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# A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Model for the Rhône River Sub-aqueous Delta, France

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**README Summary**

**Title: A Model Archive for a Coupled Hydrodynamic-Sediment Transport-Biogeochemistry Model for the Rhône River Sub-aqueous Delta, France**

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**Associated Publication:**
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**Keywords:** Rhône River Delta, France; sediment transport; biogeochemistry; numerical modeling; oceanography; Regional Ocean Modeling System (ROMS).

**Description:** These files are compressed versions of input files, model code, and output used for the associated publication in *Biogeosciences* (see above). 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 .

**Author contributions**:
1 Moriarty - Model development (~2013-2017).
2 Harris - Oversaw all aspects of model development (2008-2017).

3 Fennel - Provided access to Soetaert model and guidance during model development.
4 Xu - Model development (2007-2008).
5 Rabouille - Provided data for input files (waves, water column oxygen & nutrient concentrations, etc.) and seabed biogeochemistry data (porewater oxygen time-series and diffusive oxygen uptake) that were used to calibrate and evaluate the model.
6 Friedrichs - Guidance on model development.

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**Spatial Information:** 43°19.2 N, 4°52 E; Rhone River sub-aqueous delta, Gulf of Lion, France

**Files include**:

| File | Description |
|---|---|
| **Input Files** | |
| init_rhone3.nc.gz | Input File – Model Initialization |
| rhone_waves3.nc | Input File - Wave Forcing |
| bio_rhone.in.gz | Input File – Water column Biogeochemistry Information |
| sed_standard.in.gz | Input File - Sediment Information |
| ocean_standard.in.gz | Input File – Model Run Information |
| varinfo.dat.gz | Input File – List of variables |
| sedbiotoy.h.gz | Input File – Options for Model Compilation |
| ana_grid.h.gz<br>ana_pair.h.gz<br>ana_smflux.h.gz<br>ana_stflux.h.gz<br>ata_tclima.h.gz | Input File/Model Code: Model grid, air pressure, wind stresses, and climatology of water column tracers |
| **Model Code** | |
| build.bash.gz | Model Code - Script to Compile Model |
| trunk_sbt2.tar | Model Code - Model Code |
| **Model Output**<br>*Note that for each sensitivity test, altered input files, as well as files for the no-resuspension model run for each sensitivity test, were included with the model output | |

| | |
|---|---|
| results_standard.tar | Model Output - Standard Model Run |
| results_input_no_resuspension.tar | Model Output – No Resuspension Version of the Standard Model Run |
| results_input_b1.tar | Model Output –Low Seabed Diffusion Sensitivity Test from Moriarty et al. (2017) |
| results_input_b2.tar | Model Output –High Seabed Diffusion Sensitivity Test from Moriarty et al. (2017) |
| results_input_c1.tar | Model Output –No Organic Matter Partitioning Sensitivity Test from Moriarty et al. (2017) |
| results_input_l1.tar | Model Output –Low Lability Sensitivity Test from Moriarty et al. (2017) |
| results_input_l2.tar | Model Output –High Lability Sensitivity Test from Moriarty et al. (2017) |
| results_input_n1.tar | Model Output –Low Nitrification Rate Sensitivity Test from Moriarty et al. (2017) |
| results_input_n2.tar | Model Output –High Nitrification Rate Sensitivity Test from Moriarty et al. (2017) |
| results_input_p1.tar | Model Output –Low Particulate Organic Matter Sedimentation Sensitivity Test from Moriarty et al. (2017) |
| results_input_p2.tar | Model Output –High Particulate Organic Matter Sedimentation Sensitivity Test from Moriarty et al. (2017) |
| results_input_r1.tar | Model Output –Low Erosion Rate Parameter Sensitivity Test from Moriarty et al. (2017) |
| results_input_r2.tar | Model Output –High Erosion Rate Parameter Sensitivity Test from Moriarty et al. (2017) |
| results_input_s1.tar | Model Output –Low Inorganic Sedimentation Sensitivity Test from Moriarty et al. (2017) |
| results_input_s2.tar | Model Output –High Inorganic Sedimentation Sensitivity Test from Moriarty et al. (2017) |
| results_input_t1.tar | Model Output –Low Critical Shear |

| | |
|---|---|
| | Stress Sensitivity Test from Moriarty et al. (2017) |
| results_input_t2.tar | Model Output –High Critical Shear Stress Sensitivity Test from Moriarty et al. (2017) |