

GEOLAB, Science for enhancing Europe's Critical Infrastructure

**Ton Peters, Deltares
coordinator GEOLAB**

<https://project-geolab.eu/>



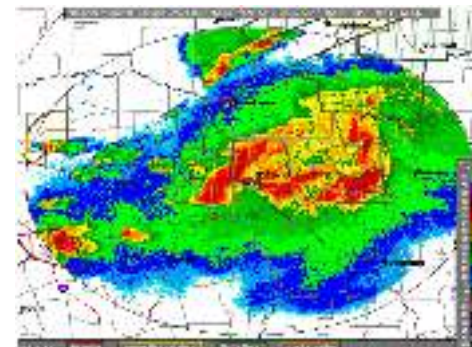
@GeolabP



<https://www.linkedin.com/groups/12504909>

Why GEOLAB?

Critical Infrastructure (CI) is threatened by climate change, extreme weather, geo-hazards, aging and intensified/changed usage.



Scientific research and innovative solutions are needed to enhance CI resilience, supported by advanced physical research infrastructure

GEOLAB aim: One-stop-shop to address the challenges faced by Europe's CI



- **Integration** of 11 national research facilities from 8 countries into one research infrastructure
- **Innovation** of the research infrastructure, e.g. physical modelling and measuring capabilities
- **Standardization** of data to allow efficient exchange between facilities and re-use experiment results



GEOLAB research infrastructure (5 centrifuges)



Deltares GeoCentrifuge
(5.5 m)



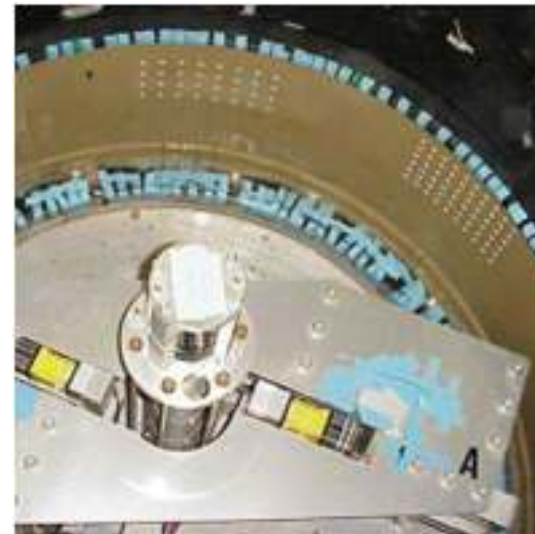
University Gustave Eiffel
Geo-centrifuge (5.5 m)



TU Delft centrifuge (1.2 m)



Cambridge University Beam Centrifuge (10 m)



ETH Zurich Drum centrifuge (2.2 m)



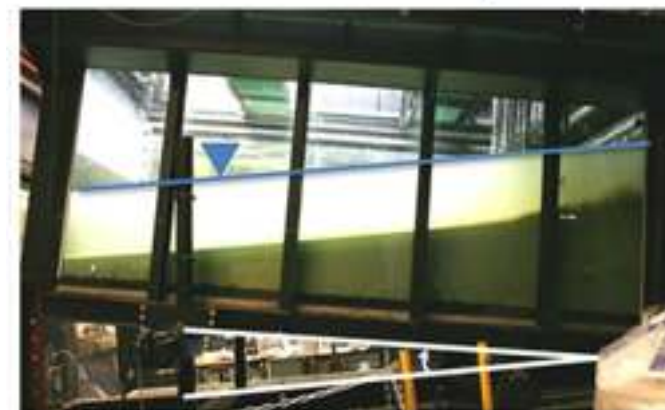
GEOLAB research infrastructure (6 other facilities)



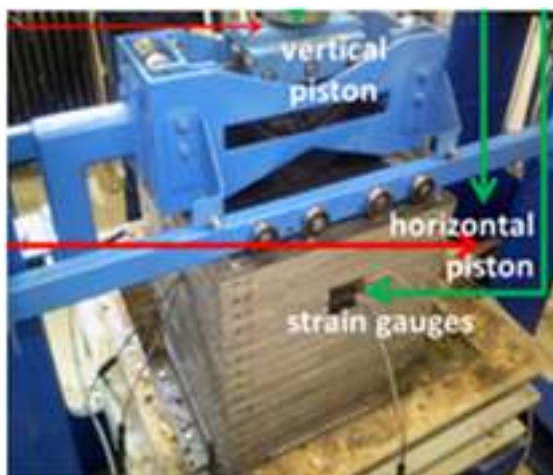
Deltares GeoModel container
(4 x 2.5 x 1.2 m)



CEDEX railway track simulator
(21 x 5 x 4 m)



TU Delft static liquefaction tank
(5 x 2 x 2 m)



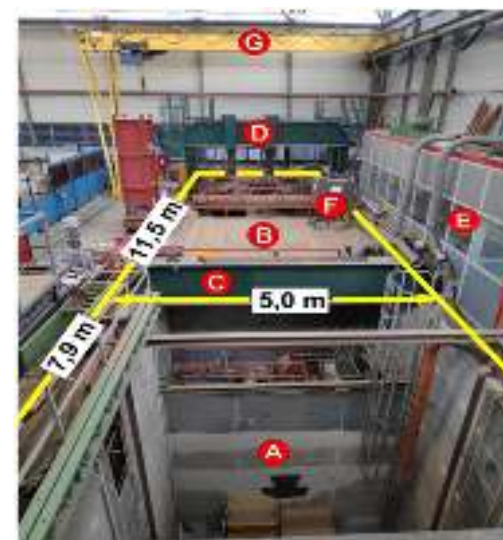
University Maribor traffic load
simulator (0.7 x 0.7 x 1.2 m)



- Soft Clay Site – Onsøy
- Silt Site – Halden
- Sand Site – Øysand
- Quick Clay Site – Tiller
- Permafrost Site – Longyearbyen, Svalbard



(5 sites)



J Darmstadt pile foundation
test pit (19.4 x 5 x 3/6 m)

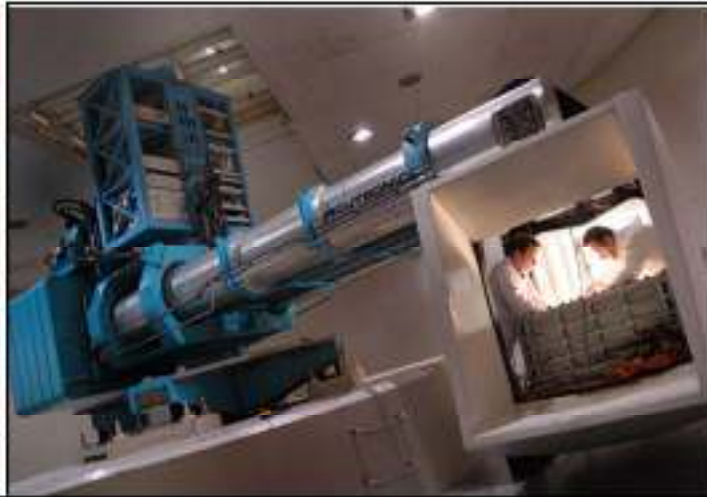
GEOLAB network



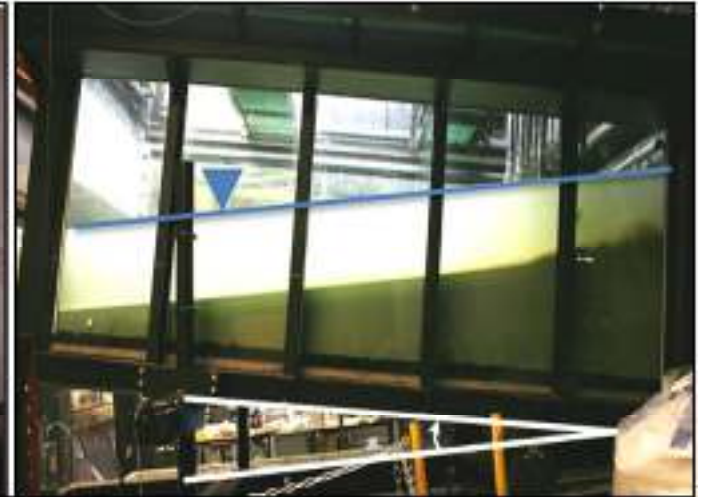
Transnational Access for academia, industry and CI managers



Railway track test facility



Geocentrifuge: soil-structure interaction



Soil-water liquefaction tank

- **Ground-breaking experiments** that address challenges faced by Europe's CI
- **Budget available for 40 experiments**, including technical and scientific support and travel and subsistence cost of the users





What is in it for the ECTP community?

- For **CI asset managers & policy makers** this will give insight in how to deal with the impact of climate change, ageing beyond life-span and other pressures.
- **Contractors and consultants** will be able to test their innovative products and demonstrate added value.
- **Software developers and suppliers** will be able to validate engineering software and constitutive models.
- **SME** provide cross cutting technologies (e.g. sensors, 3D printing) to innovate the research infrastructure.





Future results and opportunities

- Outcome from 14 awarded experiments
- Public project deliverables on advances in experimental research
- New call-for-proposal open in June 2022:
 - Theme: Experiments to study the pressures on CI
 - Using advances from JRA on physical modelling of climate change, extreme events and aging
- New GEOLAB event with NG training workshop in November 2022
- Follow us at: <https://www.linkedin.com/groups/12504909/>



THANK YOU!



Contact details

Ton Peters

Deltares

ton.peters@deltares.nl

