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Dynamic virtual environments from original data and measurements: a game engine perspective

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Exploring seafloor morphology and benthic habitats is essential for understanding the interactions between biology and geology. While findings have traditionally been shared through maps and graphs, effectively communicating environmental change and mitigation scenarios to stakeholders is becoming increasingly important. Immersive and dynamic environments offer a new way of transferring knowledge by enabling interactive discussions of science-based scenarios and the large, complex geospatial datasets used in ecosystem classification. However, integrating hydroacoustic or optical data into virtual environments often introduces artefacts, which limits their effectiveness. To address this issue, we have developed an asset-based, immersive, virtual model of a coastal land-to-sea (L2S) environment. This model focuses on coastal vegetation and the potential impact of sea-level rise on coastal landscapes. This is achieved through a combination of data acquisition and processing, semi-automated classification, and translation into the game engine Epic Unreal Engine 5. In this presentation, we will demonstrate such a dynamic virtual environment. We see a great potential of this method to visualize and explore complex virtual environments at the interface between terrestrial and marine datasets.

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