

Brunifiering av sötvatten – orsaker och konsekvenser



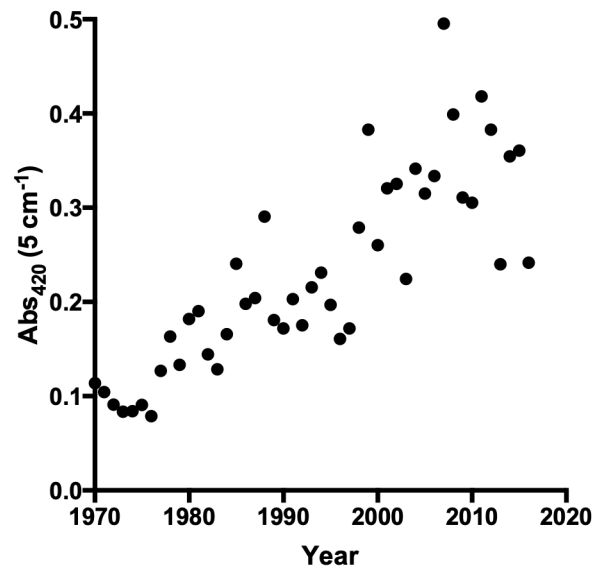
Emma Kritzberg

Biologiska
institutionen

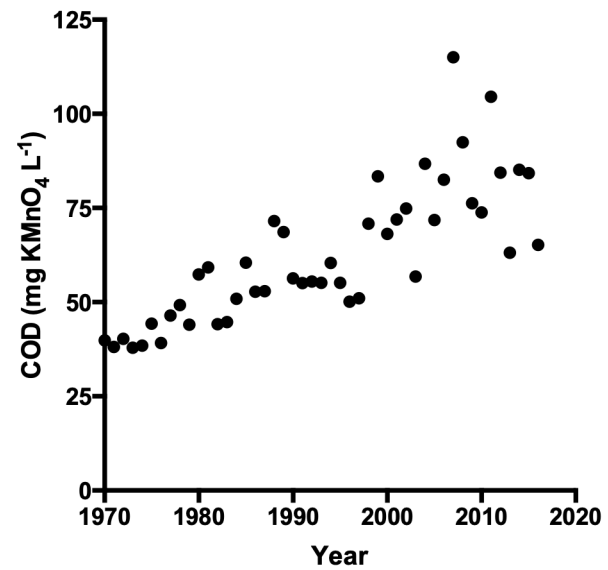


LUND
UNIVERSITY

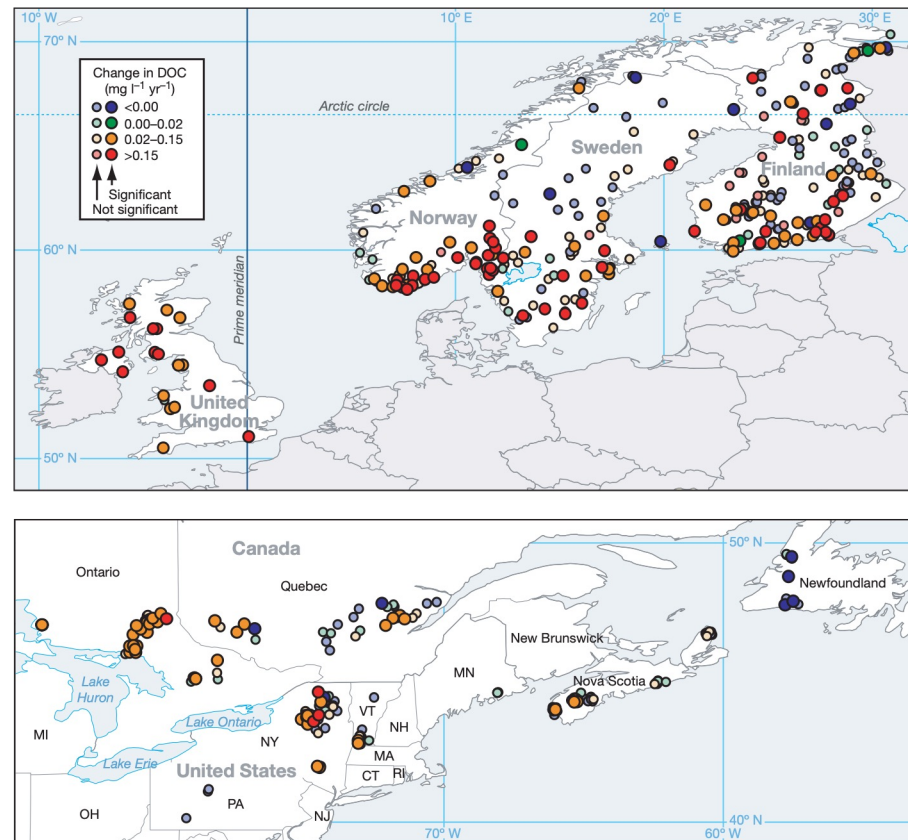
Vattenfärg



Organiskt material



Storskaligt fenomen



Konsekvenser

Ekosystemets struktur
och funktion



Ekosystemtjänster



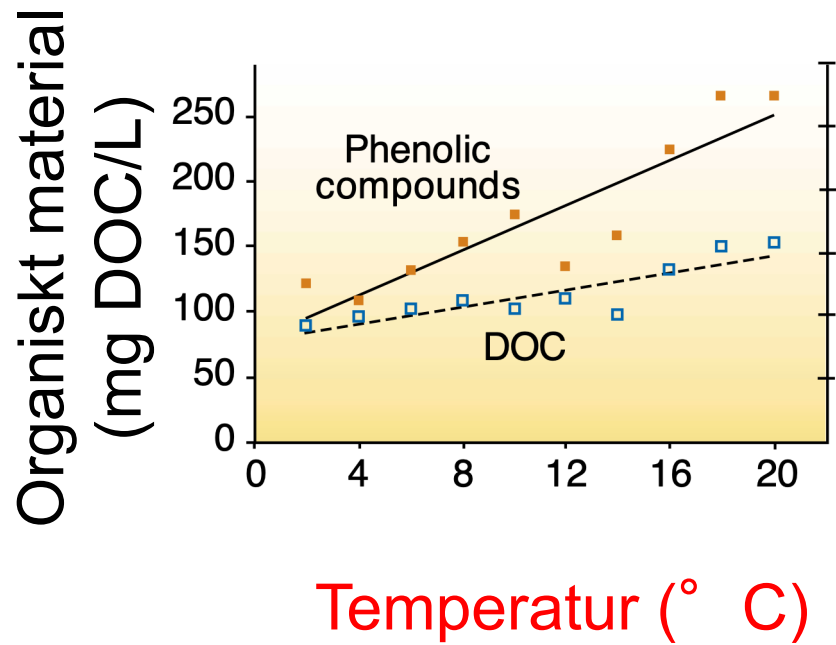
Vilka faktorer påverkar?

Klimat/väder

Luftföroreningar/surt nedfall

Markanvändning

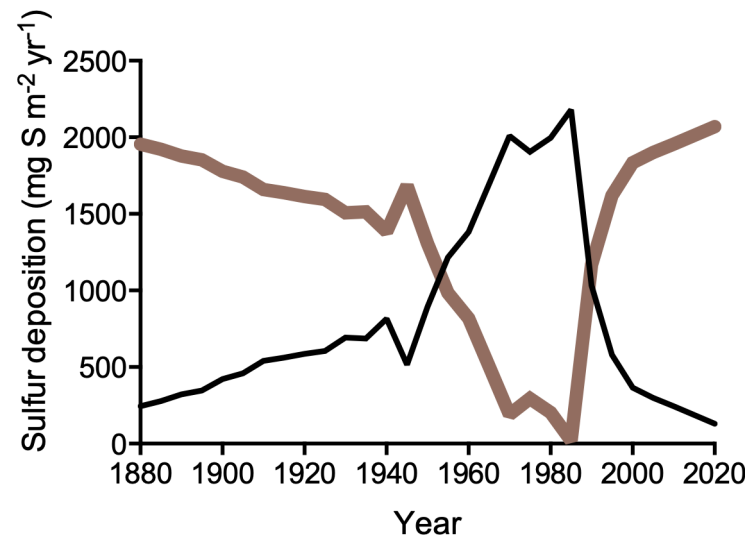
Klimat/väder



Freeman et al. 2001

Hongve et al. 2004

Surt nedfall

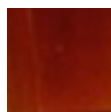


Vattenfärg
Organiskt material



Markanvändning

MYRMARK



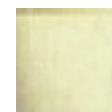
BARRSKOG



LÖVSKOG



JORDBRUK

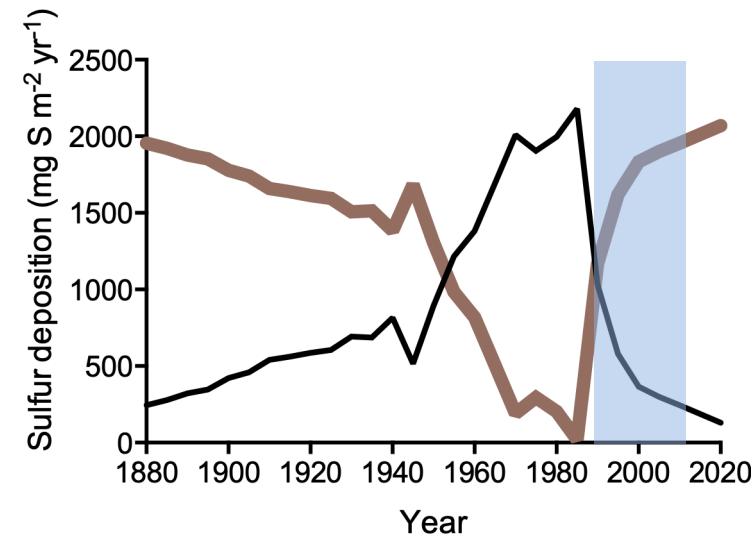


Orsaker

Klimat/Väder

Surt nedfall/återhämtning från försurning

Markanvändning





Einar Naumann
(1891 – 1934)

Aneboda fältstation

S Thunmark

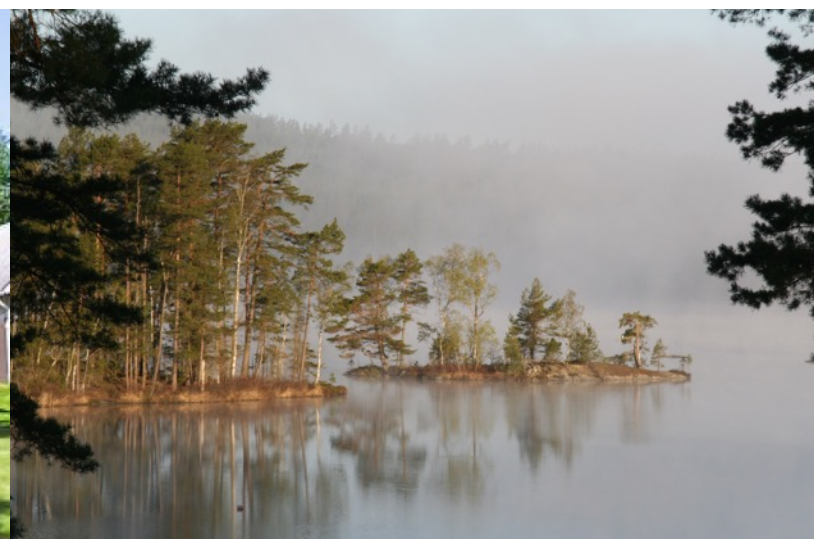
W Rodhe

B Åberg

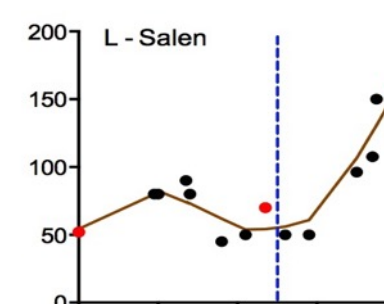
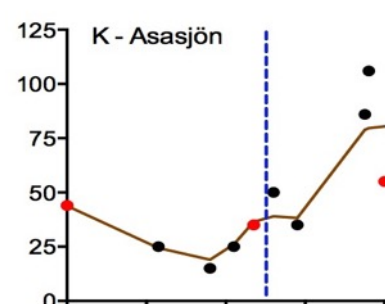
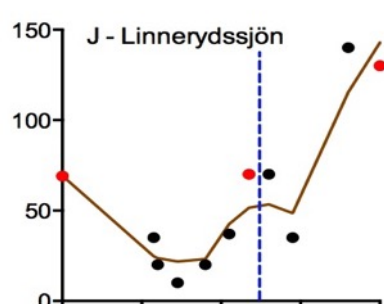
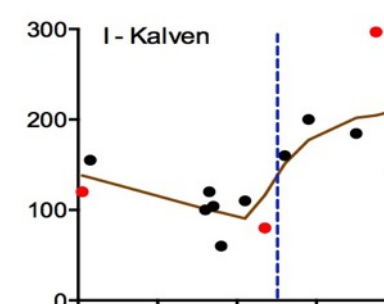
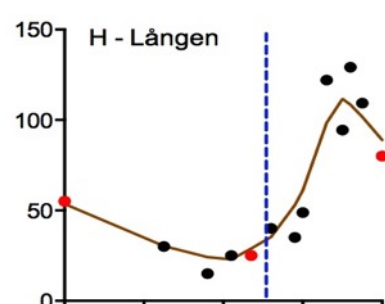
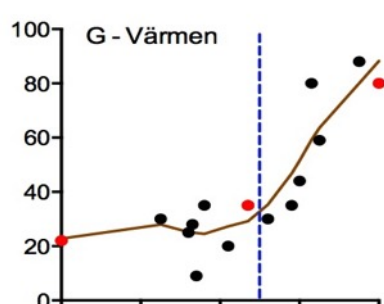
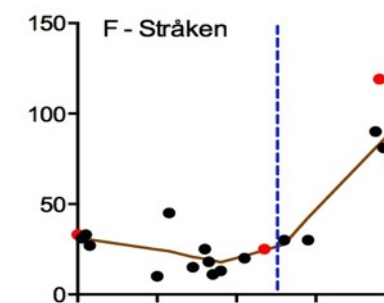
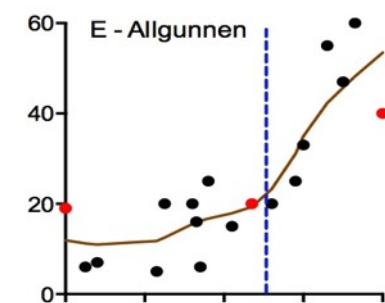
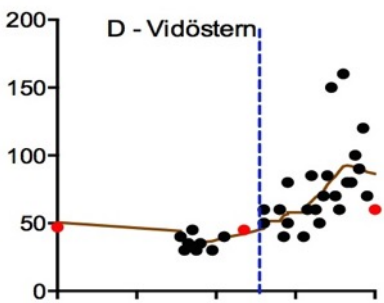
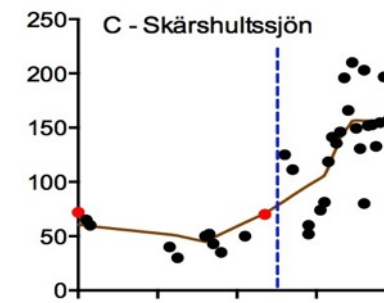
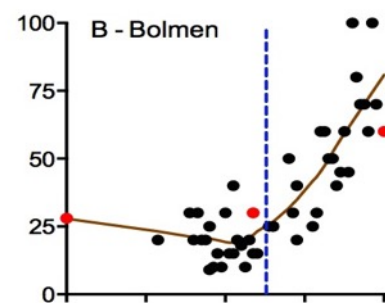
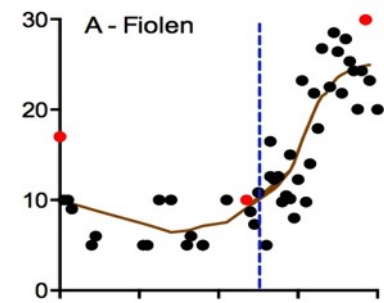
S Björk

G Andersson

Miljöövervakning 70tal -



Vattenfärg (mg Pt L⁻¹)

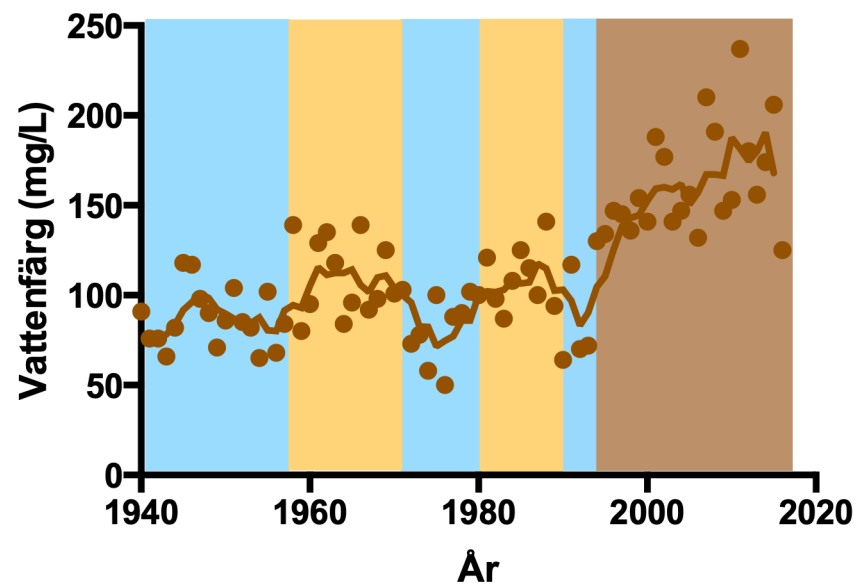
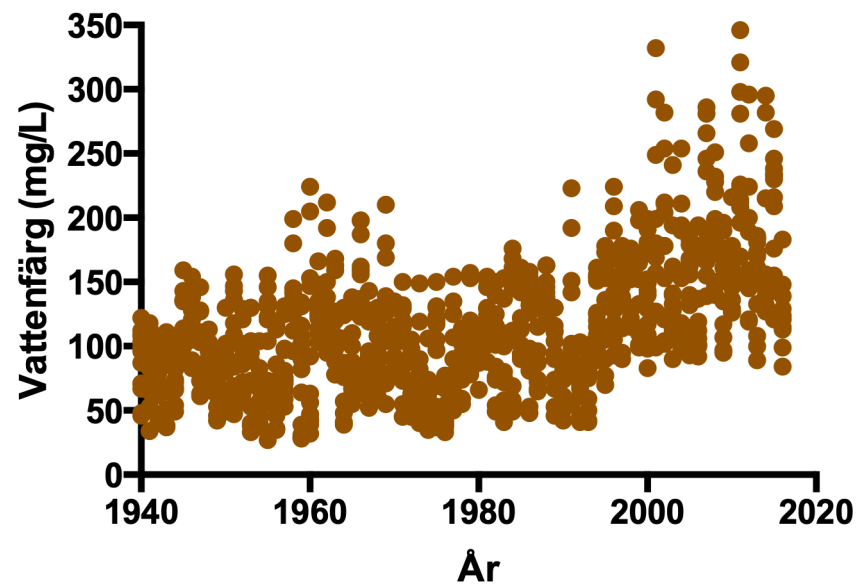


1935 1975 2015

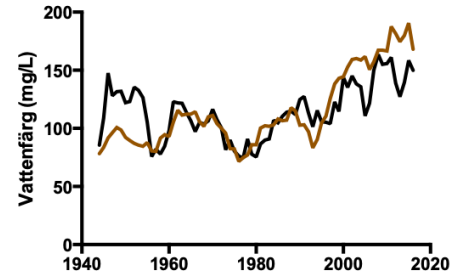
Karlskrona vattenverk

Mätningar sedan 1940 (~20 i månaden).



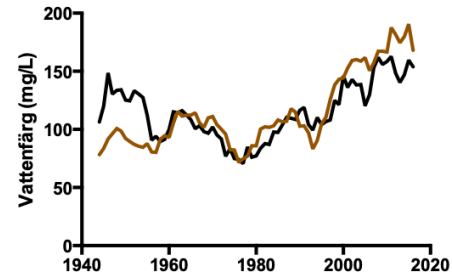


Flöde, temperatur,
tillväxtdagar



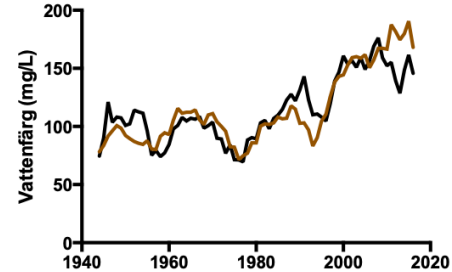
$$r^2 = 0,53$$

Flöde, temperatur,
tillväxtdagar, svavel



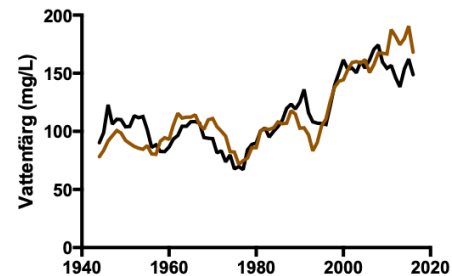
$$r^2 = 0,58$$

Flöde, temperatur,
tillväxtdagar, gran



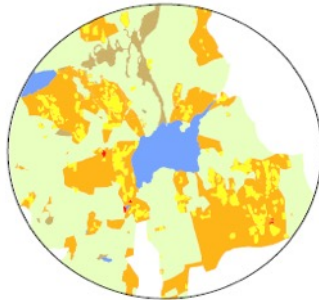
$$r^2 = 0,74$$

Flöde, temperatur,
tillväxtdagar, gran,
svavel

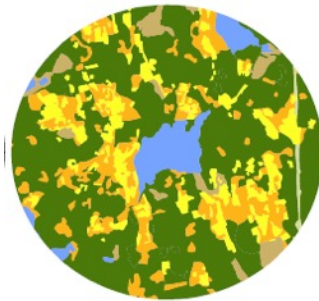


$$r^2 = 0,77$$

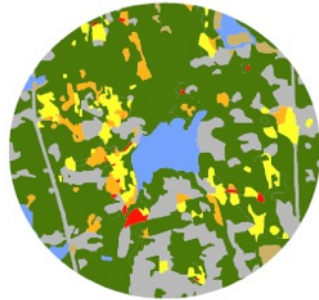
1850-1895



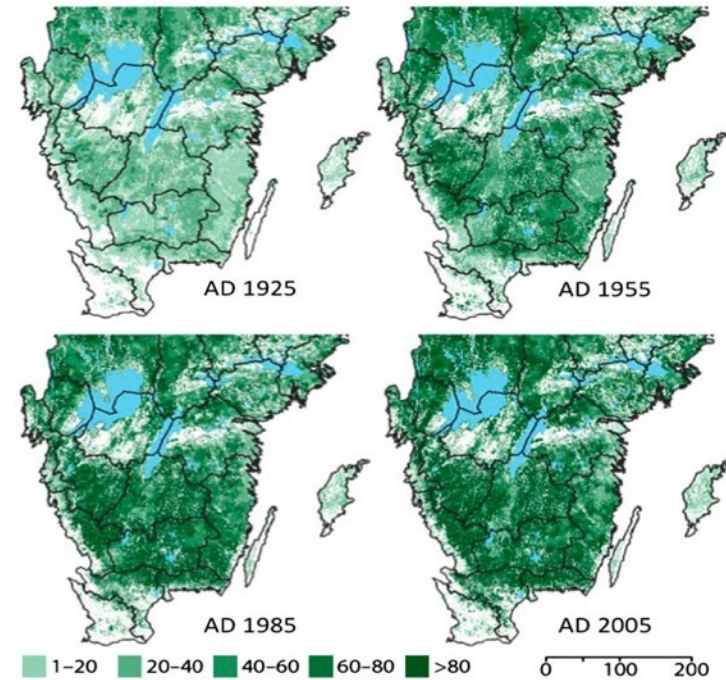
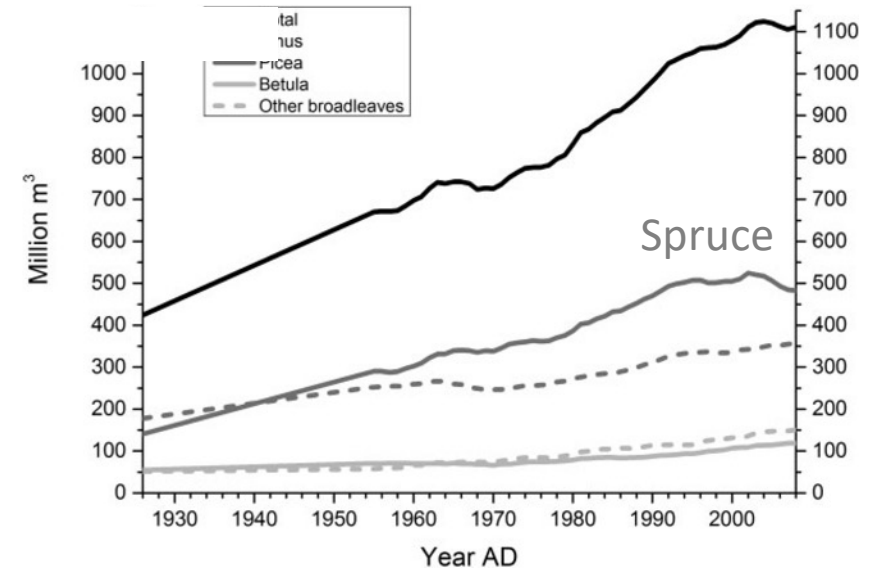
1946

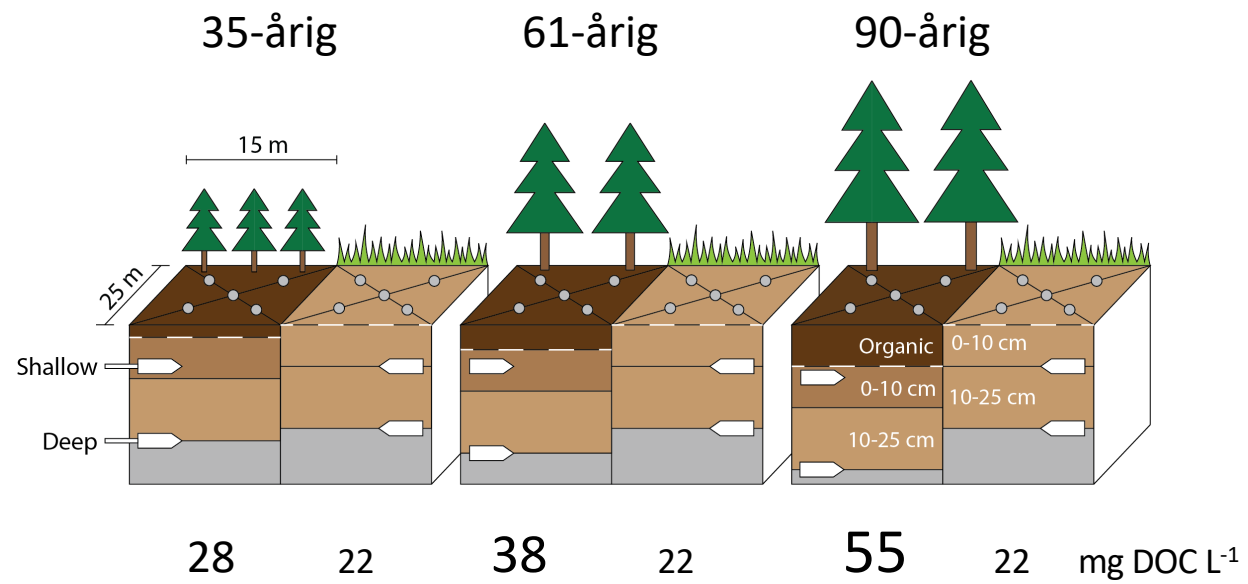


2005



Total





ORSAKER

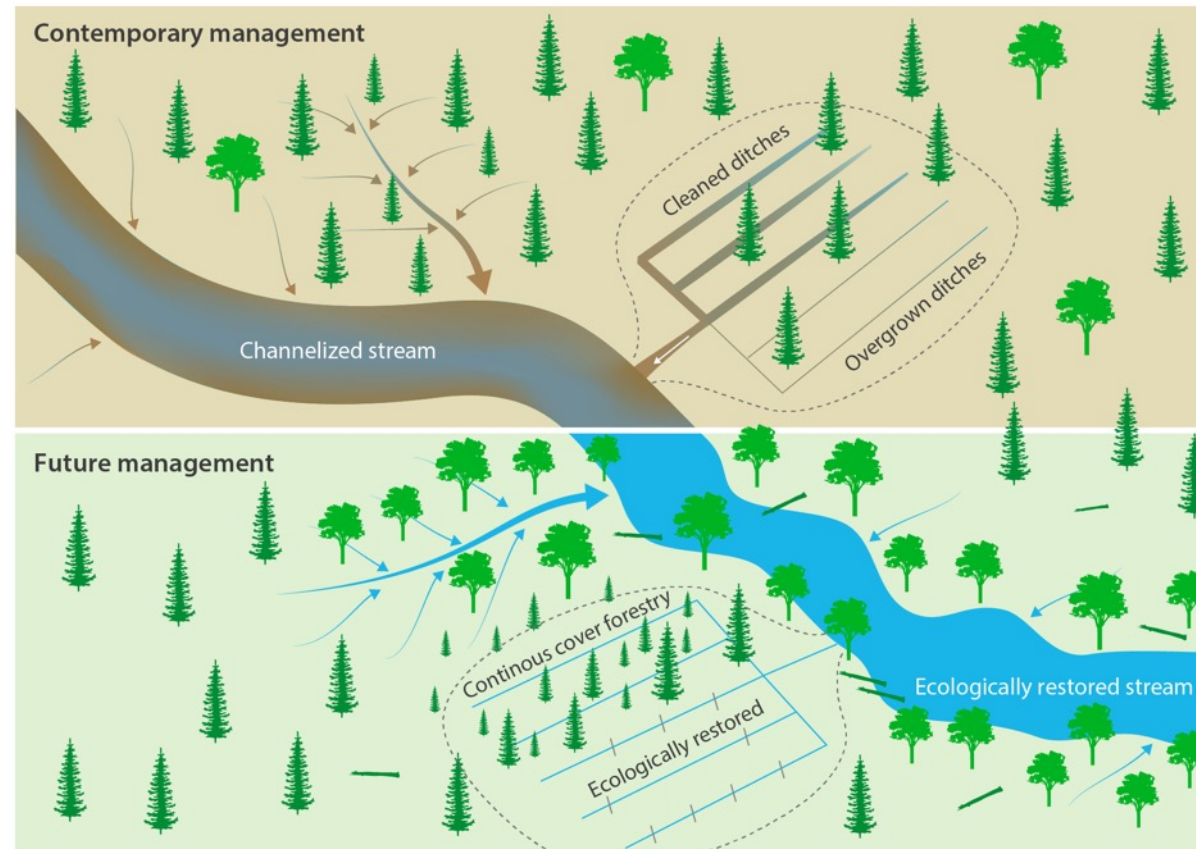
- Återhämtning från försurning är inte den *förhärskande* faktorn...
- ...och brunifieringen är inte en återgång till ett naturligt tillstånd
- Nederbörd är en viktig faktor bakom periodicitet...
- ...och i kombination med ökande temperatur är klimatet en bidragande faktor till brunifiering
- Markanvändning – expansion av barrskog – har varit en underskattad faktor



REVIEW

Browning of freshwaters: Consequences to ecosystem services, underlying drivers, and potential mitigation measures

Emma S. Kritzberg , Eliza Maher Hasselquist, Martin Škerlep, Stefan Löfgren, Olle Olsson, Johanna Stadmark, Salar Valinia, Lars-Anders Hansson, Hjalmar Laudon





Tack!

