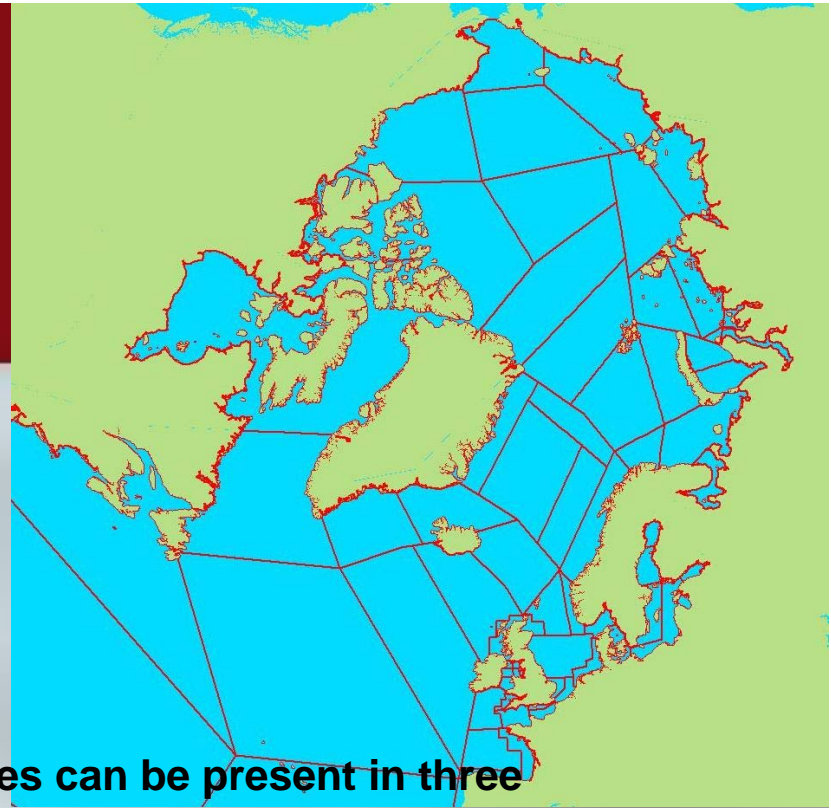
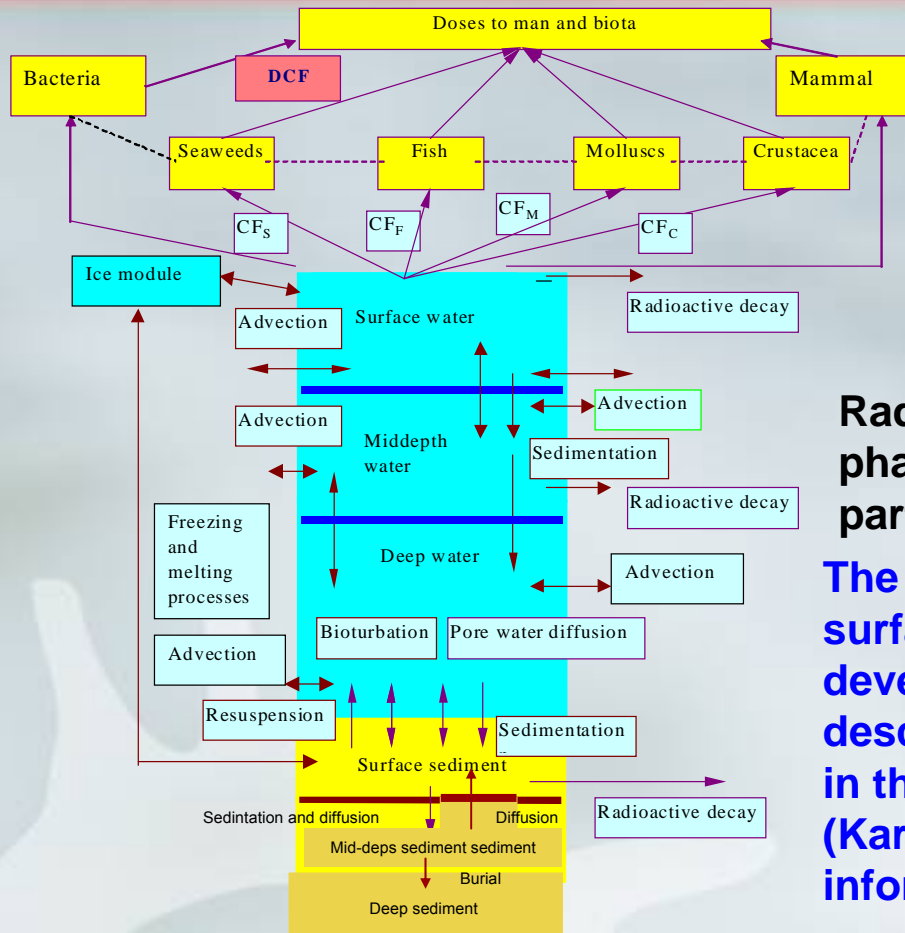


# Modelling approach



**Radionuclides can be present in three phases: dissolved, suspended matter particles and bottom sediment**

**The structure of the compartments for surface, mid-depth and deep waters is developed with regards to the improved description of Polar, Atlantic and Deep waters in the Arctic Ocean and the Northern Seas (Karcher & Harms, 2000) and site-specific information for description of the compartments (the 3D NAOSIM model, AWI).**



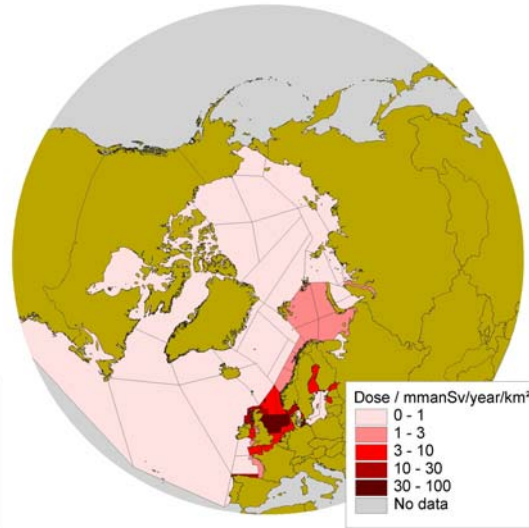
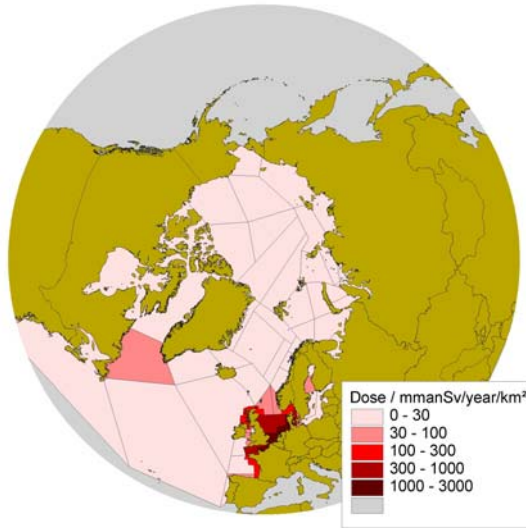
The radiological sensitivity index  $SI^{(M)}$  (Iosjpe et al., 2003):  
where  $\Delta D$  is a variation in the collective dose to man during  
time  $\Delta T$  and  $S$  is the surface area of the relevant marine  
region.

$$SI^{(M)} = \frac{\Delta D}{S \Delta T}$$



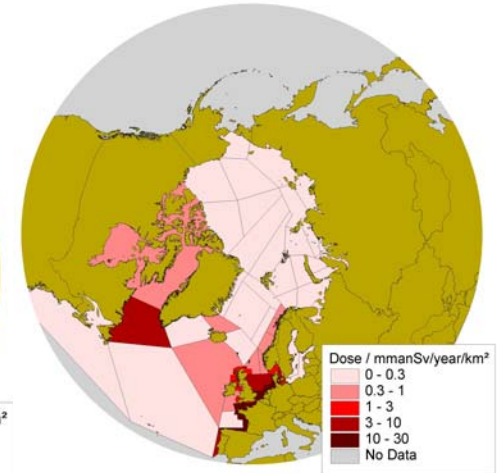
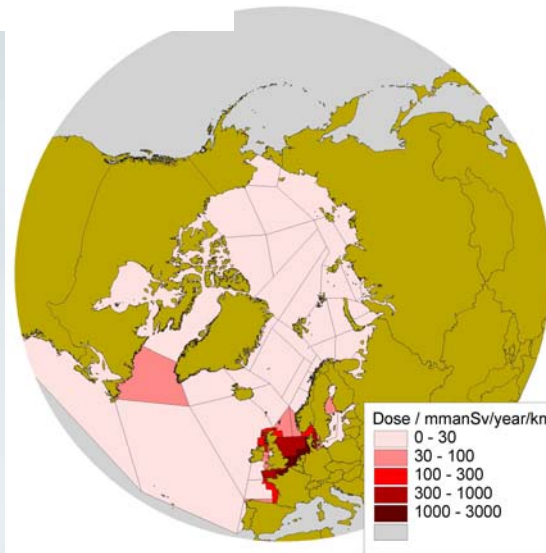
# Sensitivity of coastal waters

Doses to man after uniform atmospheric fallout 1 kBq/m<sup>2</sup>

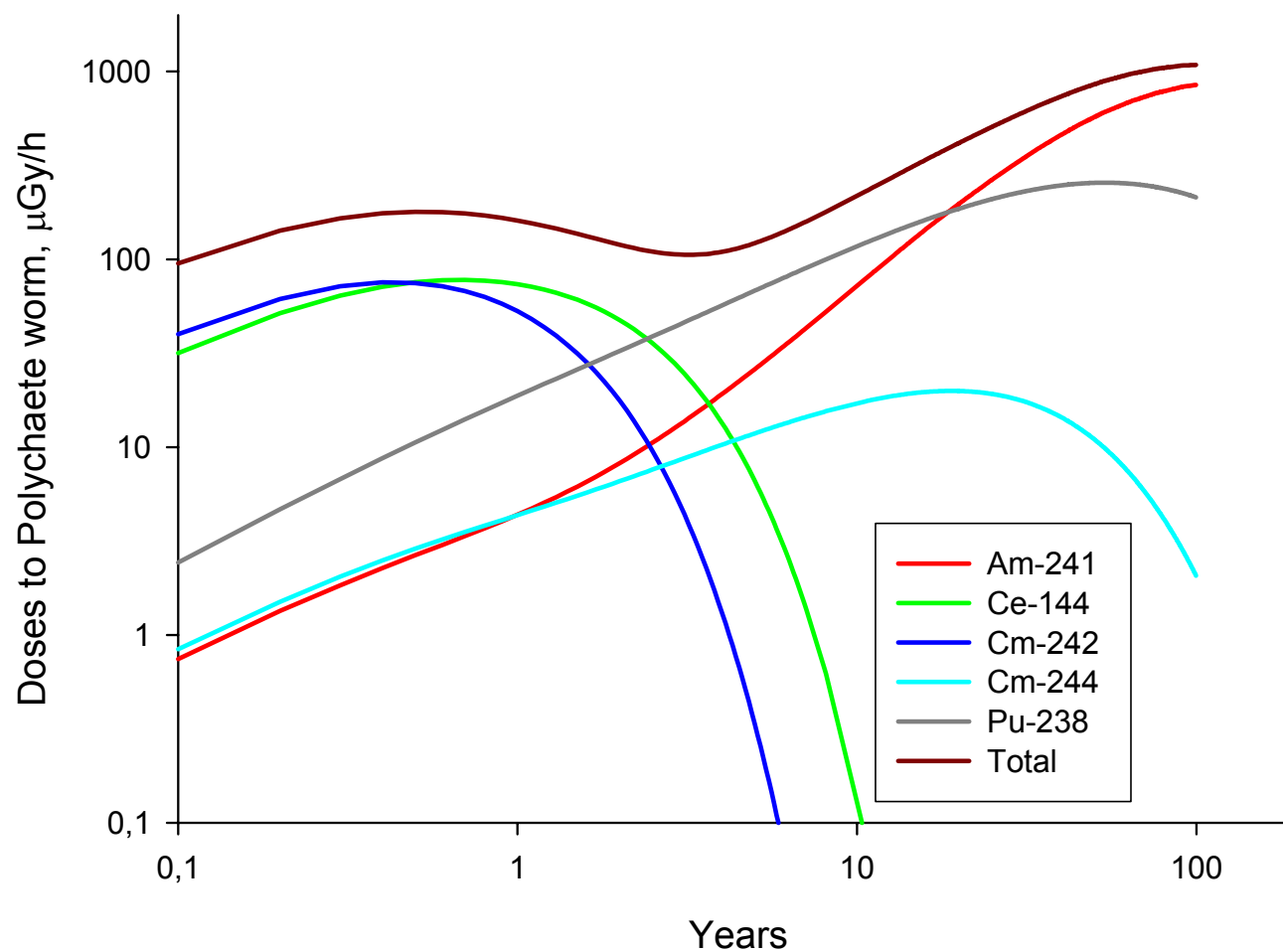


Cs-137 deposition (1y & 50y)

Pu-239 deposition (1y & 100y)



# Doses to the Polychaete Worm



**Sensitivity indexes for local and global sensitivity analysis for model parameters, correspondingly (Jørgensen, 1994; Till and Meyer, 1983).**

$$S^{(L)} = \frac{dD}{dP} \frac{P^{(0)}}{D^{(0)}}$$

$S^{(L)}$  and  $S^{(G)}$



$$S^{(G)} = 1 - \frac{D_{\min}}{D_{\max}}$$



