

Contents

1. Introduction	6
2. State of the Arts in Research	7
2.1 Experimental research	8
2.2 Modeling	10
3. Recent Developments and Work in Progress	11
3.1 Scope of investigation: interaction between flowing liquid and mobile bed	11
3.2 Experimental work	13
3.2.1 Laboratory of Dredging Engineering of DUT (2003-2004)	13
3.2.2 Laboratory of Institute of Hydrodynamics (2005-2008)	14
3.2.3 Tested solids	15
3.2.4 Typical measured concentration profiles	15
3.3 Analysis	16
3.3.1 Frictional pressure drop in pipe flow above stationary bed	16
3.3.2 Solids flow rate at high shear stress	18
3.3.3 Equivalent roughness of bed at high shear stress	22
3.3.4 Methodology for determination of equivalent roughness of mobile bed in alluvial channels (with particular attention to flood conditions)	26
4. Concluding Remarks and Future Outlook	27
Acknowledgements	28
References	28
doc. Dr. Ing. Václav Matoušek	31