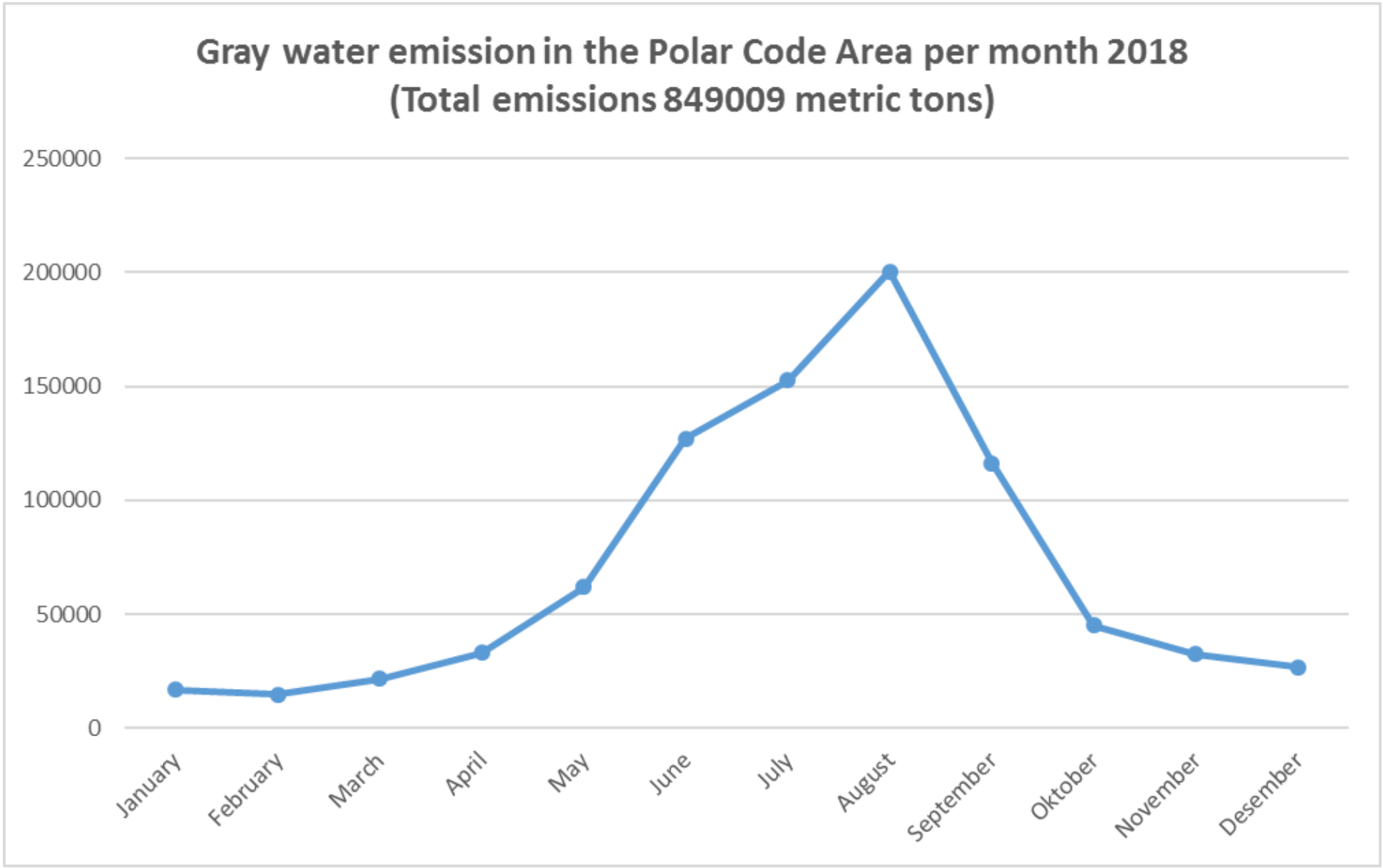
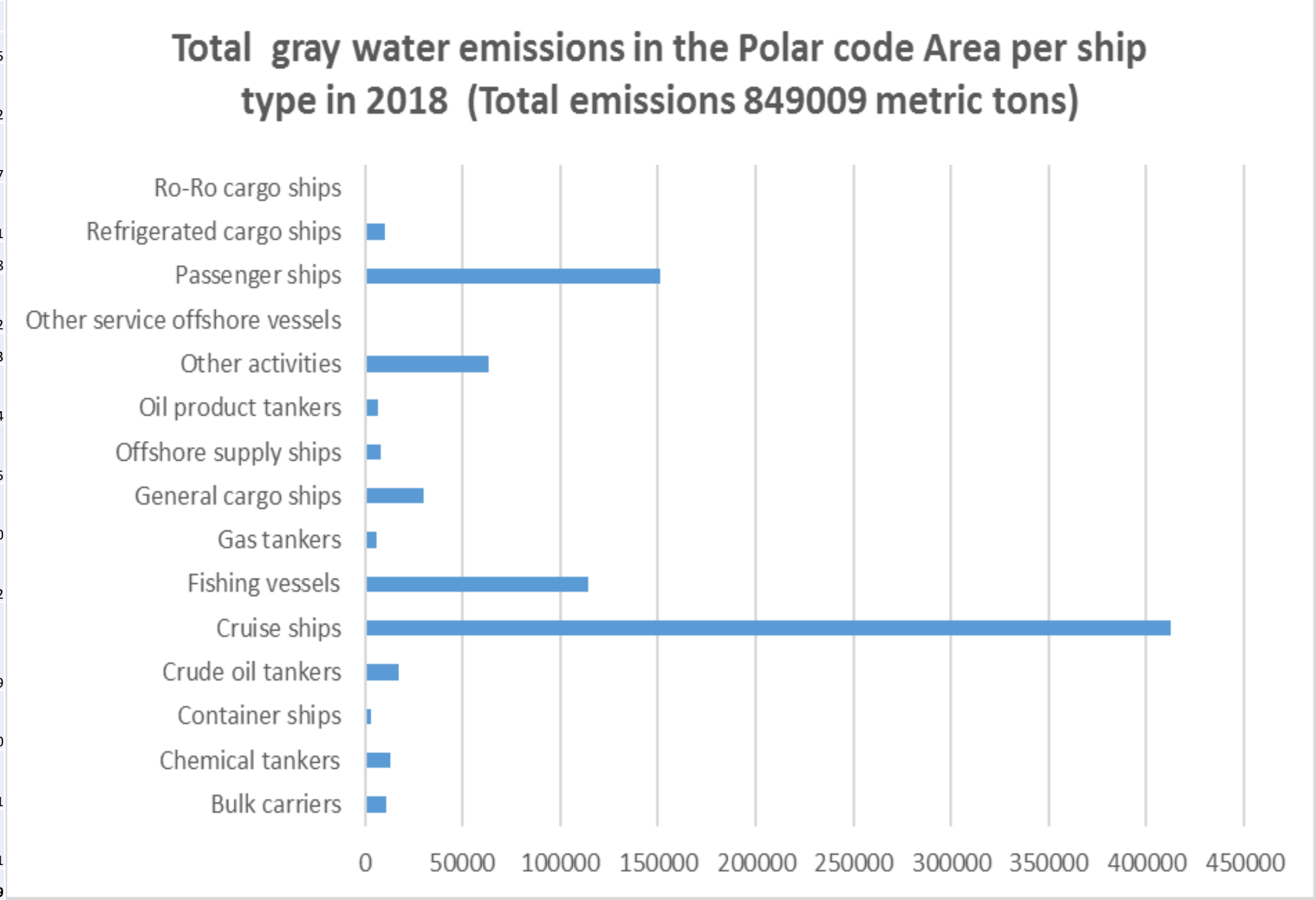
Gray water emissions in the Polar Code Area in 2018



January	February	March	April	May	June	July	August	September	Oktober	November	Desember
16860,7	14847,3	21587,4	33161,9	61854,0	127223,2	152792,0	200385,8	116244,4	44991,6	32386,4	26673,8

Ship type	
Bulk carriers	11175
Chemical tankers	13432
Container ships	3147
Crude oil tankers	17061
Cruise ships	412688
Fishing vessels	114352
Gas tankers	6253
General cargo ships	30124
Offshore supply ships	8035
Oil product tankers	6670
Other activities	63622
Other service offshore vessels	829
Passenger ships	150880
Refrigerated cargo ships	10181
Ro-Ro cargo ships	561
Sum	**849009**



Regulations driving clean tech development and deployment

- State of Alaska enforced “continuous discharge” for the Cruise industry in Alaskan waters from 2002 based on US EPA quality requirements and under strict USCG control regime.
- The Alaska standards known as the *Alaskan Murkowski* allows Cruise ships equipped with advanced purification systems for grey and black water to discharge its purified effluent overboard continuously even in ports, as long as proof of compliance can be provided.
- The Alaska standard was the first known standard to regulate both sewage (black water) and grey water from passenger ships.
- The Alaska standard soon became a cruise industry standard, where advanced wastewater purification has been deployed on both Cruise newbuilds and on existing Cruiseships as retrofits the latest 12 years.
- Today, almost 30% of the cruise vessels (≈125 ships) are equipped with advanced wastewater purification in compliance with the standards enforced in Alaskan waters.
- The new IMO standard for special area Baltic Sea known as the Helcom standard (IMO Marpol MEPC 227(64) chapter 4.2) to be enforced from 2019, has in the latest 3-5 years started to become the new wastewater discharge standard for the Cruise industry.
- The majority of Cruise newbuilds are today delivered with Helcom compliant technology for both grey and black water.

Under reporting of vessels in the study