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A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Model for the Northern Gulf of Mexico, USA

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Full Dataset Available Here

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Title of Dataset: *A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Model for the Northern Gulf of Mexico, USA*

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Description: *These files are compressed versions of input files, model code, and output used for the associated publication in Journal of Geophysical Research: Oceans (see below). Compressed files with the .gz file extension can be opened with Gzip GNU software (open source). Compressed files with the .tar file extension can be opened with Gzip Tar software (open source). Many of the input and output files use the NetCDF (Network Common Data Form) file format. These have "nc" as a file extension and can be read using a variety of open source tools: see http://www.unidata.ucar.edu/software/netcdf/docs/ . For information about the Regional Ocean Modeling System (ROMS), its model code and input / output, see www.myroms.org.*

File Description Table:

File Name	Description
Input Files	
mch_grd.nc.gz	Input File – Model Grid
gom_bry_0016.nc.gz	Input File – Forcing at Open Boundary
mch_atmo_frc.nc.gz	Input File – Atmospheric Forcing, except for winds
NARR-UV-nch_grd3m-200301-200912.nc.gz	Input File – Wind Forcing
gom_river_0017.nc.gz	Input File – River Forcing
gom_waves_0018.nc.gz	Input File - Wave Forcing
varinfo.dat.gz	Input File – List of variables
1. ocean_standard_2006.in.gz 2. ocean_standard_2007.in.gz 3. ocean_noresusp_July_2006.in.gz 4. ocean_noresusp_July_2007.in.gz 5. ocean_noresusp_June_2007.in.gz 6. ocean_noresusp_June_2006.in.gz	Input Files – Model Run Information for: 1. Standard model run (2006) 2. Standard model run (2007) 3. No-resuspension model run (July 2006) 4. No-resuspension model run (July 2007) 5. No-resuspension model run (June 2007)

7. ocean_fastset.in.gz 8. ocean_slowset.in.gz 9. ocean_fastrem.in.gz 10. ocean_slowrem.in.gz	6. No-resuspension model run (June 2006) 7. Fast-settling sensitivity test 8. Slow-settling sensitivity test 9. Fast-remineralization sensitivity test 10. Slow-remineralization sensitivity test
1. sed_standard.in.gz 2. sed_noresusp.in.gz 3. sed_fastset.in.gz 4. sed_slowset.in.gz	Input Files – Sediment Transport Information for: 1. Standard model run (2006 & 2007), as well as the Fast- and Slow-remineralization sensitivity tests 2. No-resuspension model runs (June and July 2006; June and July 2007) 3. Fast-settling sensitivity test 4. Slow-settling sensitivity test
1. bio_standard.in.gz 2. bio_fastset.in.gz 3. bio_slowset.in.gz 4. bio_fastrem.in.gz 5. bio_slowrem.in.gz	Input Files – Water column Biogeochemistry Information for: 1. Standard model run (2006 & 2007), No-resuspension model runs (June and July 2006; June and July 2007) 2. Fast-settling sensitivity test 3. Slow-settling sensitivity test 4. Fast-remineralization sensitivity test 5. Slow-remineralization sensitivity test
1. gom_init_0099_from0098.nc.gz 2. gom_init_0100_from0099.nc.gz 3. gom_init_0101_from0099.nc.gz 4. gom_init_0102_from0100.nc.gz 5. gom_init_0103_from0100.nc.gz 6. gom_init_0104_from0099.nc.gz	Input File – Model Initialization Files for: 1. Standard model run (2006) 2. Standard model run (2007) 3. No-resuspension model run (July 2006) 4. No-resuspension model run (July 2007) 5. No-resuspension model run (June 2007) 6. No-resuspension model run (June 2006), as well as sensitivity tests for Fast-settling, Slow-settling, Fast-remineralization, and Slow-remineralization
Model Code	
build.bash.gz	Model Code - Script to Compile Model
mch_hbs.h.gz	Model Code - Options for Model Compilation
trunk_sbt_gom.tar	Model Code - Model Code
Model Output	
1. results_gom_standard_2006.tar 2. results_gom_standard_2007.tar 3. results_gom_no_resuspension_June2006.tar 4. results_gom_no_resuspension_July2006.tar 5. results_gom_no_resuspension_June2007.tar 6. results_gom_no_resuspension_July2007.tar	Model Output for: 1. Standard model run (2006) 2. Standard model run (2007) 3. No-resuspension model run (July 2006) 4. No-resuspension model run (July 2007) 5. No-resuspension model run (June 2007) 6. No-resuspension model run (June 2006) 7. Fast-settling sensitivity test 8. Slow-settling sensitivity test 9. Fast-remineralization sensitivity test

7. results_gom_fast_settling.tar 8. results_gom_slow_settling.tar 9. results_gom_fast_remin.tar results_gom_slow_remin.tar	10. Slow-remineralization sensitivity test

DOI: *I would like a DOI assigned to this dataset*

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Keywords: *Northern Gulf of Mexico, USA; sediment transport; biogeochemistry; numerical modeling; oceanography; Regional Ocean Modeling System (ROMS); hypoxia; oxygen; ammonium; particulate organic carbon remineralization; resuspension; sediment oxygen consumption.*

Associated Publications: *Moriarty, J. M., Harris, C. K., Friedrichs, M.A.M, Fennel, K., and Xu, K. (2018). Impact of seabed resuspension on oxygen and nitrogen dynamics in the northern Gulf of Mexico: A numerical modeling study. Accepted by Journal of Geophysical Research: Oceans.*

Author contributions:

1. Moriarty - Model development.
2. Harris - Oversaw all aspects of model development.
3. Friedrichs - Oversaw all aspects of model development.
4. Fennel - Provided data for hydrodynamic and biogeochemical input files and model forcing (water column currents, oxygen & nutrient concentrations, etc.).
5. Xu - Provided data for hydrodynamic and sediment transport input files and model forcing (waves, water column sediment concentrations, etc.).

Spatial Information: 27.4-30.3°N, -94.6 - -87.8 °W; Louisiana continental shelf, Northern Gulf of Mexico, USA