



Newsletter #1

This, the first Newsletter of the TDWG, is primarily to update inaugural members – thanks for your support in this venture – but it can also serve to inform others. A major aim of PUB is to engage the international hydrological community for a Decade (2003-2012) towards making progress in the hydrological science related to estimation and prediction in ungauged basins¹. Several Working Groups are being established as “...the main engines of PUB research activities”. If you are not part of the TDWG yet but would like to be, please contact the Organisers (our email addresses are given at the end of this Newsletter).

The following is rather longer than I (certainly) and you (probably) would like but I hope you can find time to consider it carefully and then contribute to the (email) discussion we need early in 2004 in order to develop a clearly defined purpose for the TDWG within the PUB framework. PUB Working Groups enjoy a large measure of freedom in deciding how they organise themselves, what they do and how they do it. The TDWG should respond to this situation. I am happy to be TDWG Organiser (with Barry Croke and David Post as Co-organisers) but this should be agreed by the Group at some stage (I suggest at session #11 iEMSs2004 – see later). We should also, as a Group, decide if we wish to change the ‘officers’ of the Group from time to time and, if so, how often. Our Terms of Reference can be amended accordingly. Comments on any aspect of the TDWG, by email, can be either to the whole Group or to me, depending on their nature and at your discretion.

The IAHS PUB Decade (2003-2012) started formally in June 2003, when the IAHS Bureau accepted the Science and Implementation Plan¹ (for an abridged version of the Plan see *Hydrological Sciences Journal*, 48(6), 857-880, Dec 2003). Members of the PUB Science Steering Group (SSG), with others, are actively promoting PUB and arranging PUB-related workshops, conference sessions and symposia 2003-2005 (I’ll mention a few).

Nationally/regionally, the French hydrological community were pretty quick off the mark, holding a PUB Workshop 17-19 November² at which I talked on “Regionalisation of unit hydrographs: an example of the top-down modelling approach for predicting continuous flow in ungauged basins”. A joint Australia/Japan PUB Workshop is being held 2-5 February in Perth, Western Australia³. There may be a PUB Workshop later in 2004 in the UK.

Forthcoming international meetings with a PUB component, which affect the TDWG directly, are the EGU2004 meeting in Nice, France, 25-30 April, 2004⁴, and session #11 of iEMSs2004, 14-17 June, University of Osnabrück, Germany, “Modelling

¹ <http://iahs.info> and/or <http://cee.uiuc.edu/research/pub>

² http://www.enpc.fr/cereve/atelier_PUB/

³ <http://www2.cwr.uwa.edu.au/~pub2004/>

⁴ <http://www.copernicus.org/EGU/ga/egu04/>



Prediction in Ungauged Basins (PUB)
The 'Top-Down modelling
Working Group (TDWG)



Hydrological Responses in Ungauged Catchments”, which I am organising with Barry Croke and David Post⁵. Further off, there will be a PUB Symposium at the IAHS General Assembly in Brazil, 4-9 April, 2005¹.

VIIth IAHS Scientific Assembly *VII^e Assemblée Scientifique de l’AISH*



Foz do Iguaçu (Brazil)

For EGU2004, PUB WG organisers have been asked to present papers outlining progress in their areas. With no agreed technical programme or progress to report yet, I will present a holding ‘position paper’ (co-authored by Barry and David), (a) restating/outlining what we are about in general terms (see “The role of ‘top-down’ modelling...”, *Hydrological Processes*, 17, 1673-1679, 2003) and (b) advertising iEMSs2004 session #11 as a landmark meeting at which the TDWG will be formally launched⁶. Several TDWG members are contributing papers for session #11 iEMSs2004 and we hope many other members will be able to attend. Interest has been very high. We currently have 29 papers, which will cover 2 full days, and plan to have 3 TDWG-oriented discussion periods (at the start, middle and end) helping to break-up the papers. Through discussion between now and session #11 iEMSs2004, and at that meeting, we need to arrive at a clear identity for the TDWG within PUB. We

⁵ <http://www.iemss.org/iemss2004/>

⁶ Unfortunately neither I or Barry or David were able to attend.



need to plan for a PUB *Decade*. However, in the short/medium term we need to develop a better picture of what topics will be addressed by which sub-groups of the TDWG. So your immediate input is very much needed. To help things along, here are 4 starters for consideration.

1. A sub-topic that Barry, David, myself and others have identified is the further development and application of the unit hydrograph regionalisation approach for simulating continuous streamflow at ungauged sites using physical catchment descriptors. This topic has emerged principally from UK/Australia research over the past 2 or 3 decades (e.g. 'standard procedure' engineering hydrology methods, and the IHACRES and data-based mechanistic modelling approaches). We want to continue developing techniques and software, with a major objective of reducing predictive uncertainty. This sub-group comprises TDWG members from CEH and Lancaster (UK) and ANU and CSIRO (Australia) but other contributors are very welcome (please contact us if you are interested). We are currently developing a project proposal for this sub-group that will be submitted for funding from the UK Natural Environment Research Council.

2. To complement item 1 above, the TDWG should review the state-of-the-art of, and develop expertise in, the geomorphological instantaneous unit hydrograph (GIUH) approach, comparing its efficacy with that of IHACRES/DBM approaches. Is there anyone with the necessary expertise who wishes to develop the GIUH angle?⁷ A comparison of UH techniques (items 1 and 2) for flow regime regionalisation could be an excellent objective of the TDWG.

3. A third sub-topic is the development and application of scaling theory and related mathematical techniques (e.g. chaos?) to assist with prediction in ungauged basins.

4. PUB is not restricted to water quantity. It will also address water quality and hydroecology issues. I have a personal interest in algorithms for estimating river mass loads at gauged sites (where flow and concentration data are available) with a focus on the uncertainties involved. Others in the TDWG have more experience of modelling water quality and 'export coefficient' methods for surveying fluxes of material from ungauged basins. There is surely scope for developing a TDWG water quality campaign. Similarly, the TDWG should develop a hydroecology campaign. TDWG champions for water quality and hydroecology – please step forward now.

Further sub-topics for the TDWG will be identified by others. But we need 'champions' for each one. Please don't hesitate to comment on the ideas above and to offer your own, so that we can present a good basis from which to launch the TDWG at iEMSs2004.

Although there are specific technical issues that I hope to pursue personally and with others via the TDWG, I feel unable to orchestrate in detail the range of science/techniques that the TDWG may want to address. However, I do feel able to offer administrative co-ordination (which is what these notes are attempting to initiate). Please consider whether you might take the lead within the TDWG for a

⁷ Dr Hua Lu has expressed an interest.



Prediction in Ungauged Basins (PUB)
The 'Top-Down modelling
Working Group (TDWG)



technical area of your choice. I would very much like to hear from you. If you know of someone who might do the job in an un-championed area, and is not currently a member of the TDWG (but probably would like to be), please let me know and we'll see what can be done.

I am a member of the PUB SSG (since September 2003). In that capacity, but also in the context of the TDWG, an issue that needs to be clarified early on in 2004 is the relationship between the 'grassroots upwards' aspects of PUB and its more formal structure. The purely grassroots upwards aspect can be satisfied by (groups of) individuals submitting papers to PUB workshops, symposia, etc. arranged by IAHS and others (i.e. business as usual). However, in order to maximize the chance of progress beyond what that might bring, the WGs (as "...the main engines of PUB research activities") need to design and implement research campaigns according to the aims and objectives of PUB in its Science and Implementation Plan. This will require co-ordination. I hope the balance between grassroots upwards and co-ordination for the TDWG conveyed in this Newsletter is about right. Please, do let me/Barry/David know your views on this issue for the TDWG, and for PUB more generally.

Best regards

Ian Littlewood, TDWG Organiser, CEH, Wallingford, UK (igl@ceh.ac.uk)

Barry Croke, TDWG Co-organiser, ANU, Australia (barry.croke@anu.edu.au)

David Post, TDWG Co-organiser, CSIRO, Australia (David.Post@csiro.au)

January 2004

Appended: Top-Down Modelling Group - Inaugural Members (December 2003)



Prediction in Ungauged Basins (PUB)
The 'Top-Down modelling
Working Group (TDWG)



Top-Down Modelling Group - Inaugural Members (December 2003)

Giuseppe Aronica,	Messina University	Italy	aronica@ingegneria.unime.it
Richard Brazier	Sheffield University	UK	richard.brazier@shef.ac.uk
Francis Chiew	University of Melbourne / CRCCH	Australia	f.chiew@civenv.unimelb.edu.au
Robin Clarke		Brazil	clarke@iph.ufrgs.br
Barry Croke, ⁺	The Australian National University	Australia	barry.croke@anu.edu.au
Louise Heathwaite	Sheffield University	UK	a.l.heathwaite@sheffield.ac.uk
Tony Jakeman	The Australian National University	Australia	tony@cres20.anu.edu.au
Teemu Kokkonen	Helsinki Institute of Technology	Finland	tkokko@water.hut.fi
Ian Littlewood*	Centre for Ecology and Hydrology	UK	igl@ceh.ac.uk
Hua Lu	Cambridge	UK	H.Lu@damtp.cam.ac.uk
John Norton	University of Birmingham	UK	john.norton@anu.edu.au
Charles Perrin	Cemagref, Antony, Paris	France	charles.perrin@cemagref.
David Post ⁺	CSIRO	Australia	David.Post@csiro.au
Renata Romanowicz	University of Lancaster	UK	r.romanowicz@lancaster.ac.uk
Murugesu Sivapalan	University of Western Australia	Australia	sivapala@cwr.uwa.edu.au
Neil Viney	CSIRO	Australia	Neil.Viney@csiro.au
Peter Young	University of Lancaster	UK	P.Young@lancaster.ac.uk
Bofu Yu	Griffith University	Australia	B.Yu@griffith.edu.au
Lu Zhang	CSIRO	Australia	Lu.Zhang@csiro.au

* TDWG Organiser

+ TDWG Co-
organisers