Background
In 1999, the LTER observatory HAUSGARTEN was established in the eastern Fram Strait. HAUSGARTEN (HG) comprises currently 21 sampling stations between 1000 and 5500 m depth. Images from the central HG station (HG IV, 2500 m depth) taken in 2002, 2004, 2007, 2008, 2011 were analysed during a first litter time-series study on the deep Arctic seafloor and reported doubled litter densities between 2002 and 2011.

Current Research
- Extended HG IV litter time series to 2012 and 2014 to determine if temporal trend persists
- Compared litter density, size, type and interaction with megafauna of the two stations
- Explored possible sources of litter, e.g. rising ship traffic in this remote region as a result of reduced sea ice extent?

Materials & methods
Repeated camera (OFOS) transects for megaunal time series

- Litter count per image was converted to litter density (litter km⁻²) based on the area of the image. Mean litter densities were calculated thus: (litter density) / N, where N is the total number of the images of a transect, year or station
- A total of 7,058 images (incl. data of previous HG IV study) were analysed for temporal and spatial differences using PERMANOVA (PRIMER)

Outlook
- FRAM Pollution Observatory: Surveillance of marine Arctic ecosystem compartments with a particular emphasis on litter and microplastic pollution
- Development of LITTERBASE: Global map of marine litter records and species affected by litter and microplastic

Conclusions
- Litter densities at HAUSGARTEN increased strongly between 2002 and 2014, exceeding those of Lisbon Canyon (6,600 items km⁻²)
- Size of plastic litter decreases → fragmentation into microplastic?
- Litter on seafloor (2.237 - 18.473 items km⁻²) exceeds floating litter in study area (0 - 0.22 items km⁻²) → Is deep seafloor a sink for marine litter?
- Decreasing sea ice cover may encourage anthropogenic activities (tourism, shipping, fishing)

Acknowledgements
We thank the crew of RVs Polarstern and MS Merian, P. Finne for inspection data, K. Bräten for ship call data, T. Schoening for BIIGLE user support. A travel grant from the Fram Centre enabled conference attendance.