Book review

HYDRAULIC MODELLING – AN INTRODUCTION: PRINCIPLES, METHODS AND APPLICATIONS

Pavel Novak, Vincent Guinot, Alan Jeffrey and Dominic E. Reeve.
Spon Press, Abingdon, UK, 2010, ISBN 978-0-419-25020-3,
£34.99, 602 pp.

The subject of hydraulic modelling, including both computational and scaled physical models, is central to the design of most major hydraulic and coastal engineering schemes. Understanding and applying such models correctly is a complex matter. Worldwide, there are many students, academics and engineers in professional practice who need this understanding and knowledge. This book was designed to fulfil these requirements.

At just over 600 pages long, the book draws together for the first time a comprehensive, high-level introduction to the study of hydraulic modelling, in all its forms. It begins with four chapters describing the theoretical background relating to the mathematics, numerical techniques, hydraulics and scaled physical models. These each offer a concise summary and some excellent explanations of the concepts involved. A useful chapter then follows describing the tools and procedures used in both laboratories and mathematical toolboxes. Thereafter, separate chapters detail the specific aspects of modelling of open channel flow, environmental modelling of open channel systems, closed conduit flow, urban drainage, estuaries, coastal processes and hydraulic structures. Each of these chapters covers, in a systematic way, the mathematical/numerical/computational

techniques, the scaled physical modelling procedures and example case studies. Although the treatment of each specialist form of hydraulic modelling is necessarily limited in extent, the book provides an excellent basis for further study and is a source of reference to more specialist literature.

The four authors are all eminent professors. Not surprisingly, therefore, all the chapters are written with an authority gained from a combination of many years of teaching experience, high-level research activity and involvement in real-world hydraulic modelling studies.

The authors modestly say that it is an introduction to the subject, which although true, does not really convey the stature of the book. It is a comprehensive and high-level text, which requires a good previous background in hydraulic and numerical modelling principles to get the best out of it. It is aimed at final-year undergraduates, postgraduates and practitioners, but I suspect that it is really the latter two classes of reader who will gain most from the book.

The book is a gem for dipping into for those needing to refresh or extend their knowledge. It deserves a place in the repositories of knowledge at both academic institutions and consultancy practices.

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