the "delete" icon 

Refer to the example below for Streamflow stations:

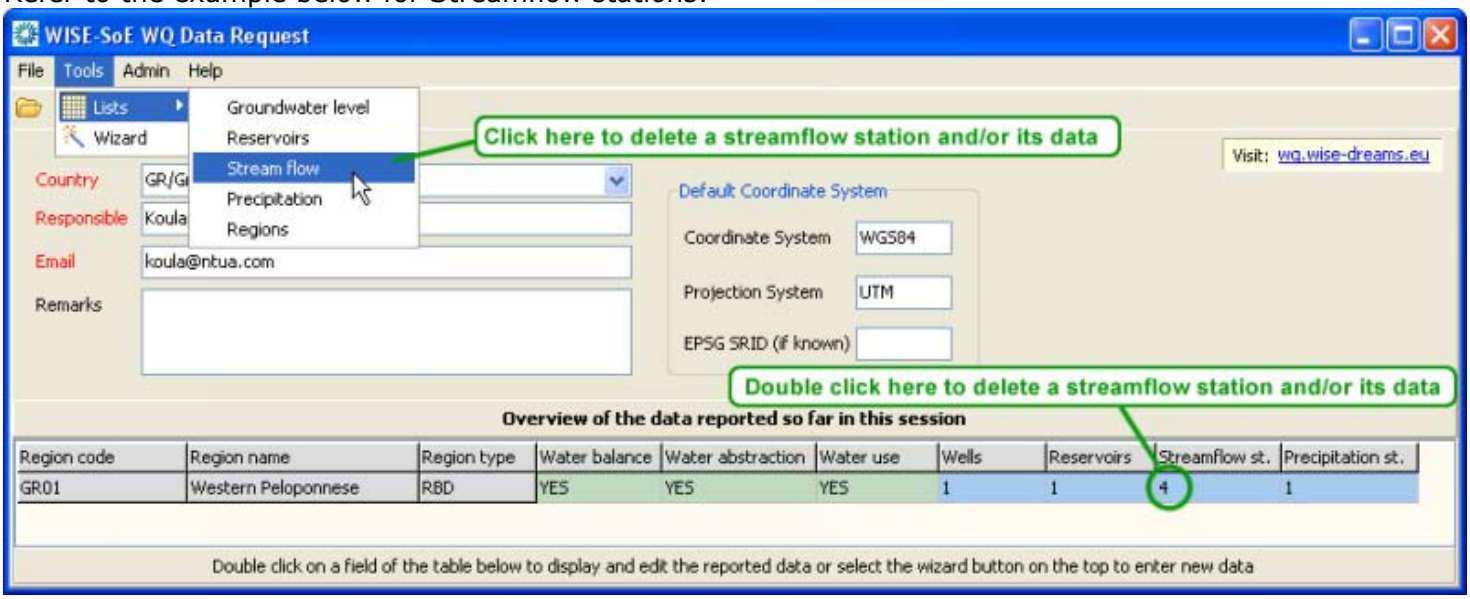


Figure 8: Deleting reported data for a station -step 1

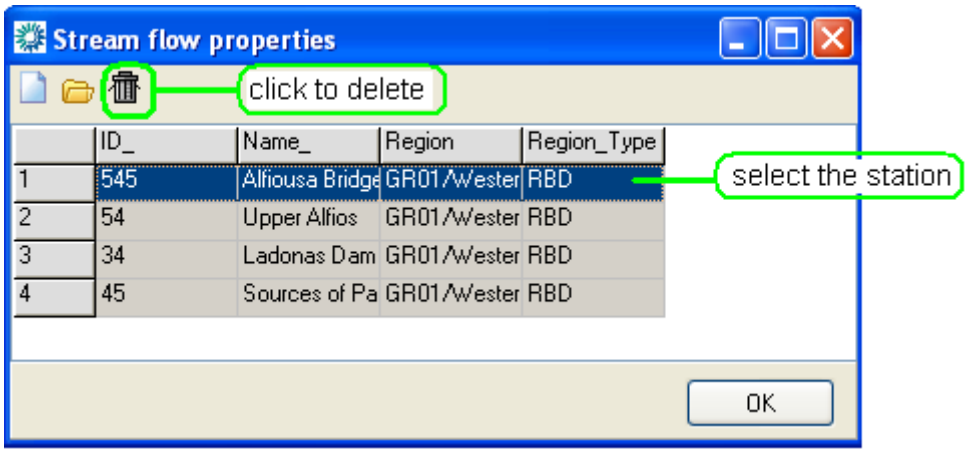
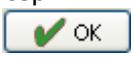


Figure 9: Deleting reported data for a station -step 2

- In order to delete regional data (applicable for the views: "Water balance", "Water abstraction", "Water

use")
step 1: double click the appropriate field in the table "overview of data reported so far" in the "WISE-SoE WQ Data Request" view (as shown in Figure 8)

step 2: In the view which opens up, Press the "CLEAR ALL" button 

and then the "OK" button 

2.5 Data Import Routines

If you have lists of stations (wells, reservoirs, streamflow stations, precipitation stations) or time-series stored in a database or spreadsheet file you can directly import them through CSV files. Each line in the CSV file corresponds to a row in a table. Within a line, fields are separated by a value delimiter, each field belonging to one table column. For analytical instructions refer to the following sections.

The application supports the following data imports:
- stations (streamflow stations, rain gauge stations, wells and reservoirs) and its basic characteristics
- stream flow daily data

Keep in mind that the application expects that the decimal separator (i.e."." or ",") and the date separator (i.e. "-" or "/") in the CSV files are the same with the ones you have specified in the regional setting of your PC.

2.5.1 Importing stations

To import a list of stations or reservoirs from a CSV file select **File / Import / Stations...** from the main menu in the "WISE-SoE WQ Data Request" view (as demonstrated in the Figure below).

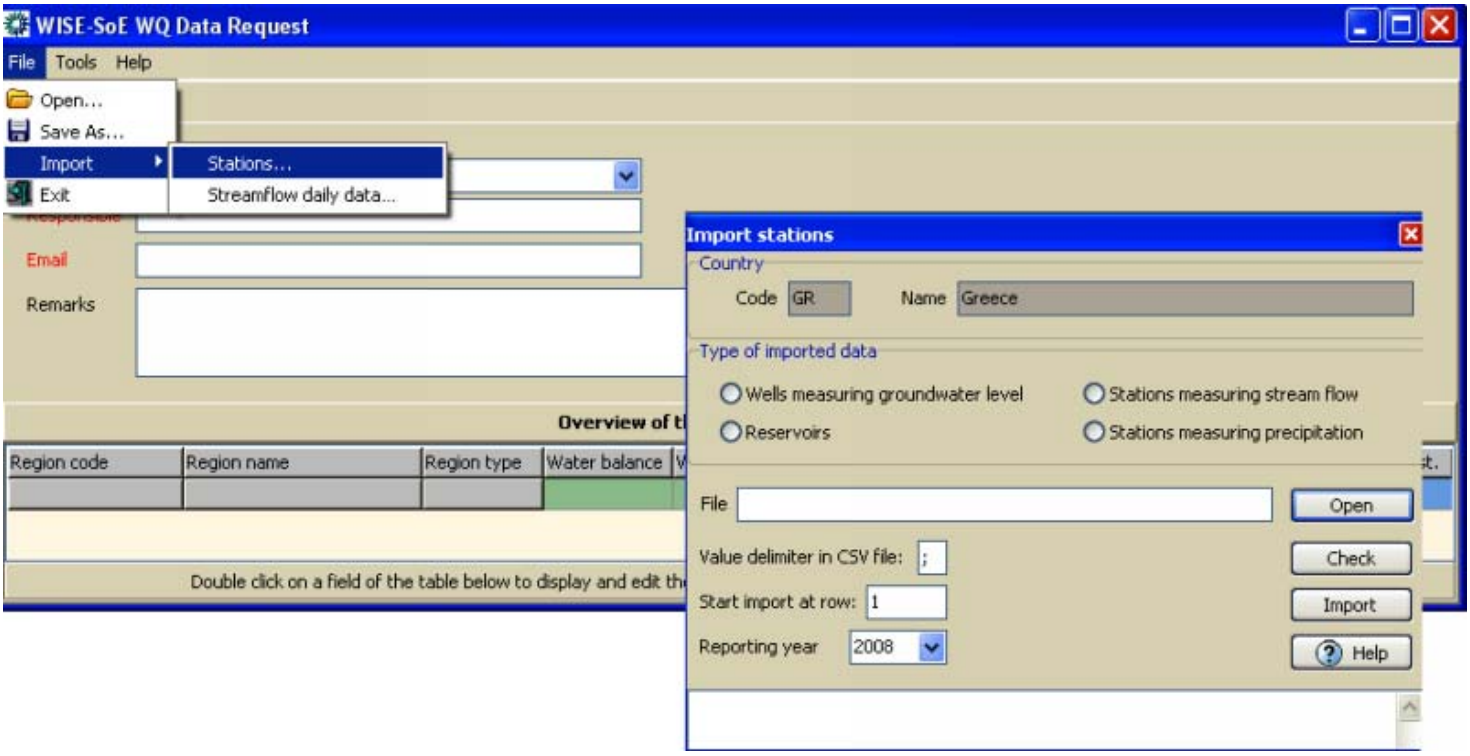


Figure 10: Importing stations

Enter the characteristics of the data in the window that appears:

- The type of the imported data
- The delimiter character, which separates the values in the CSV-file
- The reporting year for all imported data
- The line number from which the import procedure will start. All preceding lines will be ignored (header lines)
- The name of the CSV-file

Before Importing the data you may want to check that the format of your CSV file complies with the pre-defined format (see below)

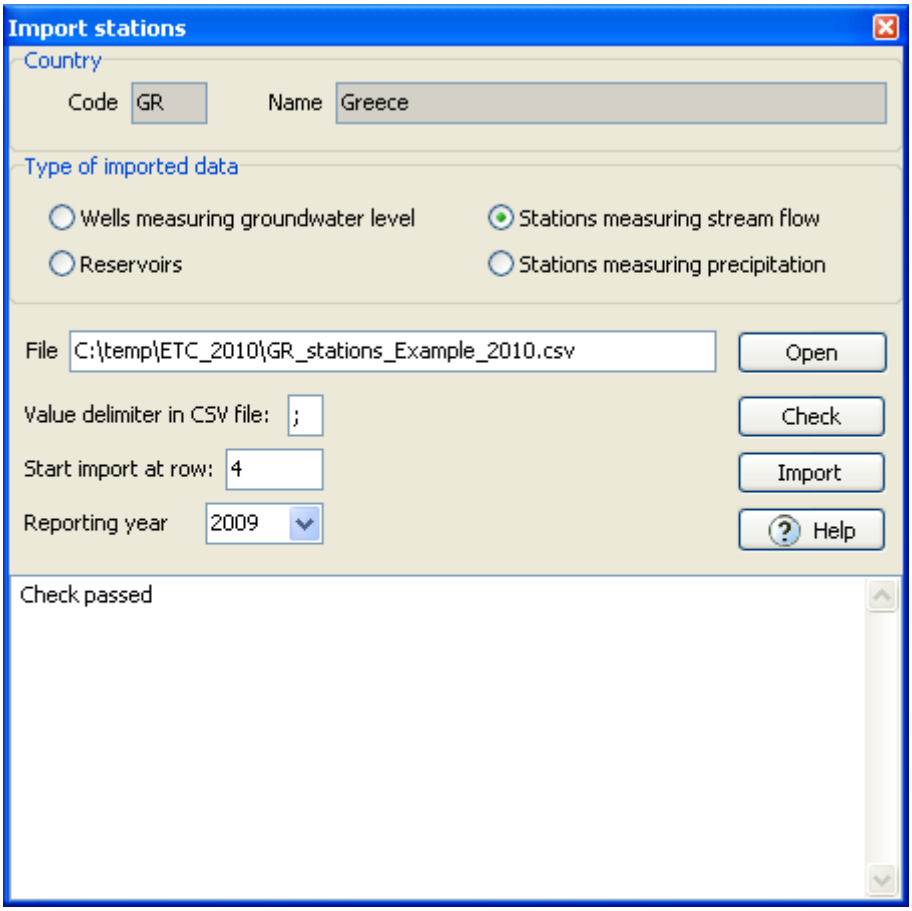


Figure 11: "Import stations" view

For stations measuring precipitation, steam flow and groundwater level, each line must have the following format:
SpScale;RegCode;StCode;StName;Longitude;Latitude;CoordSys
where:
SpScale is the spatial scale which the reported data will be referring to. Valid values are:
- COUNTRY
- RBD (for River Basin District)
- SU (for Sub Unit)

RegCode is the code of the region to which the station belongs
StCode is code (ID) of the station
StName is the name of the station
Longitude is a real number
Longitude is a real number
CoordSys is the coordinate system
Blank lines and those starting with an asterisk (*) are ignored. Leading and tailing blanks before and after the delimiter are omitted. The character for the decimal separator is determined by the computers OS global variable (s. Windows regional settings).

Note: Only the mandatory characteristics for each station are included in the CSV file. The remaining data should be entered in the windows provided by the data entry tool.

Example of CSV-files for importing stations:
****

```
* Rain Gauge Stations
*********************

RBD;GR10;AXZ1513;Acheloos Gefyra;380333.2;220915.2;WGS84
RBD;GR01;DSHJ5666;PYRNARI 2;38035.1;220920.2;WGS84
SU;GR1;JLK0000;kritiko;38135.2;220820;WGS84


*********************
* Streamflow Stations
*********************

RBD;GR10;KOS513;Acherontas;38122.2;220920.2;WGS84
RBD;GR01;TERA66;Mazi56;38036;220921;WGS84
SU;GR1;VALEK00;Verioa;38135.5;220823;WGS84


*********************
* Wells
*********************

RBD;GR10;WLL1243;Pigi;39000;230920.5;WGS84
RBD;GR01;WLL2536;Loutra;38025;221221;WGS84
SU;GR1;WLL1526;Xrysopigi;38145.2;22282.3;WGS84
```

For reservoirs the CSV-file must have an additional value (**ResType**), indicating if it is a man-made or a natural reservoir. Thus, each line must have the following format:
SpScale;RegCode;StCode;StName;Longitude;Latitude;ResType;CoordSys
Valid values for ResType are:

- M, and m for Man-made reservoirs and
- N and n for Natural reservoirs

Example of a CSV-file for importing reservoirs:

```
*********************
* Reservoir
*********************

RBD;GR10;RST1436;Evinos; 39123;230922.5;M;WGS84
RBD;GR01;VGIT5667;Gefira Vatia;38512.5;245699;N;WGS84
SU;GR1;TRY678;Orestino;39152.5;228896;m;WGS84
```

2.5.2 Importing daily streamflow data

To import daily data of stations measuring streamflow from a CSV file select **File / Import / Streamflow daily data…** from the main menu in the "WISE-SoE WQ Data Request" view as demonstrated in the Figure below.

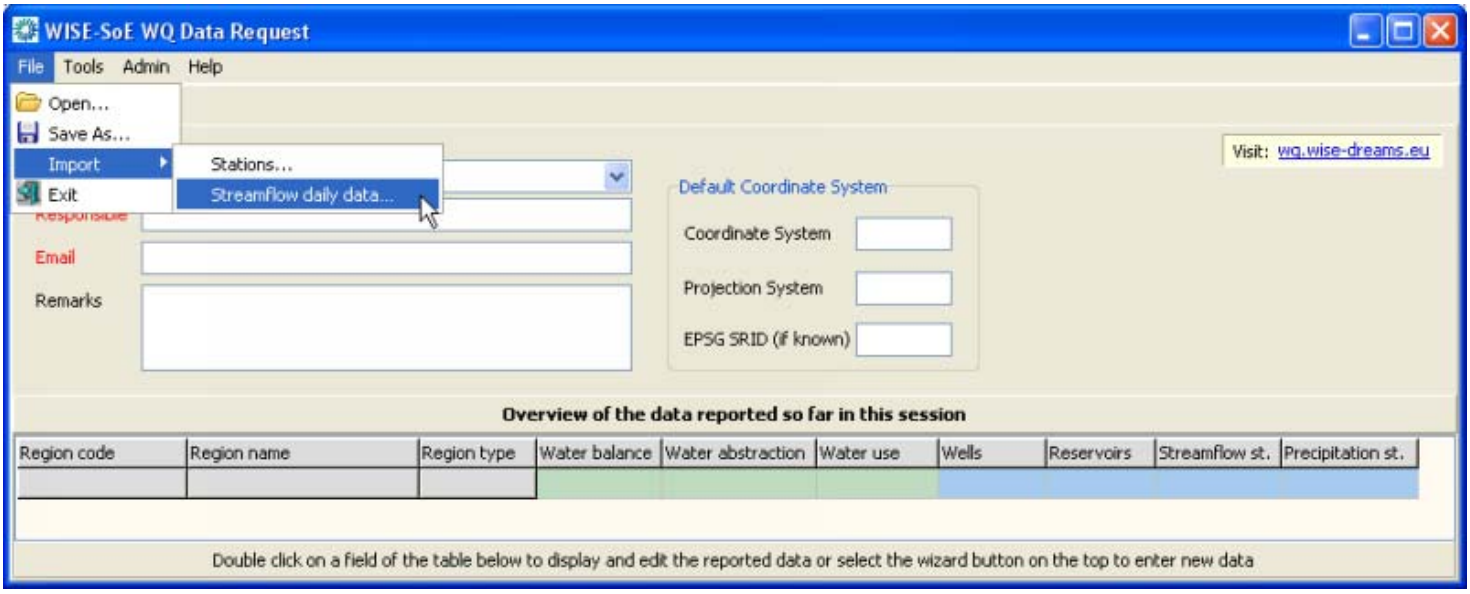


Figure 12: Importing daily streamflow data

Enter the characteristics of the data in the window that appears:

- The delimiter character, which separates the values in the CSV-file
- The line number from which the import procedure will start. All preceding lines will be ignored (header lines)
- The name of the CSV-file

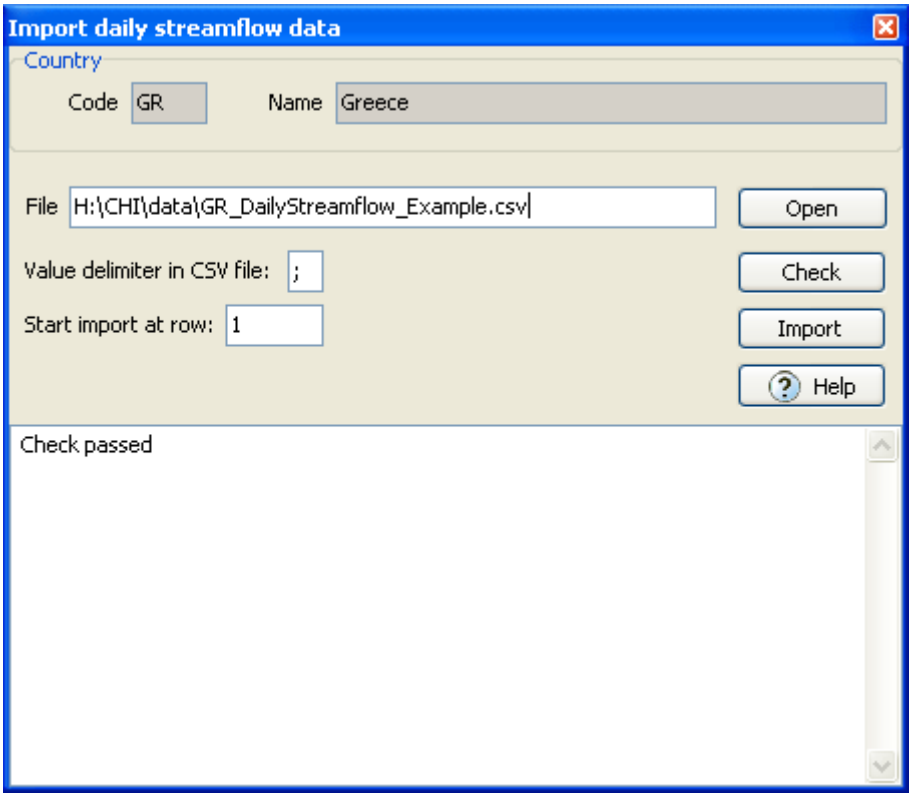


Figure 13: "Import streamflow daily data" view

Each line must have the following format:

StCode;Date;Value
where:
- **StCode** is the code (ID) of the station.
- The **Date**. The date separator and the order for day, month and year are determined by the computers OS global variable (s. Windows regional settings)**.**
- **Value** is the streamflow for the specified day. The character for the decimal separator is determined by the computers OS global variable (s. Windows regional settings).

Blank lines and those starting with an asterisk (*) are ignored. Leading and tailing blanks before and after the delimiter are omitted.

Example of a CSV-file for importing daily streamflow time series

```
*****************************
* Daily streamflow time series
*****************************

**** Station 1
St1;1/1/2008;10.10
St1;2/1/2008;10.23
St1;3/1/2008;10.30
St1;4/1/2008;10.48
St1;5/1/2008;10.61
St1;6/1/2008;10.74
St1;7/1/2008;11.00
St1;8/1/2008;11.13
St1;9/1/2008;11.26
St1;10/1/2008;11.38
St1;11/1/2008;11.51
St1;12/1/2008;12.00
St1;13/1/2008;11.77
St1;14/1/2008;11.90
St1;15/1/2008;11.10
St1;16/1/2008;12.15
St1;17/1/2008;12.28
St1;18/1/2008;12.41
St1;19/1/2008;12.54
St1;20/1/2008;13.00
St1;21/1/2008;12.80

**** Station 2
St2;1/6/2007;5.10
St2;2/6/2007;5.23
```

Additionally, the following rules apply:
- Time series of only one year between 1998-2008 per station may be imported
- While the reporting year may differ from station to station, all data of a station must be of the same (calendar) year.
- Time series do not have to be ordered
- Any existing daily data will be overwritten, as well as the reporting year of the specific station

Part

3 WATER AVAILABILITY

The information requested related to the water availability is divided in regional aggregated data (Regional Water Balance), and point measurements (wells measuring groundwater level, reservoirs, stations measuring streamflow, stations measuring precipitation) as demonstrated in the diagram bellow:

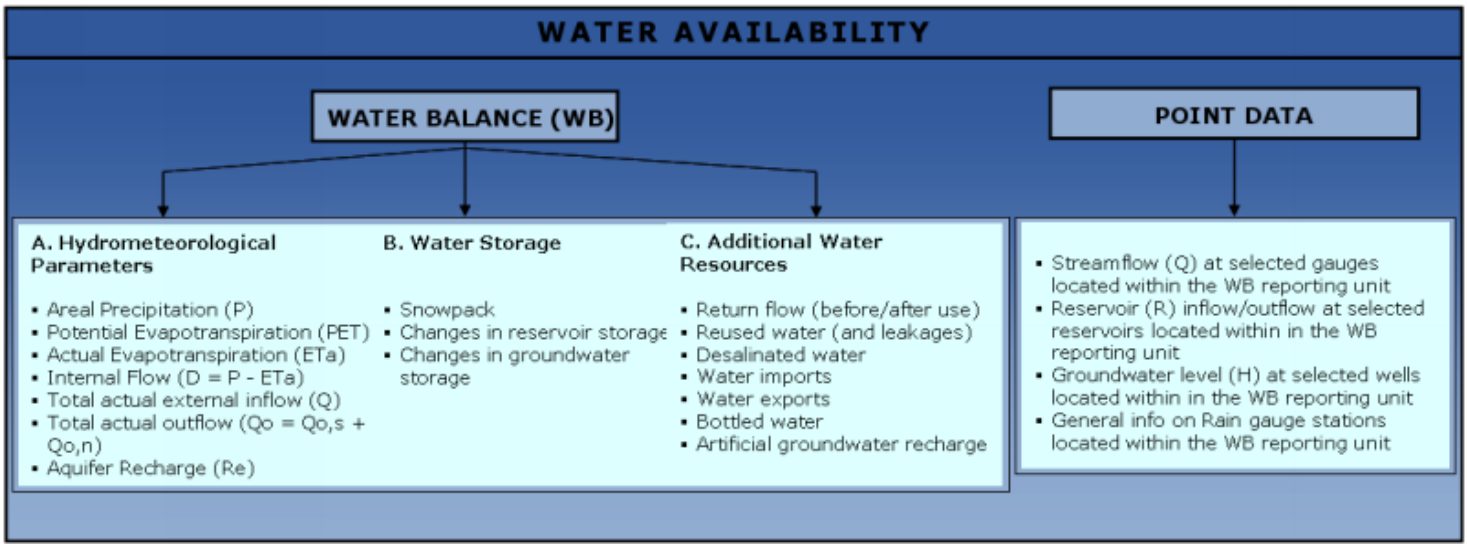


Figure 14: Water Availability dataset flowchart

3.1 REGIONAL WATER BALANCE

Regional Water Balance datasets

The Water Balance view comprises of 6 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the diagram below.
The parameters which are requested in each tab and their definitions are provided in the following tables of this section (Tables 4-9).

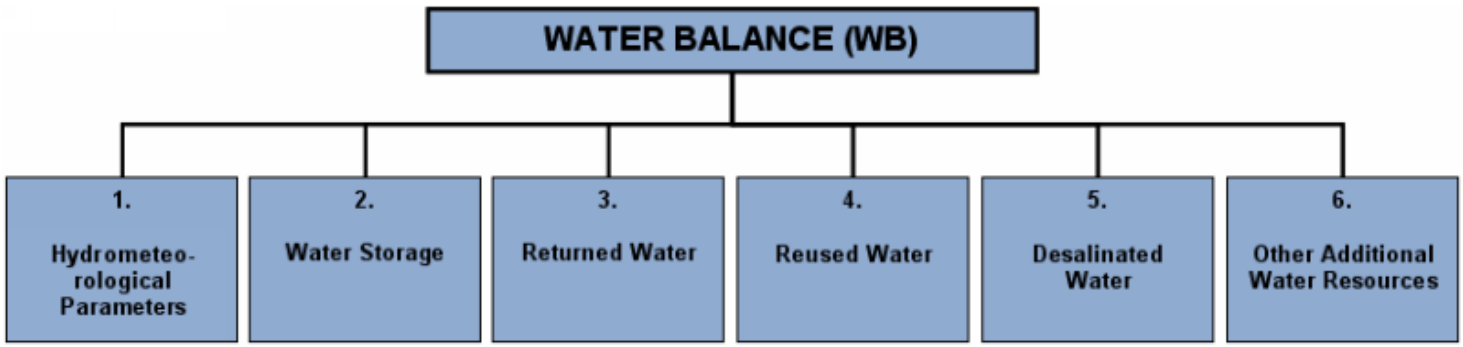


Figure 15: Regional Water Balance tabs (each relating to a dataset)

**Note that returned water, reused water, desalinated water are conceptually considered as additional water resources in alignment with Figure 2 presented in the previous "water availability" section*

Reporting Scale

- The reporting spatial scale in the one you have pre-selected in the "Data Entry Wizard" view and can be a River Basin District (RBD), a sub-unit (SU), a statistical territorial unit (NUTS) or a Country. Please report at the **SMALLEST available spatial scale,** and make sure that you have covered the entire territory of your country. In case that through your reporting in the selected scale you did not mange to cover the entire territory of your country (e.g. your country has 10 RBDs but you only reported data for 9 of them, thus you have not covered the entire territory of your country) it is requested to also report country level data in order to ensure continuation of the representation of your country.
- Regarding the temporal resolution for which you report the data, you have the flexibility to report at different scales: Monthly, Seasonal and Annual. Please report at the **LOWEST available temporal scale** (the preferred one is Monthly). In case that through your reporting you did not mange to cover the entire year (e.g. the year has 12 months but you only reported data for 8 of them, thus you have not covered the entire year) it is requested to also report annual data in order to ensure continuation of the representation of your country.

Additional definitions (common in all the 6 tabs)

Month 1(Jan) - Month 12: the monthly value (total volume of the month) for each reported parameter

Annual: the annual value (total volume of the year) for each reported parameter (= sum of monthly values)

Wet season: the value of the wet season (total volume of the wet season). Wet season is defined from October-March in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

Dry season: the value of the dry season (total volume of the dry season). Dry season is defined from April-September in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

LTAA: Long Term Annual Average. This value should be based on annual values, averaged over a period of at least 20 consecutive years. It is recommended that the LTAA values are consistent with the annual values provided, using the same methods and basic data. The Reference period of the LTAA (From YYYY - To YYYY) is also requested. In case your period length is less than 20 consecutive years it is designed to still be accepted by the tool as far as it is not less than 10 years. If less than 10 years, then it is rejected.

hm3: million cubic meters

Remarks

At the bottom of each view a field is provided for Remarks entry. Extra information on the calculation method used, or additional relative information including URLs (such as reports, maps etc.) can be entered there. You could also enter comments and feedback if desired.

3.1.1 Hydrometeorological Parameters

The requested parameters and their definitions are provided in the table below and presented in the following diagram:

Variable	Definition	Unit
Areal Precipitation (P)	Total volume of atmospheric wet precipitation (rain, snow, hail etc.). Precipitation is usually measured by meteorological or hydrological institutes.	unit: million cubic meters (hm^3)
Potential Evapotranspiration (PET)	The maximum quantity of water capable of being evaporated in a given climate from a continuous stretch of vegetation covering the whole ground and well supplied with water.	unit: million cubic meters (hm^3)
Actual Evapotranspiration (ET_a)	Total volume of evaporation from the ground, wetlands and natural water bodies and transpiration of plants. According the definition of this concept in hydrology, the evapotranspiration generated by all human interventions is excluded, except rain-fed agriculture and forestry. The "actual evapotranspiration" is measured or calculated using different types of mathematical models, ranging from very simple algorithms (Turc, Penmann, Budyko, Turn Pyke, etc) and corrections related to vegetal cover and season to schemes that capture the hydrological cycle in detail. **Please do not report potential evapotranspiration here.** *Potential Evapotranspiration (PET)> Actual Evapotranspiration (ET_a)*	unit: million cubic meters (hm^3)
Internal flow ($D = P - ET_a$)	Total volume of river run-off and groundwater generated, in natural conditions, exclusively by precipitation into a territory. The internal flow is equal to precipitation less actual evapotranspiration and can be calculated or measured. If the river run-off and groundwater generation are measured separately, transfers between surface and groundwater should be netted out to avoid double counting.	unit: million cubic meters (hm^3)
Total actual external inflow (Q_i)	Total volume of actual flow of rivers and groundwater, coming from neighboring territories (e.g. RBDs) within or outside the country.	unit: million cubic meters (hm^3)

Variable	Definition	Unit
Total actual outflow ($Q_o = Q_{o,s} + Q_{o,n}$) of which $Q_{o,s}$ **into the sea** of which $Q_{o,n}$ **into neighboring territories**	Actual outflow of rivers and groundwater into the sea plus actual outflow into neighboring territories (within or outside the country). Total actual outflow – of which into the sea: The total volume of actual outflow of rivers and groundwater into the sea. Total actual outflow – of which to neighboring territories: The total volume of actual outflow of rivers and groundwater into neighboring territories (RBDs or Countries if Country level is reported). *Total actual outflow into neighbouring territories $Q_{o,n}$ + Total actual outflow into the sea $Q_{o,s}$ = Total actual outflow Q_o*	unit: million cubic meters (hm^3)
Aquifer Recharge (Re)	Total volume of water added from outside to the zone of saturation of an aquifer through natural recharge only (either from percolation of precipitation or from a loosing surface water body-river, lake). Artificial recharge is excluded here.	unit: million cubic meters (hm^3)

Table 4: Hydrometeorological Parameters

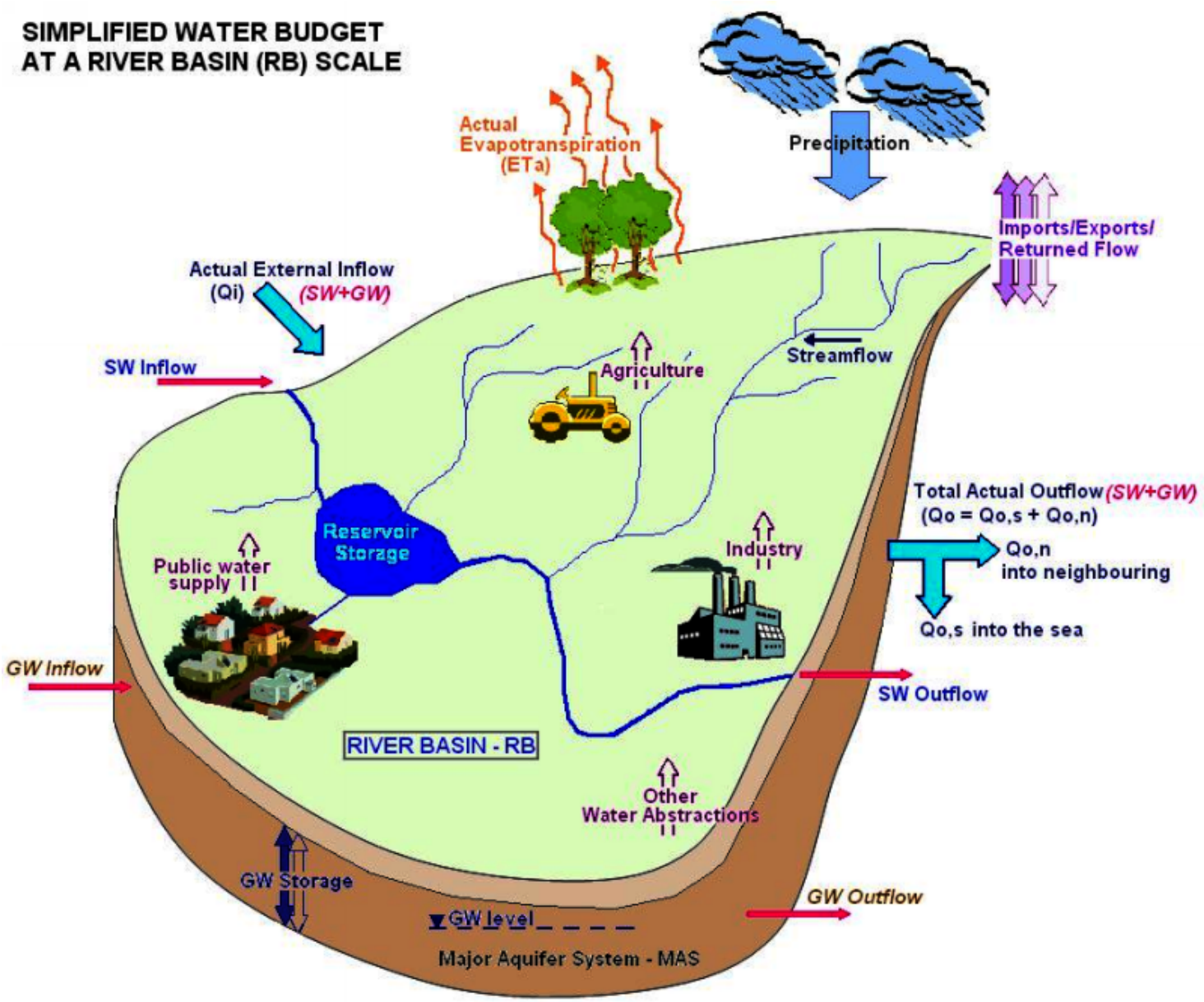


Figure 16: Schematic illustration of the simplified water budget depicting the Hydrometeorological Parameters

3.1.2 Water Storage

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Snowpack (estimates of changes in storage; volume of snow)	Volume of snow accumulated stored over a period which can result (fully or partially) in snow melted water. It does not include the **long-term** glaciers storage (but does include the intermediate-term storage), and it is measured at a reference time. The long-term glacier storage of ice on time scales of years to centuries is not of interest for the purposes of this reporting. What is of interest and we wanted to be included in the reporting is the intermediate-term storage which affects runoff and river flow and varies seasonally.	unit: million cubic meters (hm^3)
Changes in reservoir storage	Volumetric change of the water stored in a reservoir (natural and manmade) at a given time	unit: million cubic meters (hm^3)
Changes in groundwater storage	Volumetric change of the groundwater stored in an aquifer at a given time	unit: million cubic meters (hm^3)

Table 5: Water Storage Parameters

3.1.3 Returned water

The requested parameters and their definitions are provided in the following table 3 .
The conceptual flowchart of returned water breakdown is presented in the following diagrams:

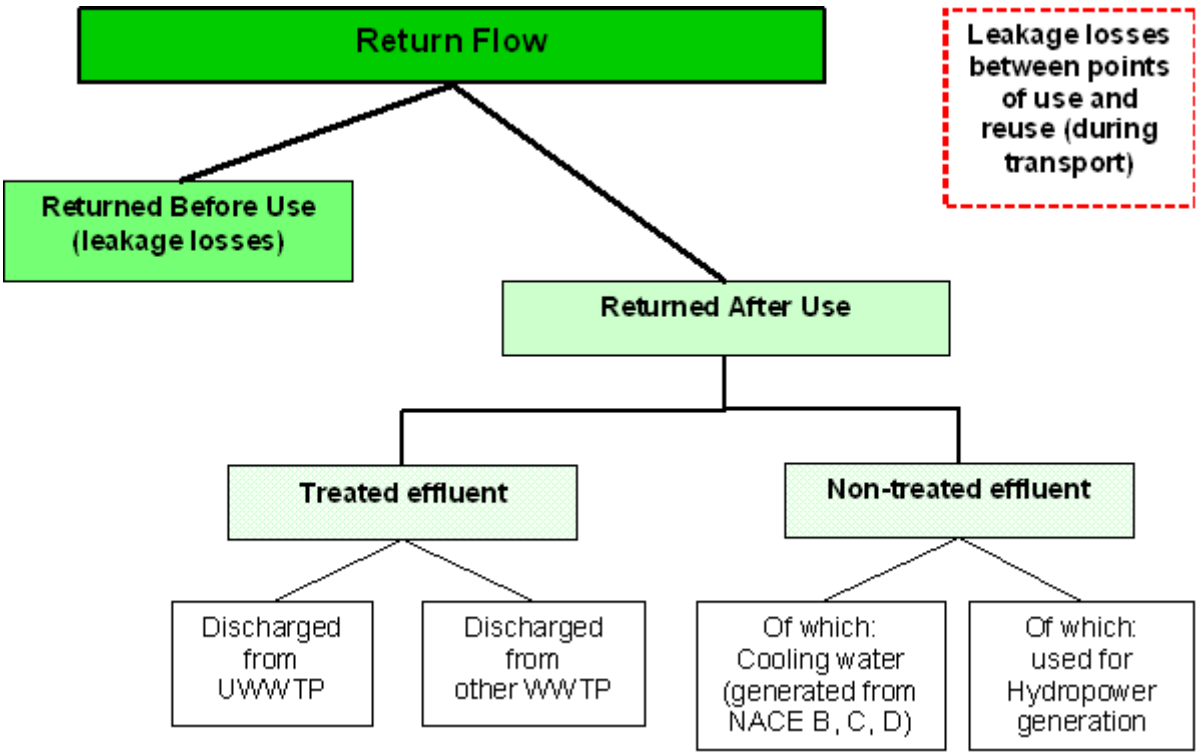


Figure 17: Returned water breakdown

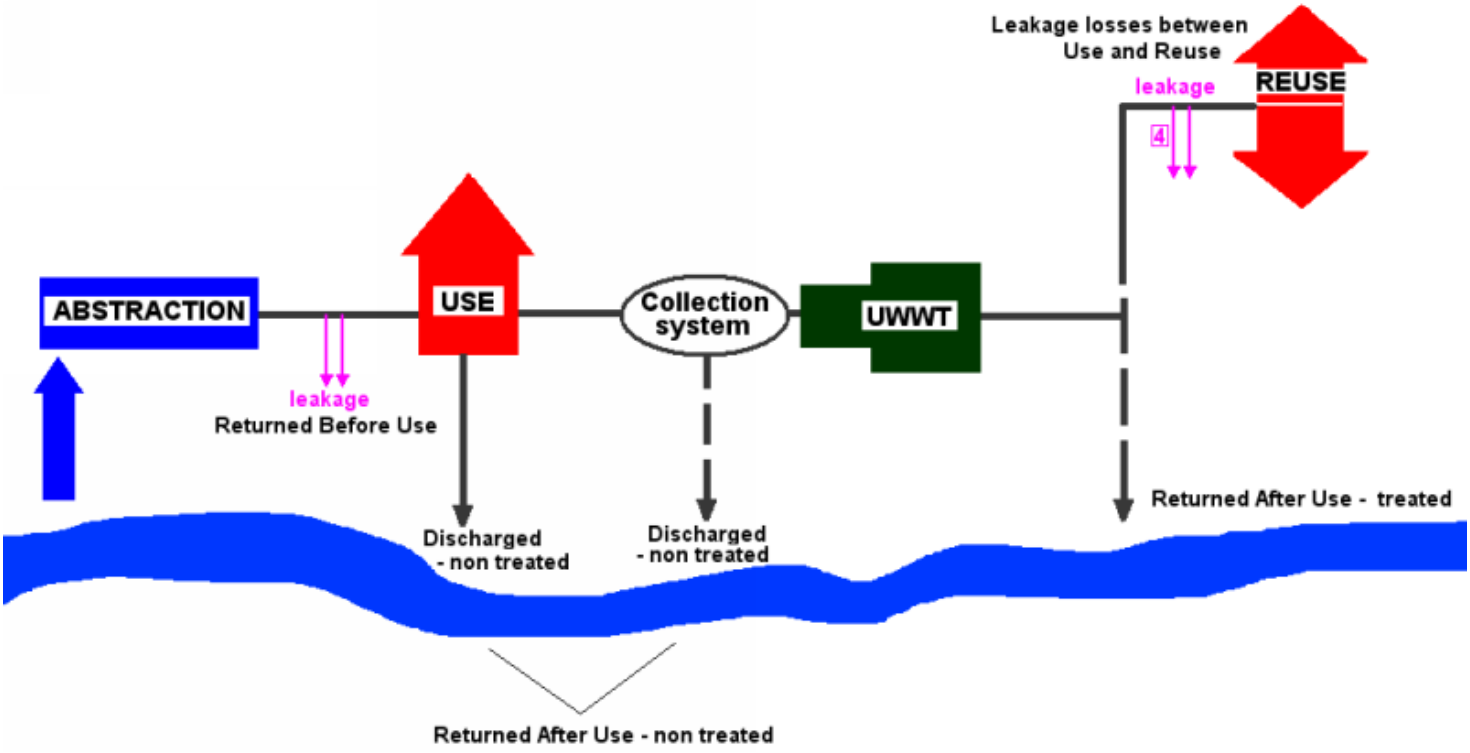


Figure 18: Returned water conceptual flowchart

Variable	Definition	Unit
Total Return flow	Water abstracted from any fresh water source and discharged into fresh waters before or after use. Discharges to the sea are excluded. *Returned Before Use (Leakage Losses) + Returned After Use (Total) = Return flow (Total)*	unit: million cubic meters (hm^3)
1. Returned Before Use (Leakage Losses)	Water abstracted from any freshwater source and returned into a freshwater recipient before use. It refers to the volume of water lost during transport **through leakage** between a point of abstraction and a point of use, and/or between a water supplier/distributor. Discharges to the sea are excluded. **Do not** report here evapotranspiration losses, or water which occurs during mining or construction activities.	unit: million cubic meters (hm^3)
2. Returned After Use	Total volume of water discharged after use as treated effluent or as non-treated into fresh waters. **Cooling water is included**. Discharges to the sea are excluded. The hydrological unit-recipient of the discharge is also requested if it is different than the one where the water was originally abstracted	unit: million cubic meters (hm^3)
2a. Treated Effluent Of which: – Treated effluent (UWWTP) – Treated effluent (Other WWTP)	Effluent that has undergone treatment through UWWTP or other WWTP. **UWWTP**: all treatment in urban wastewater treatment plants (UWWTP's). UWWTP's are usually operated by public authorities or by private companies working by order of public authorities. Includes the treatment of wastewater delivered to treatment plants by trucks. **Other WWTP**: treatment in any non-public treatment plant, e. g. industrial wastewater treatment plants or treatment facilities of hotels, army camps etc. that do not fall under Independent Treatment. Excluded from "other wastewater treatment" is the treatment in septic tanks. *Treated effluent (UWWTP) + Treated Effluent (Other WWTP) = Treated effluent (Total*	unit: million cubic meters (hm^3)
2b. Non-treated Effluent Of which: – Non-treated effluent used for cooling (generated from NACE activities B, C, D) – Non-treated effluent used for hydropower generation	Effluent that has not undergone any wastewater treatment and was retuned to the water body. It includes water that was directly discharged from a user (e.g. domestic, industrial etc. including cooling water, mining, and water used for **hydropower** generation), and water lost from the waste water collection system (as overflow or leakage). *Non treated effluent (Total) > Non treated effluent (cooling water) + Non treated effluent (Hydropower)*	unit: million cubic meters (hm^3)
Leakage losses between Use and Reuse	It refers to the volume of water lost during transport through leakage **between points of use and reuse,** after the treated effluent leaves the wastewater treatment plant and is transported to the recipients. Do not report here evapotranspiration losses	unit: million cubic meters (hm^3)

Table 6: Returned Water Parameters

An additional question is provisioned in this view where you can type in the hydrological unit-recipient of the return flow if this is different that the one where it was originally abstracted. This is an important information since it allows the correct allocated of the returned water volume.

3.1.4 Reused water

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Reused water (total volume) Of which: – Domestic – Agriculture, forestry, fishing (NACE A) - of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) - of which cooling water for industry – Production of electricity (NACE D) – cooling water for electricity production – Services (e.g. tourism) (NACE I) – Other	Water that has undergone wastewater treatment and is delivered to a user as reclaimed wastewater. This means the direct supply of treated effluent to the user. Excluded is waste water discharged into a watercourse and used again downstream. **Recycling is excluded**. If this amount of water is made available (totally or partially) for reuse to recipients which are located in a different hydrological unit (than the one where the water was originally abstracted) -in other words the water is exported for reuse elsewhere- this should be mentioned to avoid miscalculations, and the hydrological unit receiving this water should be defined if possible. *Reused water (Domestic) + Reused water (NACE A) + Reused water (NACE B) + Reused water (NACE C) + Reused water (NACE D) + Reused water (NACE I) + Reused water (Other) ≤ Reused water (Total)* *The sum of the reused water per activity may be less than the total reused water if the amount of the reused water is not known for each activity.* *Reused water (NACE A) ≥ Reused water (NACE A Irrigation)* *Reused water (NACE C) ≥ Reused water (NACE C Cooling)* *Reused water (NACE D) ≥ Reused water (NACE D Cooling)*	unit: million cubic meters (hm^3)

Table 7: Reused Water Parameters

An additional question is provisioned in this view where you can type in the hydrological unit which receives this amount of water for reuse, if this is different than then one where the water was originally abstracted.

3.1.5 Desalinated water

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Desalinated (total volume) Of which: – Domestic – Agriculture, forestry, fishing (NACE A) - of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) - of which cooling water for industry – Production of electricity (NACE D) - of which cooling water for electricity production – Services (e.g. tourism) (NACE I) – Other	Total volume of water obtained from desalination processes. *Desalinated water (Domestic) + Desalinated water (NACE A) + Desalinated water (NACE B) + Desalinated water (NACE C) + Desalinated water (NACE D) + Desalinated water (NACE I) + Desalinated water (Other) ≤ Desalinated water (Total)* *The sum of the desalinated water per activity may be less than the total desalinated water if the amount of the desalinated water is not known for each activity.* *Desalinated water (NACE A) ≥ Desalinated water (NACE A Irrigation)* *Desalinated water (NACE C) ≥ Desalinated water (NACE C Cooling)* *Desalinated water (NACE D) ≥ Desalinated water (NACE D Cooling*	unit: million cubic meters (hm^3)

Table 8: Desalinated Water Parameters

3.1.6 Other Additional water resources

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Water Imports	Traded bulk water from another territory outside the specific reporting unit (bottled water is not included)	unit: million cubic meters (hm^3)
Water Exports	Traded bulk water to another territory outside the specific reporting unit (bottled water is not included)	unit: million cubic meters (hm^3)
Bottled water – Amount Imported – Amount Exported	Traded bottled water that is imported to and/or exported from the specific reporting unit.	unit: million cubic meters (hm^3)

Variable	Definition	Unit
Artificial Groundwater Recharge Originating sources: – Return flow – Desalinated water – Water imports	Total volume of water added from outside to the zone of saturation of an aquifer through artificial recharge only.	unit: million cubic meters (hm^3)

Table 9: Other Additional Water Resources Parameters

Additional questions are provisioned in this view where you can either type in or select from pre-defined options as follows:

- Specify from which hydrological unit Imports come
- Specify to which hydrological unit Exports go
- Specify where the Artificial Groundwater Recharge originates from: return flow, desalinated water, or water imports?

3.2 Point Measurements

The point measurements requested consist of the following datasets and are analytically described in the following sections of this chapter:

- wells measuring groundwater level
- reservoirs
- stations measuring streamflow
- stations measuring precipitation

In the case of point measurement the actual reporting unit is a single point (no spatial aggregation of data) either a well, a reservoir, a streamflow station, or a rain gauge, which is located within the spatial scale (RBD, SU or Country) that you have selected on the Data Entry Wizard view.

3.2.1 Groundwater level

The Groundwater Level view comprises of 2 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the figure below.
The tab "Well Characteristic" asks for general information, while the tab "Data" asks for the groundwater level measurements.

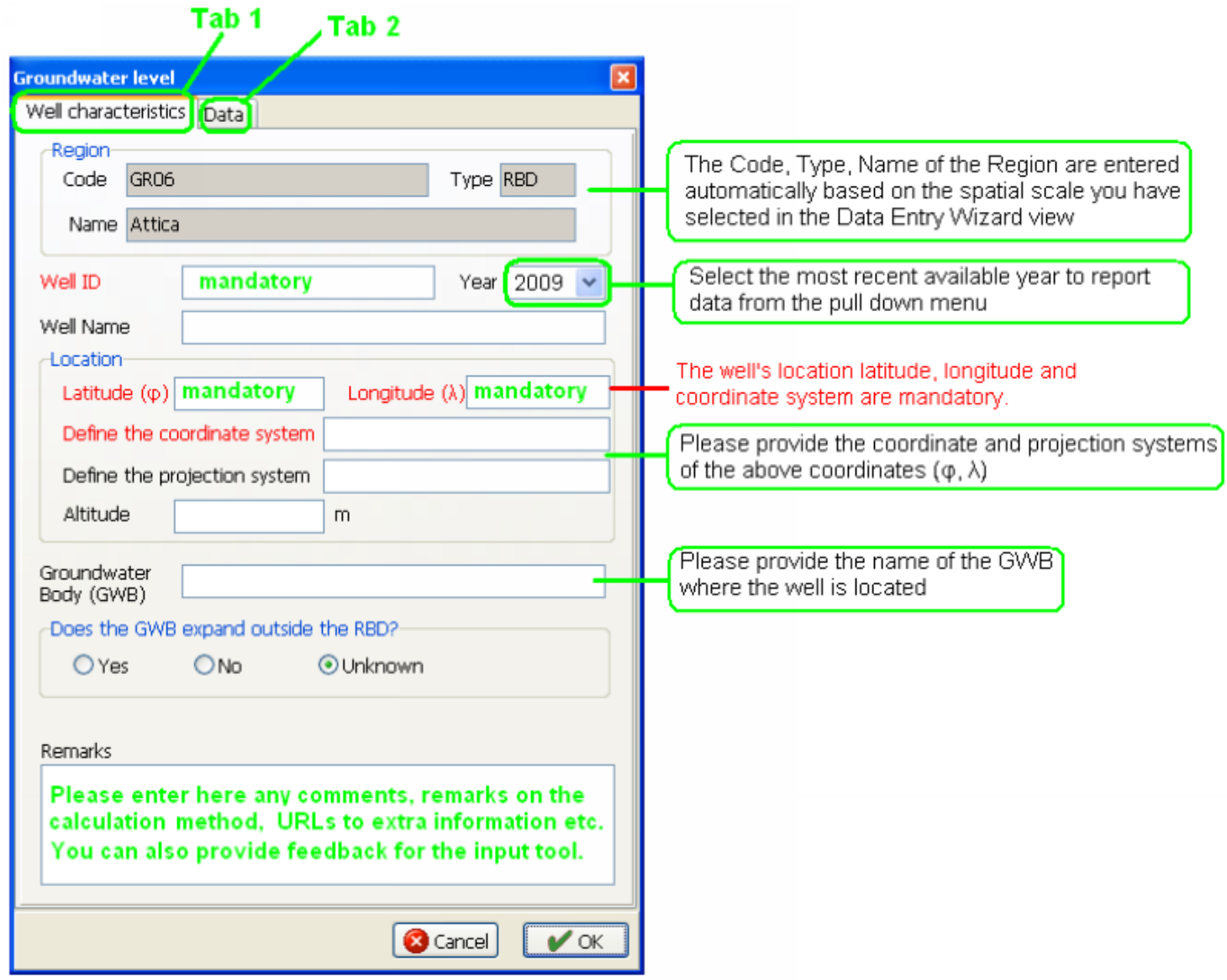


Figure 19: Groundwater Level: Tab "Well characteristics"

The parameters which are requested in the tab "Data" and their definitions are provided in the following table:

Variable	Definition	Unit
Mean Groundwater Level	Groundwater level observations from wells located within the reporting scale (RBD or other). Negative values are accepted in case the groundwater table is below the sea level (e.g. case of Netherlands). The mean groundwater level is requested for each month (Jan-Dec). The mean value of the wet and dry seasons is requested in case that all the monthly values are not provided. The mean annual groundwater level is requested in case that all the monthly values are not provided. The mean LTAA level is requested to allow comparison with the current reporting year, and trends observation.	unit: meters (m)
Month of min. level **Month of max. level**	The month that the minimum and maximum groundwater levels are observed can be selected from the pull down menu.	unit: month

Table 10: Groundwater Parameters

Selection of Groundwater level at monitoring stations (wells):
The wells for which you report the data must be located within the reporting scale (RBD or other) that you have previously selected in the Data Entry Wizard view

The groundwater level reporting has to be linked to the general ground water reporting under the WFD and the quality related SoE GW reporting. The GW stations available at EEA (as reported under WFD art. 8) will be the basis for the reporting also of the GW level**.** To this purpose, representative stations will have to be defined out of the set of the WFD stations reported. The representativity criteria of selecting ground water monitoring sites have bee described in the guidance document on SoE parameter section 2.7.

(http://eea.eionet.europa.eu/Public/irc/eionet-circle/water/library?l=/reporting_eionetwfd/parameter_may2007doc/_EN_1.0_&a=i)

3.2.2 Reservoirs

The view comprises of 2 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the figure below.
The tab "Reservoir Characteristics" asks for general information, while the tab "Data" asks for the reservoir inflow and outflow measurements.

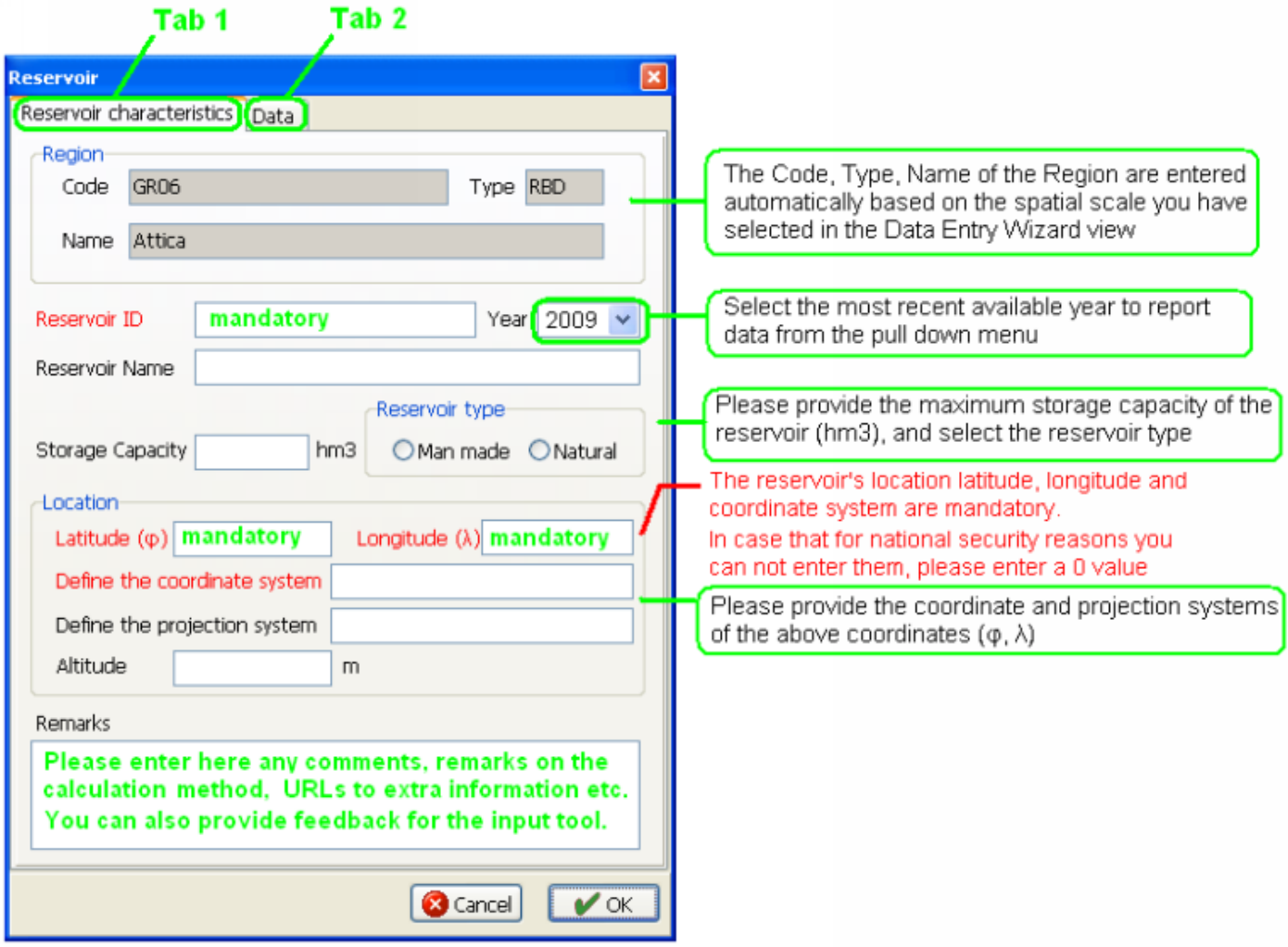


Figure 20: Reservoir: Tab "Reservoir characteristics"

The parameters which are requested in the tab "Data" and their definitions are provided in the following table:

Variable	Definition	Unit
Reservoir Inflow	Total volume of water entering in a natural or manmade reservoir. The monthly inflow (hm^3/month) is requested for each month (Jan-Dec). The mean value of the wet and dry seasons (hm^3/ month) is requested in case that all the monthly values are not provided. The annual inflow (hm^3/year) is requested in case that all the monthly values are not provided. The mean LTAA inflow (hm^3/year) is requested to allow comparison with the current reporting year, and trends observation.	unit: million cubic meters (hm^3)
Reservoir Outflow	Total volume of water released from a natural or manmade reservoir. The monthly inflow (hm^3/month) is requested for each month (Jan-Dec). The mean value of the wet and dry seasons (hm^3/ month) is requested in case that all the monthly values are not provided. The annual inflow (hm^3/year) is requested in case that all the monthly values are not provided. The mean LTAA inflow (hm^3/year) is requested to allow comparison with the current reporting year, and trends observation.	unit: million cubic meters (hm^3)

Table 11: Reservoir Parameters

Selection of Reservoirs:
The reservoirs for which you report the data must be located within the reporting scale (RBD or other) that you have previously selected in the Data Entry Wizard view.

Note: natural reservoirs refers to lakes. Man-made refers to those constructed by human and used for e.g. agricultural purposes, public supply, including hydropower production.

3.2.3 Streamflow

The view comprises of 3 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the figure below.
The tab "Reservoir Characteristic" asks for general information, while the tabs "Monthly Data" and "Daily Data" ask for the monthly and daily streamflow measurements.

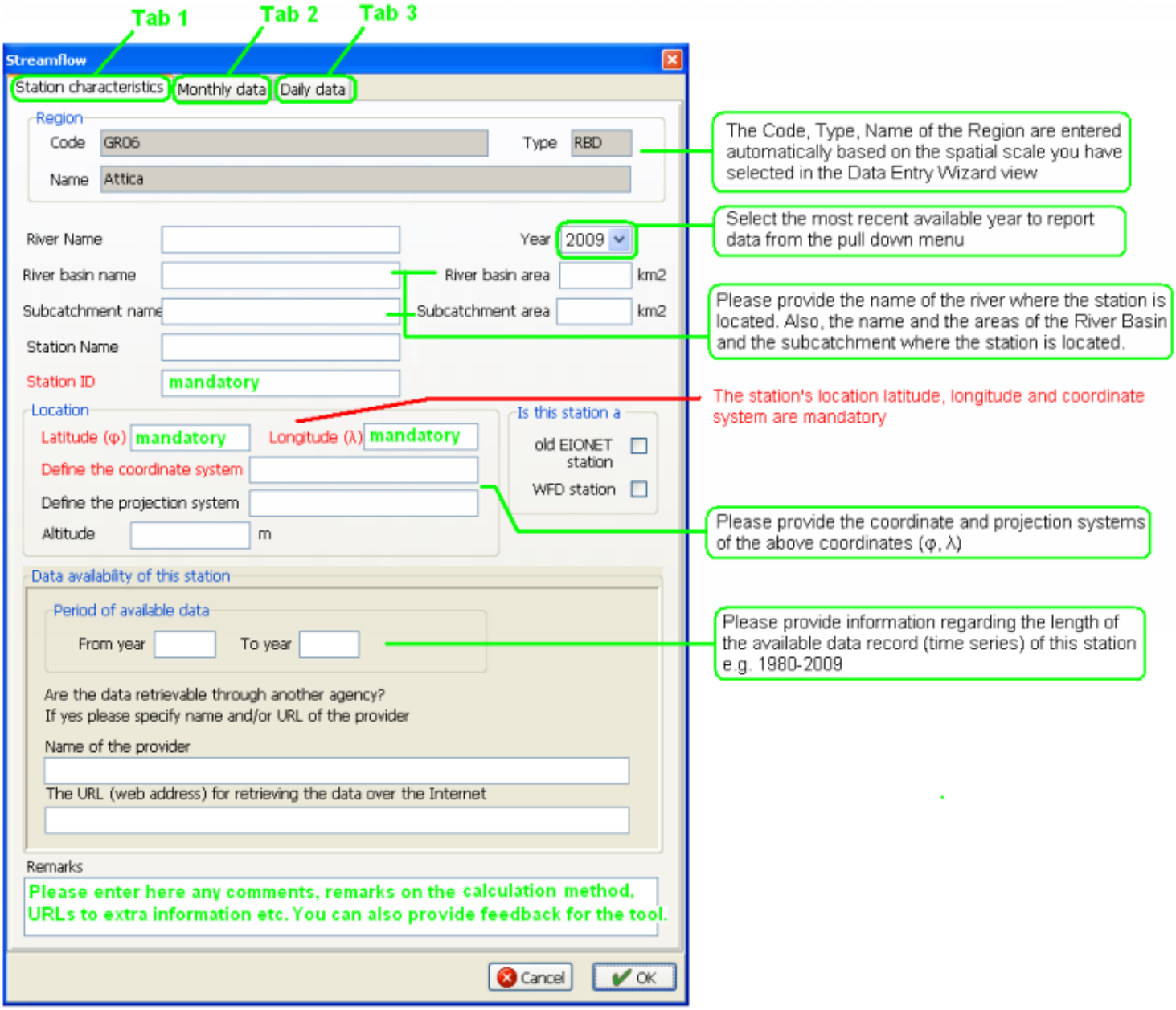


Figure 21: Streamflow: Tab "Station characteristics"

The parameters which are requested in the tab "Monthly Data" and "Daily Data: and their definitions are provided in the following table:

Variable	Definition	Unit
Mean monthly streamflow	It is the average streamflow for a given month of the selected year (Jan-Dec). For example, the average streamflow for January 2008 is based on in the daily flows of that month. The sum of the mean daily flows for January 2008, when divided by the number of days in the month (31 days), will give the mean flow for January 2008.	unit: Cubic meters per second (m^3/sec)
LTA streamflow of that month (Long Term Average)	The LTA streamflow of a month is the average mean monthly streamflow of that month for the full period of record. For example the LTAA streamflow for January is based on the average of all Januarys in the reference period of record. If the reference period is e.g. 1980-2008, then LTAA January = AVERAGE(mean monthly Streamflow of January1980:mean monthly Streamflow of January2008).	
Mean Annual streamflow	The mean annual flow is the average flow for the selected reporting year. It is obtained by dividing the sum of all the individual mean daily flows by the number of daily flows recorded for the year (365 in case a full record exists).	unit: Cubic meters per second (m^3/sec)
LTAA streamflow (Long Term Annual Average)	The LTAA is the overall mean flow of the entire period of record. It is calculated by averaging the mean annual streamflows of all the years of the LTAA reference period.	
Min. streamflow **Date of min. streamflow**	It is the minimum (lowest) observed mean daily streamflow of the selected reported year. The date that this value was measured (DD/MM/YYYY) has to be provided as well. This does not refer to the minimum observed streamflow whithin a day (i.e. if you have 10mins measurements), but to the minimum mean daily streamflow observed within the reporting year.	unit: Cubic meters per second (m^3/sec)
Max. streamflow **Date of max. streamflow**	It is the maximum (highest) observed mean daily streamflow of the selected reported year. The date that this value was measured (DD/MM/YYYY) has to be provided as well. This does not refer to the maximum observed streamflow whithin a day (i.e. if you have 10mins measurements), but to the maximum mean daily streamflow observed within the reporting year.	
Mean daily streamflow	Daily steamflow data on selected gauging stations within the RBD.	unit: Cubic meters per second (m^3/sec)

Table 12: Streamflow Parameters

Selection of Stations measuring Streamflow:

- The stations for which you report the data must be located within the reporting scale (RBD or other) that you have previously selected in the Data Entry Wizard view.

- The selection of the streamflow gauging stations is at the discretion of Member States since regional expert knowledge is highly important in this aspect. The number of stations does not necessarily have to be high since emphasis should be paid to the quality of the measurements and the representativity of the station in relation to regional conditions (see also section two of the SoE task 3 – document on station selection)

- One gauging station per 1000 km^2 may be used as an indicative density. In complex terrain information from more gauging stations might be suitable to be provided.

- Regarding the selection of the streamflow stations, it is desirable that the minimum available record of continuous measurements (times series) covers the past 10 years

- Representative selection of gauging stations for the River Basin District/ sub-units could be:
  - Downstream stations at the relevant catchments and the intersection of the main stream with its major tributaries
  - Stations located on the main river near the inflow to or outlet from a catchment
  - Stations directly upstream and downstream of the water abstraction points
  - Stations depicting natural regime (upper stations, less influenced, or unaffected by reservoirs or water abstractions)
  - Stations with continuous measurements and long duration (ideally without discontinuity)

- Stations representing the runoff from a small fraction of a catchment can not be assumed representative for this catchment and should be only used if no alternative can be found.

3.2.4 Precipitation

The view "Rain gauge station" asks only for general information on the rain gauges measuring precipitation, as demonstrated in the figure below.
The stations which you report here must be located within the reporting scale (RBD or other) that you have previously selected in the Data Entry Wizard view, and it is assumed that these stations were used to calculate the Areal Precipitation requested in the Water Balance view (tab "Hydrometeorological Parameters", table 1 of the help manual)

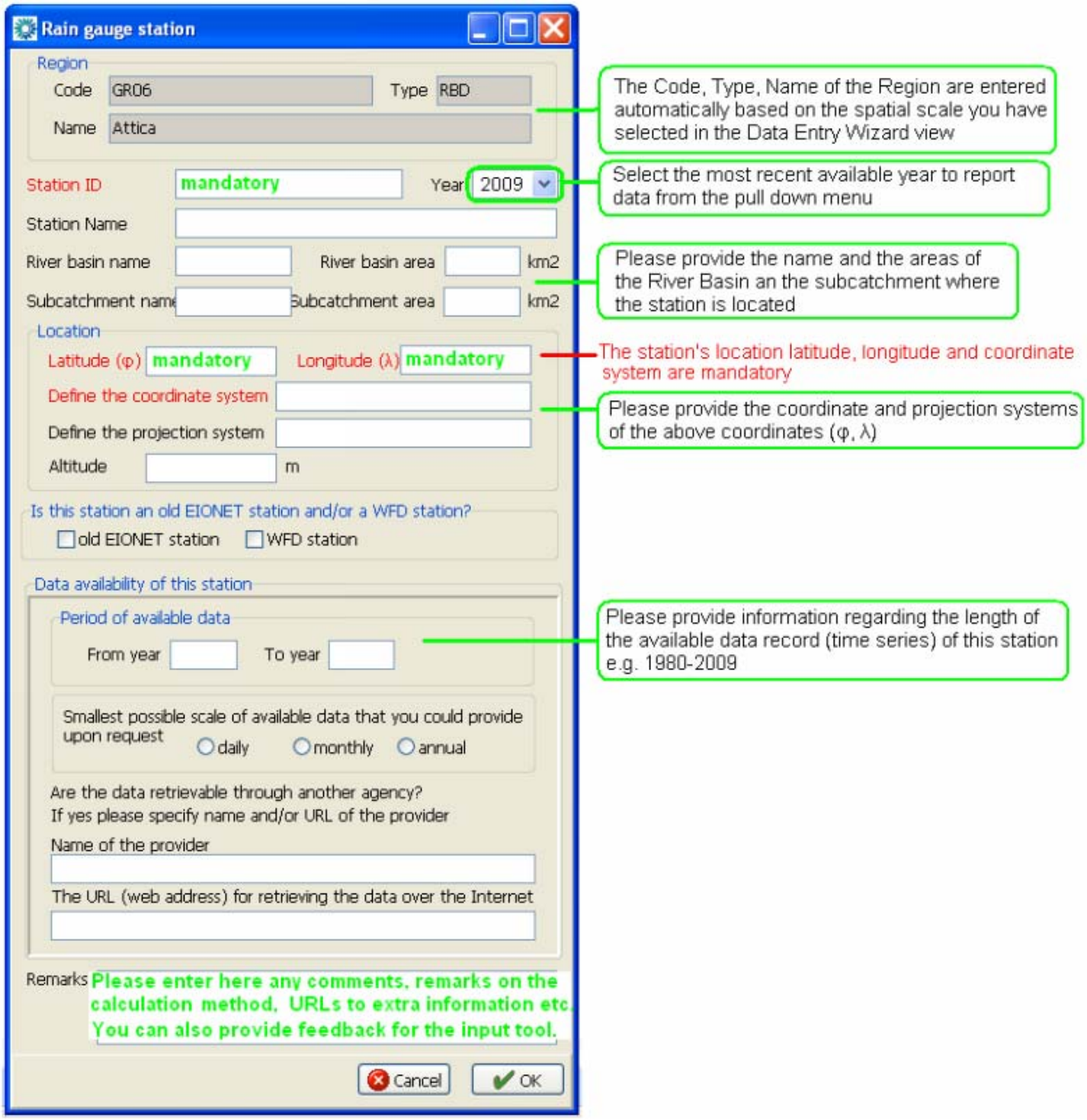


Figure 22: Rain gauge station

Part

4 REGIONAL WATER ABSTRACTION

Regional Water Abstraction datasets

The information requested related to the water abstraction is in summary demonstrated in the diagram bellow:

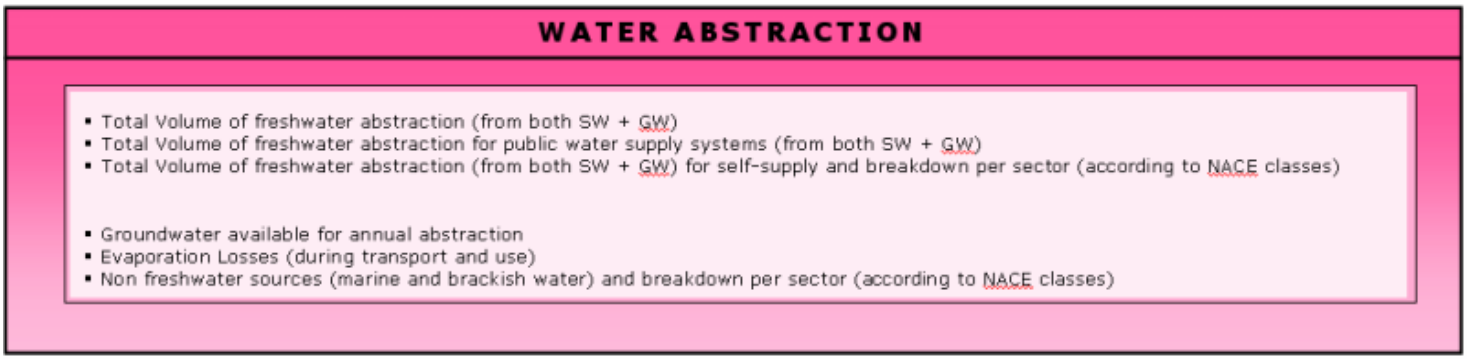


Figure 23: Water Abstraction dataset flowchart

The Water Abstraction view comprises of 7 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the diagram below.
The parameters which are requested in each tab and their definitions are provided in the following tables of this section (Tables 13-19).

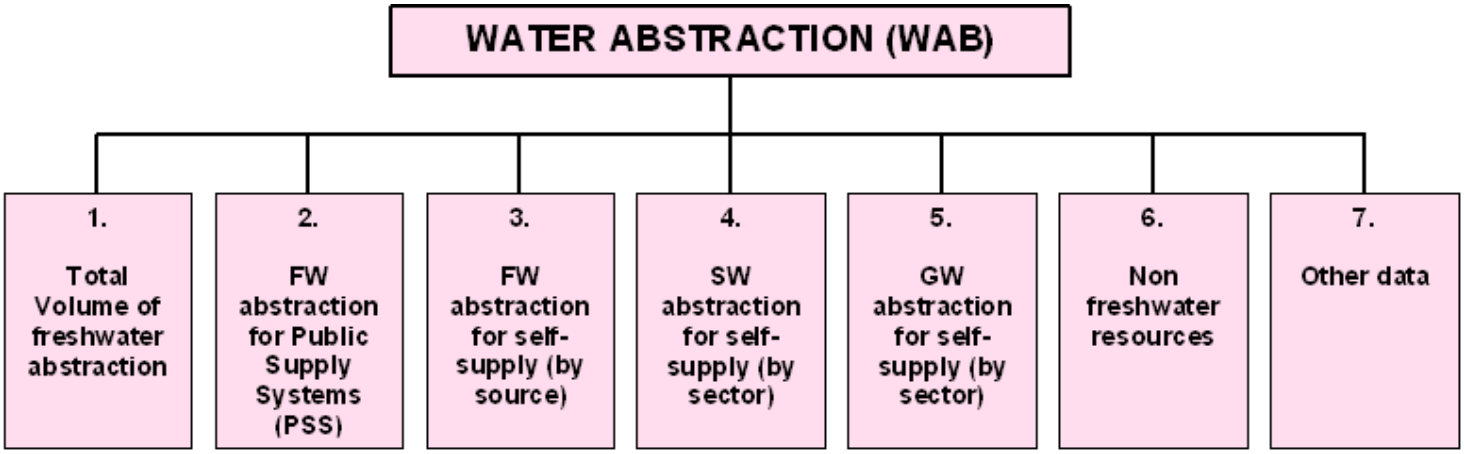


Figure 24: Regional Water Abstraction tabs (each relating to a dataset)

Reporting Scale

- The reporting spatial scale in the one you have pre-selected in the "Data Entry Wizard" view and can be a River Basin District (RBD), a sub-unit (SU), a statistical territorial unit (NUTS) or a Country. Please report at the **SMALLEST available spatial scale,** and make sure that you have covered the entire territory of your country. In case that through your reporting in the selected scale you did not mange to cover the entire territory of your country (e.g. your country has 10 RBDs but you only reported data for 9 of them, thus you have not covered the entire territory of your country) it is requested to also report country level data in order to ensure continuation of the representation of your country.

- Regarding the temporal resolution for which you report the data, you have the flexibility to report at different scales: Monthly, Seasonal and Annual. Please report at the **LOWEST available temporal scale** (the preferred one is Monthly). In case that through your reporting you did not mange to cover the entire year (e.g. the year has 12 months but you only reported data for 8 of them, thus you have not covered the entire year) it is requested to also report annual data in order to ensure continuation of the representation of your country.

Additional definitions (common in all the 7 tabs)

Month 1(Jan) - Month 12: the monthly value (total volume of the month) for each reported parameter

Annual: the annual value (total volume of the year) for each reported parameter (= sum of monthly values)

Wet season: the value of the wet season (total volume of the wet season). Wet season is defined from October-March in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

Dry season: the value of the dry season (total volume of the dry season). Dry season is defined from April-September in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

LTAA: Long Term Annual Average. This value should be based on annual values, averaged over a period of at least 20 consecutive years. It is recommended that the LTAA values are consistent with the annual values provided, using the same methods and basic data. The Reference period of the LTAA (From YYYY - To YYYY) is also requested. In case your period length is less than 20 consecutive years it is designed to still be accepted by the tool as far as it is not less than 10 years. If less than 10 years, then it is rejected.

hm3: million cubic meters

Remarks

At the bottom of each view a field is provided for Remarks entry. Extra information on the calculation method used, or additional relative information including URLs (such as reports, maps etc.) can be entered there. You could also enter comments and feedback if desired.

4.1 Total Volume of Freshwater abstraction

The requested parameters and their definitions are provided in the following table, while the conceptual flowchart of freshwater abstraction breakdown by source is presented in the diagram bellow:

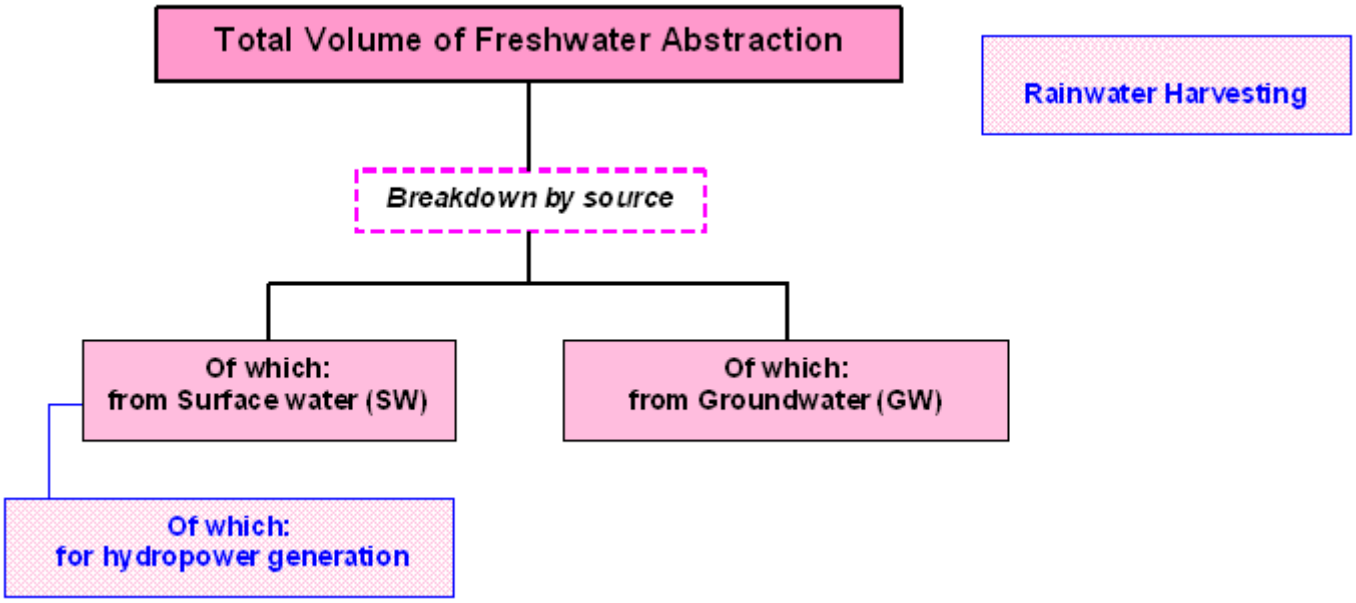


Figure 25: Freshwater abstraction breakdown by source

Variable	Definition	Unit
Total Volume of freshwater abstraction (from both SW + GW)	Freshwater abstraction (= freshwater withdrawal) is defined as water removed from any source, either permanently or temporarily. Mine water and drainage water are included. Water abstraction from precipitation (rainwater harvesting) is included. Water used for **hydropower generation is included** (although in-situ it is considered a use, but this item is also asked as a separate category to allow identifying this amount of water). Water abstractions from groundwater resources in any given time period are defined as total amount withdrawn from the aquifer (regardless of any input from artificial recharge which may be taking place). The volume of total abstraction ca be further broken down by source and by provider, as follows: *Total Water Abstraction = Total Water Abstraction from Surface Water + Total Water Abstraction from Groundwater* *Total Water Abstraction = Water Abstraction for Public Water Systems + Water Abstraction for Self Supply* *Total Water Abstraction from Surface Water ≥ Total Abstraction for Hydropower*	unit: million cubic meters (hm^3)

Variable	Definition	Unit
Total Volume from SW (surface water)	**Surface water (SW):** Water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. For purposes of this questionnaire, bank filtration (induced infiltration of river water through bankside gravel strata (by pumping from wells sunk into the gravel strata to create a hydraulic gradient) with the intention of improving the water quality) is included under fresh surface water. Sea-water, and transitional waters, such as brackish swamps, lagoons and estuarine areas are not considered fresh surface water and so are included under - Non Freshwater Sources	unit: million cubic meters (hm^3)
Total Volume from GW (groundwater)	**Ground Water (GW):** Fresh water which is being held in, and can usually be recovered from, or via, an underground formation. All permanent and temporary deposits of water, both artificially charged and naturally, in the subsoil, of sufficient quality for at least seasonal use. This category includes phreatic water-bearing strata, as well as deep strata under pressure or not, contained in porous or fracture soils. For purposes of this questionnaire, ground water includes springs, both concentrated and diffused, which may be sub aqueous.	unit: million cubic meters (hm^3)
Volume from Rainwater harvesting	Volume of water collected through rainwater harvesting Rainwater harvesting is the collection of rainfall water in appropriate tanks, reservoirs and other collection systems in order to be used.	unit: million cubic meters (hm^3)
Volume for Hydropower generation	Volume of the surface freshwater abstraction used for Hydropower generation.	unit: million cubic meters (hm^3)

Table 13 : Total Freshwater abstraction Parameters

4.2 Freshwater abstraction for Public Supply Systems

The requested parameters and their definitions are provided in the following table, while the conceptual flowchart of PSS freshwater abstraction breakdown by source is presented in the diagram bellow:

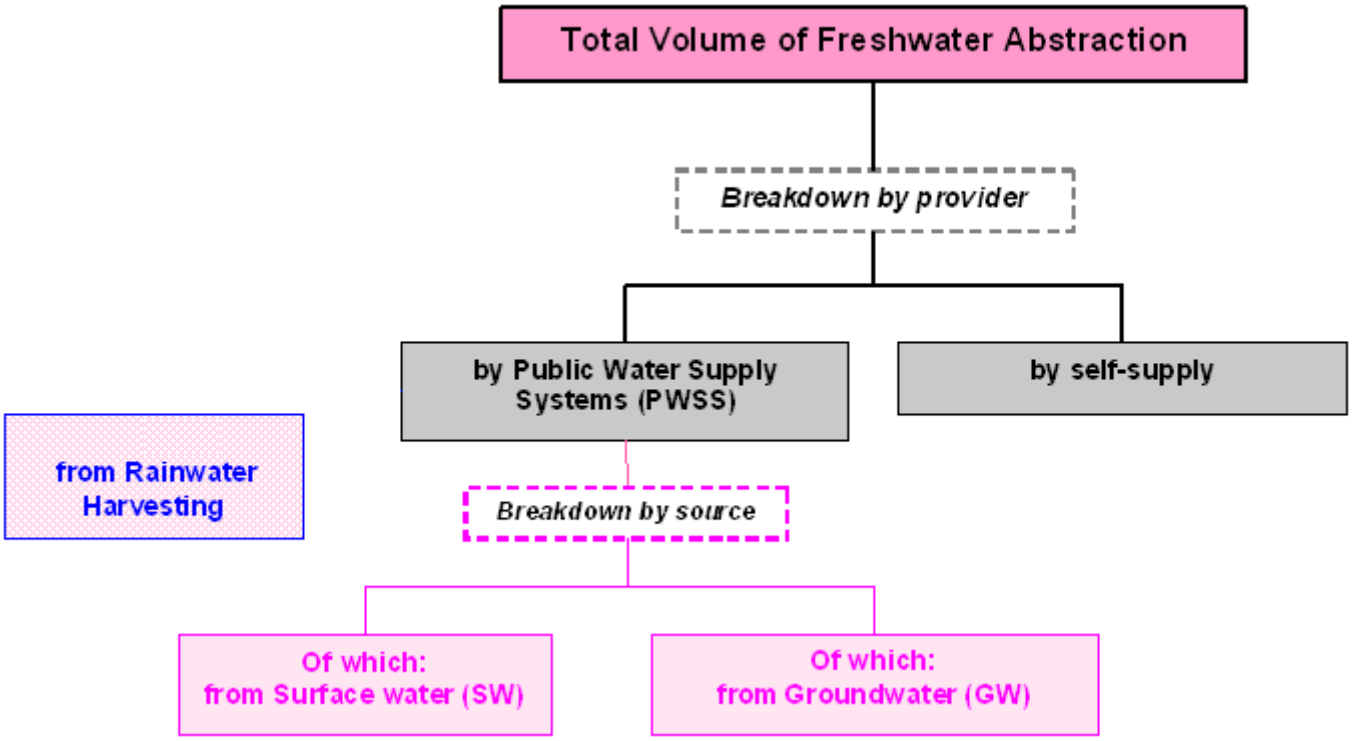


Figure 26: Freshwater abstraction breakdown by provider, and further breakdown for the PWSS abstraction by source

Variable	Definition	Unit
Total Volume of freshwater abstraction (from both SW + GW) **for public water supply systems** * If available differentiate between **Total Volume from SW (surface water)** **Total Volume from GW (groundwater)**	Refers to the volume of freshwater abstraction (as defined in the previous tab "Total Volume of Freshwater abstraction") which was withdrawn from/through public supply systems **Public water supply:** Water supplied by economic units engaged in collection, purification and distribution of water (excluding system operation for agricultural purposes and treatment of waste water solely in order to prevent pollution). It corresponds to division 41 (NACE/ISIC) independently of the sector involved. Deliveries of water from one public supply undertaking to another are excluded. Note: Public water supply services provide water for domestic use, use at offices, restaurants and hotels, factories, municipal use etc. (all or some of these uses). Thus, since this depends on the system it may not be possible to separate which amount is intended for each user. In some cases of course this might. be possible. *Total Water Abstraction for Public Water Systems = Water Abstraction for Public Water Systems from Surface Water + Water Abstraction for Public Water Systems from Groundwater* **Surface water (SW):** as defined in the previous tab "Total Volume of Freshwater abstraction" **Ground Water (GW):** as defined in the previous tab "Total Volume of Freshwater abstraction"	unit: million cubic meters (hm^3)
Volume from Rainwater harvesting	Volume of water collected through rainwater harvesting from public water supply systems (rainwater harvesting for sell-supply is excluded here)	unit: million cubic meters (hm^3)

Table 14 : Freshwater abstraction for Public Water Supply System (PWSS) Parameters

4.3 Freshwater abstraction for self-supply (by source)

The requested parameters and their definitions are provided in the following table, while the conceptual flowchart of the self-supply freshwater abstraction breakdown by source is presented in the diagram bellow:

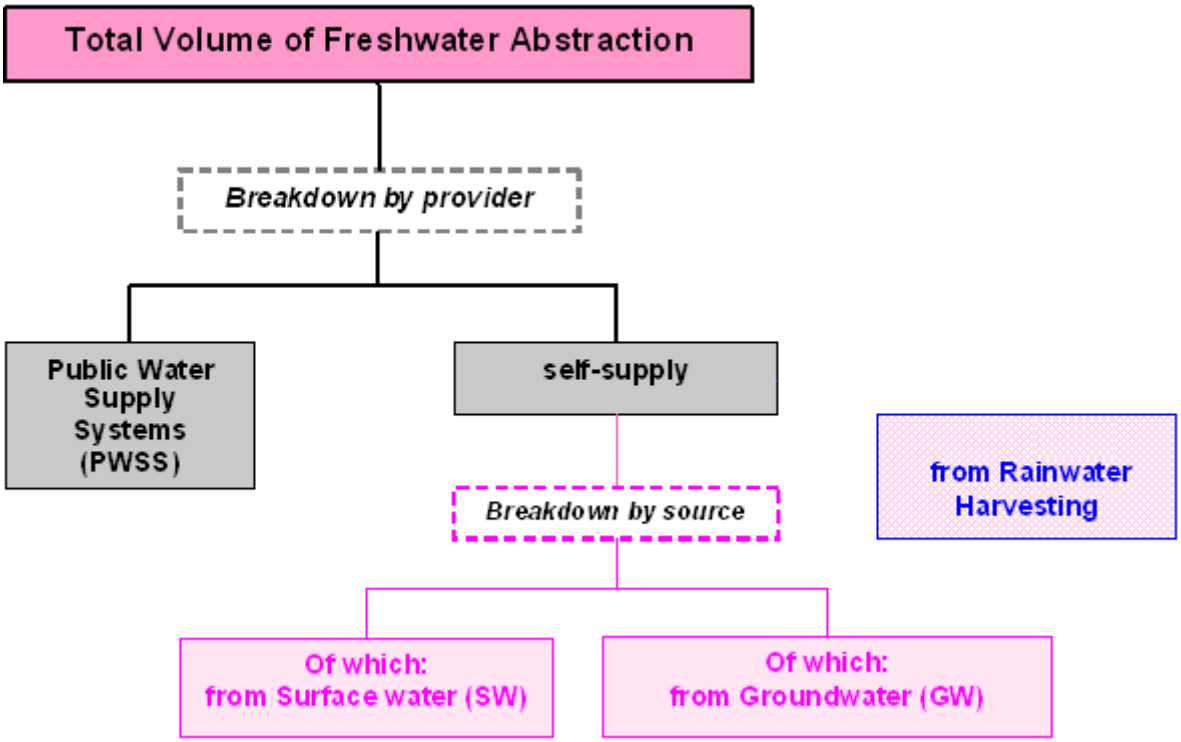


Figure 27: Freshwater abstraction breakdown by provider, and further breakdown for the self-supply abstraction by source

Variable	Definition	Unit
Total Volume of freshwater abstraction (from both SW + GW) **for self-supply** * If available differentiate between **Total Volume from SW (surface water)** **Total Volume from GW (groundwater)**	Refers to the volume of freshwater abstraction (as defined in the previous tab "Total Volume of Freshwater abstraction") which was withdrawn from/through self-supply **Self – supply:** Abstraction of water by the user for own final use. For instance a resort or an industry can abstract directly water from a surface or groundwater body and use it to cover its individual needs. *Total Water Abstraction for Self Supply = Water Abstraction for Self Supply from Surface Water + Water Abstraction for Self Supply from Groundwater* **Surface water (SW):** as defined in the previous tab "Total Volume of Freshwater abstraction" **Ground Water (GW):** as defined in the previous tab "Total Volume of Freshwater abstraction"	unit: million cubic meters (hm^3)
Volume from Rainwater harvesting	Volume of water collected through rainwater harvesting for sell-supply (rainwater harvesting for public water supply systems is excluded here)	unit: million cubic meters (hm^3)

Table 15 : Freshwater abstraction for self-supply (by source) Parameters

4.4 Surface water abstraction for self-supply (by sector)

The requested parameters and their definitions are provided in the following table, while the conceptual flowchart of the self-supply surface water abstraction breakdown by sector is presented in the diagram bellow:

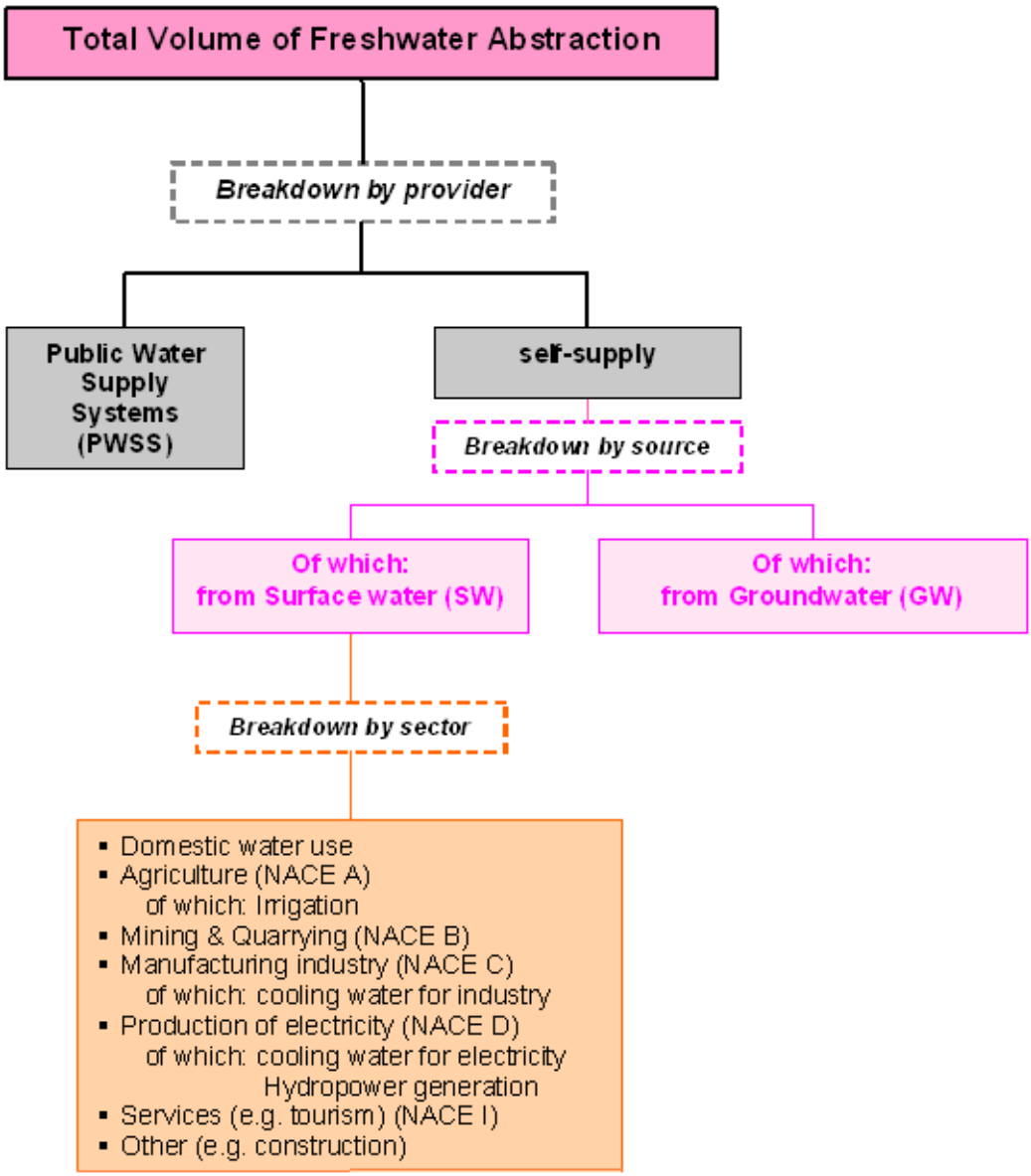


Figure 28: Self-supply Freshwater abstraction breakdown by source, and further breakdown for the SW self-supply abstraction by sector

Variable	Definition	Unit
Total Volume of SW (surface water) abstraction for self-supply **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) - Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) - Of which cooling water for industry – Production of electricity (NACE D) - Of which: -cooling water for electricity production -Hydropower generation – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	Refers to the volume of freshwater abstraction which was withdrawn through self-supply (as defined in the previous tab "Total Volume of Freshwater abstraction for self-supply") **solely from Surface water** (Groundwater abstraction is excluded here) *Total Water Abstraction for Self Supply = **Water Abstraction for Self Supply from Surface Water** + Water Abstraction for Self Supply from Groundwater* **Self – supply:** Abstraction of water by the user for own final use. For instance a resort or an industry can abstract directly water from a surface or groundwater body and use it to cover its individual needs. **Surface water (SW):** Water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. For purposes of this questionnaire, bank filtration (induced infiltration of river water through bankside gravel strata (by pumping from wells sunk into the gravel strata to create a hydraulic gradient) with the intention of improving the water quality) is included under fresh surface water. Sea-water, and transitional waters, such as brackish swamps, lagoons and estuarine areas are not considered fresh surface water and so are included under - Non Freshwater Sources. **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Surface Water Abstraction for Self Supply (Domestic) + Total Surface Water Abstraction for Self Suplly (NACE A) + Total Surface Water Abstraction for Self Suplly (NACE B) + Total Surface Water Abstraction for Self Suplly (NACE C) + Total Surface Water Abstraction for Self Suplly (NACE D) + Total Surface Water Abstraction for Self Suplly (NACE I) + Total Surface Water Abstraction for Self Suplly (Other) ≤ Total Surface Water Abstraction for Self Suplly (Total)* *The sum of the abstracted surface water for self-supply per activity may be less than the total abstracted surface water for self-supply if the amount of the abstracted surface water for self-supply is not known for each activity.* *Total Surface Water Abstraction for Self Suplly (NACE A) ≥ Total Surface Water Abstraction for Self Suplly (NACE A Irrigation)* *Total Surface Water Abstraction for Self Suplly (NACE C) ≥ Total Surface Water Abstraction for Self Suplly (NACE C Cooling)* *Total Surface Water Abstraction for Self Suplly (NACE D) ≥ Total Surface Water Abstraction for Self Suplly (NACE D Cooling)*	unit: million cubic meters (hm^3)

Table 16 : SW (surface water) abstraction for self-supply (by sector) Parameters

4.5 Groundwater abstraction for self-supply (by sector)

The requested parameters and their definitions are provided in the following table, while the conceptual flowchart of the self-supply groundwater abstraction breakdown by sector is presented in the diagram bellow:

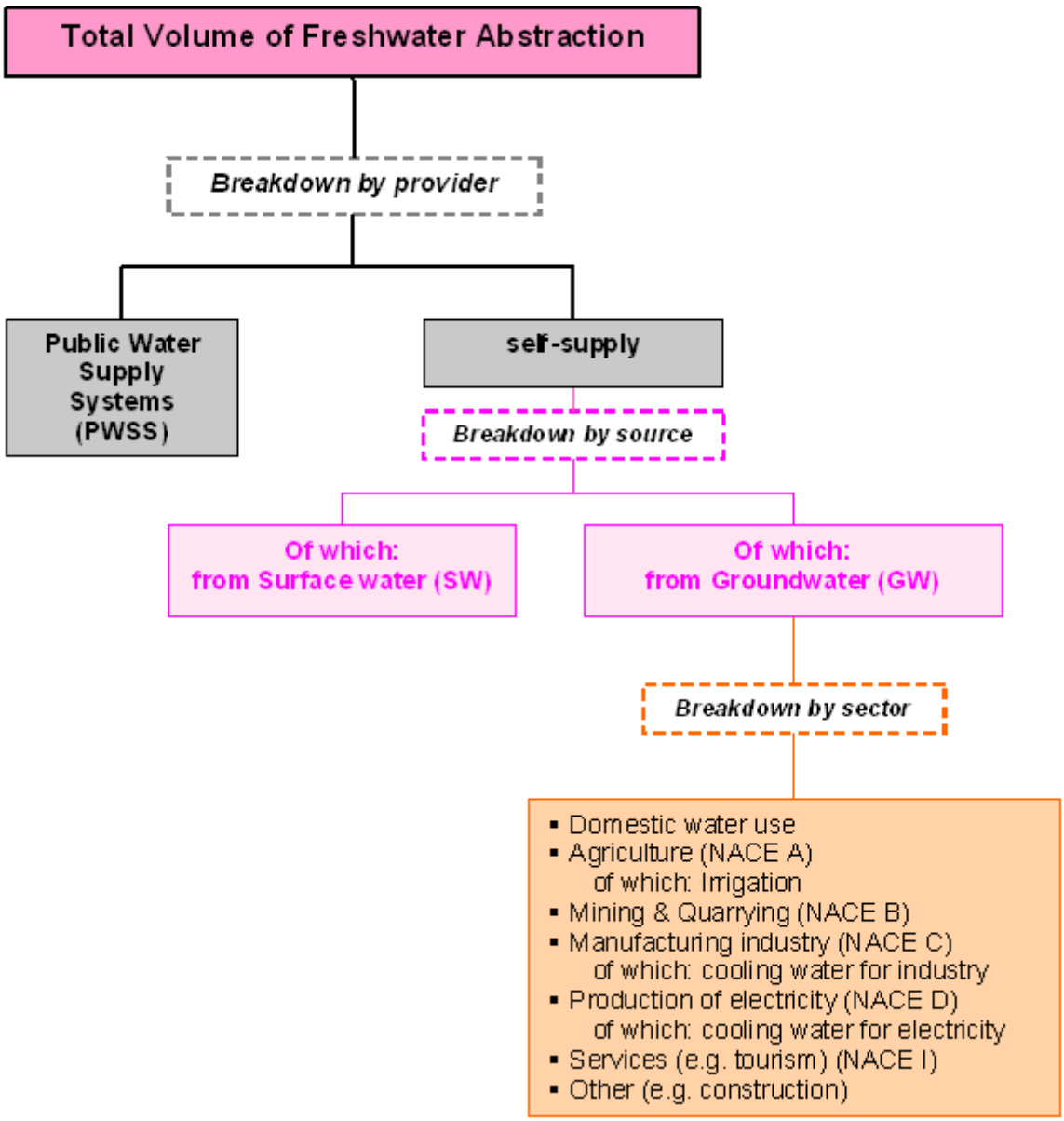


Figure 29: Self-supply Freshwater abstraction breakdown by source, and further breakdown for the GW self-supply abstraction by sector

Variable	Definition	Unit
Total Volume of GW (groundwater water) abstraction for self-supply **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) - Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) - Of which cooling water for industry – Production of electricity (NACE D) - Of which cooling water for electricity production – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	Refers to the volume of freshwater abstraction which was withdrawn through self-supply (as defined in the previous tab "Total Volume of Freshwater abstraction for self-supply") **solely from Groundwater** (surface abstraction is excluded here) *Total Water Abstraction for Self Supply = **Water Abstraction for Self Supply from Surface Water** + Water Abstraction for Self Supply from Groundwater* **Self – supply:** Abstraction of water by the user for own final use. For instance a resort or an industry can abstract directly water from a surface or groundwater body and use it to cover its individual needs. **Ground Water (GW):** Fresh water which is being held in, and can usually be recovered from, or via, an underground formation. All permanent and temporary deposits of water, both artificially charged and naturally, in the subsoil, of sufficient quality for at least seasonal use. This category includes phreatic water-bearing strata, as well as deep strata under pressure or not, contained in porous or fracture soils. For purposes of this questionnaire, ground water includes springs, both concentrated and diffused, which may be sub aqueous. **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Ground Water Abstraction for Self Supply (Domestic) + Total Ground Water Abstraction for Self Supply (NACE A) + Total Ground Water Abstraction for Self Supply (NACE B) + Total Ground Water Abstraction for Self Supply (NACE C) + Total Ground Water Abstraction for Self Supply (NACE D) + Total Ground Water Abstraction for Self Supply (NACE I) + Total Ground Water Abstraction for Self Supply (Other) ≤ Total Ground Water Abstraction for Self Supply (Total)* *The sum of the abstracted groundwater for self-supply per activity may be less than the total abstracted groundwater for self-supply if the amount of the abstracted groundwater for self-supply is not known for each activity.* *Total Ground Water Abstraction for Self Supply (NACE A) ≥ Total Ground Water Abstraction for Self Supply (NACE A Irrigation)* *Total Ground Water Abstraction for Self Supply (NACE C) ≥ Total Ground Water Abstraction for Self Supply (NACE C Cooling)* *Total Ground Water Abstraction for Self Supply (NACE D) ≥ Total Ground Water Abstraction for Self Supply (NACE D Cooling)*	unit: million cubic meters (hm^3)

Table 17 : GW (groundwater) abstraction for self-supply (by sector) Parameters

4.6 Non-freshwater Resources

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Total Volume of Non-freshwater Resources	**Non freshwater sources:** (Marine and brackish water) Includes sea water and transitional water, such as brackish swamps, lagoons and estuarine areas. Such water resources may be of great importance locally, although in a national context, they are usually of lesser importance as compared to surface and groundwater resources.	unit: million cubic meters (hm^3)
Breakdown of the Total volume per sector: – Domestic water use – Agriculture, forestry, fishing (NACE A) - Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) - Of which cooling water for industry – Production of electricity (NACE D) - Of which cooling water for electricity production – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	**Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Abstraction from Non freshwater sources (Domestic) + Total Abstraction from Non freshwater sources (NACE A) + Total Abstraction from Non freshwater sources (NACE B) + Total Abstraction from Non freshwater sources (NACE C) + Total Abstraction from Non freshwater sources (NACE D) + Total Abstraction from Non freshwater sources (NACE I) + Total Abstraction from Non freshwater sources (Other) ≤ Total Abstraction from Non freshwater sources (Total)* *The sum of the abstracted water from non-freshwater sources per activity may be less than the abstracted water from non-freshwater sources if the amount of the abstracted water from non-freshwater sources is not known for each activity.* *Total Abstraction from Non freshwater sources (NACE A) ≥ Abstraction from Non freshwater sources (NACE A Irrigation)* *Total Abstraction from Non freshwater sources (NACE C) ≥ Total Abstraction from Non freshwater sources (NACE C Cooling)* *Total Abstraction from Non freshwater sources (NACE D) ≥ Abstraction from Non freshwater sources (NACE D Cooling)*	

Table 18 : Non-freshwater Resources Parameters

An additional field is added where you can specify the source of the Non-Freshwater (for the total volume and for each of the sectoral volumes) selecting from a pull down menu; available options: Brackish swamp, Estuary, Lagoon, Marine, Other

4.7 Other data

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Groundwater available for annual abstraction	It is the theoretical maximum of groundwater available is the recharge and equals the Recharge minus the LTAA Ecological Discharge. Recharge less the long term annual average rate of flow required to achieve ecological quality objectives for associated surface water. It takes account of the ecological restrictions imposed to groundwater exploitability, nevertheless other restrictions based on economic and technical criteria could also be taken into account in terms of accessibility, productivity and maximum production cost deemed acceptable by developers.	unit: million cubic meters (hm^3)
Evaporation Losses	Water abstracted from any freshwater source lost during transport **through evaporation** between a point of abstraction and a point of use, between a water supplier/distributor and a point of use or between points of use and reuse.	unit: million cubic meters (hm^3)

Table 19 : Other Data Parameters

Part V

5 REGIONAL WATER USE

Regional Water Use datasets

The information requested related to the water use is in summary demonstrated in the diagram bellow:

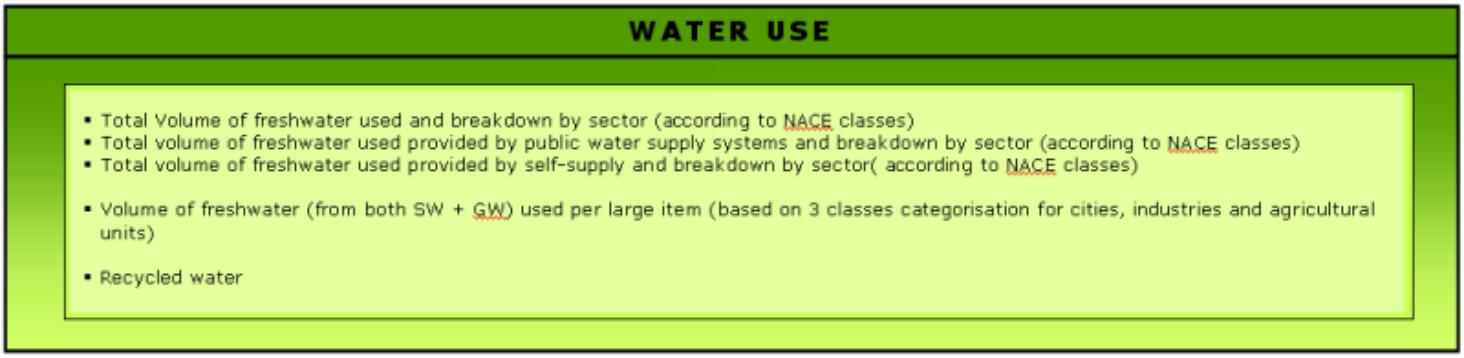


Figure 30: Water Use dataset flowchart

The Water Use view comprises of 5 tabs (which open up as individual new views), each related to a dataset, as demonstrated in the diagram below.
The parameters which are requested in each tab and their definitions are provided in the following tables of this section (Tables 20-24).

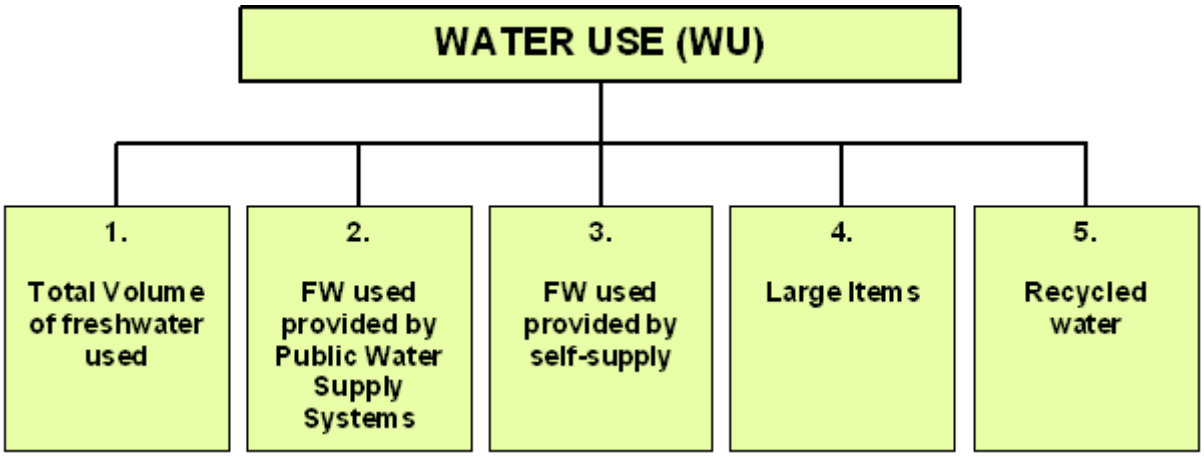


Figure 31: Regional Water Use tabs (each relating to a dataset)

Reporting Scale

- The reporting spatial scale in the one you have pre-selected in the "Data Entry Wizard" view and can be a River Basin District (RBD), a sub-unit (SU), a statistical territorial unit (NUTS) or a Country. Please report at the **SMALLEST available spatial scale,** and make sure that you have covered the entire territory of your country. In case that through your reporting in the selected scale you did not mange to cover the entire territory of your country (e.g. your country has 10 RBDs but you only reported data for 9 of them, thus you have not covered the entire territory of your country) it is requested to also report country level data in order to ensure continuation of the representation of your country.
- Regarding the temporal resolution for which you report the data, you have the flexibility to report at

different scales: Monthly, Seasonal and Annual. Please report at the **LOWEST available temporal scale** (the preferred one is Monthly). In case that through your reporting you did not mange to cover the entire year (e.g. the year has 12 months but you only reported data for 8 of them, thus you have not covered the entire year) it is requested to also report annual data in order to ensure continuation of the representation of your country.

Additional definitions (common in all the 7 tabs)

Month 1(Jan) - Month 12: the monthly value (total volume of the month) for each reported parameter

Annual: the annual value (total volume of the year) for each reported parameter (= sum of monthly values)

Wet season: the value of the wet season (total volume of the wet season). Wet season is defined from October-March in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

Dry season: the value of the dry season (total volume of the dry season). Dry season is defined from April-September in general. Nevertheless, this differs from country to country, so please provide the representative value according to the particularities of your country.

LTAA: Long Term Annual Average. This value should be based on annual values, averaged over a period of at least 20 consecutive years. It is recommended that the LTAA values are consistent with the annual values provided, using the same methods and basic data. The Reference period of the LTAA (From YYYY - To YYYY) is also requested. In case your period length is less than 20 consecutive years it is designed to still be accepted by the tool as far as it is not less than 10 years. If less than 10 years, then it is rejected.

hm3: million cubic meters

Remarks

At the bottom of each view a field is provided for Remarks entry. Extra information on the calculation method used, or additional relative information including URLs (such as reports, maps etc.) can be entered there. You could also enter comments and feedback if desired.

5.1 Total volume of Freshwater used

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Total Volume of Freshwater used **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) Of which for: – Food processing industry – Basic metals – Transport equipment – Textiles – Paper and paper products – Chemicals, refined petroleum, etc. – Other manufacturing industry Of which cooling water for industry – Production of electricity (NACE D) Of which: - cooling water for electricity production - Hydropower generation – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	**Water Use:** In contrast to **water supply** (i.e. is delivery of water to final users including abstraction for own final use), **water use** refers to water that is actually used by end users for a specific purpose within a territory, such as for domestic use, irrigation or industrial processing. Excludes returned water. **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Volume of freshwater used (Domestic) + Total Volume of freshwater used (NACE A) + Total Volume of freshwater used (NACE B) Total Volume of freshwater used (NACE C) + Total Volume of freshwater used (NACE D) + Total Volume of freshwater used (NACE I) + Total Volume of freshwater used (Other) ≤ Total Volume of freshwater used (Total)* *The sum of the freshwater used per activity may be less than the freshwater used if the amount of the freshwater used is not known for each activity.* *Total Volume of freshwater used (NACE A) ≥ Total Volume of freshwater used (NACE A Irrigation)* *Total Volume of freshwater used (NACE C) ≥ Total Volume of freshwater used (NACE C Cooling)* *Total Volume of freshwater used (NACE D) ≥ Total Volume of freshwater used (NACE D Cooling)* *Total Volume of freshwater used (NACE C Food industry) + Total Volume of freshwater used (NACE C Basic Metals) + Total Volume of freshwater used (NACE C Transport Equipment) Total Volume of freshwater used (NACE C Textiles) + Total Volume of freshwater used (NACE C Paper) + Total Volume of freshwater used (NACE C Chemicals) + Total Volume of freshwater used (NACE C Other) + Total Volume of freshwater used (NACE C Cooling) ≤ Total Volume of freshwater used (NACE C Total)*	unit: million cubic meters (hm^3)

Table 20 : Total volume of Freshwater used Parameters

5.2 Freshwater used provided by Public Water Supply Systems

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Total Volume of Freshwater used provided by Public Water Supply Systems (PWSS) **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) Of which for: – Food processing industry – Basic metals – Transport equipment – Textiles – Paper and paper products – Chemicals, refined petroleum, etc. – Other manufacturing industry Of which cooling water for industry – Production of electricity (NACE D) Of which: - cooling water for electricity production - Hydropower generation – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	Total volume of freshwater Water used by end users for a specific purpose within a territory, such as for domestic use, irrigation or industrial processing (excluding returned water) and which is provided to them by **public water supply systems**. **Public water supply:** Water supplied by economic units engaged in collection, purification and distribution of water (excluding system operation for agricultural purposes and treatment of waste water solely in order to prevent pollution). It corresponds to division 41 (NACE/ISIC) independently of the sector involved. Deliveries of water from one public supply undertaking to another are excluded. **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Volume of freshwater used PWS (Domestic) + Total Volume of freshwater used PWS (NACE A) + Total Volume of freshwater used PWS (NACE B) Total Volume of freshwater used PWS (NACE C) + Total Volume of freshwater used PWS (NACE D) + Total Volume of freshwater used PWS (NACE I) + Total Volume of freshwater used PWS (Other) ≤ Total Volume of freshwater used PWS (Total)* *The sum of the freshwater used by public water supply per activity may be less than the freshwater used by public water supply if the amount of the freshwater used by public water supply is not known for each activity.* *Total Volume of freshwater used PWS (NACE A) ≥ Total Volume of freshwater used PWS (NACE A Irrigation)* *Total Volume of freshwater used PWS (NACE C) ≥ Total Volume of freshwater used PWS (NACE C Cooling)* *Total Volume of freshwater used PWS (NACE D) ≥ Total Volume of freshwater used PWS (NACE D Cooling)*	unit: million cubic meters (hm^3)

Table 21 : Freshwater used provided by Public Water Supply Systems (PWSS) Parameters

5.3 Freshwater used provided by Self-Supply

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Total Volume of Freshwater used provided by Self-Supply **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) Of which for: – Food processing industry – Basic metals – Transport equipment – Textiles – Paper and paper products – Chemicals, refined petroleum, etc. – Other manufacturing industry Of which cooling water for industry – Production of electricity (NACE D) Of which: - cooling water for electricity production - Hydropower generation – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	Total volume of freshwater Water used by end users for a specific purpose within a territory, such as for domestic use, irrigation or industrial processing (excluding returned water) and which is provided to them by **self-supply**. **Self – supply:** Abstraction of water by the user for own final use. For instance a resort or an industry can abstract directly water from a surface or groundwater body and use it to cover its individual needs. **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Total Volume of freshwater used Self-Supply (Domestic) + Total Volume of freshwater used Self-Supply (NACE A) + Total Volume of freshwater used Self-Supply (NACE B) Total Volume of freshwater used Self-Supply (NACE C) + Total Volume of freshwater used Self-Supply (NACE D) + Total Volume of freshwater used Self-Supply (NACE I) + Total Volume of freshwater used Self-Supply (Other) ≤ Total Volume of freshwater used Self-Supply (Total)* *The sum of the freshwater used for self-supply per activity may be less than the freshwater used for self-supply if the amount of the freshwater used for self-supply is not known for each activity.* *Total Volume of freshwater used Self-Supply (NACE A) ≥ Total Volume of freshwater used Self-Supply (NACE A Irrigation)* *Total Volume of freshwater used Self-Supply (NACE C) ≥ Total Volume of freshwater used Self-Supply (NACE C Cooling)* *Total Volume of freshwater used Self-Supply (NACE D) ≥ Total Volume of freshwater used Self-Supply (NACE D Cooling)* *Total Volume of freshwater used Self-Supply (NACE C Food industry) + Total Volume of freshwater used Self-Supply (NACE C Basic Metals) + Total Volume of freshwater used Self-Supply (NACE C Transport Equipment) + Total Volume of freshwater used Self-Supply (NACE C Textiles) + Total Volume of freshwater used Self-Supply (NACE C Paper) + Total Volume of freshwater used Self-Supply (NACE C Chemicals) + Total Volume of freshwater used Self-Supply (NACE C Other) + Total Volume of freshwater used Self-Supply (NACE C Cooling) ≤ Total Volume of freshwater used Self-Supply (NACE C Total)*	unit: million cubic meters (hm^3)

Table 22 : Freshwater used provided by Self-Supply Parameters

5.4 Large Items

The requested parameters and their definitions are provided in the following table.

Large Items: Differentiating large units (often known at the MS statistical office level) from the aggregates aims at the accurate placement of abstractions and returns at the relevant subunit disaggregation level.

Large items is relevant for 3 main users: Cities, Industries, Agricultural units

Suggested classification:

Class 1: the class grouping the largest abstraction sites, together representing 50 to 70% of the activity (as a rule of thumb for domestic use, class 1 should be made of those agglomerations that together host in the range of 50% - 70% of total population per district)

Class 2: the intermediate class

Class 3: the class of smallest abstraction sites, representing 60 to 80% in number (or more) and in the range of 5 to 15% in cumulated activity.

A good rule of thumb is to provide water use volumes for all those individual users that are submitted to the dispositions of the EPER (large industrial sites), Urban waste water directive (large urban systems) and the bigger energy plants.

Variable	Definition	Unit
Total Volume of Freshwater used per large city	Volume of freshwater used (both from surface and groundwater origin) per large city. It is expected that you provide the name of the city, the class of the city (1, 2, 3 according to the classification described above) and the volume of freshwater used by this city.	unit: million cubic meters (hm^3)
Total Volume of Freshwater used per large industry	Volume of freshwater used (both from surface and groundwater origin) per large industry. It is expected that you provide the name of the city, the class of the city (1, 2, 3 according to the classification described above) and the volume of freshwater used by this industry.	unit: million cubic meters (hm^3)
Total Volume of Freshwater used per large agricultural unit	Volume of freshwater used (both from surface and groundwater origin) per agricultural unit. It is expected that you provide the name of the city, the class of the city (1, 2, 3 according to the classification described above) and the volume of freshwater used by this agricultural unit.	unit: million cubic meters (hm^3)

Table 23 : Freshwater used per Large Items Parameters

5.5 Recycled water

The requested parameters and their definitions are provided in the following table:

Variable	Definition	Unit
Total Volume of Recycled water **Breakdown of the Total volume per sector:** – Domestic water use – Agriculture, forestry, fishing (NACE A) Of which for Irrigation – Mining & Quarrying (NACE B) – Manufacturing industry (NACE C) Of which cooling water for industry – Production of electricity (NACE D) Of which cooling water for electricity production – Hydropower generation – Services (e.g. tourism) (NACE I) – Other economic activity (e.g. construction)	**Recycled water:** Water that is used multiple times by the **same** user (either treated or non treated). **Irrigation water:** Water which is applied to soils in order to increase their moisture content and to provide for normal plant growth. Data reported under this item fit in NACE/ISIC division 01. **Cooling water:** Water which is used to absorb and remove heat. In this reporting cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes (manufacturing industry). *Recycled water (Domestic) + Recycled water (NACE A) + Recycled water (NACE B Recycled water (NACE C) + Recycled water (NACE D) + Recycled water (NACE I) + Recycled water (Other) ≤ Recycled water (Total)* *The sum of the recycled water per activity may be less than the total recycled water if the amount of the recycled water is not known for each activity.* *Recycled water (NACE A) ≥ Recycled water (NACE A Irrigation)* *Recycled water (NACE C) ≥ Recycled water S (NACE C Cooling)* *Recycled water (NACE D) ≥ Recycled water (NACE D Cooling)*	unit: million cubic meters (hm^3)

Table 24 : Freshwater used provided by Self-Supply Parameters

Part VI

6 ERROR & WARNING MESSAGES

This section provides analytical explanations for the QA rules and corresponding [warning] and [error] messages which pop-up when these rules are violated during the data entry process.

The implemented rules and their definitions are provided in the following tables. The type of a rule violation may have the following values:

[error]: This is a strict rule. Valid data must comply with this rule. No data with this rule violation can be reported.

[warning]: This rule violation should be avoided, although data with such rule violations may be reported.

Basic rules (not unique ID, mandatory fields empty, false data type etc.)

Code	Definition	Rule viol. type	Remarks
BA001	A real number is expected for the field: XXX	error	This rule applies to a number of variables in various forms e.g. the groundwater level
BA002	A positive real number is expected for the field: XXX	error	This rule applies to a number of variables in various forms e.g. the reservoir storage capacity
BA003	A positive real number or zero is expected for the field/grid: XXX	error	This rule applies to a number of variables in various forms e.g. inflow/outflow volume, streamflow
BA004	A positive integer number is expected for the field: XXX	error	This rule applies to a number of variables in various forms e.g. year, SRID
BA005	The person responsible for the data entry should be specified	error	You may enter the correct information from the main form
BA006	The email address of the person responsible for the data entry should be specified	error	You may enter the correct information from the main form
BA007	A country has to be selected first	error	You may select the country from the main form
BA008	A unique identifier for the station/reservoir is missing	error	This rule applies to rain gauge stations, reservoirs, stream flow stations and wells
BA009	A station/reservoir with ID XXX already exists	error	This rule applies to rain gauge stations, reservoirs, stream flow stations and wells
BA010	A coordinate system has to be defined	error	This rule applies to rain gauge stations, reservoirs, stream flow stations and wells
BA011	A projection system should been defined	warning	This rule applies to rain gauge stations, reservoirs, stream flow stations and wells
BA012	This station is neither a EIONET nor a WFD station	warning	This rule applies to rain gauge and stream flow stations
BA013	No data have been entered. You may want to check the data tab	warning	This rule applies to reservoirs, stream flow stations and wells
BA014	The type of the reservoir must be selected	error	This rule applies to reservoirs

Code	Definition	Rule viol. type	Remarks
BA015	Column "Item class" in table XXX may have only values between 1 and 3	error	This rule applies only to the 2nd column of the tables in the tab "Large items" in the form Water use

Logical rules

Code	Definition	Rule viol. type	Remarks
LO001	The monthly values in table: XXX and column: XXX do not sum up to the annual value	error	This rule applies to all variables if annual and monthly data is given
LO002	Min. streamflow value should be lower or equal than Max. streamflow value	error	This rule applies to stream flow stations

Outliers and range checks

Code	Definition	Rule viol. type	Remarks
OU001	A real number between -100 and 5000 is expected for Altitude	error	This rule applies to rain gauge stations, reservoirs, stream flow stations and wells
OU002	An integer number between 1900 and XXX is expected for the LTAA starting year	error	This rule applies to all data related to Long Term Annual Average (LTAA) i.e. station data and regional data. The reference period must lie between 1900 and the reporting year.
OU003	An integer number between 1900 and XXX is expected for the LTAA ending year	error	This rule applies to all data related to Long Term Annual Average (LTAA) i.e. station data and regional data. The reference period must lie between 1900 and the reporting year.
OU004	The reported length period is too small to be representative for LTAA values. The LTAA reference period must be at least 10 years, preferably more than 20 years long	error	This rule applies to all data related to Long Term Annual Average (LTAA) i.e. station data and regional data
OU005	The reported LTAA reference period should be at least 20 consecutive years long	warning	This rule applies to all data related to Long Term Annual Average (LTAA) i.e. station data and regional data

Logical Rules for the Regional data (regional water balance, regional water abstraction, regional water use)

General

The following logical rule definitions consist of two expressions and a relation sign. Both expressions are additions. An equation rule check is passed if one of the following conditions is met:

- all variables of the two expressions have valid real values and the two expressions are equal
- one expression has variables with invalid values. The rule is checked as an inequality, excluding the invalid value.
- both expressions have at least one invalid variable (meaning: unable to check)

An inequality rule check is passed if one of the following conditions is met:

- all variables of the greater expression have valid real values and the inequality is true.
- at least one variable of the greater expression is invalid (meaning: unable to check)

All rules apply to all temporal scales, i.e. months, seasons and years.

Rule definitions

Code	Definition	Rule viol. type	Remarks / Explanation
	Regional Water Balance		
WB001	wb_areal_precipitation = wb_internal_flow + wb_act_evapotranspiration *(Equivalent to wb_internal_flow = wb_areal_precipitation - wb_act_evapotranspiration)*	error	Areal precipitation **must equal** the sum of Internal flow plus Actual Evapotranspiration.
WB002	wb_pot_evapotranspiration > wb_act_evapotranspiration	error	Potential Evapotranspiration **must be more than** Actual Evapotranspiration.
WB003	wb_total_actual_outflow_neighbour + wb_total_actual_outflow_sea = wb_total_actual_outflow	error	Total actual outflow **must equal** the sum of the Total actual outflow into neighbouring areas and the Total actual outflow into the sea.
WB004	wb_returned_before_use + wb_returned_after_use = wb_return_flow	error	Return flow **must equal** the returned flow before use and the returned flow after use.
WB005	wb_treated_effluent + wb_non_treated_effluent = wb_returned_after_use	error	Returned flow after use **must equal** the sum of the treated effluent and the non-treated effluent.
WB006	wb_treated_effluent_uwwtp + wb_treated_effluent_other_wwtp = wb_treated_effluent	error	Treated effluent **must equal** the sum of the treated effluent from UWWTP and the treated effluent from other WWTP.
WB007	wb_non_treated_effluent > wb_non_treated_effluent_cooling + wb_non_treated_effluent_hydropower	error	Non Treated Effluent **must be more than** the sum of the Non treated effluent from cooling and Non treated effluent from hydropower.
WB008	wb_losses_betwn_use_and_reuse <= wu_total_freshwater_used_total	warning	Losses between use and reuse **need to be less than** the Total freshwater used. *This rule is checked when closing the Water Balance form or the Water Use form*

Code	Definition	Rule viol. type	Remarks / Explanation
WB009	wb_desalinated_water_domestic + wb_desalinated_water_nace_a + wb_desalinated_water_nace_b + wb_desalinated_water_nace_c + wb_desalinated_water_nace_d + wb_desalinated_water_nace_i + wb_desalinated_water_other = wb_desalinated_water_total	error	Total Desalinated water **must equal** to the sum of the sectoral desalinated water.
WB010	wb_reused_water_nace_a >= wb_reused_water_nace_a_irrgation	error	Reused water for NACE A **must be more than** Reused water for NACE A irrigation.
WB011	wb_reused_water_nace_c >= wb_reused_water_nace_c_cooling	error	Reused water for NACE C **must be more than** Reused water for NACE C cooling.
WB012	wb_reused_water_nace_d >= wb_reused_water_nace_d_cooling	error	Reused water for NACE D **must be more than** Reused water for NACE D cooling.
WB013	wb_reused_water_domestic + wb_reused_water_nace_a + wb_reused_water_nace_b + wb_reused_water_nace_c + wb_reused_water_nace_d + wb_reused_water_nace_i + wb_reused_water_other = wb_reused_water_total	error	Total Reused water **must equal** to the sum of the sectoral reused water.
WB014	wb_desalinated_water_nace_a >= wb_desalinated_water_nace_a_irrgation	error	Desalinated water for NACE A **must be more than** Desalinated water for NACE A irrigation.
WB015	wb_desalinated_water_nace_c >= wb_desalinated_water_nace_c_cooling	error	Desalinated water for NACE C **must be more than** Desalinated water for NACE C cooling.
WB016	wb_desalinated_water_nace_d >= wb_desalinated _water_nace_d_cooling	error	Desalinated water for NACE D **must be more than** Desalinated water for NACE D cooling.
	Regional Water Abstraction		
WA001	wa_for_public_wss_sw + wa_abstraction_for_self_suply_total_sw = wa_total_abstraction_sw	error	*Will be checked after the submission of the data. Not implemented in the WQ reporting tool.*
WA002	wa_for_public_wss_gw + wa_abstraction_for_self_suply_total_gw = wa_total_abstraction_gw	error	*Will be checked after the submission of the data. Not implemented in the WQ reporting tool.*
WA003	wa_total_abstraction_sw + wa_total_abstraction_gw = wa_total_abstraction	error	Total freshwater abstraction **must equal** to the sum of the Total freshwater abstraction from surface water and the Total freshwater abstraction from groundwater.
WA004	wa_for_public_wss_sw + wa_for_public_wss_gw = wa_for_public_wss	error	Total freshwater abstraction for public water supply systems **must equal** to the sum of the Total freshwater abstraction from surface water for public water supply systems and the Total freshwater abstraction from groundwater for public water supply systems.

Code	Definition	Rule viol. type	Remarks / Explanation
WA005	wa_total_abstraction_sw >= wa_total_abstraction_for_hydropower	error	Total freshwater abstraction from surface water **must be more than** the Total freshwater abstraction for Hydropower.
WA006	wa_non_freshwater_domestic + wa_non_freshwater_nace_a + wa_non_freshwater_nace_b + wa_non_freshwater_nace_c + wa_non_freshwater_nace_d + wa_non_freshwater_nace_i + wa_non_freshwater_other = wa_non_freshwater_total	error	Total Abstracted non-freshwater **must equal** to the sum of the sectoral abstracted non-freshwater.
WA007	wa_non_freshwater_nace_a >= wa_non_freshwater_nace_a_irrgation	error	Abstracted non-freshwater for NACE A **must be more than** Abstracted non-freshwater for NACE A irrigation.
WA008	wa_non_freshwater_nace_c >= wa_non_freshwater_nace_c_cooling	error	Abstracted non-freshwater for NACE C **must be more than** Abstracted non-freshwater for NACE C cooling.
WA009	wa_non_freshwater_nace_d >= wa_non_freshwater_nace_d_cooling	error	Abstracted non-freshwater for NACE D **must be more than** Abstracted non-freshwater for NACE D cooling.
WA010	wa_abstraction_for_self_suply_total_sw_domestic + wa_abstraction_for_self_suply_total_sw_nace_a + wa_abstraction_for_self_suply_total_sw_nace_b + wa_abstraction_for_self_suply_total_sw_nace_c + wa_abstraction_for_self_suply_total_sw_nace_d + wa_abstraction_for_self_suply_total_sw_nace_i + wa_abstraction_for_self_suply_total_sw_other = wa_abstraction_for_self_suply_total_sw_total	error	Total freshwater abstraction from surface water for self supply **must equal** to the sum of the sectoral abstraction from surface water for self-supply.
WA011	wa_abstraction_for_self_suply_total_sw_nace_a >= wa_abstraction_for_self_suply_total_sw_nace_a_irrgation	error	Abstraction from surface water for self supply for NACE A **must be more than** Abstraction from surface water for self supply for NACE A irrigation.
WA012	wa_abstraction_for_self_suply_total_sw_nace_c >= wa_abstraction_for_self_suply_total_sw_nace_c_cooling	error	Abstraction from surface water for self supply for NACE C **must be more than** Abstraction from surface water for self supply for NACE C cooling.
WA013	wa_abstraction_for_self_suply_total_sw_nace_d >= wa_abstraction_for_self_suply_total_sw_nace_d_cooling	error	Abstraction from surface water for self supply for NACE D **must be more than** Abstraction from surface water for self supply for NACE D cooling.

Code	Definition	Rule viol. type	Remarks / Explanation
WA014	wa_abstraction_for_self_suply_total_gw_domestic + wa_abstraction_for_self_suply_total_gw_nace_a + wa_abstraction_for_self_suply_total_gw_nace_b + wa_abstraction_for_self_suply_total_gw_nace_c + wa_abstraction_for_self_suply_total_gw_nace_d + wa_abstraction_for_self_suply_total_gw_nace_i + wa_abstraction_for_self_suply_total_gw_other = wa_abstraction_for_self_suply_total_gw_total	error	Total freshwater abstraction from groundwater for self supply **must equal** to the sum of the sectoral abstraction from groundwater for self-supply.
WA015	wa_abstraction_for_self_suply_total_gw_nace_a >= wa_abstraction_for_self_suply_total_gw_nace_a_irrgation	error	Abstraction from groundwater for self supply for NACE A **must be more than** Abstraction from groundwater for self supply for NACE A irrigation.
WA016	wa_abstraction_for_self_suply_total_gw_nace_c >= wa_abstraction_for_self_suply_total_gw_nace_c_cooling	error	Abstraction from groundwater for self supply for NACE C **must be more than** Abstraction from groundwater for self supply for NACE C cooling.
WA017	wa_abstraction_for_self_suply_total_gw_nace_d >= wa_abstraction_for_self_suply_total_gw_nace_d_cooling	error	Abstraction from groundwater for self supply for NACE D **must be more than** Abstraction from groundwater for self supply for NACE D cooling.
WA018	wa_abstraction_for_self_suply_total_sw_total + wa_abstraction_for_self_suply_total_gw_total = wa_abstraction_for_self_suply_total	error	*Will be checked after the submission of the data. Not implemented in the WQ reporting tool.*
WA019	wa_available_groundwater ≥ wa_total_abstraction_gw	error	Available groundwater **must be more than** Total freshwater abstraction from groundwater
WA020	wa_total_abstraction_gw + wb_water_imports + wb_bottled_imports + wb_reused_water_total + wb_desalinated_water_total >= wu_total_freshwater_used_total	warning	*Will be checked after the submission of the data. Not implemented in the WQ reporting tool.*
	Regional Water Use		
WU001	wu_total_freshwater_used_domestic + wu_total_freshwater_used_nace_a + wu_total_freshwater_used_nace_b + wu_total_freshwater_used_nace_c + wu_total_freshwater_used_nace_d + wu_total_freshwater_used_nace_i + wu_total_freshwater_used_other = wu_total_freshwater_used_total	error	Total freshwater used **must equal** to the sum of the sectoral freshwater used.

Code	Definition	Rule viol. type	Remarks / Explanation
WU002	wu_total_freshwater_used_nace_a >= wu_total_freshwater_used_nace_a_irrgation	error	Total freshwater used for NACE A **must be more than** Total freshwater used for NACE A irrigation.
WU003	wu_total_freshwater_used_nace_d >= wu_total_freshwater_used_nace_d_cooling	error	Total freshwater used for NACE D **must be more than** Total freshwater used for NACE D cooling.
WU004	wu_total_freshwater_used_nace_c_food_ind + wu_total_freshwater_used_nace_c_basic_metals + wu_total_freshwater_used_nace_c_transport + wu_total_freshwater_used_nace_c_textiles + wu_total_freshwater_used_nace_c_paper + wu_total_freshwater_used_nace_c_chemicals + wu_total_freshwater_used_nace_c_other_manufact_ind <= wu_total_freshwater_used_nace_c	error	Total freshwater used for NACE C **must be more than** the sum of the freshwater used for all the subcategories of the NACE C.
WU005	wu_total_freshwater_used_nace_c >= wu_total_freshwater_used_nace_c_cooling	error	Total freshwater used for NACE C **must be more than** Total freshwater used for NACE C cooling.
WU006	wu_public_water_supply_domestic + wu_public_water_supply_nace_a + wu_public_water_supply_nace_b + wu_public_water_supply_nace_c + wu_public_water_supply_nace_d + wu_public_water_supply_nace_i + wu_public_water_supply_other = wu_public_water_supply_total	error	Total freshwater used from public water supply **must equal** to the sum of the sectoral freshwater used from public water supply.
WU007	wu_public_water_supply_nace_a >= wu_public_water_supply_nace_a_irrgation	error	Freshwater used from public water supply for NACE A **must be more than** Freshwater used from public water supply for NACE A irrigation.
WU008	wu_public_water_supply_nace_d >= wu_public_water_supply_nace_d_cooling	error	Freshwater used from public water supply for NACE D **must be more than** Freshwater used from public water supply for NACE D cooling.

Code	Definition	Rule viol. type	Remarks / Explanation
WU009	wu_public_water_supply_nace_c_food_ind + wu_public_water_supply_nace_c_basic_metals + wu_public_water_supply_nace_c_transport + wu_public_water_supply_nace_c_textiles + wu_public_water_supply_nace_c_paper + wu_public_water_supply_nace_c_chemicals + wu_public_water_supply_nace_c_other_manufact_ind <= wu_public_water_supply_nace_c	error	Freshwater used from public water supply for NACE C **must be more than** the sum of the freshwater used for all the subcategories of the NACE C.
WU010	wu_public_water_supply_nace_c >= wu_public_water_supply_nace_c_cooling	error	Freshwater used from public water supply for NACE C **must be more than** Freshwater used from public water supply for NACE C cooling.
WU011	wu_self_supply_domestic + wu_self_supply_nace_a + wu_self_supply_nace_b + wu_self_supply_nace_c + wu_self_supply_nace_d + wu_self_supply_nace_i + wu_self_supply_other = wu_self_supply_total	error	Total freshwater used from self-supply **must equal** to the sum of the sectoral freshwater used from self-supply.
WU012	wu_self_supply_nace_a >= wu_self_supply_nace_a_irrgation	error	Freshwater used from self-supply for NACE A **must be more than** Freshwater used from self-supply for NACE A irrigation.
WU013	wu_self_supply_nace_d >= wu_self_supply_nace_d_cooling	error	Freshwater used from self-supply for NACE D **must be more than** Freshwater used from self-supply for NACE D cooling.
WU014	wu_self_supply_nace_c_food_ind + wu_self_supply_nace_c_basic_metals + wu_self_supply_nace_c_transport + wu_self_supply_nace_c_textiles + wu_self_supply_nace_c_paper + wu_self_supply_nace_c_chemicals + wu_self_supply_nace_c_other_manufact_ind <= wu_self_supply_nace_c	error	Freshwater used from self-supply for NACE C **must be more than** the sum of the freshwater used for all the subcategories of the NACE C.
WU015	wu_self_supply_nace_c >= wu_self_supply_nace_c_cooling	error	Freshwater used from self-supply for NACE C **must be more than** Freshwater used from self-supply for NACE C cooling.
WU016	wu_recycled_water_domestic + wu_recycled_water_nace_a + wu_recycled_water_nace_b + wu_recycled_water_nace_c + wu_recycled_water_nace_d + wu_recycled_water_nace_i + wu_recycled_water_other = wu_recycled_water_total	error	Total recycled water used **must equal** to the sum of the sectoral recycled water used.

Code	Definition	Rule viol. type	Remarks / Explanation
WU017	wu_recycled_water_nace_a >= wu_recycled_water_nace_a_irrgation	error	Recycled water used for NACE A **must be more than** Recycled water used for NACE A irrigation.
WU018	wu_recycled_water_nace_d >= wu_recycled_water_nace_d_cooling	error	Recycled water used for NACE D **must be more than** Recycled water used for NACE D cooling.
WU019	wu_recycled_water_nace_c >= wu_recycled_water_nace_c_cooling	error	Recycled water used for NACE C **must be more than** Recycled water used for NACE C cooling.
WU020	wu_public_water_supply_total + wu_self_supply_total = wu_total_freshwater_used_total	error	*Will be checked after the submission of the data. Not implemented in the WQ reporting tool.*

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