

## Simulating social-ecological systems with Digital Ecosystem Avatars

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How much data do we really need? How much do we need to model an entire ecosystem? How do we decide what data we need and will we ever have enough? The Moorea Avatar project, launched in 2012, is an attempt to model an entire tropical island as part of the Islands Digital Ecosystem Avatar (IDEA) initiative. This talk will overview progress towards this goal, which now includes an interactive 4D satellite image model of the island and DNA barcodes from all lifeforms >1 mm from the Moorea Biocode project. As the vision for the Moorea Avatar is extended to other locations around the globe, such as the Kosterhavets national marine park in Sweden, work is proceeding towards a generic model of 'place' that can be extended to describe a diversity of local systems. Bringing together sufficient data across biodiversity, socio-economic and environmental boundaries is challenging but critically necessary if we are to model 'whole systems' in a way that increases our scientific understanding of fundamental processes driving functions and futures and helps us meet sustainability requirements.