



**Barcelona
Supercomputing
Center**

Centro Nacional de Supercomputación



BSC-ES CES Models & Workflows Team Activities, March 2016

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- Autosubmit is a Python tool to create, manage and monitor experiments by using computing resources available at computing clusters, HPC and supercomputers. It offers support for experiments running in more than one supercomputing platform and for different workflow configurations.
- <http://www.bsc.es/projects/earthscience/autosubmit/introduction.html>

Ongoing development, integrations:

- auto-nemo
 - auto-nemo v3.6a: git submodule connected to SVN.
- auto-ecearth3
 - auto-ecearth3 v3.2betaa: git submodule connected to SVN + SIM using run script + testing suite experiments
- Unit testing
- ecFlow API and GUI integration

- Development and discussion of the official upcoming releases of the Earth System Model (EC-Earth3)
- EC-Earth 3.2beta deployment on MareNostrum III
- Reproducibility

- Air Quality Forecast System, includes several models (WRF, HERMES, CMAQ, etc.) as well as the evaluation system
- CALIOPE Mobile apps
- AQFS-Mex
- Observations gathering: EIONET (part of the evaluation system + maintenance)

- HERMES for Mexico

- Meteorological core driver for NWP (Numerical Weather Prediction): NCEP/NMMB (NEMS) coupled online with BSC-CTM (BSC Chemical Transport Model) + more = NMMB/BSC-CTM (i.e.: Barcelona Dust Forecast Center)
- Evolution of WRF (NAMB: North American Mesoscale model on an Arakawa B grid, replaced the WRF-NAM in October 2011)
- Standardization of code (gitlab), procedures (workflow: autosubmit), initial data storage, etc.

- Technical memorandum:
- Poster:
 - Poster at EC-Earth meeting (Reading, UK, 5-6 May 2015): https://earth.bsc.es/wiki/lib/exe/fetch.php?media=library:external:20150506_jvegas_ec-earth2015.pdf
 - Autosubmit leaflet: <https://earth.bsc.es/gitlab/es/autosubmit/uploads/7a5ab8a83021d0fe6dc078abd9e480db/Autosubmit-triptic-2016.pdf>
- Paper:
 - HPC-WCES (Innsbruck, Austria, 18-22 July 2016): *submitted*
- Deliverables:
 - IS-ENES2 D9.3 "Assessment report on Autosubmit and Cylc"
- Other outreach materials:
 - https://earth.bsc.es/wiki/lib/exe/fetch.php?media=models:caliope:20160321_eionet_utdretriever_caliope.pdf



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EXCELENCIA
SEVERO
OCHOA

Thank you!

For further information please contact
ces@bsc.es

- Test
- Test
 - BSC theme
 - Test

- **EXAMPLE:**

- Nucleus for European Modelling of the Ocean
 - State-of-the-art modelling framework → Research & Operation
 - EU Consortium → CNRS, NERC, UKMO, Mercator, CMCC, INGV
- What has already been done? 2014-2015 (Highlights)
 - Collaboration with the NEMO dev. team, now NEMO HPC Group
 - 2 optimization branches created, one already merged to 3.6 stable (June 2015), the other going to be merged soon
 - Technical memorandum (Autumn 2015) and poster at SC15
 - Collaboration @ NEMO merging party '16
- Ongoing work
 - Paper: “Finding, analyzing and optimizing MPI communication bottlenecks in Earth System models”
 - Establishing benchmark configurations → ORCA025-LIM3 (BSC) ready
 - Test optimization on ORCA025 (HiRes) configuration → Problems with XIOS (I/O server)