

INVESTIGATING UNSTABLE BREACHING



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Sinkhole swallows car, caravan at campsite near Queensland's Rainbow Beach

Updated 27 Sep 2015, 8:51 am



PHOTO: A major sinkhole has swallowed vehicles at Inskip Point in Queensland. (Facebook: Kieren Hudson)

A major sinkhole has swallowed vehicles at a popular camping spot near Queensland's Rainbow Beach overnight.

MAP: [Rainbow Beach 4581](#)

AUSTRALIA VOTES

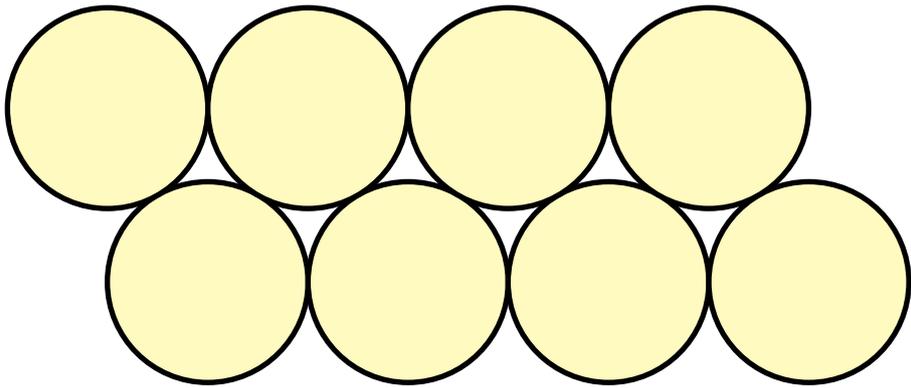
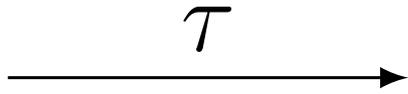
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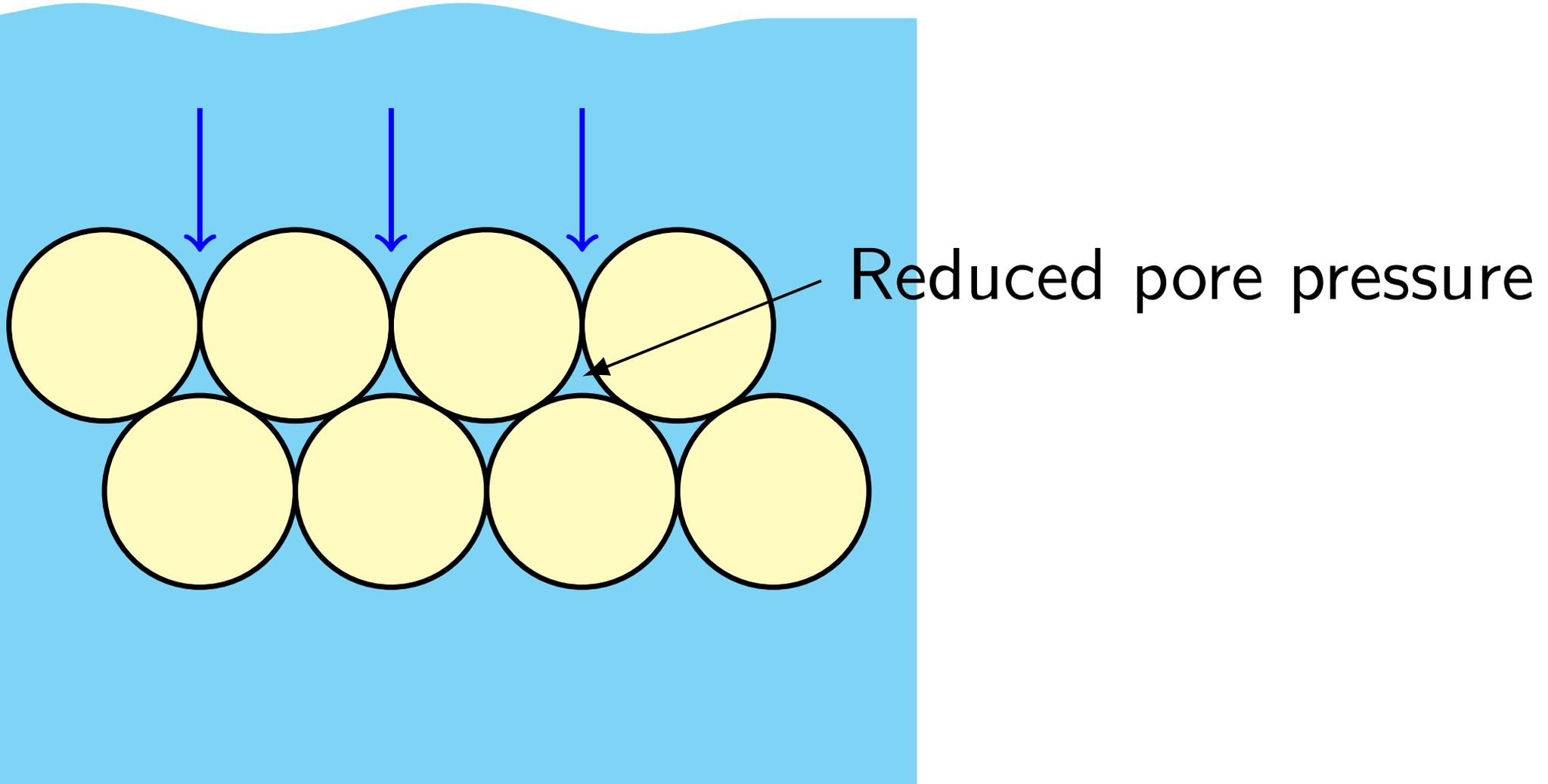
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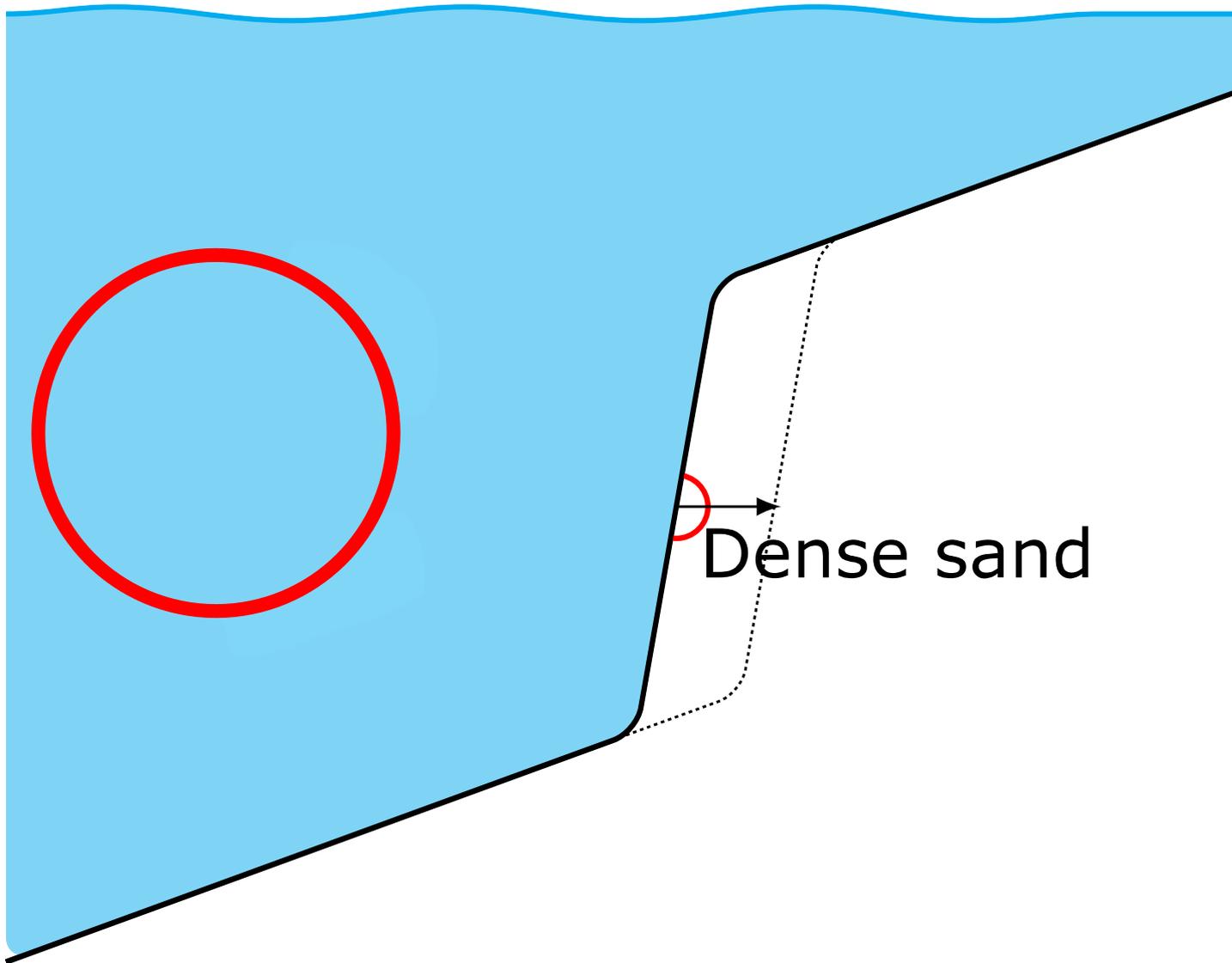
Dilatancy



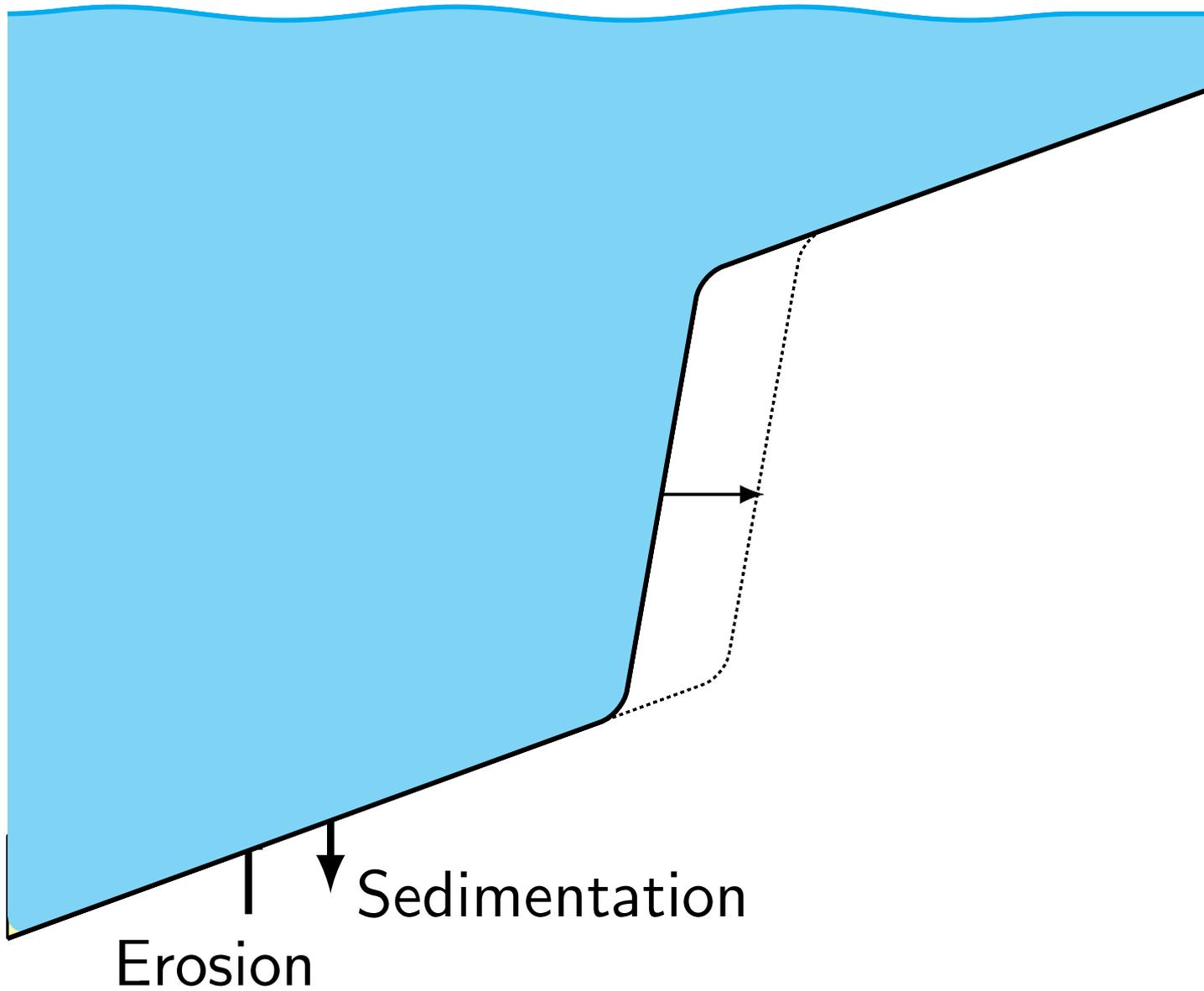
Dilatancy



Breaching

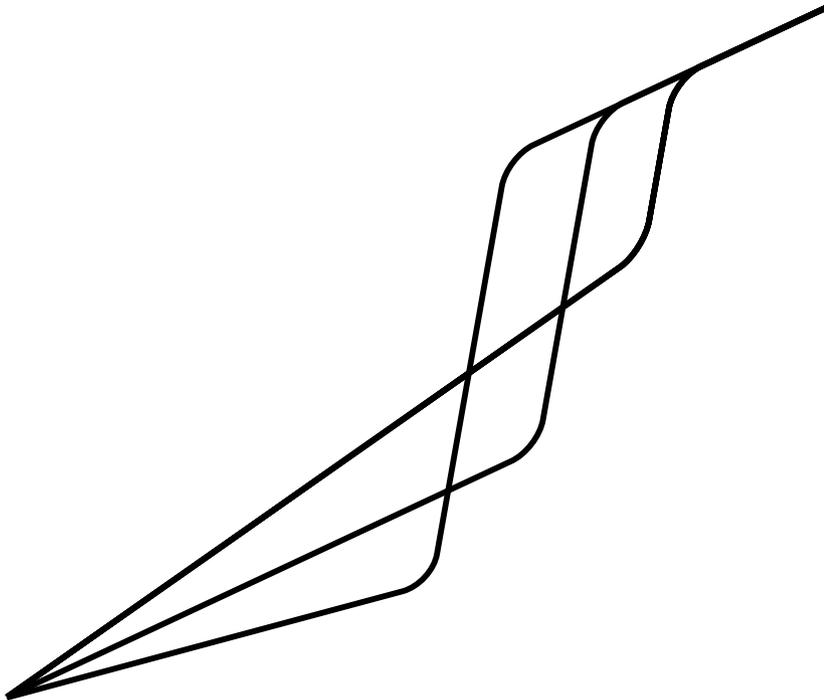


Breaching

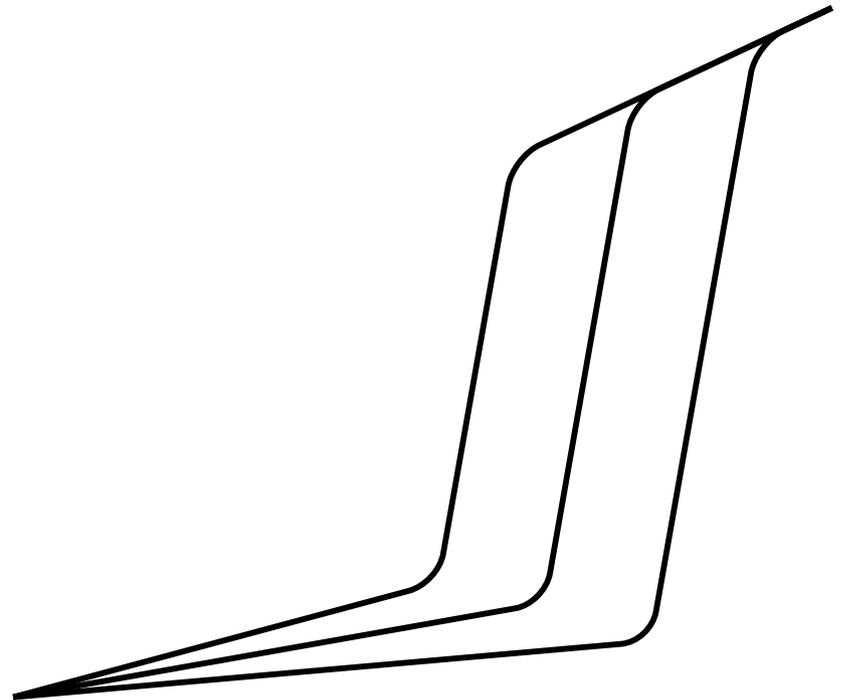


(Un)stable breaching

Stable



Unstable



Not only in Australia



Why more research?

A lot is still unknown

- Most research small-scale
- Field experiments costly and rare
- Behaviour at larger scales unclear

Our approach

Numerical model

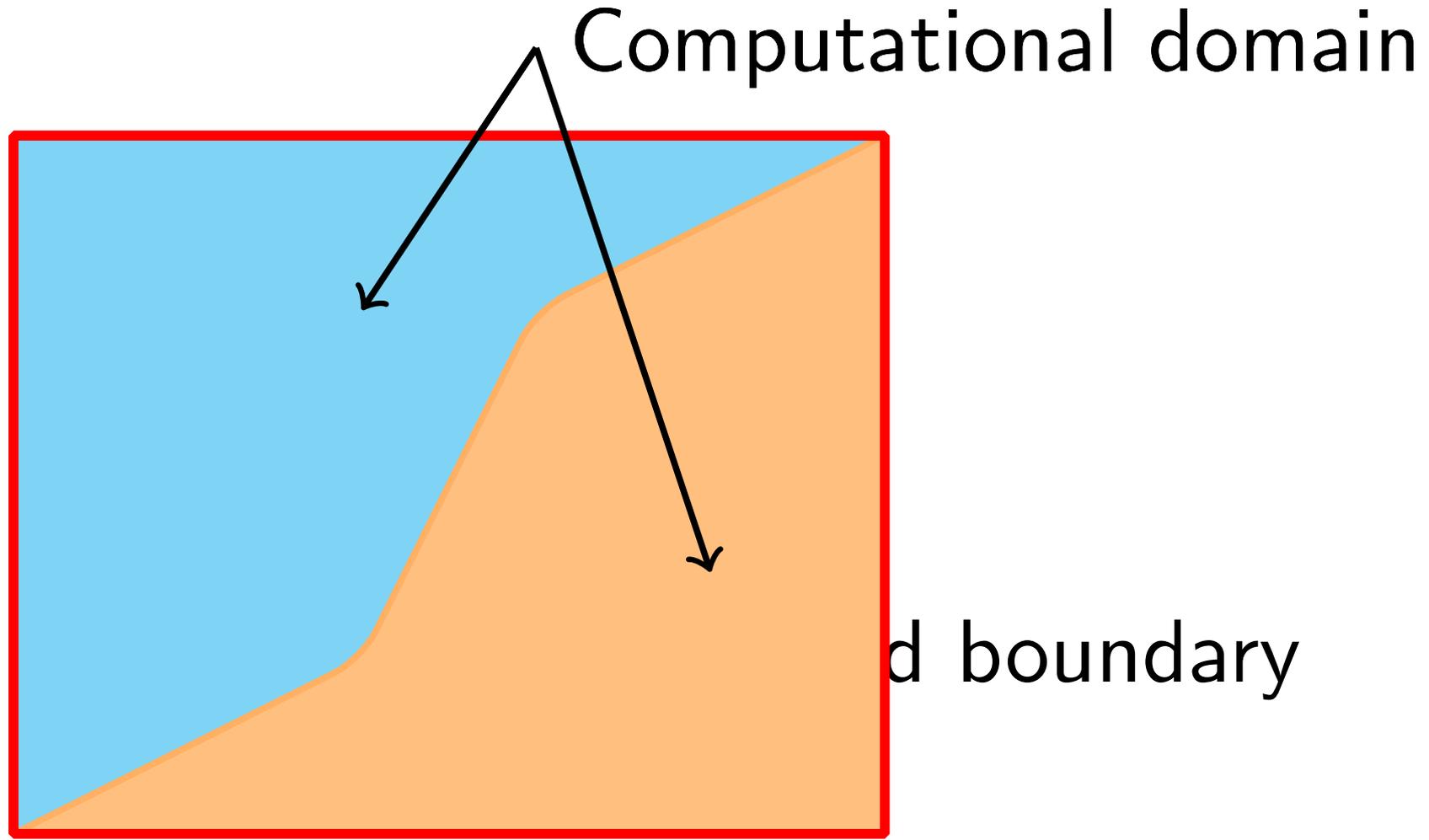
Supplemented with laboratory experiments

Numerical model

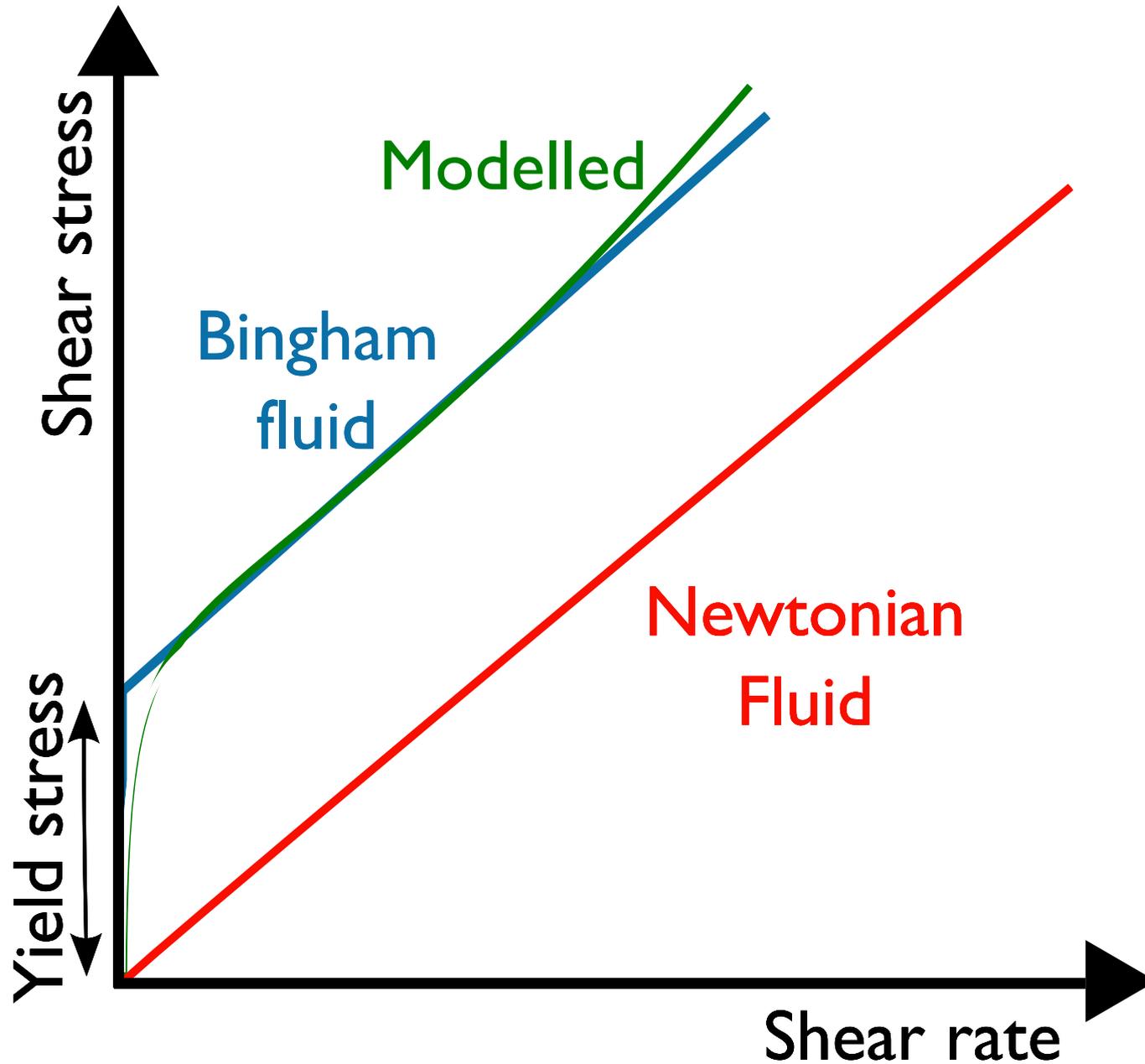
Our numerical should:

- Model turbidity currents correctly
- Model the resulting erosion/deposition
- Model the effects of dilatancy
- With reasonable computing times

Numerical model



Soil as a Bingham fluid



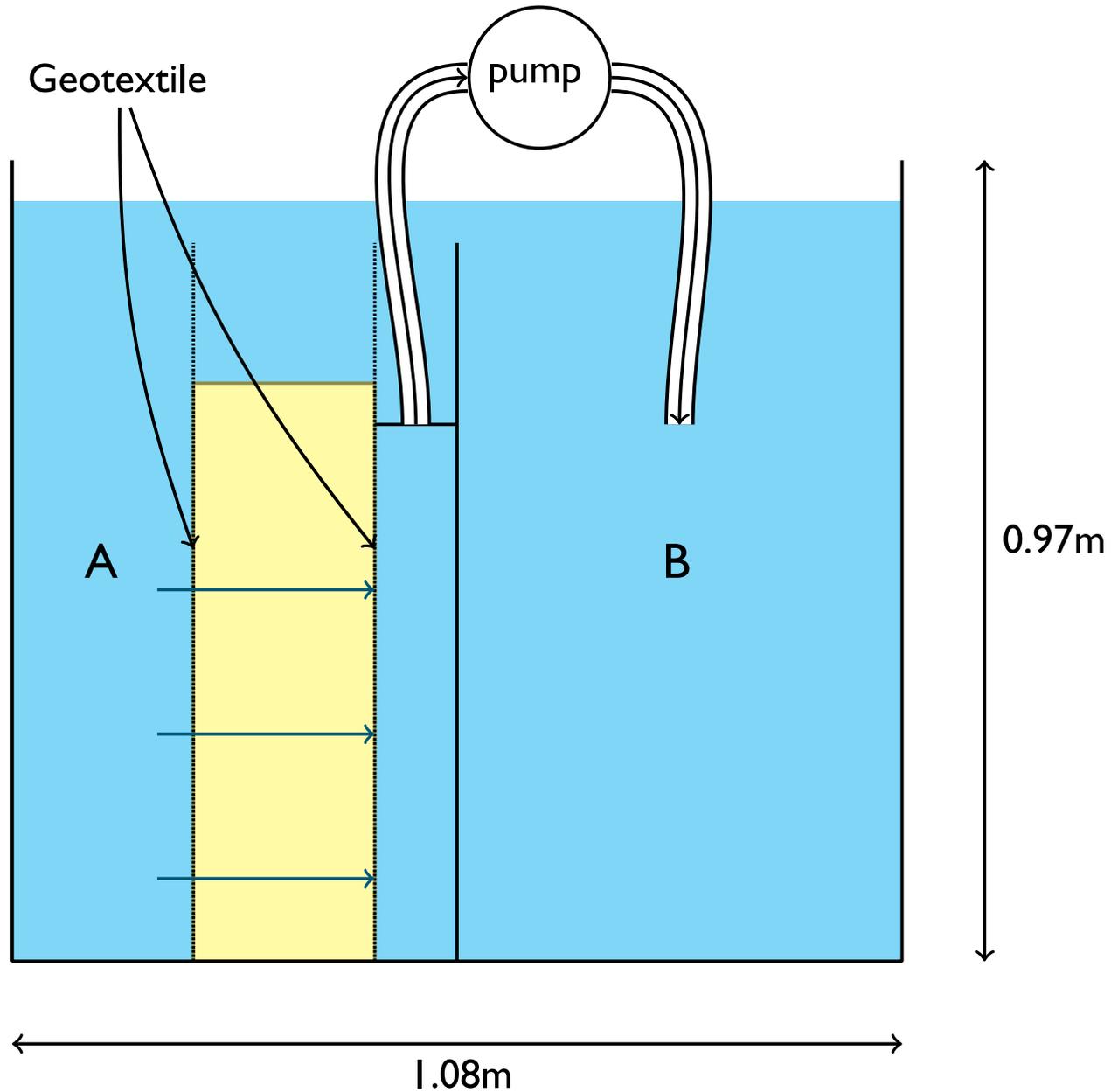
30 degrees



45 degrees



Experimental set-up



Future work

- Scale up experiments
- Including dilatancy effect in model
- Validation of model



 **TU Delft**

Van Oord



Boskalis

Deltares



Rijkswaterstaat
Ministerie van Verkeer en Waterstaat