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A Guide to Aquator

# 8 Exporters

Version 2.1

By Oxford Scientific Software Ltd.



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# Aquator Exporters

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## What are Exporters?

Exporters allow time series and profile data stored on an Aquator database to be transferred to be copied to a target elsewhere.

Aquator retains information about its last export with the time series or profile. This then enables the exporter to update the target next time an export is requested. For example a time series of Aquator generated river flows stored on the database could update a pre-determined range of cells in an Excel spreadsheet. The user only need specify the target in terms of the spreadsheet file, worksheet and cell range on the first export. Subsequent exports could automatically be sent to the same destination.

### Standard Exporters

The following is a list of standard Aquator Exporters

-  Microsoft Excel spreadsheet
-  HYSIM format file
-  Kisters WISKI format file
-  WRA format file

Exporter	Excel	HYSIM	WISKI	WRA
File format	Excel	Binary	Text	Text (CSV*)
Daily time series	Yes	Yes	Yes	Yes
Monthly time series	Yes	No	Yes	Yes
Daily profile	Yes	No	No	Yes
Monthly profile	Yes	No	No	Yes
Data type	No	Yes	Yes**	Yes

Exporter	Excel	HYSIM	WISKI	WRA
stored in file				
Data interval stored in file	No	Yes	Yes***	Yes
Missing data supported	Yes	Yes	Yes	Yes

Exporter features at a glance

\* CSV = Comma Separated Value

\*\* But the user must select the Aquator data type manually

\*\*\* But the user must select daily or monthly

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## Excel Spreadsheet



The *Microsoft® Excel®* spreadsheet exporter allows time series and profile data to be exported to Aquator from an Excel spreadsheet.

Data is exported into columns:

- A Time series data export generates two columns; one for the dates and one for values. The date column contains a contiguous set of Excel dates. For the export of monthly data, this date is always the first day of each month. The value column contains either numeric values or the *missing data* indicator. The *missing data* indicator is a user specified string that indicates a missing value. This string can be empty which indicates that the cells containing missing values will also be empty.
- Profile data export produces only a single column of data. 366 values are exported for a daily profile and 12 for a monthly profile.
- For both Time series and Profiles, this exporter allows:
  - User selection of worksheet (tab) within a workbook (file)
  - User selection of the cell to contain the first date (Time series import only)
  - User selection of the cell to contain the first value. This need not be on the same row as the start date cell (which effectively provides a way of lagging data on export)

An example of a exported time series data in a spreadsheet suitable is given below where dates are in column *B* and values in column *C*. In this instance both dates and values start in row 7:

	A	B	C	D	E
6					
7		01/02/1996	2540.16		
8		02/02/1996	2410.56		
9		03/02/1996	2272.32		
10		04/02/1996	2160		
11		05/02/1996	2151.36		
12		06/02/1996	3559.68		
13		07/02/1996	3827.52		
14		08/02/1996	2972.16		
15		09/02/1996	3680.64		
16		10/02/1996	3654.72		
17		11/02/1996	3058.56		
18		12/02/1996	2730.24		

An example of an export of a monthly profile of 12 values is given below where values start in column *F* on row 7:

	D	E	F	G	H	I
6						
7			80			
8			85			
9			90			
10			90			
11			83			
12			72			
13			65			
14			60			
15			55			
16			60			
17			65			
18			70			
19						

## The Export Definition

The first stage of defining the data export target is the display of a standard windows *File selection* dialogue box which enables the name location of the Excel spreadsheet to be specified. This may be either an existing file or a new file.

The second stage of the export is the display of the *Excel Export* dialogue box. An example of this is given below:

Excel Export: C:\AquatorOld\Database\a.xls

Spreadsheet

Worksheet: Aquator export

Active Cell

Date start cell: A1

Active Cell

Data start cell: B1

Missing data:

View Spreadsheet

Series Definition

Time series

Profile

Data type: Flow (MI/d)

Data interval: Daily

Name: Thames at Eynsham historic flow2

Properties

Export  
-----  
Thames at Eynsham historic flow2  
-to-  
C:\AquatorOld\Database\a.xls

OK

Cancel

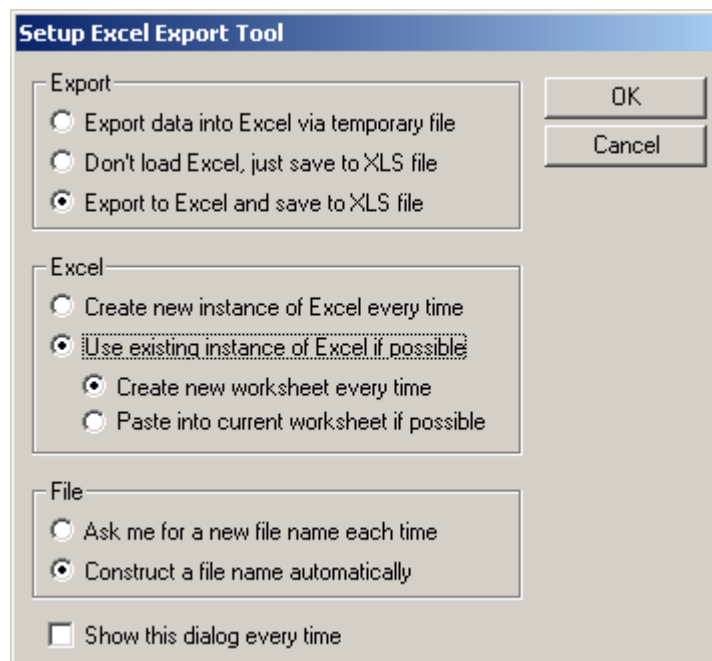
Any data you may have in the clipboard will be lost during this transfer

This form defines the target location within the previously selected file to be specified:

1. Click on *View Spreadsheet* or the Excel logo to display the spreadsheet.
2. It is convenient to have both the form above and the Excel spreadsheet both visible and located side by side.

3. Select the worksheet from either the *Worksheet* drop down list in the above form or by clicking on the appropriate tab on the spreadsheet. Your choice is restricted to existing work sheets in the file.
4. Select the first cell in the data column. The cell reference should appear above the spreadsheet column headings and under the menu bar. The cell also is also given a thick black border and the row and column headers are in **bold** type. This is called the *active cell*.
5. On the above form click the *Active Cell* command button to the left of *Data start cell*. Note that causes the cell reference to change in the above form and the value in the cell to be displayed. This should help confirm that you have selected the correct cell.
6. If you are exporting Time series data, repeat steps 4 and 5 above to define the *Date start cell*. If you are exporting profile data this step is neither required or allowed.
7. Finally click on the *OK* command button which will allow the export to proceed.

The menu item *Setup...Tools...Export...Excel spreadsheet* will display the following dialog where the options to control the export to Excel can be entered.



The *Export* box allows you to choose to

- export to Excel via a temporary file

- export to Excel (.XLS) format report without showing Excel
- save in a file and show the data in Excel

The *Excel* box allows you to choose to

- run Excel separately every time you export
- or use any instance of Excel already running if possible; in this case you can choose whether to create a new document each time or append to the currently open document

If you choose to save to file the *File* box allows you to choose to

- enter a new file name each time
- or construct new file names automatically

The last option controls whether this dialog is shown every time data is exported to Excel.

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## HYSIM Format File



The HYSIM exporter allows daily time series data to be exported to a HYSIM file. HYSIM is an internationally known hydrological catchment model. Information of HYSIM can be found at <http://www.watres.com/software/sf-hysim.html>

HYSIM files have their own binary format and can hold data at intervals other than daily and also hold more than one variable. This exporter is only able to export files holding a single variable at a daily time step.

### The Export Definition

The data export target is defined by destination file selection using a standard windows *File selection* dialogue box. This may be either an existing file or a new file.

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## Kisters WISKI format file



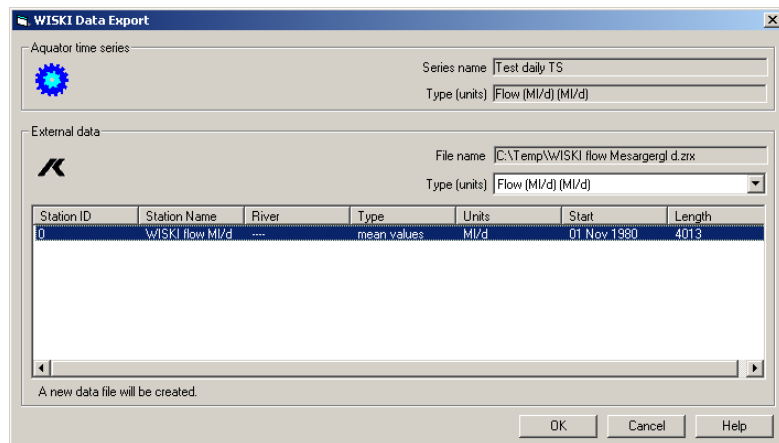
The "Water Information Management System KISTERS" from Kisters AG (<http://www.kisters.de/>) is a comprehensive software package for managing, storing, viewing and converting time series data. The Aquator WISKI importer allows time series data to be imported into Aquator from a text file created by exporting data from a Kisters WISKI database.

Aquator profile data is not available within WISKI and hence only time series data can be exported. Another difference is that WISKI timestamps data to the second while Aquator is only interested in daily or monthly values. Therefore exported data will always have the hh:mm:ss part of the timestamp set to 00:00:00.

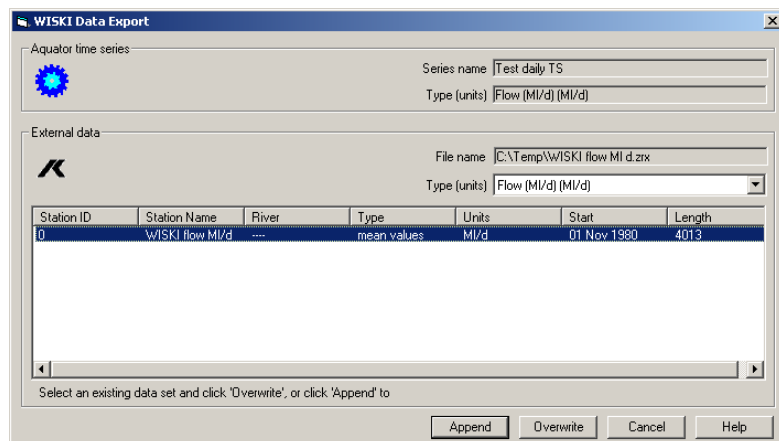
## The Export Definition

The first stage of defining the data to be exported is to choose the time series to export, then choose the the name and location of the WISKI format file..

The second stage of the import is the display of the *WISKI Data Export* dialogue box. An example of this follows:



When exporting into a new file simply choose the data type to export to before clicking OK.



If the file already exists and contains data in WISKI format you can choose whether to overwrite or append, as shown in the above dialog, before clicking OK

### WISKI file format

A file of this format is organised into one or more data sets. Each data set consists of a header followed by the data. The header may be spread over several lines, each prefixed by a '#' character. Empty lines and comment lines prefixed by '##' are ignored. Each data point is on a separate line and consists of a timestamp followed by a value e.g.

19801101000000 54.2

is a value of 54.2 for midnight on 1 Jan 1980.

A header consists of keywords, values and separators. Values may be numeric or textual. The following keywords are defined but not all will occur in every header.

Keyword	Meaning
SANR	Station identification number
SNAME	station Name
SSNR	WISKI-internal station identification number
SWATER	River Name
CDASA	Data collector number
CKONV	Converter Number
CMW	Values per day, for equidistant values
CNAME	Parameter Name
CNR	canal Number
CNTYPE	Type of precipitation parameter (totalisator or recorder)
CTYPE	Canal or value type
CUNIT	Parameter unit
REXCHANGE	Exchange Number
RID	always set to -1, without importance
RINVAL	Value for invalid data
RNR	Values per day for equidistant values or -1 for non-equidistant values

Keyword	Meaning
RORPR	Quality of values (original, production)
RTIMELVL	Time level of values (high-resolution, daily, monthly, annual values)
RTYPE	Value type (minimum, maximum, mean values, amounts, instantaneous values)

All keywords are ignored by the exporter except the following:

Keyword	Comments
SANR	Set to 0
SNAME	Set to name of time series
SWATER	Set to "----"
CTYPE	Set to "n-min-equi" for daily data or "n-min-ip" for monthly data
CMW	Set to 1 for daily data, -1 for monthly
CUNIT	Set to Aquator data type name
RINVAL	Set to -777
RNR	Set to 1 for daily data, -1 for monthly
RTYPE	Set to "mean values"

Missing data is flagged by data lines containing the value specified by the RINVAL keyword (-777).

### **Daily mean flows example**

(nominal timestamp is midnight so CMW=1 and RNR=1)

```
#SANR0|*|SNAME SNAMEMonthly flow 5|*|
#SWATER ----|*|CTYPE n-min-equi|*| CMW1|*|
#CUNITM1/d|*|CMW1|*|RINVAL-777|*|
#RNR1|*|RTYPEmean values|*|
19801101000000 54.2
19801102000000 53.0
19801103000000 50.7
19801104000000 50.6
```

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## WRA Format file



The WRA (Water Resource Associates) format file exporter allows time series and profile data to be exported to Aquator to a text file. The format of data in this text file is CSV (Comma Separated Value) and described in the **Chapter on Importers** in section **WRA CSV file format**. This format has a close resemblance to the way time series and data are stored on the Aquator database and allows not only the transfer of data, but also series information such as data types, series names and units.

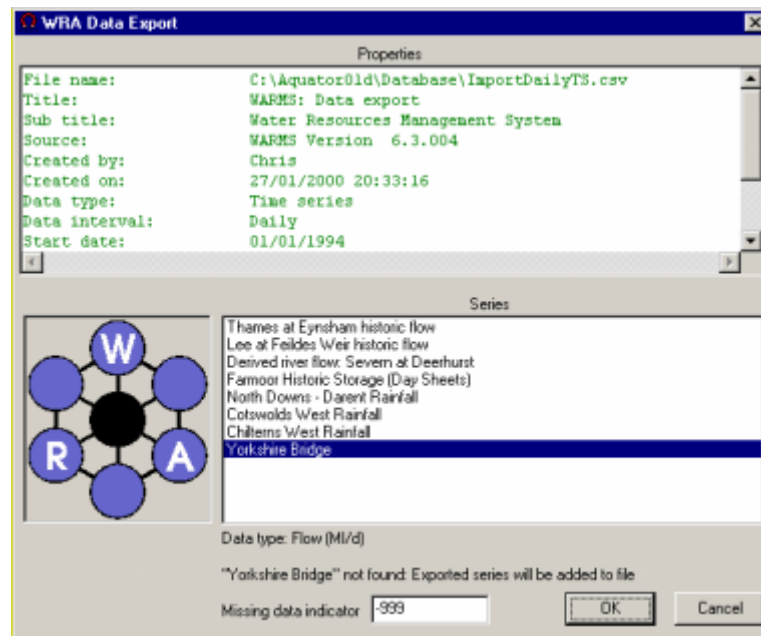
Because of this close coupling with Aquator, it provides a more secure way of transferring data between Aquator database.

Files in this format can hold multiple time series or profile of the same data interval. Exporting to an existing file preserves any existing series or profiles in the file, except that one being updated.

### The Export Definition

The first stage of defining the data to be exported is the display of a standard windows *File selection* dialogue box which enables the name and location of the WRA format CSV file to be specified.

The second stage of the export is the display of the *WRA Data Export* dialogue box. An example of this is given below:



The *Properties* window summarises the current contents of the file. The *Series* list box shows the series currently in the CSV file and the series about to be exported.

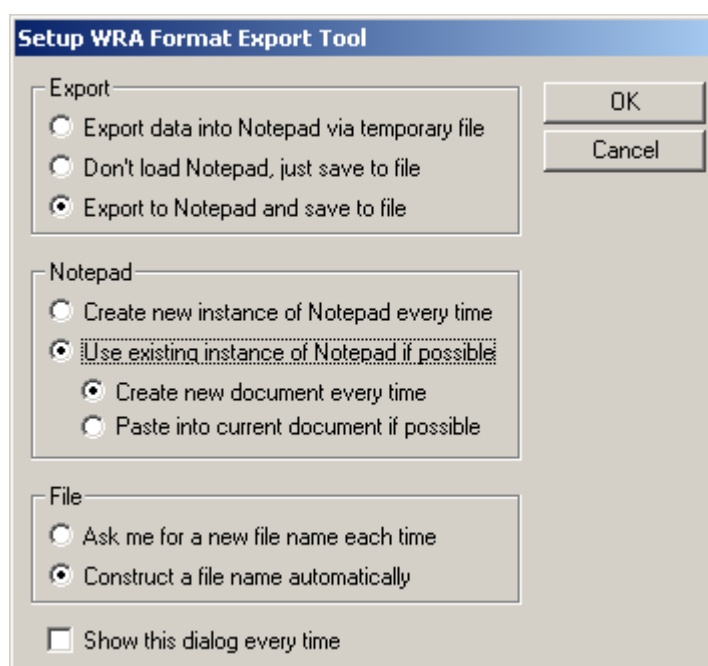
If the name of the series to be exported is found in the target file this series will be updated with values transferred from Aquator.

If the name of the series to be exported is not found, a new series will be added to those already in the target file.

The start and end dates of data in the target file are extended when necessary to cover both the period currently in the file and the period of data to be exported.

Click on the *OK* command button to continue with the export of the *Cancel* command button to abort the output.

The menu item *Setup...Tools...Export...WRA format file* will display the following dialog where the options to control the export to WRA format can be entered.



The *Export* box allows you to choose to

- export to Notepad via a temporary file
- export to a .CSV file without showing Notepad
- save in a file and show the data in Notepad

The *Notepad* box allows you to choose to

- run Notepad separately every time you export

- or use any instance of Notepad already running if possible; in this case you can choose whether to create a new document each time or append to the currently open document (this option may not work on some systems)

If you choose to save to file the *File* box allows you to choose to

- enter a new file name each time
- or construct new file names automatically

The last option controls whether this dialog is shown every time data is exported in WRA format.