SVC
GEOTEKNIK

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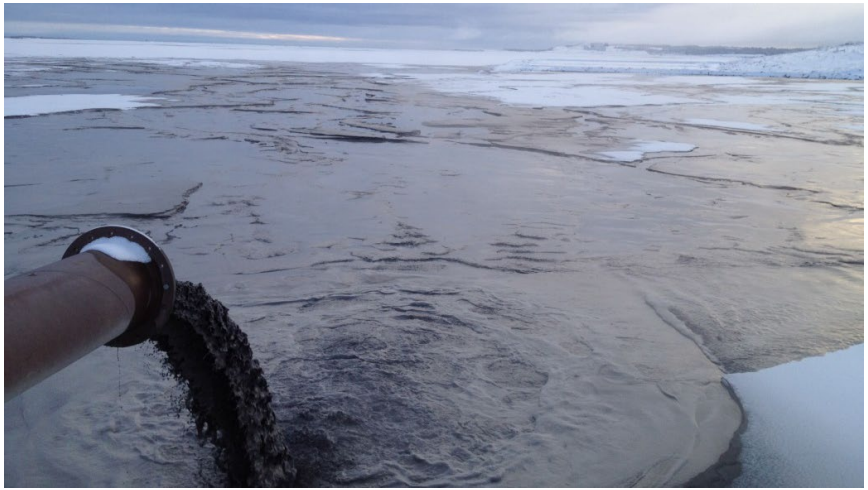
Construction and Safety of

Hydropower Embankment Dams and Tailing Dams



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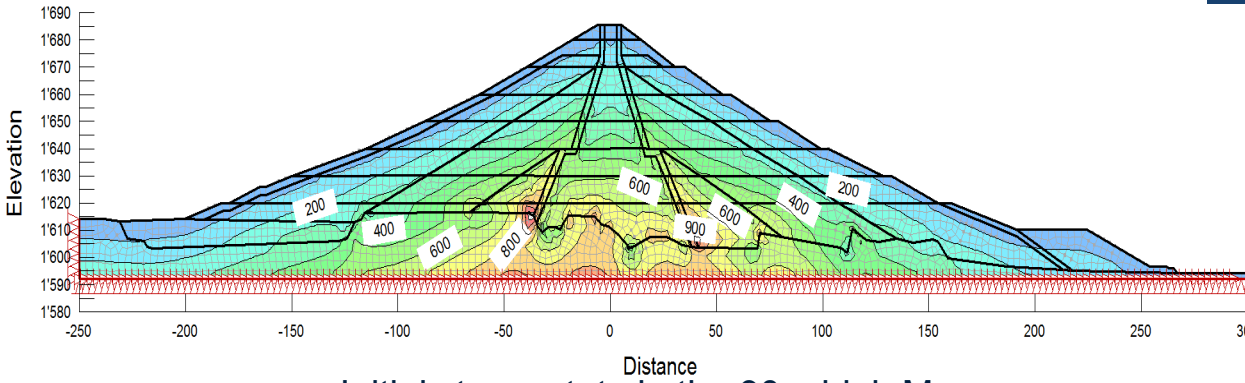
Dam related Geotechnical Engineering

Material Behaviour

Internal Mechanism

Modelling of Dam Behaviour



Initial stress state in the 90m high Marmoera dam based on geophysicial investigation

Use of Monitoring and Observational Methods

Methods for Dam repair

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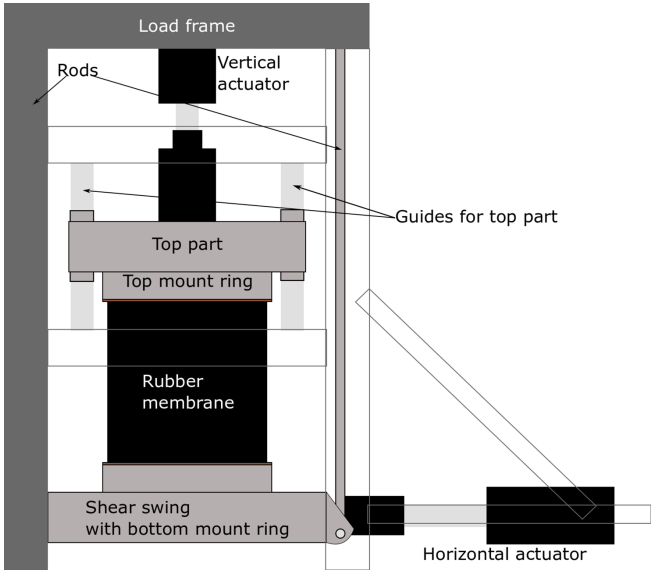
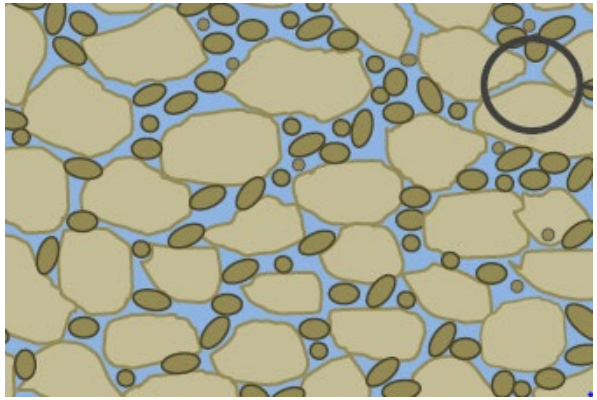
Material behaviour

- Strength and stability of the different part of a dam
  Influence of time and internal mechanism on the mechanical behaviour of dam materials
- Loading scenarios caused by tailings and state change in tailing materials

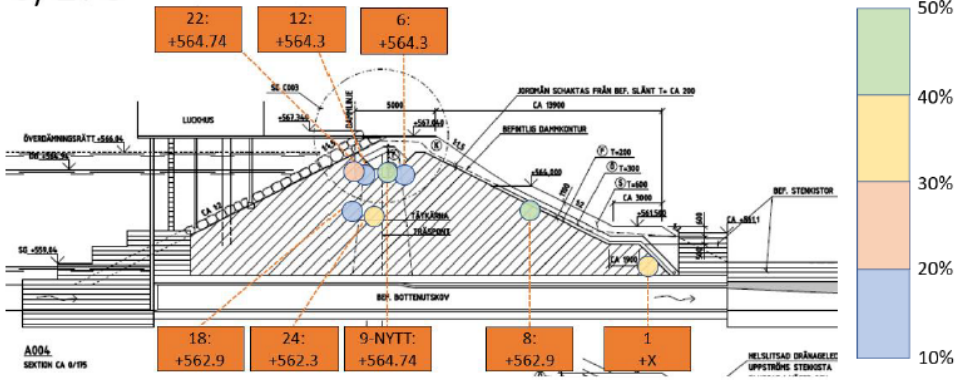


Right: testing of crushed rockfill in the large simple shear device – Poster Elin Bergliv

Internal mechanism



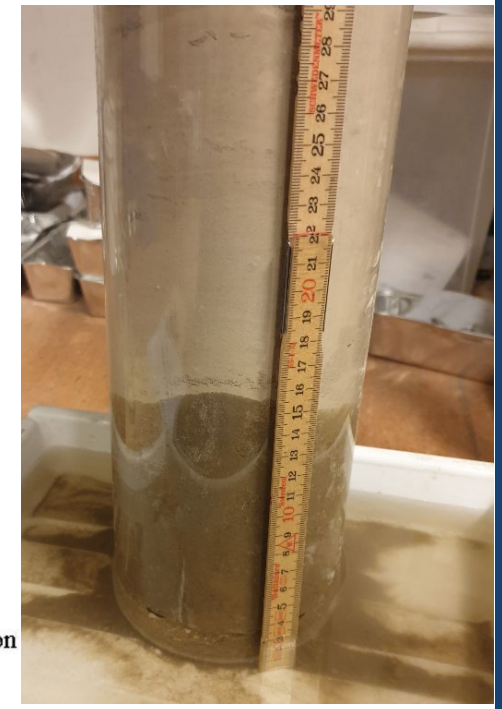
- Boundary condition for internal erosion (gradient – stress state)
- Crushing and particle movements
- Aging –
  particle movements with time

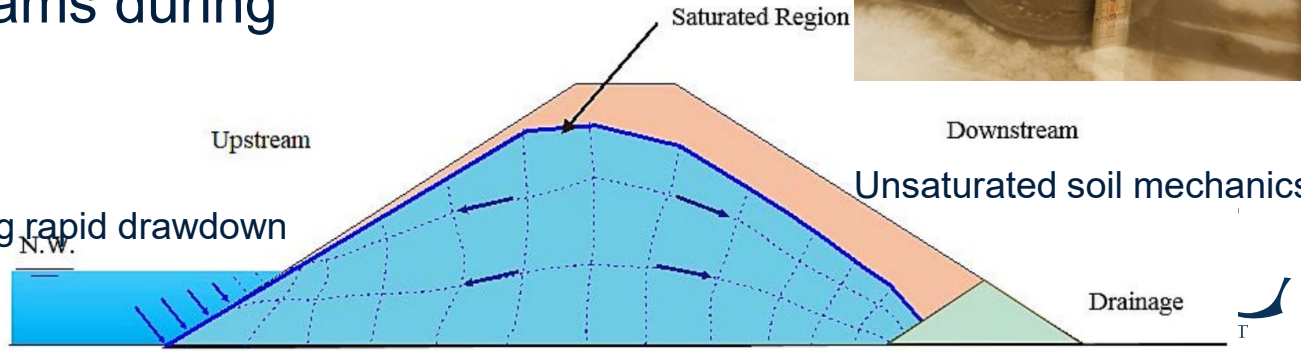


Figur 5.1 Variation av finjordshalt, sektion 0/175.

Internal mechanism

- Change of usage of reservoirs
- Influence of load cycles on mechanical parameters and stability
- Saturation of dams during reservoir raise

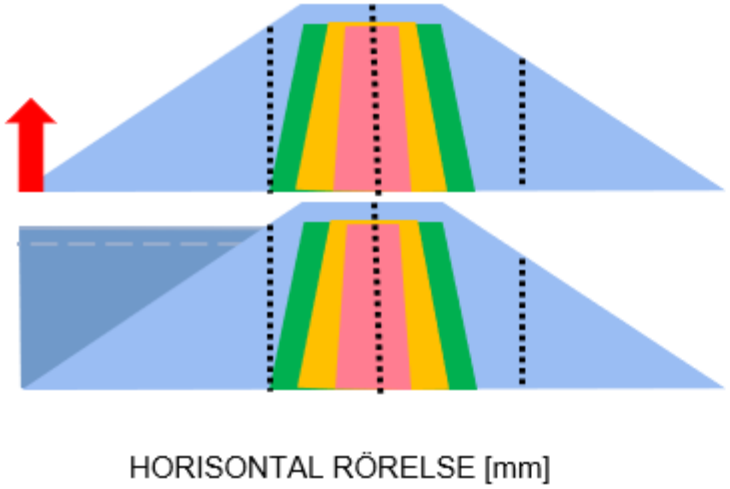


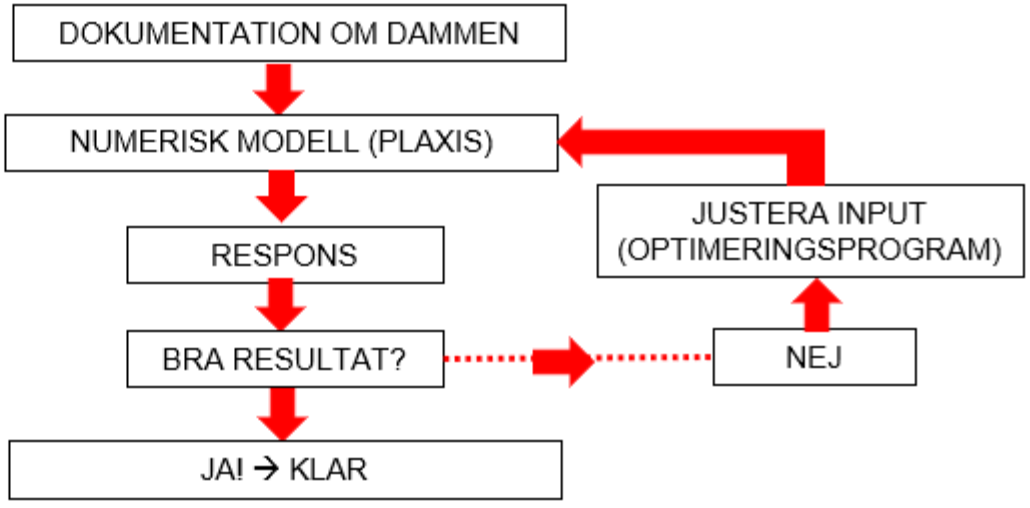


Seepage in a dam during rapid drawdown

Unsaturated soil mechanics

Use of monitoring to increase confidence in numerical models of dams





See poster Jasmina Toromanovic

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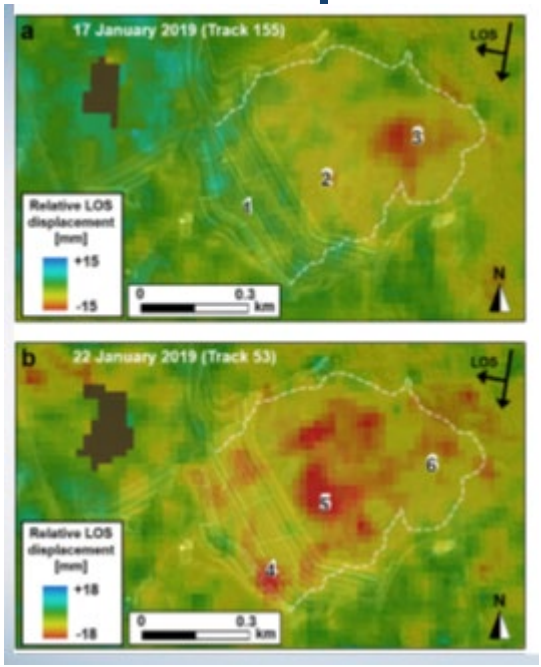
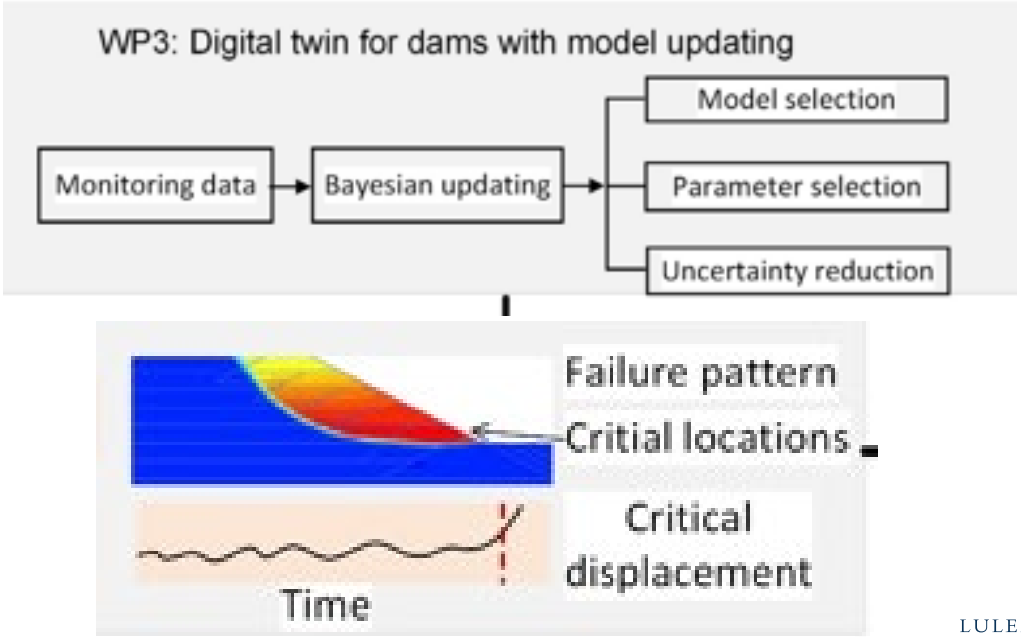
Use of big data (satellite) to add to pervious mentioned method for predicting future events



See poster Jingjiing Meng



Dam repair

- Remedial grouting of embankment (together wit Vattenfall R&D)

See poster Johan Lagerlund

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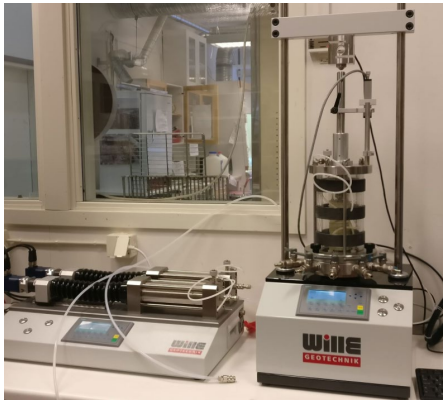
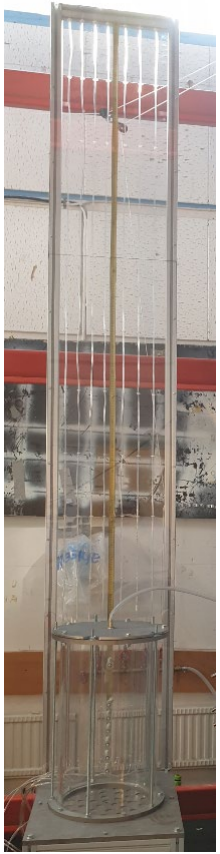
Soil Mechanics and Geotechnical Engineering

Dynamic Traixial apparatus
max sample size
D=15 and h = 30 cm.

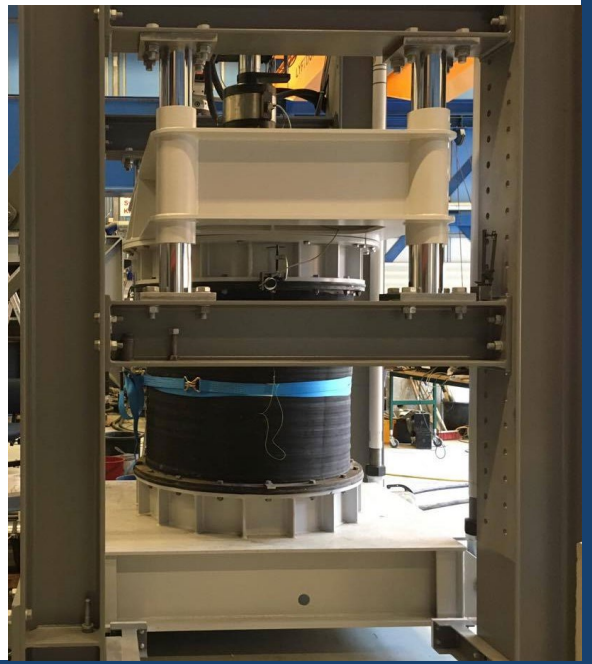
Static triaxial units
d=5cm



Permeameter
D=20cm



Large shear test unit
samples d=100cm and
h=100cm



Thank You

and do not forget the Arctic Conditions

July 13 (2011)
Frozen layer in a trial pit in a TSF
(Knutsson 2017)