

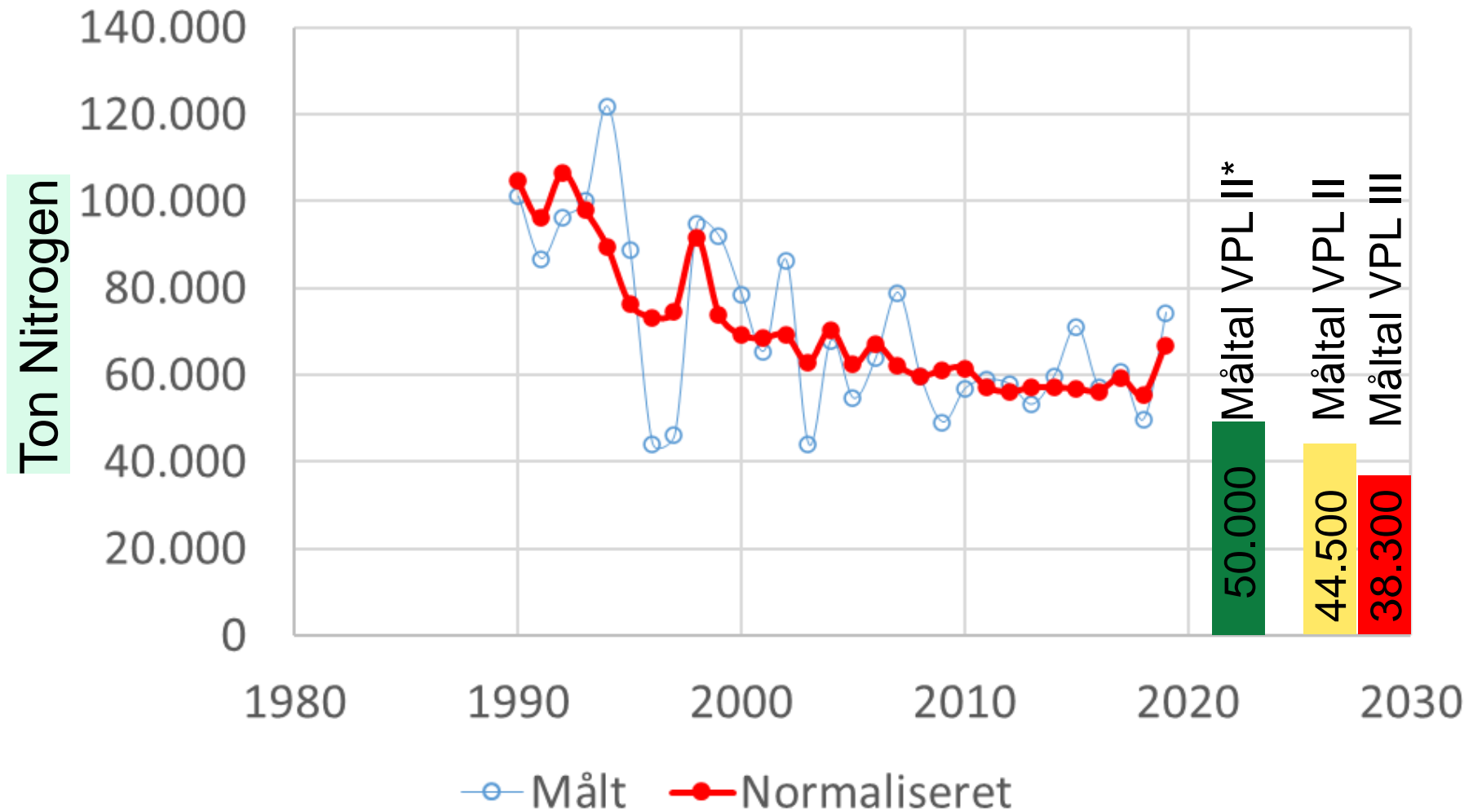
Perspectives in using DAISY to investigate practical challenges concerning use of nitrogen in agriculture

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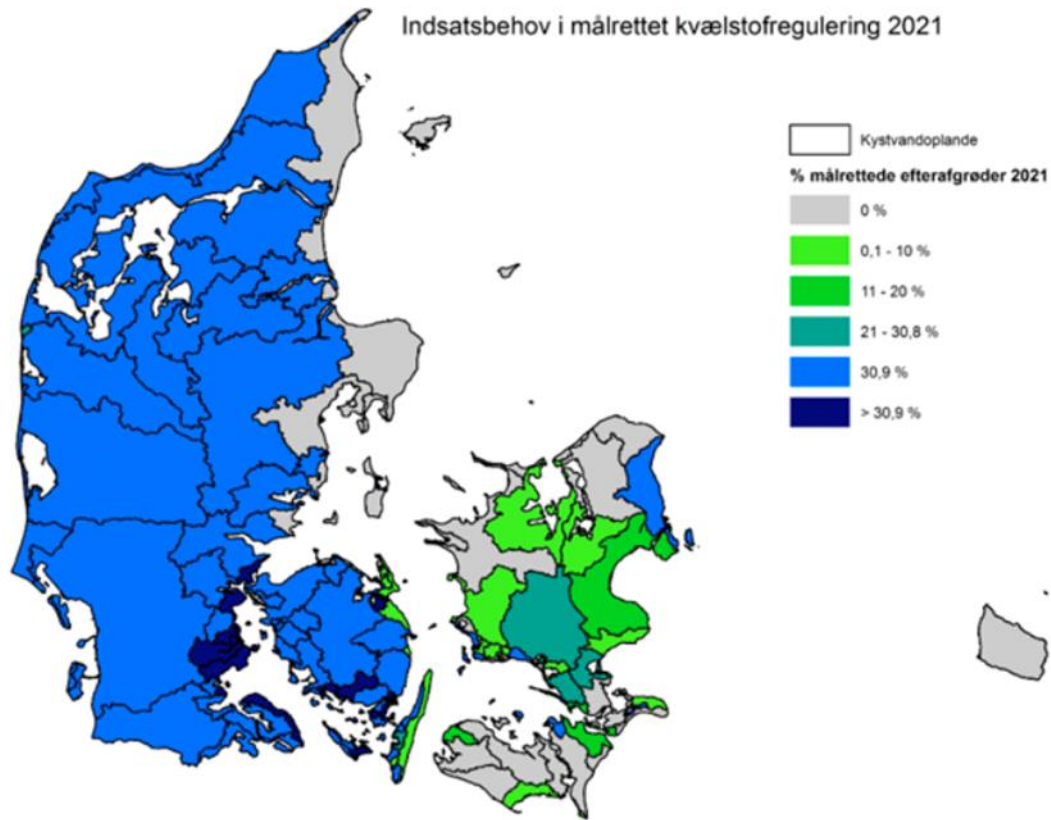
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Outlet of Nitrogen to the marine environment

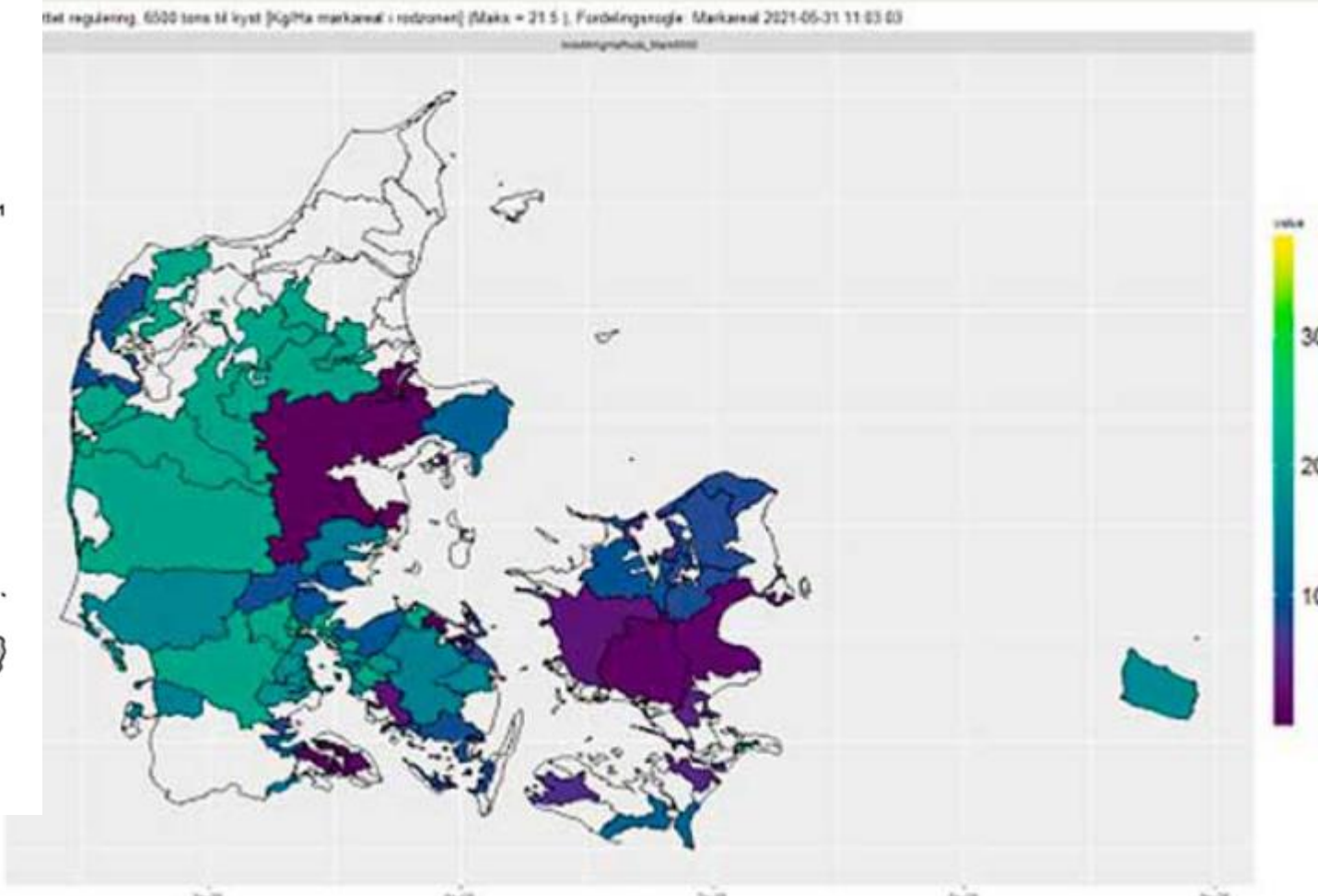


Map of targeted catch crops 2021



Demands for reduction of N leaching, per hectare of agricultural land

Reduction in N-leaching from root zone, kg N/ha



Still challenges with Nitrogen in agriculture

- Determination of leaching in our actual agricultural system on different soil types, cropping system
- Effect of different tools to reduce leaching
- Better understanding og the effect of management systems

DAISY or a more simple model like N-les5

- Different models for different purposes!
- N-les5 might be good for calculation on big scale the effects of crops, N-level, catchcrops
- But N-les5 can not simulate management practice like date for establishing the crop, time for spreading out fertilizer
- DAISY must be preferred for tasks like this

Regulation by nitrate indexes

Index for leaching af same soiltype and climate

Cereals	Indeks
Winter wheat	100
Winter barley	98
Spring barley	92
Hybrid rye	89
Oat	88

Seed,beet	Indeks
Field peas	100
Winter oil seed rape	80
Perennial ryegrass	47
Red Fescue, 2 year	31
Sugar beets	31

Grovfoder	Indeks
Maize for silage	125
Green barley+grass	64
Clover grass(2 år)	60
Clovergrass (3 år)	54
Permanent grassland	30

DAISY has been used to (examples):

- Explaining the significant drop in protein in Danish cereals 1990-2017
- Effect of early establishment of winter cereals
- Comparing different cropping systems (Plantepro)
- Plant density and leaching
- Consequences of uneven spreading of fertilizer
- Digital mapping of soil with information from satellites

New project

- The relation between leaching of N to ground and surface water of cropping systems with
 - Wintercereal dominated rotations
 - Catch crops followed by spring sown crops

DAISY normally gives a low leaching for wintercereals

N-LES5 and results from trials shows a higher leaching.

What is the truth? Very high economical impact for farmers

Vision _ Use of DAISY in fertilizer planning

DAISY

- Very detailed
- High demand for input
- Need expert to run it
- Not operational for "main use"



MarkOnline

- Rough N-model
- Few inputs
- Used for 5-600.000 fields each year
- Standard climate



Vision _ Use of DAISY in fertilizer planning

MarOnline

- Input from farmer/adviser
- Practical output for handling



DAISY

- Track of N and water in soil
- Current status of nitrate in soil, leaching, mineralization...



Satellites NDVI/NDRE

Autocalibration
from satellite