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Acoustic data from platforms of opportunity as fuel for ecosystem models

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Echo sounders are a widely used tool for observing marine ecosystems. Traditionally, rigid designed surveys are used to integrate biomass to a global estimate, which is coupled to traditional stock assessment models. More recently, the focus has shifted from single species assessment to an ecosystem approach, taking into account ecosystem function and dynamics. As a response, several ecosystem models have been developed. The data requirements for these models are different than for the traditional models, and new sensors and platforms have been developed as a response to this need. However, examples on how to integrate these observations with these new models are scarce. We propose a state-space observation-space approach, and compare the results from a vertically structured eco-system model with observations from an echo sounder positioned at the Mid Atlantic ridge. We argue that this approach is less vulnerable to assumptions in the data analysis process, and discuss adequate observations regimes for these models.