KISTERS Australia News

December 2011

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From The GM's Desk

By Bill Steen, General Manager, Kisters Pty Ltd

Another year has come and gone at what feels like an extraordinary pace. It has been a year of many milestones in terms of product development and growth within Kisters. 2011 has seen two new faces commence at Kisters with a graduate developer, Callum Ramage, working along side Trevor Magnusson in Hobart, whilst Canberra also expanded with Christian Michl coming on board.

From a work perspective several major projects including product enhancements occurred. One significant undertaking was the installation and implementation of the Kisters Water Quality module [KiWQM]. KiWQM is the first of many products that is independent of either HYDSTRA or WISKI, and will interact with either. In the case of the New South Wales Office of Water [NOW] KiWQM sits alongside Hydstra.

Of equal importance are the enhancements to the Groundwater modules which will be of benefit to many as a direct result of projects with the New South Wales Office of Water and the Victorian Department of Sustainability and Environment. Likewise the R&D into web mobile services has come to fruition and several Hydstra/WEB agencies are now offering their data users a new means of accessing water information.

Thus year many of our Australian clients have been heavily involved with Bureau of Meteorology projects - dare I mention Water Data Transfer Format (WDTF)! As most Australian users will know WDTF is being released and Kisters is undertaking training to assist with the rollout. Peter Heweston has noted that what little hair he has remaining has turned grey this year - perhaps there's a link?

2012 is just around the corner and is shaping up to be as busy and challenging as 2011.

On behalf of all the staff at Kisters I would like to wish you all a safe and Merry Christmas and a prosperous and Happy New Year.

Bill Steen
General Manager
Kisters Pty Ltd

Christmas Spirit

Over the years Kisters have been involved in many charity activities including the Police Blue Light programs and both local and international charities. In line with this our General Manager, for the fifth year in a row, has been involved with the Canberra motorcycle Toy Run. The Toy Run provides the opportunity for motorcyclists to provide toys, cash and non-perishable gifts to under privileged children.

This year the Canberra Toy Run raised over $6,500 in cash plus thousands of toys and goods to be distributed by The Salvation Army and St Johns Care.

Bill Steen, aka Santa Claus, on his 1700cc Kawasaki "reindeer".

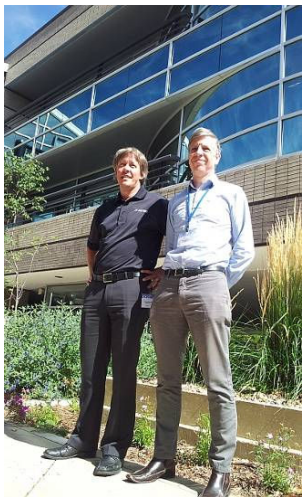
KISTERS Using New OGC Standards

Aachen, Germany/Citrus Heights, CA, September 30, 2011— KISTERS presented its final results of the Surface Water Interoperability Experiments #1 and #3 to the Open Geospatial Consortium (OGC) in Boulder, CO this past week. The end result of this work was KiWIS (KISTERS Web Interoperability Solution), the first commercially available and robust service module on the market. Used in combination with WISKI or Hydstra, KiWIS is able to both consume and publish real-time hydrological data over the Internet (http://kiwis.kisters.de) using open standards like WaterML 2.0 and SOS. This combination can also be placed on top of existing time series data archives, providing a quick and efficient method for disseminating and retrieving data from the Internet.

KISTERS worked closely with leading organizations such as the Global Runoff Data Center (GRDC), Commonwealth Scientific and Industrial Research Organisation (CSIRO), US Geological Survey (USGS), 52 North, SANDRE, German Waterways DLZ-IT, Australian Bureau of Meteorology (BOM), and Geological Survey of Canada (GSC) to advance the development of WaterML 2.0, test its use with the OGC standard SOS.

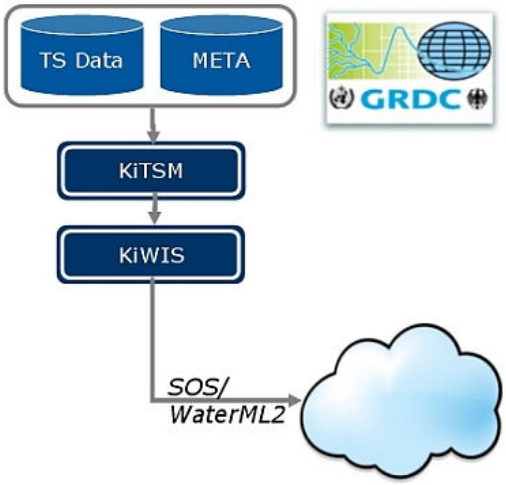
A WISKI system was implemented for the Global Runoff Data Center at KISTERS head office in Aachen, thus enabling the GRDC to view all of their meta data, specific surface water attributes, time series data, and derived data products like Daily Mean, Mean Lowest Flow, Monthly Flow, Monthly Highest Flow etc. within the WISKI system.

On top of KISTERS GRDC System KISTERS set the KiWIS service. KiWIS is able to publish WISKI content via the SOS API as WaterML 2. In addition KiWIS can publish the same content as WaterOneFlow and WaterML 1. KiWIS also supports standards such as ESRI's layer packages. With KiWIS on top of the GRDC system KISTERS is now able to bring the GRDC data into the cloud for everyone to use.



Michael Natschke (above left), WISKI Product Manager for KISTERS says, “We are extremely excited at the outcome of the work done in these IE’s. If it were not for the immense efforts put forward by all the initiators and participants in the SW and GW IE’s, KISTERS would not have been able to develop KiWIS. Interoperability issues around data and data formats between and within the surface water, groundwater and meteorological domains are now being solved with KiWIS. What’s even better, is the fact that this data can be seen by any client application able to use these open standards.” Stefan Fuest, Product Manager, Web/GIS for KISTERS notes, "KiWIS makes use of KISTERS' proprietary high speed data protocol for moving massive amounts of time series data to the Internet, unrivaled by any other commercial water data management software in the marketplace. I want to thank everyone involved in keeping KISTERS at the forefront of implementing open standards for water data management."

Peter Fitch (above right), the research program leader for Environmental Information Systems at CSIRO, co-ordinator of the Interoperability experiment and key member of the Hydro Domain Working Group at the OGC which is working to develop WaterML 2.0 comments, “I share Michael’s enthusiasm for the development of open standards like WaterML 2.0. Having vendors like KISTERS participate in the development of open standards and producing tools such as KiWIS is critical for the success of the OGC Hydro Domain working group and its goals for improved access to and interoperability of hydrological data.”



Ulrich Looser, Head of the GRDC, emphasizes that “the advantages of web services are clearly recognized by the GRDC and a process has started to develop web services for a number of GRDC requirements. We certainly look forward to continuing our close work with KISTERS, not only within the OGC Hydro Domain Working Group, to build upon the many successes we have seen thus far.”

Several government agencies and university institutions across the globe are already benefitting from the KiWIS service. With KISTERS service orientated architecture and high speed data protocols, sharing large

amounts of water data in the cloud is a reality!

KISTERS develops industry-proven software solutions for water data management, air data management, and energy data management. KISTERS has high-capacity scalable systems that can be easily tailored to suit both their customers' and local demands. KISTERS software is implemented around the world and conforms to all the major industry standards. Their customers are private companies - from small firms up to well-known multinationals - as well as all levels of government.

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KISTERS Partnership Agreement with ITEG

The Innsbruck-based ITEG IT-Engineers GmbH and KISTERS AG have agreed to intensify their cooperation in the area of time series visualisation. The new partnership has arisen from the partners' successful collaboration in a dam project with the Vorarlberger Illwerke in Austria, where a comprehensive WISKI dam information system was implemented. TIS-Graph, the time series visualisation and reporting software by ITEG, will enhance possibilities in this area as an add-on module.

Based on the tried and tested KISTERS time series technology (KiTSM), TIS-Graph will generate reports for the areas of hydrology, dam monitoring and energy data management. KISTERS products have therefore gained a new high performance component, with which users will be able to design add-on reports with tables graphics, text elements and images via Drag&Drop functionality.

Users will benefit from the great flexibility and speed of the module for report creation, based on its browser-supported design. These reports will allow the visualisation of WISKI data in conjunction with information from external data sources. Graphs created in TIS-Graph are placed with millimeter accuracy both onscreen and in the printout. The user can customise the report layout to match individual format, content, and layout requirements of the relevant organisation. The application is operating system independent.

Dr. Wolfgang Glas (ITEG) and Klaus Kisters

About ITEG

ITEG IT-Engineers GmbH was founded by Dr. Wolfgang Glas and Grad. Eng. Christoph Lechleitner in July 2011 in order to formalise their since 2002 successful cooperation in the area of premium quality IT service provision for infrastructure organisations. Their orders included subprojects for the German road toll for trucks on behalf of EFKON AG, reporting systems for dam monitoring on behalf of Vorarlberger Illwerke AG and TIWAG, as well as the development of operational stability modules for Siemens AG Germany. ITEG also offers high availability server hosting for numerous clients in Tyrol and for toll projects, which, in the Netherlands alone, serve up to 5000 on board units.

WDTF Ingest Schedule

By Todd Lovell, Bureau of Meteorology

As mentioned in the last newsletter, the Bureau of Meteorology have been working closely with Kisters on a project to receive data from Hydstra in the Water Data Transfer Format (WDTF) directly into the Australian Water Resources Information System (AWRIS). The Bureau will be ingesting data from organisations delivering data using the Hydstra HYWDTF_OUT program. Tests have been carried out with Kisters and the Bureau and this work has identified updates to the Bureau online WDTF validator, WDTF web page documentation and the Hydstra HYWDTF_OUT program. These all have required updates to keep them aligned.

In March, key staff from Lead Water Agencies (as identified in the Water Regulations) received training and configured the HYWDTF_OUT program on a copy of their Hydstra database. Further training was given in Sydney and Perth to various agencies during November. The plan is for the Bureau to receive, ingest and verify the data from these agencies over the next 12 months. The Bureau will work with each agency over 6 week periods to confirm that the data is being ingested and interpreted correctly. The planned schedule is as follows:

Schedule

Organisation	Start Date
NSW Office of Water	1-Aug-11
Department of Environment and Resource Management	12-Sep-11
South Australia Department for Water	24-Oct-11
Australian Capital Department of the Environment, Climate Change, Energy and Territory Water	5-Dec-11
Northern Territory Department of Natural Resources, Environment, the Arts and Sport	16-Jan-12
Victorian Department of Sustainability	27-Feb-12
Murray Darling Basin Authority	9-Apr-12
Western Australia Department of Water	21-May-12

Note: The Bureau requests that organisations do not switch from HYBOMEXP to HYWDTF_OUT without discussion with the Bureau first as they would like to plan and stage the transition from the current HYBOMEXP data delivery to the new HYWDTF_OUT data delivery for each organisation and work directly with them during the transition. Please liaise directly with Todd Lovell at the BOM.

Kisters footnote: Before you need to go live, as instructed by BOM, please ensure you have installed the most recent build rollup from the FTP site (see below). Important patches to HYWDTF_OUT.HSC have been made as recently as 29 Nov 2011.

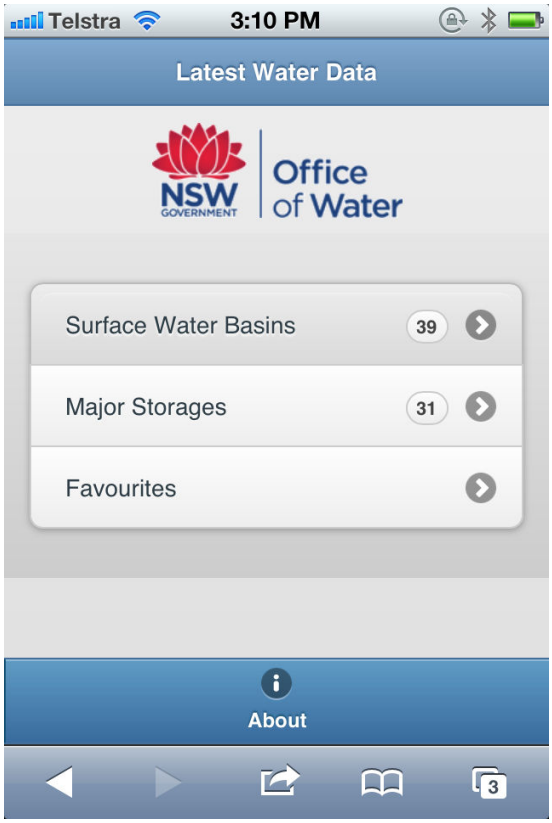
Hydstra/WEB Mobile

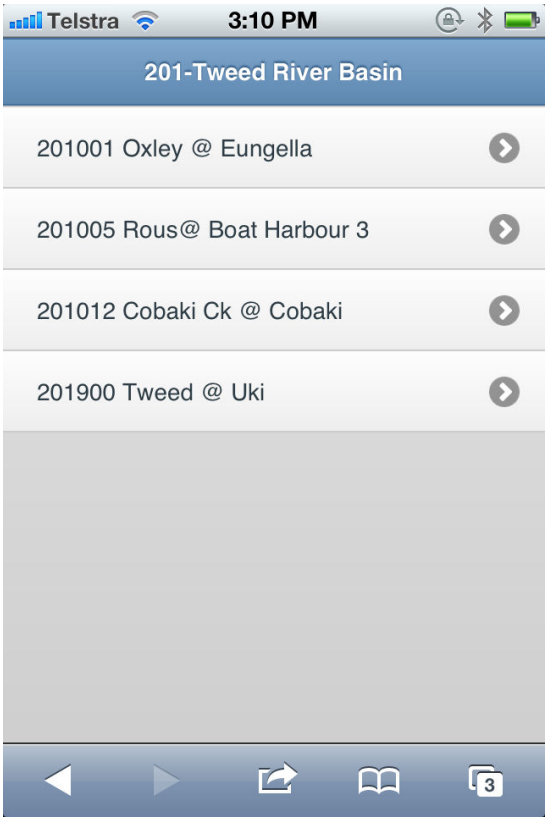
Kisters are pleased to announce the release of the mobile version of Hydstra/WEB for smartphones. This version is included with Hydstra/WEB at no additional cost and extends the reach of your data to anyone with a smartphone. There are two interfaces, an HTML5 based solution for modern phones like iPhones, recent Android and recent Blackberries, and a text based solution for older phones that lack HTML5 support.

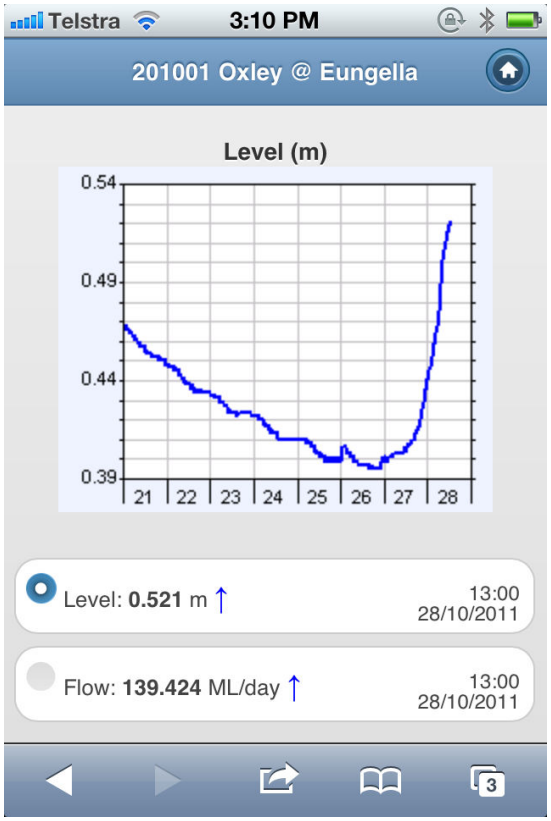
The output is simple to navigate and provides current values and quick plot of recent data. The following

screenshots give you an idea of its functionality. The actual variables and sites displayed are highly configurable. Performance seems good over the 3G network.

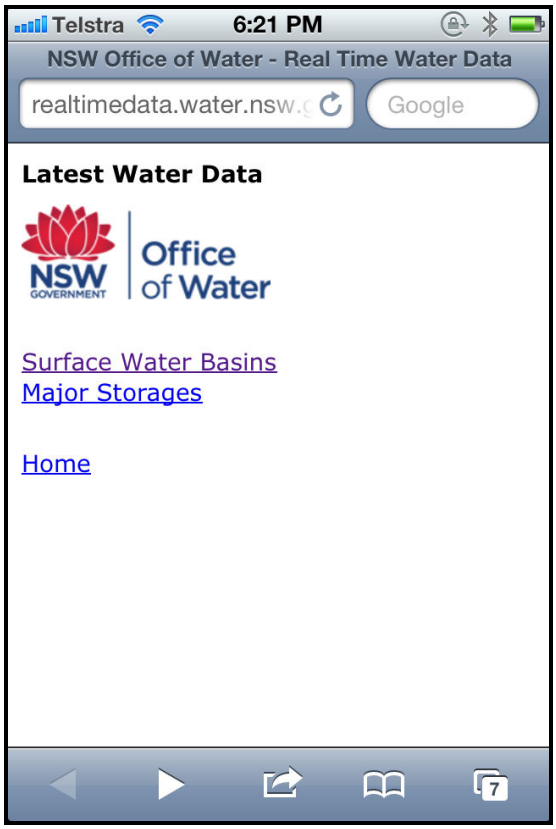
You can test the smartphone version at http://realtimedata.water.nsw.gov.au/mobile/ and it looks like this on an iPhone 4:

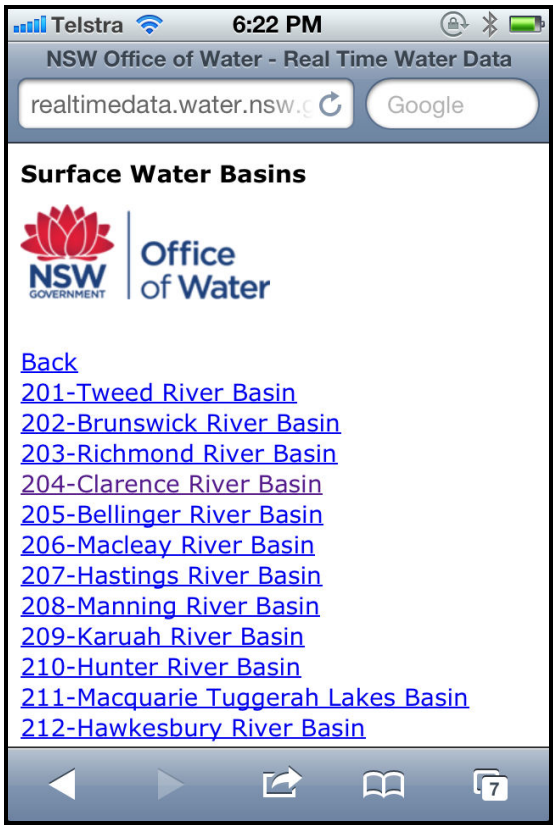


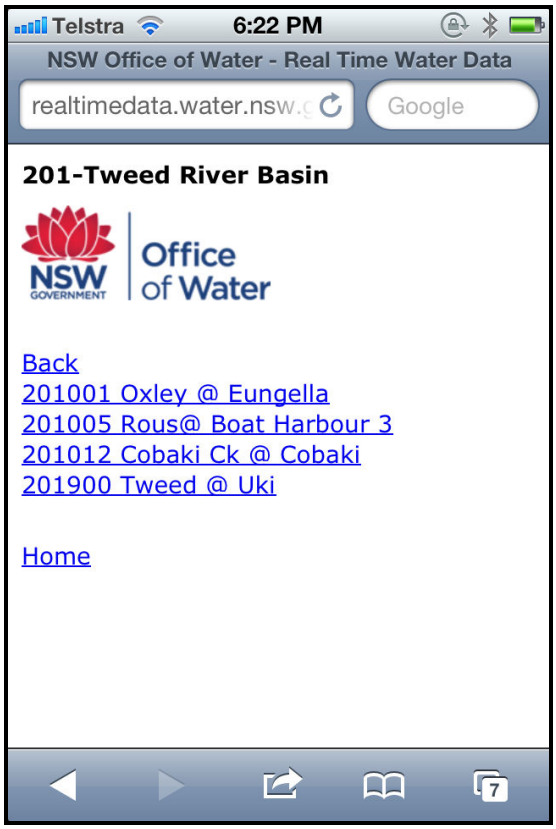


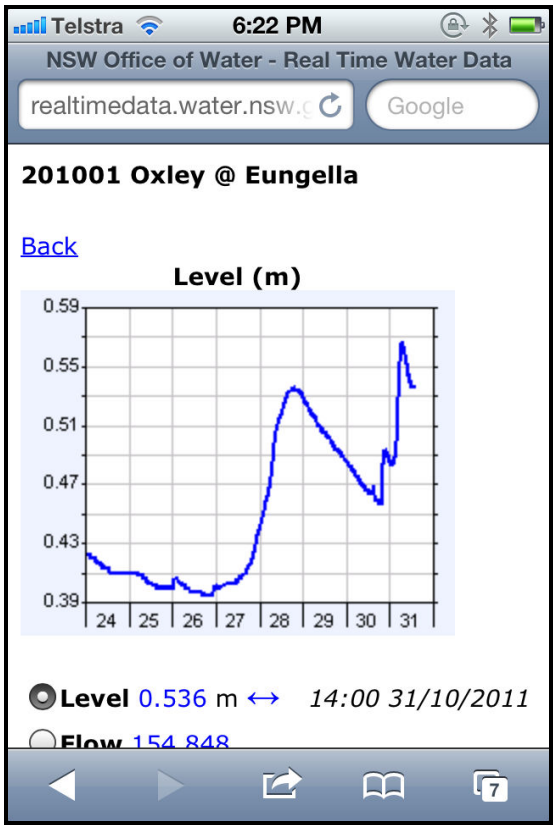


The text version is at http://realtimedata.water.nsw.gov.au/mobtext/ and looks like this on an iPhone 4:









Hydstra ODBC Time Series Driver

We are pleased to announce the release of Hydstra/ODBC, a new product that provides an ODBC interface to Hydstra/TS time-series files. The driver allows you to make basic SQL calls on time-series data. There are two virtual tables supported, TSPOINT which contains raw time-series points as recorded, and TSPERIOD which contains periodic data extracted from Hydstra, with optional variable conversions.

To extract raw data points at their original timing in 2010 for all variables:

```
SELECT * FROM TSPOINT WHERE (SITE = 'HYDSYS01' AND DATASOURCE = 'A') AND (DATETIME >= '2010-01-01') AND
(DATETIME <= '2011-01-01')
```

To extract daily mean flow for the same period

```
SELECT * FROM TSPERIOD WHERE (SITE = 'HYDSYS01' AND DATASOURCE = 'A' AND VARFROM = 100.00 AND VARTO = 140 AND
INCREMENT = 'DAY' AND MULTIPLIER = 1 AND DATATYPE = 'MEAN') AND (DATETIME >= '2010-01-01') AND (DATETIME <=
'2011-01-01')
```

The driver can be integrated into Excel and Access via the data import wizards, and can be called from any software that connects via ODBC, such as Crystal Reports, ArcView, etc. The Hydstra/ODBC driver is already being deployed to great effect at client sites to provide data to models, SCADA systems, etc.

You can already use ODBC calls over Foxpro or SQL Server tables using the appropriate drivers. The Foxpro ADO driver is delivered in *\hyd\sys\setup\ado\vfpodbc.msi* - simply right click on it and choose Install.

We are updating HYDBSQL in 10.4 to support Foxpro and Hydstra/ODBC calls, provided the drivers have been installed.

Please contact us for pricing information and/or an evaluation system.

HYVIRTUAL - Virtual Sites in Hydstra

By Jess Egan (Melbourne Water) & Sholto Maud (Kisters Pty Ltd)

The virtual sites functionality in Hydstra arose from a user need to have a site in the Hydstra database with no physical station, like a node site, or one site whose time series file is comprised of multiple physical stations.

This need was generated by situations where two or more monitoring stations can have different geographic locations, but where the flow data produced from the stations is "hydrologically the same". In this context, all things being equal, the flows recorded for the same time period by these two physically different monitoring stations would be similar enough to be considered the same. In practical terms this can be achieved by locating the monitoring equipment for the two different stations in the same monitoring pool, and with different rating tables.

Virtual sites are used to meet this need. They work by combining multiple time series traces from "real" sites (source ts), into one continuous time series file for the virtual site (the target ts). This can already be done using a composite data source, however a virtual site is more complex than a normal composite data source, and can take different periods of applicability for each source time series file. The practice of making a continuous time series file out of many different time series is not a new concept. It is currently done manually by some agencies, and the HYVIRTUAL system makes the automation of this task possible.

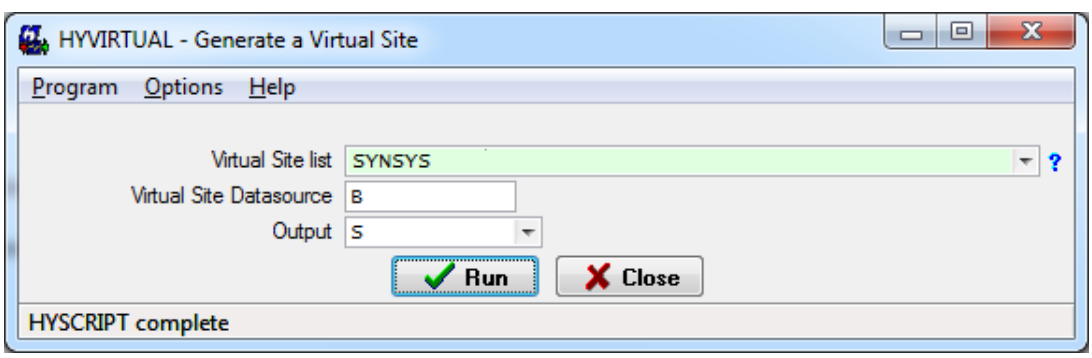
Different agencies have used different conventions for identifying these two different physical sites. Once convention has been to use a constant site number such as the AWRC number to identify the geographic location of the site in Australia. A monitoring agency might then use a letter (A, B, C … etc) as a suffix to the AWRC number in order to indicate that the monitoring locations are physically different, but hydrologically the same. For example, '229143' is the AWRC number for Chandler Highway in Victoria. '229143A' indicates the first physical installation of the monitoring location, and '229143B' is the second, different physical installation. Currently, however, there is no national convention in Australia on using AWRC numbers, or which letters to use as suffixes and when they should be used.

Monitoring location	Data file period
229143A	
229143B	
Timeline	1980 1990 2000

Table 1 Overlapping periods of two source ts traces

The duplication of monitoring locations at one site can be due to many reasons. A classic reason is when a monitoring location can no longer be maintained due to access issues. In this case the managing entity may construct a second monitoring location in the same pool.

The project for developing this functionality in Hydstra was given BOM funding, with project management undertaken by Melbourne Water Corporation in Victoria. The solution is in the form of a HYSCRIPT job with a very simple interface that takes in a site list of Virtual sites, and a target datasource that the final time series data will be written to.



The majority of the work is done by the tscalc.datasource, together with the TSCALC table located in the TSADMIN Manage. The TSCALC table is used to store the periods of applicability of each variable recorded at a site.

HYVIRTUAL Setup

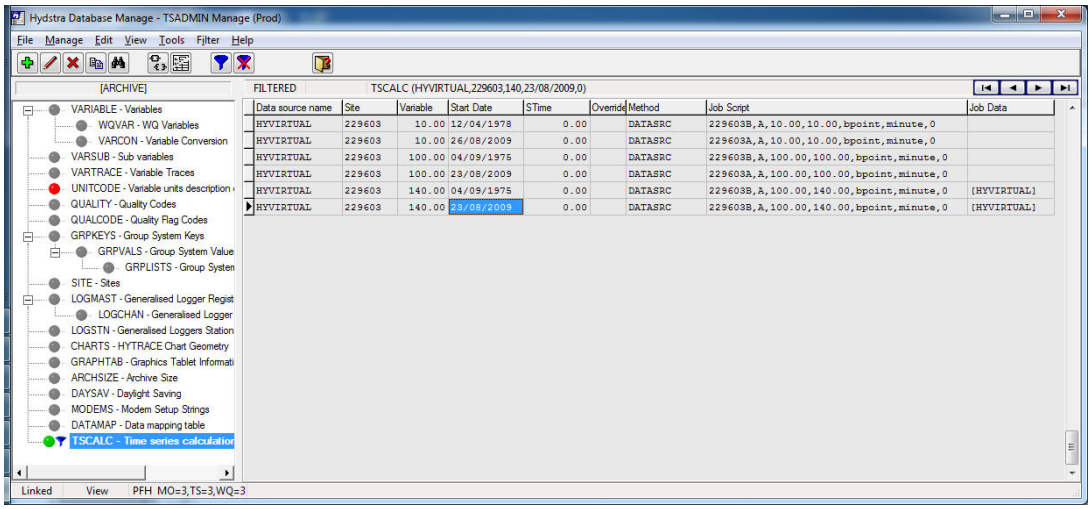
The HYVIRTUAL system can be used on a 10.3.2 system, however it needs several programs which can be packaged and sent to interested Hydstra users. Alternately, it will become a part of the next version of Hydstra and supplied as a default so users may wish to wait until the next version. Due to the level of complexity

involved when populating the TSCALC table it is likely that users will need help from Kisters during the setup process. Please contact the Canberra office to discuss your requirements. In addition, users wishing to use MODSYN models to calculate flow (or other variables) will need a MODSYN licence if they don't already have one.

HYVIRTUAL Use Cases

Three use cases were envisaged at the beginning of the project: sequential, interchange and junction. For each use case, and each site, the TSCALC table needs to be configured differently by the user with a unique set of business rules for combining time series data files and tables. The interchange use case produces a similar result to the sequential use case, and so has been omitted here for brevity.

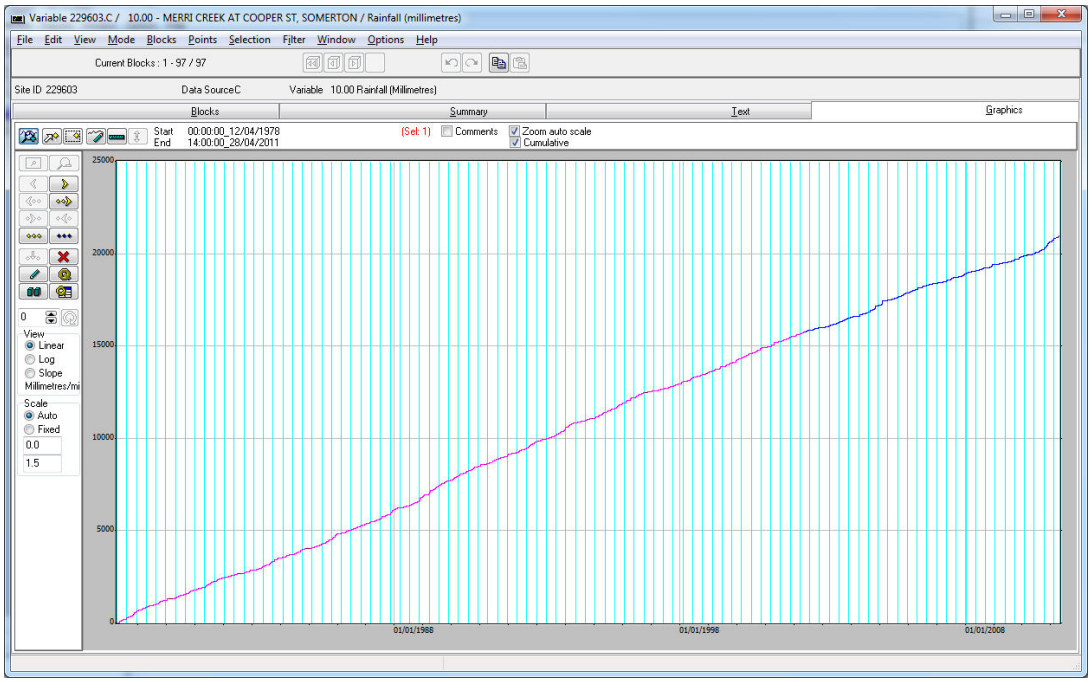
The Melbourne Water Corporation database was used to test all three uses cases. After configuring the MWC Hydstra test system the TSCALC table was setup to produce a virtual site for the Merri Creek at Cooper Street, Somerton, which was given the AWRC site ID 229603. MWC use the A and B notation to denote the first and second historical implementations of a site respectively.



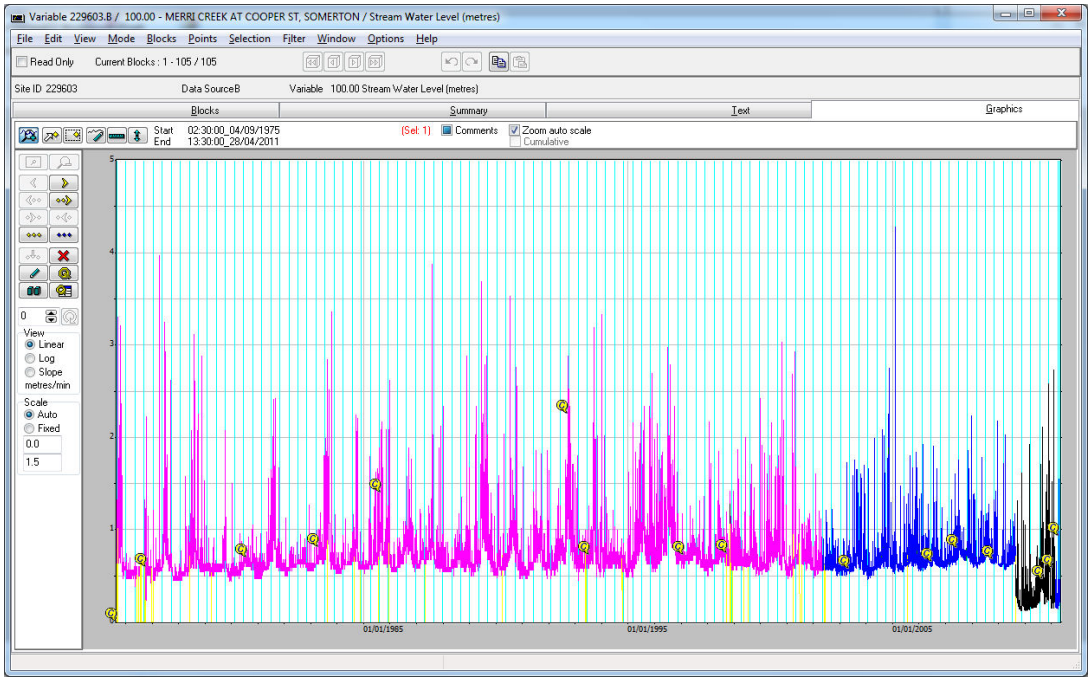
To test the sequential use case, 229603 was comprised of both rainfall level and flow variables. As shown in the screenshot above, the rainfall variable (10.00) was taken from site 229603B from 12/4/1978 until 26/8/2009, and then site 229603A from 26/8/2009 until the present. The level variable (100.00) was taken from 229603B from 04/9/1975 until 23/8/2009, and then 229603A from 26/8/2009 until the present. The flow variable (140.00) was taken only from site 229603B from 04/9/1975 until 23/8/2009, and then, again, 229603A from 26/8/2009 until the present. This flow was produced by running the level through the respective rating tables for each source site, thereby converting from variable 100 to 140.

The sequential use case

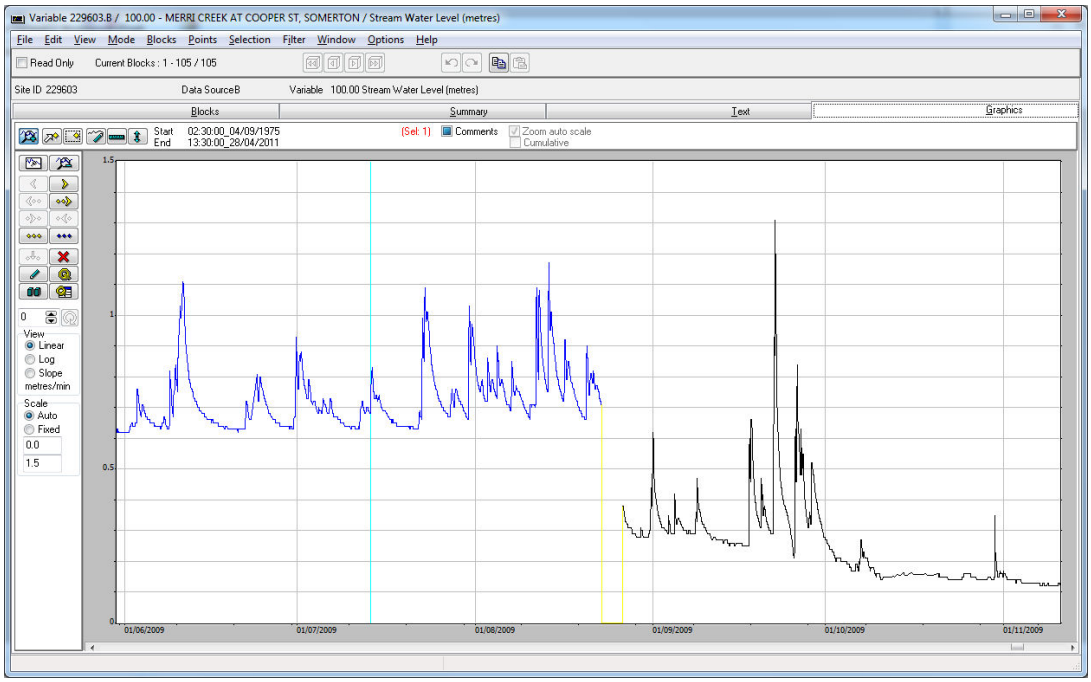
The screenshots below are of the resulting time series file for virtual site 229603, and the sequential use case. Rainfall is not rated, and the distances between the physical locations was not great. The resulting plot of the cumulative trace shows that the rate of incline is relatively consistent over the history of the file which supports the assumption that rainfall data is conserved between the sites.



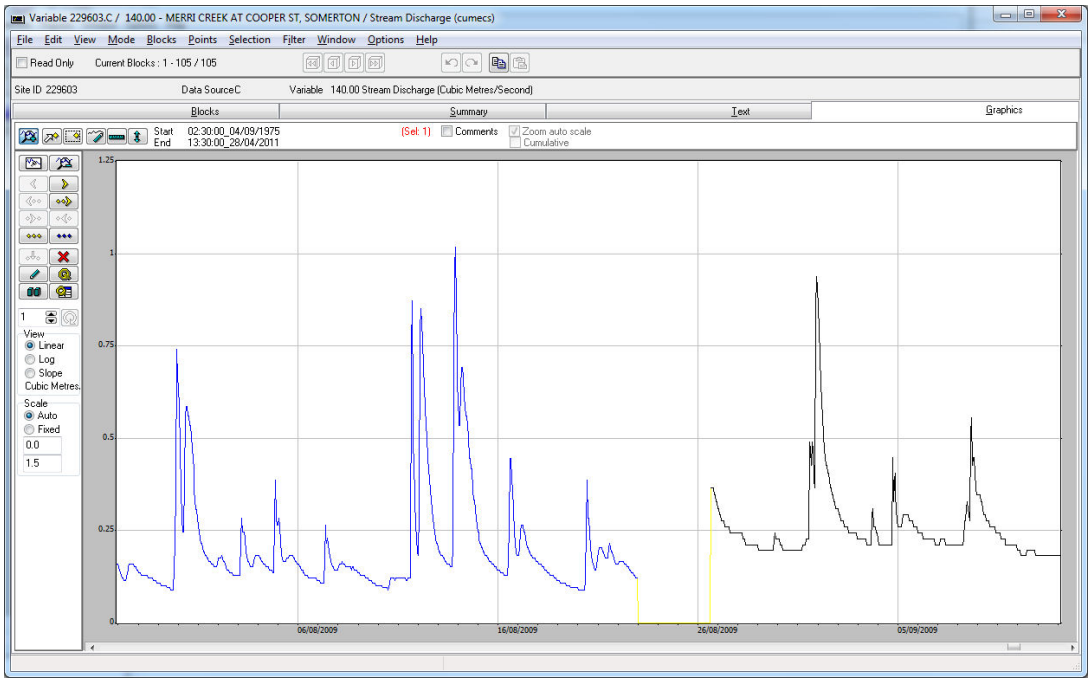
The level variable presents a different picture. As can be seen from the screenshot below, there is a distinct drop in the level variable near the end of the data set.



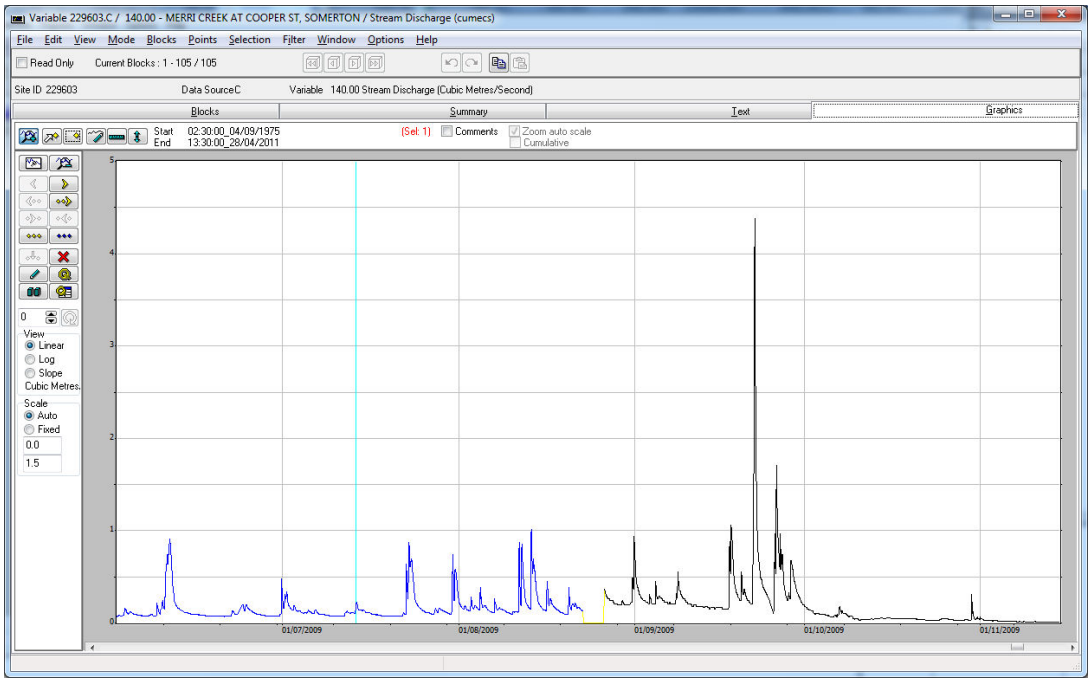
Zooming in on this section (see screenshot below) shows that at the date that we changed the source data from 229603B to 229603A, the level dropped by about .4 meters. This suggests that gauge zero may be different for each site, and that the level variable is not conserved between sites. There is also a gap, where 229603B data ends before the beginning of the time series for the 229603A site, indicating that 229603B may have been decommissioned too early to produce a continuous time series file.



The distinct drop in level between the two sites begs the question whether the rated flow will reflect this drop, or whether the ratings will iron out the drop and conserve the flow. Opening, and zooming in on the flow variable (140.00) in the Hydstra workbench, shows that, as expected, the gap was still reproduced, however the drop was not reproduced. Rather, if anything, at this level of zoom there appears to be a small shift up in the baseline flows of about 0.07 cumecs. Depending on acceptance limits, this might be deemed insignificant, or outside the tolerable range of acceptability, suggesting that the site may need to be re-rated.

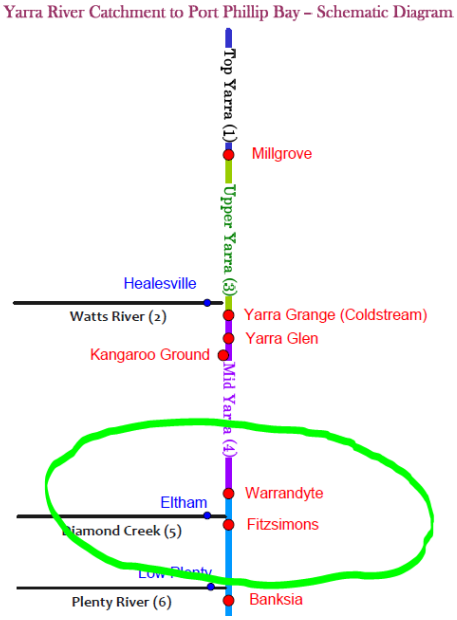


However zooming out further shows a different story. At a larger time scale, the flows from 229603A seem to be reasonably consistent, so the jump between the A and B sites may have been due to rainfall events rather than errors in the ratings.



The Junction Use Case

A simple flow-balance MODSYN model was developed for three MWC sites; Warrandyte (229200B), Eltham (229618A) and Fitzsimons (229142A) - circled in the schematic below.

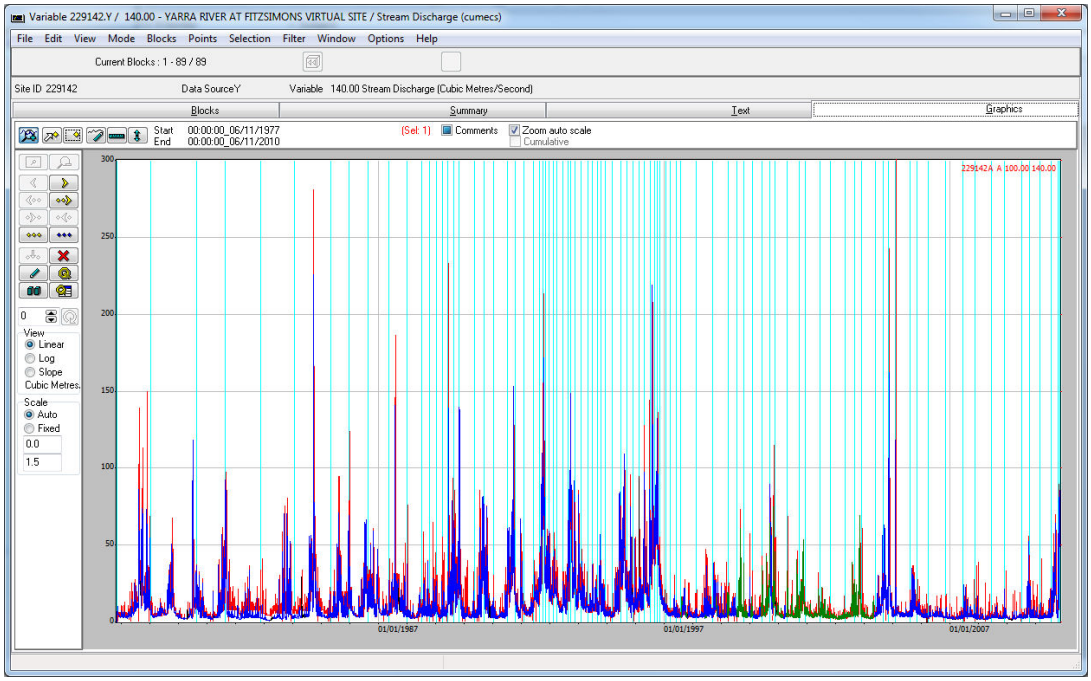


A Fitzsimons virtual site (229142) was setup and used as a junction node in the river network. The flow-balance MODSYN model was used in TSCALC to model the flow at the virtual site. MODSYN has the advantage of providing direct access to the Hydstra Time Series files, together with built-in optimisation functions.

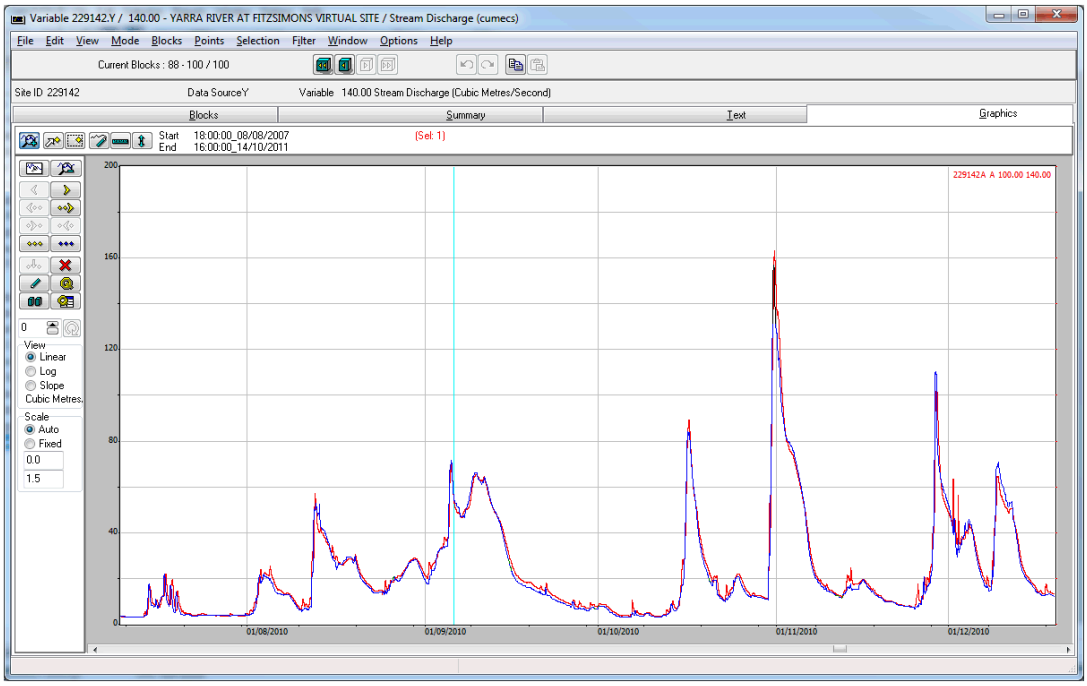
The model simply summed the flow at Eltham with the flow at Warrandyte and then lagged the resulting flow to simulate travel time to the Fitzsimons virtual node. The resulting travel times calculated in the MODSYN model were:

Travel	**Time (days)**	**Time (hours/min)**
from Warrandyte to Fitzsimons	0.140 days	3.36 hr
from Eltham to Fitzsimons	0.026 days	~37 min

The resulting flow at the virtual site 229142 was then visually compared against the flow actually recorded by opening site 229142A as a reference trace in the workbench (see screenshot below).



Increasing the zoom shows that the optimisation of travel time for the modelled data has produced a reasonably good fit compared to the actual flows recorded at Fitzsimons (see below screenshot). There are some differences in the levels of spikes which may indicate that the smoothing used in the MODSYN model was too aggressive. However are the spikes in the actual raw data real or errors? This raises a philosophical question about the accuracy of both data sets. Which flow is a more accurate depiction of what actually happened at the site? The root-mean-square deviation (RMSD) is used as a measure of accuracy, and for this model the RMSD was calculated to be 6.110. This could provide a way of auditing by eye the modelled data against the actual data for data validation purposes.



Potential use case

One might put a case for making the MODSYN model more sophisticated, and attempt to reproduce the functionality of rainfall-runoff models. This would expand the node use case so that every site in the river network has a corresponding virtual site node. Flows would be routed from upstream nodes to downstream nodes. This level of complexity raises the question of which flow should be routed from node to node. As shown above, once a flow had been calculated at one site, it can be compared to the actual flow at the site, assuming one has been recorded. But then which is the more accurate or reliable data for modelling purposes? Which time series trace should be routed to the next downstream node - the modelled flow, or the actual flow?

Acknowledgements

Thanks to Melbourne Water Corporation Hydrology and Flood Warning team for the use of their time series data and river schematics.

Hydstra Product News

Next Version Schedule

We are hoping to release Hydstra 10.4 in the second quarter of 2012. It will include a significantly enhanced Hydstra/GW system, as well as a major rework of the Instruments component. Apart from these two areas the rest of the changes are more incremental and are unlikely to have major impacts on users or cause significant upgrade problems.

Hydstra Patch Regime

Hydstra builds have a four-component name, along the line of 10.03.02.20110708. This means *version* 10, *release* 03, *patch* 02, *build* 20110708. Systems sharing the same version and release are guaranteed to be database compatible, systems sharing the same patch are guaranteed to be binary exe compatible.

We attempt to rebuild the system every week, which means the build date will change. As part of a new build the entire test harness is run across the new build to ensure that the system is still healthy.

As a general rule any patches made during the week will be consolidated into the weekly build. Only in exceptional circumstances will patches be sent immediately to users, the usual procedure will be for them to wait for the next build.

You can access the patches in one of two ways:

- From the FTP site ftp.kisters.net/hydstra/releases
- From the web site http://kna.kisters.net/hydstra/

In either case you will need to contact us for the user login and password. Please include your HYACCESS.INI in your email.

The current patch is *hydstra.10.03.02.20111205.update.zip*.

HYWDTF_OUT patches

As part of the recent round of HYWDTF_OUT training courses a couple of minor problems with HYWDTF_OUT were uncovered. The most important of these related to the sending of rating tables in CHANGE mode. A patched version is available in any patch set made after 30/11/2011. Please update to this patch if you are sending WDTF data to BOM.

Perl Modal Errors under Server 2008 R2

Occasionally (hopefully rarely) under Windows Server 2008 R2 you may see a modal dialog box announcing something like *'Perl.exe has stopped working. A problem has caused the program to stop working correctly. Please close the program*.' and you need to close the program before the task continues.

Microsoft provides a program ServerWerOptin.exe that allows you to control whether such failures are modal, and whether you want to report them to Microsoft. To disable these errors. Run:

```
ServerWerOptin.exe /disable
```

This will prevent such errors from going modal and holding up the server. You only need to run this job once.

New Hydstra/Web Monitoring Tool

Clients running Hydstra/WEB are becoming more and more dependent on the web site being up 24/7, even though maybe that wasn't in their original plan. We have developed WEBOK.BAT to provide periodic testing of a Hydstra web portal to ensure key files and pages are present and accessible. The list of URLs is stored in WEBOK.INI where you can specify maximum age (minutes) for actual files. Warnings and errors can be configured to be sent via email and/or SMS using HYMAILER.

Instruments Workshop

A dedicated group of people from major Australian agencies spent two days at Kisters learning about the new Instruments component of Hydstra 10.4 and contributing significantly to its further design and development. Thanks to all involved!

Instruments Workshop

SVRRUN Reliability and ROBOCOPY

We recently encountered a situation where SVRRUN was crashing at the same time each day. On further investigation it appears that a ROBOCOPY job was trying to copy the SVRTASKS table while it was in use, causing some sort of conflict. We suggest you shut down the server system before making backups, and we provide a sample job in MISCPATH called SVR_KILL.BAT which you can copy to INIPATH and tailor to your own environment. We suggest you shut the SVR system down using a scheduled task, perform your backups, and then bring it back up again.

Training Courses

Advanced Hydstra Training

On 14-15 March 2012 we plan to run a 2 day training course on 'Advanced Hydstra', followed by an optional additional day focussing on ratings and gaugings. The courses will be held at our office in Canberra. The course will cost $750 per person per day including GST. It is aimed at existing Hydstra users who are not necessarily system administrators, but who wish to improve their Hydstra skills. Potential topics include

- Using and configuring HYXPLORE and HYMULTI
- Loading and saving jobs
- INI files
- HYMANAGE sorting, filtering, reporting, HYDBSQL, HYCLIPIN
- Documents
- SITE lists, GROUPS and HYSTNS
- HYCREATE, HYCSVIN etc
- HYAUDIT, HYAUDIT.STNINILIM, HYAUDIT.SUMREP
- HYBATCH and using HYBATCH outputs

- HYDMWB right click jobs and documents, HYSCANR
- Advanced HYPLOT, WIP.INI
- Problem solving, HYDLOG.TXT, HYHELPME

The third day will be devoted to HYGAUGE and HYRATED with practical guidance in deriving and managing ratings.

Please feel free to suggest other topics you wish to see covered.

You can attend either course (2 day advanced or 1 day ratings and gaugings), or stay for the whole three days.

Please contact debbie.cockburn@kisters.com.au to secure a place on these courses.

Other Courses

We are happy to put on training courses on any aspect of Hydstra provided there are sufficient people interested in attending. Please contact Debbie with expressions of interest. Courses we could offer include:

- Basic Hydstra
- Advanced Hydstra Modelling with MODSYN
- Hydstra/SVR Server Products
- Ratings and Gaugings
- HYWDTF_OUT

Staff News

Chris Michl Becomes an Aussie!

On Dec 15 Chris Michl and his family became Australian citizens - congratulations cobber! You must be the only person we know who can sing Advance Australia Fair without a prompt!

Aussies Chris and Uli Michl

Kisters Christmas Party

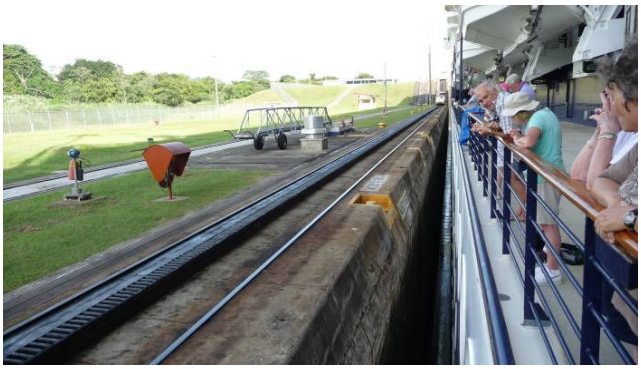
The Kisters staff Christmas party was held at Peter Heweston's house this year, with everyone bringing their favourite dish. The food was plentiful and varied, ranging from goulash to Christmas pudding, and a great time was had by all. The exchange of tacky sub-$10 Secret Santa gifts was a particular highlight - it's amazing how a loud whoopee cushion never ceases to amuse!

A thrilling array of priceless gifts

Peter Heweston's Panama Cruise

Peter Heweston achieved a life long dream in September by transiting the Panama Canal. The US designed hydraulic engineering works may be nearly a 100 years old, but they still run like clockwork. On August 23, 1928 Richard Halliburton swam the Canal and paid a toll of 36 cents since his weight was 150 pounds. By comparison, the transit fees for the Celebrity Millennium were of the order of $US300,000!

Entering Gatun Locks



A tight squeeze

Information

This newsletter is published by Kisters Pty Ltd and edited by Peter Heweston

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All support and accounts questions should be directed to support@hydstra.com.

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