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TECHNISCHE UNIVERSITÄT BERLIN  
FG Wasserwirtschaft und Hydroinformatik

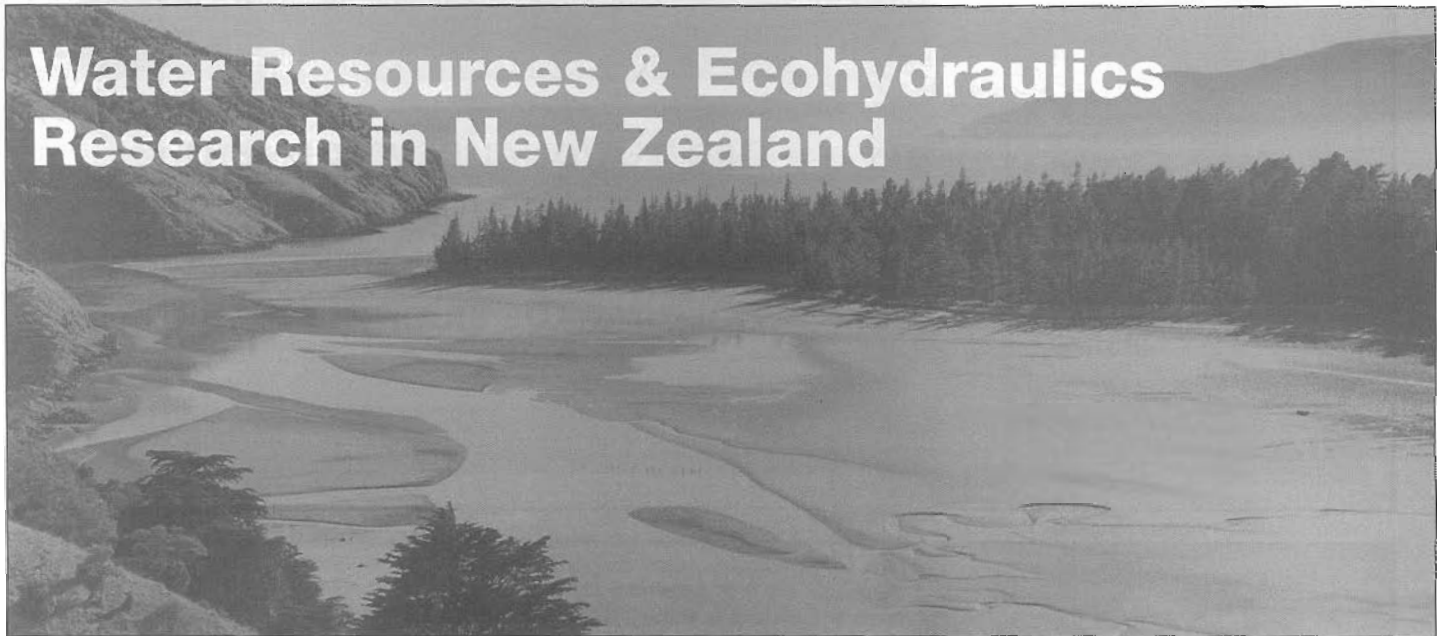
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# Newsletter 1

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## Water Resources & Ecohydraulics Research in New Zealand

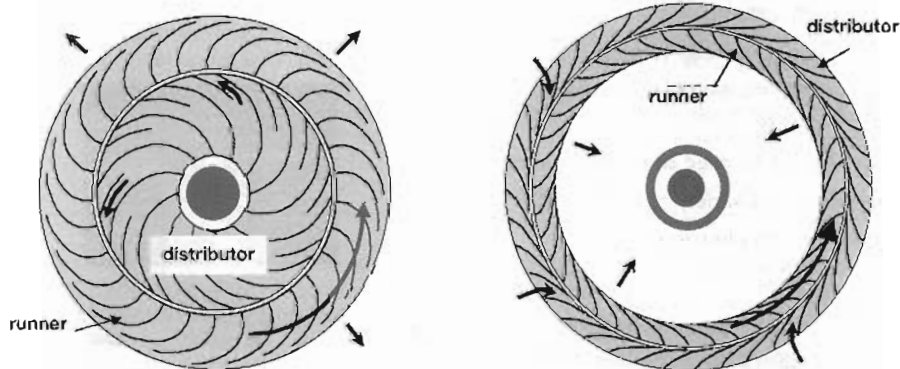
Church of the Good Shepherd - Tekapo

Read about it on page 5

## Chronicles on the History of Hydraulics

### History of the Development of the Hydraulic Turbine: 1830-1930

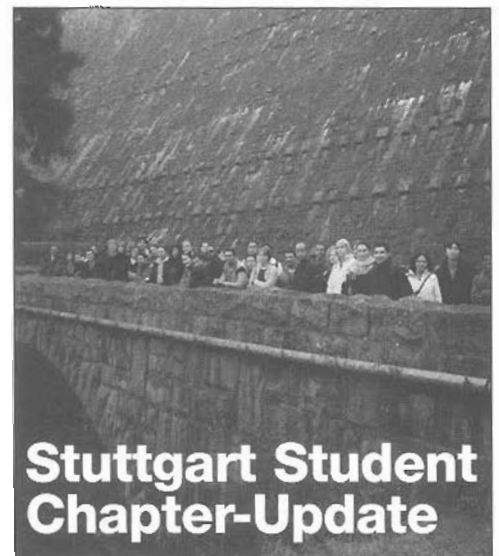
The present chronicle of our series of articles on the history of hydraulics delves into the development of the Hydraulic Turbine. From the initial designs of radial flow reaction turbines - Fourneyron (1830), Francis (1855) - to the axis horizontal ones. Continues on page 8



The initial designs of radial flow reaction turbines: left, Fourneyron (1830), right, Francis (1855)



Website Visitors Growing Page 11  
2006-2007 Co-Sponsored  
Conferences Page 12  
Roll of Honour Page 13



### Stuttgart Student Chapter-Update

Excursion to Schwarzenbach Dam in Forbach (Black Forest)

Read about it on page 6

temporary measuring equipment and researchers' needs. In addition to being involved in organizing special events at scientific meetings, he was also involved in setting IAHR's instrumentation database web site ([www.iahr.uiowa.edu/~iahr-his](http://www.iahr.uiowa.edu/~iahr-his)) – an open platform aiming at balancing the users' needs and manufacturers' capabilities in hydraulic instrumentation. Recognizing the importance of such resource, the database is currently moved on the IAHR website.

During XXXI IAHR Congress in Seoul, Dr. Prodanovic handed his role of the HIS Secretary to Vladimir Nikora, The University of Aberdeen (Scotland), who will continue to promote recent initiatives in concert with other HIS members. Over a period of 25 years Vladimir's research

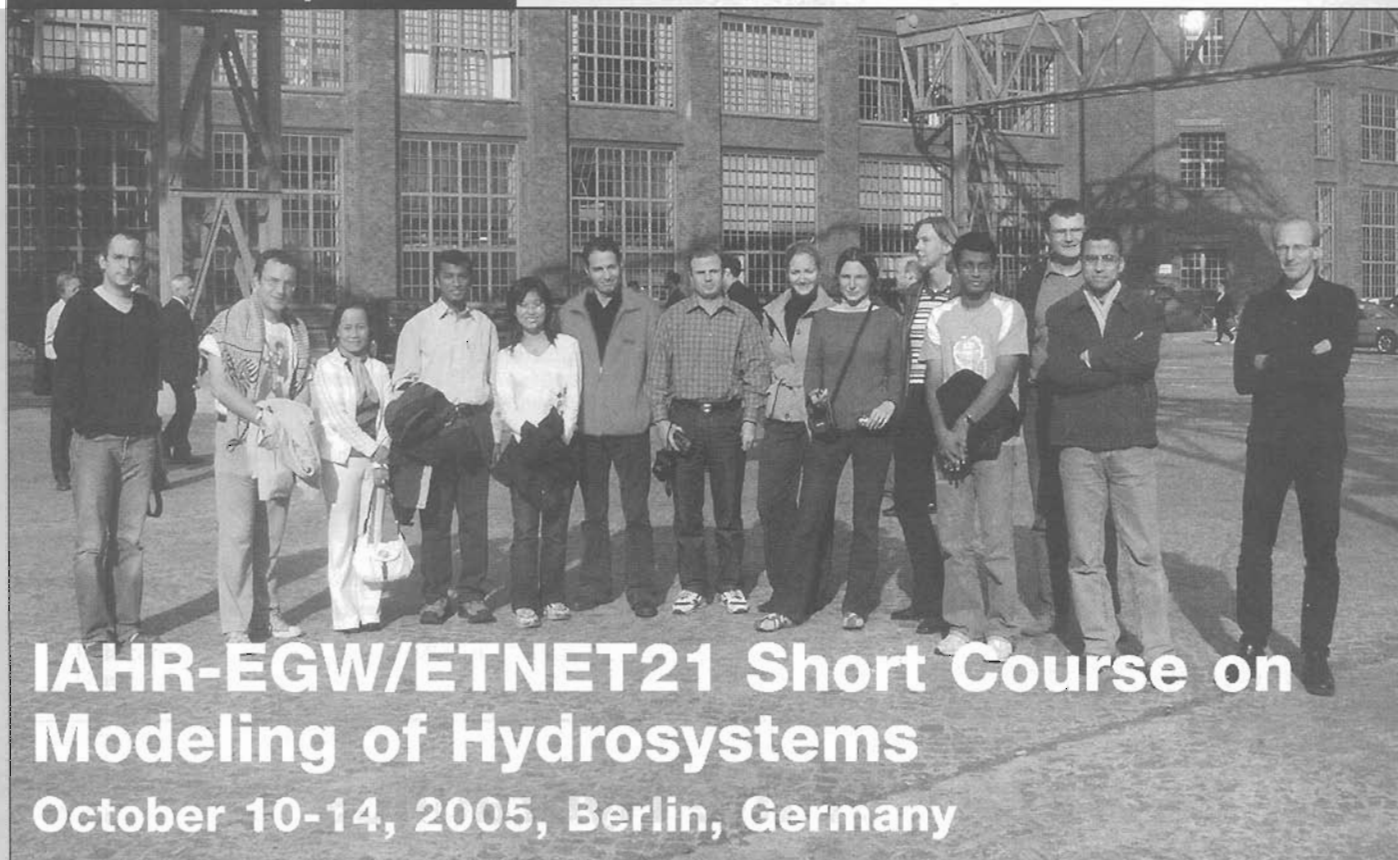
has covered a wide range of topics, including hydraulic instrumentation, turbulence, sediment transport, morphodynamics, and flow-biota interactions. He published two books and more than 100 journal papers. Prof. Nikora has extensive experience in laboratory and field measurements of sediment dynamics, turbulence, and flow-biota interactions and will further strengthen the Hydraulic Instrumentation Section.

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## Conference Report



*Course participants and instructors in front of the Institute of Civil Engineering, TU Berlin*

The short course "Modeling of Hydrosystems" of the Engineering Graduate School Environment Water (IAHR-EGW) was conducted in a cooperation with the European Master Program 'Euro Aquae - Euro Hydro-Informatics and Water Management in a collaboration between the Department of Water Resources Management and Hydroinformatics, TU Berlin, the Institute of Geocology, University of Potsdam, the Institut für Bauminformatik, BTU Cottbus, Bundesanstalt für Gewässerkunde (Federal Office of Hydrology), Koblenz and the Ingenieurgesellschaft (Engineering Company) Prof. Dr. Sieker mbH, Dahlwitz-

Hoppegarten. The lectures given by the course directors Prof. Hinkelmann, Prof. Zehe and Dr. Molkenhain were complemented by lectures of Prof. Holz, Dr. Sieker, Dr. Rouault and Mr. Krahe.

It was our pleasure to welcome 15 undergraduate students, PhD students as well as professional engineers which came from Germany, Italy, Scotland, Hungary, Russia, Palestine, Syria, Irak, India, China and Vietnam. The international participants contributed to a vivid exchange as well as a very agreeable atmosphere throughout the course.

The short course offered an overview of recent and newly developed hydrodynamic-numerical, hydrological and information modeling methods and techniques to efficiently solve research and practical problems in hydro- and environmental engineering. The main focus was put on generalized methods, different modeling approaches and their collaboration with information modeling to model rainfall-runoff, free-surface and sub-surface flow and transport processes as well as their interactions in hydrosystems. The short course showed the possibilities as well as the limitations of nowadays modeling of hydrosystems, and it pointed out some directions of future development.

The days were filled with lectures, demonstrations, and exchange of experiences. However, the participants had opportunities for recreation through leisure-time activities offered by coworkers of TU Berlin. Our ice-breaker party and boat trip through parts of Berlin by night followed by a dinner offering typical food and local beer rounded the course off. The course evalua-

tion at the end gave it very positive marks and confirmed our impression that it had been a successful week for all participants and instructors.

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For more information of other EGW activities visit the website <http://www.wahyd.tu-berlin.de>

## Upcoming Conference

# Water Resources & Ecohydraulics Research in New Zealand

## 6th International Symposium on Ecohydraulics February 18 – 23, 2007, Christchurch, New Zealand

*Kaikoura Peninsula*

The sixth International Symposium on Ecohydraulics will focus on the links between hydraulics and biology (including flow - biota interactions). The Symposium will also focus on interdisciplinary methods for resolving conflicts from increasing water use and environmental demands.

World-wide, agricultural uses of water from rivers, lakes, and aquifers account for an estimated 65% of global water use<sup>1</sup>. New Zealand, with a population of approx. 4 million, is strongly dependent on agriculture. Indeed, the area of irrigated land has doubled since 1985 and is expected to increase by a further 28% over the next five years. New Zealand is also well served with extensive hydro-power (providing more than half the country's power needs).

BRIDGING THE GAP BETWEEN  
HYDRAULICS AND BIOLOGY

## 6th International Symposium on Ecohydraulics

While New Zealand is, by continental standards, a water rich nation (reflecting the maritime climate), the geographical configuration and associated high mountain ranges through the central parts of both main islands means that precipitation and associated river flows are very unevenly spread. For example, parts of the West Coast of the South Island receive up to 12m of rain annually, while less than 50km away annual precipitation can be less than 0.4m. Thus, water allocation is seen

as one of the most significant threats to both sustainable economic development and freshwater environments in New Zealand. In the face of ever-increasing demands for water, protection of this finite resource must address the fundamental questions of how much water river/lake/wetland ecosystems need, and what degree of variability in the hydrological regime is required, to maintain ecological and recreational values.

The above situation, together with the appropriate legislative setting (more recently the Resource Management Act), has led to a strong focus on hydrological, hydraulic and ecological science in New Zealand, and the linking of these disciplines. Early research was carried out in separate discipline areas (as has been the case world-wide) and