

# Translating climate-induced lake deoxygenation predictions into adaptive management strategies



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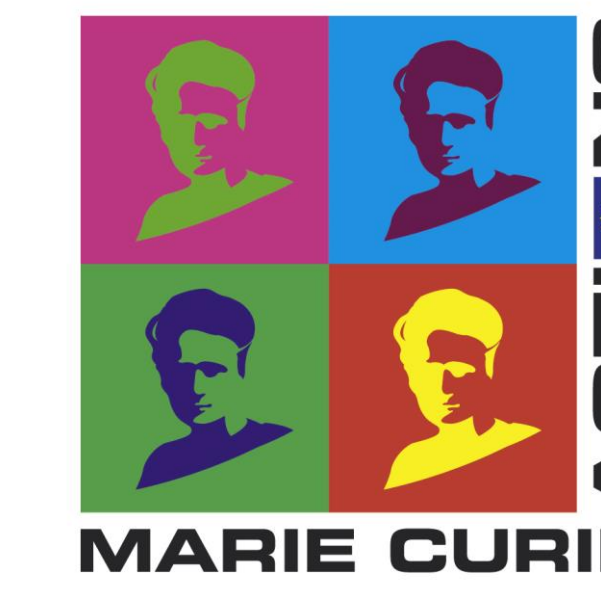
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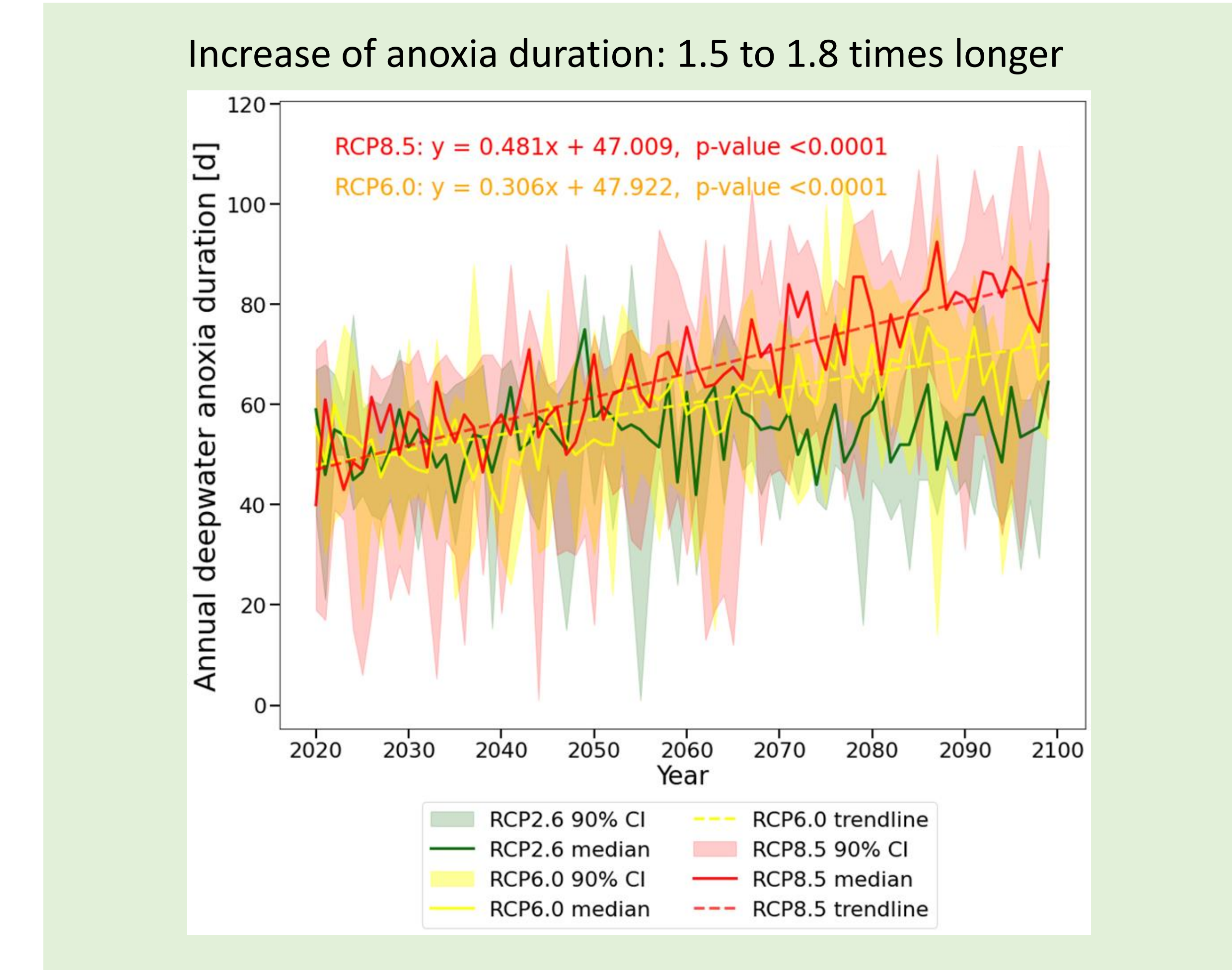
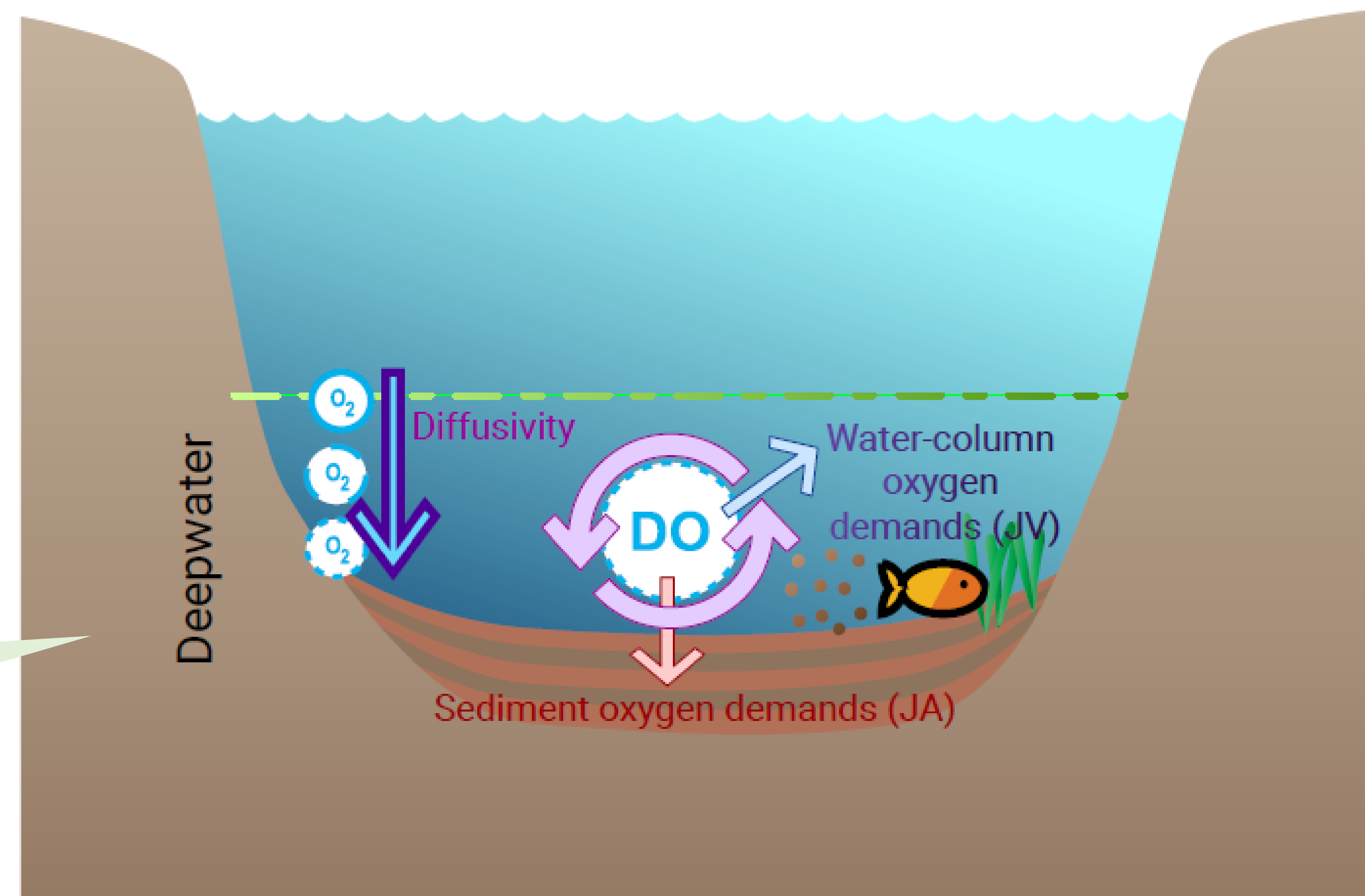
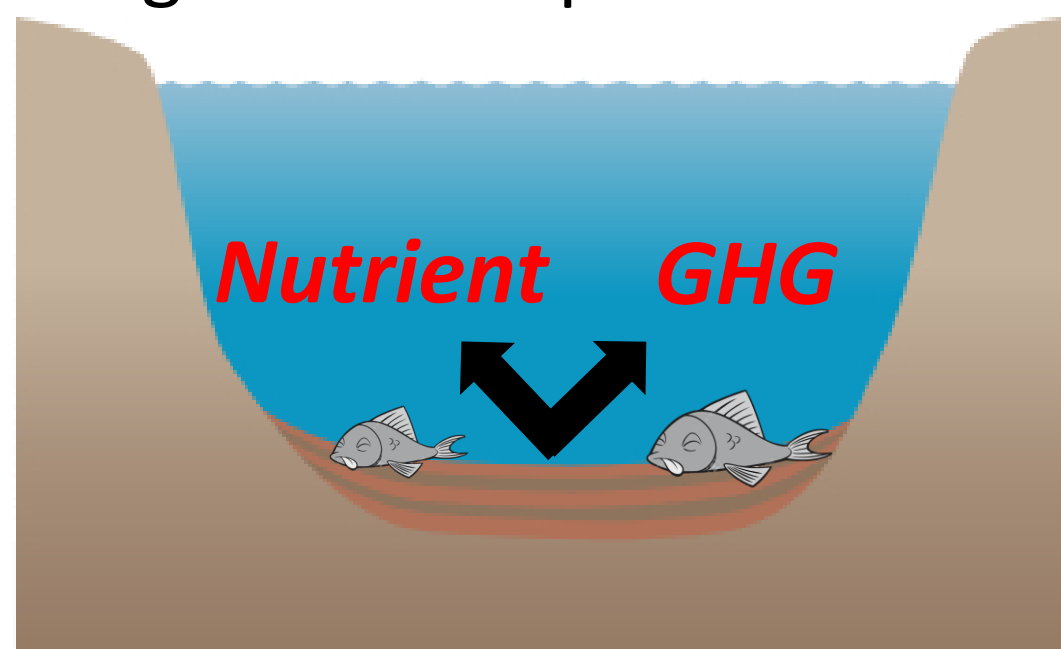
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**!** Widespread deepwater dissolved oxygen (DO) depletion occurs during the warm, stratified months, when bottom waters are isolated from the well-oxygenated surface layers (Jane et al., 2021).

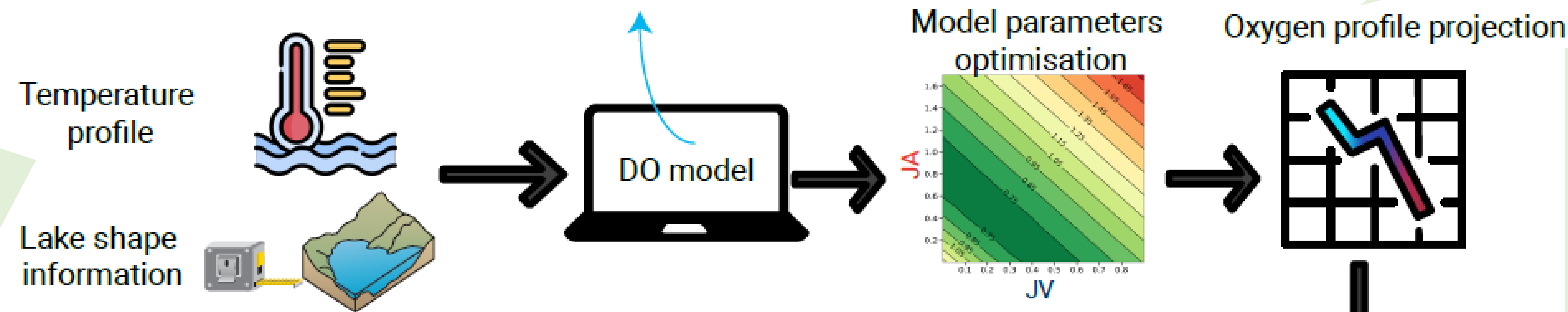
**!** Climate change is expected to further exacerbate this issue and intensify its negative ecological consequences in the future.



- Simulate stratified deepwater DO profile
- Fully saturated onset
- Depletion rates<sup>1</sup> modified by temperature
- Mixing into and within the hypolimnion

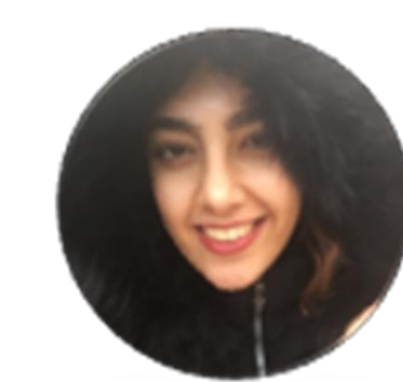
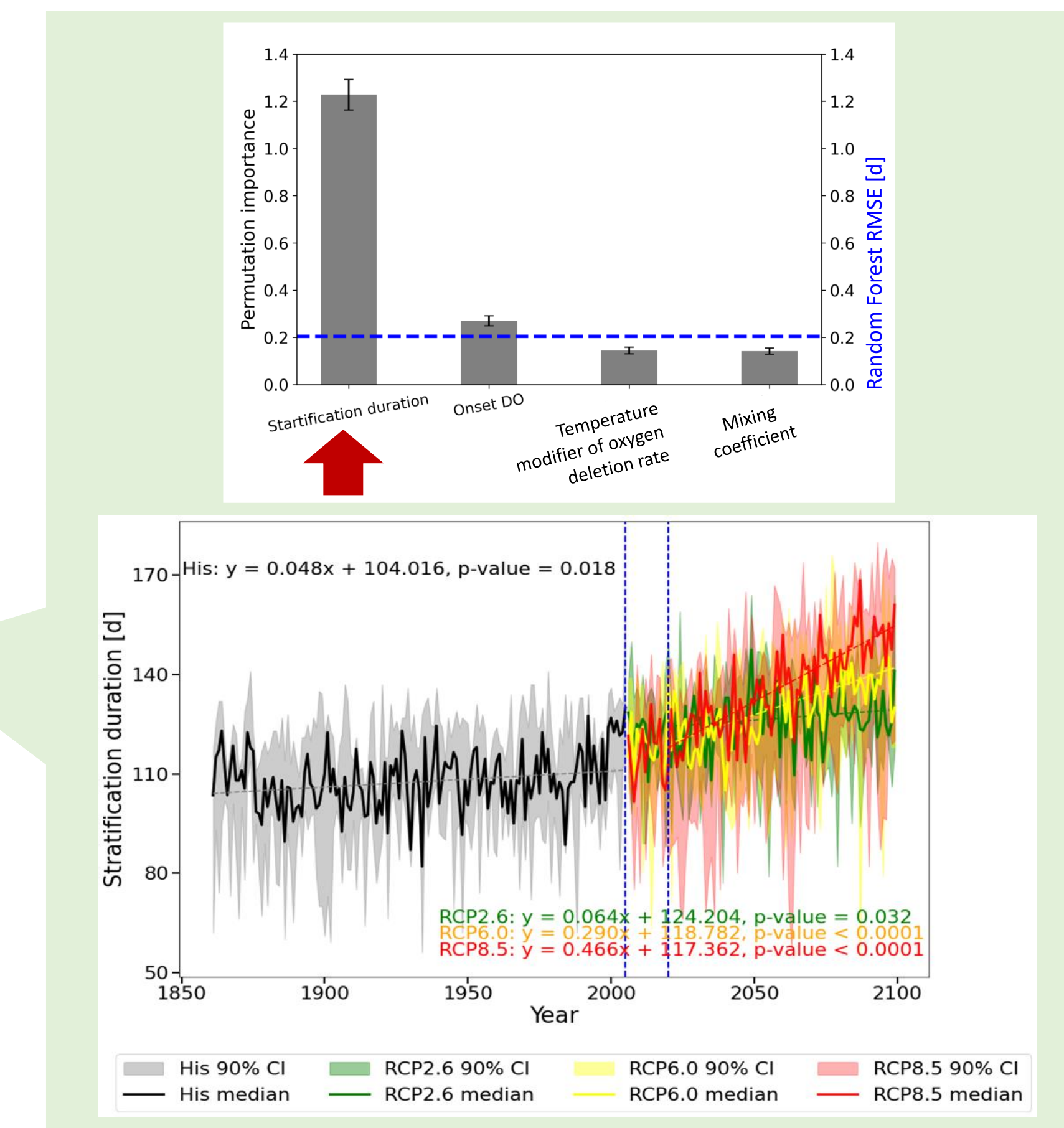
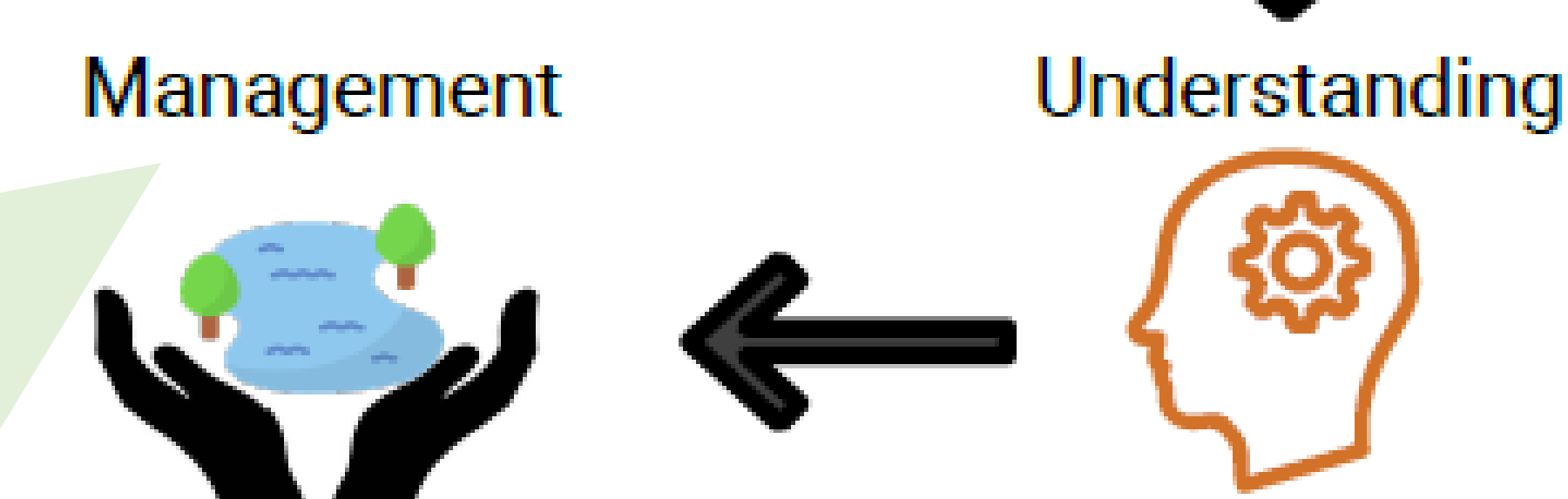
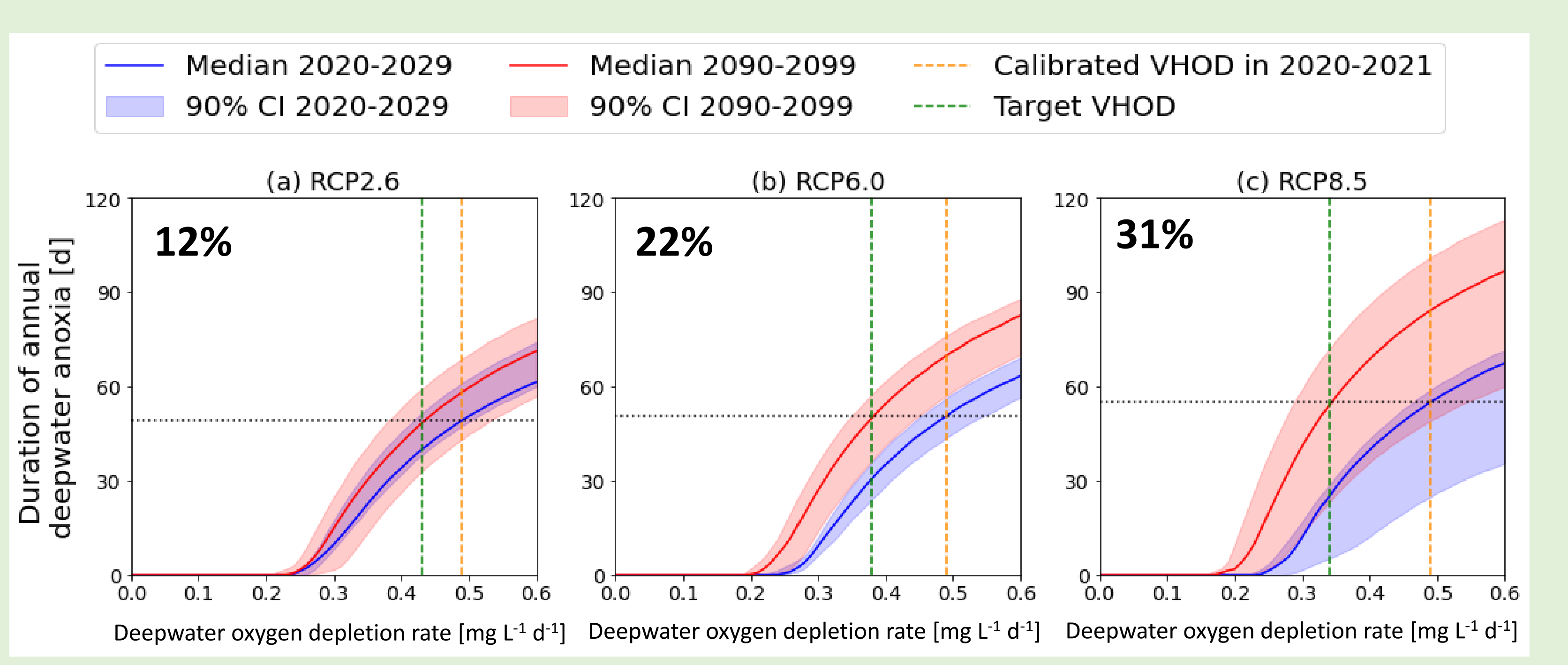


- A hydrodynamic model (GOTM) (Ayala et al., 2020), 4 GCMs, 3 RCPs.
- Observed anoxia ( $< 0.5 \text{ mg L}^{-1}$ ) duration in 2022 was 45 days.
- Average deepwater oxygen depletion rate was  $0.49 \text{ mg L}^{-1} \text{ d}^{-1}$ .



## Supporting mitigation strategies design:

- Reducing external and internal nutrient inputs (Nbs)
- Mixing and oxygenation
- Biological management



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