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The role of large benthic sulfur bacteria in biogeochemical cycles - a model approach.

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On the seabed of oxygen minimum zones (OMZ), embedded in organic-rich sediments, large sulfur bacteria (LSB) fulfil an important ecological role by detoxifying the overlying bottom waters. *Thiomargarita Namibiensis* and *Beggiatoa* spp. are chemoautotrophic microorganisms that reduce sulfur compounds to create biomass and link by doing so the carbon, sulfur, oxygen and nitrate cycle very efficiently. This particular ability make life in suboxic and hypoxic coastal waters feasible. Nevertheless, due to the complexity of sulfur oxidation and its various pathways the quantification of such activity is of great complexity. Hereby, we describe a model framework of LSB activity to implement intrinsic properties of the bacteria based on field observations and numerical modelling validations, linking the stoichiometry and energy conservation efficiency of LSB while counting for the reduced sulfur pools and its partitioning sub-products.