The Arctic Ocean is a confined mediterranean sea with substantial water mass transformation and in- and outflows of very different amounts and properties.

In- and outflowing water masses at Fram Strait differ distinctively. The West Spitsbergen Current in the east imports warm and saline water, the East Greenland Current in the west exports very cold and fresh water. The Fram Strait section has been monitored for a decade. The Barents Sea Opening transports have also been explored over several years. Thus, initial and end members of the transformation are reasonably well known.

Much less is known about areas, amounts and time scales of the transformation from Atlantic to Polar Water within the Arctic Ocean.

Here we describe how this transformation occurs and varies in the North Atlantic/Arctic Ocean-Sea Ice Model (NAOSIM). We have several tracers with different properties and boundary conditions included in the 9km-resolution version of the model. The combined analysis of these tracers allows to detect areas of change, calculate amounts of transformed water masses and identify the partaking ambient water masses.