

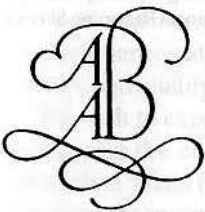
PROCEEDINGS OF THE EUROMECH 262 COLLOQUIUM ON  
SAND TRANSPORT IN RIVERS, ESTUARIES AND THE SEA  
WALLINGFORD / 26 - 29 JUNE 1990

# Sand Transport in Rivers, Estuaries and the Sea

*Edited by*

**RICHARD SOULSBY & ROGER BETTESS**

*Hydraulics Research Ltd, Wallingford*



**A. A. BALKEMA / ROTTERDAM / BROOKFIELD / 1991**



## Table of contents

Preface	v
<b>1. Sediment transport by combined waves and currents</b>	
Sediment transport in combined currents and waves <i>L.C.van Rijn</i>	3
Estimating bedload transport on continental shelves by observations of ripple migration – An assessment <i>D.A.Huntley, C.L.Amos, J.J.Williams &amp; J.D.Humphery</i>	17
Field measurements of time-averaged suspended-sediment profiles in a combined wave and current flow <i>Malcolm O.Green &amp; Christopher E.Vincent</i>	25
Threshold condition of sand particles under codirectional combined wave and current flow <i>M.S.Kapdaşlı</i>	31
Sediment pick-up in wave and current flows <i>P.B.Murray, A.G.Davies &amp; R.L.Soulsby</i>	37
Bedload transport of non-uniform sand due to waves and current <i>H.Tanaka, T.Yoshitake &amp; N.Shuto</i>	45
<b>2. Boundary layer processes under steady currents</b>	
Local resistance to turbulent flow over rough bed <i>M.L.Vajda</i>	53
A critique of wake-function velocity-profile models for sediment-laden open-channel flows <i>D.A.Lyn</i>	61
<b>3. Wave-only and wave-plus-current boundary layers</b>	
Experimental studies on non-uniform oscillatory boundary layers <i>B.M.Sumer, J.Fredsøe &amp; T.S.Laursen</i>	71

Time history of current boundary layer parameters in a North Sea storm <i>D.Myrhaug, O.H.Slaattelid &amp; K.F.Lambrakos</i>	79
Flow separation in combined waves and current <i>Rolf Deigaard</i>	87
A numerical model of the rough turbulent boundary layer in combined wave and current interaction <i>S.Huynh Thanh &amp; A.Temperville</i>	93
<b>4. Physical processes of sediment suspension</b>	
Important considerations in suspended load calculations when waves and currents are present <i>S.R.McLean</i>	103
Application of acoustic backscattering to measuring suspended sediment processes <i>P.D.Thorne &amp; P.J.Hardcastle</i>	111
Patterns of suspended sand <i>Christopher E.Vincent &amp; Malcolm O.Green</i>	117
The intermittent suspension of sand due to shoaling waves <i>Daniel M.Hanes</i>	125
Field measurements of suspended sediment concentrations in the surf zone at Walker Bay <i>J.S.Schoonees</i>	131
<b>5. Bedform dynamics (ripples, dunes and sand waves)</b>	
Bedforms, sediment concentrations and sediment transport in simulated wave conditions <i>Jan S.Ribberink &amp; Abdullah Al-Salem</i>	141
On brick-pattern ripple formation: preliminary results <i>G.Vittori &amp; P.Blondeaux</i>	149
Field measurements of suspended sediment over sandwaves <i>R.L.Soulsby, R.Atkins, C.B.Waters &amp; N.Oliver</i>	155
Finite amplitude free-bars: a fully nonlinear spectral solution <i>M.Colombini &amp; M.Tubino</i>	163
On the formation of alternate bars <i>M.S.Yalin &amp; A.M.F.Silva</i>	171
Measurements and computations of the turbulent flow field above fixed bed-forms <i>F.C.M.van der Knaap, M.C.L.M.van Mierlo &amp; M.J.Officier</i>	179
<b>6. Physical processes of bedload transport</b>	
Bedload transport on a sloping surface in asymmetrically oscillating flow <i>J.Hardisty</i>	189
Mathematical model for oscillating sheet flow <i>L.Kaczmarek</i>	197

On some problems of particles' behaviour in a shear flow <i>A.Lasek</i>	203
A granular-fluid model of the stress transfer from the fluid to the bed <i>Alberto Lamberti, Luigi Montefusco &amp; Alessandro Valiani</i>	209
Slope-inclusive bed load transport: experimental assessment and implications for models of bedform development <i>R.J.S.Whitehouse</i>	215
<i>7. Prediction of total sediment transport rates</i>	
Reliability theory applied to sediment transport formulae <i>W.Bechteler &amp; M.Maurer</i>	223
Investigations on sediment transport by luminophors in the Lower Saalach River, Bavaria <i>F.H.Weiss</i>	229
Validation of a detailed alongshore transport model <i>Robert B.Nairn</i>	233
The computation of the annual sediment transport in rivers <i>M.Vetter</i>	241
The studies on the bed sediment discharge both in the USSR and East European countries <i>G.Gergov</i>	245
<i>8. Transport of sediment mixtures</i>	
Transport of sand mixtures <i>Gordon Miles</i>	253
Sediment transport in rivers: bed roughness and grain sorting <i>P.Chee &amp; J.Allard</i>	259
Bed-load transport of non-uniform sediments <i>M.K.Mittal, P.D.Porey &amp; K.G.Ranga Raju</i>	263
<i>9. Special topics</i>	
Suspended sediment transport in axi-symmetric river bends <i>A.M.Talmon</i>	275
A model for ignitive autosuspension in brackish underflows <i>H.M.Pantin</i>	283
Author index	291