Mesozooplankton abundance and distribution in Fram Strait in comparison between a cold and a warm year

**BACKGROUND/OBJECTIVES**

In Fram Strait (Fig. 1), the only deep water connection to the Arctic Ocean (AO), relatively warm Atlantic water masses (AW) flowing northward with the West Spitsbergen Current (WSC) encounter cold polar water masses that are transported southward with the East Greenland Current (EGC). Zooplankton organisms are associated to distinct water masses. As the amount and temperature of AW entering the AO increase in the course of climate change [1, 2], zooplankton abundance and species composition might change, with possible consequences for the pelagic food web. We therefore investigated interannual changes in the zooplankton community across Fram Strait in relation to water temperatures.

**METHODS**

- **Research cruises** ARK-XXVI/1 (June/July 2011) and ARK-XXVII/1 (June/July 2012) with RV Polarstern to Fram Strait
- **Vertical Multinet hauls** (mesh size: 150 µm; net opening: 0.25 m$^3$) on a transect at N 78° 50’ (Fig. 1)
- **5 depth strata** (0-50/50-200/200-500/500-1000/1000-1500 m)
- **Mesozooplankton samples** were preserved in 4% formalin buffered with hexamethylenetetramine
- **Organisms** were determined to the lowest taxonomical level using a stereomicroscope

**RESULTS**

- In the WSC (Atlantic Water), temperatures down to 1000 m water depth were ~1.9 to 2.3 °C warmer in 2011 as compared to 2012
- In the EGC (Polar Water), water temperatures were generally similar in 2011 and 2012

**CONCLUSIONS**

- An increased inflow of warm Atlantic water masses into the Arctic Ocean might lead to higher mesozooplankton abundances in the eastern Fram Strait
- Changes in mesozooplankton community composition due to climate change might only be visible in the long term