

Turbulent hyperconcentrated sediment transport

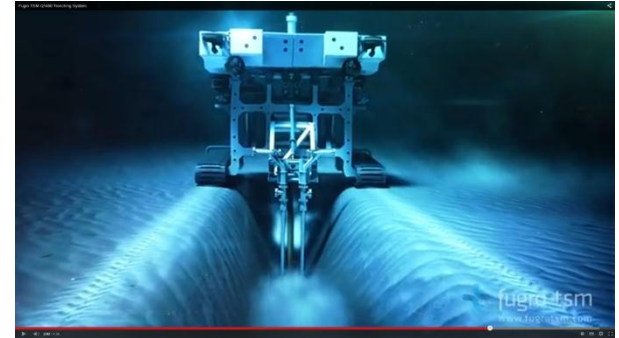
(source: www.ihcmerwede.com)



land reclamation: sediment transport and sedimentation



(source: www.engineeringtoolbox.com)



(source: fugro-tsm)

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Matchmaking event Maritime Challenges 2015, Nieuwegein

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Why study turbulent hyperconcentrated flows?

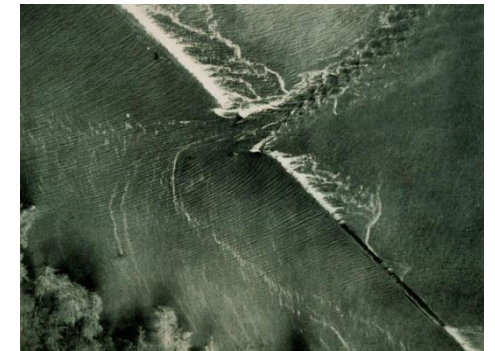
Better prediction of key dredging related applications

- Vertical and horizontal slurry pipe flow
- Jetting of sand, TSHD
- Trenching



Better prediction of damage

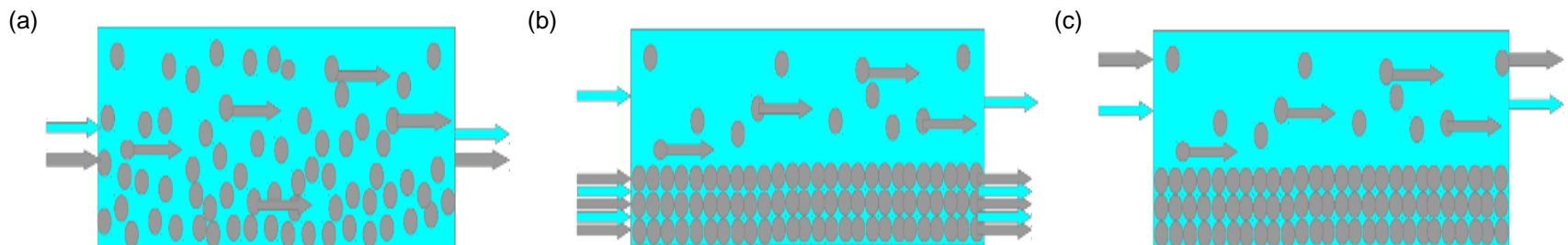
- Dike breaching
- Dune erosion
- Unstable breaching of underwater slopes
- Turbidity currents



How?

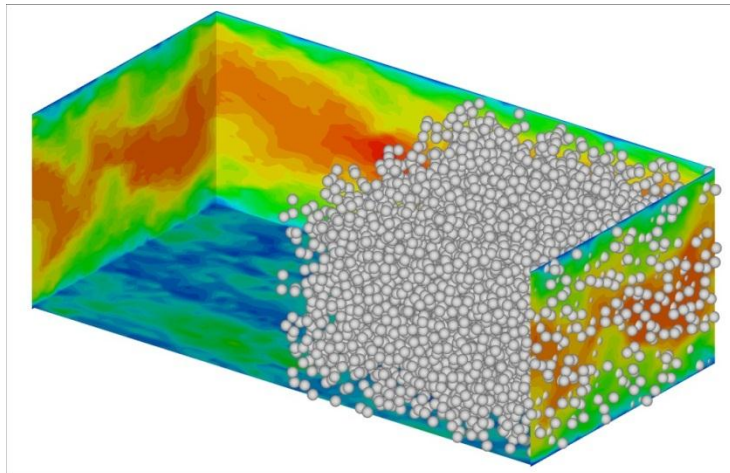
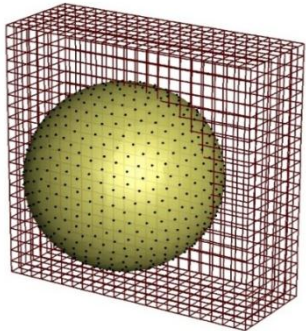
Step 1: hyperconcentrated horizontal pipeflow

- Incorporates all essential physics
- Well defined boundary conditions
- Relatively high quality data-sets available for validation
- Very relevant for the dredging and mining industry



What?

- High Performance Direct Numerical Simulations (DNS)
- Derive a continuous multiphase model from the DNS data
- Comparison with experimental data at laboratory and prototype scale



W.P. Breugem

Who?

- ✓ Stichting Speurwerk Baggertechniek (Boskalis & van Oord)
- ✓ Delft University of Technology

Looking for more collaborations!
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