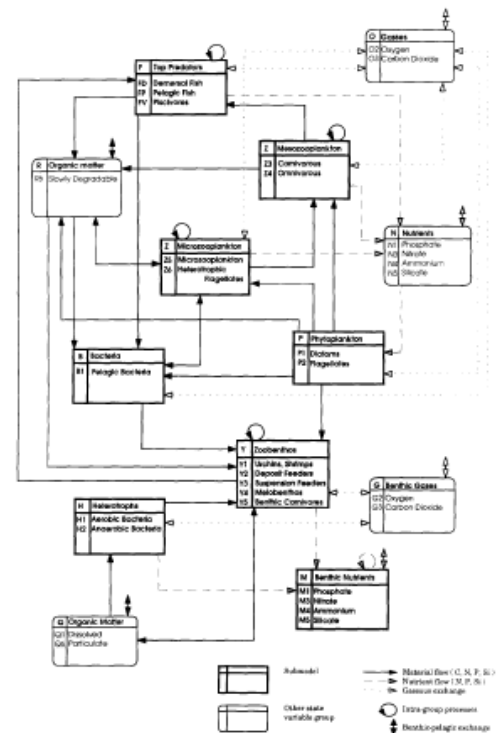


## The History of ERSEM

The European Regional Seas Ecosystem Model, ERSEM, was initially developed in two projects, funded by the EU Marine Science and Technology programme (ERSEM, 1990-1993; ERSEM II, 1993-1996) both under the leadership of Job Baretta at NIOZ (NL). In addition to NIOZ, these initial projects involved Plymouth Marine Laboratory (UK), the Universities of Oldenburg (DE), Hamburg (DE), Strathclyde (UK) and Aberdeen (UK), Marine Laboratory Aberdeen, Ecological Modelling Centre (DK) and CEAB (ES).

The earlier ambitions of the program were significant, not only coupling benthic and pelagic processes in a physical context and developing a prognostic model, but extending up the food chain to age-structured mesozooplankton models, pelagic and demersal fish and even seabirds. As a general rule, the higher the trophic level the less successful the models as 20+ years ago understanding, data and computational power were far inferior to that which we currently enjoy.

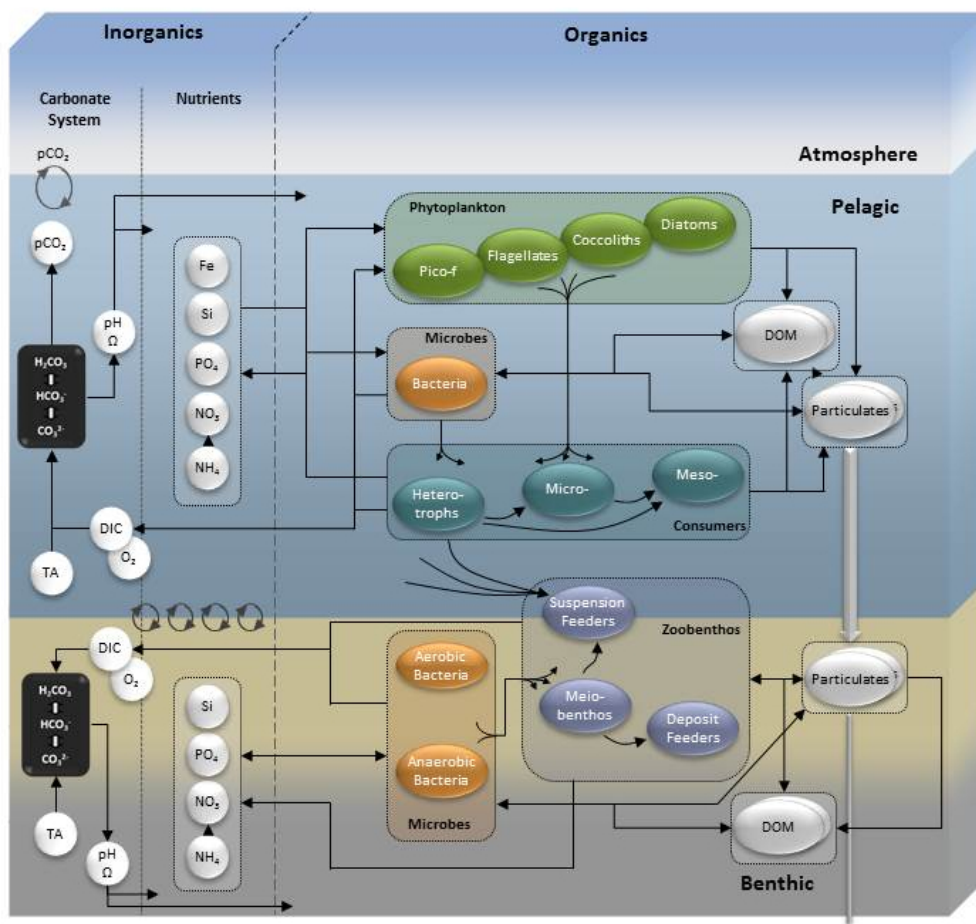
Although ERSEM itself had roots in earlier modelling initiatives (the Ems-Dollard and Gembase models) it pioneered a community approach to model development. At the heart of this was a set of scripts (SESAME) which controlled compilation and output generation, data transfer by COMMON BLOCK, a system of code nomenclature (Blackford & Radford, 1995, if you are wondering why variables and parameters have strange names) and a structure of almost independent modules. This meant that for the majority of developers, with minimal practice, the code was accessible with limited computational expertise. Development of modules could occur in parallel without worrying about interfaces between functional groups. This accessibility did not lead to the most efficient coding but did allow a range of computationally naive experts the unfettered ability to develop the model. A six monthly development cycle, whereby new modules were submitted for assessment and incorporation ahead of a project meeting to evaluate results ensured rapid model development. Computational incompatibility was avoided by providing each partner with the same UNIX computer system, the then eye-wateringly expensive SUN SPARC desktops retailing at £20K apiece. Just a few years previously, before the internet, email and processing capability exceeding 100 MHz ERSEM would have been inconceivable.



An early schematic of ERSEM

Each of the initial ERSEM projects produced a special issue describing model systems and results, the Netherlands Journal of Sea Research V33 (3/4) in 1995 and the by then renamed Journal of Sea Research V38 (3/4) in 1997. After cessation of the ERSEM projects model development occurred more independently in three main centres, NIOZ and PML producing variants using the ERSEM name and at Bologna where ERSEM formed the basis of the Biogeochemical Flux Model (BFM). We suspect that in excess of 200 papers have been published using ERSEM since 1995.

The ERSEM model now aspires to reach beyond its name, addressing biogeochemical and ecological systems in many applications in global regional seas and more recently the global ocean, engaging in a range of heuristic, predictive and impact studies.



*The latest schematic of ERSEM*