

# Preface

Scour around structures exposed to a steady current has received large attention at least during the last fifty years. This is because one of the most important man-made structures, namely the Bridge, the structure constructed to allow the crossing of a river, may fail due to scouring, which is one of the major failure modes. Many excellent text books can be found on the subject, among which we would like to mention the book by H.N.C. Breusers and A.J. Raudkivi: Scouring. A.A. Balkema, Rotterdam, 1991; that by G.J.C.M. Hoffmans and H.J. Verheij: Scour Manual. A.A. Balkema, Rotterdam, 1997; and, very recently, the book by B.W. Melville and S.E. Coleman: Bridge Scour. Water Resources Publications, LLC, CO, USA, 2000.

Wave scour has not received the same kind of attention. This is partly because the use of structures in the ocean is much more recent than the bridge crossing of rivers, and partly because scour has, not to the same degree, been recognized as a failure mode. The first important contribution to the topic is by J.B. Herbich, who published two early monographs on the subject, J.B. Herbich: Scour around pipelines and other objects. In: Offshore Pipeline Design Elements. Marcell Dekker, Inc. New York, NY, 1981; and J.B. Herbich, R.E. Schiller, Jr., R.K. Watanabe and W.A. Dunlap: Seafloor Scour. Design Guidelines for Ocean-Founded Structures, Marcell Dekker, Inc., New York, NY, 1984. In these books attention was concentrated on especially pipelines and piles. It has later been recognized that the scour pattern around pipelines is much more complex and three-dimensional in structure. Pipeline scour is one of the main chapters in the present book, simply because a pipeline is a very important marine structure.

However, our aim is to describe the wave scour around other kinds of coastal and offshore structures as well, such as vertical piles, breakwaters and seawalls, just to mention the most important ones. Vertical piles of different shapes will be a very important marine structure in the future when offshore windmill farms will increase in number.

While we were working on the present book, another one, R. Whitehouse: *Scour at Marine Structures*. Thomas Telford, 1998, appeared on the market. Fortunately, our treatment is fairly different. In the present book the hydrodynamic description is very detailed, and very much based on laboratory tests in conjunction with mathematical/numerical modelling. The reason for this is that one structure is seldom alike to another, and therefore the understanding of the processes is a "must" in order to be able to predict the scour for a new structure. We hope that, with our book, we have satisfied this goal.

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