Presentation Title: LOST: A Particle Trajectory Model for Search and Rescue in the Greater Agulhas System

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A particle trajectory model that incorporates the impacts of ocean currents, surface winds and stochastic motion is presented. Here we present the importance of using particle trajectory modelling in scientific studies and applications along the coastline of South Africa. One application is presented that illustrates the importance of particle trajectory modelling in scientific studies, operational applications and for local communities.

On the 18th of January 2016, the upturned hull of a catamaran was spotted approximately 113 nautical miles off Cape Recife, near Port Elizabeth (South Africa). 5 days after being spotted off Cape Recife, on the 22nd of January 2016, the National Sea Rescue Institute (NSRI) found the capsized catamaran south of Cape Agulhas. The approximate locations, the last known position and the recovery site of the capsized vessel provides valuable information that are used to assess the ability of the LOST particle trajectory model.

A comparison between the use of windage, ocean surface currents and stochastic motion is presented and discussed in order to assess their impact on estimating the pathway and final location of objects lost at sea. This application illustrates the capability of the particle trajectory model in real life applications and it is shown to be important to include windage, ocean surface currents and stochastic motion in search and rescue applications.

A second application is presented showing the broad range of capabilities of the particle trajectory model and how it can be used to serve the community. This application is that of a surfboard that was lost during a surfing incident and then found on the west coast two weeks later.