SDG

1. Overview
2. Model Description
   1. Process Descriptions
      1. Primary Redox Reactions
      2. Secondary Redox Reactions
      3. Equilibrium Geochemistry
      4. Physical Transport and Porosity
         1. Soilds
         2. Porewater
         3. Bioturbation and bioirrigation
         4. Porosity
      5. Physical-Chemical Interactions
         1. Salinity inhibition
         2. H2S inhibition
         3. Bioturbation functions
         4. O2 injections
   2. Implementation within the AED framework
      1. Sediment-water coupling
      2. Resolving sediment zonation
      3. Program structure
3. Setup and Configuration
   1. Initialisation
      1. Initialisation of sediment depth layers
      2. Initialisation of porosity
      3. Initialisation of bioturbation and bioirrigation
         1. Bioturbation
         2. Irrigation
      4. Initialisation of concentration profiles
      5. Evolution of concentration profiles
   2. Boundary settings
      1. Sediment-water interface boundary
         1. Static option
         2. Dynamic options : linked
         3. Dynamic option : swibc file
         4. POMSpecial
      2. Bottom boundary
         1. Static option: deep\_vals
         2. Dynamic option: deep\_bc file
   3. Parameter Definition
      1. Set for all zones
      2. Distinct for each zone
         1. Physical domain and numerical parameters
         2. Organic matter parameters
         3. Secondary redox reactions
         4. Geochemistry
      3. Hidden parameters
      4. Timing switches
         1. Substep
         2. Special organic matter flux
         3. Spinup substep
         4. Transport without reaction
         5. Combined organic matter flux and timestep switch
4. Model Output & Post-processing
   1. Concentration of state variables
   2. Flux of state variables
   3. Other variables
   4. Depth profile settings

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1. Overview
2. Model Description
   1. Process Descriptions
      1. Sediment Model Domain
      2. Physical Transport
         1. Soilds
         2. Porewater
         3. Sediment-water fluxes
      3. Primary Redox Reactions
         1. Organic matter pools & reactivity *(use tabs for OMModel)*
         2. Limitation & Inhibition  *(use tabs for OMModel if needed)*
         3. Denitrification  *(need a section for new model)*
         4. Methanogenesis  *(use tabs for OMModel)*
      4. Secondary Redox Reactions
         1. …  *(need to add tables)*
      5. Equilibrium Geochemistry
         1. Mineral precipitation and aging
         2. Adsoprtion
         3. pH
      6. Biological Dynamics
         1. Benthic macrofauna
            1. Bioturbation
            2. Bioirrigation
            3. O2 and H2S limitation
         2. Benthic productivity
            1. Microphytobenthos
            2. Aquatic macrophytes
   2. Implementation within the AED framework
      1. Sediment-water coupling
      2. Resolving sediment zonation …  *(add 3 zone POM Special example, or below)*
      3. Numerical solution …  *(refer Boudreau book and DVODE)*
      4. Module program structure
   3. Optional module links
   4. Feedbacks to the host model
   5. Variable summary
      1. State variables
      2. Diagnostic variables
   6. Parameter and option summary
      1. Module settings
      2. Zone specific parameters
3. Setup and Configuration
   1. Setup examples
   2. Sediment initialisation options
      1. Concentration profiles
      2. OM profiles
      3. ?? partitioning TN TP and TOC pools ??
      4. Spinup
   3. Boundary settings
      1. Sediment-water interface boundary
         1. Static option
         2. Dynamic options : linked
         3. Dynamic option : swibc file
         4. POMSpecial + Combined organic matter flux and timestep switch
      2. Bottom boundary
         1. Static option: deep\_vals
         2. Dynamic option: deep\_bc file
4. Output & Post-processing
   1. Concentration of state variables
   2. Flux of state variables
   3. Other variables
   4. Depth profile settings
5. Case Studies & Examples
   1. VCW
   2. Aquaculture
   3. CDM