

Update on ICP Waters

Kari Austnes and Heleen de Wit
Norwegian Institute for Water Research

35th ICP M&M Task Force meeting
Madrid 2-4 April 2019

New leadership ICP Waters

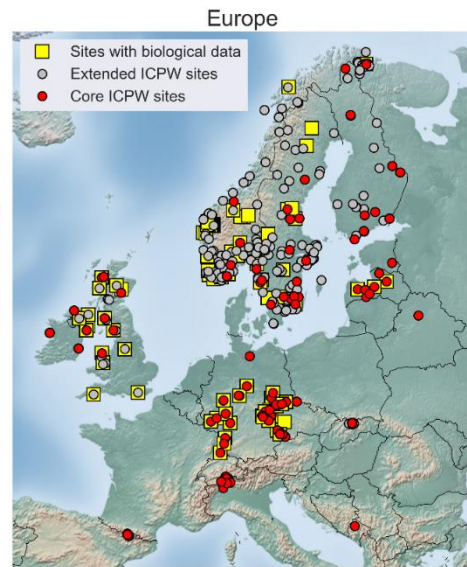
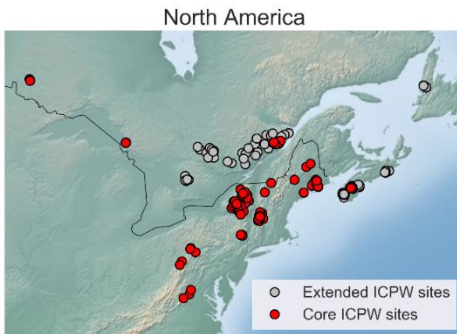
- Chair: Heleen de Wit
- Leader of Programme Centre: Kari Austnes
- Gunnar Skotte (Norwegian Environment Agency, former chair) will continue as national representative
- Main intention to have a leadership of ICP Waters with more scientific expertise

Progress of activities

- Thematic report 2018 on spatial extent of acidification
- Thematic report 2019: trends in water chemistry
- Fish mercury report (2017) published in ES&T
- Activities in relation to the Minamata Convention
- Thematic report 2020: ?
- TF meeting in June

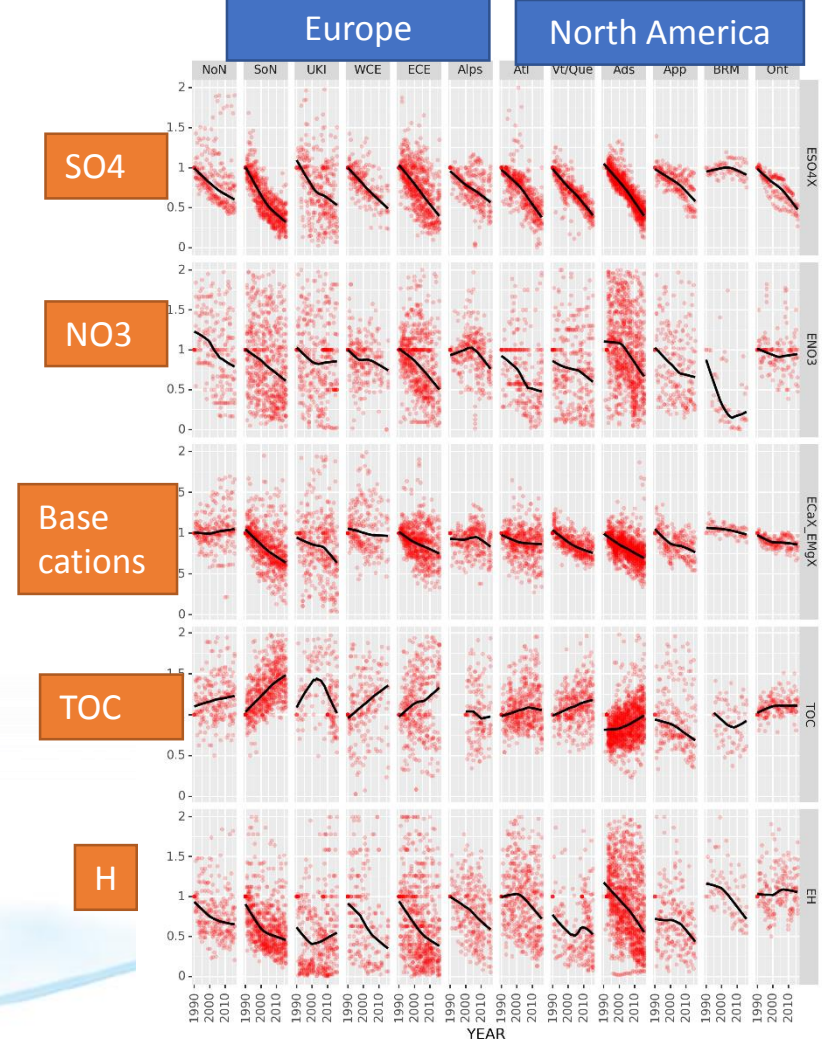
2019 report: Trends in water chemistry

- 1990-2016/2017
- Larger spatial coverage and more stations than in last trend report
- Topics:
 - Are trends levelling off?
 - How does land use affect recovery?
 - Potentially look at links to climate change (precipitation)



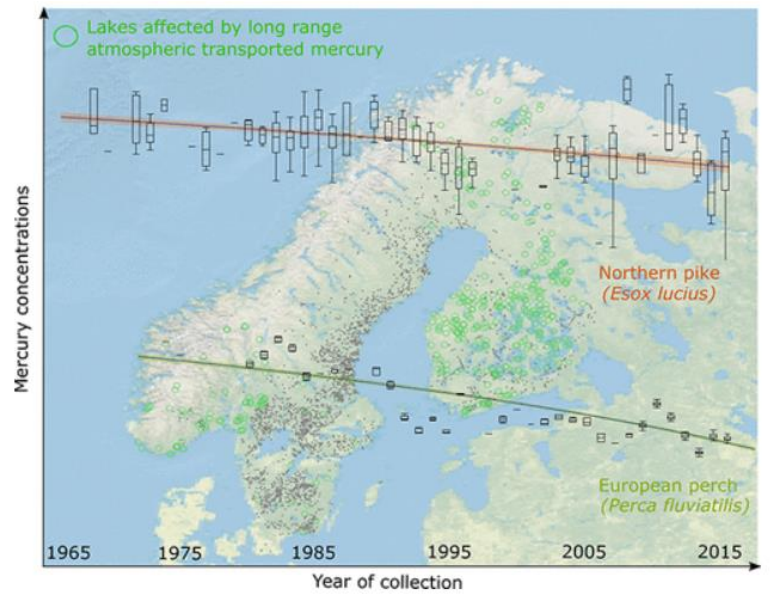
Trends 1990-2016/7

- SO_4 trends might be levelling off in Europe
- Recovery could be slowing down in some regions
- NO_3 trends mostly negative



Improved environmental status: 50 years of declining fish mercury levels in boreal and subarctic Fennoscandia

- Decline in fish Hg (perch and pike) demonstrated in boreal and subarctic lakes
- But: Fish Hg exceeds advised limits for human consumption in 25% of all lakes post-2000

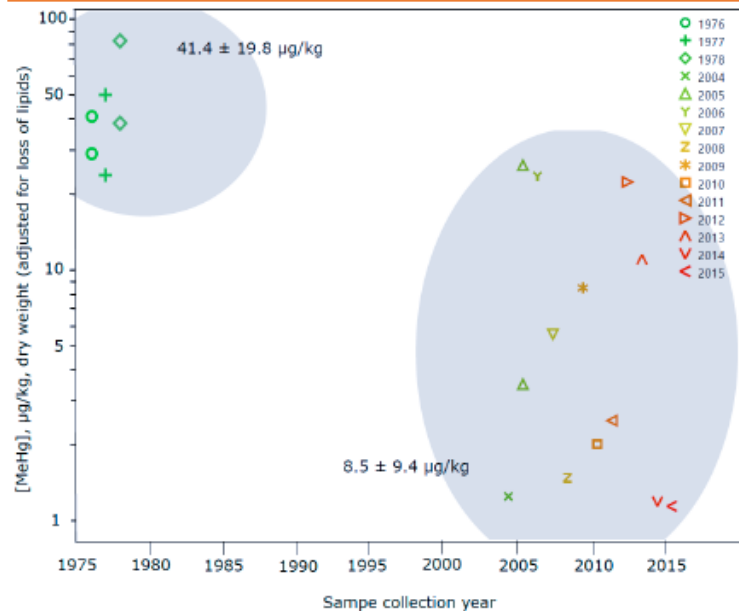


Braaten et al. 2019 *Environ. Sci. Technol.* 53, 1834-1843.

Follow-up: from Fennoscandia to a single-lake study

- Fish database shows large-scale patterns but difficult to test hypotheses
- ICP IM site Langtjern >40 year of data
- MeHg in midge larvae shows decline, as observed for fish Hg
- Sediment records show increase in tot-Hg over time
- SO_4 -reducing bacteria produce MeHg
- «Loading of SO_4 is more important than loading of Hg for observed Hg decline in aquatic organisms»

Observation of 40-year MeHg-decline in larvae of non-biting midges (Chironomidae)



Braaten et al., submitted

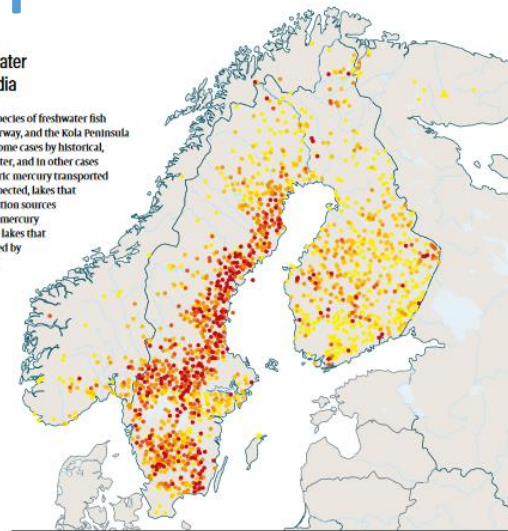
COP-2 Minamata Convention

- Hans Fredrik Braaten represented ICP Waters
- Contributed to discussions on monitoring (*Effectiveness Evaluation*) under Minamata Convention
- Output from ICP W report used in Global Mercury Assessment:
<https://www.unenvironment.org/resources/publication/global-mercury-assessment-2018>

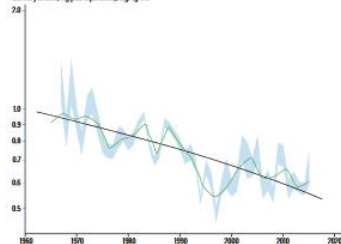
Mercury in freshwater fish in Fennoscandia

Mercury levels in various species of freshwater fish across Sweden, Finland, Norway, and the Kola Peninsula in Russia were affected in some cases by historical, local releases directly to water, and in other cases by deposition of atmospheric mercury transported from distant sources. As expected, lakes that were affected by local pollution sources had higher mean observed mercury concentrations in fish than lakes that were predominantly affected by atmospherically deposited mercury. The levels in fish showed a consistent and significant decreasing trend, matching well with the general declining atmospheric mercury trend over Northern Europe.

Total Hg in muscle, mg/kg ww
0.00 - 0.25
0.26 - 0.50
0.51 - 0.75
0.76 - 1.00
1.01 - 3.57



Mercury in fish (log scale exponential), mg/kg ww



▲ Average mercury concentrations in the freshwater fish species across Fennoscandia, showing geographic distribution and trends from 1965 to 2015.

Thematic report 2020

To be discussed at TF meeting

1. Ca concentrations in acidified waters

- Low because of i) base cation depletion in soils, ii) reduced SO_4 concentrations
- Ca is a key structural component for invertebrates with a calcified exoskeleton
- What are the ecological implications of low Ca?
- Regional differences in Ca trends – role of weathering, need for liming

2. Nitrogen impacts in aquatic ecosystems

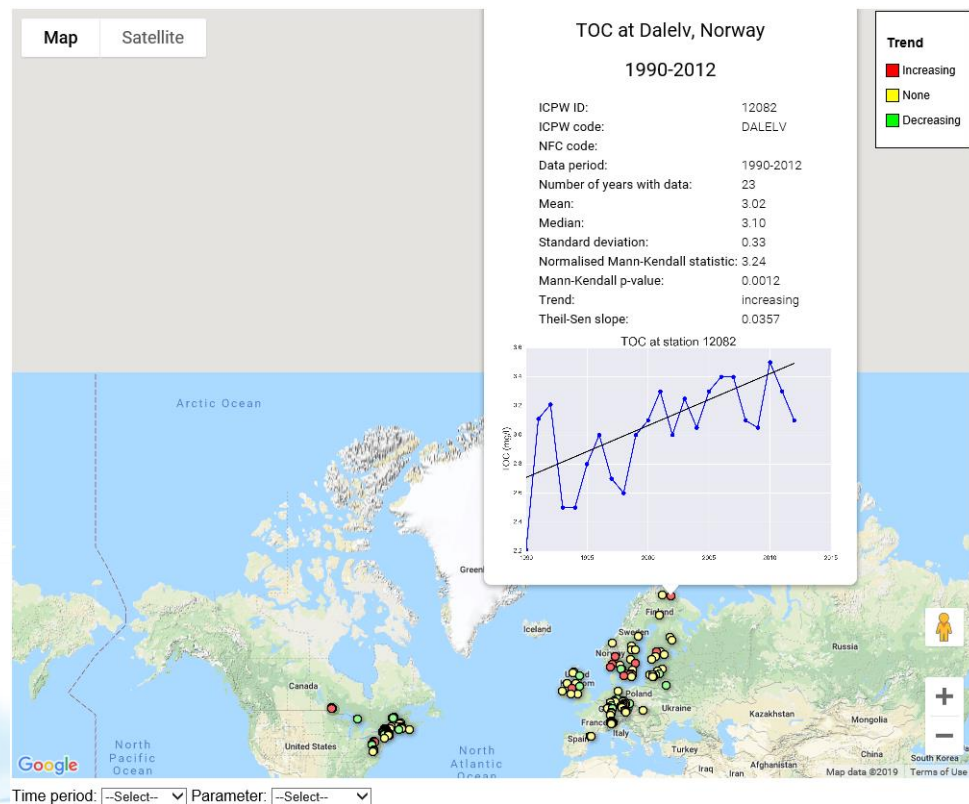
- N deposition and N leaching
- Most freshwaters are P-limited - can we still observe ecosystem effects of nitrate leaching in some cases? (link to empirical CL)
- Marine ecosystems are N-limited – can N deposition and N-leaching to the coast via surface waters contribute to eutrophication in coastal ecosystems?

Other activities

- NEC Directive
 - Participating in NEC Ecosystem Monitoring subgroup
 - Data will be submitted in 2019: Unclear how/if data assessment will be done and by whom
- Chemical and biological intercomparison
 - Participation is welcome for all ICPs
- Encouraging increased participation from EECCA countries
 - Georgia (and hopefully Azerbaijan) will participate in TF meeting for the first time this year

Home page and data portal

- <http://www.icp-waters.no/>
- Data exploration
- Reports and publications
- General information



Next TF meeting June 4-6 in Helsinki

- Participation welcome!

Registration for the 35th Task Force Meeting



January 25, 2019

Meetings

[Leave a comment](#)

The next Task Force Meeting will take place in Helsinki, Finland June 4-6 2019. As previously, this will be a joint meeting with ICP Integrated Monitoring. Please [register online](#) before April 30th.

A **preliminary agenda** is available below. Practical information can be found [here](#).