



Improving ocean forecasts with gliders: a non-Markovian game

Christopher Hughes, David A. Smeed, Peter Challenor, and Kevin Oliver

National Oceanography Centre, Southampton SO14 3ZH UK, Chris.Hughes@noc.soton.ac.uk

Throughout much of the ocean observations are sparse and ocean forecast models are under-constrained, which reduces their prediction skill. Underwater gliders can help improve predictive capability by making many observations over long periods at relatively low cost, whilst also allowing retargeting. Deciding where to send the gliders is, however, difficult, because strong covariances between observations make the reward for any given measurement dependent on past choices. Here, the issue is framed as a decision problem with non-Markovian rewards. A probabilistic solution method is developed which is then tested on an idealised problem. Finally, ways in which this method is being extended for use in an operational context are discussed.