

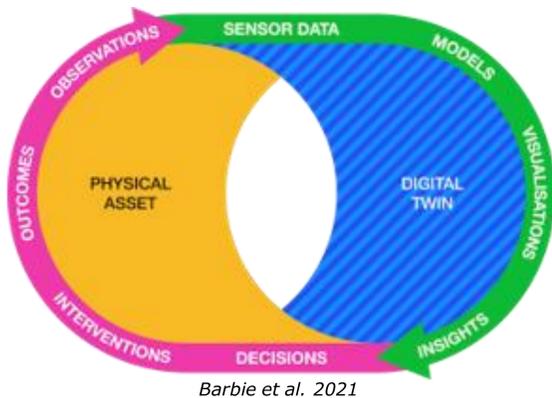


# Perceptions of marine science as a field-based discipline: Highlighting digital twinning of the oceans as a complementary and more inclusive pathway into a career in the marine sciences

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## Study Motivation

- Limitations of fieldwork may create barriers, yet it is considered an entry-way into the career (Mol & Atchison 2019; Giles et al 2020)
- Do incoming & established scientists perceive the same barriers?
- How can we raise awareness of alternative routes into the disciplines?

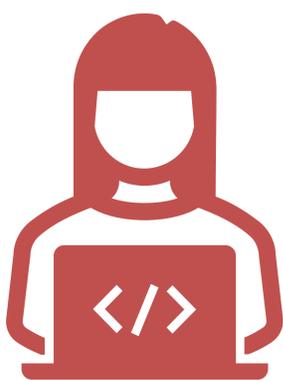


## Methods

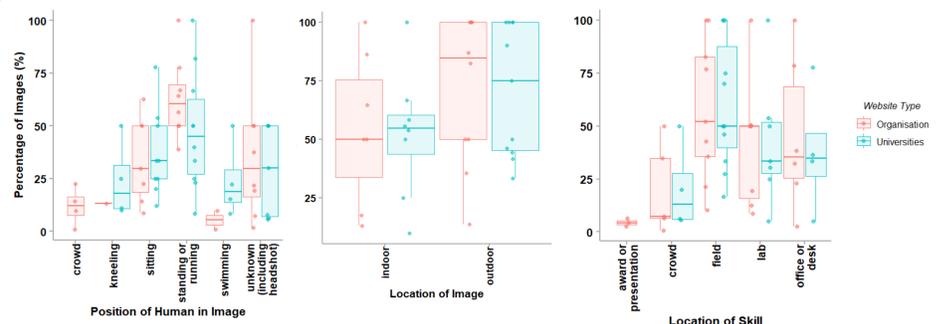
- Perceptions of fieldwork & digital twinning – thematic analysis of questionnaire & focus group
- Image analysis – manual & supervised algorithm
- Job advert language - systematic review

## What is a Digital Twin?

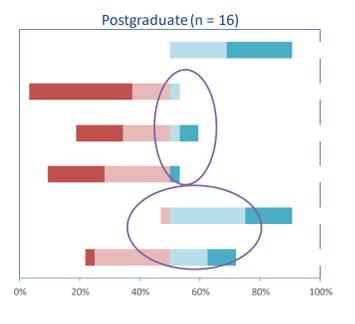
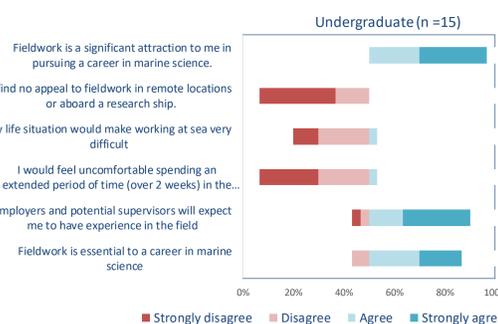
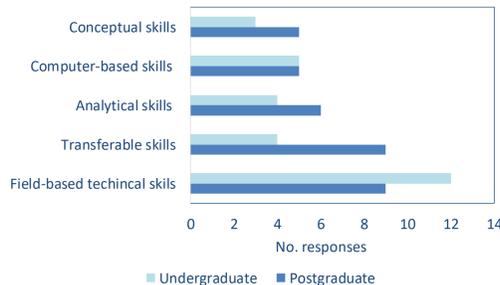
Two-way connection between sensors, models & physical environment and stakeholders, used to make real-time decisions & interventions remotely



## Results



What skills do you see as important?



## Conclusions & Next Steps

- Higher proportion of outdoor images, trend for field-based images
- Perception that fieldwork is important – need to 'equalize' digital skills?
- Support needed to equalize opportunities in the field and digital realm
- Digital skills are appreciated, but less than field ones
- Interactive online portal due December 2022
- Thanks to: NERC Making Environmental Science Equal, Diverse & Inclusive

I love the relationships you build with others whilst on a cruise....I deeply enjoy being at sea and being a part of a team. I am more than happy ... to provide information virtually for those on shore however!

[Motivation for digital twinning] would depend on where I was in my career. As I am quite young and want to be outside currently, the idea of being stuck behind a computer all the time is not as appealing, but later on, I might prefer digital twinning, particularly if I have a family.

I feel expense is a big barrier when the most commonly encountered opportunities online are often pay to participate schemes. The careers department of my institution has promoted such schemes to my cohort and allowed them to advertise at careers fairs too. I think such schemes can be highly exploitative.

Barbie et al. 2021. Developing an Underwater Network of Ocean Observation Systems with Digital Twin Prototypes - A Field Report from the Baltic Sea; Mol & Atchison (2019). J Geography Higher Education, 43(4), 544-567; Giles et al. (2020) Nat Rev Earth Environ 1, 77-78

