

Multidisciplinary Simulation, Estimation, and Assimilation Systems Seminar Series

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Divisione OPA (Ocean Predictions and Applications)

Lecce, Italy

Optimal Ship Routing for Crossing the Atlantic

Abstract: The purpose of this work is to develop a numerical model that calculates the efficient and safe routes for a vessel to take across the Atlantic Ocean. Existing software exists to perform this task, but it could be significantly improved by building on the experience gained with the open-source model VISIR-I (www.visir-model.net) and the oceanographic datasets of the Copernicus Marine Environment Monitoring Service (<http://marine.copernicus.eu/>). In particular, the VISIR model has been evolved into a new code in Python and the path optimization is now solved on a non-uniform unstructured grid. The new code will start employing the CMCC CGLORS reanalysis of ocean circulation at $\frac{1}{4}$ deg, while other relevant environmental fields will be added later on. The new code will be used for achieving the goals of H-2020 project [AtlantOS Task 8.3](#), which includes the capacity to compute safe routes optimizing the economic cost of navigation through use of dynamic environmental information.

Biography: Gianandrea's research activity aims to improve Maritime Transportation by means of Decision Support Systems. Together with colleagues of the TESSA and IONIO projects, he designed and implemented VISIR, a ship routing model for safer and more efficient navigation, and presently leads its scientific and operational development. As a model, VISIR's source code is made publicly available following the guidelines of the Free and Open Source Software. As an operational system, VISIR already has an operational implementation in the Mediterranean Sea.

Thursday, Aug. 11, 2016

3:00PM; Rm. 5-234

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Host: Pierre Lermusiaux

<http://mseas.mit.edu>

0.62
0.41
0.21
min 2

$\frac{\partial \phi_i}{\partial t} + \mathbf{u} \cdot \nabla$

Chl.
Fcst.

Assimilation
Adapt
Mode
Estimates

Stoch.
Stoch. Coef. 4

Temp.
Fcst.

(dB)
ivers
A)
loss)
40

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