KISTERS Australia News

August 2021

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From The GM's Desk

By Paul Sheahan, General Manager, KISTERS Pty Ltd

Just when we thought life was returning to normal(ish) we find ourselves juggling travel plans again. At this stage it looks most unlikely that the AHA conference will go ahead this year. The AHA committee is looking at an adaptive, e-conference approach for later this year.

Australian User Group Online

We would like to trial an online format for the Australian KISTERS user group for the last quarter of this year. Our plan is for a one-hour session each month for the last quarter of the year, please see the below table of dates. Each month there will be a separate session for Hydstra clients and for WISKI clients. Our plan is for all content to be covered in the hour and any additional discussion can occur following the one-hour session, for those that would like to stay in the meeting. We will finish up the year with Pete's famous 'What's new in technology' talk.

The sessions will most likely be hosted on Teams as a meeting, we have deliberately chosen a meeting style rather than a webinar as we are keen for an attendee participation approach.

For users in other time zones we will record the sessions using Teams, and registered attendees will be able to view the recordings later, so please register even if the live times are impossible for you.

Date	Topic	Session time			
		New Zealand	AU WA Standard time	AU Eastern Standard	AU Eastern Summer
Mon, 6 Sept.	Hydstra	2 pm	10 am	12 noon	n/a
Mon, 13 Sept.	WISKI	2 pm	10 am	12 noon	n/a
Mon, 11 Oct.	Hydstra	2 pm	9 am	11 am	12 noon
Mon, 18 Oct.	WISKI	2 pm	9 am	11 am	12 noon
Mon, 8 Nov.	Hydstra	2 pm	9 am	11 am	12 noon
Mon, 15 Nov.	WISKI	2 pm	9 am	11 am	12 noon
Mon, 13 Dec	What's new in Technology	2 pm	9 am	11 am	12 noon

The online approach for presenting the Australian user group meeting may be of interest to users outside of Australia, and below are the sessions times across the globe. Many of the these session time are not that sleep friendly. If you're outside the Australian region and would like to receive a link to the session recording then please register you interest in the recording in the same way as session registration above.

Topic	Session time							
	Canberra	San Diego	New York	London	Aachen	Pretoria	Hanoi	Singapore
	AEST/AEDT	*PDT/PST*	*EDT/EST*	*BST/GMT*	*CET/CEST*	*SAST*	*ICT*	*SGT*
Hydstra #1	Mon, 6 Sep 12 PM	Sun, 5 Sep 07 PM	Sun, 5 Sep 10 PM	Mon, 6 Sep 03 AM	Mon, 6 Sep 04 AM	Mon, 6 Sep 04 AM	Mon, 6 Sep 09 AM	Mon, 6 Sep 10 AM
WISKI #1	Mon, 13 Sep 12 PM	Sun, 12 Sep 07 PM	Sun, 12 Sep 10 PM	Mon, 13 Sep 03 AM	Mon, 13 Sep 04 AM	Mon, 13 Sep 04 AM	Mon, 13 Sep 09 AM	Mon, 13 Sep 10 AM
Hydstra #2	Mon, 11 Oct 12 PM	Sun, 10 Oct 06 PM	Sun, 10 Oct 09 PM	Mon, 11 Oct 02 AM	Mon, 11 Oct 03 AM	Mon, 11 Oct 03 AM	Mon, 11 Oct 08 AM	Mon, 11 Oct 09 AM
WISKI #2	Mon, 18 Oct 12 PM	Sun, 17 Oct 06 PM	Sun, 17 Oct 09 PM	Mon, 18 Oct 02 AM	Mon, 18 Oct 03 AM	Mon, 18 Oct 03 AM	Mon, 18 Oct 08 AM	Mon, 18 Oct 09 AM

Hydstra #3	Mon, 8 Nov 12 PM	Sun, 7 Nov 05 PM	Sun, 7 Nov 08 PM	Mon, 8 Nov 01 AM	Mon, 8 Nov 02 AM	Mon, 8 Nov 03 AM	Mon, 8 Nov 08 AM	Mon, 8 Nov 09 AM
WISKI #3	Mon, 15 Nov 12 PM	Sun, 14 Nov 05 PM	Sun, 14 Nov 08 PM	Mon, 15 Nov 01 AM	Mon, 15 Nov 02 AM	Mon, 15 Nov 03 AM	Mon, 15 Nov 08 AM	Mon, 15 Nov 09 AM
What's new in Technology	Mon, 13 Dec 12 PM	Sun, 12 Dec 05 PM	Sun, 12 Dec 08 PM	Mon, 13 Dec 01 AM	Mon, 13 Dec 02 AM	Mon, 13 Dec 03 AM	Mon, 13 Dec 08 AM	Mon, 13 Dec 09 AM

- Hopefully we've calculated the multitude of daylight savings and timezone permutations correctly. A useful tool for checking for your local cities time relative to Canberra is https://www.timeanddate.com/worldclock/meeting.html

If you'd like to attend any of the sessions please email us at support@kisters.com.au and we will send you links for the session(s) of interest. We'd love to have some brief user presentations also, so if you would like to share what you are up to for 5-10 minutes then please let us know.

Request link to Hydstra sessions

Request link to WISKI sessions

Request link to Technology session

JIRA

We are progressing with our JIRA Service Desk trial that was flagged in our last newsletter. We currently have two clients on the trial and we are working towards a service desk configuration that will apply to all clients supported by our staff at KISTERS Australia. The implementation of JIRA Service Desk will eventually be rolled out to all clients and will replace our existing systems such as 'System Reports' and 'Bugzilla'. Our initial use of JIRA has been encouraging and we are confident it will not only be a replacement but provide a more connected experience for our clients.

We will be taking a full export of our existing systems to enable the valuable resource of prior experience to be retained. Having a complete repository of product support and development cases is an essential part of running our business. Whilst some corporate clients have similar issue tracking systems, we need to maintain a single point of knowledge for our products and will make Service Desk the point of interaction on support and development for our products and services.

Automated data quality checks

Since our last newsletter I've visited several clients, both head office and regional offices, and I'm keen to continue so let me know if we can organise a visit.

Following one of these visits we are taking a look at how we can better help out with hydrographer configured auto QA. We have an extensive capability of automated QA tools, this exercise will look to the feasibility of enabling a station hydrographer to easily configure both tests and test parameters from the data managers workbench with the tests being run from the server module as new data arrives or when data is modified. Please continue reading this newsletter for details on our current QA capabilities. We would like one of the Hydstra user group sessions to discuss this topic so invite participation from both users and sys admins, so please let me know if you are keen to be in the discussion.

On behalf of the KISTERS Australia team, thanks for the opportunity continue working with you. We strive to be client focused and value your feedback.

Paul Sheahan
General Manager

KISTERS Pty Ltd

Innovation Optimizes Water Resources & Competing Interests

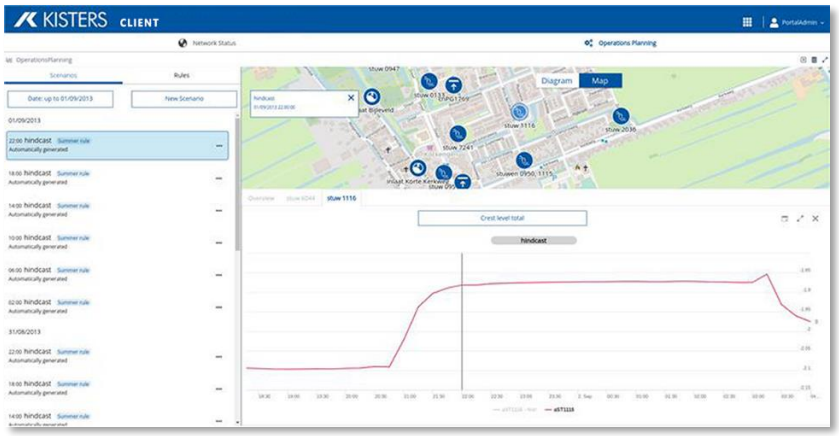
Maximize data value from control & water accounting systems as KISTERS future-proofs your water data infrastructure

Now water managers can further improve operational performance under the best possible operating scenario that meets user-defined and user-ranked priorities for water conservation, energy efficiency, or regulatory constraints.

KISTERS Real-Time Optimization (RTO) platform and its clean web interface empower operators to set acceptable thresholds on a wide range of variables such as pump discharge, inlet levels, outlets and weir crests. Utilizing a patent-pending approach, the solution aggregates and validates data you already collect from SCADA or PLC systems among others. The higher quality information is then integrated with the proprietary model and run at a remarkably fast speed on KISTERS technology stack, making supercomputing results more accessible and affordable.

Among European and North American customers who have implemented this generation of technology, extremely precise predictions for short-, medium-, and long-term resource schedules have yielded summer energy cost savings of 20%. During heavy storms, RTO has reduced peak water levels by 50% -- minimizing potential for risk of flooding. Applied to hydropower generation, this KISTERS innovation has demonstrated 5-10% higher returns from existing assets while meeting environmentally-responsible obligations.

Learn more about KISTERS RTO solution.



Dam Simulation in Mozambique

Reservoir Balance Simulation and Forecasting for Hidroeléctrica de Cahora Bassa

The Cahora Bassa Dam is located in Mozambique. It is one of the two major dams on the Zambezi river, the other being the Kariba. The dam is used to convert the Zambezi River power into electricity by turning turbines. That energy is then sold to Mozambique Electricity Company, South African and Zimbabwe cities, farms and mines, providing important revenue to Mozambique. The Cahora Bassa dam forms Cahora Bassa Reservoir behind it, which is 270 kilometres long and 30 kilometres at its widest point, with 52 cubic kilometres of live storage. The dam is the largest hydroelectric power plant in southern Africa and the most efficient power generating station in Mozambique. See https://www.hcb.co.mz for more information on Cahora Bassa.

Lake Cahora Bassa

KISTERS installed Hydstra for Hidroelectrica de Cahora Bassa in 2018, and in 2020 started on a simulation project to provide advice on optimising the dam's operation.

HCBSIM is a bespoke program for simulating the hydrological behaviour of the Cahora Bassa reservoir and hydro power station in Mozambique, under a variety of projected future scenarios.

The simulation is a balancing exercise:

Two sections of a simulation

Each simulation is divided into two stages:

The ***observed*** stage is a period for which recorded time series data is available in Hydstra. Many of the reservoir parameters are simply read from Hydstra TS files and displayed.

The ***simulated*** stage is the period that extends past the end of recorded data and into the future, and involves estimates and projections of future inflows and activities.

Water inflows

Water flows into Cahora Bassa basin from various tributaries and rainfall. During the observed period, this is loaded from a single TS trace representing all sources. During the simulated period, this input is chosen from a statistical distribution, derived from the period of recorded data for that same trace.

Historical and projected outflows from two upstream dams Kafue (in Zambia) and Kariba (jointly owned by Zimbabwe and Zambia) are entered manually.

Scenarios: different projected estimates of the amount of water flowing in

The operators can configure a series of different scenarios, where differing amounts of water flow in. This allows them to compare what would happen in a dry period as opposed to a wet one. Scenarios can also account for taking generators offline for maintenance periods.

Some water evaporates

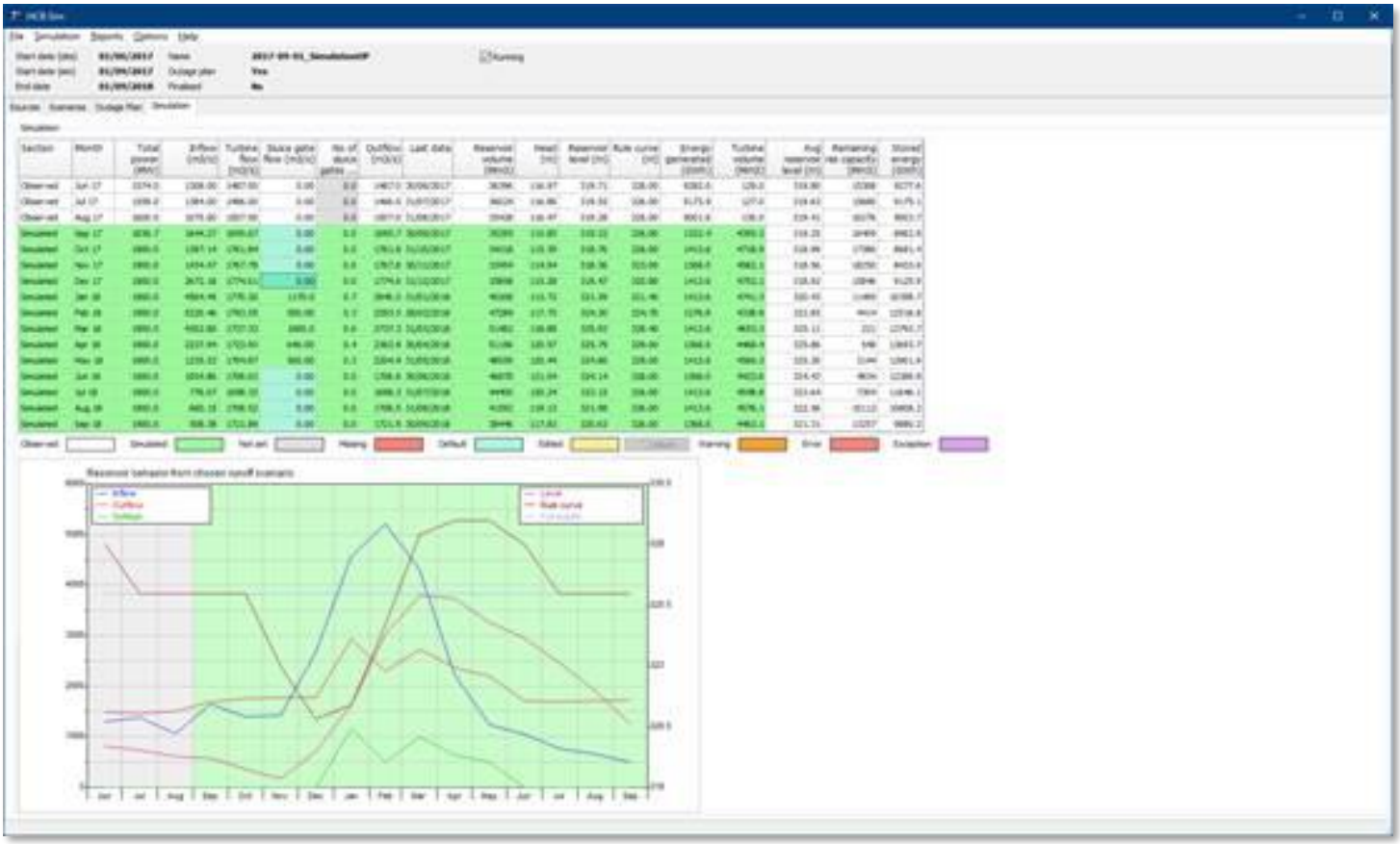
During the observed period, recorded evaporation data is used to calculate the amount of water that evaporates. During the simulated period a series of long-term averages for each month are used.

Some water is used to generate power

Depending on how much power is needed, water is used to drive the turbines, and then discharged downstream.

If the reservoir level is too high, additional water is released downstream

If the water level in the reservoir is higher than a certain month-specific limit, additional water is released through sluice gates.



The model was based on a complex series of spreadsheets which were used in the past to operate the dam.

It may not be obvious from the screen dump, but the whole of Hydstra operates in Portuguese in Mozambique. Much thanks to our agent in Africa, Gina Gaspar, who is fluent in Portuguese and also knows Hydstra inside out. And particular thanks are also due to the friendly and knowledgeable staff at HCB for their patience in explaining the complexity of the HCBSIM model so we could implement it.

Although the particular HCBSIM model may not be transportable to other agencies, the Delphi objects and techniques for dealing with complex sheets of data, parts of which are read from Hydstra time-series and part from manually entered data will be useful in future projects.

Hydstra Product News

Hydstra V13 In Production

Most of our users have upgraded to Version 13, which was released in May last year. Please consider upgrading soon, particularly if you are still running older V10 or V11 systems, as they have become unsupportable. Contact support@kisters.com.au for details on how to download the latest version. Note that you can only upgrade one version at a time, so if you are still on V11 for example, you need to go V11->V12, and then V12->V13.

If you don't feel confident to perform the upgrade yourself, KISTERS can assist as a paid consulting project, provided of course that we can gain access to your server through VPN or Citrix. For very small systems another option is for you to send us the whole system either on a hard drive or as a zip file uploaded to Dropbox. We will upgrade it, and return it to you upgraded to the current release. This of course assumes you can live without it for a while.

Hydstra TS images system

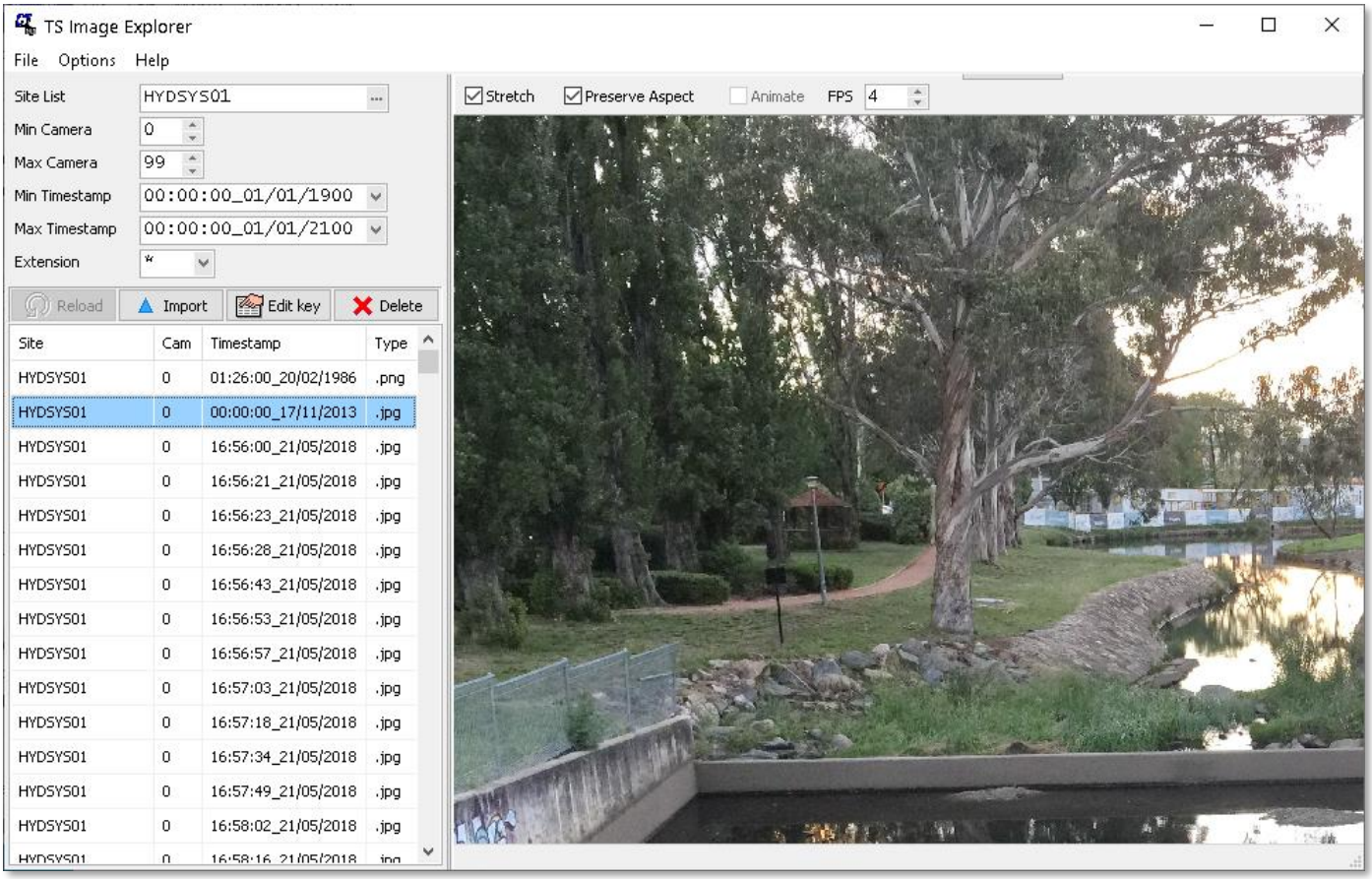
The new Hydstra time series images system is designed to store and manage images taken by permanent on-site or logger-attached cameras on a regular basis (e.g. every hour or every day, or whenever an event occurs). The system is designed to be flexible and extensible. At present it is limited to file-based storage of images, but the design allows it to be extended in future to other storage methods: databases, web-based storage, big-data storage solutions etc.

The components of this system include:

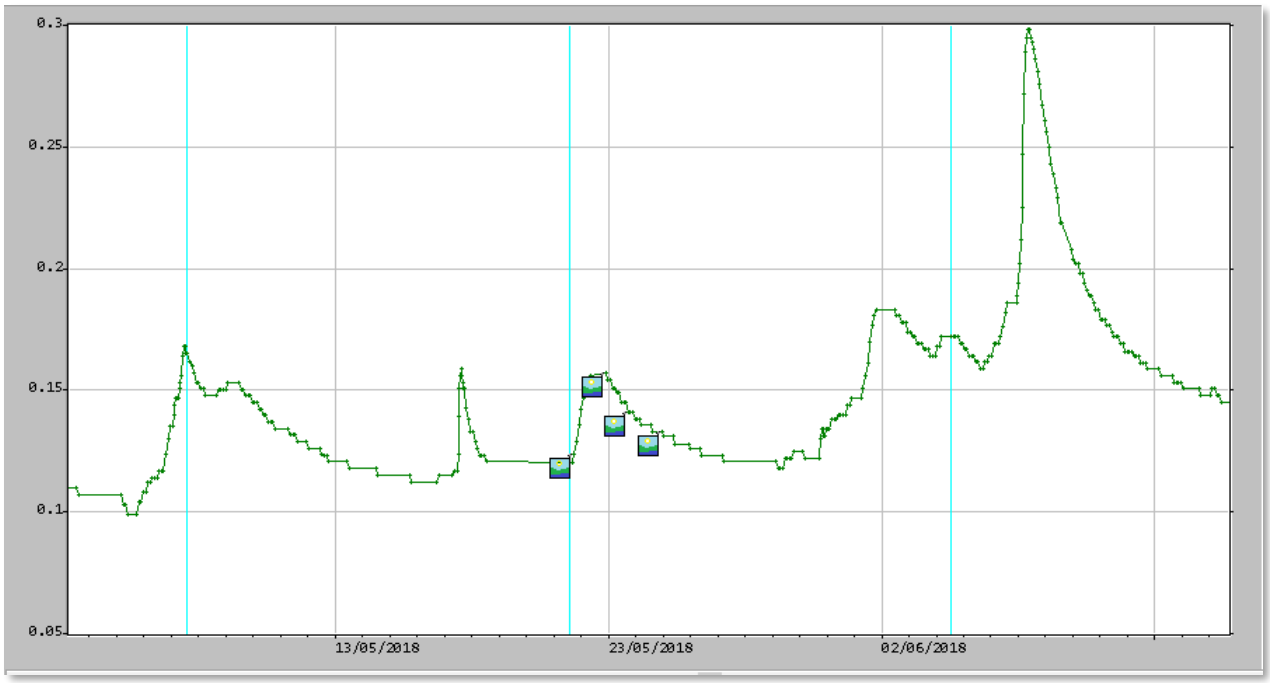
- Two new hyconfig keywords: IMAGEPATH and IMAGESTORE.
- A new database table: CAMERAS describes the location of each camera and specifies the folder structure for the file-based store (whether to have folders for year, month and day).
- Two new HYDLLP calls: *get_image*s and *put_images* can be used in custom scripts to import images from loggers and connected cameras in an automated manner.
- The image explorer application HYIMAGES.EXE allows you to view, import and delete TS images
- The image viewer is integrated into the Data Managers' Workbench (images can appear as icons on the trace, like comments)
- A Python datasource that allows HYPLOT to overlay symbols on a time series plot corresponding to the times that images were taken

In v14.00, this system is controlled by two new hyconfig keywords: IMAGEPATH and IMAGESTORE. In v13.00, IMGPATH is hardwired to be a sibling folder of your INIPATH: *\hyd\dat\img*, and IMAGESTORE is hardwired to *FILE* (which is currently the only option at this stage anyway).

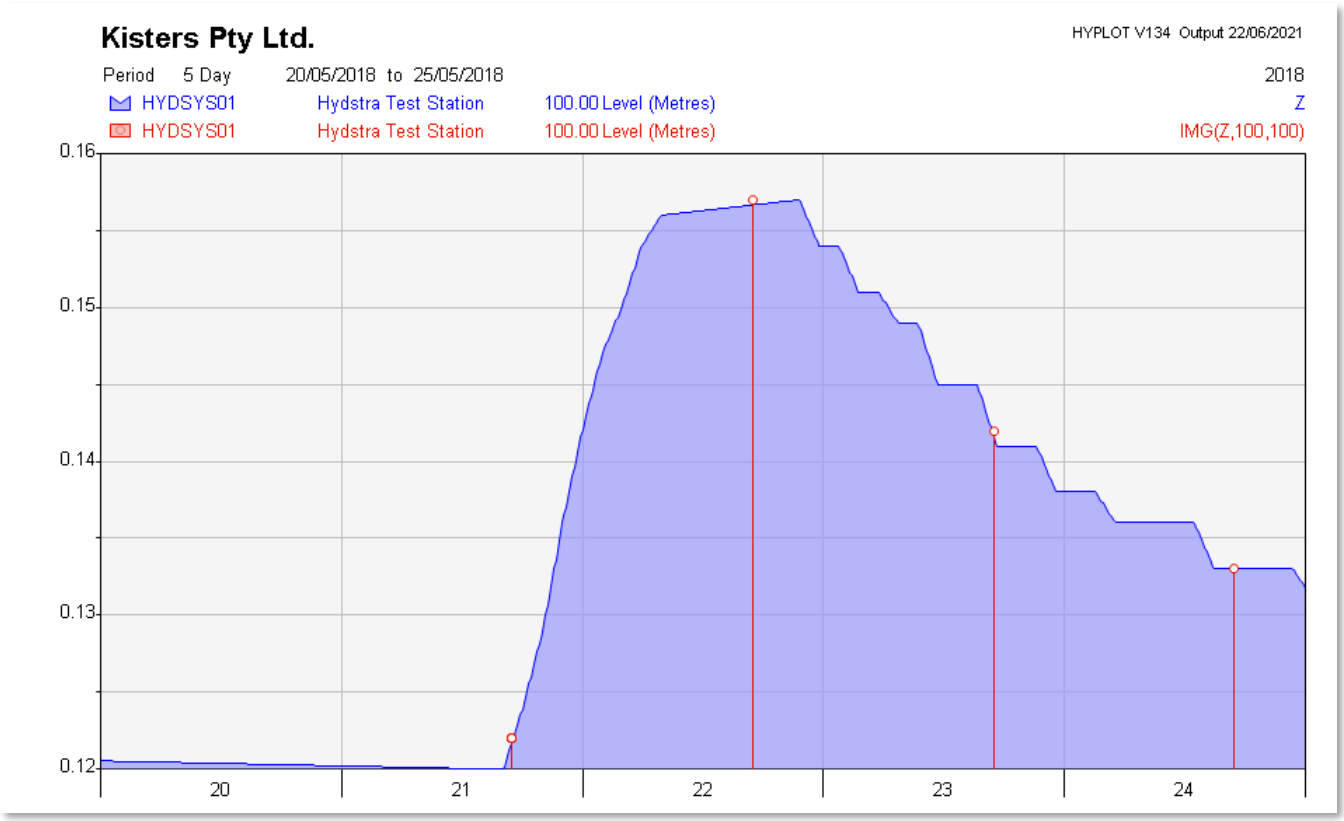
Since there are no standards at present for the way loggers deliver images we will probably need to develop a small script to import images from wherever they currently arrive. Since HYDLLP provides all the needed infrastructure calls the job should be fairly simple - please contact us for assistance.



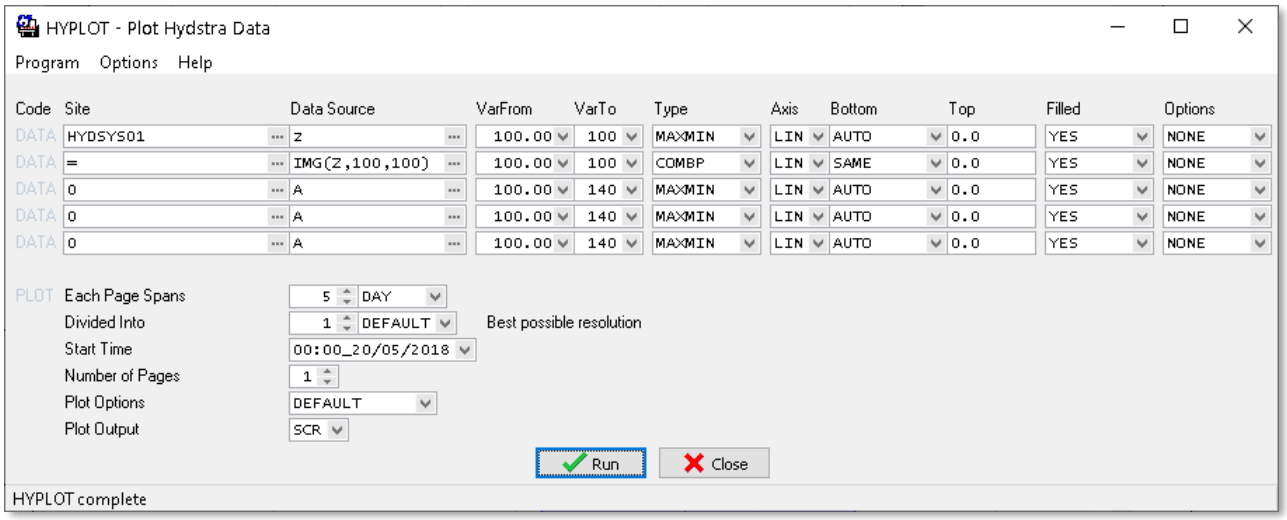
Screen dump from HYIMAGES



Workbench showing image times (right-click to actually inspect the image)



HYPLOT showing times at which images were taken (COMBP plot)

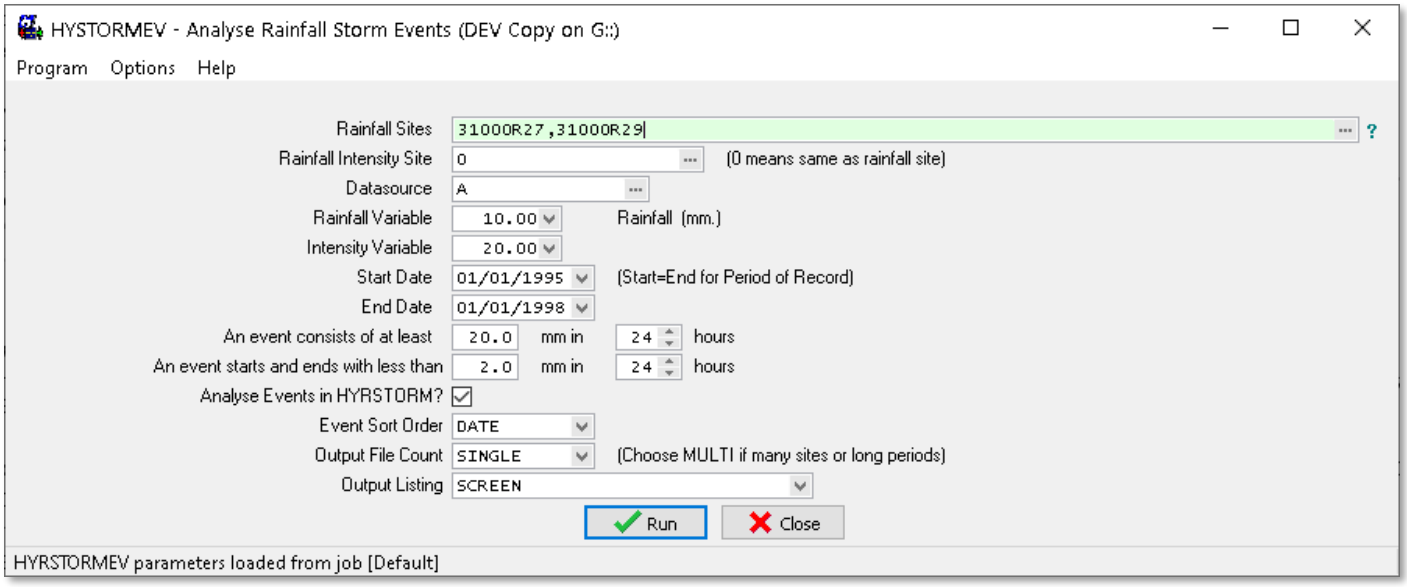


HYPLOT parameter screen using IMG datasource

HYRSTORMEV - Automatically Extract and Analyse Rainfall Storm Events

We have developed a new program HYRSTORMEV which runs across a list of sites and automatically extracts and analyses rainfall storm events. The program can produce a one page report if run over a short period for a list of sites, or multiple separate outputs with a linking header page if running long periods over many sites. In Australia it can use the table of AEP values published by the Bureau of Meteorology, otherwise it will use rating tables with ARI values in them. See HYRSTORM doco for more information.

Because the program runs HYRSTORM on every detected storm event for every site it can result in very long run times.



Sample SINGLE Mode Output

HYRSTORMEV - Report Rainfall Storm Events

Analysis on Date Range 01/01/1995 to 01/01/1998

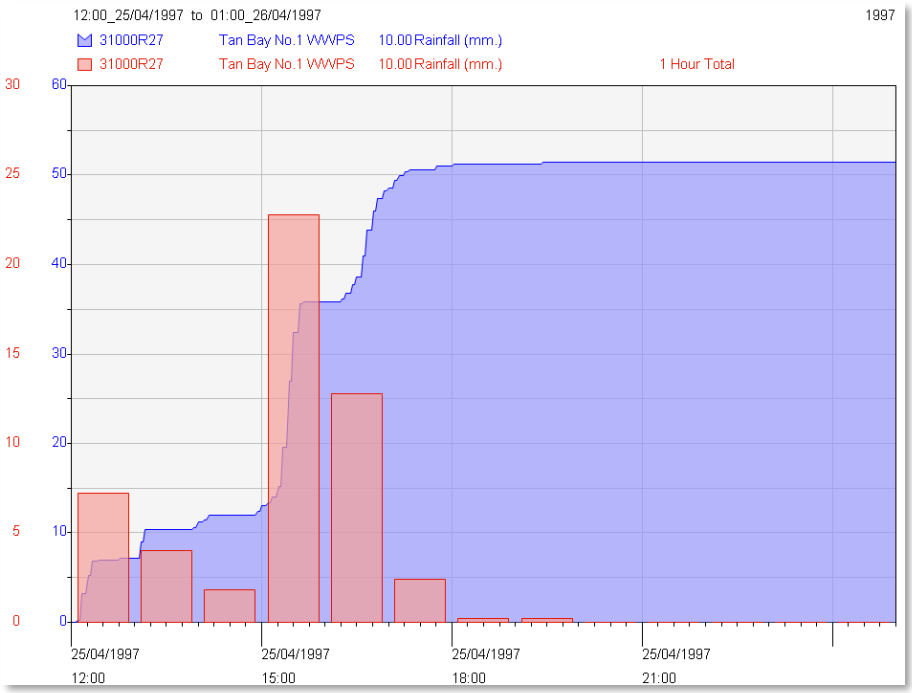
Run at 10:03:28_05/07/2021

Site	Name	Period Start	Period End	Interval	Event Start	Event Total (mm)	Average Intensity (mm/h)	AEP (Min Freq)	ARI (1/N Years) (Min Freq)	Report	Plot
31000R27	Tanilba Bay No.1 WWPS Rain gauge	12:00_25/04/1997	01:00_26/04/1997	30 Minute	15:09_25/04/1997	22.200	44.4	ARI 1.3	1.30	TXT	PNG
31000R29	Bolwarra No.1 WWPS Rain gauge	16:00_29/11/1995	10:00_01/12/1995	30 Minute	14:54_30/11/1995	21.200	42.4	ARI 2.0	2.00	TXT	PNG
		10:00_30/12/1996	14:00_30/12/1996	30 Minute	11:34_30/12/1996	19.200	38.4	ARI 1.5	1.50	TXT	PNG

To the right of the report are hotlinks to the TXT output from HYRTORM, and the PNG output from HYPLOT. The TXT output looks as follows:

```
Hunter Water Corporation

Site       31000R27              Tanilba Bay No.1 WWPS Rain gauge
Variable     10.00               Rainfall (Millimetres)

Storm Intensity/Duration Report for Period Beginning 12:00_25/04/1997
                                           Ending    01:00_26/04/1997

Total for Period  :        51.400

Maximum Storm Bursts

Duration     Began              Amount  Intensity    Return
             Time  Date          (mm.)    (mm/hr)

  1 Minute  15:24_25/04/1997   7.400      444.0
  2 Minute  15:24_25/04/1997   7.400      222.0
  3 Minute  15:24_25/04/1997   7.400      148.0
  4 Minute  15:24_25/04/1997   7.400      111.0
  5 Minute  15:24_25/04/1997   7.400       88.8
 10 Minute  15:24_25/04/1997  12.800       76.8     ARI 1.3
 15 Minute  15:19_25/04/1997  17.200       68.8     ARI 1.7
 30 Minute  15:09_25/04/1997  22.200       44.4     ARI 1.3
  1 Hour    14:54_25/04/1997  23.800       23.8     < ARI 1
  2 Hour    15:14_25/04/1997  36.000       18.0     ARI 1.1
  3 Hour    14:54_25/04/1997  39.000       13.0     < ARI 1
  6 Hour    12:04_25/04/1997  51.200        8.5     ARI 1.0
 12 Hour    12:04_25/04/1997  51.400        4.3     < ARI 1
 24 Hour    Period Insufficient for this Duration
 48 Hour    Period Insufficient for this Duration
 72 Hour    Period Insufficient for this Duration
 96 Hour    Period Insufficient for this Duration
120 Hour    Period Insufficient for this Duration
144 Hour    Period Insufficient for this Duration
168 Hour    Period Insufficient for this Duration
```

While the PNG output looks as follows:



Sample MULTI Mode Output

In MULTI mode each site is written to a separate HYML file in the same folder as the final output file. The final output file then consists simply of a summary page which links to the underlying sites, one line per site:

HYRSTORMEV - Report Rainfall Storm Events

Run at 10:27:44_15/06/2021

Site	Site Name	Report
31000R27	Tanilba Bay No.1 WWPS Rain gauge	hyrstormev.31000R27.htm
31000R29	Bolwarra No.1 WWPS Rain gauge	hyrstormev.31000R29.htm

And each report link points to an output similar to SINGLE mode, but for just one site.

HYRSTORMEV is available in recent V13 patches.

Automated Data Validation in Hydstra

Hydstra presently has a bit of a shotgun approach to data validation and screening ranging from limits in SVRIMP and HYGENLOG to specific tools like HYADJUST and HYAUDIT for recognising and adjusting data values and quality codes. We are looking to simplify the data validation process so that Hydrographers can more easily screen their data, see and change limits, etc. Stay tuned, but in the meantime here is an overview of what is available right now:

SVRIMP Import Validation

SVRIMP offers a basic form of import validation, using the IMPORTVALID.INI file, and entries in your STNINI table. Here is a sample **IMPORTVALID.INI** file:

```
[Version]
Version=1

[Excessive Action]
Quality = 151
Comment = ERROR: Excessive value %VAL% out of expected range %MIN% .. %MAX%
Clip    = no
Delete  = no

[HighValue Action]
Quality = 111
Comment = Warning: High value %VAL% out of expected range %MIN% .. %MAX%
Clip    = yes
Delete  = no

[SVRIMP Validation]
;variable=STNINIKW,Action
100 = testexcessive,excessive
100 = testhighvalue,highvalue
140 = testflow,highvalue
```

Sections of the form [xxx Action] are named actions that can get applied to non-compliance values. Available keywords are:

- Quality - Will force non-complying data values to be written with an override quality.
- Comment - Will write a comment against non-complying data values. The macros %VAL%, %MIN% and %MAX% will be filled in the appropriate values. Omit the comment if you don't want each bad point to be comment flagged.
- Clip - Will cause non-complying data values to be clipped to the range limits you have defined (in STNINI).
- Delete - Will cause non-complying data values to be discarded altogether – as if they were not present in the input file.

Sections of the form [*xxx* Validation] are named collections of actions that can get applied to incoming data. SVRIMP lets you specify a single such named collection in the *Validation Section* setting. Each entry in these sections consists of:

- variable-filter - The "key" (left-hand-side of the equals sign) must be a variable-filter. Typically this will be a variable number, with or without the subvar, depending on whether you want to match all subvars, or a specific one. Please see HYSTNS for more information.
- STNINI-keyword - The first comma-separated item of the "value" (right-hand-side of the equals sign) must be a keyword in STNINI. This lets you specify a different range for each site ID, or if you specify site 0, you can specify a range to apply to all sites (that don't have a direct match).

  The format of the values in STNINI is the same as for those used by HYAUDIT's "Data Within Range" tests, so you can use the same keywords if you have already set them up for HYAUDIT. The format of these values in STNINI must be two numbers separate by a comma, e.g. "-0.5,10.125" (without quotes) specifying the lower and upper limits.
- Action -The second comma-separated item of the "value" is the name of the action to be applied if data falls outside the specified range. There must be a corresponding [*xxx* Action] section in the INI file.

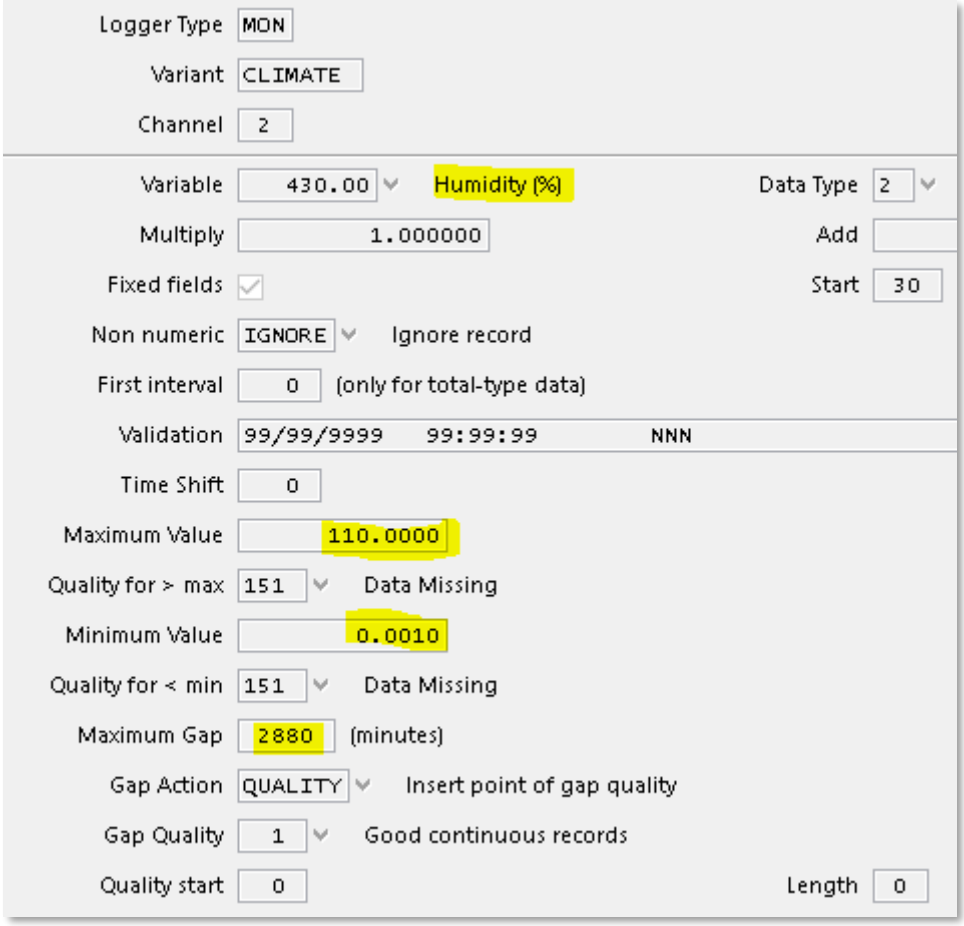
Behaviour of SVRIMP import validation:

You can have multiple ranges specified against the same variable. SVRIMP will apply the tests in order, and as soon as a non-compliance is detected, it will apply the action, and proceed no further down the list. This means you should place the "extreme" tests near the top, and less severe "warning" tests further down.

- If there is no entry in STNINI for your specified keyword – neither for the actual site ID, nor for the "catch all" site ID of "0", that means the test will be skipped. This means you can specify tests that will only apply to certain sites – just make sure you don't have a zero-site entry if that is your intention.
- If you have an action with Delete=Yes, it means the settings for Quality, Comment and Clip are ignored – SVRIMP will behave as if the non-complying data values was not present in the input file.

HYGENLOG

The Generalised Loggers system allows you to specify upper and lower bounds on data as it is being imported, and also to specify a maximum period between values before you declare a gap. Careful setting of these values will immediately screen bad data at source:



HYAUDIT

Next port of call is HYAUDIT, which can be configured to check for many more issues, including rate of change limits (SVRIMP can't really do rate of change since the points may be coming in one at a time).

When a specific HYAUDIT test is run the output can be directed to an XML file for later parsing. But more importantly a trigger event is raised, which can be captured in SVRTRG and an action generated in SVRRUN. The action can be as simple as sending an email, and as complex as you (or we) can code up.

Bear in mind the SITE 0 facility of HYAUDIT, which allows you to set up a default set of limits for a variable against site 0, and then override those typically wide limits with more appropriate ones on a site by site basis. We have capabilities for analysing your data to try and find potential limits using HYAUDIT.STNINILIM and writing global limits using HYAUDIT.STNINSET.

In addition to the capabilities we have for using HYAUDIT to automatically modify data, HYAUDIT should be run routinely overnight and the results presented using HYAUDIT.SUMREP. This produces a nice looking HTML report which can be distributed either via the company menus in HYXPLORE or even by emails direct to site owners.

HYAUDIT Summary Report

Audit Job Name: TEST

Run on: 2021/04/23 10:04:47

CSV Version of this report

Rainfall Intensity Low	Rainfall Uncoded Spread	Bad Quality Percentage	Gap Between Points	Data Compare	No Data Deviations	No Data Discontinuities	No Quality Discontinuities	Site in Table	Qualities Registered	Variables Registered	Sufficient Gaugings	Gap Between Gaugings	Gauging Deviations	Gauging Runs Tests	Gaugings Students T Test	Section Last Surveyed
fail	fail	fail	fail	n/a	n/a	pass	fail	pass	pass	pass	fail	fail	fail	fail	fail	fail
pass	fail	pass	fail	fail	n/a	pass	fail	pass	pass	pass	fail	fail	fail	fail	pass	n/a
n/a	n/a	fail	n/a	fail	n/a	n/a	pass	pass	pass	pass	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	pass	fail	fail	n/a	pass	pass	pass	pass	pass	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	pass	n/a	fail	n/a	n/a	fail	pass	pass	pass	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	fail	n/a	fail	n/a	n/a	pass	pass	pass	pass	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	pass	n/a	fail	n/a	n/a	pass	pass	pass	pass	pass	fail	pass	fail	n/a	n/a
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	0	4	0	0	0	3	4	7	7	7	1	0	1	0	1	0
1	2	3	3	6	0	0	3	0	0	0	2	3	2	3	1	1
5	5	0	4	1	7	4	0	0	0	0	4	4	4	4	5	6
14	0	57	0	0	0	43	57	100	100	100	14	0	14	0	14	0
14	29	43	43	86	0	0	43	0	0	0	29	43	29	43	14	14
71	71	0	57	14	100	57	0	0	0	0	57	57	57	57	71	86

HYMAILER

The simplest HYAUDIT action might be to simply email someone that an audit failure has occurred, and it's a trivial job to run HYMAILER to the site owner, based on a SRVTRIG trigger. Since you don't want the owner to be inundated with gazillions of emails you can use the deferred capability of HYMAILER to bundle up a number of emails into a single daily one if you wish.

HYADJUST

Once you get past simple value and change limits we get into the area of more sophisticated amendments, which can be run on an on-change trigger. HYADJUST is an interesting program which can perform several more interesting adjustments including gap filling, de-spiking, range checking, applying calibrations, etc. It can be run on a trigger to detect and fix issues.

HYLATEST - Data Timeliness Report

So far we have been addressing issues in the data domain - exceeding limits, rate of change etc. Another important aspect of data validation is to look into the time domain - is data arriving in a timely manner for all your sites? HYLATEST is a configurable tool that allows you to colour-code the timeliness of your data in a report, with hover tips to show current values. You should schedule HYLATEST regularly and make the output available in HYXPLORE under the Company Favourites menu.

Telemetry Status by Variable

Grid displays the age of the data in days contained in the HYDSTRA TE data file
Site List=tsfiles(E), Datasource=E, Run on 2021/07/29 09:25:50

CSV File: hylatest.telemetry.csv

<1440m | 1440m-2880m | >2880m | No Data | Excluded

Site	Site Name	10.11 Rainfall (mm.)	10.70 Rainfall (mm.)	10.81 Rainfall (mm.)	100.10 Level (Metres)	117.10 Water Level (m)	120.10 Tide Level (m)
225112A	THOMSON RIV D/S DAM				9.4h		
225208B	THOMSON R-COOPERS CK				9.		
225210B	THOMSON RIV-NARROWS				9.		
225213A	ABERFELDY BEARDMORES				9.		
225811A	MYRRHEE RG	9.4h	9.4h				
225812A	ABERFELDY TOWN RG	9.4h	9.4h				
225813A	MT ST GWINEAR RG	9.4h	9.4h				
225815A	THOMSON DAM WALL RG	9.4h	9.4h				

variable=100.10, varname=Level (Metres), age=9.4h, last time=2021-07-29_00.00.00, last value=0.490, last quality=147

Perl and Python Scripts

Now we get to the harder bits. If you want to trigger an action based on rate of change out of HYAUDIT and do something to the data we may use a Perl or Python script to implement your decision. We do have sample Perl to replace values with bad quality or limit values or whatever which we can easily configure. In some cases you may even want to run a MODSYN model or something more complex to detect and fix problems by looking across different parameters and different sites.

Conclusion

We do concede that the bits and pieces of data validation are scattered about Hydstra, and do need a bit of understanding and setup. Nonetheless you can do a lot with a relatively small amount of work setting things up. Some users are putting them to good use, others not so much. We keep banging on about HYAUDIT (and HYGIENE, but that's another story), but persuading people to use it is one thing, and then doing something about it is altogether another!

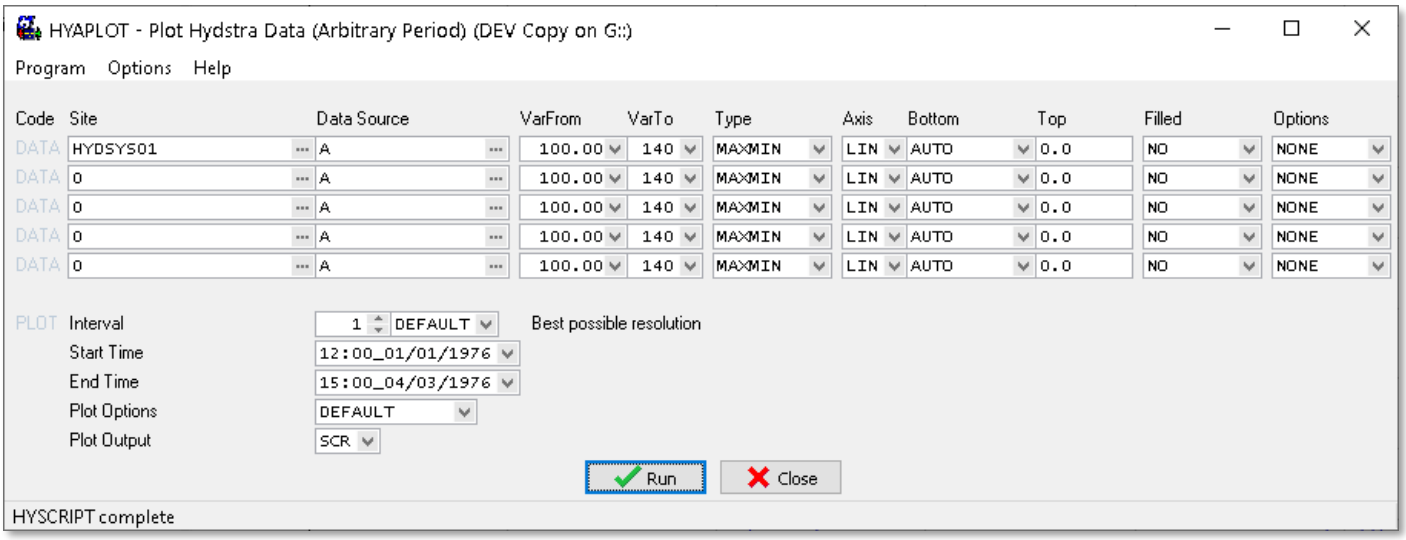
KISTERS will be happy to work with you if you wanted to set up a small project to help configure some validation, correction, and notification, but we would need guidance from you as to what your objectives were.

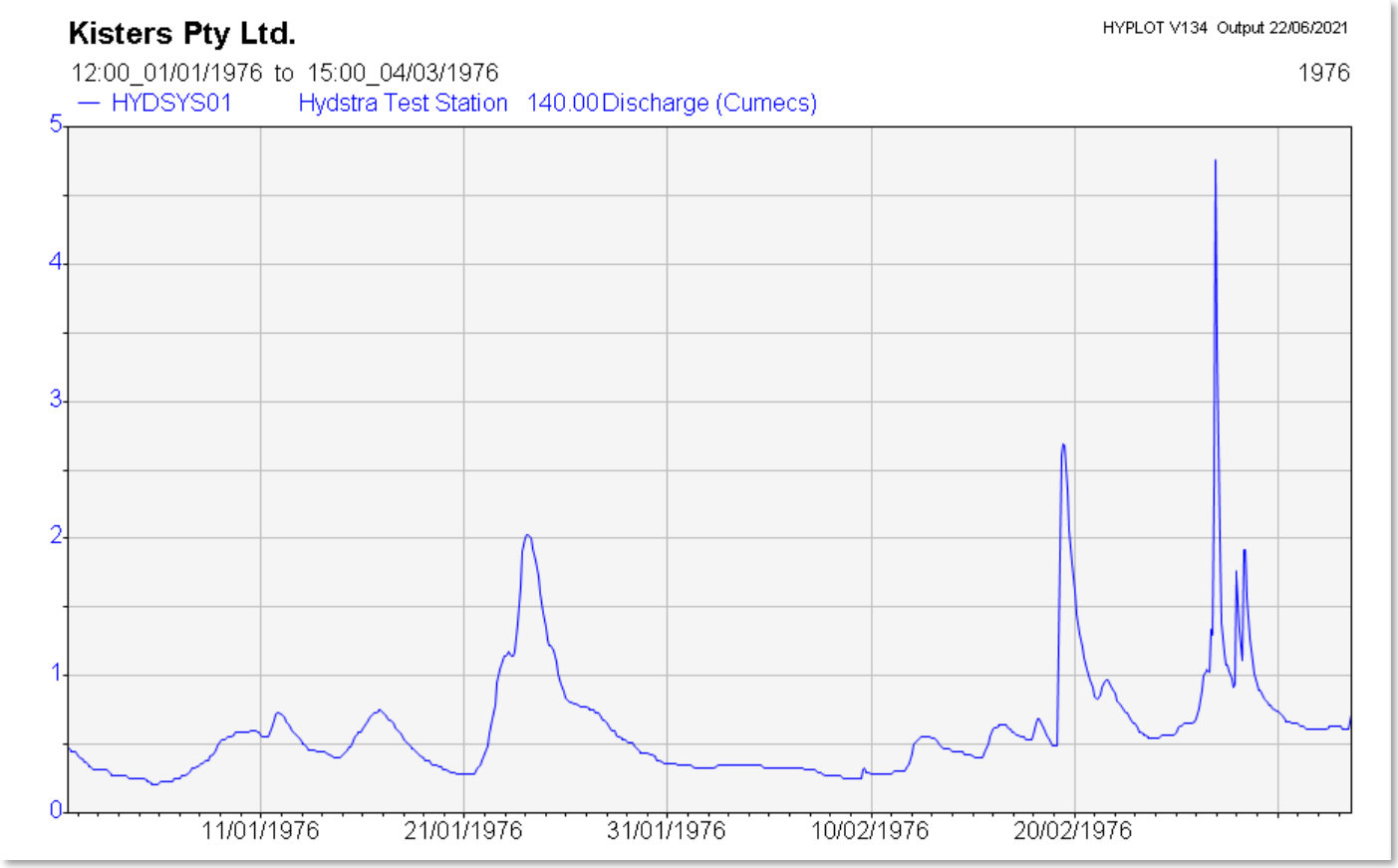
Please get back to us with your suggestions on how we can improve data validation in Hydstra. KISTERS is always happy to work with you on consulting projects to improve your data flows.

HYAPLOT - A HYSCRIPT job to plot arbitrary periods

HYAPLOT can produce a plot of any arbitrary period of data – you specify start time and end time rather than start time and period/multiplier. Because the periods are completely arbitrary, the x-axis scaling might not be *presentation-focused*, but you can specify literally any period. Because HYAPLOT (via HYSCRIPT) is simply running HYPLOT (with some special parameter recognition to unlock the new behaviour), all the flexible power of HYPLOT is available to you – stacked, layered, custom layouts, colours, etc.

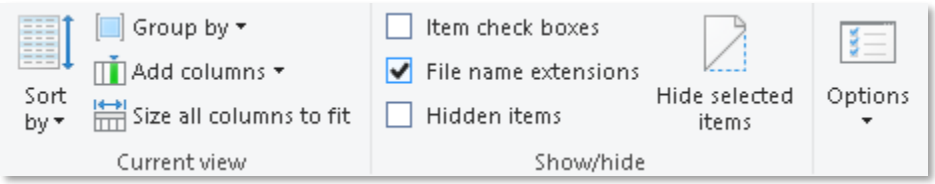
If you are running HYBATCH or Perl or Python processes to create plots simply call HYPLOT with the appropriate parameters and it will invoke HYAPLOT behaviour.





Importance of Showing File Extensions in File Manager

It is vitally important that Windows File Manager be configured to always show file extensions. It is a simple matter to do so - go to the View menu and check *File name extensions*:



Without that checked you can't tell the difference between HYACCESS.INI, HYACCESS.TXT and HYACCESS.EXE. Even worse, you may see HYACCESS.INI but not realise it is really HYACCESS.INI.EXE! This is a common way for viruses to enter your system by masquerading in emails as images or videos.

Adventures in Variable Conversion

Introduction

The Variable Conversion system of Hydstra allows you to convert from one variable to another using a sequence of steps specified in the VARCON table, which offers a range of conversion techniques. These conversions happen in-memory, and are extremely fast. By comparison external computations such as MODSYN, Perl and Python datasources etc are much slower, so it is always worth trying to get the conversion system to behave for you. And resorting to manual calculations in Excel should always be a last resort!

The first point to remember about the VARCON system is that it applies a sequence of generic rules which must apply always, to all sites. Only a few methods allows you to introduce site-specific differences in the way things are computed.

- The LOOKUP method uses site-specific rating tables and periods, and this is the most common way of arranging conversions that vary by site.

- Datasources can also introduce site-specific constants into the chain using TRACEADD, TRACESUBTRACT, TRACEMULTIPLY and TRACEDIVIDE. For example TTABHED and TTABPTS can be used to store factors that change rarely , if at all, such as spillway levels, catchment size, etc. Likewise the STNINI datasource allows you to set up site-specific constants in STNINI that never change by date. And global factors, such as unit changes, can generally be embedded directly into each VARCON step.

When setting up complex conversion chains you need to bear in mind that you can only perform one operation at a time and you may need to define intermediate variables to hold the results of intermediate steps. Sometimes this means you inconveniently have to invent quite a few dummy variables to get a complex chain working, and we suggest you use variables above 1000 for this purpose, as they often have no specific meaning to end users.

Computing Mean Velocity from Index Velocity

A client recently asked us to develop a conversion that took stream index velocity (Vx), as recorded by a logger, and convert it to mean velocity. The Conversion function was of the form:

Vmean= 0.39455235918535 + (-0.541741563761432 * Vx) + (0.0494830530457459 * Vx *Stage)

Where the factors varied by site, and included stage in the calculation. We decided that using equation ratings minimised the number of additional variables required, but still the process was complex. We started with variable 240 for Vx and wanted to end up with 241 for Vmean (both in m/sec).

In diagrammatic terms the steps consist of:

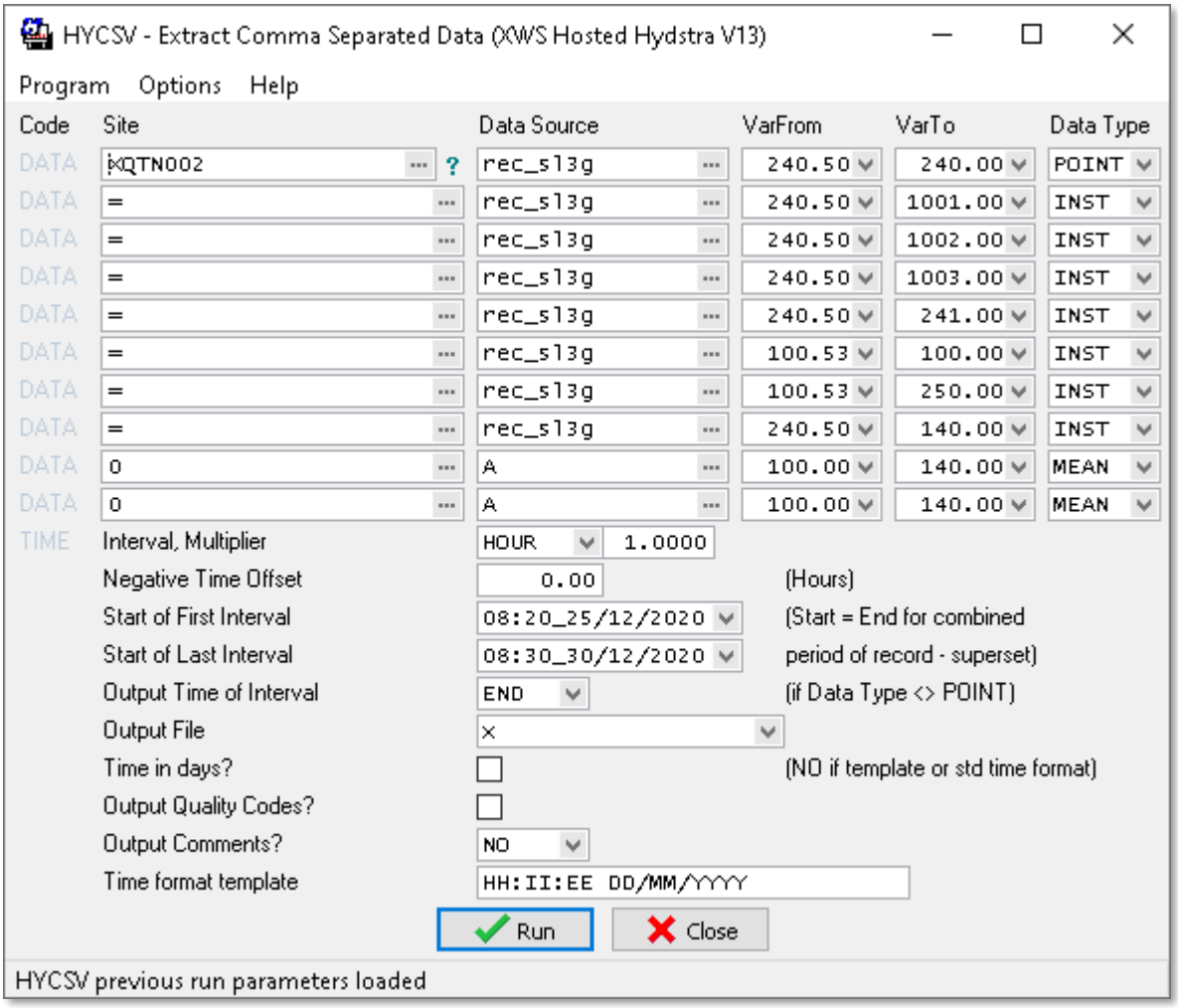
```
---------------------------------------Varcon ADD V1+V3 -------------------------------
                                            ---Varcon mult V1002*Stage to V1003--
-----------Equation table to V1001----------   ---Equation to V1002 ----
0.39455235918535 + (-0.541741563761432 * Vx) + (0.0494830530457459 * Vx)     *Stage)
```

This involved the following processes:

- Register variables 1001, 1002 and 1003 in VARIABLE, with names like Vindex Factor 1, Vindex Factor 2, Vindex Factor 3.
- Register VARCON entry 240->1001 as a LOOKUP. Set up an equation table in RATEHD and RATEEQN for the specific site of the form 0.39455235918535-(0.541741563761432 * X) and a RATEPER entry to apply it.
- Register VARCON entry 240->1002 as a LOOKUP. Set up an equation table in RATEHD and RATEEQN for the specific site of the form 0.0494830530457459 *X and a RATEPER entry to apply it.
- Register VARCON entry 1002->1003 as a TRACEMULTIPLY by 100 (stage)
- Register 240->1003 as a CHAIN conversion of the form 240/1002/1003
- Register 1003->241 as TRACEADD of 240->1001
- Register 240->241 as a CHAIN of 240/1002/1003/241

It's worth noting that we had to re-define 241 to be mean velocity in m/sec from the delivered default variable set. You are free to re-define variables you don't need (such as imperial unit variables in a metric system).

Now comes the most important part - confirming that the conversions are all working. To do that we set up a HYCSV job showing all the components, and send the result to Excel:



Note that we output the first trace as POINT and all the others as INST, which means they follow the timing of the primary input trace.

Now confirm the various results by computing the Excel equivalent alongside the Hydstra results and check that everything works as expected:

Time	XQTN002	XQTN002	XQTN002	XQTN002	XQTN002	XQTN002					
and	240.5	1001	1002	1003	241.000	100.53					
Date	Point	Inst	Inst	Inst	Inst	Inst					
25/12/2020 8:29	0.862	-0.07243	0.042654	0.612858	0.540	14.368		-0.07243	0.042654	0.612858	0.540
25/12/2020 8:44	0.837	-0.05889	0.041417	0.597196	0.538	14.419		-0.05889	0.041417	0.597196	0.538
25/12/2020 8:59	0.855	-0.06864	0.042308	0.606655	0.538	14.339		-0.06864	0.042308	0.606655	0.538
25/12/2020 9:14	0.873	-0.07839	0.043199	0.620549	0.542	14.365		-0.07839	0.043199	0.620549	0.542
25/12/2020 9:29	0.859	-0.0708	0.042506	0.611278	0.540	14.381		-0.0708	0.042506	0.611278	0.540
25/12/2020 9:44	0.854	-0.0681	0.042259	0.607973	0.540	14.387		-0.06809	0.042259	0.607973	0.540
25/12/2020 9:59	0.849	-0.06539	0.042011	0.604414	0.539	14.387		-0.06539	0.042011	0.604414	0.539
25/12/2020 10:14	0.838	-0.05943	0.041467	0.596334	0.537	14.381		-0.05943	0.041467	0.596334	0.537

Along the way you may well need to look into HYDLOG for errors if things are not working as expected. In extreme cases you may even need to turn on HYDEBUG and follow a single data value through the conversion chain.

Potential sources of error are legion, and include missing tables, incorrect conversion chains, use of the wrong subvariables, etc.

However once the conversion is in place it will work forever for all sites, provided you set up the rating equations appropriately.

It was but one more VARCON step to multiply Vmean by cross-sectional area to compute flow - we will leave that as an exercise for the reader.

Complex Dam Calculations

Back in 2003 we set up an extremely complex conversion for a client, which involved computing airspace and %full calculations in dams. While not boring you with all the details, the variable conversion system rose to the extremely complex task. The outline of the steps involved include:

- Lowest outlet level – timetable
- Spillway level – timetable
- Gauge offset from elevation – timetable
- Water level – time series in gauge datum
- Capacity tables in elevation datum
- Level(elevation)=level(gauge)+offset
- Gross volume=Level(elevation) -> volume
- Dead water volume= lowest outlet -> volume
- Full Supply volume=spillway level -> volume
- Effective volume=Gross volume-dead water
- Effective capacity=Full supply volume-dead water
- % full=Effective volume /Effective capacity*100
- Air Space=Full Supply volume-Gross volume

Assistance in Setting up Complex Conversions

KISTERS can assist in helping you set up your more complex variable conversions as a small consulting task. In order to help you out we will need a HYHELPME of your system plus a detailed specification of the steps you wish to implement, bearing in mind that the steps must eventually be the same for all sites. We will quote you (likely a day) and get the steps back to you.

Perl One-Liners in HYBATCH

HYBATCH is a powerful tool for producing outputs or running processes over a list of sites. It is often used on a trigger for example to produce data and reports for a web site.

Sometimes the built-in facilities of HYBATCH are not quite powerful enough to do the job, and a little Perl or Python intervention may be required. We encountered just such a case recently where an agency wanted to run HYRSTORM across many sites and save the output to a file name based on the start date passed in from HYBATCH. Unfortunately the %STARTDATE% macro wasn't suitable to embed in a file name as it contains slashes (being of the form 25/12/2000), but one (rather messy) line of Perl did the trick:

```
[HYRSTORMP]
; HYRSTORM report
command='perl -e "require
q(hydlib.pl);$s='%startdate%';$s=~m{(\d+)/(\d+)/(\d+)};$folderpath=qq($ENV{PTMPPATH}reports\\hybatch\\hyr
storm_$3-$2-$1);MkDir($folderpath);print qq(set folderpath=$folderpath)"
>%%junkpath%%setfolderpath.bat&call %%junkpath%%setfolderpath.bat'

command=hyrstorm %SITE% %datasource% 10 20 %startdate% %enddate% default 72 hour print
%%folderpath%%\%site%.hyrstorm.txt scr %SITE%
```

Breaking down the one-line Perl into something more readable, it looks like this:

```
require q(hydlib.pl); #use hydstra tools
$s='%startdate%'; #get the start date from the HYBATCH macro
$s=~m{(\d+)/(\d+)/(\d+)}; #extract the day, month, year from start date of form 25/12/2000
$folderpath=qq($ENV{PTMPPATH}reports\\hybatch\\hyrstorm_$3-$2-$1); #set up path of form 2000-12-25
MkDir($folderpath); #Make new path
print qq(set folderpath=$folderpath) #print to STDOUT a SET statement
```

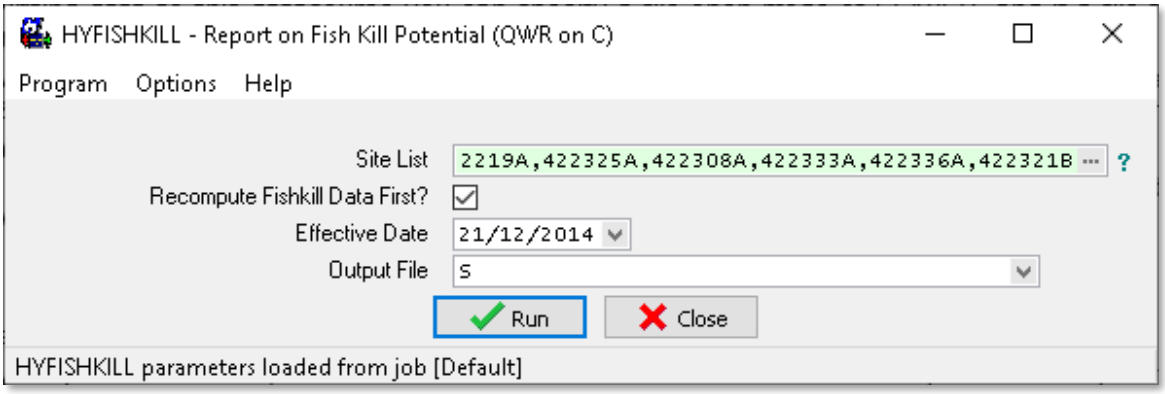
sends the output to a batch job and run it:

```
>%%junkpath%%setfolderpath.bat (redirect the output to a temporary batch file)
&call %%junkpath%%setfolderpath.bat (run the batch job to set the folderpath into the environment)
```

Simple when you know how, eh?

HYFISHKILL - Estimating Fish Kill Risk in River Pools

HYFISHKILL reports the risk of fish kill in pooled sections of a river by assessing how many days the pool has existed without inflow. The greater the number of days without inflow, the greater the risk of fish kill. A series of STNINI entries set the number of days of no inflow, and the various alarm levels. HYFISHKILL calls MODSYN to perform the calculations, and you will need at least one Hydstra/MO licence in order to run HYFISHKILL. You can develop a custom footer in HTML which will automatically be incorporated (as in the example below).



HYFISHKILL parameter screen

HYFISHKILL - Assess Risk of Fish Kill

Site List=422201F,422204A,422205A,422206A,422207A,422208B,422209A,422210a,422211a,422213a,422219A,422325A,422308A,422333A,422336A,422321B
Flow Datasource=TE
Fish Kill Risk as at 21/12/2014
Run at 18:11:53_22/06/2021
CSV File: hyfishkill.csv

Site	Site Name	Minimum Flow	Low Risk (Days)	Moderate Risk (Days)	High Risk (Days)	Days Since Minimum Flow	Risk
422201F	Balonne River at St. George	<0.001	<50	<100	<200	83	moderate
422204A	Culgoa River at Whyenbah	<0.001	<50	<100	<200	75	moderate
422205A	Balonne-minor River at Hastings	<0.001	<50	<100	<200	243	extreme
422206A	Narran River at Dirranbandi-Hebel Road	<0.001	<50	<100	<200	233	extreme
422207A	Ballandool River at Hebel Bollon Road	<0.001	<50	<100	<200	174	high
422208B		<0.001	<50	<100	<200	na	na
422209A	Bokhara River at Hebel	<0.001	<50	<100	<200	228	extreme
422210A	Bungil Creek at Tabers	<0.001	<50	<100	<200	0	low
422211A	Briarie Creek at Woolerbilla-Hebel Road	<0.001	<50	<100	<200	596	extreme
422213A	Balonne River at Weribone	<0.001	<50	<100	<200	0	low
422219A	Yuleba Creek at Forestry Station	<0.001	<50	<100	<200	0	low
422325A	Condamine River at Cotswold	<0.001	<50	<100	<200	0	low
422308A	Condamine River at Sandersons	<0.001	<50	<100	<200	na	na
422333A	Condamine River at Loudouns Bridge	<0.001	<50	<100	<200	4	low
422336A	Condamine River at Brigalow	<0.001	<50	<100	<200	180	high
422321B	Spring Creek at Killarney	<0.001	<50	<100	<200	0	low

Fish Kill Risk Data via REST API

The Qld State Government's RDMW Water Monitoring program Fisk Kill Risk data is available through the Qld Water Monitoring Information Portal REST API, some sample queries:

Latest Values (all stations, CSV):
https://water-monitoring.information.qld.gov.au/cgi/webservice.pl?function=get_latest_ts_values&site_list=GROUP(OPEN_STATIONS)&datasource=FKR&varfrom=973.00&varto=973&lookback=1440&format=csv

Period of Record (all stations, all of 2021, daily data, JSON):
https://water-monitoring.information.qld.gov.au/cgi/webservice.pl?function=get_ts_traces&site_list=GROUP(OPEN_STATIONS)&datasource=FKR&varfrom=973.00&varto=973.00&start_time=20210101000000&end_time=20211231000000&data_type=point&interval=day&multiplier=1

More information on construction of your own WMIP REST API queries: https://water-monitoring.information.qld.gov.au/wini/documents/RDMW_API_doco.pdf

---

HYFISHKILL report

HYGENLOG Pre-processor for SonTek Loggers

We deliver in MISCPATH in recent patches *hygenlog_sontek.pl*, a pre-processor for SonTek IQ and other similar loggers that deliver data of the form:

```
#File name,Sample number,Sample time,Area (m²),Battery voltage (V),Cell End (m), ..etc
#MD5_20210501_110015,1,2021-05-01 11:00:15,1.11435495,11.0958,0.129,51,43,25,25,..etc
```

The script removes the first two columns of the file, making the rest quite easy to process in HYGENLOG.

Campbell Driver for Synchronising Datasource

We have added a driver for the Synchronising Datasource (invoked by HYSYNCTS) for Campbell loggers using the Campbell API to download the data. The driver is called *hydatasrc_sync_campbell.pm* and it is configured in *hydatasrc_sync_config.pl* roughly as follows:

```
#Campbell logger API
{site=>'HYDTEST',dskey=>'SYNC',variable=>100.00,plugin=>'hydatasrc_sync_campbell.pm',
uri=>'http://mylogger.dynalias.org/?command=dataquery&uri=dl:sl1500_data.sl_water_level&
format=json&mode=date-range&p1=${start}&p2=${end}',datatrans=>1,chunkperiod=>144000,
earliest=>'2021-01-01_00.00.00',dateformat=>'YYYY-MM-DDTHH:II:EE',localoffset=>0}
```

You will need to know from the Campbell logger programming which table and field you want to retrieve (in the above example it is *sl1500_data.sl_water_level*.

Run HYFILER CLEANUP Regularly

HYFILER CLEANUP helps you manage Perl and Python data sources. These data sources are configured with a LifeTime setting, which means they are automatically recomputed if you access them after they have expired. However, after you have lost interest, those expired files just sit there, taking up space, forever. The HYFILER CLEANUP command deletes expired Perl/Python data sources files, any unaccompanied .lifetime files, and any empty folders left behind afterwards. If you make heavy use of Perl and Python datasources, you should consider scheduling this job once a week or so to reduce build-up of useless files. There is no harm in deleting these files – they will be recreated when someone needs them – and since they are expired, this would have happened anyway. The syntax for running HYFILER CLEANUP is

```
HYFILER CLEANUP ListDev
```

And the output will be something like:

```
HYFILER V109  Output 05/07/2021

Scanning data source T_LAG
  Deleting expired G:\hyd\dat\ts\perlds\t_lag\A\100.00\60\HYDSYS01.H and HYDSYS01.H.LIFETIME
  Deleting empty G:\HYD\DAT\TS\PERLDS\T_LAG\A\100.00\60\
  Deleting empty G:\HYD\DAT\TS\PERLDS\T_LAG\A\100.00\
  Deleting empty G:\HYD\DAT\TS\PERLDS\T_LAG\A\
  Deleting empty G:\HYD\DAT\TS\PERLDS\T_LAG\

Scanning data source PARTITION
  Deleting expired G:\hyd\dat\ts\perlds\partition\MONTH\SEASON\A\10\HYDSYS01.H and HYDSYS01.H.LIFETIME
  Deleting expired G:\hyd\dat\ts\perlds\partition\MONTH\SEASON\A\10.00\HYDSYS01.H and HYDSYS01.H.LIFETIME
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\MONTH\SEASON\A\10\
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\MONTH\SEASON\A\10.00\
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\MONTH\SEASON\A\
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\MONTH\SEASON\
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\MONTH\
  Deleting empty G:\HYD\DAT\TS\PERLDS\PARTITION\
... etc
```

WISKI Product News

Release Management and Client Base

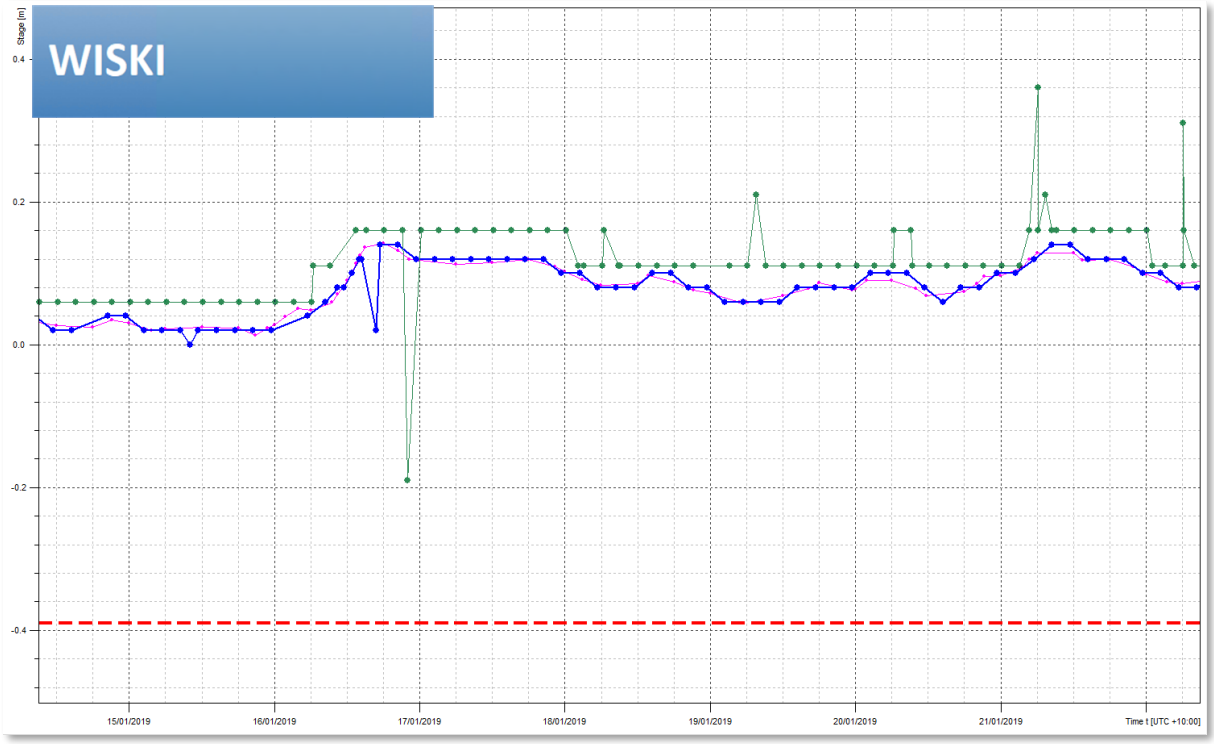
A happy winter from the WISKI team to our friends across the region. We've ticked over into the next major version, which always brings many performance enhancements both at the server level and the client level. With this, new features are added in the client, and existing features are being made simpler to use. Most of you are running a 7.4.9 or 7.4.11 version, however the newest version – 7.4.13 – will soon be available for installation.

In most cases, unless there are specific enhancements that you're waiting on in an upcoming release, upgrades are generally only necessary once every 1-2 years, depending on the circumstances. Customers using the biological and water quality modules (KiECO and KiWQM, respectively) may see benefit in updating more often, as expansions to these (relatively) newer applications are more frequent than in the core product. If you're unsure about how regularly your organisation should be updating, or would like some more info in the other modules available, get in touch at wiski-support@kisters.com.au and we'll be happy to advise.

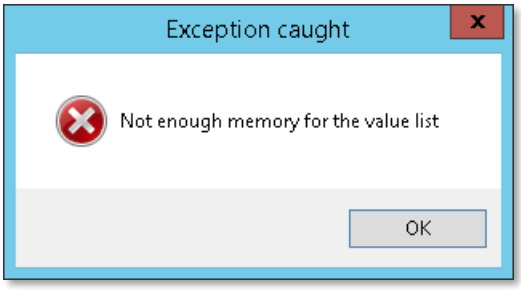
Performance Enhancements in 7.4.13

As mentioned above, a number of areas have received a tune-up in recent versions. One such area is in the display and manipulation of data in graphs, particularly when that data spans a wide period or is very high resolution, or

when multiple edits have been applied to the period in sequence. This enhancement to memory handling also applies to your standard graphs, which may need to load 10, 20, or even more time series at once.



As the WISKI client runs as one process, there are certain resource limitations when a large amount of data is stored in memory. This limit is fundamentally dictated by the OS, and each action performed in the client has to share the process' allotted memory. In some cases, if the data set is too large, an exception will be thrown by the client, such as:



The way that the client handles these cases has been significantly reworked, such that the available memory for these processes is 3 to 5 times higher than in older versions, enabling greater volumes of data to be plotted/edited at a time.

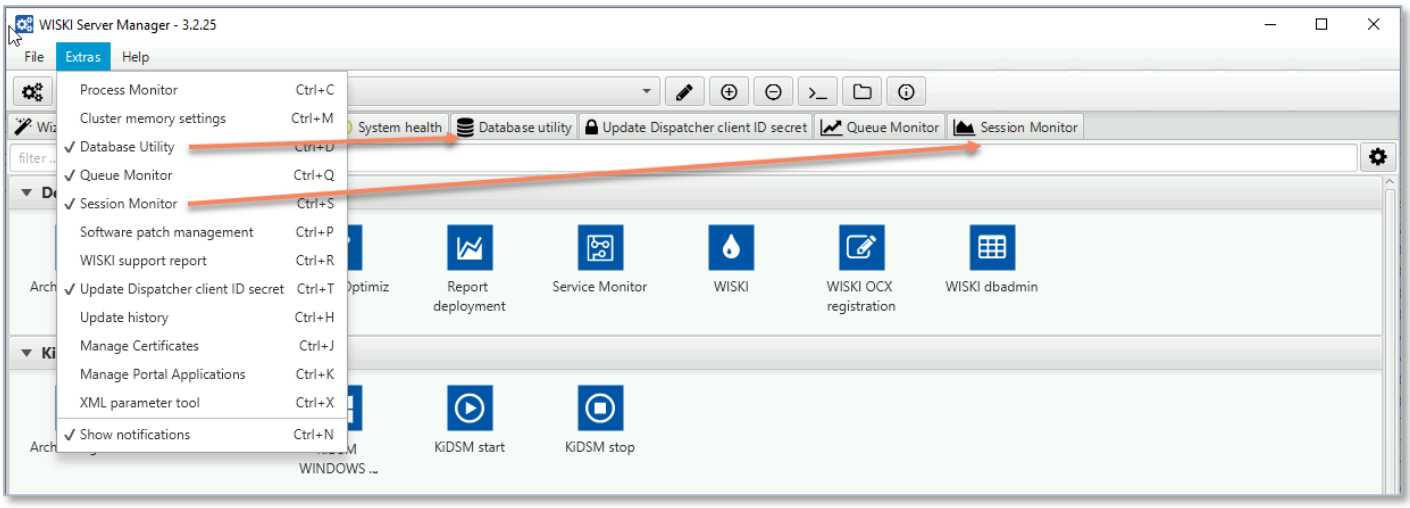
The development team are continuously working on the client to allow users to perform the most basic – and the most complex – tasks more simply and efficiently. Optimising the core processes undertaken by data managers is just one component of the ongoing modernisation of the WISKI client.

WISKI Server Manager, Package Management and Single-Sign-On

A Few Insights

Most of you will have used by now the WISKI Server Manager (WSM) as an important tool to access the different clients WISKI/KiWQM/KiECO, tools like the Kirolling Optimiser or DbMaintain, or the Standard Water Portal to work with KiDSM, System Metrics or Process Analytics. The WSM is also very handy to monitor and analyse system performance, look at your memory settings, deploy patches and update/manage certificates or required information for authentication.

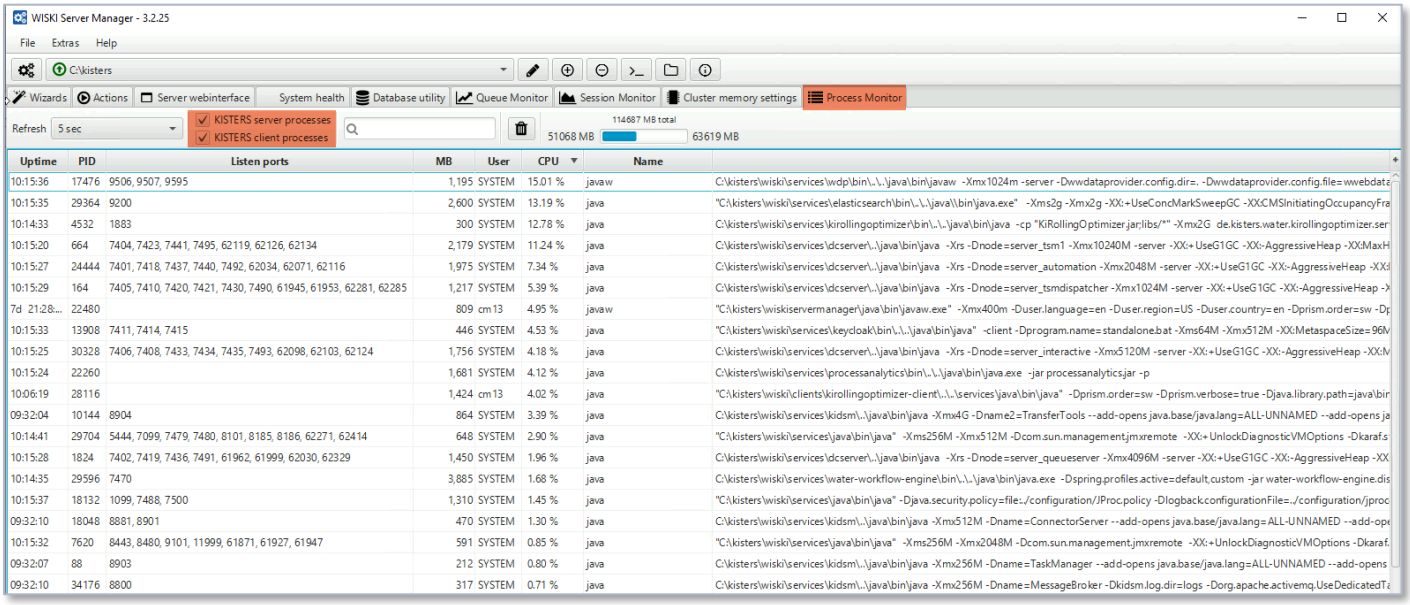
These additional tools can be accessed over 'Extras' in the menu bar and will then appear as a separate tab in the GUI.



The monitoring tools, which do not apply any changes to your system configurations, are always worth looking into on a regular basis, such as:

- Process monitor
- Cluster memory settings
- Database utility
- Queue and session monitor

One tool I always find very helpful is the Process Monitor (see screen shot below), which is a cut-down version of the task manager and provides an overview of all the running processes and the ports they are listening on. Tailoring the processes to what you need can help reduce load on the machine and increase performance.



Besides the monitoring tools, you'll also find tools which apply configurational changes to the system, like:

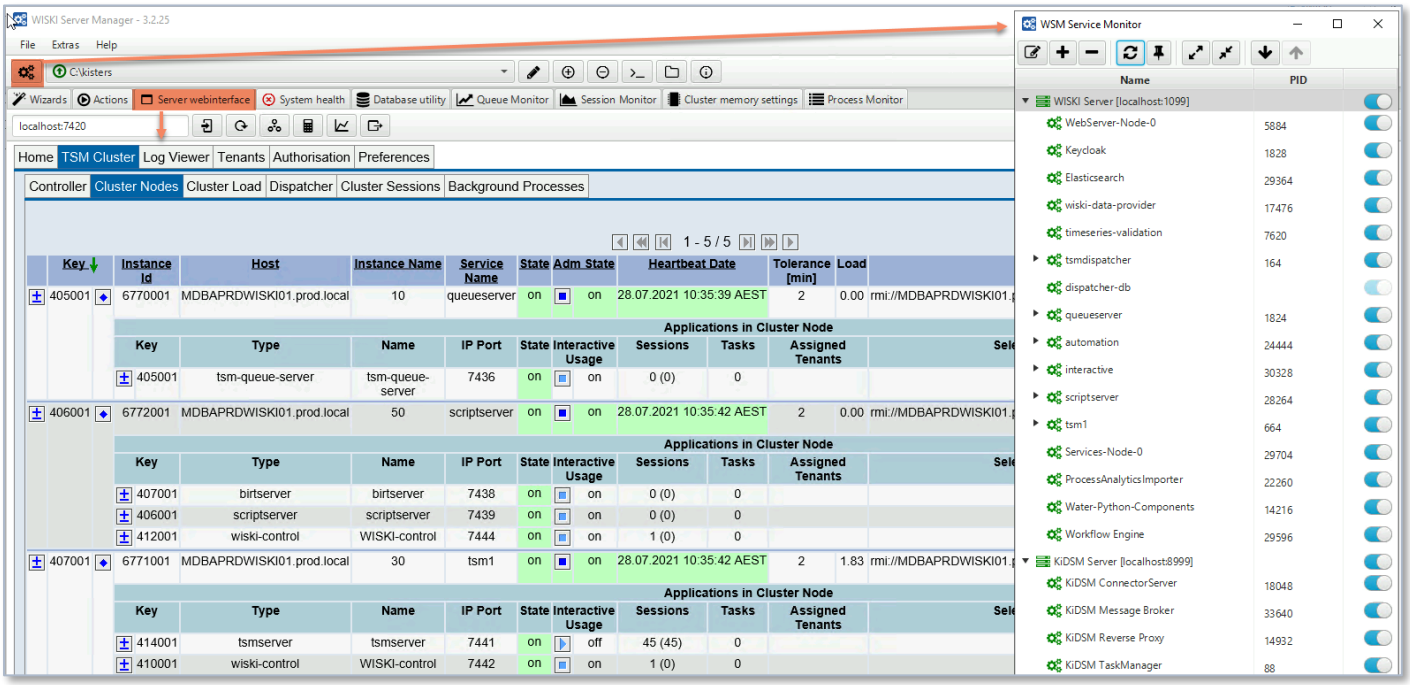
- Software patch management
- Update dispatcher client secret
- Manage certificates or Portal Applications

Regarding these tools, we always suggest to get in touch with our support first to avoid misconfigurations. For experienced users who have used these tools before and know their system very well, we also encourage you to take ownership of applying these changes (like applying patches) mainly in TEST and UAT environments. For changes in PRD environments, we always advise to talk to support first.

Another very important function of the WSM is live monitoring of the different services of the WISKI server and scheduler (KiDSM). There are two monitors available which differ in complexity and are shown below:

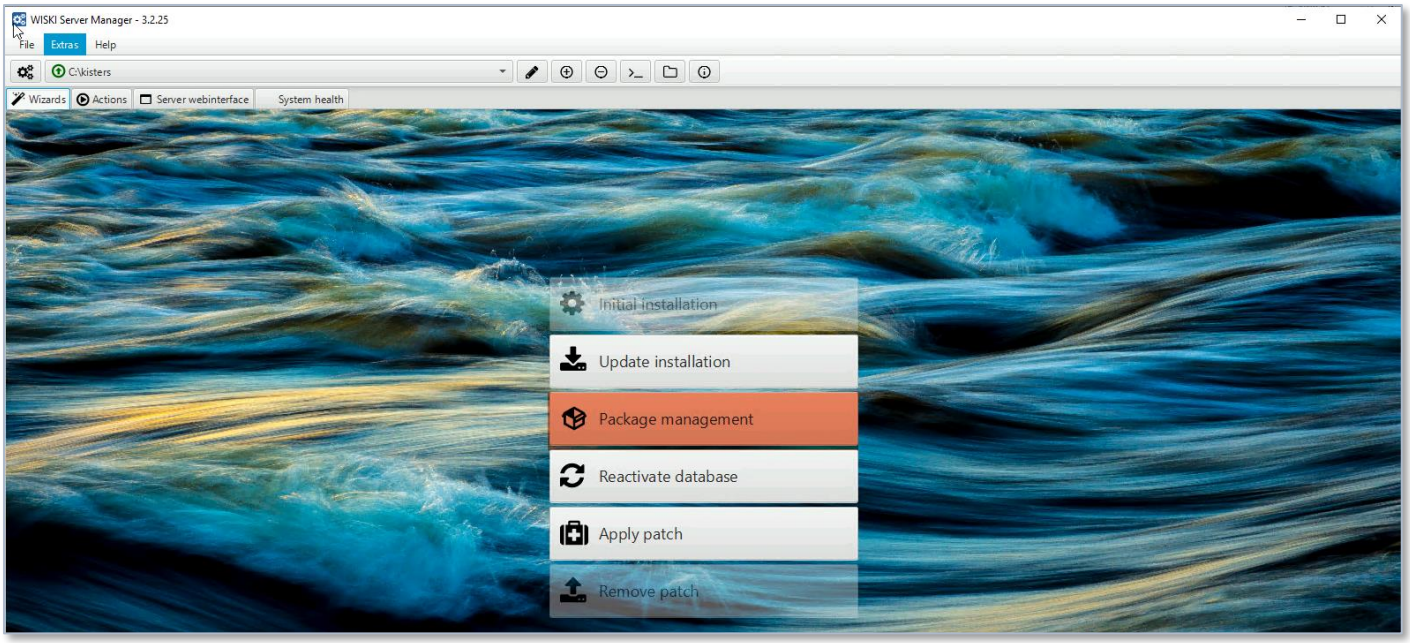
- The WSM Service Monitor is the tool to get a quick overview of all WISKI services. That is the go-to console for daily monitoring and highlights directly in yellow/red if a service is not available or has issues, such as:
    - the tsm dispatcher is not available, so any login from users or applications like KiWIS will fail,
    - the automation server is down, so no imports will be processed, or
    - the tsm1 is not active and no dependent calculations are executed

- The Server web interface is an expert-level application and requires know-how of the functionality of the WISKI server. The interface facilitates the monitoring of tasks and processes like the cluster nodes (services) overview and the background processes pages. These monitoring tasks are often used by our clients and are helpful to further dig into an issue. For all changes which can be done over the web interface, specifically to the WISKI tenant and the reconfiguration of the background processing, we always advise to use our support.



Package Management and SSO Using Keycloak

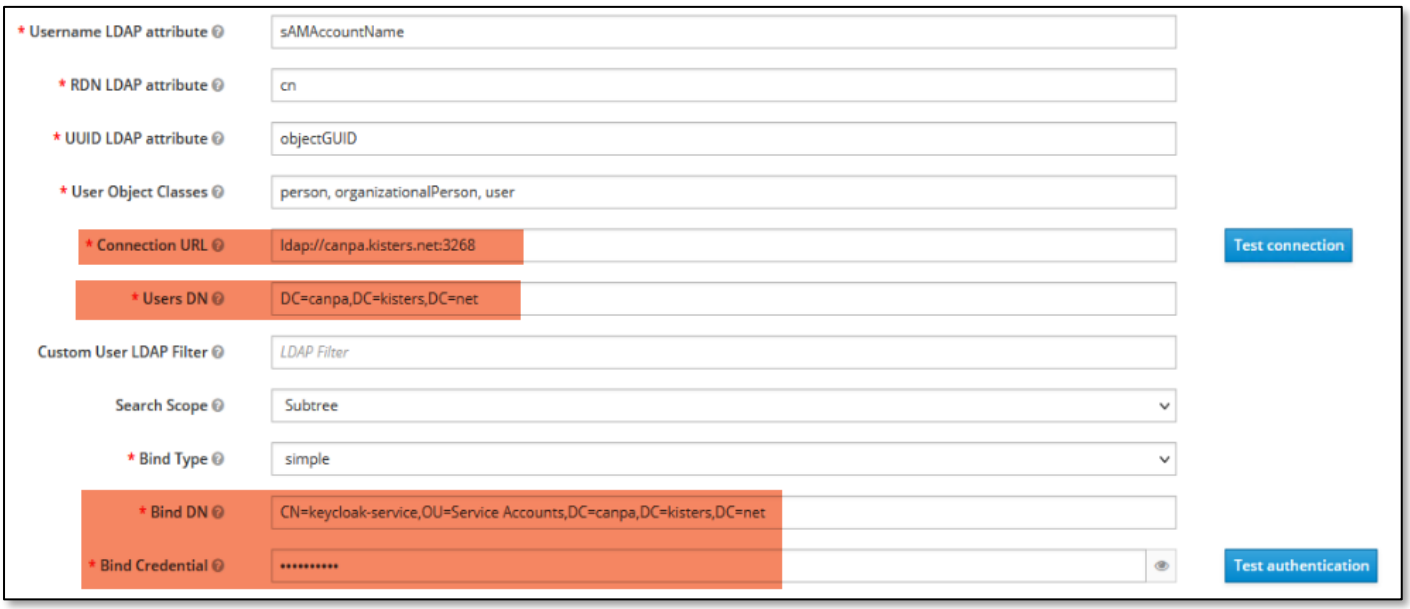
Another WSM functionality is to install, update and reactivate WISKI installations. In the recent versions we also included the Package management, which allows for the deployment of a third party package to an existing WISKI installation. This avoids the requirement that WISKI core packages need to be updated (as part of a full WISKI update) if an application is deployed which has no dependencies to the existing and installed WISKI version.



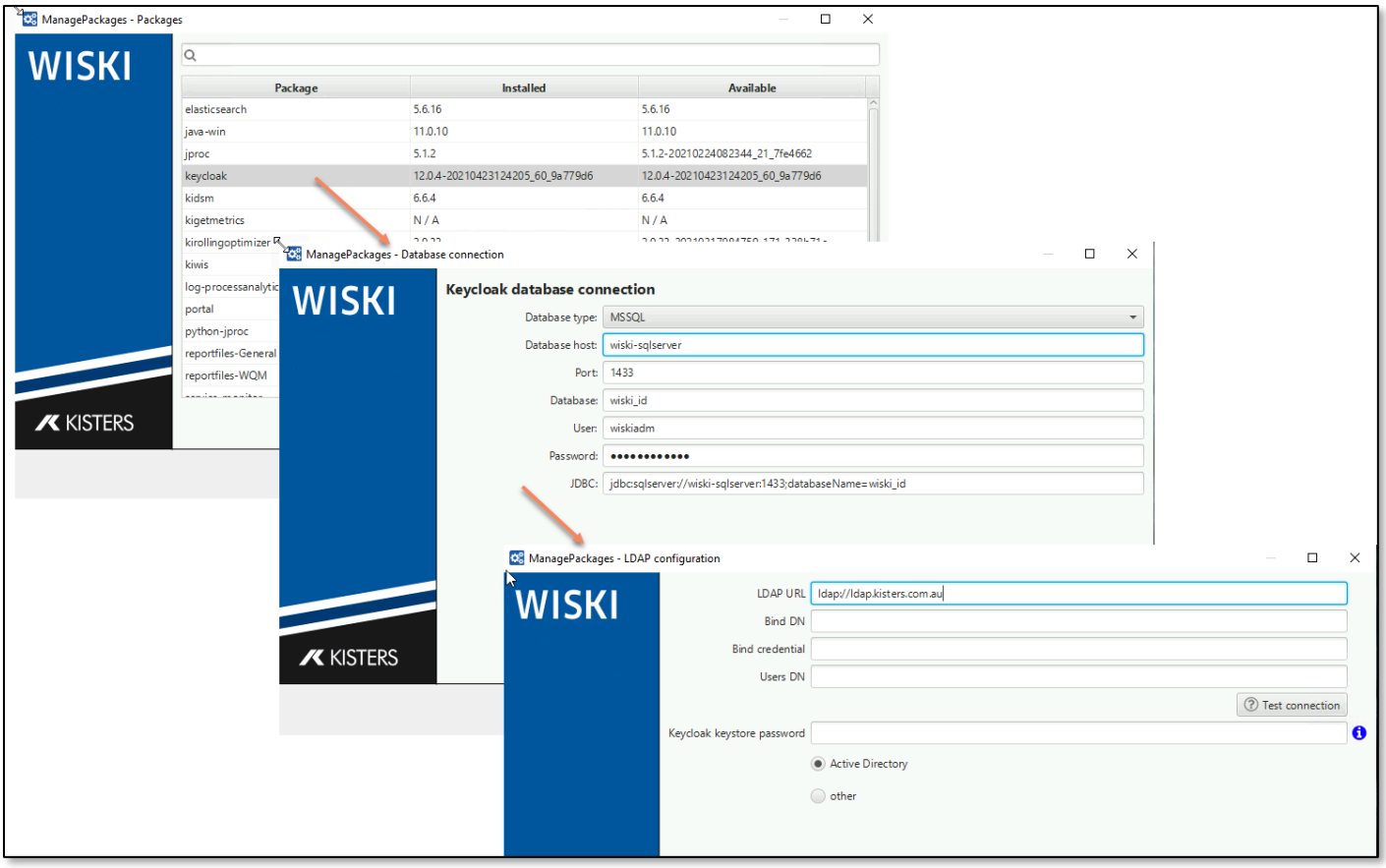
One classical example is to change the authentication system for WISKI. In most installations users are separately managed in WISKI and are not using the central identity management system (IDMS) of an organisation like Active Directory (AD). To allow integration with LDAP capabilities and AD, WISKI uses the IDMS of keycloak. Keycloak is specifically packaged for WISKI and replaces the internal OpenID connect mechanisms of Mitre. With the deployment of keycloak the authentication for WISKI server, KiDSM and the portal is adjusted and the LDAP configurations are passed.

This can now easily be done in the WSM. A separate database is required for keycloak and the following connection details:

- URL to LDAP server (see example)
- Users Domain Name (DN) – full DN of the LDAP tree where your users are located, see example for domain components (DC) canpa.kisters.net
- Bind DN – service user that accesses the information to use, see example below with common name (CN) 'keycloak-service' and organisational (OU) 'Service Accounts'
- Bind Credentials – credentials to connect to the LDAP server



With the information above the WSM leads through the configuration process and deploys the keycloak package.



After the installation, keycloak provides a web interface to check and test all required connections. All users which are part of the defined service account in AD are able to access all WISKI applications including KiDSM and the Water Portal.

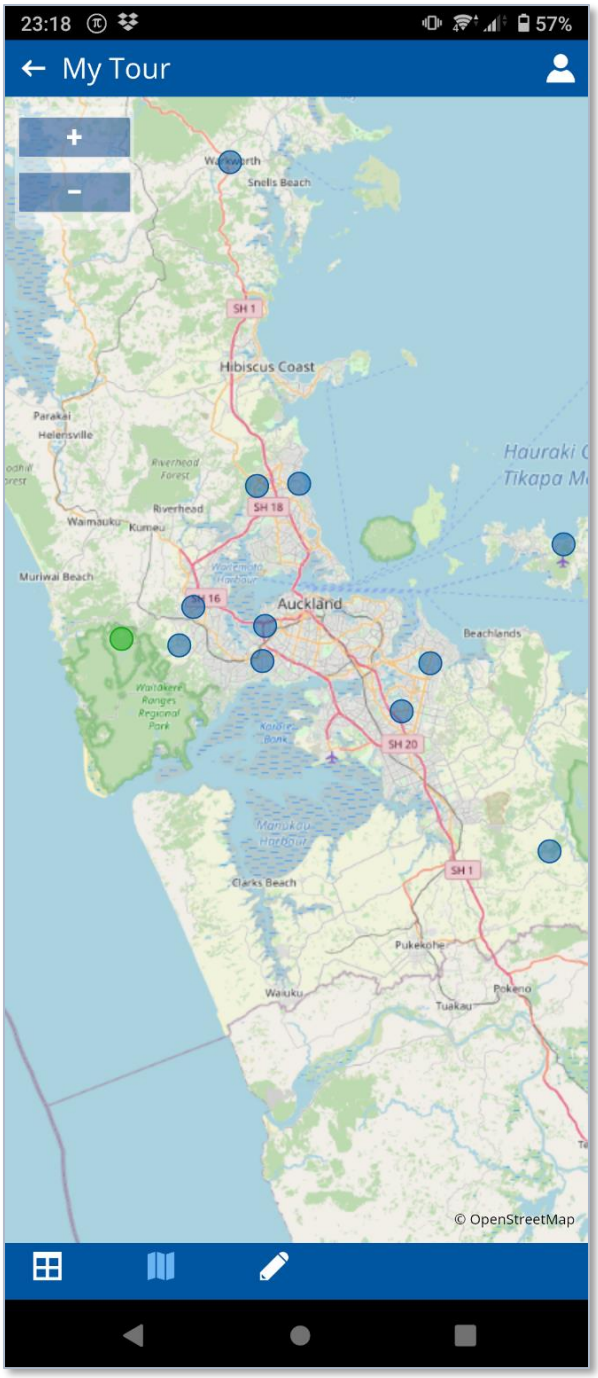
Recently, the Bureau of Meteorology and the Murray Darling Basin Authority have switched to Single-Sign-On using the WISKI keycloak package. Please contact us over support if you are interested in also making the switch. There is a small consulting effort associated with the change.

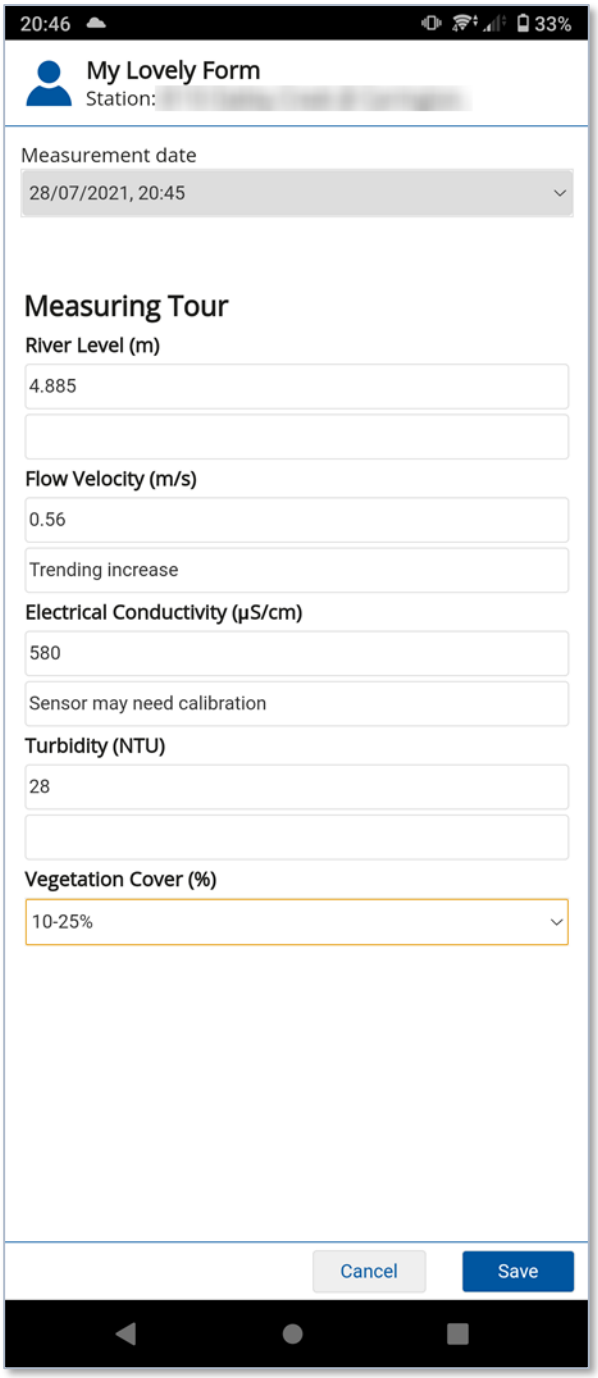
FieldVisits Mobile App

In a previous newsletter you may have read about KISTERS' field data acquisition application, FieldVisits. Organisations are often managing their data collected in the field using several mediums, each of them processing or categorising the data in a certain way, passing through different sets of hands, requiring manual intervention, then finally ending up in a system where mistakes made through steps A to F require a lot of QA. Without the help of some sharp programming, considerable effort and human-error-free humans, this process will significantly reduce the efficiency of the integration of manually acquired data.

If this sounds like you (or a friend of a friend), wipe those sensor readings off your palm and get in touch with wiski-support@kisters.com.au to help you with your field data woes. With this application you can load up your run (known as a Tour in FieldVisits), go out and collect your readings, then send them straight back to the WISKI server once you're back on the network. No excel spreadsheets and no warped field books that you keep dropping in the creek.

The FieldVisits application is designed to work offline; quite recently the application build has been expanded from a desktop and tablet version to also include a small form factor mobile app. Note that at the moment, this is only available as an Android app, not yet on iOS.





This app has all the features of the original version, however selecting stations to visit, form types and observations now comfortably fit on the small(er) screen.

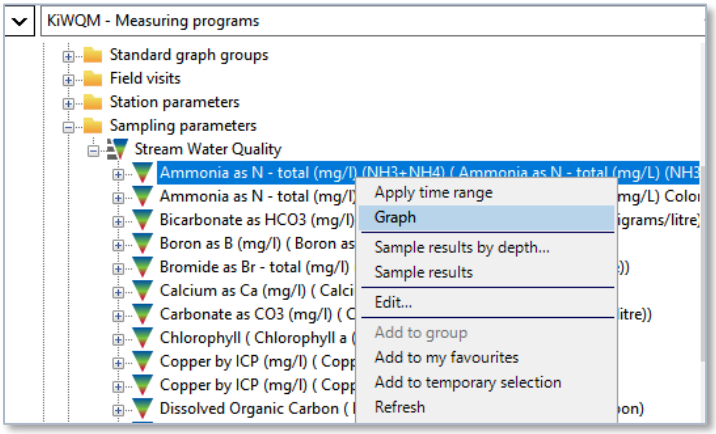
Use your field laptop, tablet or phone to record your point data observations, water quality samplings, or maintenance information tied to WISKI's equipment management interface.

KiWQM – Box and Whisker Plots

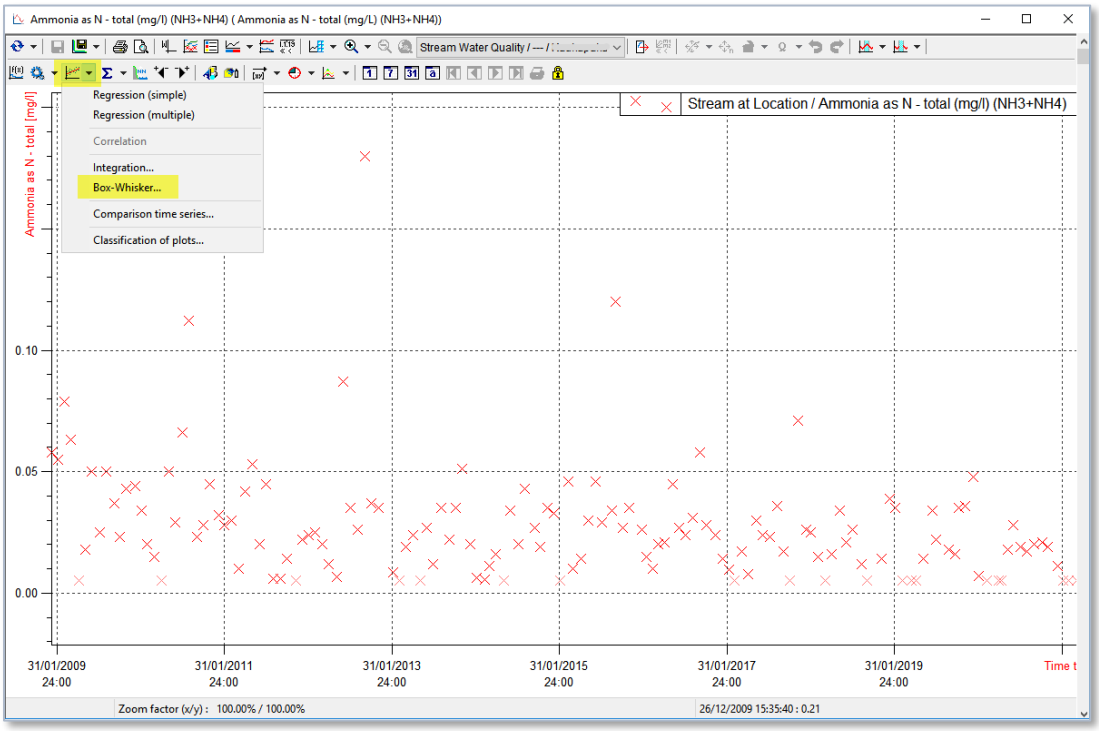
Recently we have had a number of queries from KiWQM customers about built in data analytic capabilities. The are many on offer in the desktop application within the graph, operations and reports which allow you to generate statistics and perform standard calculations on your data. Here we will cover a common use case – a Box and Whisker Plot.

A Box and Whisker plot, also called a box plot, is a visual statistical method that is used to show the spread and centres of a set of data. It graphically displays measures of spread including the quartile range and the mean of the data set and well as measures of centre including the mean or average and median.

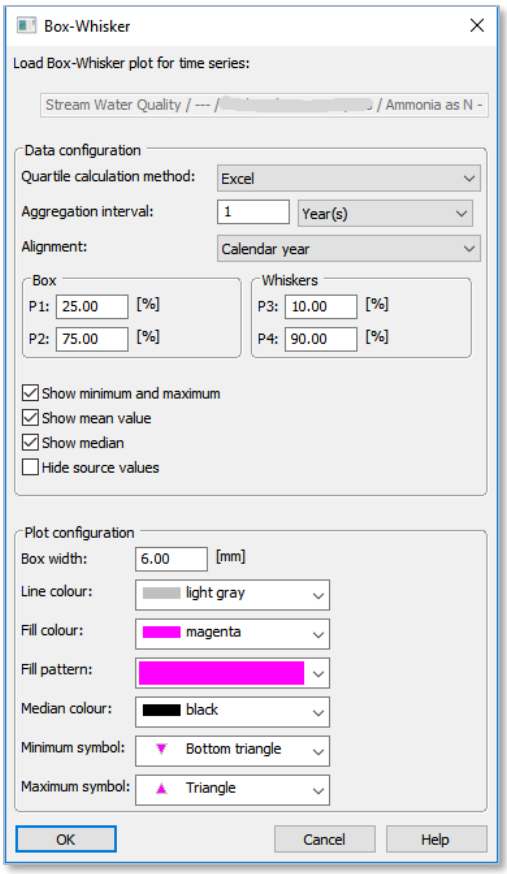
This function is built into the graphing interface and can easily be applied to a set of data currently being displayed in the graph. To apply, open your sampling results in a graph from the sampling parameter list at the station you are interested in and select Graph:



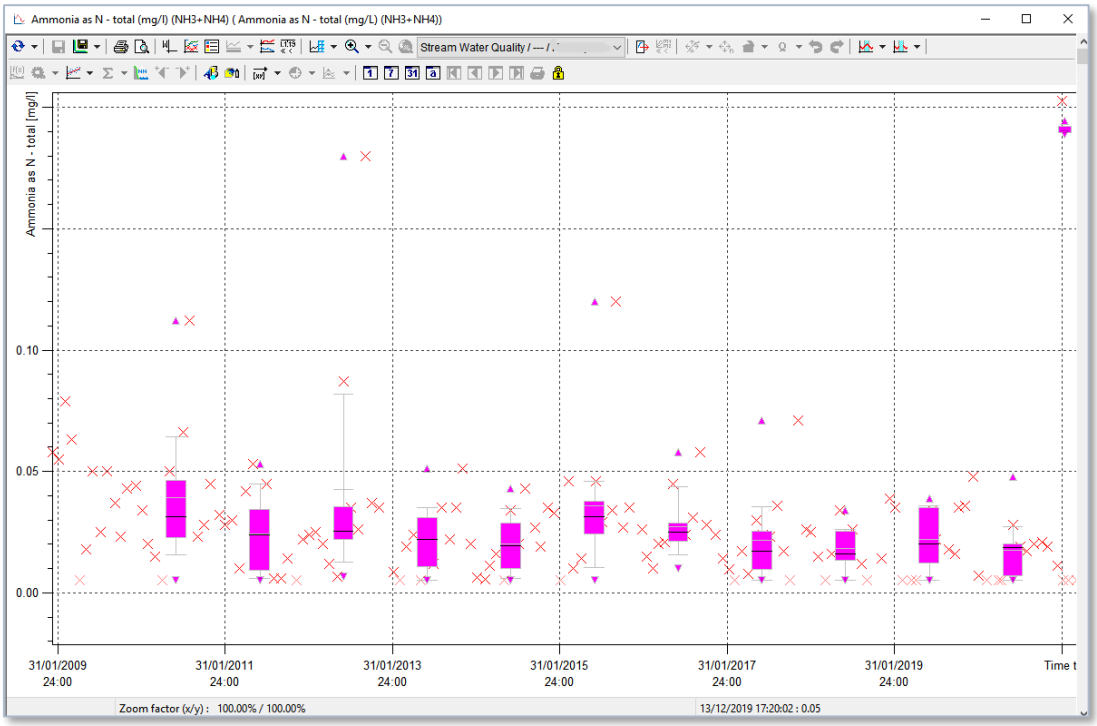
Click on **Analysis functions** from the graphing toolbar and select **Box-Whisker**:



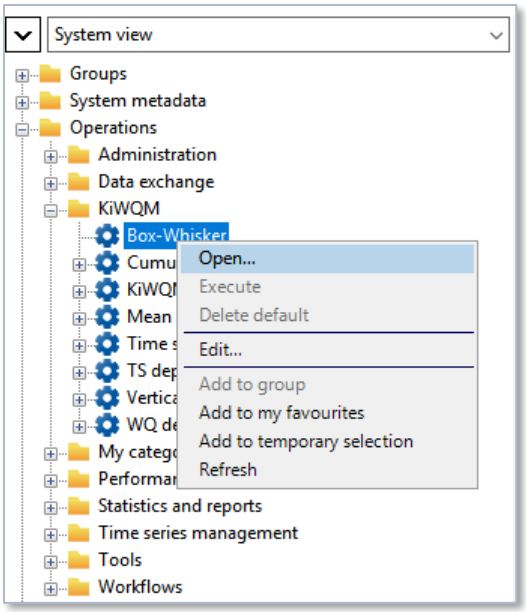
Select the percentile calculation method you wish to use and aggregation interval; if selecting yearly aggregation, you can choose by calendar, hydrological or half hydrological year. You then need to specify the percentage values for the quartiles for the box and whiskers. You can specify if you want to also show the minimum, maximum, mean, median and whether to include the source data on the same graph. You then choose the plot formatting options for the colours and symbols.



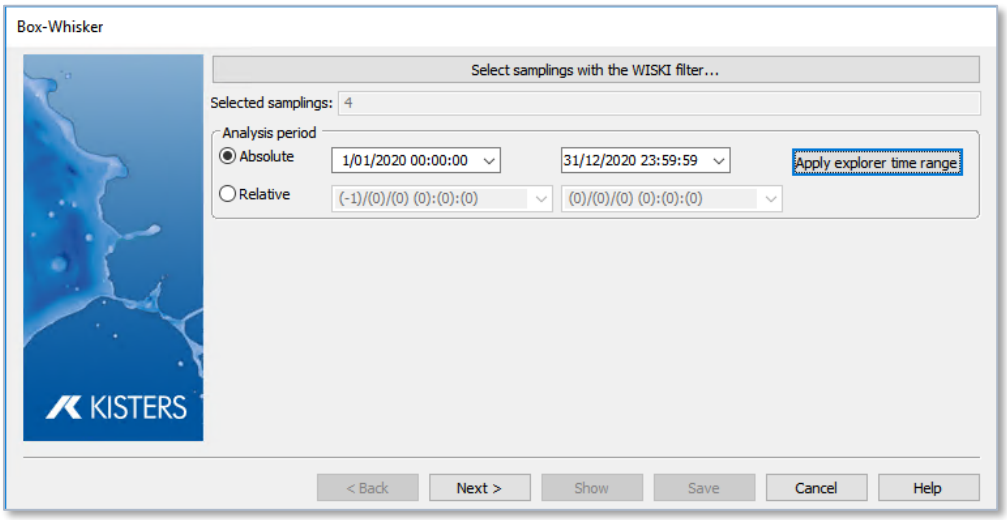
Once you click on OK, the plot is immediately generated and can be saved as an image file.

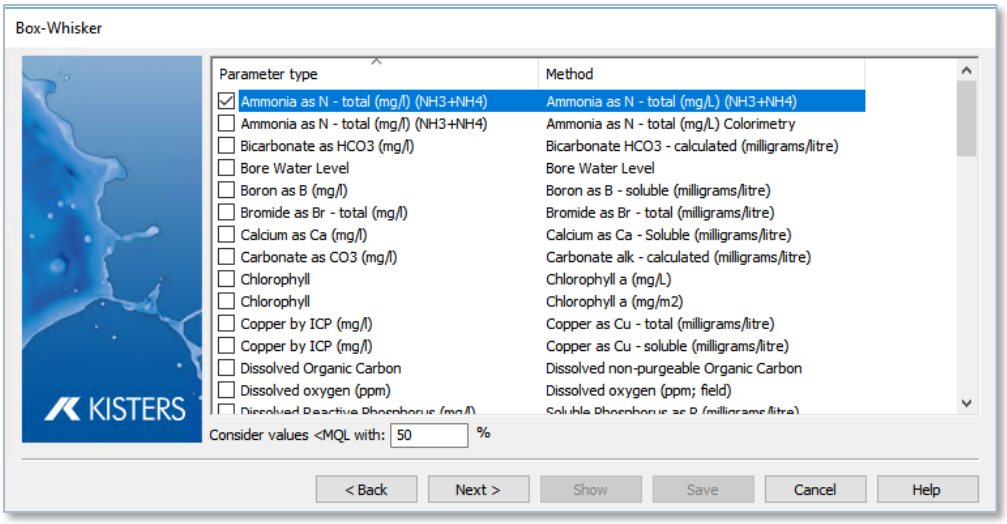


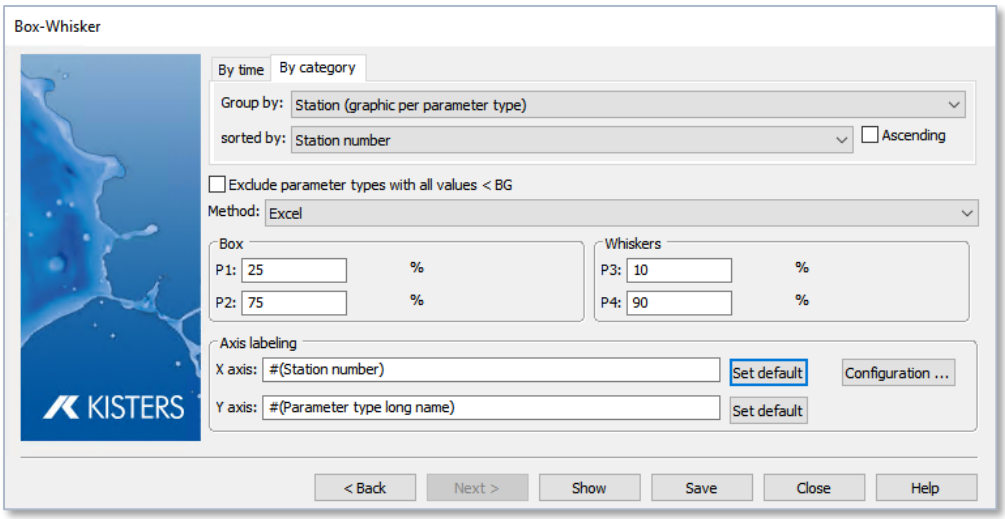
You also have the option to run the Box Whisker plot as an Operation, which allows a plot to be generated for one parameter at different stations or for different parameters at the same station. To access, go to the **System View** > **Operations** > **KiWQM** > **Box-Whisker**. Right click and select **Open**:

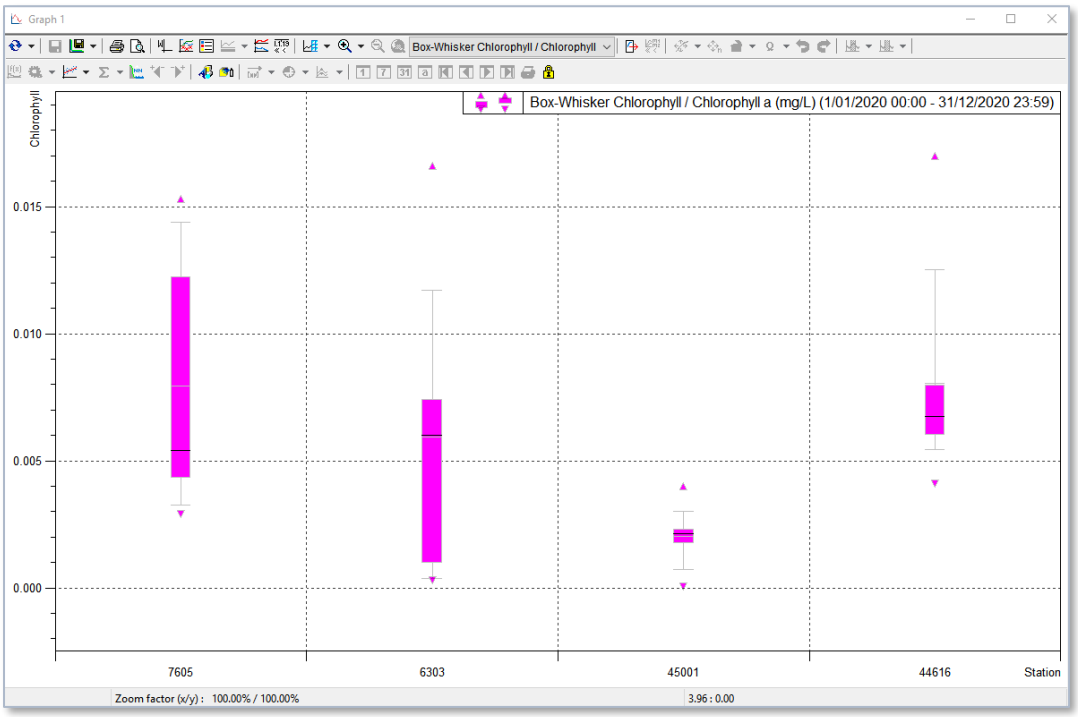


The operation is a wizard that steps you through forms to select samplings (using the WISKI filter), enter either an absolute or relative time range for the analysis, select your parameters, and lastly the configuration of the plot. You can then Save your configuration if required.









Please contact us if you require further information regarding the availability and usage of KiWQM data analytics.

KISTERS Training

Given the current state of the world it seems face to face training seems a thing of the past. We plan to offer product training via Teams for the foreseeable future. We can offer basic and advanced training in Hydstra and WISKI, as well as specialised courses in various domains. A typical basic introductory course is two days in duration.

Depending on how many users we get for any given course we would either charge consulting rates of approx. $2,195 per day, or a per-person cost if we get multiple users attending. There may be a setup cost invoved as well.

We have found that delivering training in one go over Teams is too tiring for everyone involved, so we generally plan to spread a 2 day training course over 4 half-days, delivered over one or two weeks.

If you are interested in receiving trainng in any KISTERS product please contact us at support@kisters.com.au with an expression of interest.

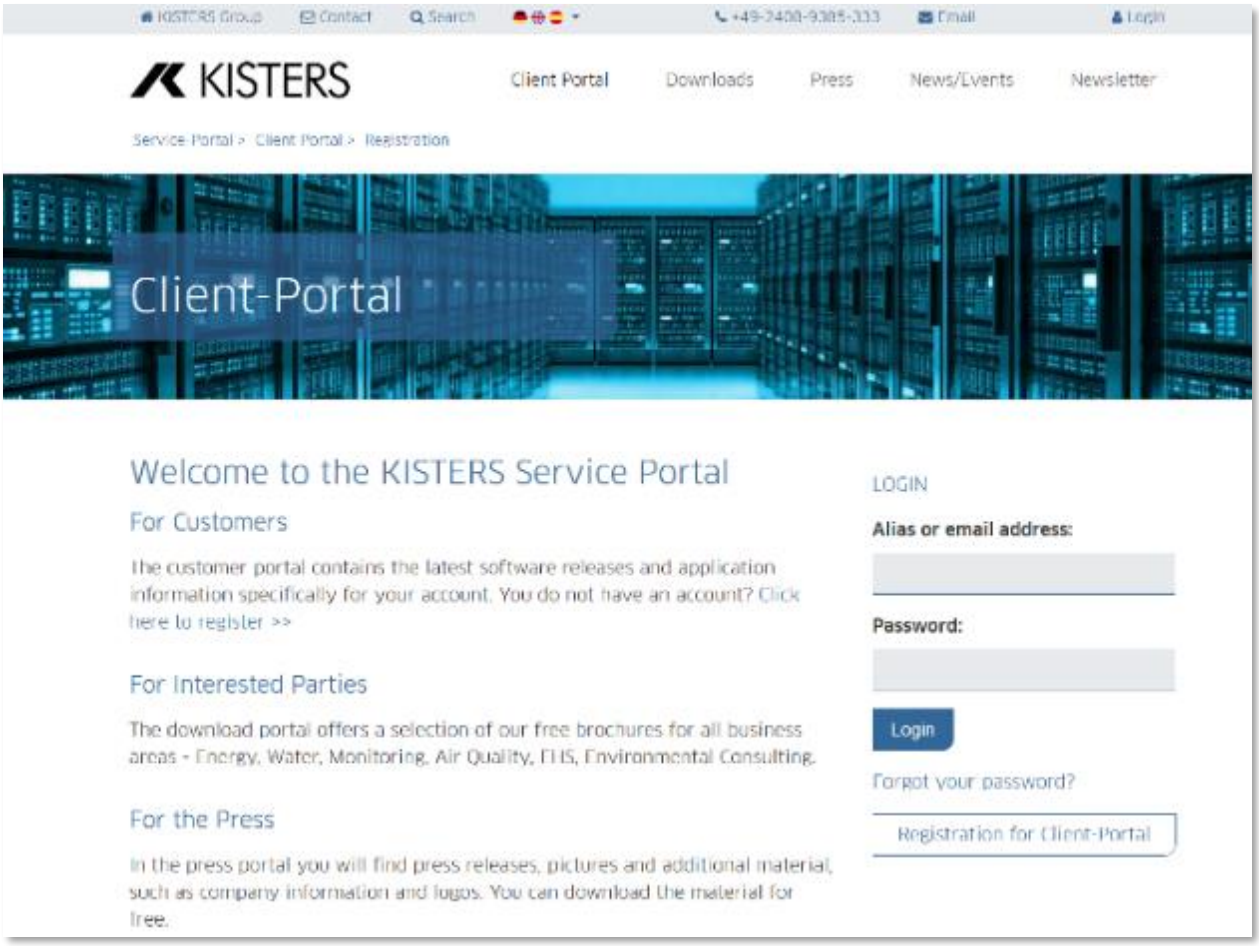
News from KISTERS Overseas

Staying Connected Globally

KISTERS offers a global Service Portal for our customers and other interested parties. The Service Portal supplies non-registered users with press releases and general brochures from the company and the Business Units Water and Energy. Further features are available for our licensed customers such as the latest WISKI releases and specific application information and other internal knowledge of your licensed software.

By clicking on the Newsletter section of the Service Portal you can subscribe to various newsletters where you can receive up-to-date information about the company and of the business activities in KISTERS water and monitoring solutions. These newsletters also provide information about access to various resources such as online webinars and training events.

KISTERS global Service Portal: https://serviceportal.kisters.de/en/



Please feel free to subscribe to the available newsletters or register for the client portal. For users of the client portal, we do however suggest, to use the software download option for WISKI from the Australian download portal at:

http://kisters.com.au/downloadswiski.html

An overview of news from our offices in Europe and America is accessible via the following links:

https://water.kisters.de/en/press-room/

https://water.kisters.de/en/news/

https://www.kisters.net/NA/news/

Staff News

New Phone System in Canberra

We have recently refreshed the VOIP phone system in Canberra, and you may notice a few changes. Firstly you should now see that the call is coming from the correct number of the person calling you. If you call back that number you will go directly to their extension.

The phone system includes voicemail messaging, and the messages are emailed to the recipient so even if they are away from the office they should get your message eventually.

Please let us know if you have any problems contacting Canberra staff by phone.

Markus Baurle Moves On

It is with some regret that we report Markus Baurle has moved on from KISTERS to another position in the water industry. Markus was a skilled and dedicated employee working primarily with the WISKI team in the Canberra office, and he will be sorely missed. We wish him well in his new employment.

Markus Baurle

Joel Murphy Joins HyQuest Solutions Australia

Joel Murphy has joined the HyQuest Solutions Australia team as a Water Quality Specialist based in Brisbane, Australia.

Joel commenced his career in 2014 as a Project Officer in the Healthy Waterways Project determining best turbidity sensors for the Environmental Health Monitoring Program in Queensland Australia. He later extended his experience working with Xylem Analytics Australia, in a Service and Support Role. This encompassed both Operational Training and Field Installations, including the maintenance and operation of integrated environmental monitoring systems.

As State Manager for Eco Environmental, Joel managed a team that oversaw Environmental Projects across the states of Queensland and New South Wales on the east coast of Australia, achieving strong annual growth year over year.

Joel will work closely with Dougal Harding in our New Zealand Office to support and help grow our Water Quality business in the Oceania Region and together with Anthony Skinner and Mike Lysaght will help develop our Marketing plans and strategic growth for the Australian Market.

E-Mail: Joel.Murphy@hyquestsolutions.com.au

Joel Murphy

Information

This newsletter is published by KISTERS Pty Ltd and edited by Peter Heweston. It is distributed using MailChimp (www.mailchimp.com)

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