

**Model data documentation for Zamora and Oschlies (in press) “Surface nitrification: a major uncertainty in marine N<sub>2</sub>O emissions,” *Geophys. Res. Lett.***

The accompanying folder entitled, “Model\_Files” contains various files documenting the 19 model simulations described in Zamora and Oschlies [2014]. Each simulation is referred to by the abbreviations and options described in Table 1 of the paper, and as follows:

<b>Folder name</b>	<b>Description</b>
<b>1_SW4CRavSSPlinSP0SOVlzAD0</b>	Baseline scenario
<b>2_SW4CRavSSPlinSP10SOVlzAD+</b>	Baseline except: surface N <sub>2</sub> O production at 10% and atmospheric N deposition
<b>3_SW4CRavSSPlinSP10SOVlzAD0</b>	Baseline except: surface N <sub>2</sub> O production at 10%
<b>4_SW4CRavSSPlinSP50SOVlzAD0</b>	Baseline except: surface N <sub>2</sub> O production at 50%
<b>5_SW10CRavSSPlinSP10SOVlzAD+</b>	Baseline except: 10 μM switching point, surface N <sub>2</sub> O production at 10%, and atmospheric N deposition
<b>6_SW10CRavSSPlinSP10SOVlzAD0</b>	Baseline except: 10 μM switching point, surface N <sub>2</sub> O production at 10%
<b>7_SW10CRavSSPlinSP50SOVlzAD0</b>	Baseline except: 10 μM switching point, surface N <sub>2</sub> O production at 50%
<b>8_SW4CRlowSSPlinSP0SOVlzAD0</b>	Baseline except: low consumption rate
<b>9_SW4CRhighSSPlinSP0SOVlzAD0</b>	Baseline except: high consumption rate
<b>10_SW10CRlowSSPlinSP0SOVlzAD0</b>	Baseline except: 10 μM switching point, low consumption rate
<b>11_SW10CRhighSSPlinSP0SOVlzAD0</b>	Baseline except: 10 μM switching point, high consumption rate
<b>12_SW4CRavSSPlinSP0SOVgdAD0</b>	Baseline except: Getzlaff and Dietze [2013] suboxic volume
<b>13_SW10CRavSSPlinSP0SOVgdAD0</b>	Baseline except: 10 μM switching point, O <sub>2</sub> , Getzlaff and Dietze [2013] suboxic volume
<b>14_SW10CRavSSPlinSP0SOVlzAD0</b>	Baseline except: 10 μM switching point
<b>15_SW15CRavSSPlinSP0SOVlzAD0</b>	Baseline except: 15 μM switching point
<b>16_SW1CRavSSPlinSP0SOVlzAD0</b>	Baseline except: 1 μM switching point
<b>17_SW4CRsunSSPnlinSP0SOVlzAD0</b>	Baseline except: severely non-linear subsurface N <sub>2</sub> O production parameterization and Suntharalingam et al. [2000] N <sub>2</sub> O consumption
<b>18_SW4CRavSSPlinhiSP0SOVlzAD0</b>	Baseline except: steeper subsurface N <sub>2</sub> O production as a function of O <sub>2</sub> .
<b>19_SW4CRavSSPlinlowSP0SOVlzAD0</b>	Baseline except: less steep subsurface N <sub>2</sub> O production as a function of O <sub>2</sub> .

Each of the above folders contains files necessary for reproducing the simulations. The files are organized by the following folders:

Folder name	Description
<b>"code_*/"</b>	Model source code
<b>"spinup/"</b>	Files related to the model spinup
<b>"drift/"</b>	Files related to the model drift (post-spinup)
<b>"final/"</b>	Files related to final data, post-drift (as reported in paper)

Within the "spinup/", "drift/", and "final/" folders, there are a subset of the following files:

Name	Description
<b>Latest_fixes_spin_up</b>	Compiled executable
<b>control.in, mk.in files</b>	File settings and options
<b>run.csh</b>	Script to add in the atmospheric N deposition input files

Note that to reproduce the model data entirely, one would also need the model forcing files. Due to space limitations, these are not included here. Contact L. Zamora ([laurence@gmail.com](mailto:laurence@gmail.com)) for access to these files.

## References

- Getzlaff, J., and H. Dietze (2013), Effects of increased isopycnal diffusivity mimicking the unresolved equatorial intermediate current system in an earth system climate model, *Geophys. Res. Lett.*, doi:10.1002/grl.50419.
- Suntharalingam, P., J. L. Sarmiento, and J. R. Toggweiler (2000), Global significance of nitrous-oxide production and transport from oceanic low-oxygen zones: A modeling study, *Glob. Biogeochem. Cycles*, 14(4), 1353–1370.
- Zamora, L. M., and A. Oschlies (in press), Surface nitrification: a major uncertainty in marine N<sub>2</sub>O emissions.