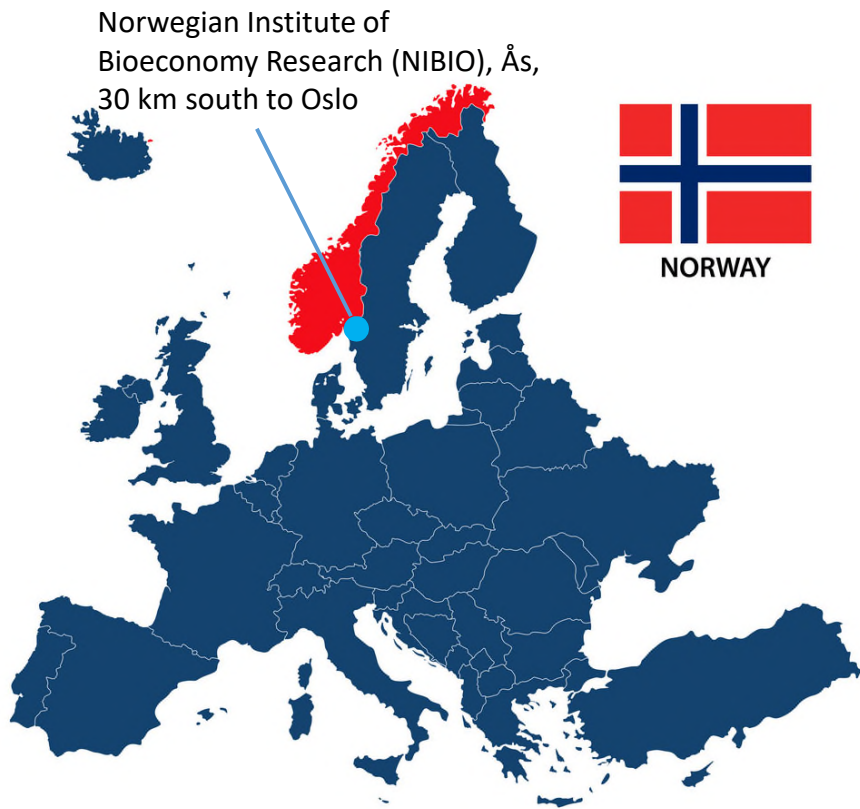


# Agricultural Water Management in Norway

Jian Liu



## About Norway:

- Latitude: 57°57' – 71°08' N (*Saskatoon: 52°09'*)
- Land area: 365,000 km<sup>2</sup> (*slightly > 1/2 SK*)
- Population: 5 million
- Land use: Agricultural land 3%; lakes and glaciers 7%; forest 38%; mountainous 44%
- Climate: A maritime climate
  - Mild winters (Jan: Oslo ~ Toronto)
  - Cool summers (July: Oslo ~ Yellowknife)

# Challenges of agricultural water management in Norway

Eutrophication in rivers and lakes due to phosphorus



Typical ag regions



## III. Climate change

- More extreme weather events (Higher rainfall and more intense precipitation episodes)
- Increases in runoff, soil erosion, and phosphorus loss
- Greater uncertainty in efficacy of mitigation strategies

## I. Water quality

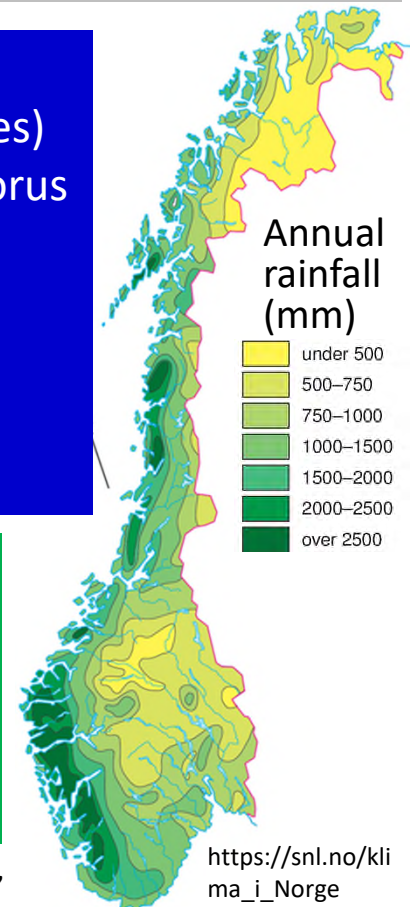
- Relatively good (vs most European countries)
- Eutrophication in rivers and lakes: Phosphorus
- Very high precipitation in many areas
- Agriculture is an area of concern
  - Soil erosion
  - Manure and fertilizer applications
  - Vegetable and potato production

## II. Water quantity

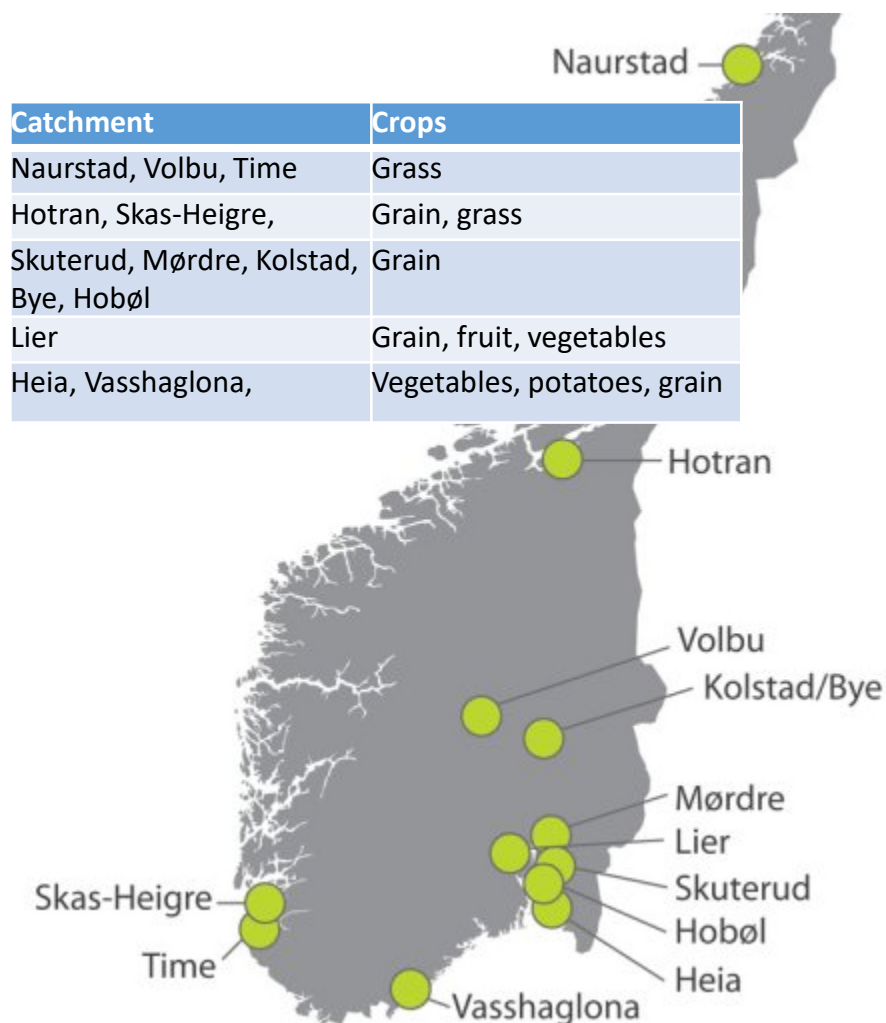
- Both too much and lack of water
- Drainage: 60% ag land artificially drained
- Irrigation needed in some areas and normally for vegetables

Source: Climate and Pollution Agency, 2008  
www.environment.no

Based on presentations by M. Bechmann,  
L. Øygarden and J. Stolte



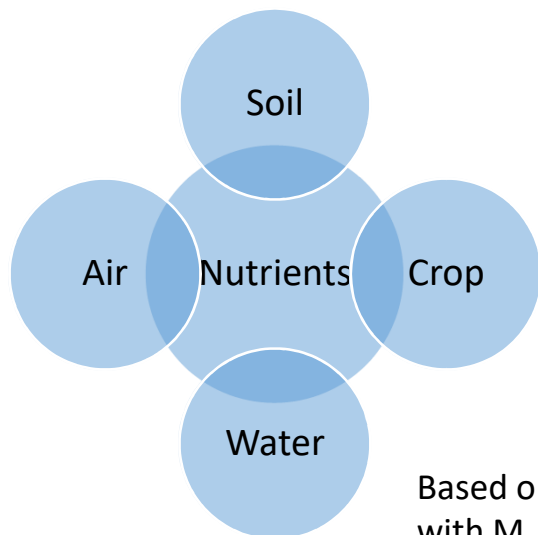
# The Norwegian Agricultural Environmental Monitoring Programme (JOVA)



- A national programme for soil and water monitoring in agriculture-dominated catchments.
- Initiated in 1992; 13 catchments.
- Aim: document the effects of agricultural practices and measures on runoff and water quality.
- Most catchments: continuous record of water-flow and sampling for analysis of nutrients, particles and pesticides, as well as agricultural management practices.

# Initial projects to be involved with in NIBIO

- Revisiting regulations related to livestock manure management
- National phosphorus and nitrogen modeling for improving water quality: JOVAest
- EU ECONUTRI project: Innovative concepts and technologies for ECOlogically sustainable NUTRIent management in agriculture aiming to prevent, mitigate and eliminate pollution in soils, water and air
  - EU-China collaboration (24 European institutions + 6 Chinese)



Based on discussion  
with M. Bechmann

**Happy to bridge any future  
collaborations between GIWS and  
NIBIO on water and/or nutrients!**

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*Any questions/comments?*



*Norwegian fjords*

Photo: [www.audleytravel.com](http://www.audleytravel.com)