Date of birth : 08.10.1985   Mail: ignacio.merino.cue@gmail.com
Nationality: Spanish

Nacho Merino Cue.

Education.

2013-2016 :
PhD, Geophysical modeling.
Academic Institution: **Joseph Fourier Univ. (Grenoble-Alpes Univ.)**
Research institution : **LGGE (CNRS/OSUG).**
Title: **Ice-ocean interactions: towards coupled model**
- Study of the model representation of the Antarctic/Southern Ocean interactions into the next generation of climate models.
- Iceberg modeling development.
- Improve representation of Antarctic freshwater fluxes in standalone ocean models.
- Sensitivity of glacier models to ocean-induced grounding line retreat.
- Sea ice changes in response to observed Antarctic mass discharge acceleration.

2014:
Summer School – Fluid Dynamics Summer School. FSDE
Institution: **University of Cambridge and Ecole Polytechnique Paris.**

2012-2013:
Master M2 (M.Sc) - Modélisation et Simulation (modeling and simulation)
Institution: **Ecole Centrale Paris (France)**
- PDE mathematical tools, optimization without gradients, simulation and numerical methods, asymptotic preserving schemes, fluids modelling and simulation, statistics physics modelling and simulation, parallel computing.
- Thesis : A new inverse method to initialize ice flow models. (LGGE Grenoble)

2011-2013:
M.Sc - Ingenieria Matematica (Mathematical Engineering)
Institution: **Univ. Vigo and Univ Santiago (Spain)**
- Finite elements method schemes, finite volumes method schemes, parallel computing, fluid dynamics solvers, CAD 3D
- Thesis : A new inverse method to initialize ice flow models. (LGGE Grenoble)

2003-2010:
B.Sc - Physics
Institution: **Univ. Cantabria (Spain)**
- Materials structure Physics, Numerical methods in material structure Physics, statistical Physics, solid state Physics, atomic Physics, particles and nuclear Physics, chaos and non-linear Physics, quantum mechanics, numerical methods in electromagnetism, software engineering.
- Thesis project: Remote control API of a Microbiro robot with CORBA and ZigBee frameworks. (CTR University of Cantabria)

Professional History.

2016-Present.
Model Engineer
Institution: **CNRS-LGGE**
- Technical coupling of NEMO ocean model and Elmer/Ice ice-sheet model.

2014-2016.
Lecturer
Institution: **ENSIMAG**

- Software Engineering.
- C developement.

<u>March 2013-August 2013</u>.
Internship
<u>Institution</u>: **LGGE (Grenoble, France)**
- Internship project: A new inverse method to initialize ice flow models

<u>Avril 2011-Octobre 2011</u>.
Programmer
<u>Company</u>: **Valnera Consultoría y Sistemas** (<u>www.valnera.com</u>)
<u>Sector</u>: Software and web service

<u>2010</u>
Programmer
<u>Institution</u>: **CTR Lab** (Computers and Real-Time), Universidad de Cantabria.
<u>Sector</u>: Research

<u>Others :</u>
- <u>2011 : Head coach VigoSquash.</u>
- <u>2010 : Restaurant Waiter.</u>
- <u>2009-2010 : Squash trainer. Squash Astillero</u>
- <u>2006-2009 : Shop assitant. Ciberlope</u>

Teaching activities

<u>Courses at ENSIMAG Grenoble – INP Superior Engineering School :</u>

ACVL (Software Engineering) (40h):
<u>Role :</u> Lecturer and assesor.
<u>Description</u>: Conceptual design and analyse of software engineering problems (33 hours lectures).

C-Project (30h):
<u>Role :</u> Assistant.
<u>Description :</u> C software development.

<u>Others :</u>
Workshop « Math a modeler » (10h)
<u>Role :</u> Lecturer
<u>Description :</u> Mathematical games workshop for school children.

Numerical Tools :

Modeling software:
Ocean modelling: **NEMO**
Ice flow modelling: **Elmer/Ice**
FEM software: **ElmerFEM**, **FreeFEM**, **COMSOL Multiphysics**
Molecular and solid physics: **Gaussian**, **SIESTA, HyperChem**
Fluid Dynamics: **FLUENT**
Enviromental: **MIKE21** (DHI), **TELEMAC**
Mesher: **ANSYS**, **GMSH**
CAD Design: **SolidWorks, FreeCAD**
Programming:
Languages: **Java, C, FORTRAN,**
Scripting : **PYTHON, MATLAB, BASH**
Data structure **: NetCDF, VTK**
Parallel : **Open-MP, MPI**
Frameworks: **Java-Struts**, **CORBA**
Standards: **ZigBee**, **POSIX**
Others:
Graphics: **InkScape**, **Fireworks**
Web: **Jekyll**, **Joomla**, **Alfresco**, **Moodle**
Statistics: **KaleidaGraph**
OS: **Windows, Linux, MacOS**

Publications

1- Merino, N. J. Le Sommer, G. Durand, N. Jourdain, H. Goosse, G. Madec, P. Mathiot. Increasing glacial freshwater impacts Antarctic sea ice. 2016 (Currently under review in Ocean Modeling).

2- Merino, N. J. Le Sommer, G. Durand, N. Jourdain, G. Madec, P. Mathiot and J. Tournadre. Antarctic icebergs melt over the Southern Ocean : climatology and impact on sea ice. 2016

3- Fürst, J. J.; Durand, G.; Gillet-Chaulet, F.; Merino, N.; Tavard, L.; Mouginot, J.; Gourmelen, N.; Gagliardini, O.Assimilation of Antarctic velocity observations provides evidece for uncharted pinning points. 2015

4- R. Marsh, V. O. Ivchenko, N. Skliris, S. Alderson, G. R. Bigg, G. Madec, A. T. Blaker, Y. Aksenov, B. Sinha, A. C. Coward, J. Le Sommer, N. Merino, and V. B. Zalesny. NEMO–ICB (v1.0): interactive icebergs in the NEMO ocean model globally configured at eddy-permitting resolution. 2015

Presentations

<u>Oral:</u>

IGS Meeting (Wellington 2017):
N. Merino , J. Le Sommer, G. Durand, N. Jourdain, P. Mathiot, H. Goosse 2017. Impact of increasing Antarctic glacial freshwater release on regional sea-ice cover in the Southern Ocean
DRAKKAR Meeting (Grenoble 2017):
N. Merino , J. Le Sommer, G. Durand, N. Jourdain, P. Mathiot , H. Goosse 2017. Impact of increasing Antarctic glacial freshwater release on regional sea-ice cover in the Southern Ocean
IUGG (Prague 2015):
N. Merino , J. Le Sommer, G. Durand, N. Jourdain, G. Madec P. Mathiot 2015. A model-based climatology of antarctic icebergs melt over the Southern Ocean.
DRAKKAR Meeting (Grenoble 2015) :
N. Merino , J. Le Sommer, G. Durand, G. Madec P. Mathiot 2015. Modelled icebergs freshwater flux distribution in the Southern Ocean.

<u>Posters:</u>

IGS Meeting (La Jolla, 2016) :
Merino, N., Le Sommer, J., Durand, G., Jourdain, N., Mathiot, P. NEMO-Elmer/Ice in the context of MISOMIP test.

Ocean Science Meeting (New Orleans, 2016) :
Merino, N., Le Sommer, J., Durand, G., Jourdain, N., Goosse H., Madec, G., Mathiot, P. Contribution of increasing glacial freshwater fluxes to observed trends in Antarctic sea-ice

IGS Meeting (Cambridge 2015) :
Merino, N., Le Sommer, J., Durand, G., Jourdain, N., Madec, G., Mathiot, P. Impact ot the observed changes in Antarctic ice sheet mass balance on Southern Ocean properties and sea-ice

FRISP Workshop (Koln 2014) :
Merino, N., Durand, G., Le Sommer, J., Madec, G., Mathiot, P.. Evolution of ocean freshwater forcing from Antarctic ice shelves over the past 20 years.

IGS Meeting (Chamonix 2014) :
Merino, N., Durand, G., Le Sommer, J., Madec, G., Mathiot, P.. Evolution of ocean freshwater forcing from Antarctic ice shelves over the past 20 years.

EGU (Wien 2014) :
Merino, N., Durand, G., Gillet-Chaulet, F., Gourmelen, N., Stumpf, A., Lampert, T., & Gagliardini, O. (2014, May) . Recession of Thwaites Glacier: inferring relevant processes using the ice sheet model Elmer/Ice.