

SS039: Exploring the Role of AI in Marine Science and its Potential for Research, Monitoring, and Decision-Making (OORI 25)

Dr. Karolien Van Puyvelde & Prof. AJ Smit

karolien.van.puyvelde@vub.be

ajsmit@uwc.ac.za

Artificial intelligence (AI) is increasingly permeating the landscape of scientific inquiry as a reconfiguration of how knowledge is structured, accessed, and interpreted. As in all spheres of science, this use is also apparent in marine science, where the convergence of vast, heterogeneous datasets and urgent ecological imperatives invites methodological innovation. Applying generative models such as GPT and other AI architectures offers new capacities for research design, textual synthesis, data analysis, and inferential support. Yet, these technologies do not merely automate: they reshape the epistemic conditions under which questions are asked, evidence is assembled, and arguments are made. This workshop explores the role of AI in marine science with a dual orientation: pragmatic and philosophical. Participants will engage with the anatomy of AI models, examine the significance of prompt structure in shaping output quality, and evaluate use cases from satellite data extraction and ecological forecasting to peer review simulation and scientific writing. Importantly, the workshop foregrounds the epistemological stakes of these interventions—what is gained, obscured, or displaced when machine learning augments the human researcher. Questions of academic integrity, model provenance, and disciplinary trust are explicitly addressed. Targeted at Early and Established Career Ocean Professionals, the workshop combines theoretical framing with hands-on interaction. Rather than evangelising AI, it invites critical adoption: a stance that is neither reactionary nor credulous, but attentive to the uneven landscape where automation, authorship, and accountability now intersect.