



# Observed accumulative increase of certain Perfluoroalkyl Substances (PFASs) in East Greenland polar bears (*Ursus maritimus*)

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<sup>1</sup> Emily, Mari and Felicia share first authorship.



CNN



NTB Scanpix (2020)



W. Kaehler (2018)



Katharina M. Miller (2020)



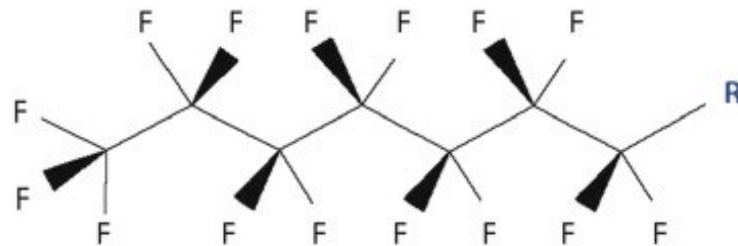


# PFAS – what is it?

- Per- and polyfluoroalkyl substances
- High thermal and chemical stability.
- Water and oil repellent.
- Produced for over 50 years.
- Accumulate in environment and biota.



EuChemS (2020)



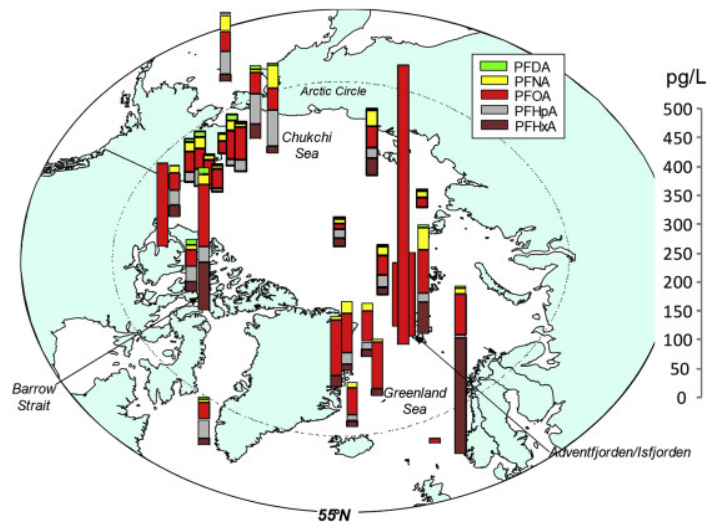
Muir et al., 2019

(Haukås et al., 2007, Muir et al., 2019, Wang et al., 2009)



# Effect on the arctic

- Arctic: A remote area with high exposure
- Polar bears: Apex predators -> biomagnification



Average concentrations (pg/L) of PFASs in Arctic seawater based on 9 studies by Muir et al. (2019)



Christopher Michel (2017)



Has there been an observable accumulative increase of certain Perfluoroalkyl Substances (PFASs) in East Greenland polar bears (*Ursus maritimus*) over the period 1984-2006?



# Materials and Methods

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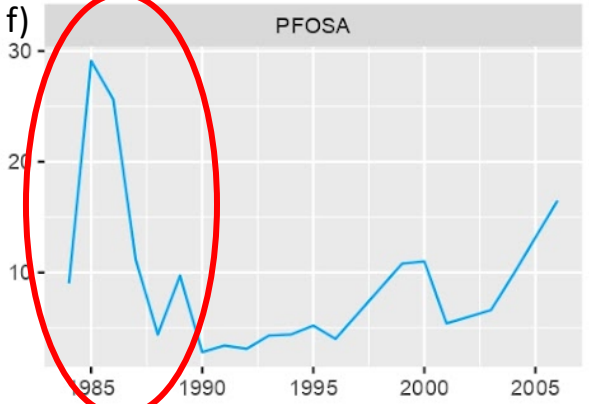
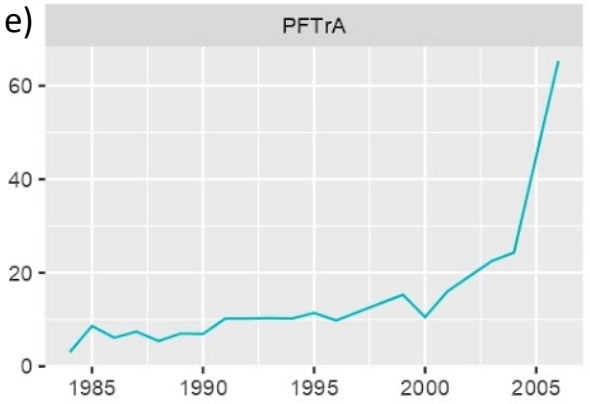
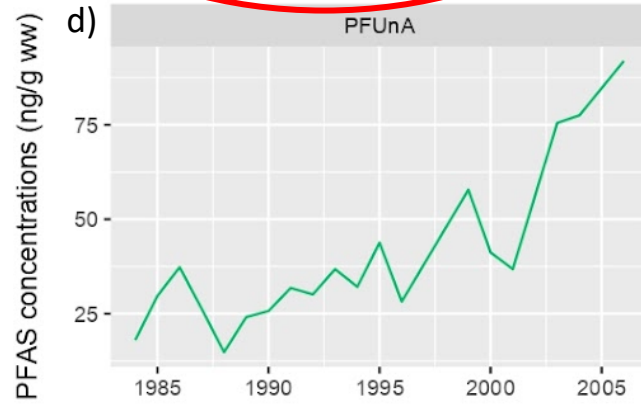
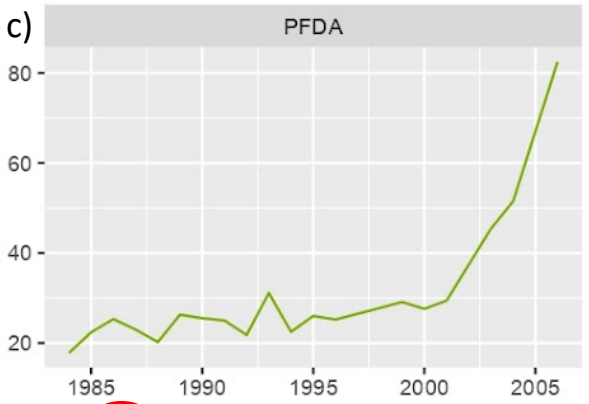
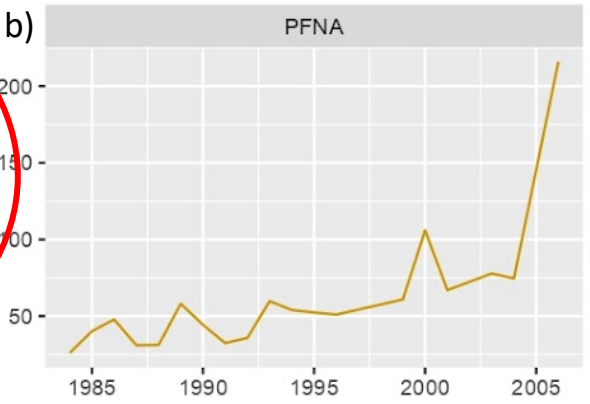
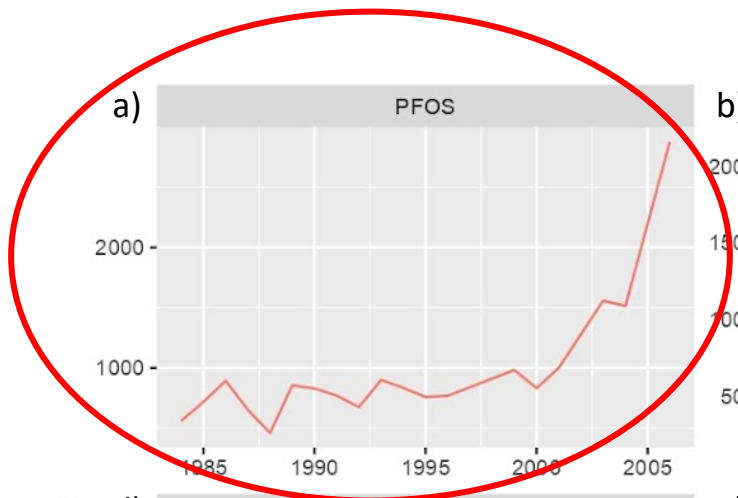
## **Increasing Perfluoroalkyl Contaminants in East Greenland Polar Bears (*Ursus maritimus*): A New Toxic Threat to the Arctic Bears**

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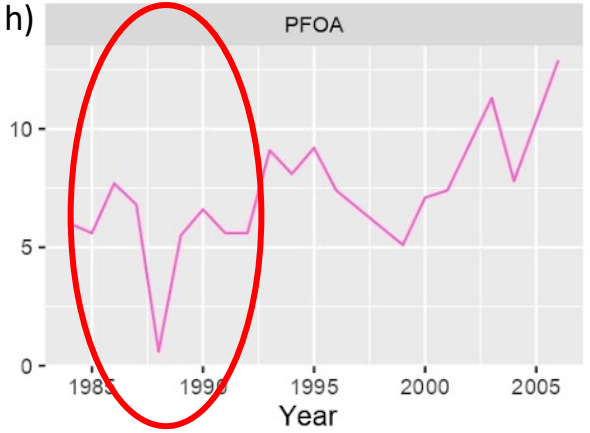
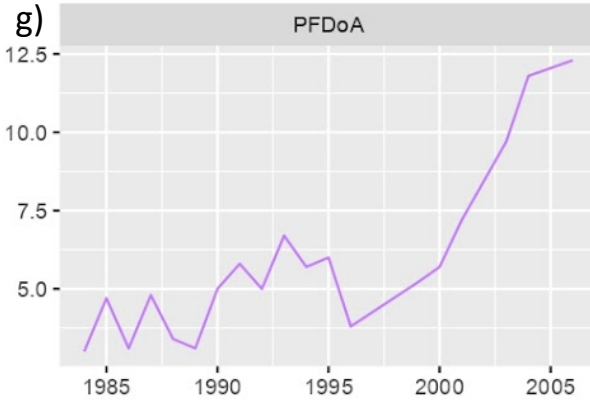
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- PFAS**
- PFOS
  - PFNA
  - PFDA
  - PFUnA
  - PFTra
  - PFOSA
  - PFDoA
  - PFOA





# What does this mean?

- Highest concentration of PFOS
- Sample size explains peaks and dips.
- 2001: The Stockholm convention -> PFOS and PFOA classified as persistent organic pollutants (POPs).
- Slower distribution in ocean currents compared to air currents, may represent a time-lag in transport.

# References

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Questions?

