



Spreading wide and thin? rivers, fans & deltas

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Research group

River and delta morphodynamics

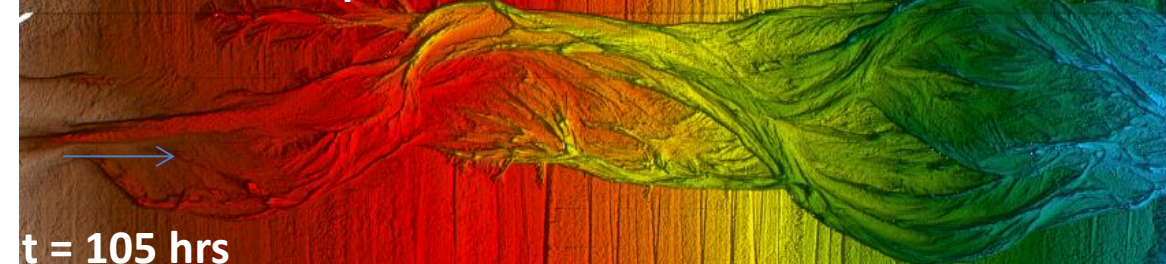
Mission: Rivers, fans, deltas and coasts build up from sand, mud and vegetation. These are important for ecology, society and oil exploration. I aim to understand how these systems form and change by fieldwork, remote sensing, scale experiments and numerical models.

Meandering & braided rivers

- Pattern difference caused by mud and vegetation on floodplains
- For the first time meanders reproduced in the lab, including vegetation, numerical modelling in progress
- Baffles & barriers in the deposits modelled



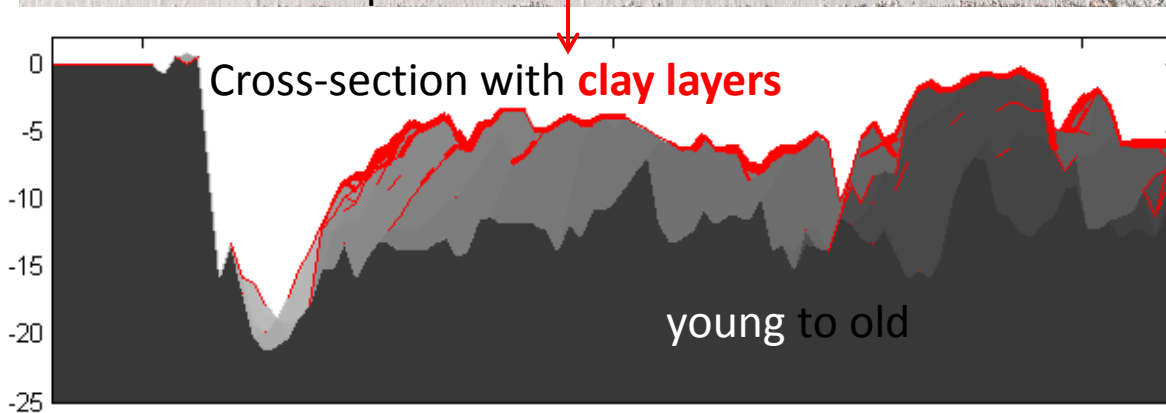
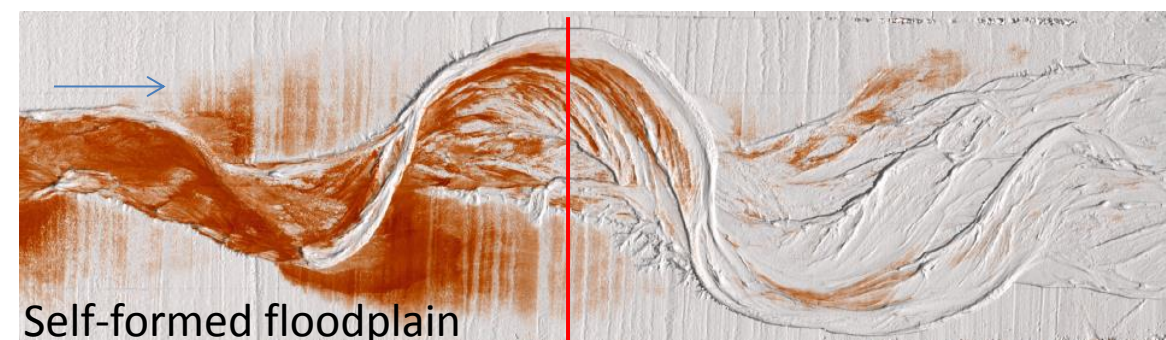
Floods, no floodplain



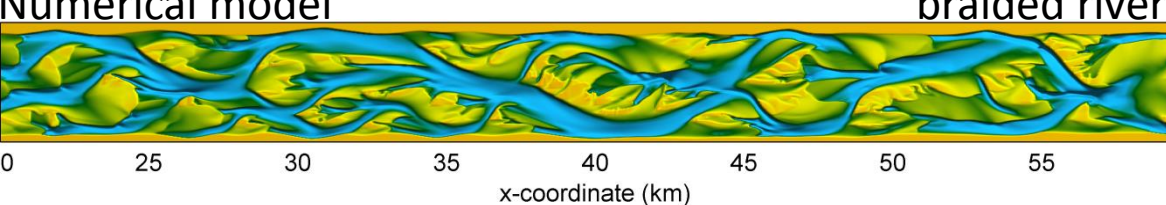
Floods, with floodplain



380 500 [mm]



Numerical model



River valleys & alluvial fans

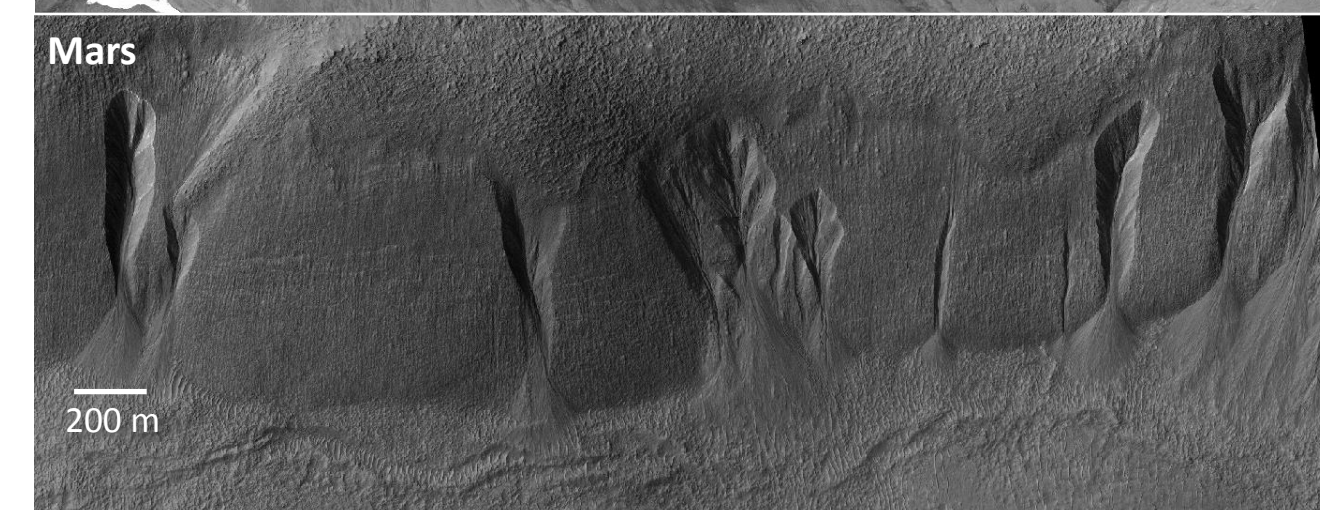
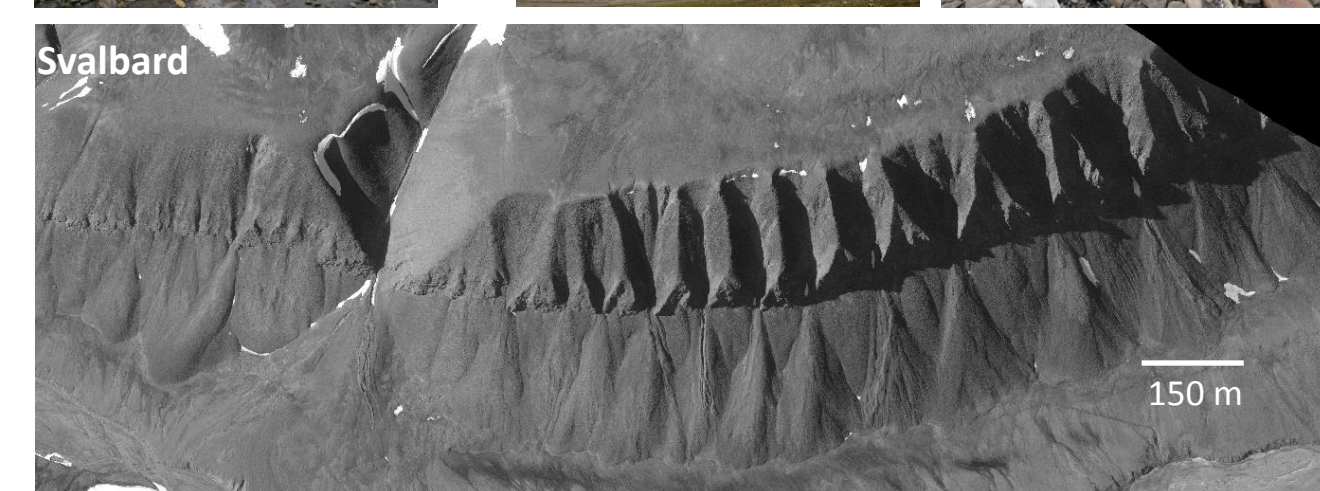
- Valley incision since the Little Ice Age and in the future
- Activity of debris flows (hazards) on fans
- Sediment delivery to rivers and fjords
- Svalbard fieldwork, remote sensing and experiments



debris flows

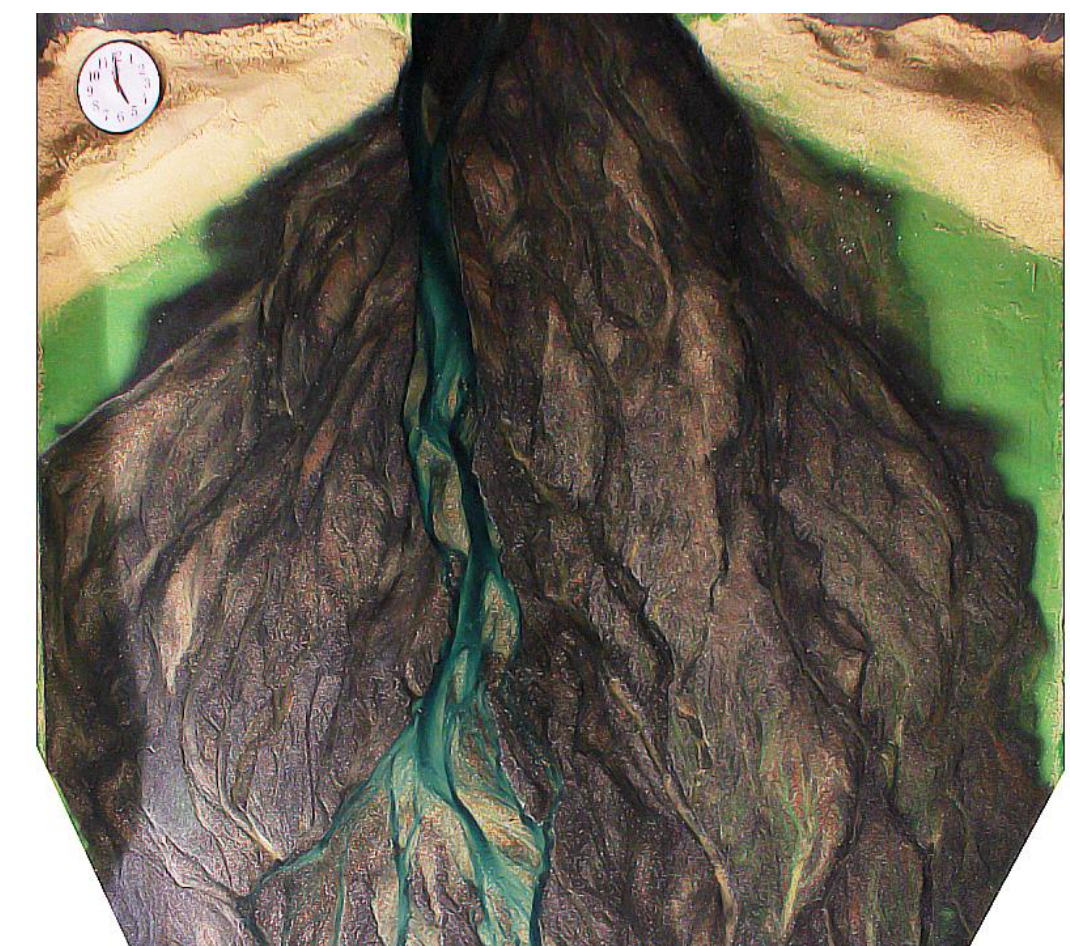


snow avalanches



Distributive fluvial systems

- Long-term sedimentation in large fan systems
- On the sea floor, oil-bearing
- Novel experiments: channel bodies and floodplain



How we apply this:

- effects of past and future climate change on erosion and sedimentation
 - Coasts
 - Rivers & deltas
 - Debris flows, hazards
- Interaction between vegetation and sediments
- oil exploration & exploitation
- Climate reconstruction on polar Planet Mars
- Collaboration welcome!
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