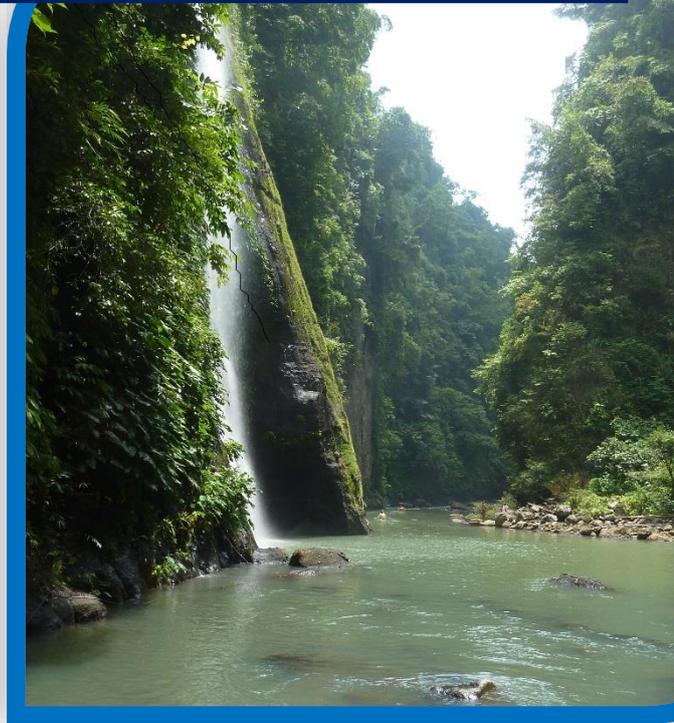


IAHR Conference Report



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1 Introduction

In early 2015, I was awarded the JD Lawson Scholarship, which provided me with the opportunity to attend the IAHR Congress. The IAHR Congress in 2015 was held in The Hague in the Netherlands. This report provides an overview of my experience at the conference.

2 IAHR Congress

The International Association of Hydraulic Research (IAHR) is one of the leading bodies internationally for hydraulics, and the Congress is one of the leading hydraulics conferences in the world. Hundreds of leading researchers and practitioners come to this conference from all over the world to share research and experience in hydraulics and hydraulics related fields. There was a strong representation from Europe given their proximity, but also a significant number of attendees from all over the world.

The topic areas covered by the conference were large in scope. Some of the key topic areas covered by the conference were:

- Coastal Engineering;
- Floodplain hydraulics;
- Water Sensitive Urban Design/ SUDS/ BMPs;
- Flood Risk Management;
- Climate Change;
- River Engineering;
- Eco-hydraulics;
- Sediment analysis for rivers and coasts.

3 The Experience

3.1 Location

The Congress was held at the World Forum, just outside the main city of The Hague. I stayed in Delft while I was attending the conference, which is roughly 20 minutes by tram to the conference venue. However, most days I borrowed a bicycle from the hotel and cycled to the conference venue, in true Dutch style.

I really enjoyed cycling along the old cobbled streets and canals of Delft and The Hague on the way to the conference in the morning, which is a nice way to start the day.

In the evenings, the chance to see some of Delft and The Hague, experience dining in the cafés and restaurants in the old town was very nice.

3.2 Initial Impressions

The IAHR Congress is a large conference, and this really became apparent during the opening. This was held in the main hall of the conference venue, and the number of people, all whom are involved in hydraulics in some way, was impressive.

During the opening address, the organisers specifically mentioned and had a slide on the JD Lawson Scholarship, Engineers Australia and myself. I was quite honoured by this, and I am sure that it also helped to raise the profile of Engineers Australia.

3.3 Topic Areas of Interest

There were numerous topics presented throughout the conference. My key focus was on attending the presentations in line with my areas of interest, namely:

- Water Sensitive Urban Design/ BMPs/ SUDS;
- Floodplain and structure hydraulics;
- Flood risk management;
- Hydrology.

However, I also ensured that I ventured into a number of the other related topic areas. These included:

- Oil dispersion, as it relates to oil spills. While highly complicated, there was some interesting key note presentations in this area.
- Eco-hydraulics. This is not an area that I have had significant experience in, but I am interested to develop my skills in this area which overlaps both ecology and hydraulics together. I found a number of these presentations highly interesting.

3.4 Social Functions

Unfortunately, while I was originally scheduled to attend the field trips, my son became ill on this particular day and I regrettably had to miss this. However, I attended the conference dinner in Maduradam on the Friday of the conference.

Maduradam is a miniature world setup for families and tourists, with lots of miniature versions of buildings from all over the Netherlands. It was an unusual venue for a conference dinner, but did provide some entertainment for the guests.

Having a conference dinner on a Friday night is unusual for a conference. However, in many ways it worked well as I was able to catchup with many of the individuals that I had met throughout the conference, and it was a good opportunity to discuss things with them on a more social basis.

In addition to the formal conference functions, there were the lunches and breaks during the conference proceedings. These were a good opportunity to meet various people in the industry, and also catchup with a number of people that I have met over the years at other conferences.

4 Presentation of Conference Papers

At the Congress, I had the opportunity to present three separate papers:

- Thomson R, Drynan L, Ball J, Veldema A, Phillips B & Babister M. *Flooding Risk Assessment in Stationary and Non-Stationary Environments*
- Thomson R, Wood D, Retallick M & Babister M. *The Human Factor in Hydrology*.
- Thomson R, Back W, Middleton I, Tokam H, Evans L & Hammersley D. *South Fly Village Relocation*.

The opportunity to present these papers to leading experts from around the world was a unique experience. Following the presentations, I had several questions on each of the papers, and also follow up discussion during the breaks. It was good to discuss the specifics of the work with attendees, and to gain some insight on similar or related experiences that they had had.

I was also the co-author for a poster paper:

- Evans L, Thomson R, Phillips B & Golaszewski R. *Optimisation of the Flood Infrastructure for the Penrith Lakes Scheme in NSW, Australia*.

While the poster paper provided less opportunity to discuss the work with the conference attendees, it was nice to have the work available for review by the conference.

5 Selected Papers

There were many interesting papers throughout the conference, and it is difficult to pick out highlights. However, the following two papers for me were particularly interesting.

5.1 Performance of WSUD in UK

Multiple event analysis of fine sediment pollutant transport through Sustainable urban Drainage Systems. Deonie Allen, Scott Arthur, Heather Haynes, Valerie Olive

The aim of this research was to track the long term performance of WSUD treatment trains (or SUDS in the UK) in the removal of various pollutants. The research had been undertaken on some pilot sites in the UK, which had been constructed in accordance with the UK guidelines, and included swales and wetlands for the treatment of runoff from a residential area.

In order to track the fate of the pollutants, they had attached rare earth metals to the pollutants, and placed a small portion of these throughout the catchment. This way, they would follow the path of the other pollutants throughout the catchment. They then monitored the concentration of these pollutants throughout the treatment train over long period of time.

The key outcome of this analysis, based on these catchments, was that the performance of these treatment systems was in accordance with the guidelines for a particular event (for example, the removal of TSS). However, over the long term the pollutants continued to migrate throughout the system. Therefore, while you may achieve an 80% reduction in TSS, for example, for a particular runoff event, this might reduce to 20% when you consider it over the long term and over multiple events.

This was fascinating research, and the first that I am aware of in this area. The majority of the research to date focuses on event based performance, but does not necessarily look at this longer term performance. The use of these rare earth metal tracers allowed for this longer term assessment to be made, and could have some very interesting outcomes to the way in which we look at WSUD.

5.2 Bay of Fundy, Canada

Hydrodynamics and Sediment Dynamics in Macrotidal Drainage Channels and Salt Marshes. Ryan Mulligan, Logan Ashall, Danika van Proosdij, Emma Poirier

This paper was investigating the potential impact of tidal power on sensitive intertidal zones within an estuary in Canada.

There is current work being undertaken to look at the feasibility of incorporating tidal power in this estuary, as there is relatively strong tidal currents at the constrained entrance to the estuary. However, the estuary also has a number of sensitive intertidal zones, and the paper was focused on assessing whether the incorporation of these tidal power generators would affect that area, and if so, whether there was an “optimal” number of tidal power generators that would be suitable.

The key issue was that the tidal power generators would reduce the tidal currents entering the estuary, as they convert that to electricity. The research developed a model of the estuary and found that this had the potential to reduce the velocities coming into the estuary reasonably substantially, depending on the scale of the tidal power generation. However, this impact was not so significant from an ecological sense for the main body of the estuary.

However, there are expansive areas of shallow intertidal zones, that are only inundated at the peak of the tide within the estuary. These are generally similar to salt marsh in Australia estuaries. In these areas, the analysis had demonstrated that the presence of a significant amount of tidal power had the potential to reduce the inundation in these areas.

This was interesting for me, as it is not an area that I would typically be involved in. It is also not necessarily an impact on the environment that you might naturally think of in terms of hydropower.

6 Summary

The IAHR Congress allowed me to further involve myself with the international hydraulics community, further my knowledge in the leading areas of research and to also show case work that has been undertaken in Australia. I am grateful for this opportunity.

