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Associated dataset: Impacts of Atmospheric Nitrogen Deposition and Coastal Nitrogen Fluxes on Oxygen Concentrations in Chesapeake Bay

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Recommended Citation

Da, Fei; Friedrichs, Marjorie A.M.; and St-Laurent, Pierre, "Associated dataset: Impacts of Atmospheric Nitrogen Deposition and Coastal Nitrogen Fluxes on Oxygen Concentrations in Chesapeake Bay" (2018). https://doi.org/10.21220/gaww-m696

Dataset Information

CLICK HERE TO ACCESS DATA FILES

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Academic Department and/or Research Group:

Virginia Institute of Marine Science

Title of Dataset:

Associated dataset: Impacts of Atmospheric Nitrogen Deposition and Coastal Nitrogen Fluxes on Oxygen Concentrations in Chesapeake Bay

Publication Date:

June-2018

Description:

These are daily model outputs used to generate results and figures shown in Da et al., *Journal of Geophysical Research: Oceans*, 2018. Please see associated journal article for details. There are seven folders, including one for standard model run, and six for sensitivity tests. All files are in netCDF format, which can be manipulated and displayed by a wide range of freely available (e.g. Python) and licensed software (e.g. MATLAB), see http://www.unidata.ucar.edu/software/netcdf/docs/. For detailed information about the open source model: Regional Ocean Modeling System (ROMS), see: www.myroms.org.

File Description Table:

Folder Name	Description
reference	Model Output – Standard model run
atm_zero	Model Output – No direct atmospheric dissolved inorganic nitrogen (DIN) deposition, AtmN sensitivity test
atm_double	Model Output – Double direct atmospheric DIN deposition, AtmN sensitivity test
nud_zero	Model Output – Nudge to zero DIN concentrations along model open boundary on the continental shelf, CoastalN sensitivity test

nud_double	Model Output – Nudge to doubled DIN concentrations along model open boundary on the continental shelf, CoastalN sensitivity test
riv_reduce	Model Output – Reduce riverine DIN loading by the same amount as direct atmospheric DIN deposition, ΔRiverN sensitivity test
riv_increase	Model Output – Increase riverine DIN loading by the same amount as direct atmospheric DIN deposition, ΔRiverN sensitivity test
Note that both ocean_avg*.nc and ocean_dia*.nc files save daily averaged model outputs. Primary production rate is read from ocean_dia*.nc files, while other variables are read from ocean_avg*.nc files.	

Abstract:

The dataset includes model outputs used in publication Da et al. (2018), which used the Estuarine-Carbon-Biogeochemistry model embedded in the Regional-Ocean-Modeling-System (*Ches*ROMS-ECB) to examine the relative impact of direct atmospheric dissolved inorganic nitrogen (DIN) deposition and DIN from the continental shelf on the Chesapeake Bay dissolved oxygen. Model simulations highlight that DIN from the atmosphere has roughly the same impact on hypoxia as the same gram-for-gram change in riverine DIN loading. DIN concentrations on the continental shelf has a similar overall impact on hypoxia as DIN from the atmosphere.

Associated Publications:

Da, F., Friedrichs, M. A. M., and St-Laurent, P. (2018). Impacts of Atmospheric Nitrogen Deposition and Coastal Nitrogen Fluxes on Oxygen Concentrations in Chesapeake Bay. *Journal of Geophysical Research: Oceans*, in revision.

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