End-to-End modeling of marine ecosystems: can the people and data keep up with the computers?

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I will first describe what I mean by end-to-end modeling, the reasons why end-to-end modeling is needed and gaining popularity, and the major challenges with developing and applying end-to-end models. Then I will present an example of a 3-D model of sardine and anchovy in the California Current that combines the ROMS hydrodynamics model, the NEMURO NPZ model, individual-based fish population models, and a fishing fleet model. I will use the example to illustrate how such models are developed, coded, and how their output is interpreted. I will conclude with a discussion of the future directions I envision for end-to-end modeling.