

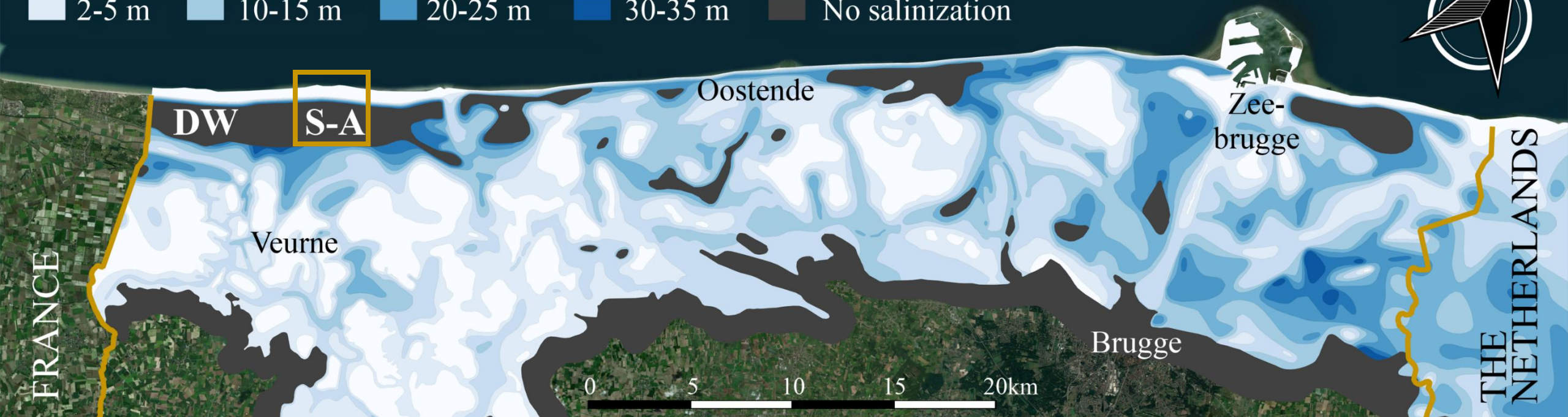
Effect of artificial recharge on submarine groundwater discharge: a Belgian case study

Marieke Paepen, Kristine Walraevens, & Thomas Hermans

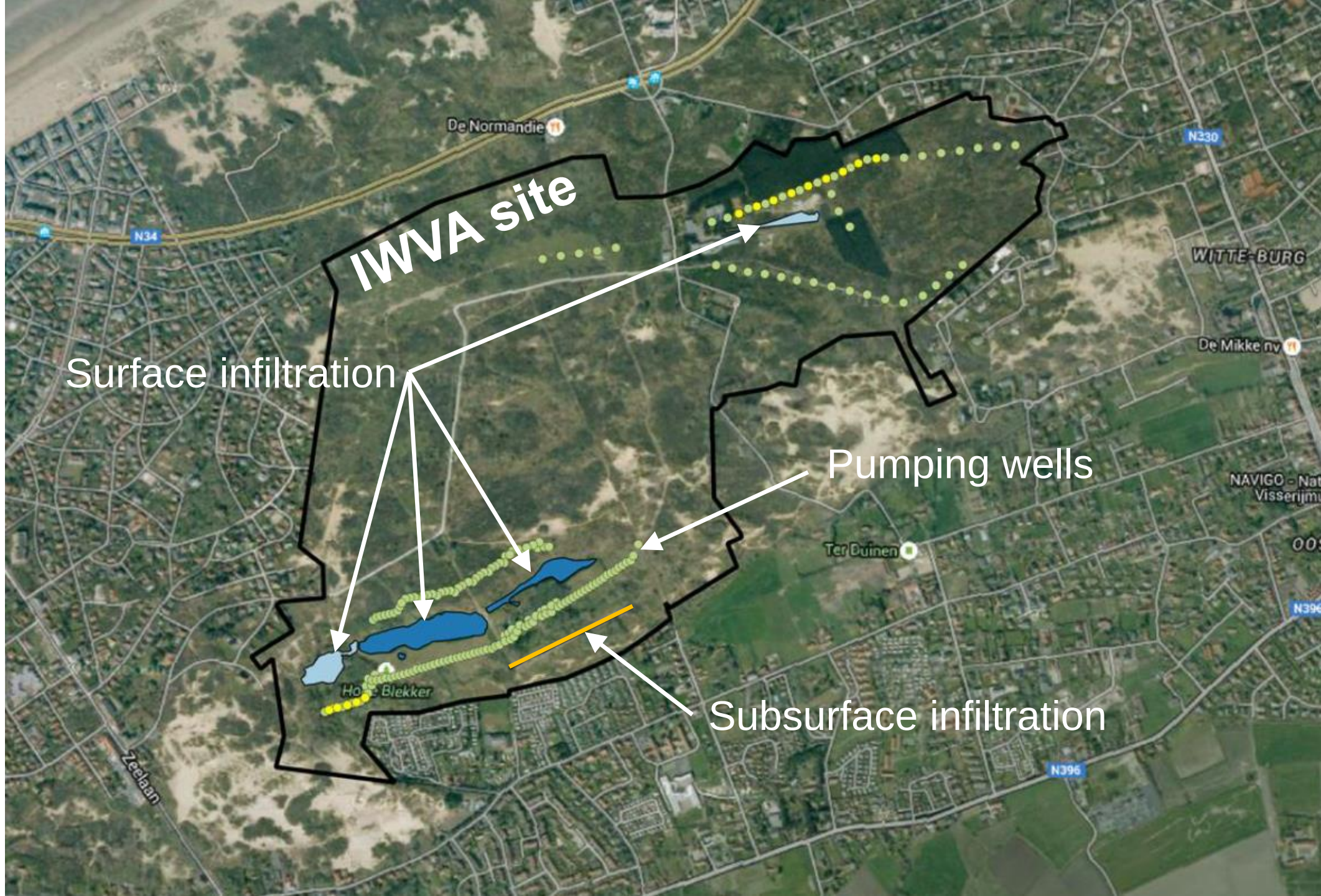
Study area



Depth of saline groundwater:



S-A = St. André (Oostduinkerke)



Methods

Geophysics: » Electrical resistivity tomography (ERT)
 » Continuous resistivity profiling (CRP)

→ electrical resistivity ~ water quality

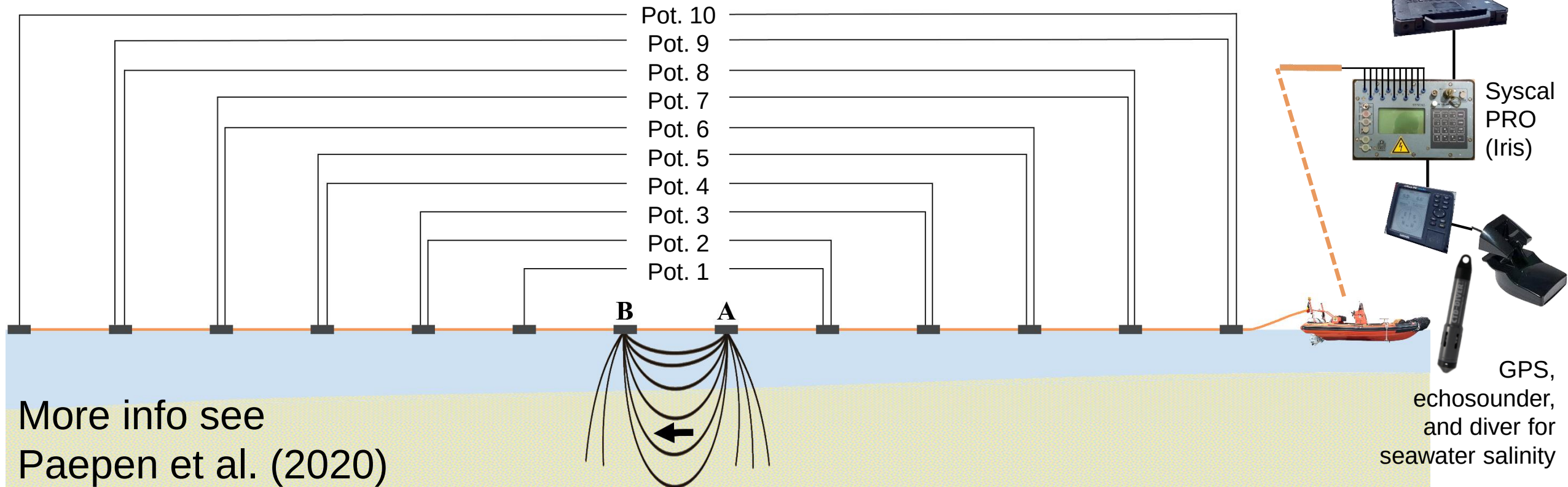
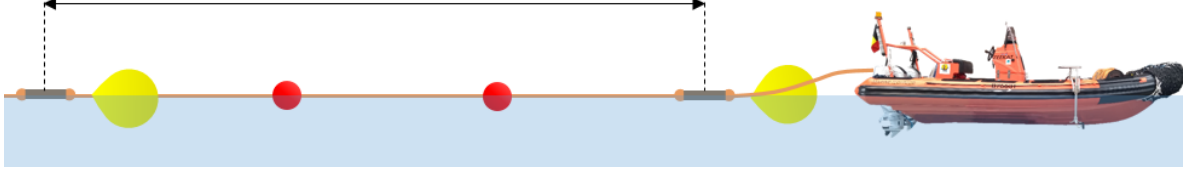
- Profiling fresh-/salt water interface
- Relatively large spatial coverage, both on- and offshore

ERT ON LAND (September 2020 or March 2021)



MARINE CRP

10m



MARINE CRP (May 2019)

High tide

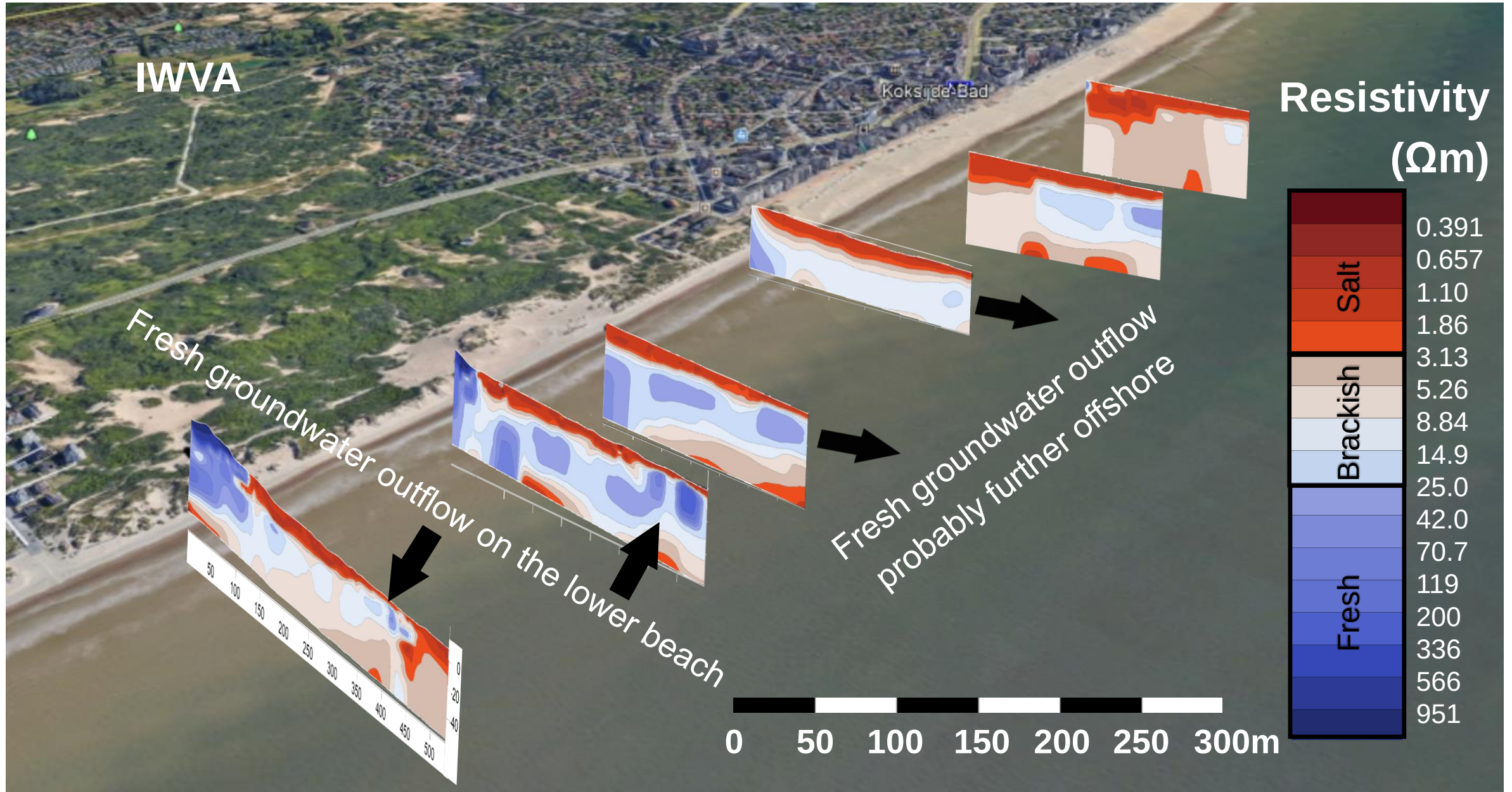


MARINE CRP (May 2019)

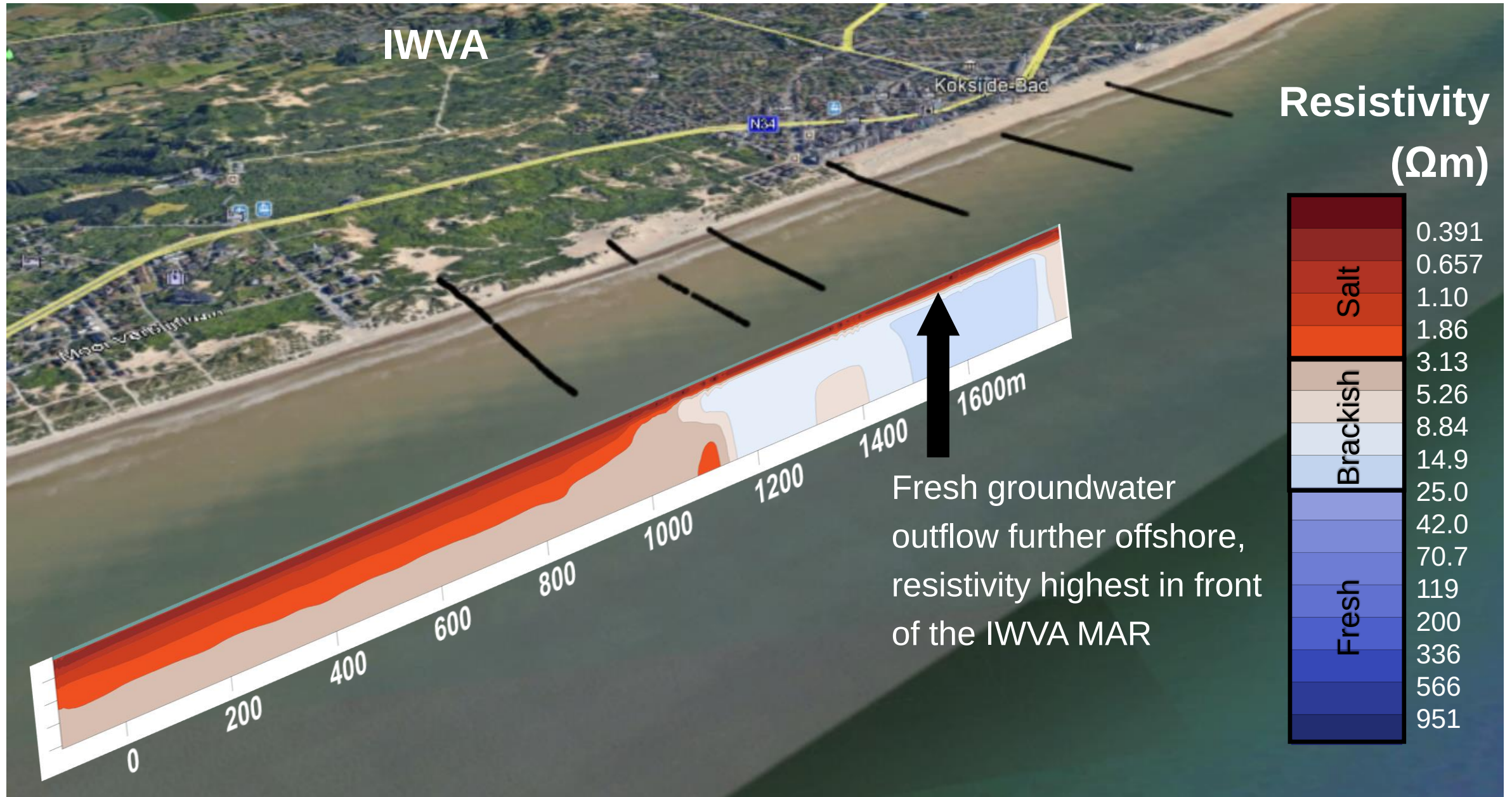
Low tide



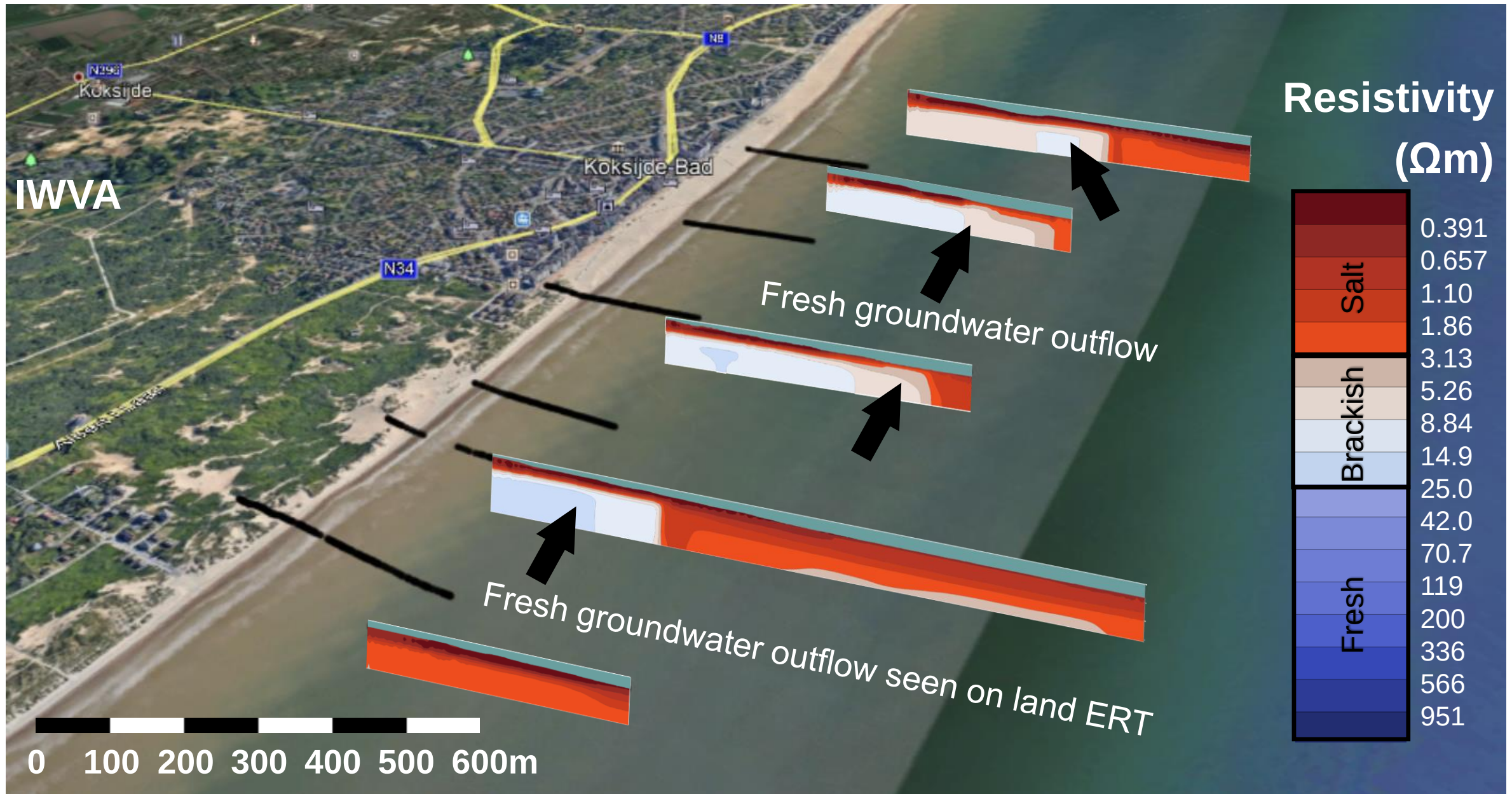
ERT ON LAND



LOW TIDE MARINE CRP



HIGH TIDE MARINE CRP



Conclusion

Fresh groundwater outflow is more seaward located in front of the artificial recharge and groundwater exploitation site.

It indicates a stronger discharge (Paepen et al., 2020)

More research needed to see if other factors are influencing this pattern



REFERENCES

Lebbe, L. (2017). Grondwatermodel van de geplande wijzigingen in waterwinning Sint-André. Opdrachtgever: Intercommunale Waterleidingsmaatschappij van Veurne Ambacht (IWVA).

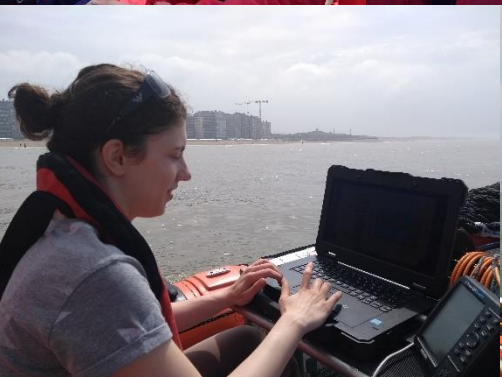
Paepen, M., Hanssens, D., Smedt, P. D., Walraevens, K., & Hermans, T. (2020). Combining resistivity and frequency domain electromagnetic methods to investigate submarine groundwater discharge in the littoral zone. *Hydrology and Earth System Sciences*, 24(7), 3539-3555.





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Project

Quantitative and qualitative assessment of the fresh groundwater discharge in the Belgian coastal area.