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DEPARTMENT OF BIOSCIENCE

**dNmark**  
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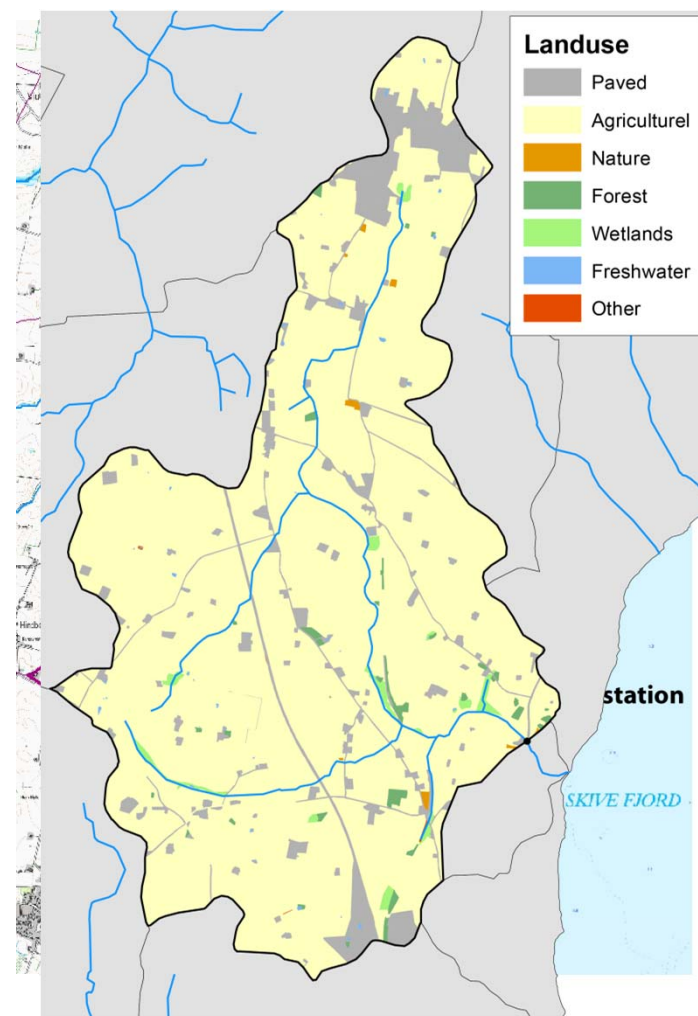
# Results from monitoring station in Hagens Møllebæk, Skive Nitrogen transport

Jane R. Poulsen  
Nymindegab Kro, 10 March 2015



## MEASUREMENTS CONDUCTED IN HAGENS MØLLEBÆK

- › **Purpose**
- › Determine the transport of nitrogen from Hagens Møllebæk to Skive Fjord
- › **Catchment characteristics**
- › Catchment size: 26 km<sup>2</sup>
- › Land use: 88% agriculture, paved 10%
- › Dominating soil type: sandy clay 53%
- › **Measurement period**
- › March 2014 – March 2015





## MEASUREMENTS CONDUCTED IN HAGENS MØLLEBÆK

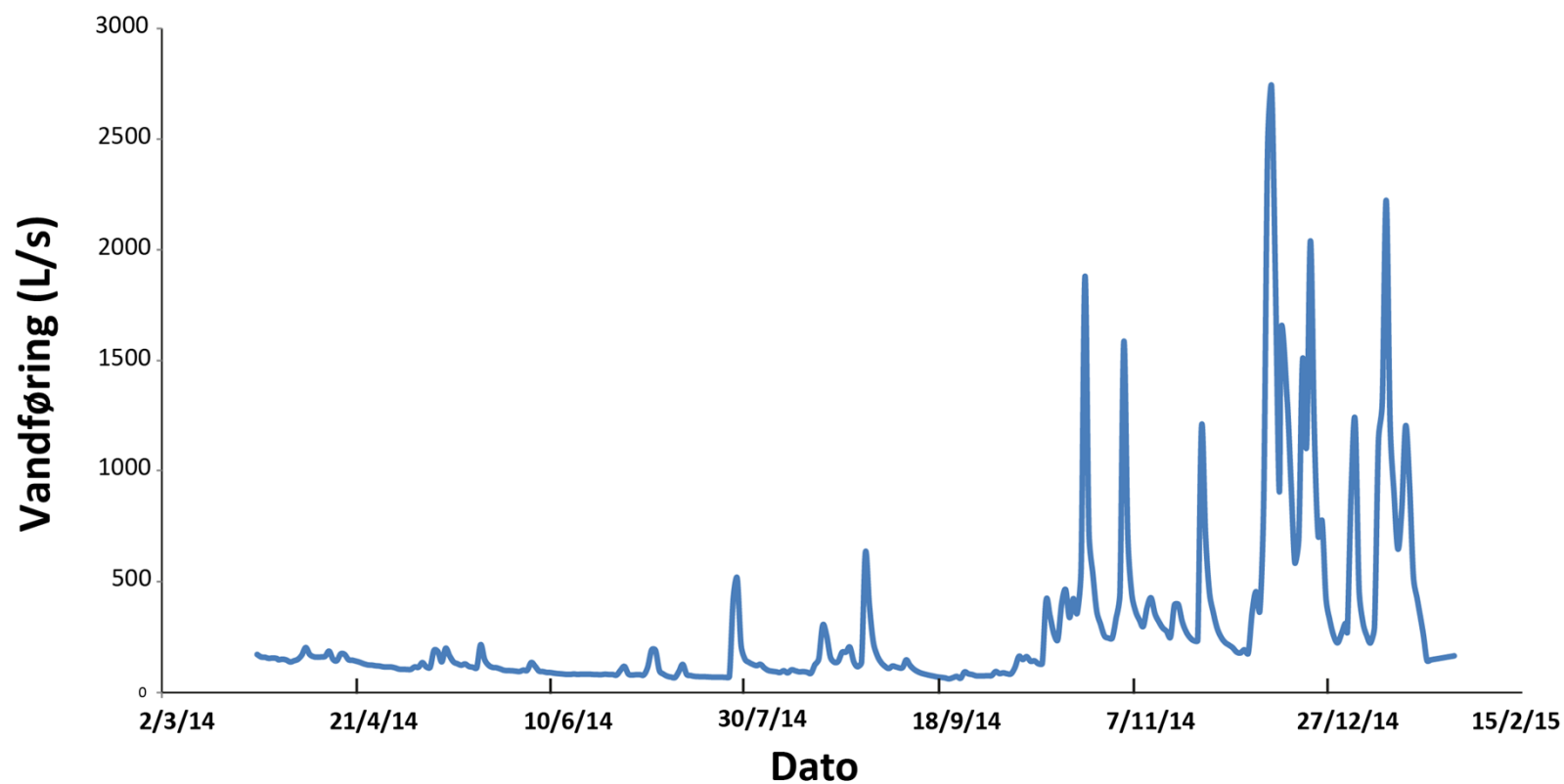
- › **Discharge measurements**
  - › Water stage (10 min interval)
  - › Direct discharge measurements (biweekly)
  - › Stage-discharge relation established
- › **Stream water N concentrations**
  - › Daily composite water samples (every 3rd hour)
  - › Biweekly grab samples
  - › All water samples analysed for nitrate (N) concentrations, pointsamples also total N.
- › **Water velocities**
  - › Doppler sensors measure average water velocity
  - › Used for test of backwater effects





## RESULTS FROM DISCHARGE AND N MEASUREMENTS

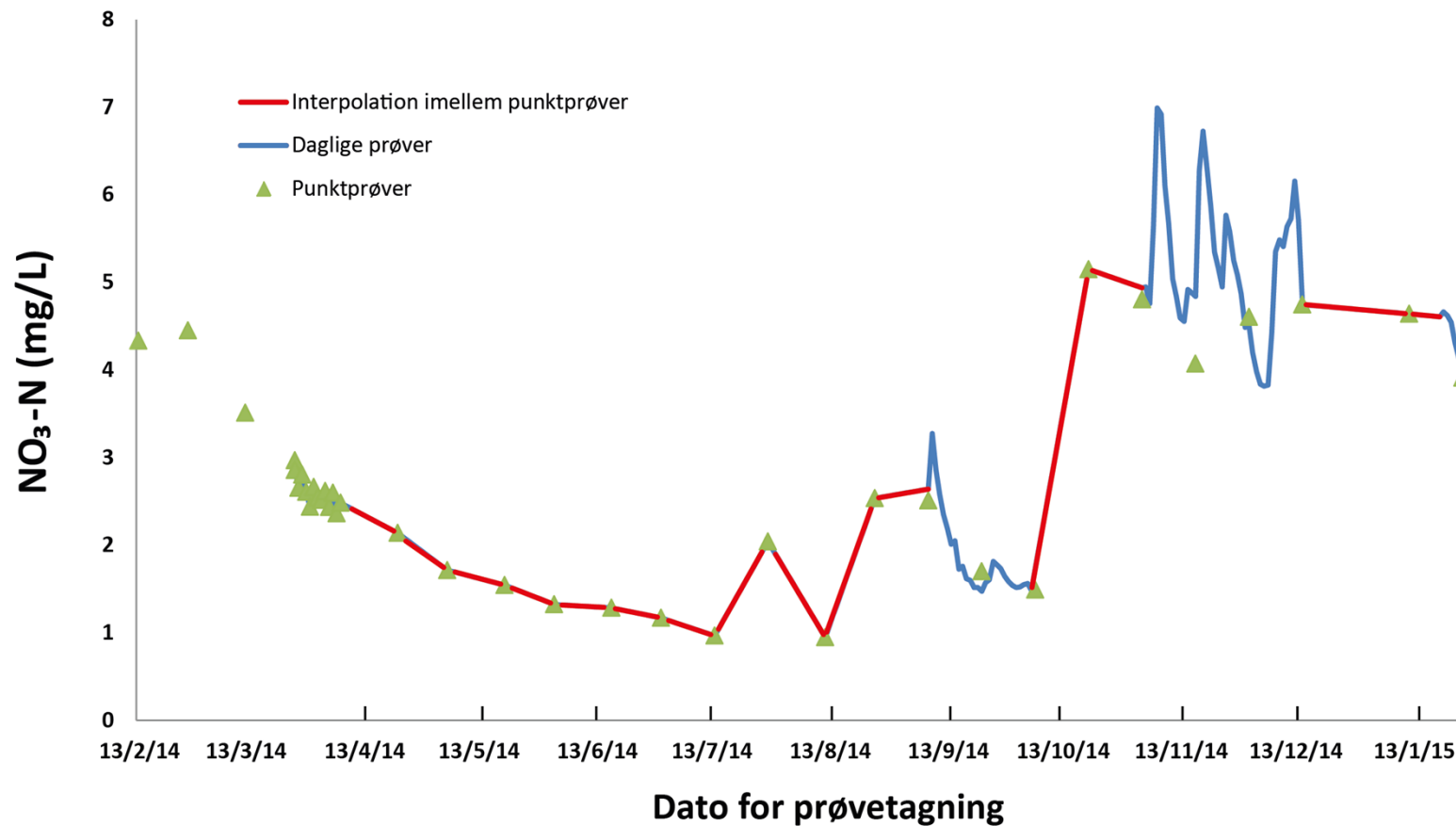
› The hydrograph for Hagens Møllebæk, March 2014 – February 2015





# RESULTS FROM DISCHARGE AND N MEASUREMENTS

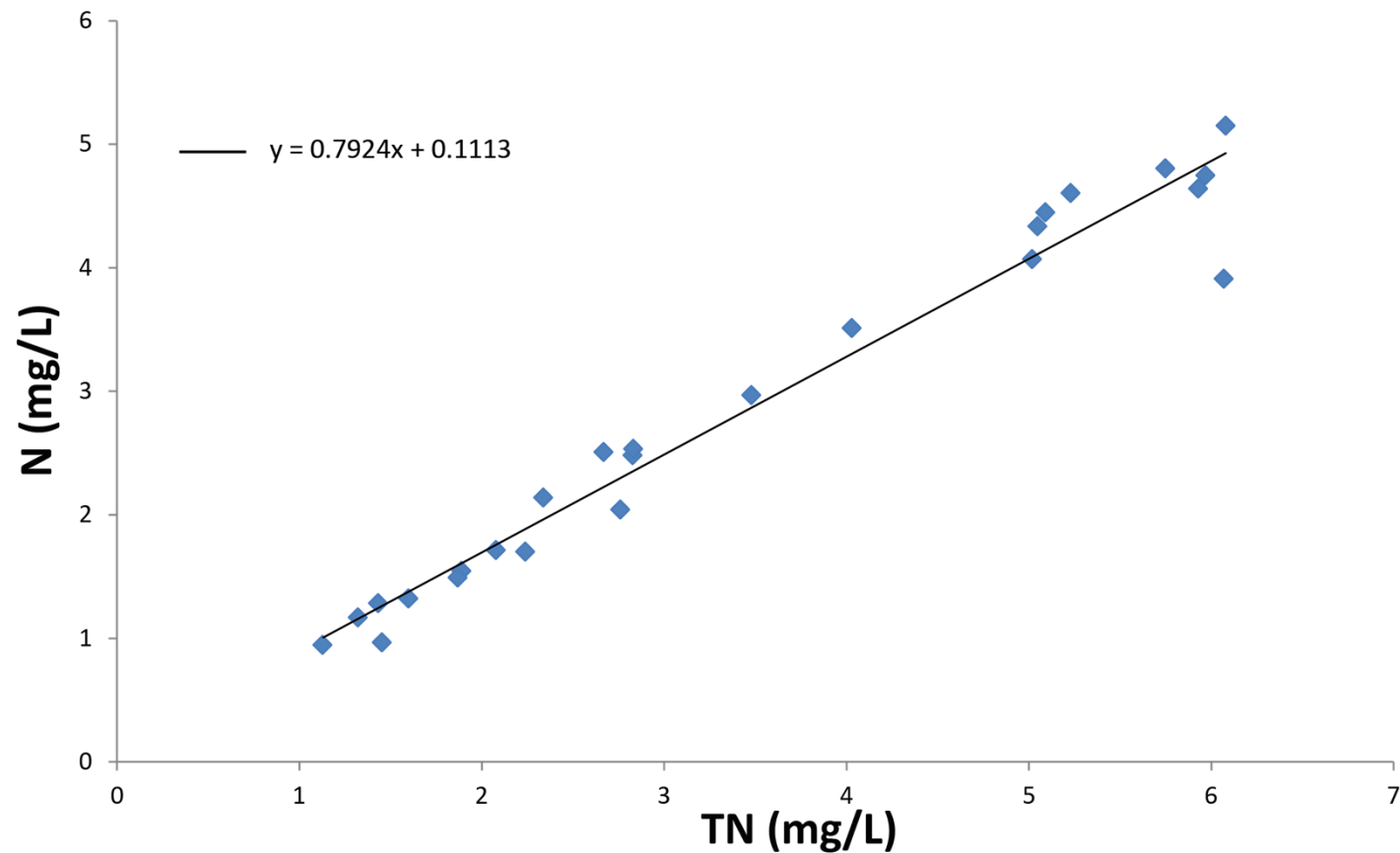
## > N concentrations in point and composite samples





## RESULTS FROM DISCHARGE AND N MEASUREMENTS

> Relationship between total (T) N and N (only point measurements analysed for TP)





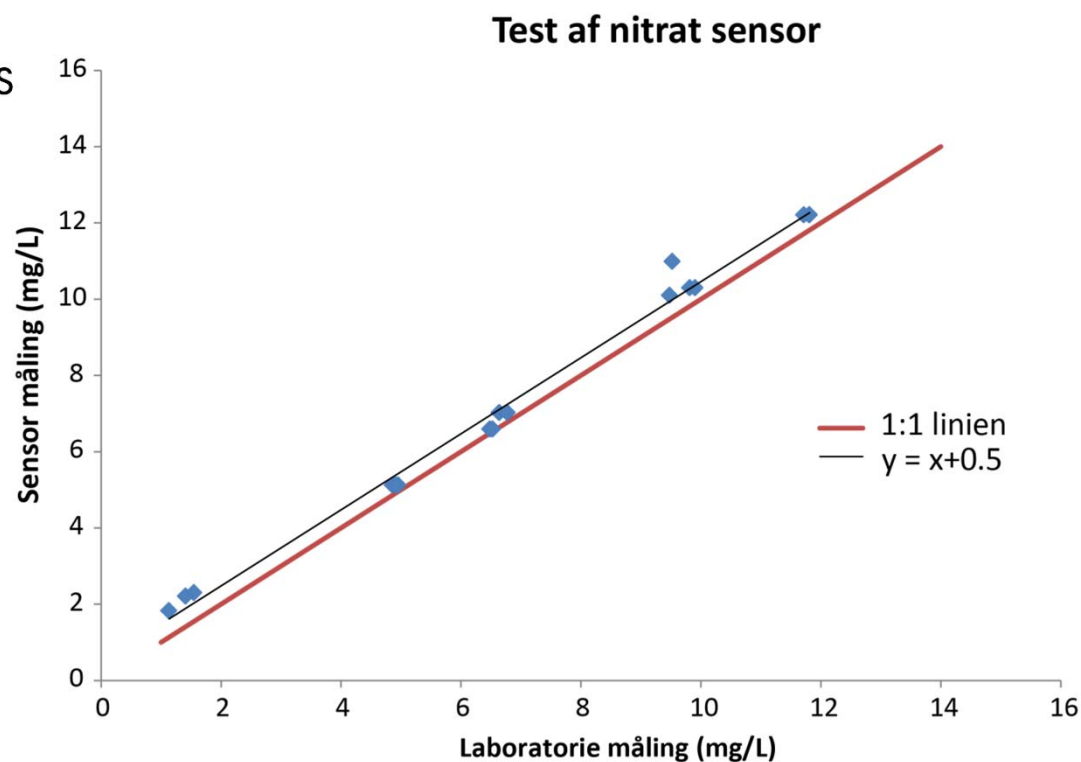
## RESULTS FROM DISCHARGE AND N MEASUREMENTS

- › **Transport of N and TN to Skive Fjord**
- › For the period March 2014 – March 2015:
  - 35,000 kg N**
  - 42,000 kg TN (estimated)**
- › For the entire catchment:
  - 16 kg TN/ha**



## MEASUREMENTS CONDUCTED IN HAGENS MØLLEBÆK

- › **New sensor technology to investigate detailed temporal N variability**
- › N-sensor has been tested
- › Sensor measures the damping of light, due to nitrate molecules
- › Sensor can estimate N concentration every 10 min.







## CONCLUSIONS

- › Uncertainty in the estimated transport due to incomplete measurement period.
- › The result of app. 16 kg N /ha is close to DK average.
- › The year March 2014 – March 2015 has been exceptional, due to a warm summer/fall. Likely to result in lower leaching of N.
- › The new sensors are a promising tool for investigating the detailed temporal variation in N concentrations → very useful for instance in vulnerable or particularly stressed streams.