FAIRWAY

FAIRWAY Project

SURDYK Nicolas

BRGM

FAIRWAY
Farm System Management and Governance
for Good Water Quality and Drinking Water Supplies

Funded by the European Union's Horizon 2020 Programme for research & innovation under grant agreement no 727984

General objectives of H2020-project FAIRWAY

To contribute to a more effective protection of drinking water resources against nitrate and pesticide pollution from agriculture

by identification and further development of innovative measures and governance approaches,

together with relevant local, regional and national actors.

Period 1 June 2017 – 31 November 2021

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FAIRWAY: 22 partners in 11 countries

Partner	Acronym	Country
Wageningen Research	WUR	NL
RoyalHaskoning-DHV	RHDHV	NL
Wageningen University	WU	NL
BRGM	BRGM	FR
Landbrug/SEGES	SEGES	DK
NIVA	NIVA	NO
Univerza v Ljubljani	UL	SI
Fondazione per lo Sviluppo Sostenibile del Mediterraneo	MEDES	IT
CLM	CLM	NL
Thünen Institute	Thuenen	DE
Coimbra Polytechnic Agri. School	IPC/ESAC	PT
University Lincoln	UoL	UK
ICPA	ICPA	RO
Aristotle University of Thessaloniki	AUTH	EL
Agri-Food & Biosciences Institute	AFBI	UK
Aarhus University	AU	DK
GEUS	GEUS	DK
RIVM	RIVM	NL
Kmetijsko gozdarski zavod Maribor	KGZ Maribor	SI
ADAS	ADAS	UK
LWK (Chamber of Agriculture)	LWK	DE
Scienceview Media B.V.	Scienceview	NL

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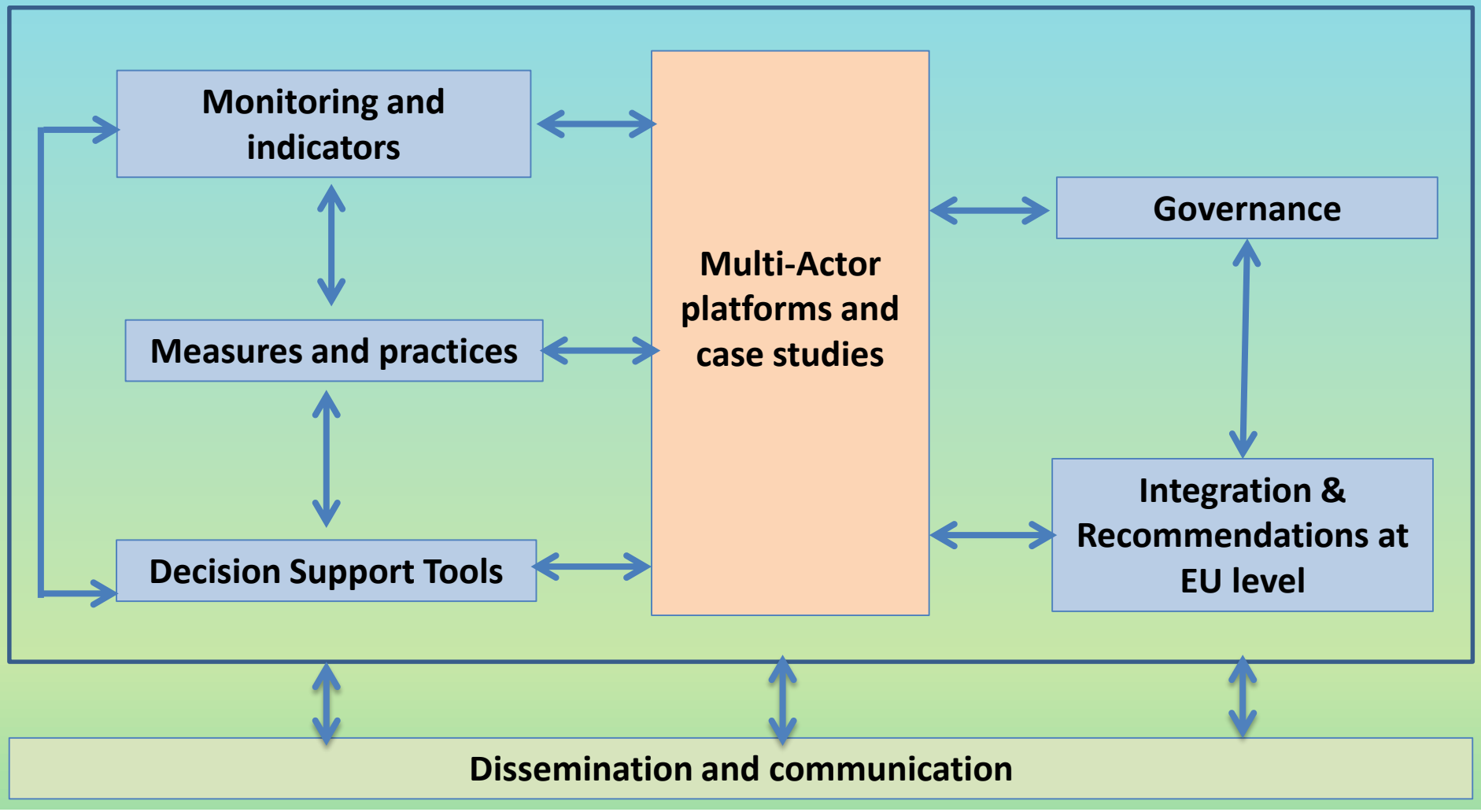
FAIRWAY approach



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13 case studies in 11 countries

1	Island Tunø, Denmark
2	Aalborg, Denmark
3	Anglian Region, England
4	La Voulzie, France
5	Lower Saxony, Germany
6	Axios river, Greece
7	Derg catchment, Northern Ireland
8	Overijssel, Netherlands
9	Noord-Brabant, Netherlands
10	Vansjø, Norway
11	Baixo Mondego, Portugal
12	Arges-Videa, Romenia
13	Dravsko Polje, Slovenia

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Planning FAIRWAY in 2021

- Deliverables and scientific papers, e.g.
  - Analysis of the Multi-Actor Platforms in the different case studies
  - Measures to reduce leaching of nitrate and pesticides
  - Water Safety Plans
  - Governance

- Synthesis of the work
  - Recommendations
  - Interaction with policy makers and stakeholders

- Final meeting at Conference Land Use and Water Quality in Maastricht (NL) in September 2021

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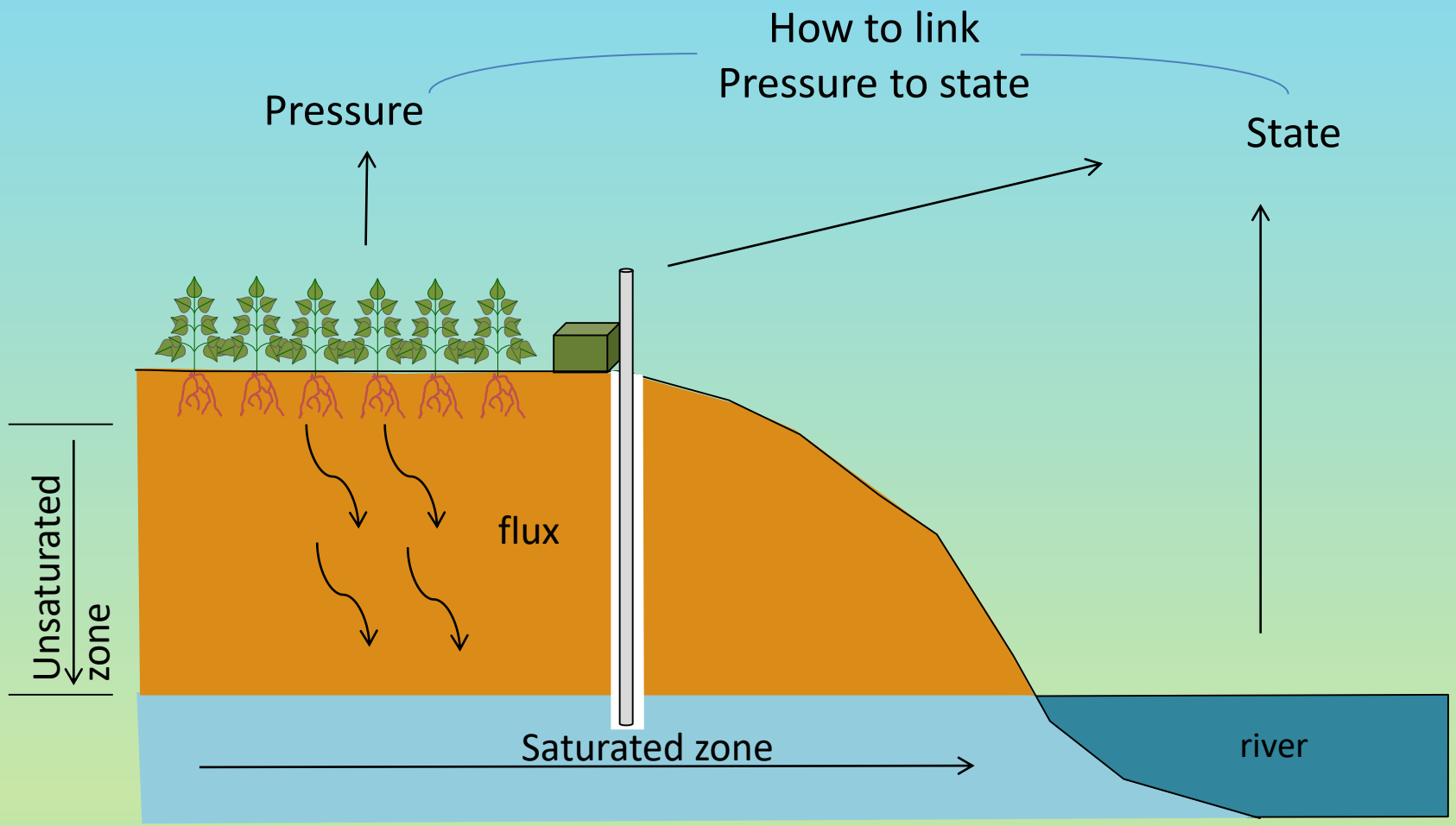
How to link “Pressure” to “State”



Selection of Indicators

DPSRI Framework

Linking “Pressure” and “State” is needed in CAP and WFD

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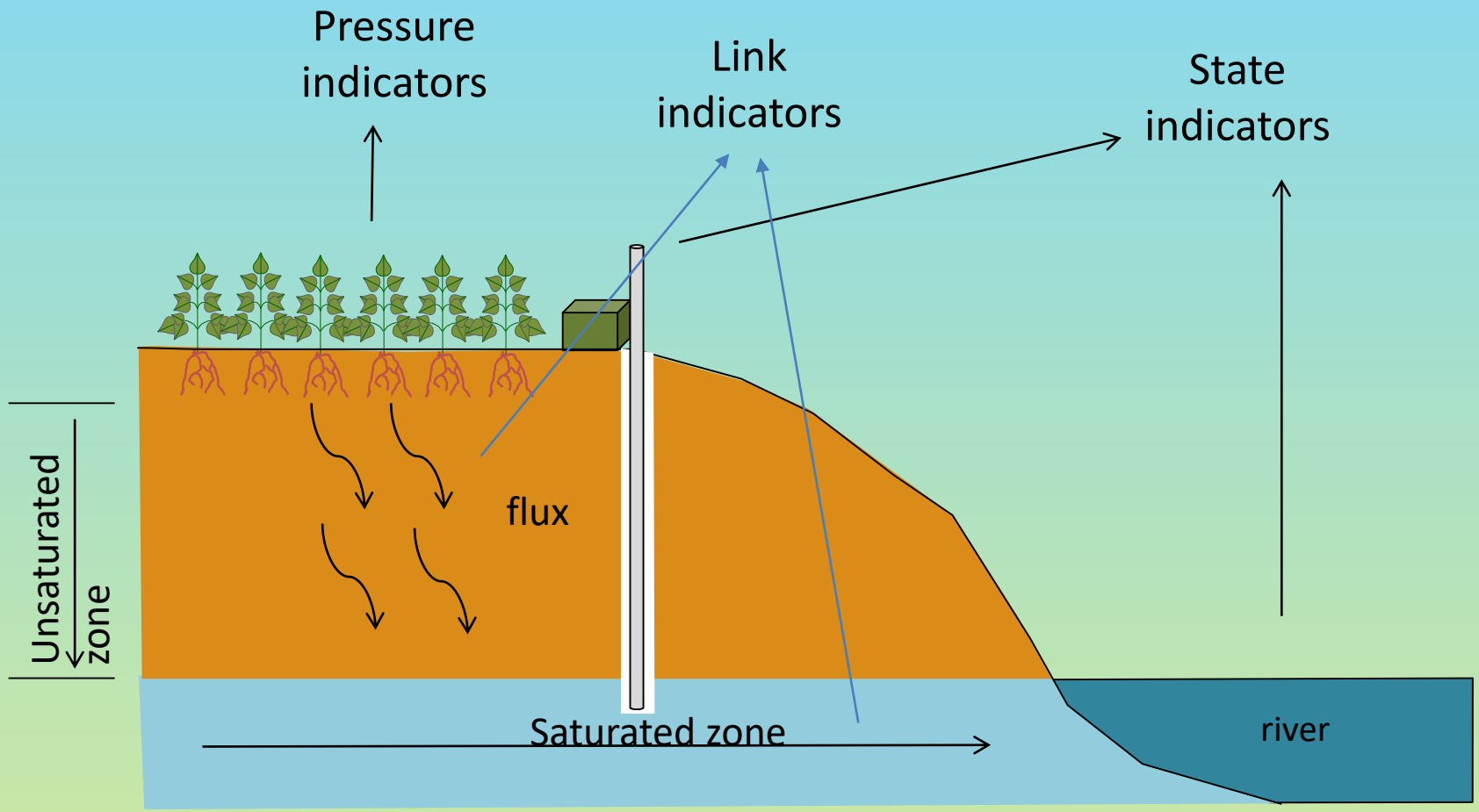
Selection of pertinent indicators



Preselection of indicators with though a reviews and surveys

Identification of pertinent pressure indicator though comparison to state indicator

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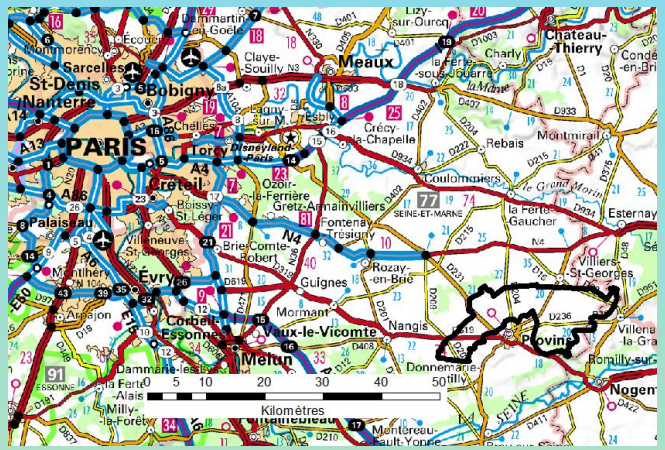
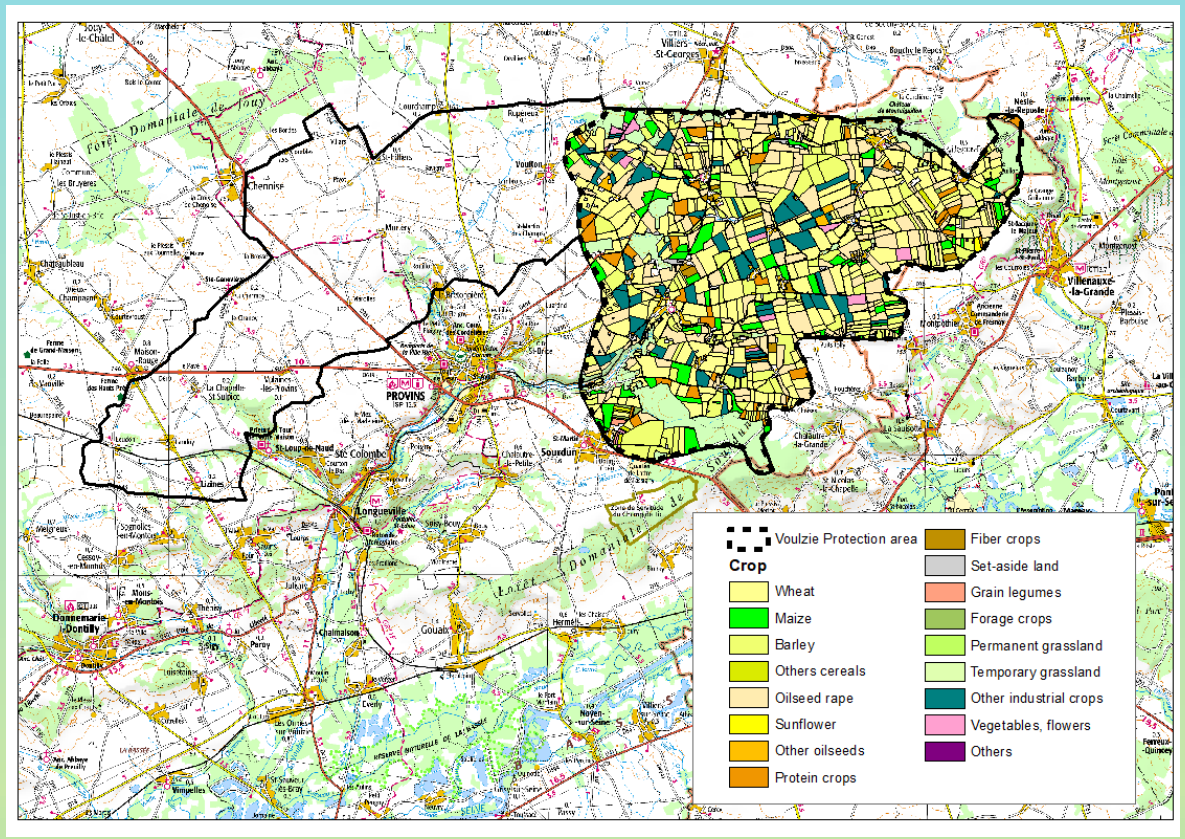
Presentation of the case study : La Voulzie





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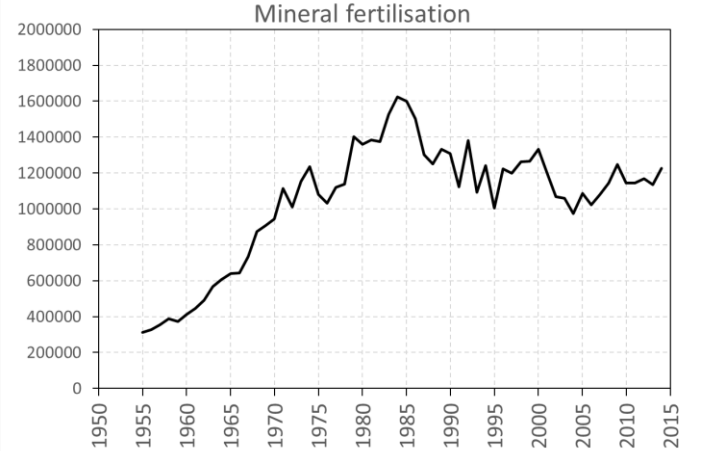
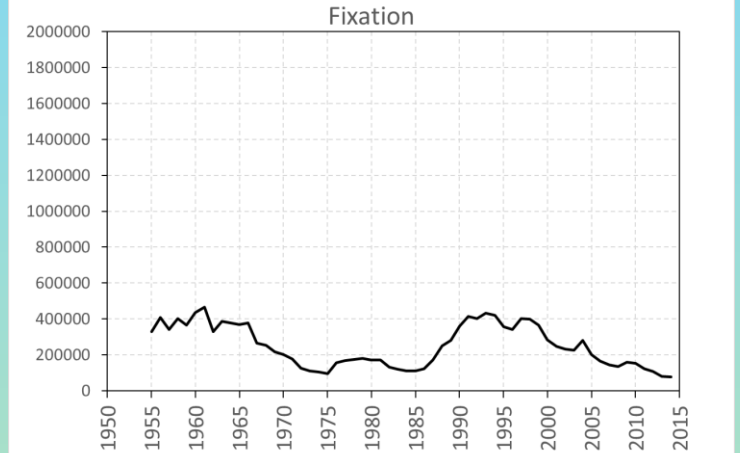
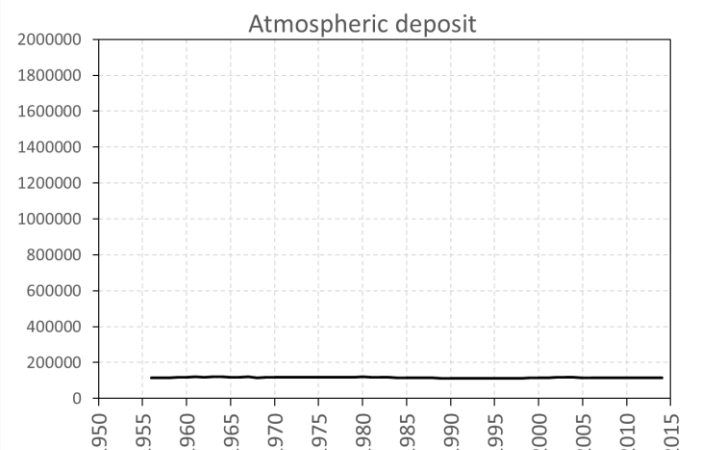
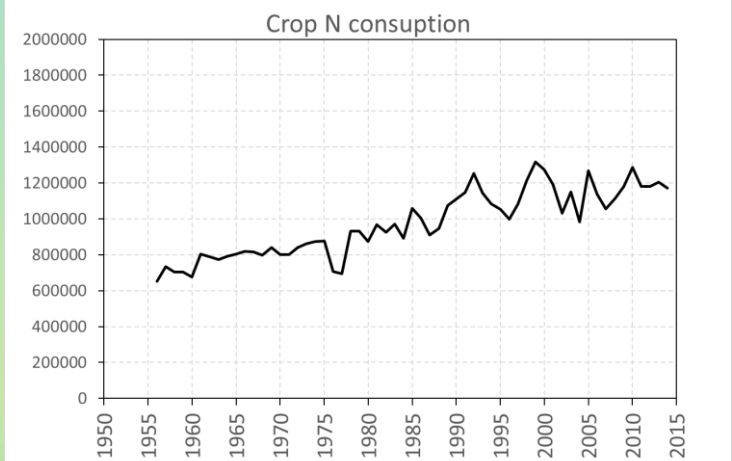
Example of available data

Kg of N/ catchement area









Cassis-N
Poisvert et al., 2016

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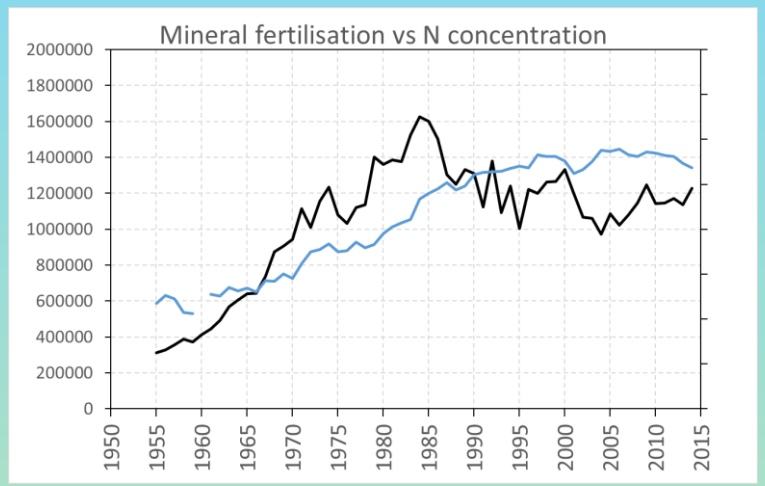
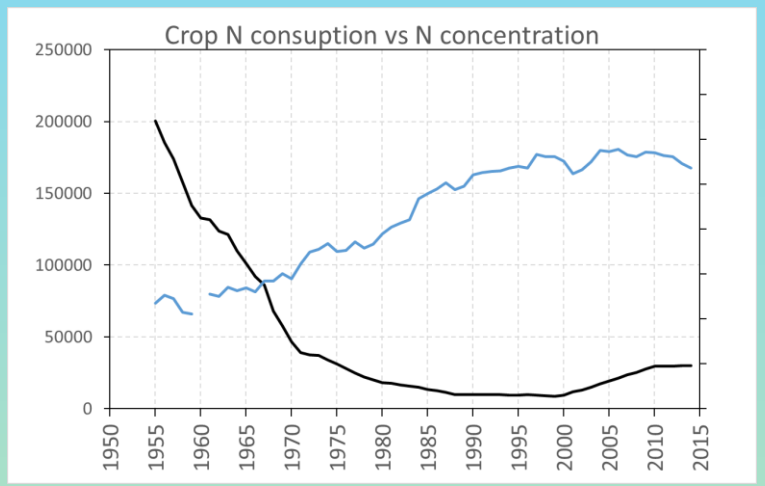
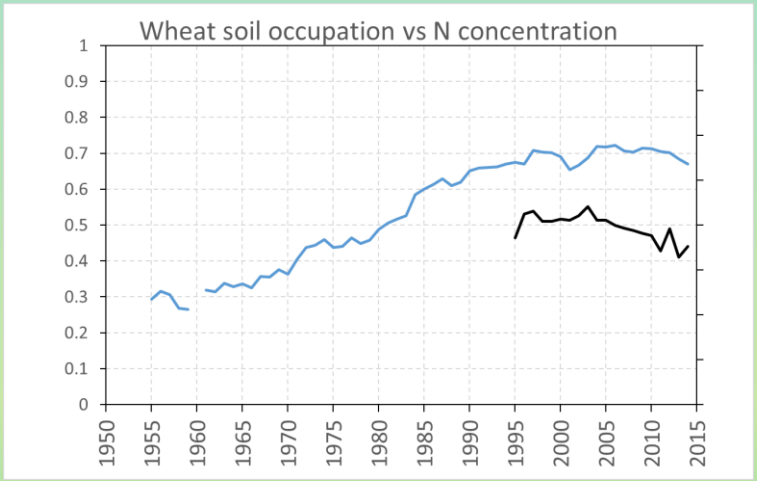
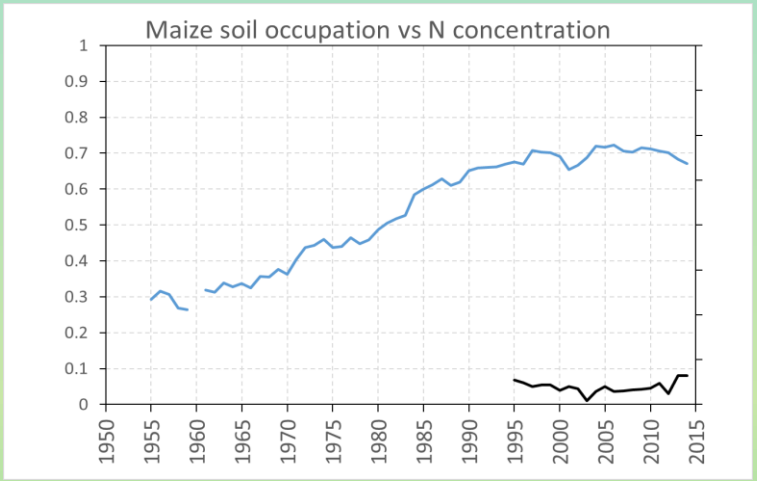
Crossing available data









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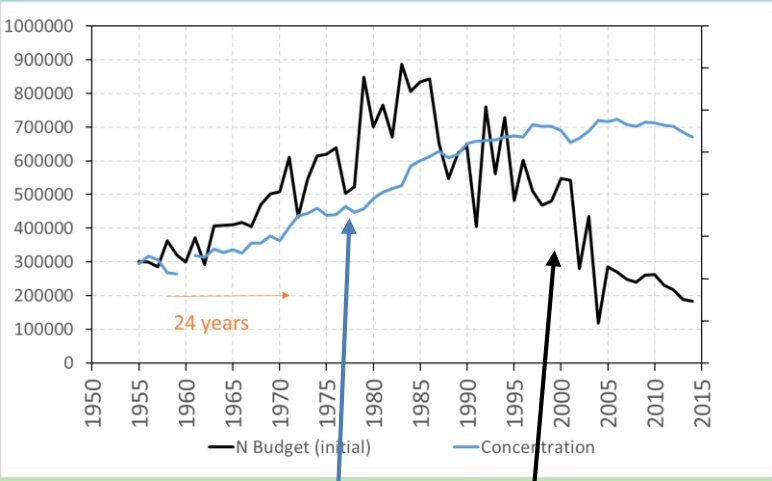
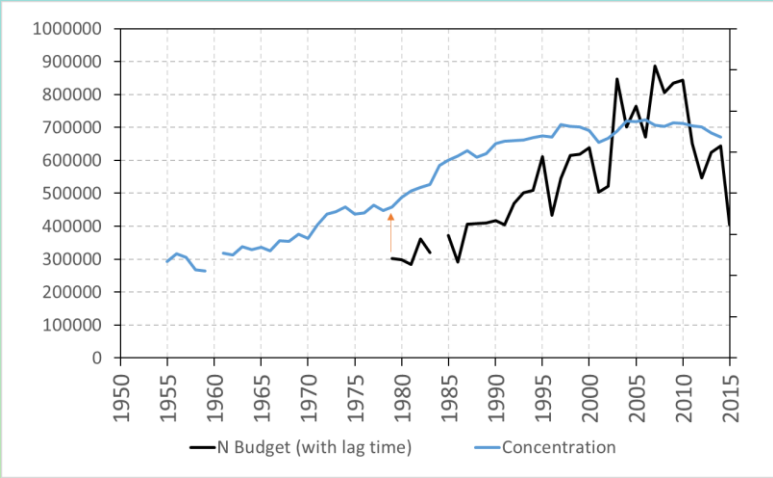
Results – Best correlation selected

- Relation between N-budget and concentration but also between Mineral fertilization and concentration





State Indicator

Pressure Indicator

Lag time

lag time (year)	coefficient correlation
0	-0.04
1	0.03
2	0.09
3	0.15
4	0.20
5	0.25
6	0.33
7	0.38
8	0.44
9	0.49
10	0.56
11	0.67
12	0.69
13	0.74
14	0.76
15	0.75
16	0.78
17	0.78
18	0.79
19	0.79
20	0.79
21	0.79
22	0.76
23	0.79
24	**0.80**
25	0.78
26	0.77
27	0.72
28	0.68
29	0.70

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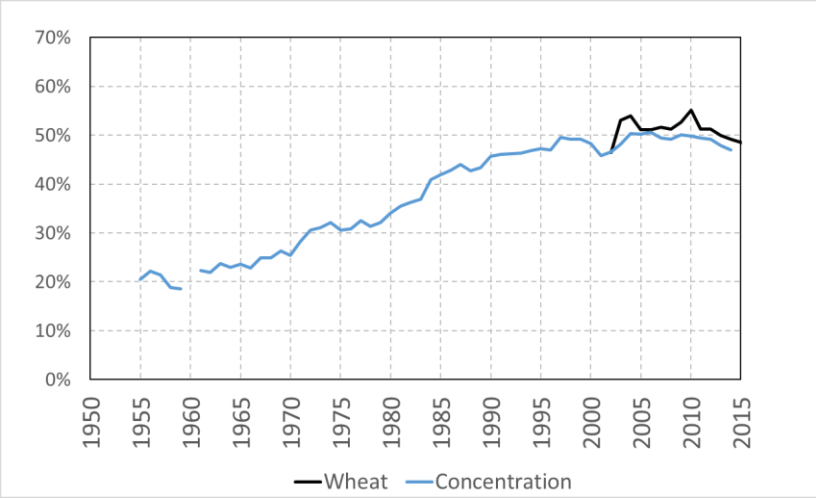
Results

- Time lag between N input and NO3 concentration in deep groundwater (max 24 years)
- Lag time depends on depth and of hydrogeological context
- Little relation between land use and N concentration (the dataset was too short)



- No relation between parameters and pesticides concentration. The dataset was too short for this kind of analysis

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Conclusion

- In some hydrological context, a long time lag between N input and NO3 concentration in deep groundwater (>10 y)
- Policies (WFD, CAP) have to deal with long response time and therefore indicators to anticipate water quality response are needed to evaluate effectiveness of policies
- Long time series are needed to link pressure and state indicators at the catchment scale.
- In some hydrological contexts, achievement of results can not be accelerate; Long-term solutions are needed (consistent politics) to provide long-term efforts

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Thank you!

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