



Involved scientists:

Ariadna Szczybelski (AEW, Wageningen UR), Martine van den Heuvel-Greve (IMARES, Wageningen UR), Nico van den Brink (Toxicology Div., Wageningen UR), Bart Koelmans (AEW, Wageningen UR)

Introduction

Development of specific and sensitive biological indicators that can be used for impact assessment of human activities in the Arctic, particularly oil and gas (O&G) and harbour development

Approach

Field work and long-term exposure experiments have been carried out both in the Netherlands and Svalbard (Norway) in order to:

1. Identify pressures and impacts of PAH and PCB sources
2. Identify pathways of exposure
3. Explore the potential for read-across between Arctic (*A. borealis*, *M. calcarea*, *N. ciliata*) and Atlantic benthic species (*M. balthica*, *N. virens*)

Results: Field work (July 2013)

1. PAH and PCB body residues (BRs) can be applied as a more conclusive pollution monitoring parameter than biota to sediment accumulation factors (BSAFs)
2. A richer lipid composition and lower digestion efficiency of PAHs and PCBs in smaller bivalve individuals together with a considerable POM input (Evenset *et al.* 2016) and reduced sediment BC content (Ma *et al.* 2015) may account for differences in BRs found between size classes and stations, respectively
3. *M. calcarea* was considered as a promising indicator of O&G-derived environmental impacts although influxes of fresh ice algae/phytoplankton may either mask or strongly affect long-term PAH and PCB accumulation

Oral presentations: NWO Symposium (The Hague, Nov 2014), SETAC Europe (Barcelona, May 2015), APECS Symposium (The Hague, Nov 2015)

Poster presentations: NWO Symposium (The Hague, Nov 2013), ARCTIC FRONTIERS (Tromsø, Jan 2014; Health and Environment in the Arctic part: *best poster award*)

