

# KISTERS Australia News

December 2009

## Contents

Contents .....	1
From The GM's Desk .....	1
Hydstra & CUAHSI .....	1
2010 User Groups .....	2
NOW Web Site Released .....	2
Those Damn Dams .....	2
Hydstra Advanced Training .....	3
Backups .....	3
Hydstra Product News .....	4
Instruments Database Workshop .....	5
Staff News .....	6
iQuest News .....	6
Contact Information .....	6

## From The GM's Desk

*By Bill Steen*

I'm not sure where the year has gone. I know it has been extremely busy for everyone and here at Kisters we have been fully occupied undertaking new installations, training, and product enhancement.

Hydstra training definitely seems to be in huge demand and we are planning to put on more regular training courses throughout 2010. Dates of courses will be advertised in the newsletter in the New Year.

We recently held an Advanced Hydstra training course at our Canberra office and the response for placements was overwhelming. We apologise for those people who missed out but we have your details for the next one. Training requirements are not limited to the Australian user community. One participant in the recent course was Carlos Andrade from Empresas Públicas de Medellin, Colombia.

Empresas Públicas de Medellin has been using Hydstra for over 14 years and the users have an exceptional knowledge of the program and have been extremely innovative and assisted in improving Hydstra functionality. It was therefore a pleasure to have Carlos attend training here in Australia.

On the local front here in Kisters we are all looking

forward to a short break over the Christmas and New Year period. The office however will be manned over the break in case you require urgent assistance.

On behalf of everyone within Kisters I would like to take the opportunity to wish you all a safe and Merry Christmas and a prosperous New Year.

Bill Steen

General Manager  
Kisters Pty Ltd



## Hydstra & CUAHSI

*By Peter Heweston*

Damian Skinner and Peter Heweston had an opportunity recently to catch up with Dr David Maidment in Canberra. David was editor in chief of the Handbook of Hydrology (McGraw-Hill, 1993), the bible of modern hydrology, and is now one of the driving forces behind the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) in the US.

CUAHSI uses web services technology to exchange water information between contributing agencies. The interchange format is WaterML, an XML format similar in concept to Water Data Transfer Format (WDTF) developed by the Bureau of Meteorology in Australia. There are presently international efforts underway to harmonise WaterML and WDTF to hopefully produce WaterML2, a uniform international hydrological data interchange format.

Kisters has been involved in the CUASHI initiative as well as in the development of the WDTF standard, and we have a number of internal company initiatives to explore web services from a publisher and consumer perspective. In Aachen we are working on a uniform web services framework for all Kisters products, in Canberra we have written some prototype CUASHI consumers and producers to better understand the technology.

We are also considering a Hydstra web service, based on some variant of HYDLL which could be used for in-house web service provision.

We will keep you informed of developments in this area.

*By Peter Heweston*

The International WISKI User Conference 2010 will be held at the Swedish Meteorological and Hydrological Institute, SMHI Headquarter Norrköping, Sweden on 8th and 9th June 2010.

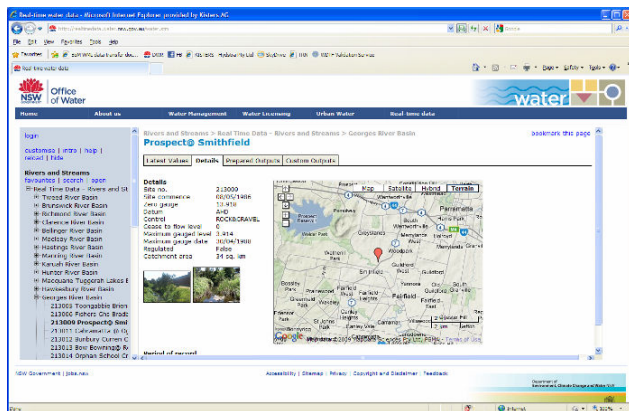
In the US we propose a one day Hydstra-only meeting in Ventura, California on Sep 13, possibly followed by a day of Hydstra training on Sep 14 if there is interest. The main joint Kisters User Group meeting will be held in Orlando Florida on Sep 16 and 17.

The Australian meeting will be held in Perth on 19 October 2010 at the Birdwood Casino, the day before the start of the three day AHA conference at the same location.

Why not put in a budget proposal to do the grand tour and attend all four?

The Hydstra/WEB installation at the NSW Office of Water (NOW) went live last month. The site shows data from rivers and storages run by NOW. You can visit the site at

The site is implemented using Hydstra/WEB, which is a recent Hydstra product that extends Hydstra onto the web. Hydstra/WEB provides access to live Hydstra data, precomputed reports and plots, and provides a download facility where the general public can download data in CSV files.



Contact us for more information on Hvdstra/WEB.

*By Peter Heweston*

The Australian Government has mandated that the Bureau of Meteorology be provided with data about storages - levels, volumes, spills etc. As we move towards a national approach to water data in Australia we may need to harmonise the way we store dam metadata and compute volumes in storages.

There are a number of different volume measures that are of interest when discussing a storage, but the principal one is net volume, often phrased as effective volume, and expressed either as a volume or as percent full. Other volumes of interest include dead storage, which is volume of water below the lowest outlet that couldn't be accessed except by pumping, and air space, which is the additional volume of water that could be routed into a storage before it started to spill.

Over the years many dams in Australia have been subject to engineering works to change the physical properties of the dam. Spillways have been raised, new outlets created, silt surveys carried out etc. Each of these affects the calculation of volume over time.

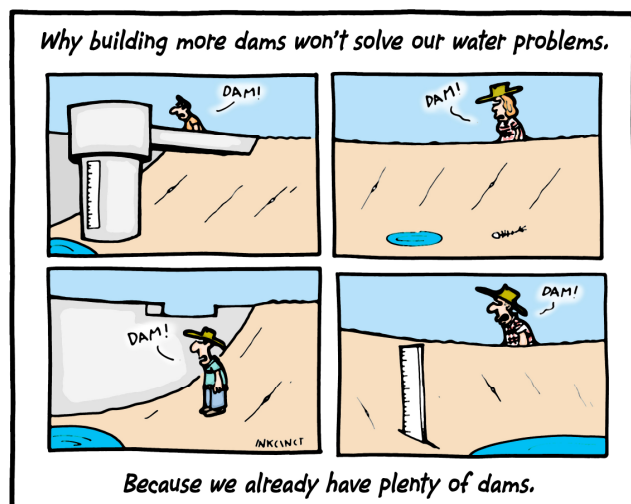
Unfortunately in Australia at the moment there are almost as many ways of using Hydstra to compute storage volumes as there are agencies. Some agencies have tables that convert storage level to net volume, with separate tables that compute percent full - hopefully aligned with the volume tables. Some agencies aren't so fussed about dead water, and include it in their volume calculations.

At some storages the calculation of volume gets very complex indeed - for example when adjoining storages have independent volumes below some level, but merge to a single entity at higher water levels as they spill over their adjoining boundaries.

It is possible in Hydstora to store all the engineering levels in time-tables (changes in lowest outlet, spillway level, conversion from local gauge datum to AHD etc) and then compute everything else from a single series of level to volume rating tables in a uniform way - however we are not aware of any Australian agencies who are doing it this way. The South African Department of Water Affairs has probably the most complete model of storage parameterisation in Hydstora that we are aware of.

We presented the South African dam model at the 2003 Hydstra Users Group meeting. In summary it comprises the following variables and calculations:

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



Cartoon published with permission from INKCINCT Cartoons,  
<http://www.inkcinct.com.au/>

## Hydstra Advanced Training

In December we gave a three day Advanced Hydstra training course to 8 users from a variety of agencies. We covered many aspects of managing a complex Hydstra installation, and spent one of the days on advanced HYAUDIT and HYBATCH capabilities. We also spent some time discussing issues around upgrading to Hydstra V10.

The Hydstra V10.2 Help file has been extensively reorganised and enhanced to incorporate all of the training material. We will offer another course next year, as the one we just ran was oversubscribed. We have found that it is possible to run Hydstra

quite well from a fast USB memory stick, which makes the setting up of a training room much faster. You still need to configure each PC a little, such as registering the DLL and installing the FoxPro ADO drivers, but providing training from a USB drive simplifies the setup significantly, and provides the trainees with a system they can take home at the end of the course. We have documented the process of running Hydstra from a USB stick in the 10.2 Help file. We buy 2GB USB sticks for less than \$10 each.



Advanced Hydstra Training

## Backups

From time to time we still have to assist clients who have lost Hydstra data for some reason or another. The V10 help file has an expanded section on Hydstra Backup and Recovery, but to summarise the main points, you should really implement a number of different backups to protect against different threats. We recommend a three layered approach:

- Regular tape backup run by your IT department to protect against catastrophic system and building loss. They should be maintaining offsite copies of the backup.
- Regular disk to disk copies made using ROBOCOPY via HYCLONE. This will protect you against embarrassing 'oops' moments without having to go back to IT cap in hand to ask for recovery from tape. With a cheap 2TB hard drive you can keep hundreds of system images.
- Regular weekly or monthly backup to single use CDs or DVDs, which are likely to be the only backup medium still readable 10 or 20 years down the track.

# Hydstra Product News

## ***Hydstra Version 10 Status***

The current release of Hydstra is version 10.01.00. We had a slip-up with 10.00.00, and it has been canned. If you have a 10.00 installation please upgrade it to 10.01 soon, as 10.00 is unpatchable. V10.01.00 is available from the Kisters FTP site - contact Debbie Cockburn for details on how to access it.

We are looking to make more routine the provision of Hydstra patches on the Kisters FTP site. The patches will be saved with a name of the form *hydstra.10.01.02.20091207.zip*, which encodes the version, release, patch and date. We plan to develop an automated patch installer later next year, in the mean time the patching will need to be a manual process - we recommend using Beyond Compare to simplify the process. Don't forget to back up your system and throw everybody off before applying patches.

The upgrade to version 10 may require some care for larger users, particularly those with lots of custom scripts. Read the V10 Help file from the release CD for more information.

Please notify us when you go live with V10, as it is important that we keep accurate records of which version everyone is running.

## ***V10 TS Files Not Backward Compatible***

It is worth pointing out that Hydstra V10 includes several changes to the internal Hydstra /TS file format. The changes include improvements to the round-tripping of exact decimal numbers, the inclusion of place-holders when compression is applied, so that points are not really eliminated, some preparation for alphanumeric variables, improved precision for very large numbers, and a size reduction in many time-series archive files by improved compression. Although V9 files can be read by V10, V10 files cannot be read by V9. Agencies who cooperate by exchanging time series files should coordinate their approach to upgrading to V10.

Hopefully by the end of 2010 the exchange of TS files will be deprecated as the BOM WDTF format becomes the preferred way of exchanging time-series data within Australia.

## ***Windows 7***

We are testing Hydstra V10.1 on Windows 7 right now. It seems to be fine so far.

You will encounter the same difficulties as you do with Vista concerning the registration of HYDLL - see the Help file for more details.

There have been some minor changes to some standard Windows dialogs - for example the read-only checkbox is no longer available on the File/Open dialog, and we use it in MAPHYD. We will change our approach so the checkbox is no longer needed.

## ***Microsoft SQL Server Version of Hydstra***

We are working towards the release of a Microsoft SQL Server version of Hydstra in which all tables will be stored in SQL Server. Time series data will still be stored in binary TS files. We expect that Hydstra 10.2 will be the first version with SQL Server support, and we hope to release it first quarter 2010.

There will be a significant cost associated with upgrading to the SQL Server version - contact Bill Steen for pricing information.

## ***Alphanumeric Field Validation***

In Hydstra V10 we have increased the checking in certain database fields to ensure that if a field is marked in MASTDICT as being ALPHANUMERIC then the only characters permitted are A\_Z, 0-9 and underscore. Some fields may have let in other stray characters in the past, and in V10 you will need to consider fixing them. Two potential problems we have identified are WQFORMS with slashes or dots in them, and instrument entries in INSTREG with non-standard characters in them.

We can develop a Perl script to tidy up problems in your database tables using HYDBPERL.HSC. We can even assist you to completely renumber your instruments, for example. Contact us for more information.

## ***Strawberry Perl 5.10 and Moose***

Hydstra V10 includes a change in the distributed Perl technology to upgrade from Perl 5.6 to Strawberry Perl 5.10 - a considerable number of Perl version upgrades. There are no known compatibility issues for existing scripts, but the version upgrade brings some great new opportunities, not the least being the huge number of powerful new modules available on CPAN.

One component that we have started using successfully is an object framework called Moose. It provides a very elegant way of developing Perl modules, and we are developing our new Perl WDTF tools using Moose. You can find any amount of online material about Moose by Googling for 'Perl Moose'.

## ***Perl 5.10 Defined-or Operator***

One nice new operator that becomes available in Perl 5.10 is the defined-or operator '//' . Thus in Perl 5.10:



```
$a=$b // $c;
```

is the same as Perl 5.6:

```
$a=defined($b)?$b:$c;
```

or

```
if(defined($b)) {  
    $a=$b;  
}  
else {  
    $a=$c;  
}
```

The fact that we are starting to use Perl 5.10 features in Hydstra V10 means that Perl scripts developed for V10 will not necessarily be backward compatible with Hydstra V9.

A full listing of all the changes in Perl since 5.6 can be found at <http://perldoc.perl.org/index-history.html>.

### **New HYDLLP.DLL**

We are working on a new approach to communicating with Hydstra from Perl and other external programs. At present the technology we offer is HYDLL, which is technically accessed via COM (the successor to ActiveX). While HYDLL has served us well for many years, the security in Windows Vista and Windows 7 make it increasingly difficult to get the DLL registered in the first place. In a tightly controlled IT environment it can require system administrators to register the DLL on every PC that can run Hydstra, and that's a pain.

We are looking to find a way to bypass the registration problem, and to that end we have been working on a new DLL called HYDLLP.DLL that can be directly linked in to any program and function as a DLL. It will not require registration, however the parameters and calling sequence of the calls to HYDLLP.DLL are necessarily quite different, and it will require redevelopment of your program to use it.

To ease the pain for Perl programmers we have developed a new Perl interface library HYDLLP.PM, and we will be at some future time be converting all our Perl scripts to use HYDDLLP.PM instead of HYDDL.PM. The conversion should be trivial for Perl programs using HYDDL.PM - simply adding 'P' to the module name, because the Perl interface calls are exactly the same, and mask the differences in the underlying library calls.

HYDLLP.DLL and HYDDLLP.PM will be available in Hydstra 10.2.

### **Water Data Transfer Format Developments**

We have received funding from BOM via the NSW Office of Water to develop a number of product

enhancements in the area of WDTF data transfer.

- We will be developing a non-Hydstra application to create and deliver WDTF files from Excel data. The application will use Hydstra tools and techniques, but will be freely distributable by BOM to anyone who needs it.
- We plan to enhance HYBOMEXP to deliver WDTF data.
- We will create a new application HYBOMIMP to import WDTF data into Hydstra.

Once these last two applications are complete it should be possible for users to transfer data amongst themselves in WDTF format.

We are contracted to deliver these developments by June 2010.

## **Instruments Database Workshop**

*By John Hayes, NSW Office of Water*

NOW uses its Hydstra Instrument databases to record instrument details and locations for a range of management purposes. These databases are also used to track the performance and reliability of instruments. With some 900 surface water sites and 400 groundwater monitoring sites spread throughout the state, with multiple recording, sensing and associated devices at each site (on average there are 10 devices at any surface water site) and with different devices at the same site sometimes having different owners an efficient means of handling this data and an effective classification system is essential.

NOW also believes that calibration records are important as well and that it is not possible to truly define the quality of the data collected if the calibration status of the instruments are not known.

In examining options to have changes and enhancements made to the instrument database system in Hydstra it became evident to NOW that other organisations were also looking to do something similar. Rather than head off in disparate directions, major agencies and other major users were canvassed for their views on whether it would be appropriate to adopt a standard/national approach to instrument records and instrument management.

The NSW Office of Water (NOW) were successful in obtaining Bureau funding to hold a workshop to work towards developing a national approach to instrument records management to better link instrument performance and data quality. Funds

were also available to enhance the Hydstra Instrument database system to be able to be modified to more closely deliver this national approach.

The AHA have expressed a willingness to aid with the operation of the workshop to assist with the creation of a consistent national approach.

NOW will be seeking nomination from agencies who would wish to send representative(s) to a 2 day work shop in Sydney on the 3rd and 4th of March 2010. Bureau funds will be available to assist with travel and accommodation expenses. More details of the workshop agenda and location will be forthcoming in the New year.

## Staff News

### *Christmas Dinner*

As usual we brought all Kisters Pty Ltd staff together in Canberra to share a Christmas dinner. We were fortunate to have Klaus Kisters with us, and also Carlos Andrade from Empresas Públicas de Medellin (EPM). EPM have been a longstanding and sophisticated Hydstra user, so it was great to be able to spend time with Carlos. Those of you who are HYAUDIT users will appreciate some of the significant developments in HYAUDIT that appear in V10, thanks to work funded by EPM.

In keeping with the dignity of the occasion it seemed only appropriate to thank Carlos by publishing a photo of him proudly displaying his Kris Kringle present:



*Trevor Magnusson and Carlos Andrade*

## iQuest News

2009 has been a busy year for the iQuest NZ team. With new customers coming on board in Australia, New Zealand and even Brunei, the variety of applications that their products are being used in continues to grow. Collaboration with other Kisters Group companies is also ongoing and 2010 will be a great opportunity to build on the work that has already been done. iQuest have just released a newsletter and unveiled a freshly updated website. You can check this out at <http://www.iquest.co.nz>.

## Contact Information

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

Homepage: <http://www.kisters.com.au>

All support and accounts questions should be directed to [support@hydstra.com](mailto:support@hydstra.com).

All personal Kisters email addresses in Australia are of the form [firstname.lastname@kisters.com.au](mailto:firstname.lastname@kisters.com.au), but all general emails should be addressed to [support@hydstra.com](mailto:support@hydstra.com).

### *Canberra*

Unit 4A, 24 Mahony Court  
Weston ACT 2611

PO Box 3476  
Weston Creek ACT 2611, Australia  
Phone +61 2 6288 2302, Fax +61 2 6288 9061,  
Email [support@hydstra.com](mailto:support@hydstra.com)

### *Hobart*

Level 4, 2 Kirksway Place,  
Battery Point, Tas 7004  
GPO Box 1390  
Hobart, Tas. 7001  
Phone +61 3 6224 8252, Fax +61 3 6224 8414

### *Sacramento*

7777 Greenback Lane, suite 209  
Citrus Heights, CA 95610  
Phone +1 916 723 1441, Fax: +1 916 723 1626

### *Aachen*

Charlottenburger Allee 5  
52068 Aachen, Nordrhein-Westfalen, Germany  
Phone +49 241 9671-0, Fax +49 241 9671-555

### *France*

KISTERS France SAS  
11Bd de la République  
78400 Chatou  
Phone +33 1 30 71 62 54

### ***Italy***

Temistocle Li Vigni, General Manager  
GEOSPHERA Hi-Tech Supplies  
85 Via Panoramica  
Ercolano (NA) 80056 - ITALY  
<http://www.geosphera.com>  
Phone +39 081 777 9541,  
Fax +39 081 739 2596  
Mobile +39 335 601 3998

### ***Spain***

C / Gabilondo N°15 Principal  
E-47007 Valladolid, Spain  
Phone +34 983-228134, Fax +34 983-276876

### ***Shanghai***

Fushan Road 450, 10F  
Pudong New Area  
200122 Shanghai  
China

### ***iQuest (NZ) Ltd***

PO Box 15 169  
Dinsdale  
Hamilton 3243 New Zealand  
Core Facilities Building  
Waikato Innovation Park  
Ruakura Lane  
Hamilton 3214 New Zealand  
Phone +64 7 857 0812 (DDI), Fax +64 7 857 0811,  
Mobile +64 21 489 617