Data

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Numerical Simulations of the Biogeochemical Impact of Atmospheric Nitrogen Deposition on Surface Waters of the Western North Atlantic

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***Complete Dataset is available HERE or at under Data Access

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Title of Dataset:

Numerical simulations of the biogeochemical impact of atmospheric nitrogen deposition on surface waters of the western North Atlantic

Publication Date:

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Description:

This dataset features the results from 3 numerical simulations described in the following reference:
St-Laurent, P., et al., Impacts of atmospheric nitrogen deposition on surface waters of the western North Atlantic mitigated by multiple feedbacks, J. Geophys. Res. Oceans, vol.122, doi:10.1002/2017jc013072.
The simulation results are in the standard, self-documented NetCDF format (extension .nc); see https://www.unidata.ucar.edu/software/netcdf/ for more information. The 3 numerical simulations described in the reference document are archived in separate directories: run01, run02 and run03. The results from each simulation are further divided into monthly files (suffix _0001 to _0063) of two types. The first type holds time-averaged model fields (e.g., ocean_avg_0001.nc) and the second type holds time-averaged diagnostics (e.g., ocean_dia_0001.nc). In addition to the simulation results, the dataset includes the atmospheric deposition forcing that was prescribed at the ocean surface in the simulations. This atmospheric deposition forcing is in the same format as above (NetCDF) and it is archived in the directory “deposition_forcing”. The area covered by the study is 25-45deg.N and 65-80deg.W.

Abstract:

The impacts of atmospheric nitrogen deposition on the chlorophyll and nitrogen dynamics of surface waters in the western North Atlantic (25-45N, 65-80W) were examined with a biogeochemical ocean model forced with a regional atmospheric chemistry model. The model simulations cover the period 2004 to 2008 and are fully described in the following reference:
St-Laurent, P., et al., Impacts of atmospheric nitrogen deposition on surface waters of the western North Atlantic mitigated by multiple feedbacks, J. Geophys. Res. Oceans, vol.122, doi:10.1002/2017jc013072.

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Keywords: nutrients, atmospheric deposition, biogeochemistry, numerical modeling, oceanography, North Atlantic

Files include:

File	Description
Input Files (deposition_forcing)	
rain_trmm_NENA_200x_with_wet_and_dry_atmdep.nc	Atmospheric nitrogen deposition forcing (years 2003 to 2008) prescribed at the ocean surface. The nitrogen fluxes include both wet and dry deposition.
rain_trmm_NENA_200x_with_wet_atmdep.nc	Atmospheric nitrogen deposition forcing (years 2003 to 2008) prescribed at the ocean surface. The nitrogen fluxes only include wet deposition.
Model Output (run01)	
ocean_avg_00xx.nc	Time-averaged ocean fields (Nov. 2003 to Dec. 2008, each file contains one month) for the control simulation (no deposition forcing).
ocean_dia_00xx.nc	Time-averaged ocean diagnostic fields (Nov. 2003 to Dec. 2008, each file contains one month) for the control simulation (no deposition forcing).
Model Output (run02)	
ocean_avg_00xx.nc	Time-averaged ocean fields (Nov. 2003 to Dec. 2008, each file contains one month) for the simulation including wet and dry deposition.
ocean_dia_00xx.nc	Time-averaged ocean diagnostic fields (Nov. 2003 to Dec. 2008, each file contains one month) for the simulation including wet and dry deposition.
Model Output (run03)	

File	Description
ocean_avg_00xx.nc	Time-averaged ocean fields (Nov. 2003 to Dec. 2008, each file contains one month) for the simulation including only wet deposition.
ocean_dia_00xx.nc	Time-averaged ocean diagnostic fields (Nov. 2003 to Dec. 2008, each file contains one month) for the simulation including only wet deposition.