

SCIENTIFIC REPORT BY ANA M. MANCHO

Dr. Ana M. Mancho has visited NERSC at Bergen in the framework of the Short Term Scientific Mission “Dynamical Systems tools and the Arctic Circulation” during full five working days running from the 6th to the 10th of March 2017. Her arrival date to Bergen was on the 5th of March and her departure day was on the 11th of March. Overall the visit has contributed to the interchange of knowledge between Dr. Laurent Bertino, Dr. Jiping Xie and Dr. Satoshi Kimura on Arctic simulations and data assimilation and that of Dr. Mancho and her PhD student, Francisco Balibrea-Iniesta on dynamical systems tools and their applications to the study of transport in geophysical flows. As a result, these researchers --jointly with Dr. Stephen Wiggins, who also attended the meeting funded by the Office of Naval Research, and Dr. Victor. J. Garcia-Garrido-- are shaping an article that:

1. will provide novel insights on freshwater transport and storage in the Arctic and
2. will describe the role played to this end by circulation patterns such as the Transpolar Drift and the Beaufort Gyre.

We expect that these novel insights will help to evaluate Arctic Ocean synthesis, which is at the core of the goals of the COST action funding the visit.

The first day of the Short Term Scientific Mission was dedicated to an extensive presentation by Dr. Laurent Bertino on specific issues on data assimilation in the Arctic simulations run at NERSC. This served as an introduction to the visiting researchers and helped them to gain insights in the part of the project less familiar to them. Additionally PhD student Francisco Balibrea-Iniesta provided a brief description on the preliminary results he has obtained on the Lagrangian analysis of Arctic Data. The second day Dr. Ana Mancho gave a seminar at NERSC illustrating dynamical systems concepts and their application to the management of an oil spill occurred in Spain in 2015. This presentation served as introduction for the host researchers on the kind of tools that will be used to assess transport in the Arctic in the ongoing joint project. The third day further discussions with Dr. Laurent Bertino outlined the goals of the article. He offered further data recently obtained by his group at NERSC that will allow the study of transport issues in longer time series. The data was prepared and passed to PhD student Francisco Balibrea-Iniesta, by Dr. Jiping Xie on the fourth day. Additionally numerous references of interest for the project were circulated by Dr. Laurent Bertino and subsequently discussed. Finally the last day the list of the actions required to complete the manuscript was agreed. These included the performance of new simulations for longer periods, considering the new data supplied by the NERSC group and circulating a first draft of the article by the end of March.

Madrid, 22th March 2017



Dr. Ana M Mancho