

Instrumentation d'un bâtiment en bois

Francesca LANATA – francesca.lanata@esb-campus.fr

LIMBHA – Ecole Supérieure du Bois – Nantes (FR)

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Context

- Mid- to high-rise timber buildings
- Beyond the code limitations
 - Laboratory and in-service tests
 - Guidelines and handbooks
- ADIVbois in France
 - Case studies (theoretical)
 - Laboratory tests
 - 13 mid-rise demonstration projects



Lend Lease



RLP Architekten

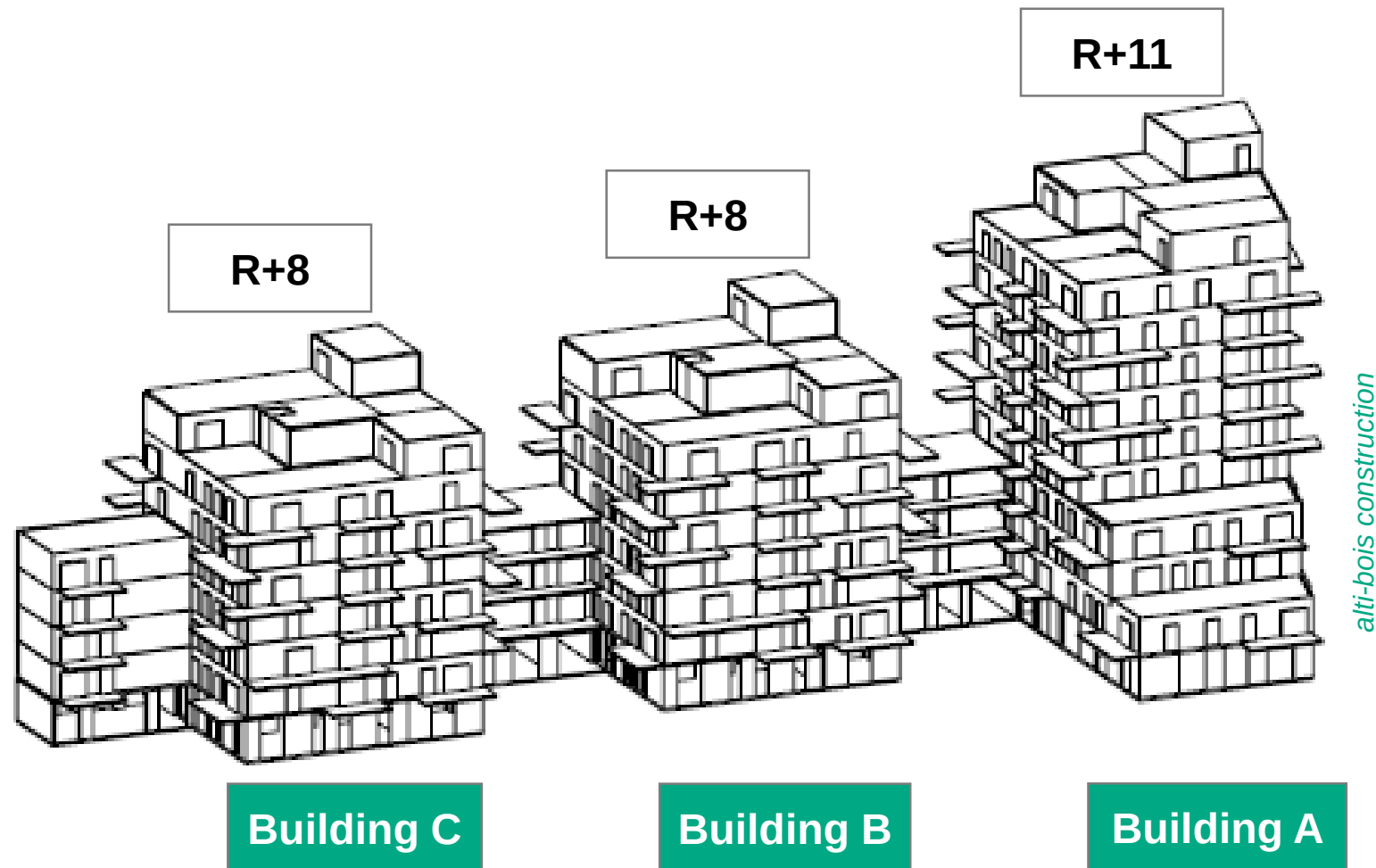


David Valldeby



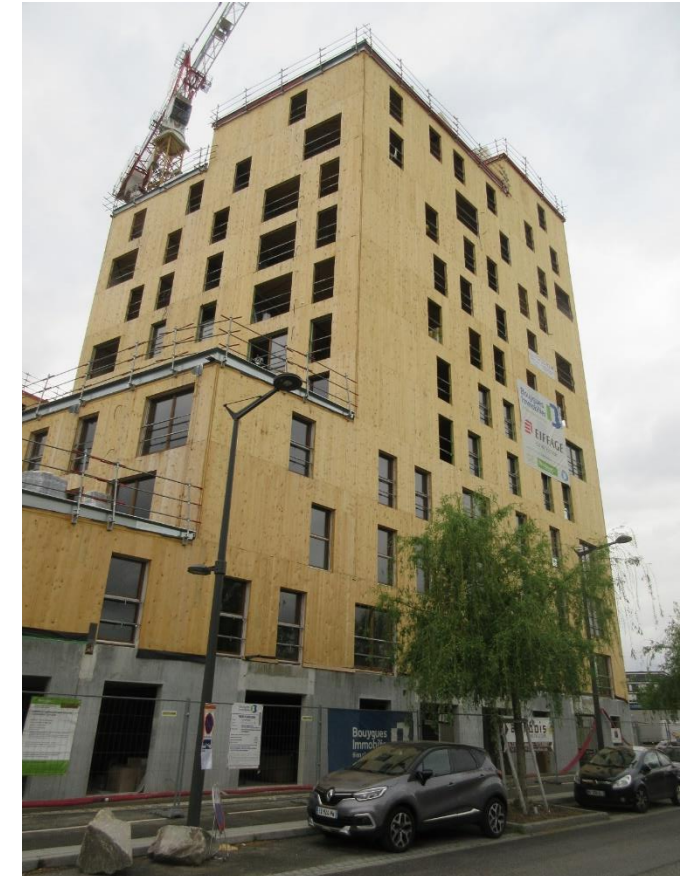
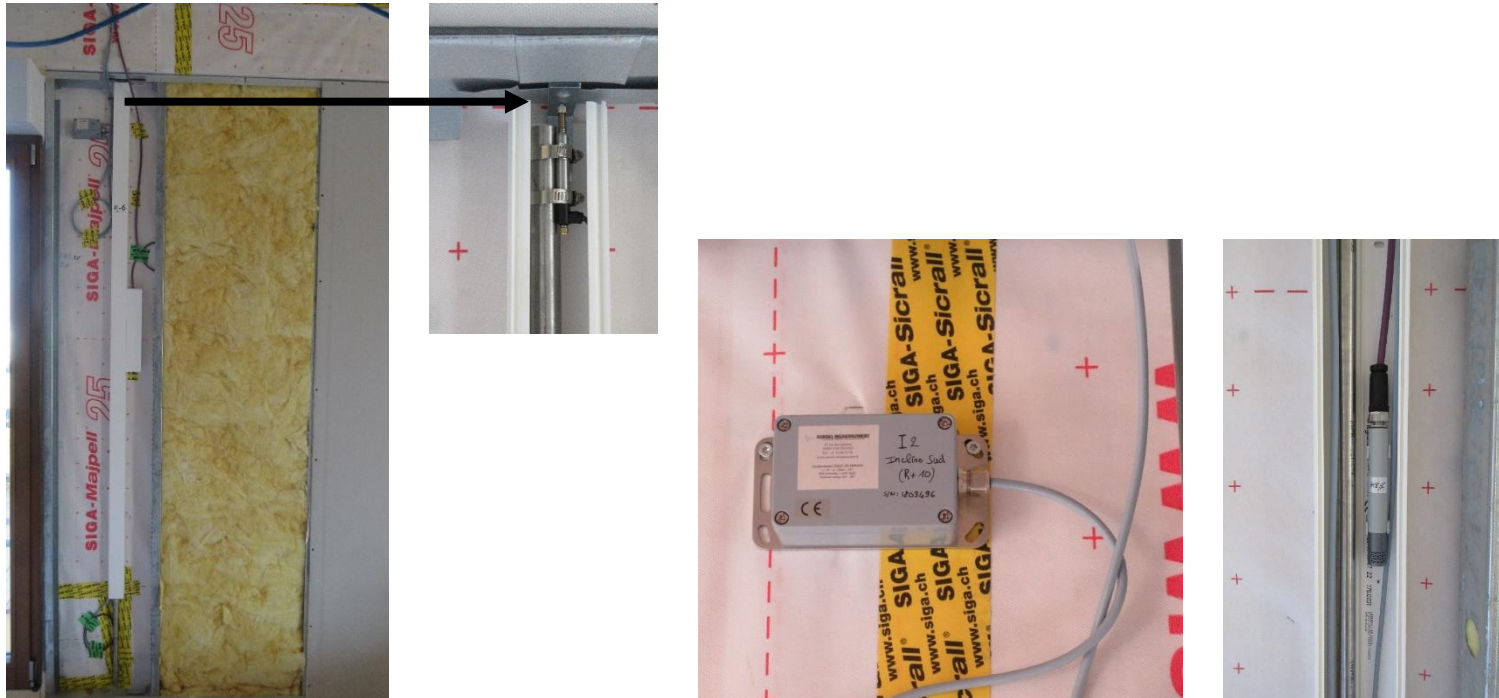
Acton Ostry

A first 100% timber building in Strasbourg



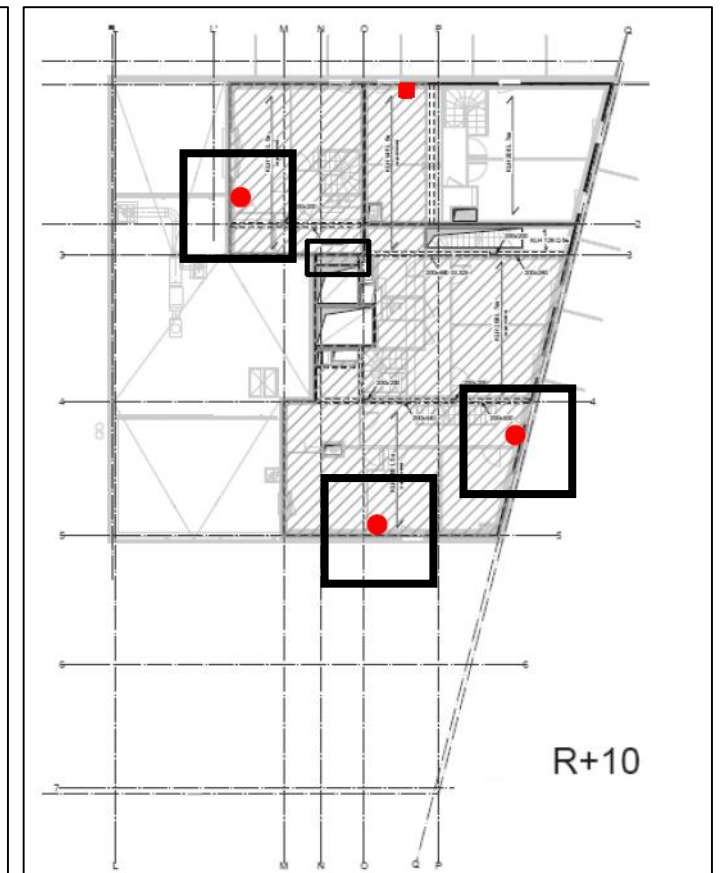
Monitoring system proposal

- Construction and in-service conditions
 - Vertical settlement
 - Horizontal displacements at the top



Final sensors setup

- 5 measurement points
 - Displacement transductor
 - Biaxial inclinometer
 - Temperature/relative humidity
- 3 additional measurement points
 - Biaxial inclinometer
- Wind speed and direction
- Measurements since July 2018
 - Every 10 minutes
 - Remote downloading

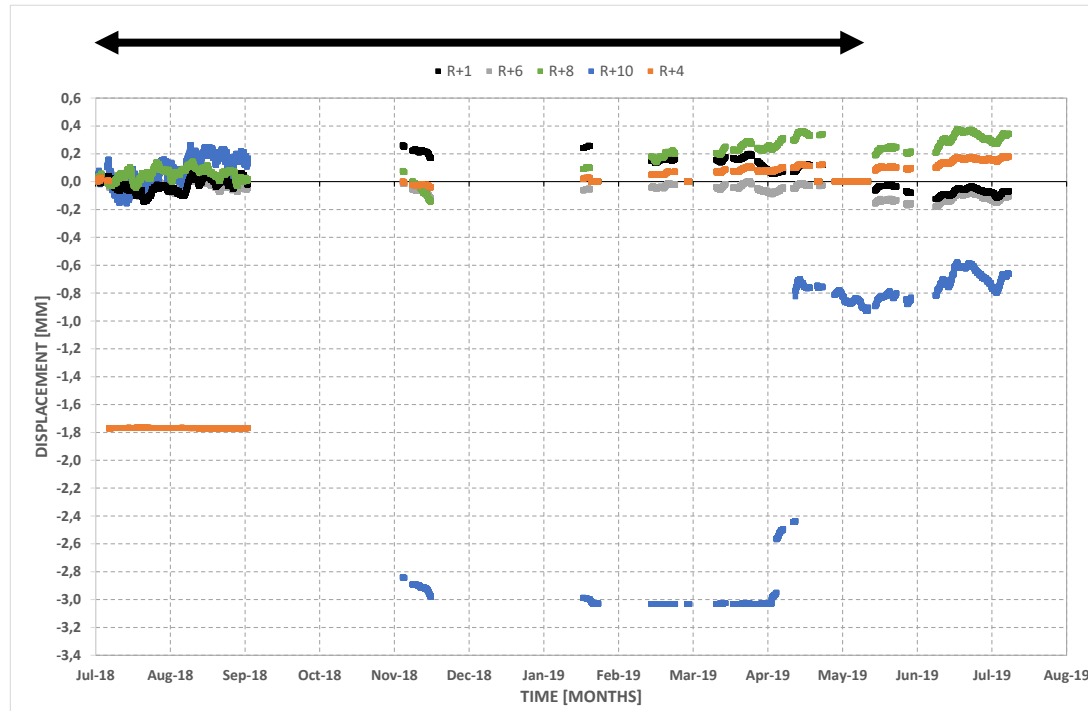


Final sensors setup



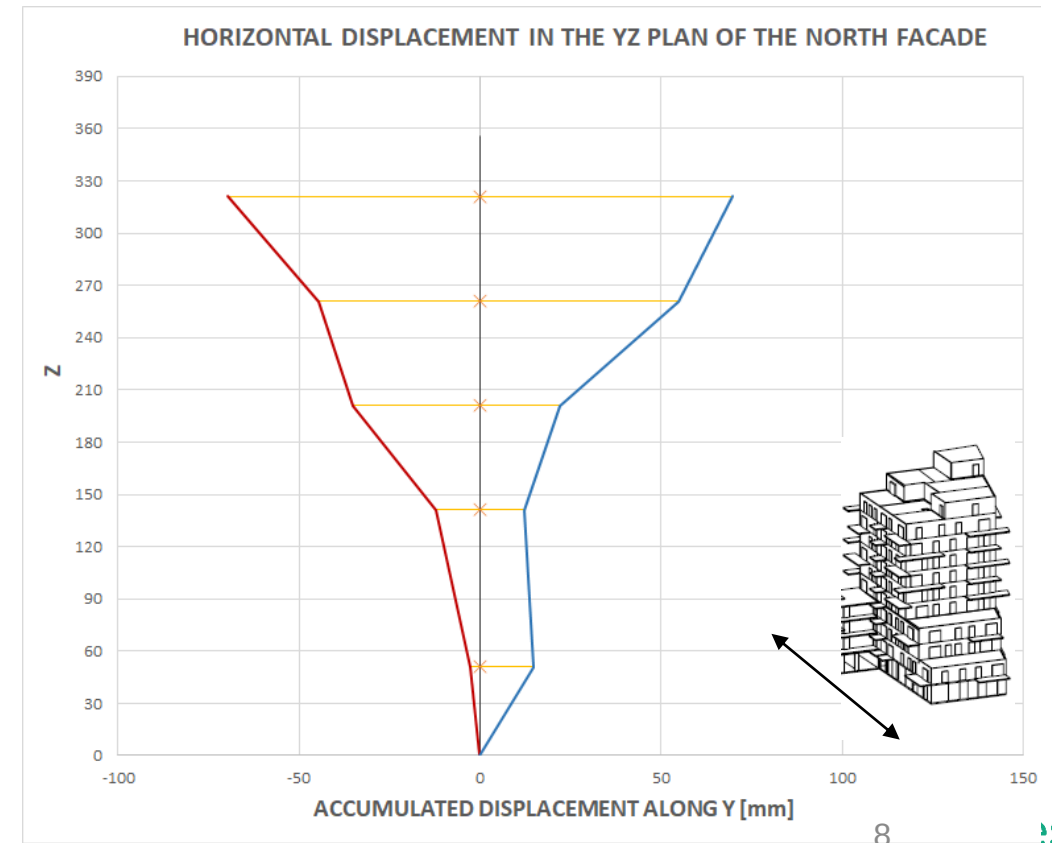
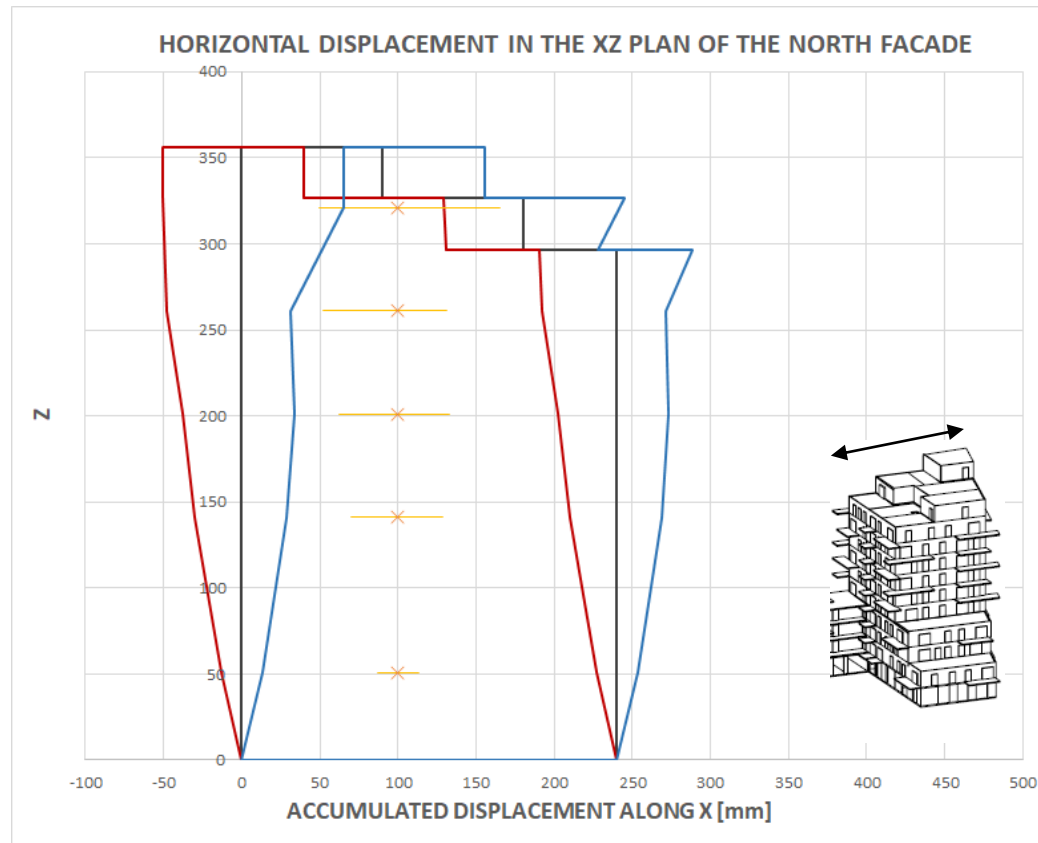
Construction phase movements

- Settlement



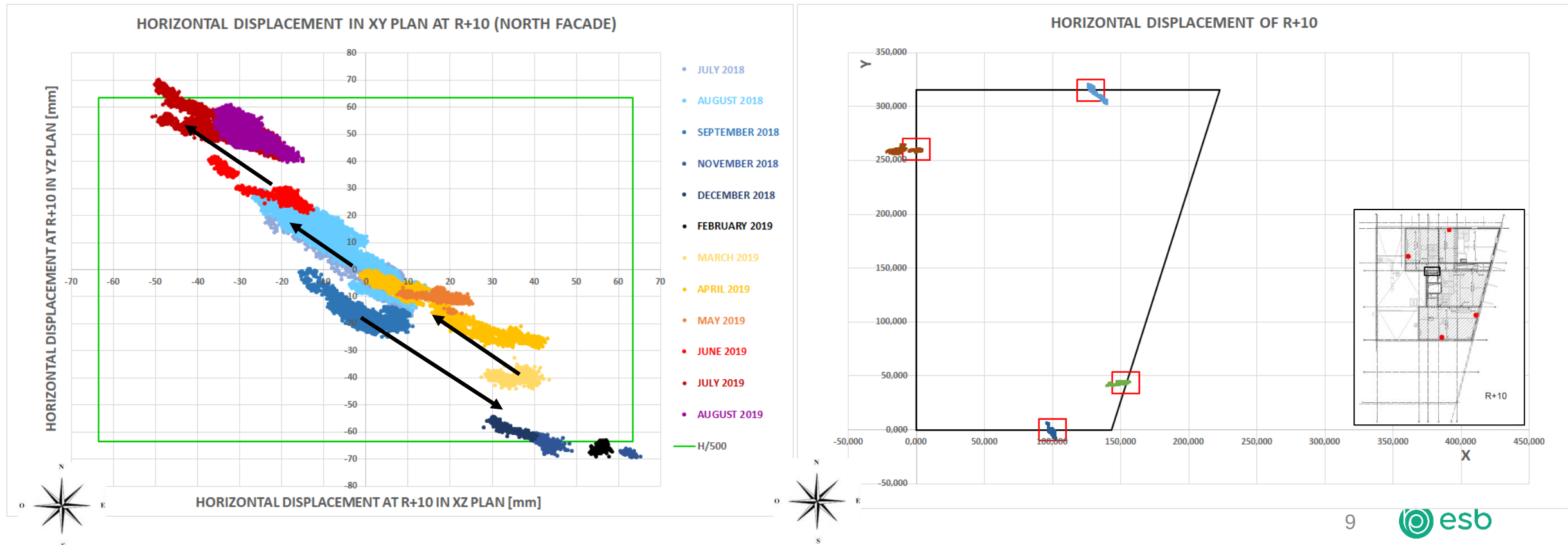
Construction phase movements

- Horizontal displacement (façade view)



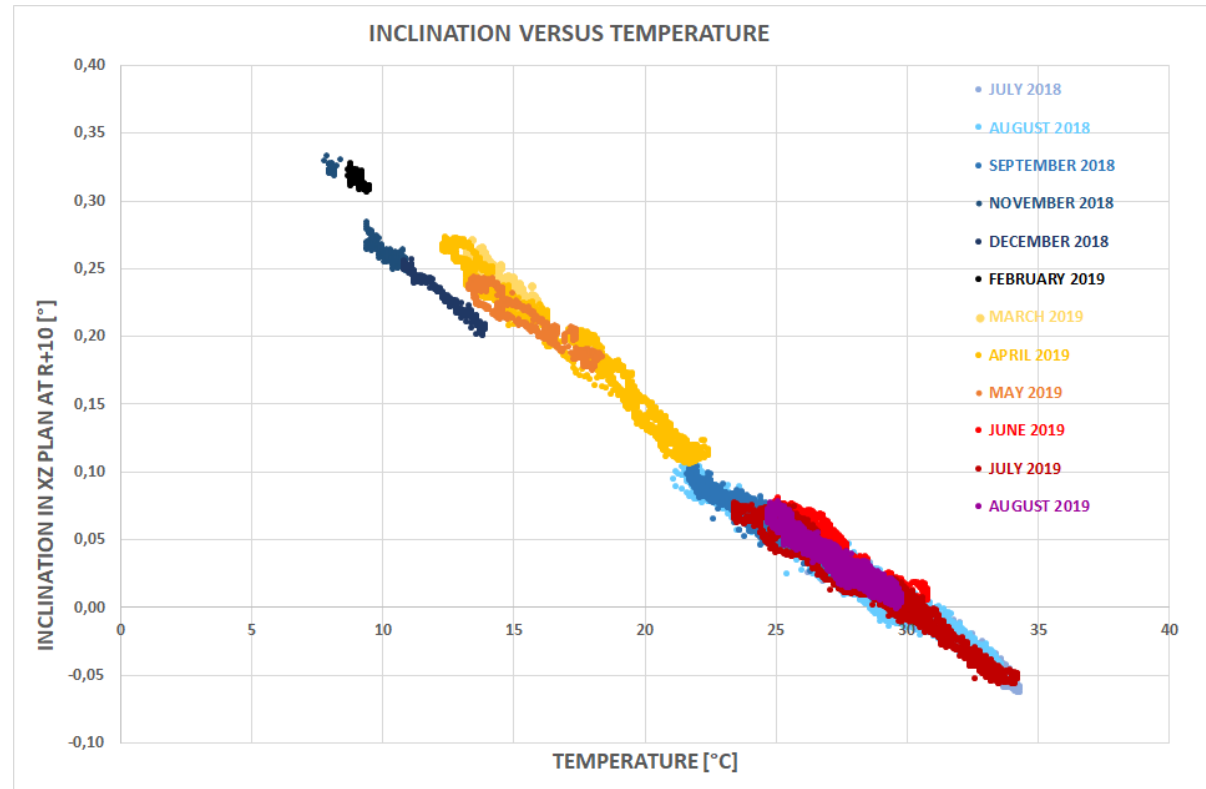
Construction phase movements

- Horizontal displacement (top view)



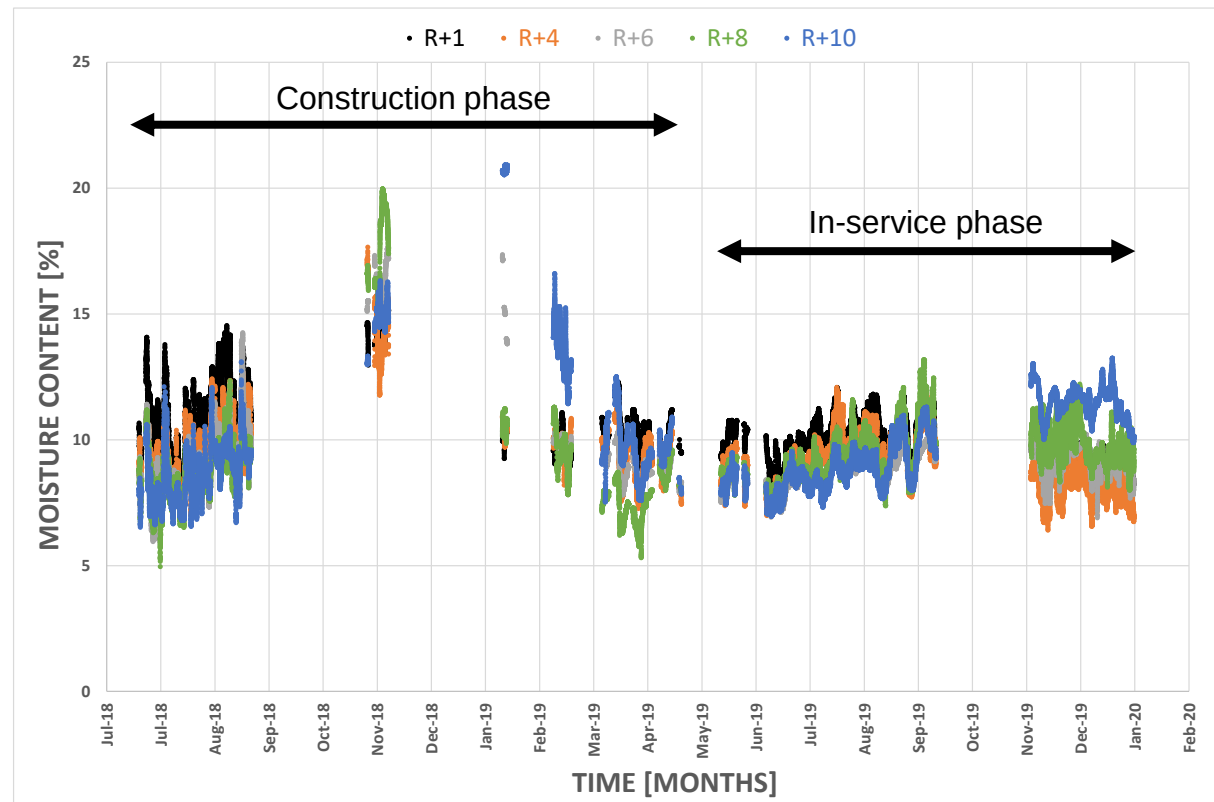
Construction phase movements

- Environmental effects



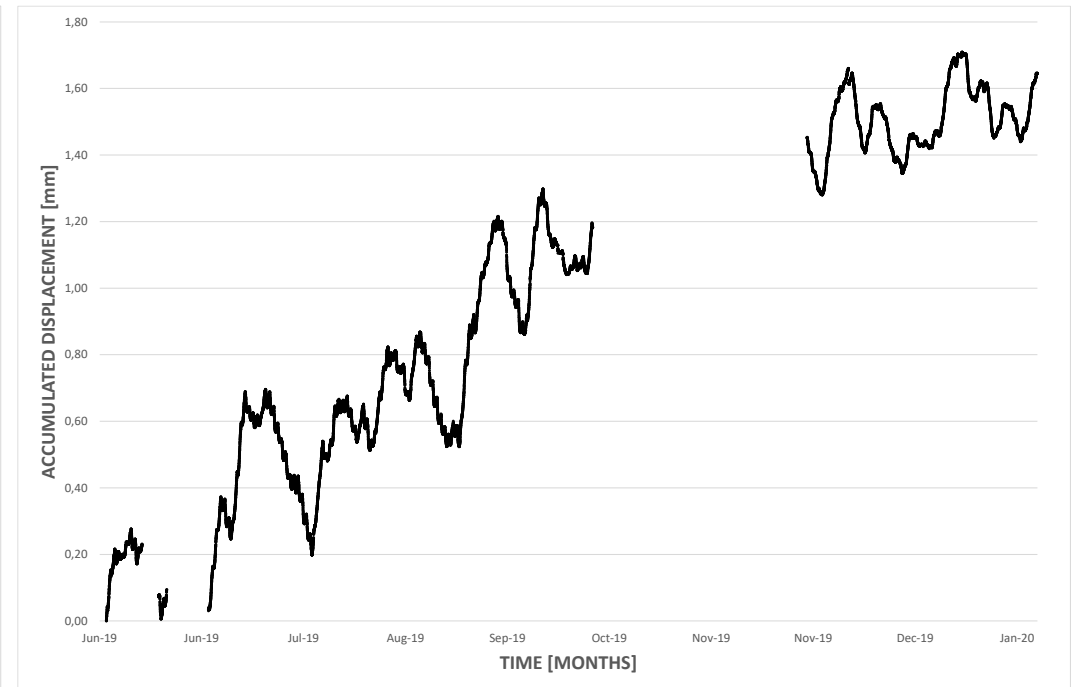
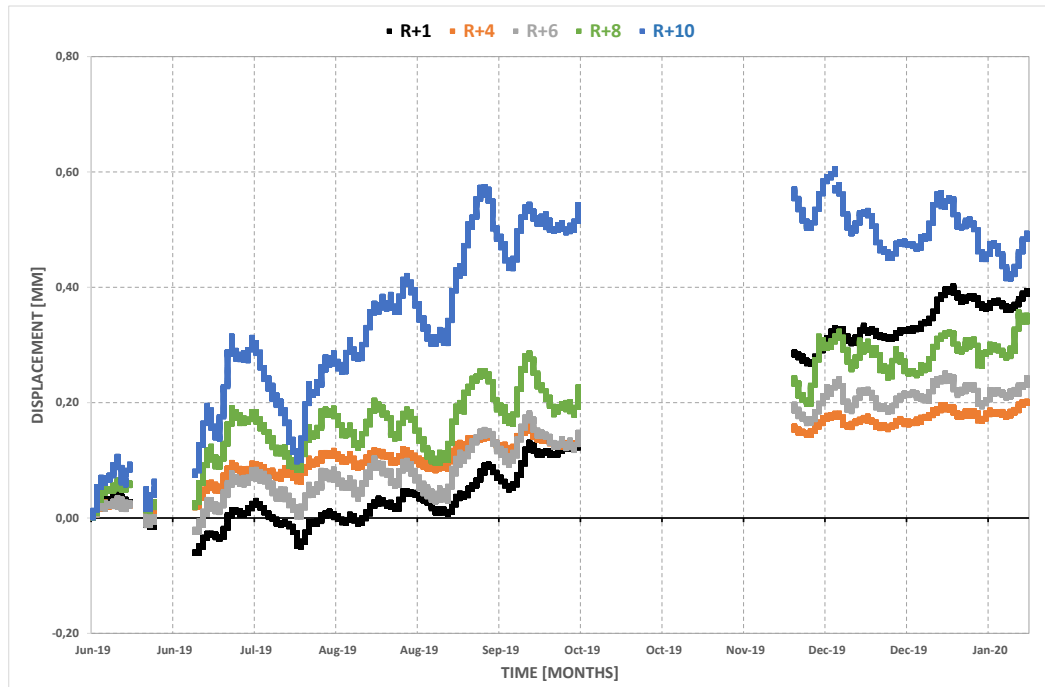
In-service phase movements

- Equilibrium moisture content



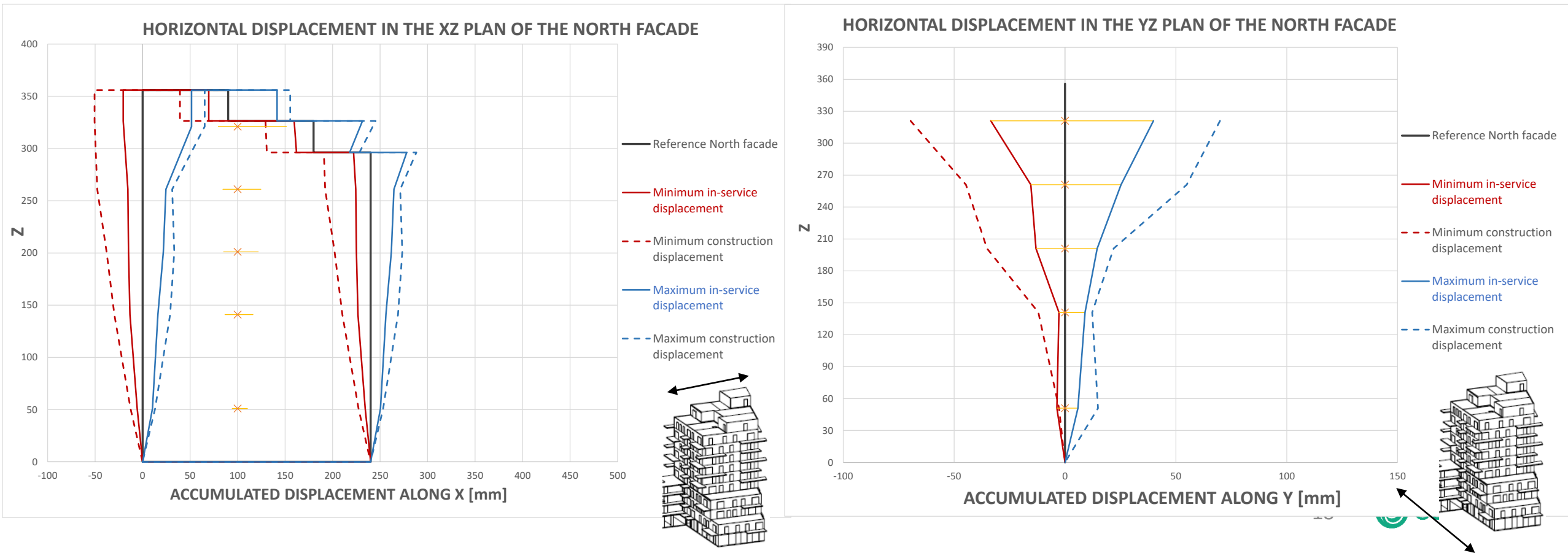
In-service phase mouvements

- Settlement (new reference measurement)



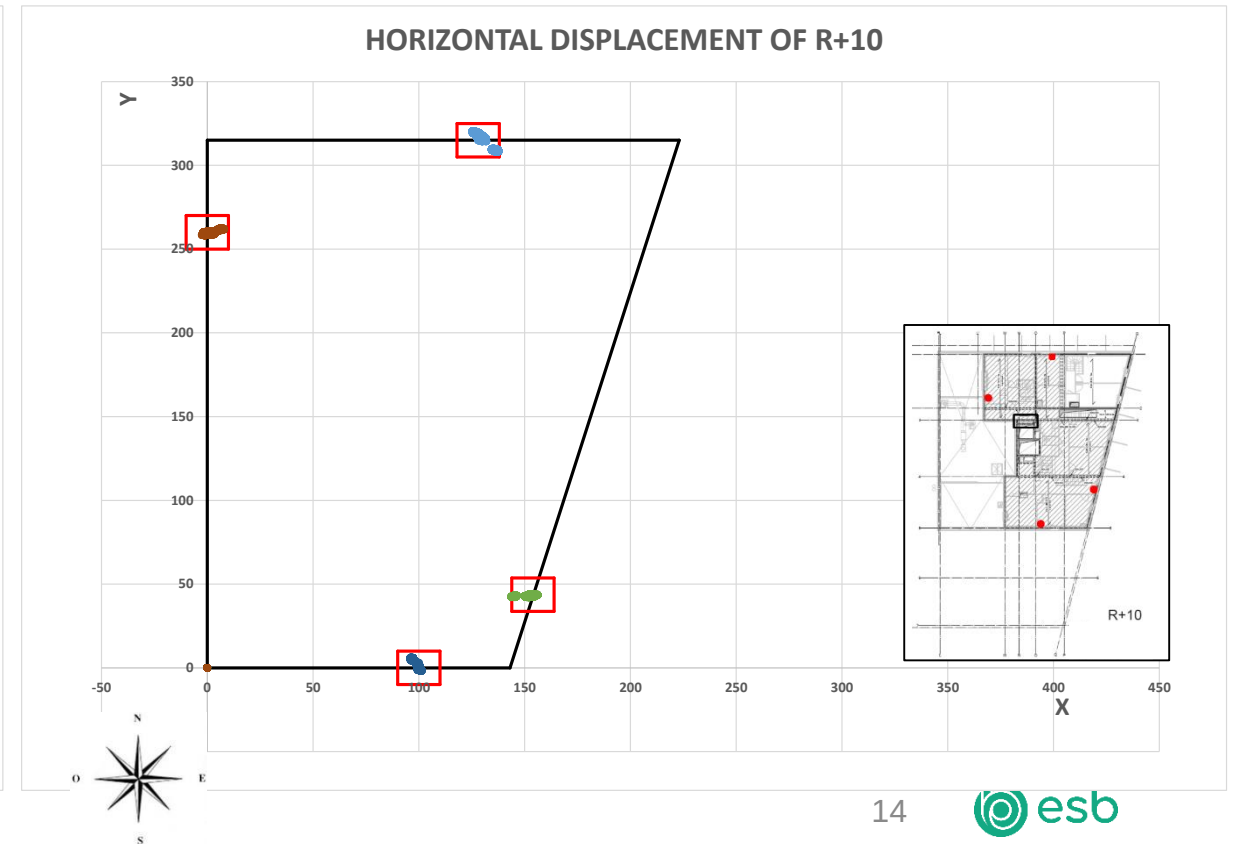
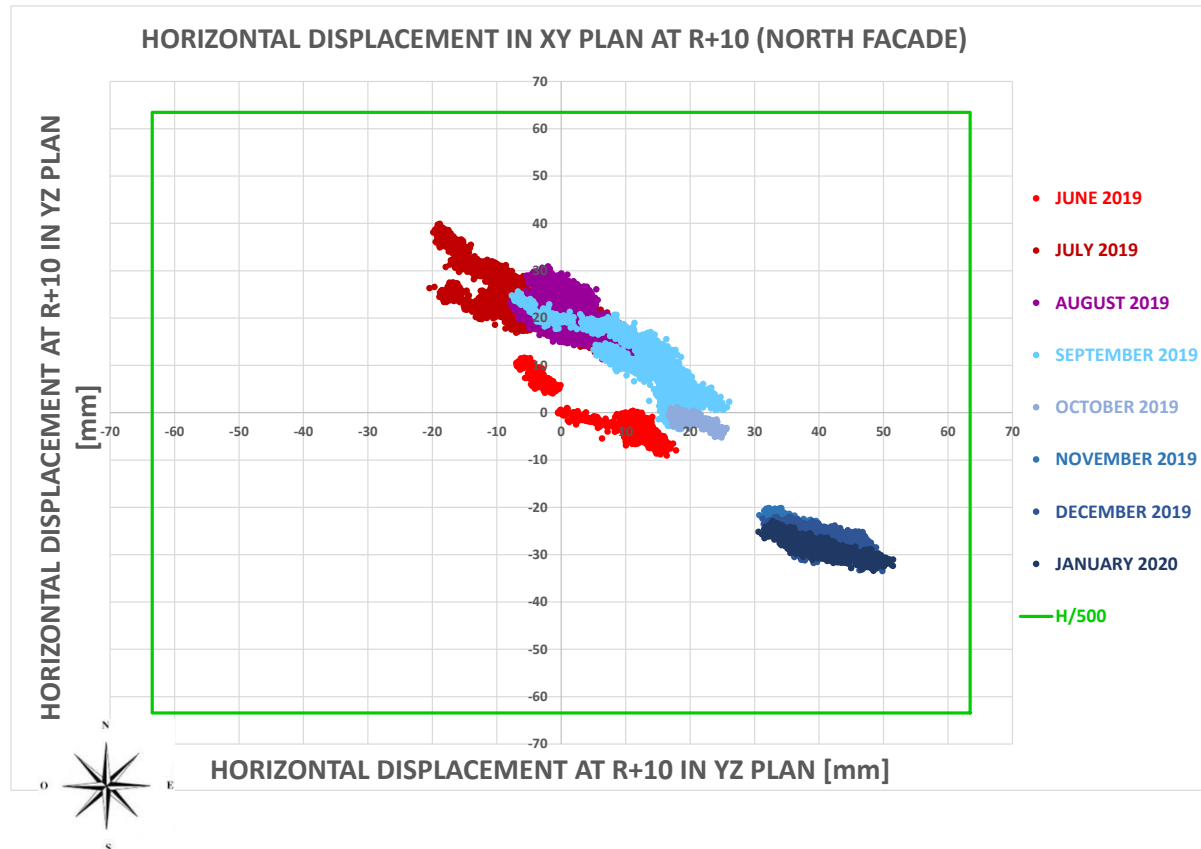
In-service phase movements

- Horizontal displacement (façade view)



In-service phase mouvements

- Horizontal displacement (top view)



Final comments and further steps

- A new reference position for in-service conditions
 - Construction phases
 - Environmental changes
- Huge but temporary displacements during construction
- Compare measurements to theoretical calculations (SLS) and safety standards
- Learning from experience
- Widespread use of wood in tall construction

THANK YOU FOR
YOUR ATTENTION

www.esb-campus.fr

Atlanpôle – BP 10605
Rue Christian Pauc
F – 44306 Nantes Cedex 3



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