

Assessing climate change impacts on the hydro-meteorological forcings of the Gironde estuary

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Context and objectives of the ECCLIPSE project

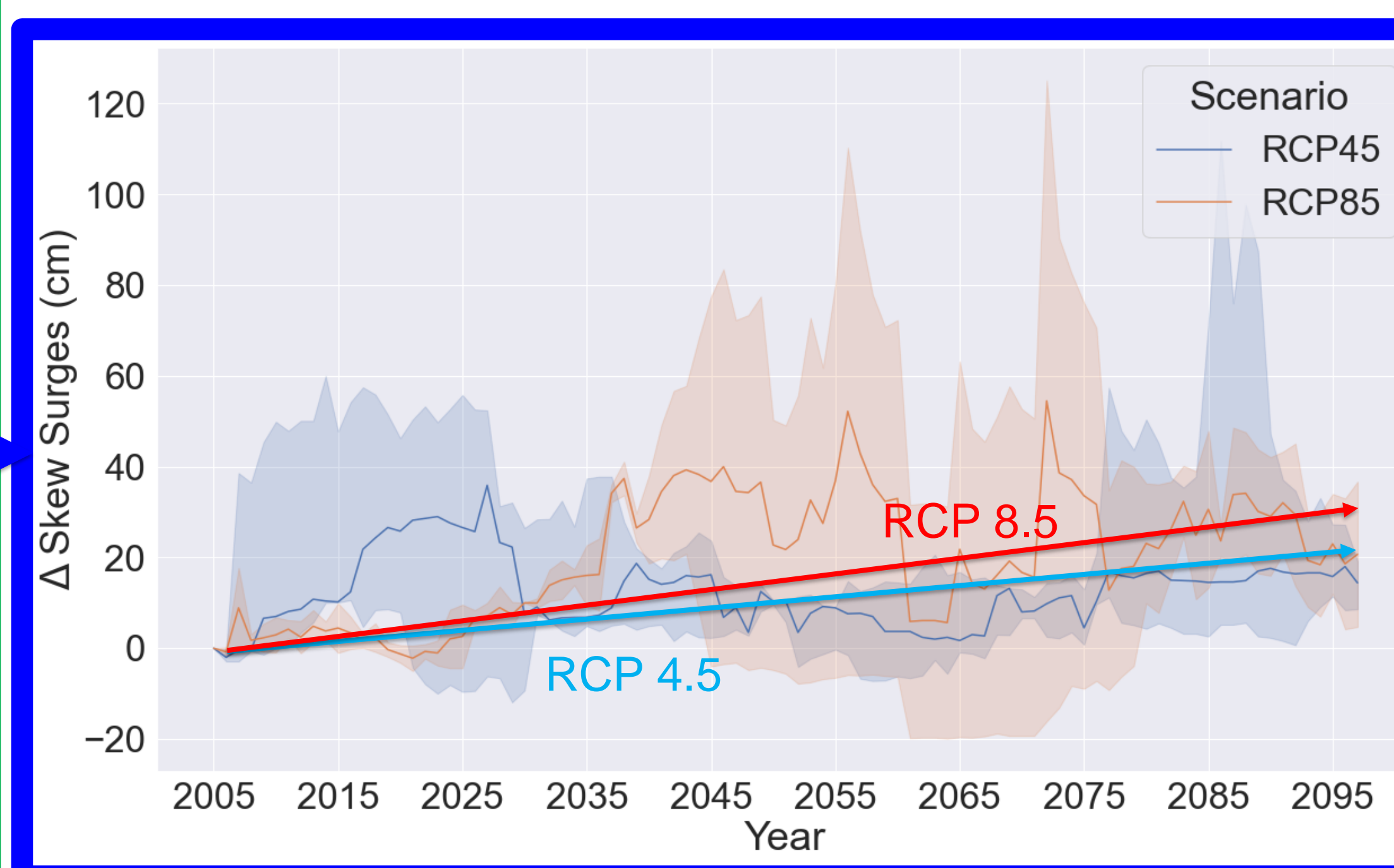
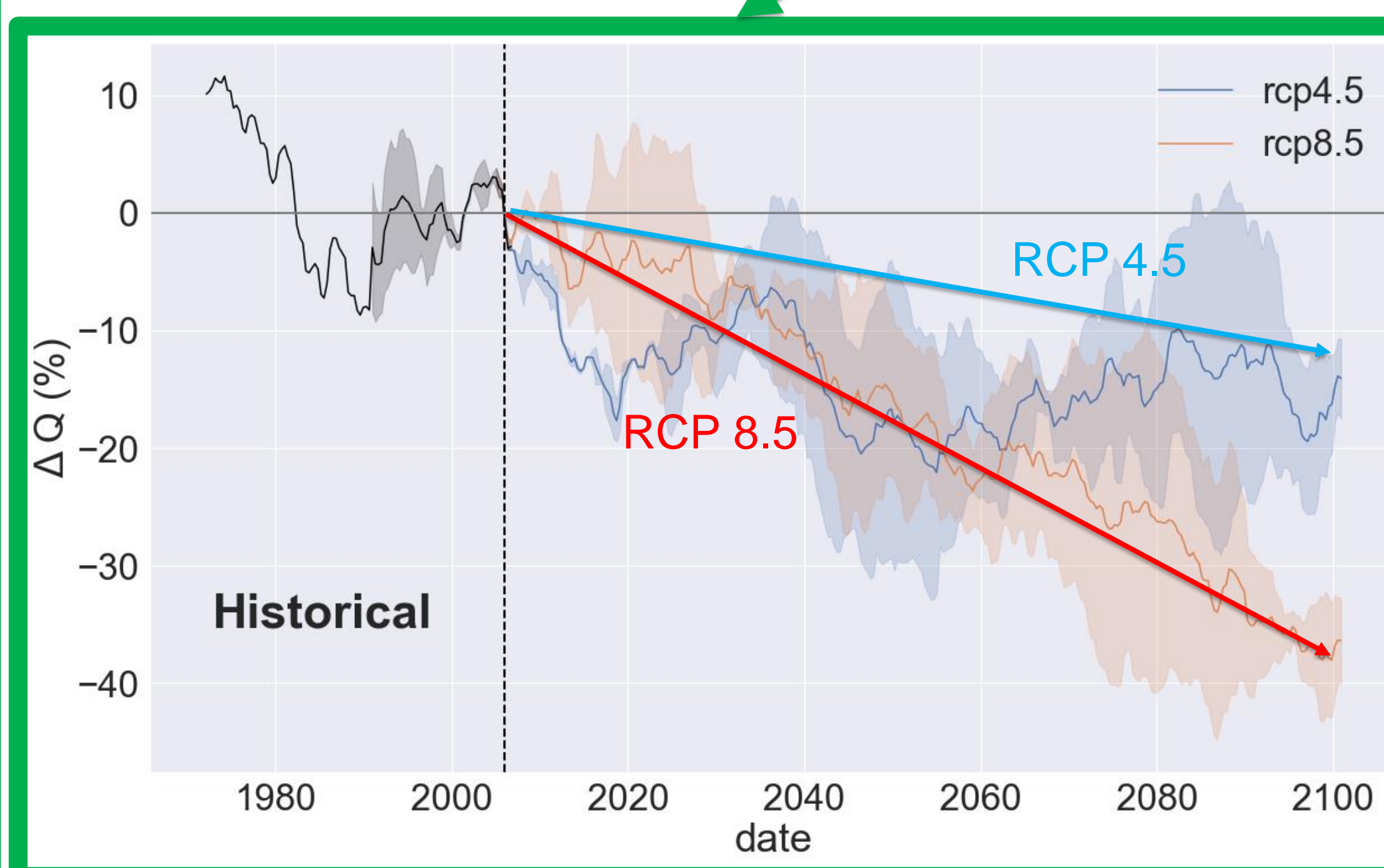
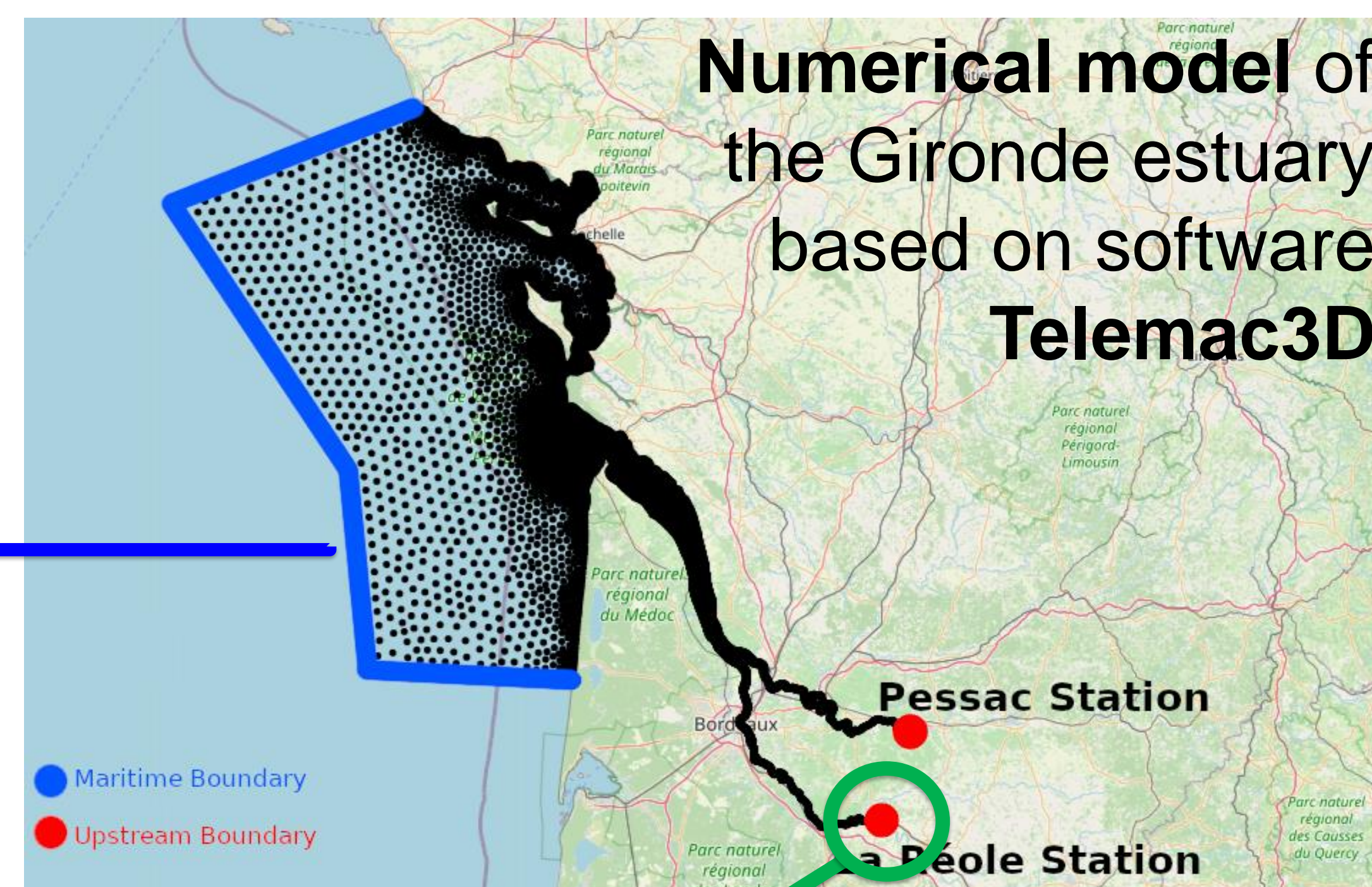
1. Study how **seaports** located in **southwestern Europe** can **adapt** to climate change
2. **Assess the impact** on the **hydrological** and **maritime (storm surges and Mean Sea level Rise) forcings** in **Gironde estuary** and on the **evolution of the hydrodynamics and hazards.**

Materials and methods

- **Conceptual and 2D shallow water equations based numerical modelling ([1],[3])**
- **Deterministic downscaling from Regional Climate Model to local models ([2])**
- **Statistical indices for the short, middle and long term (towards 2100) periods**

Maritime Boundary Condition provided by Telemac2D Surge level Numerical Model [5]

Results : evolution towards 2100



Conclusions ([4])

Assessment of the **impact of climate change** on the **main variables driving the hydrodynamics** of the **Gironde estuary.**

1. **decrease** in the flows of the Dordogne and Garonne rivers by an average of **10 % and 40 %** respectively
2. **increase** in the value of **skew surges with a return period of 100 years of 20 cm to 30 cm** for the **RCP4.5 and RCP8.5** scenarios respectively.

On progress

1. Study of the **3D hydrodynamics of the Gironde estuary (time-dependent evolution of the salinity)**
2. **Dredging requirements evolution**

Literature cited

- [1] Fayet, L., 2020. *Intership report.*
- [2] Huybrechts, N. & al. *Journal of waterway, port, coastal, and ocean engineering*, 138(4), 312-322.
- [3] Laborie, V & al (2015). In *Proceedings of the XII TUC* (pp. 172-181)
- [4] Traboulsi, M., 2021. *Intership report.*

Acknowledgments

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Further information

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