Geophysical monitoring of evolutions of buffer materials and EBS

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Mont Terri – EB Experiment

Mont Terri – HE-E Experiment

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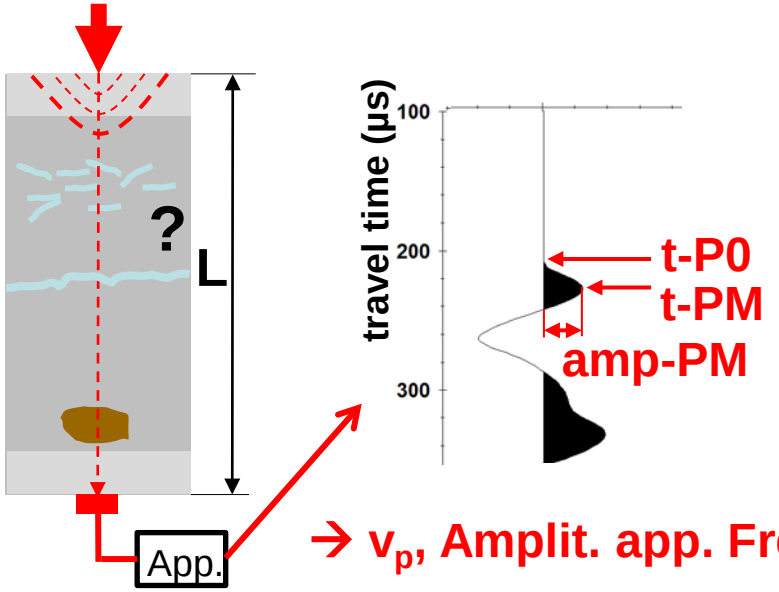
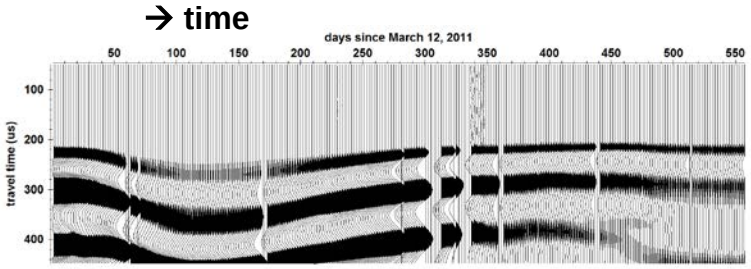
Applied Geophysical Methods
Seismic / Ultrasonic & Geoelectrical Measurements

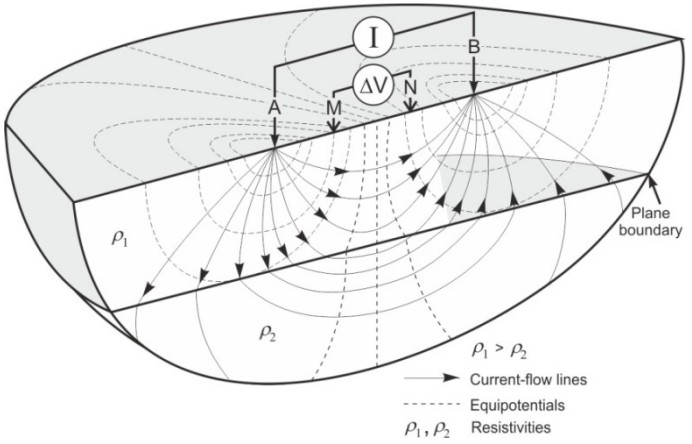
Seismic Methods



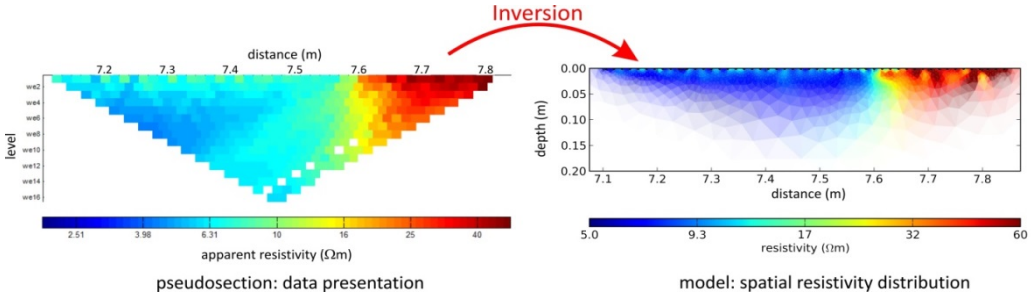
→ v_p, Amplit. app. Freq.



Geoelectrical Methods



Application of multi-electrode configurations



→ Electrical Resistivity / Conductivity distribution

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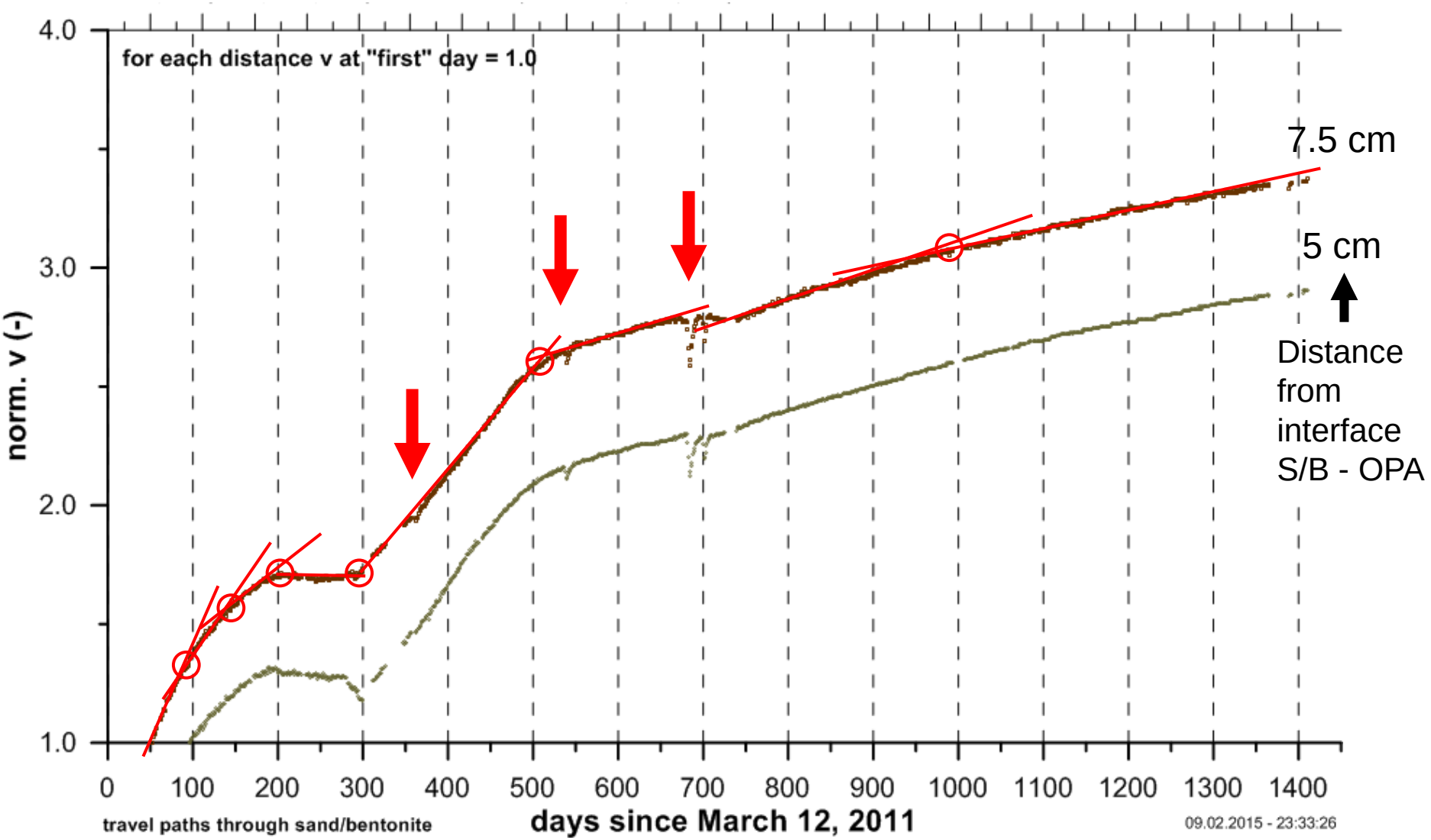
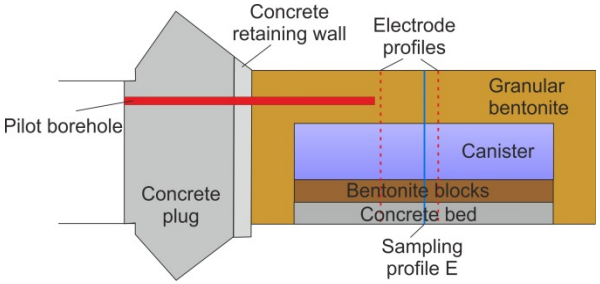
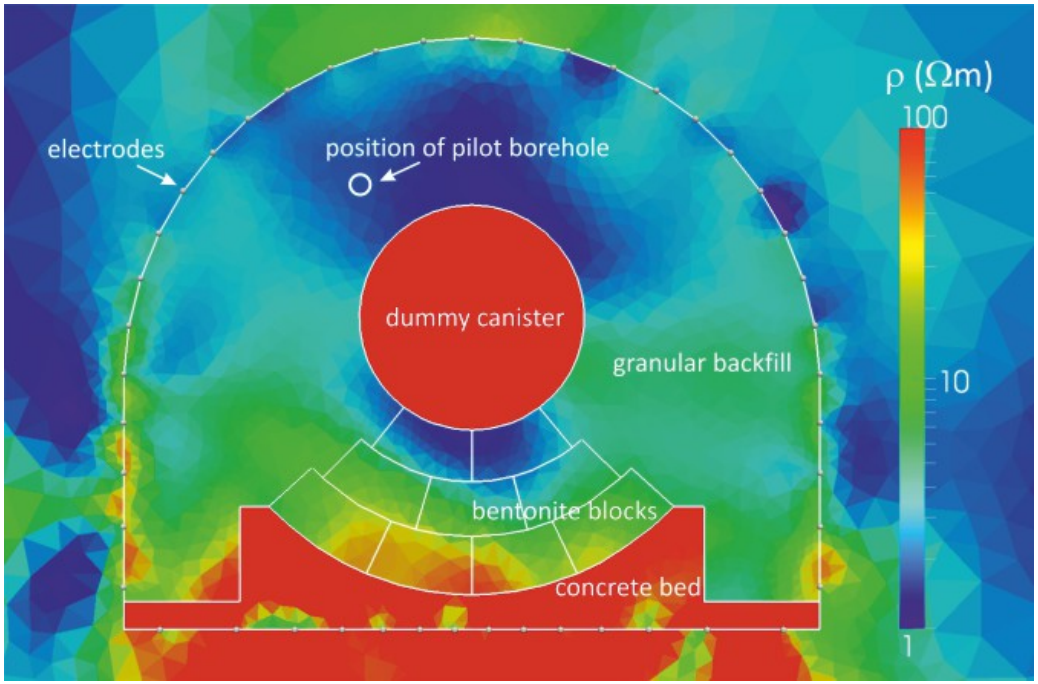
HE-E Exp. - Evolution of seismic velocities in Sand/Bentonite – 1411 days

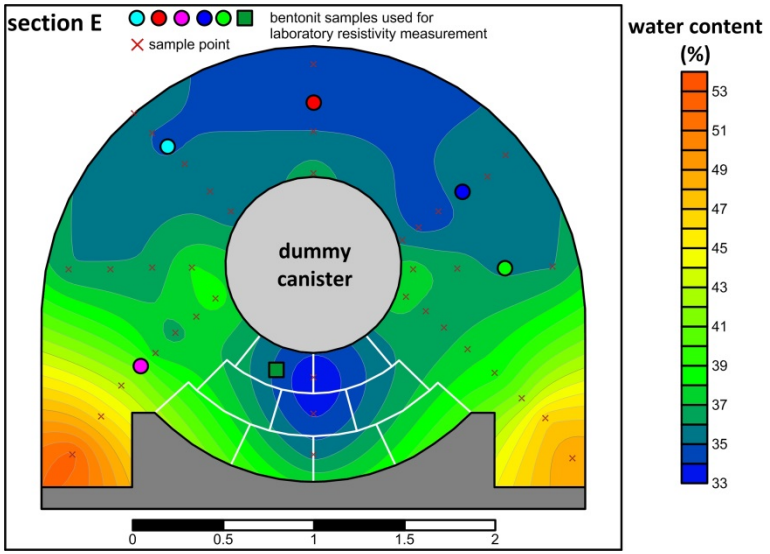


EB Exp. – Geoelectrical Long-term Monitoring

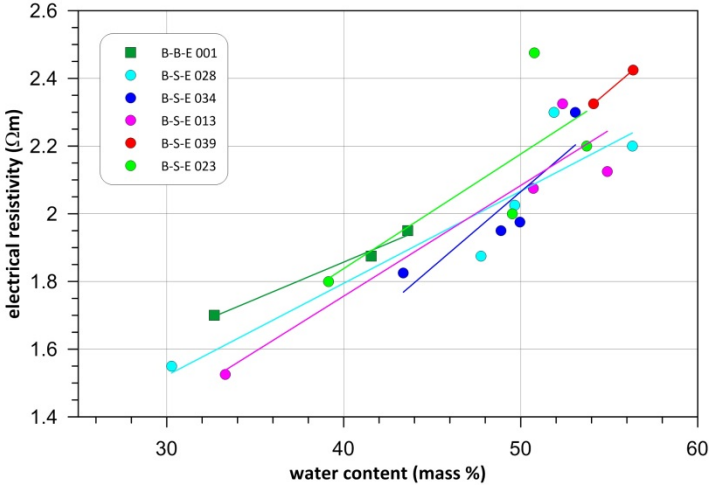




Model of the spatial resistivity distribution on September 30th 2012



Spatial distribution of water content (Palacios et al., 2013, modified)



Laboratory resistivity measurements of bentonite samples confirming the positive correlation of resistivity and water content (Kaufhold, 2013)

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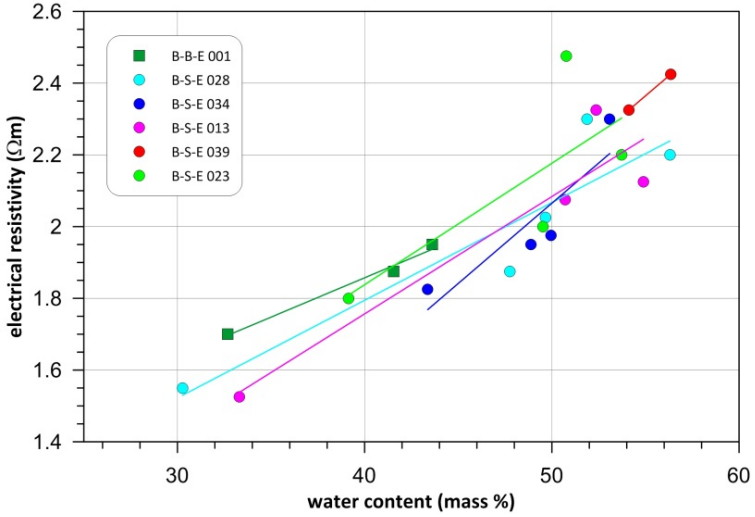
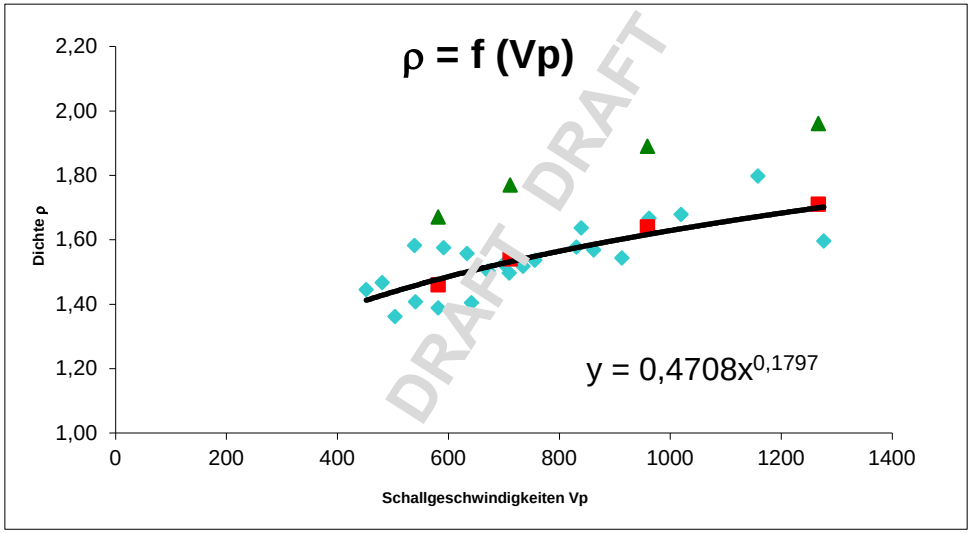
Laboratory measurments

Correlation between geoelectrical resistivity & water content



Correlation between seismic velocities & densities of bentonite



What is needed?

Establish physical relations between geophysical in-situ & lab. data

Extend the geoelectrical lab. data for different confining pressures

Build a data base

Thank you

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