

# UNCERTAINTY AND CONCEPTUAL UNDERSTANDING OF P LOSS PROCESSES

LANCASTER  
UNIVERSITY



defra

Department for Environment  
Food and Rural Affairs



ENVIRONMENT AGENCY

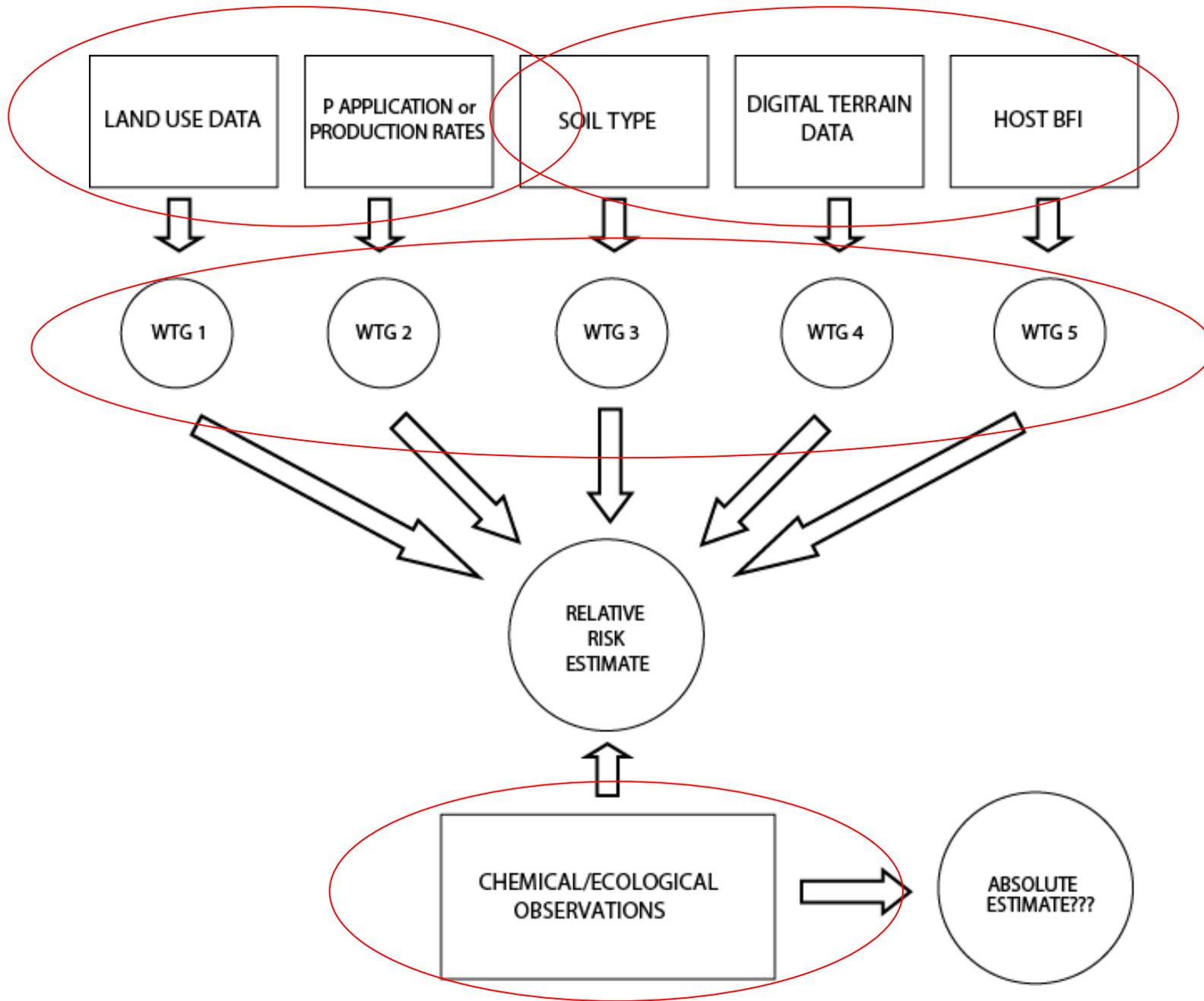


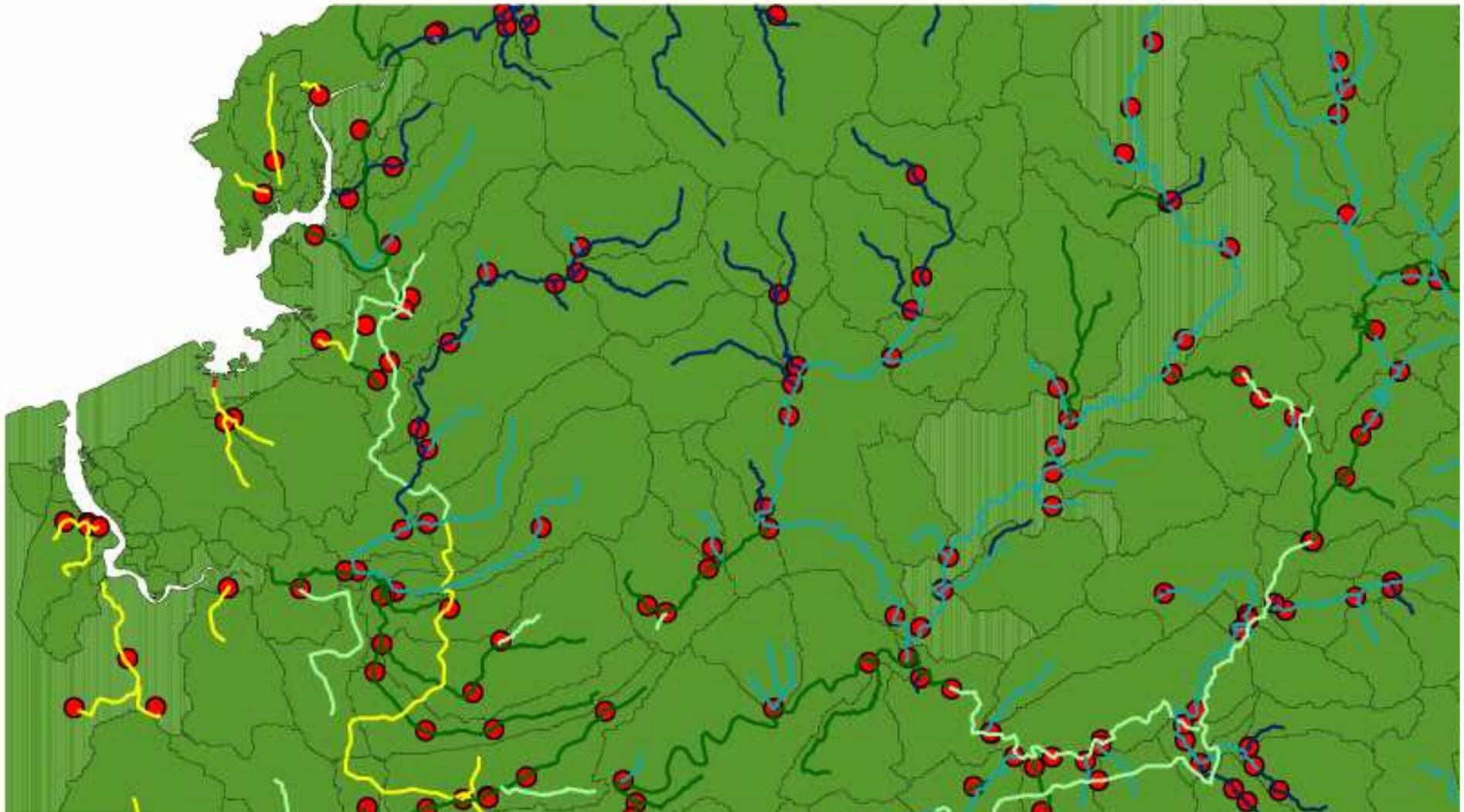
Centre for  
Sustainable  
Water  
Management

CSWM

## **Objectives:**

- 1. Academic agreement and disagreement**
- 2. Principal uncertainties & sources**
- 3. Develop revised conceptual model for WFD risk assessment – uncertainty explicit?**
- 4. Consequences of uncertainty for UK policies for nutrient phosphorus management**
- 5. Identify research priorities**



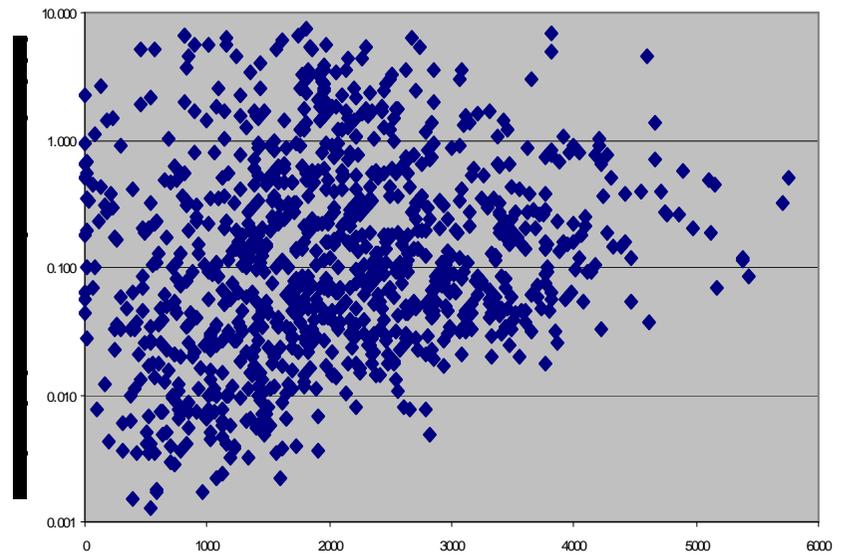
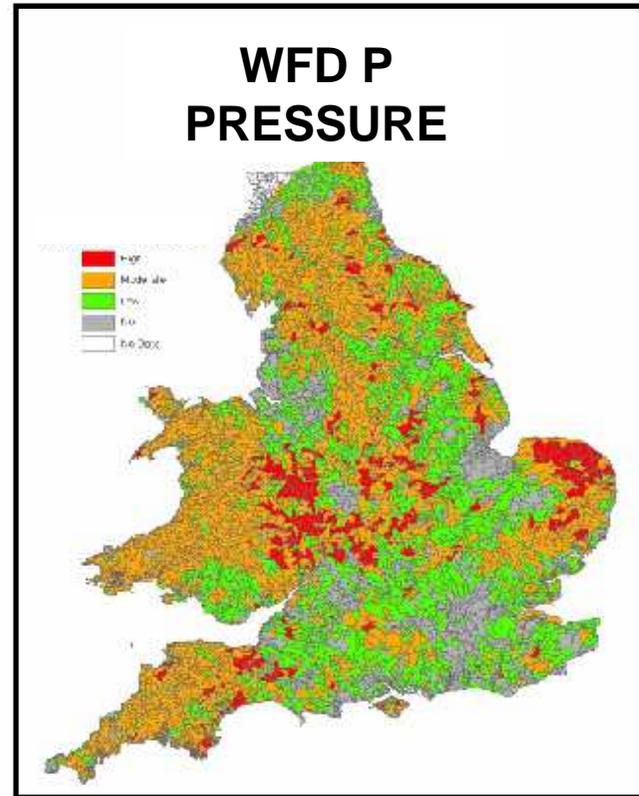


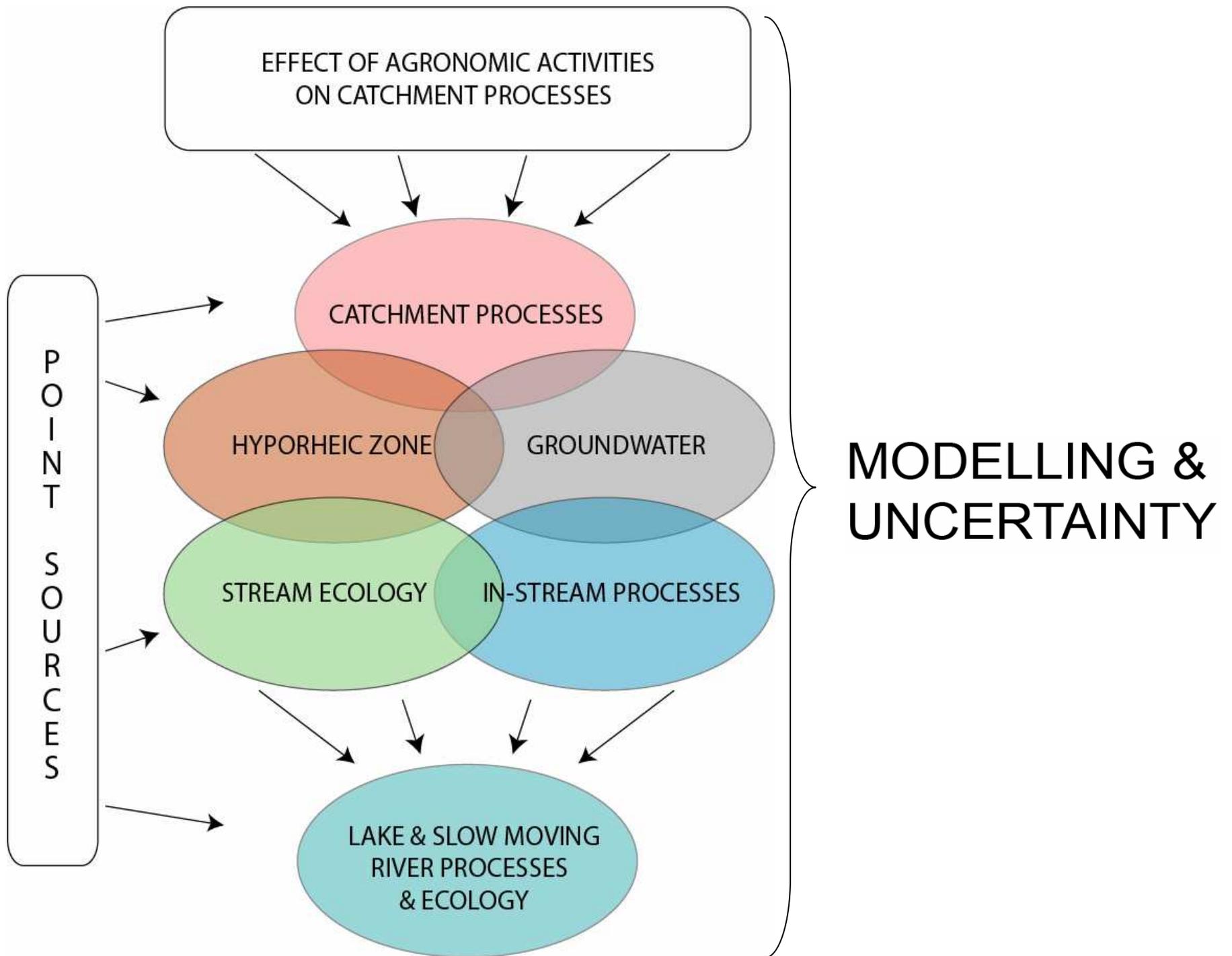
River Reaches 9370

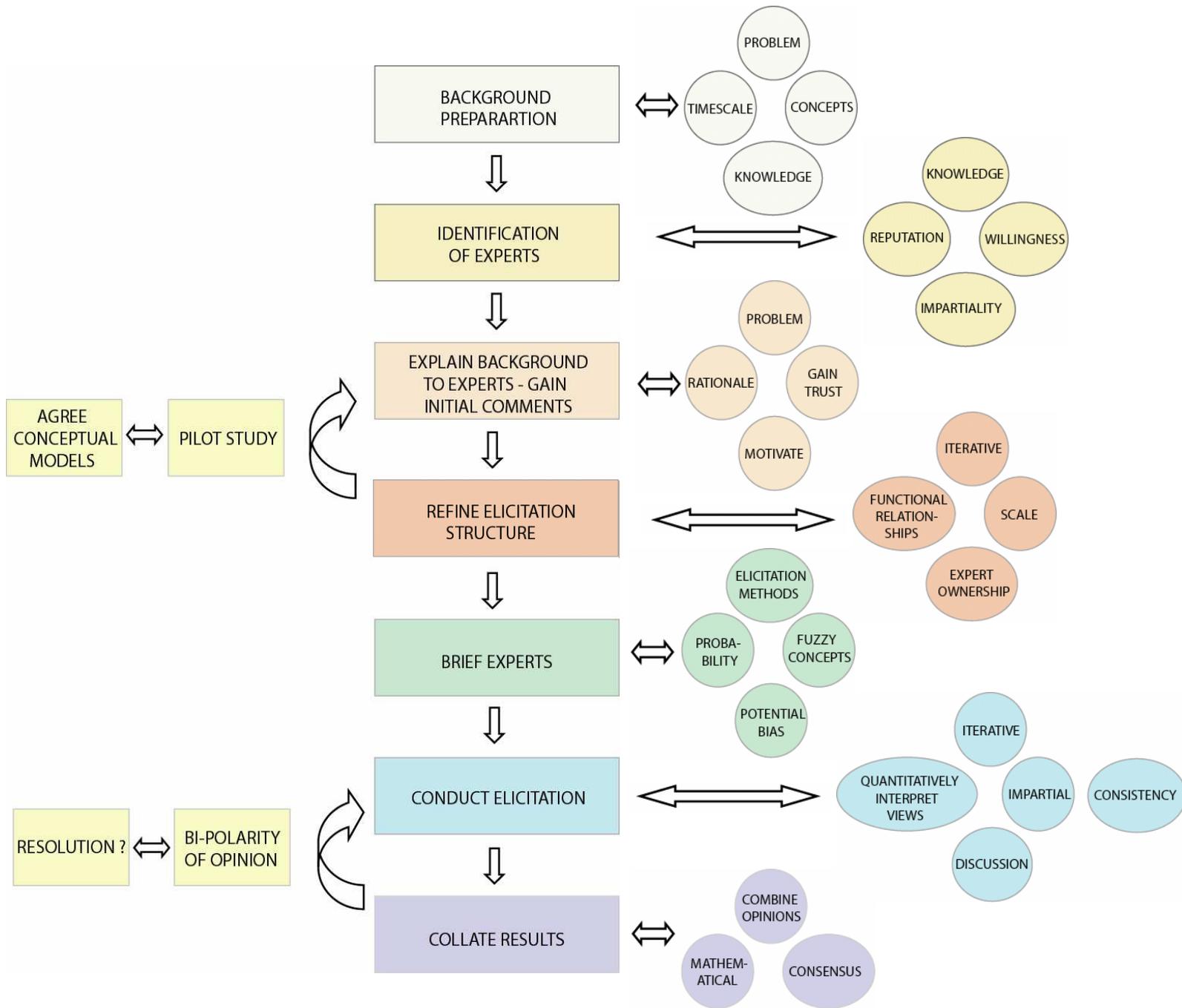
(length (km): 5<sup>th</sup> = 0.5; median = 3.2; 95<sup>th</sup> = 12)



GQA sampling points 6836





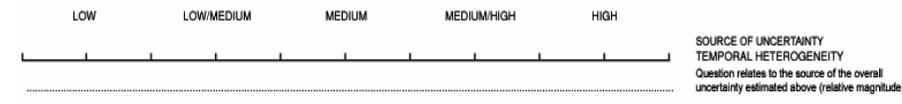
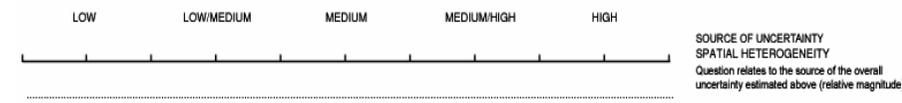
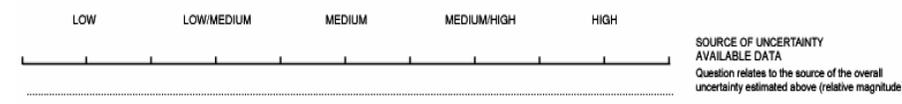
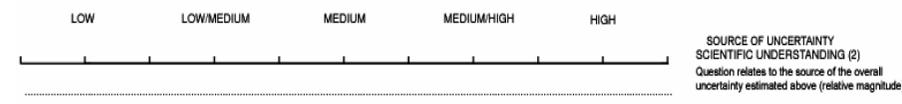
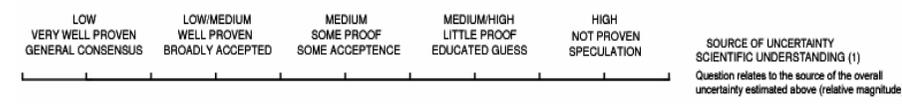
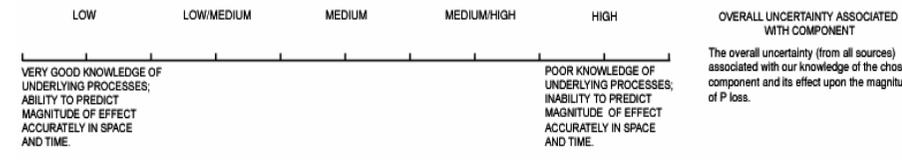
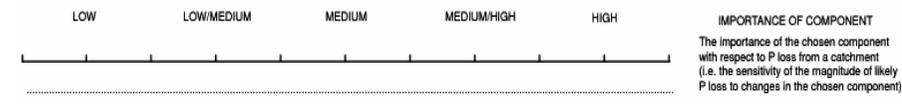




NAME ..... CONCEPTUAL MODEL ..... Agronomic Processes.....

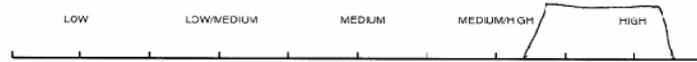
MODEL COMPONENT ..... EXPERT FAMILIARITY RATING (0-10).....

TYPOLGY .....



MODEL COMPONENT INTERNAL LOAD ~~LOAD~~ Rate

TYPOLGY SHALLOW (ONLY)



IMPORTANCE OF COMPONENT

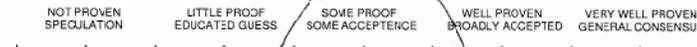
SHALLOW NOT DEEP



ASSOCIATED UNCERTAINTY

WITH MAGNITUDE OF INTERNAL LOAD.

with risk to lake from P.



SCIENTIFIC UNDERSTANDING



AVAILABLE DATA



SPATIAL HETEROGENEITY



TEMPORAL HETEROGENEITY

O<sub>2</sub> + 25 cm<sup>2</sup>

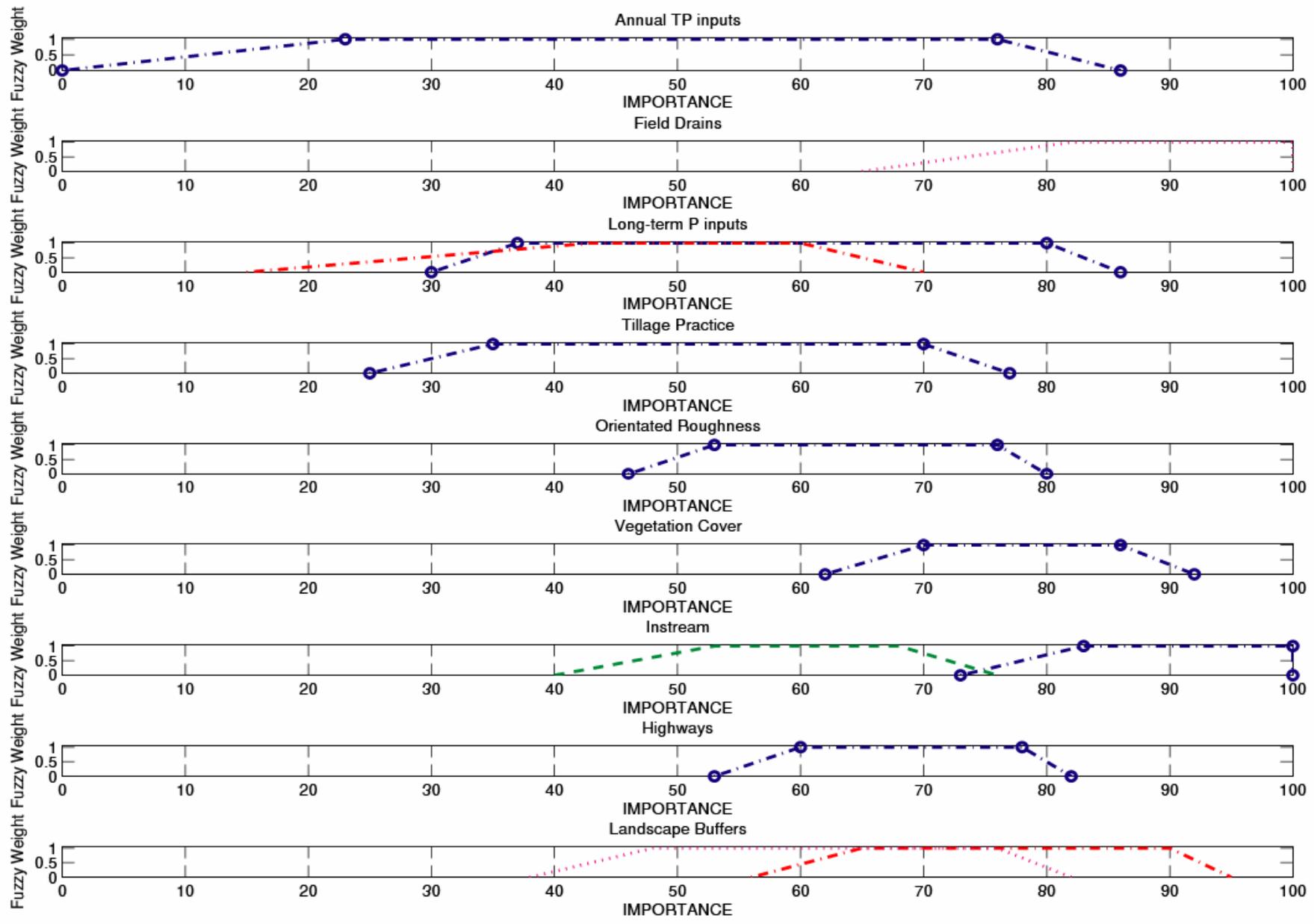


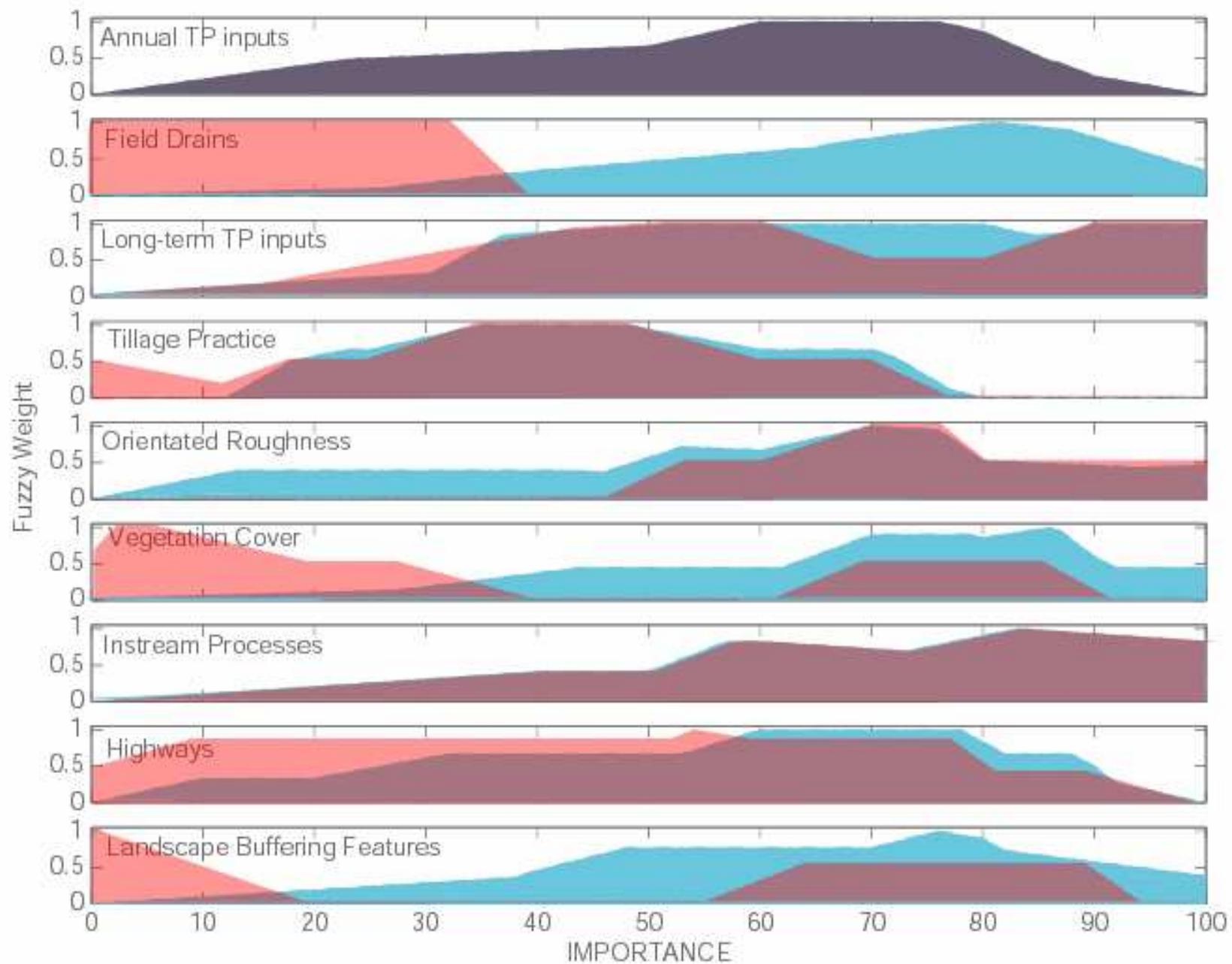
LINK BETWEEN P AND ECOLOGICAL INDICATOR(S)

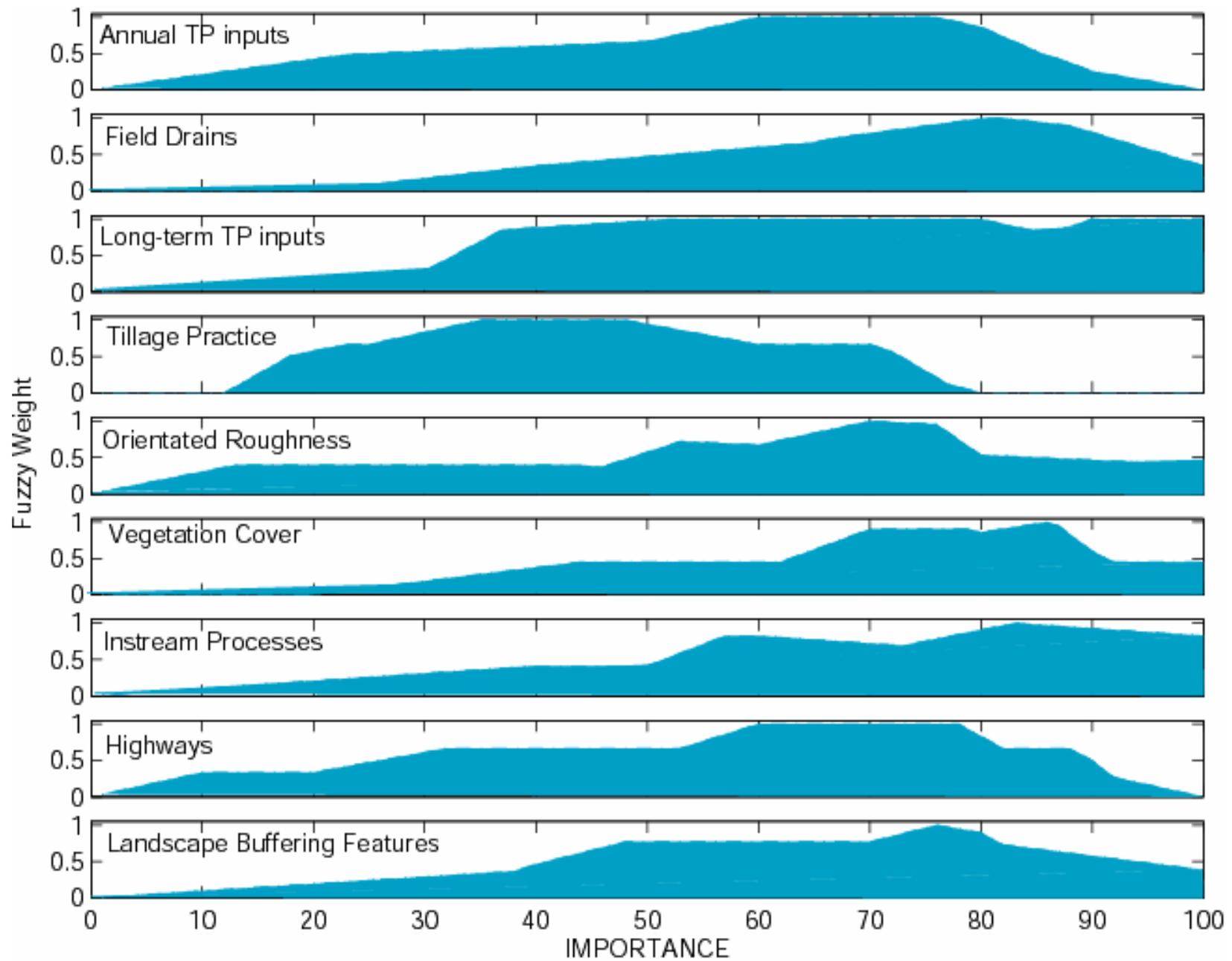
NA

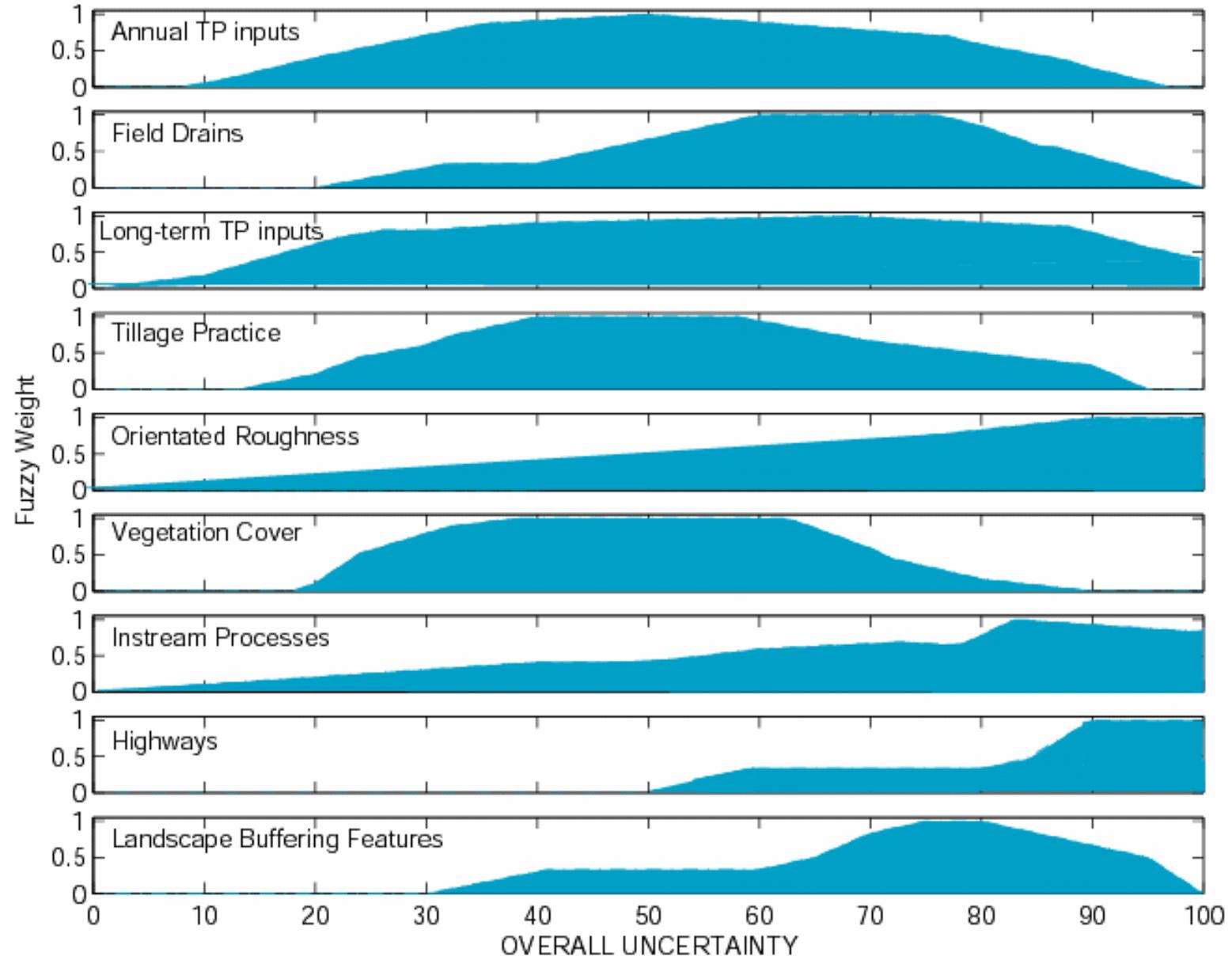


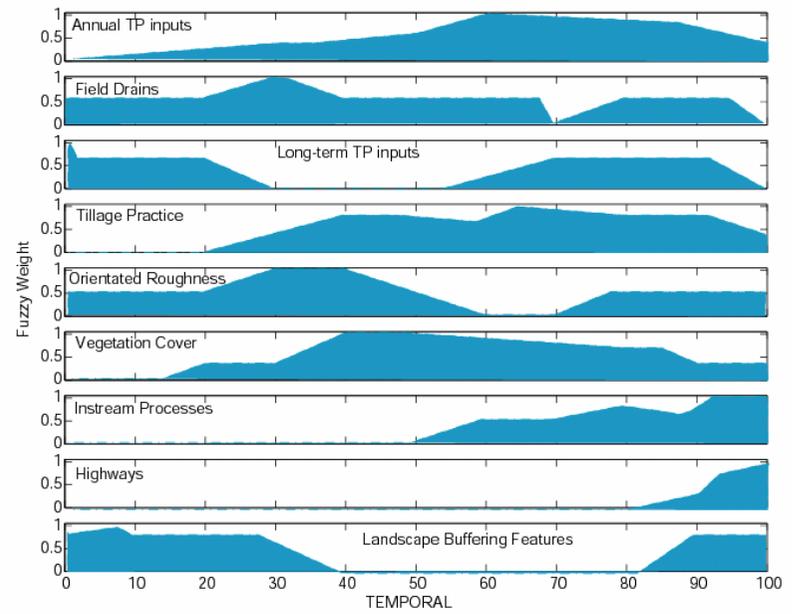
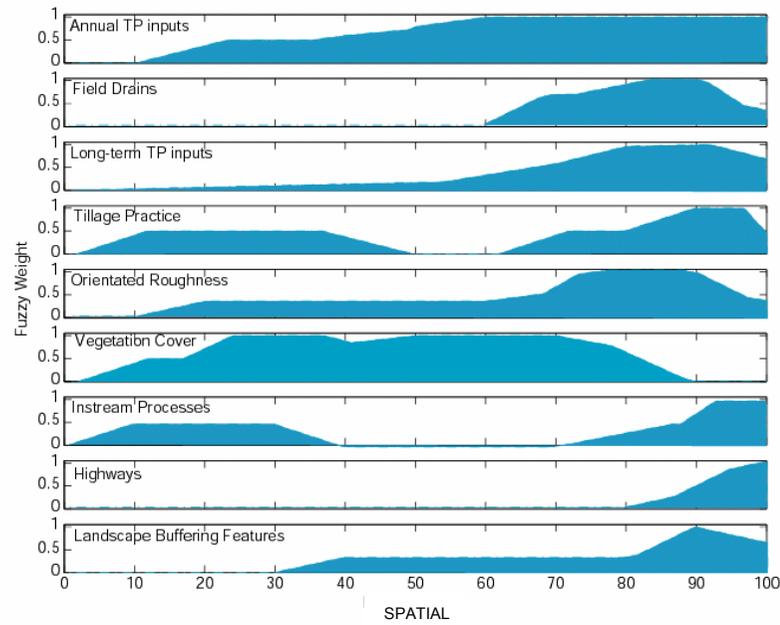
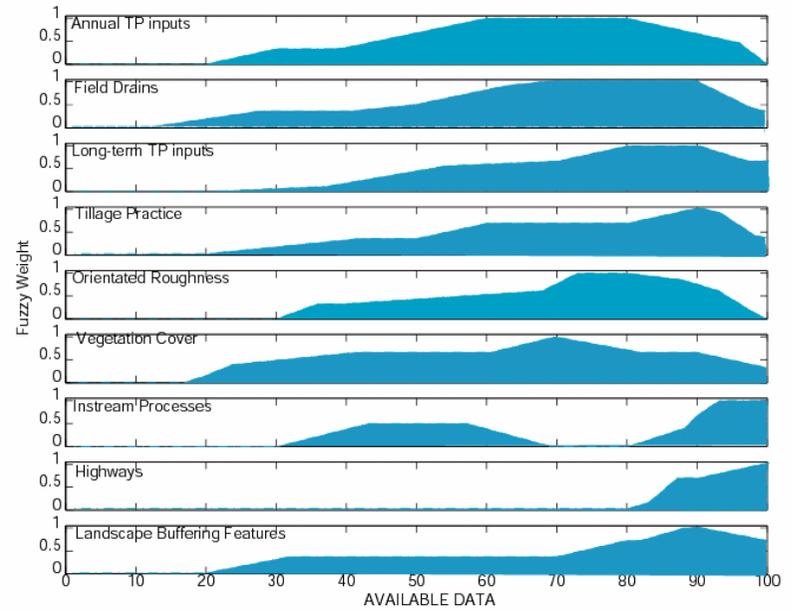
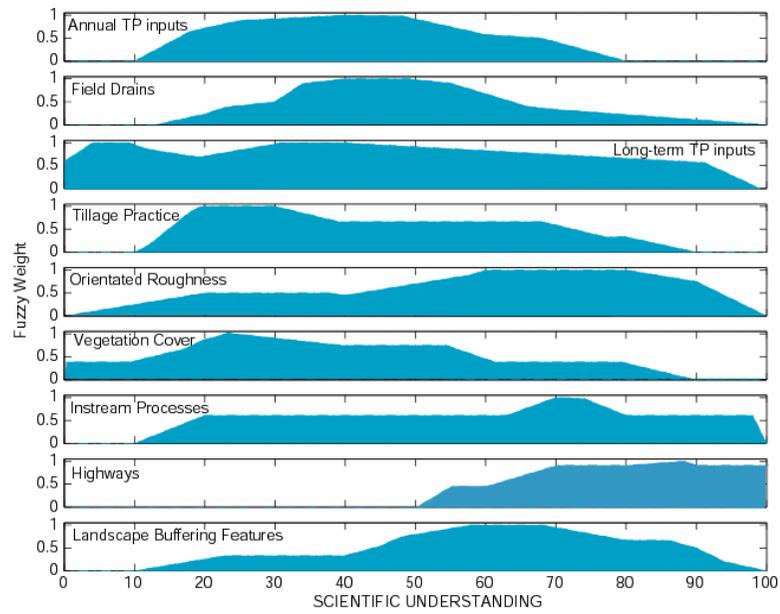
OTHER (SPECIFY BELOW)

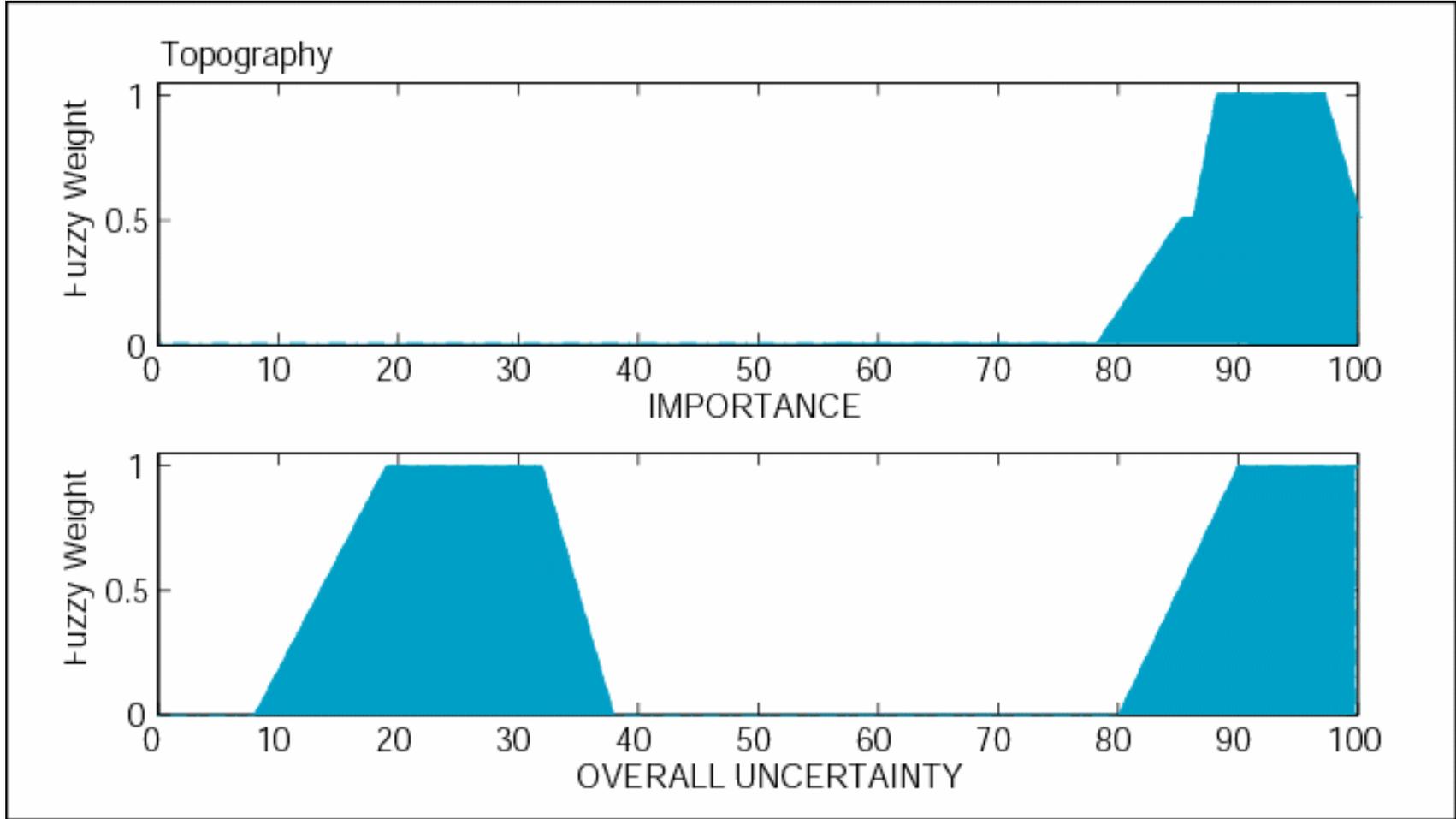


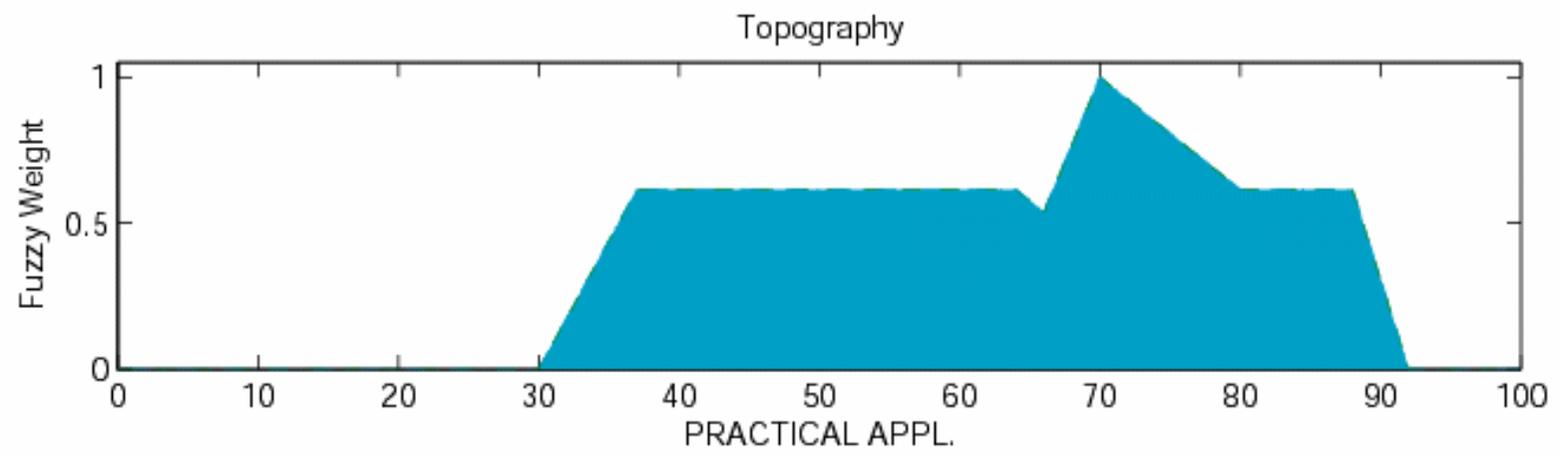












What is the best way to include data on expert opinion into our modelling systems?

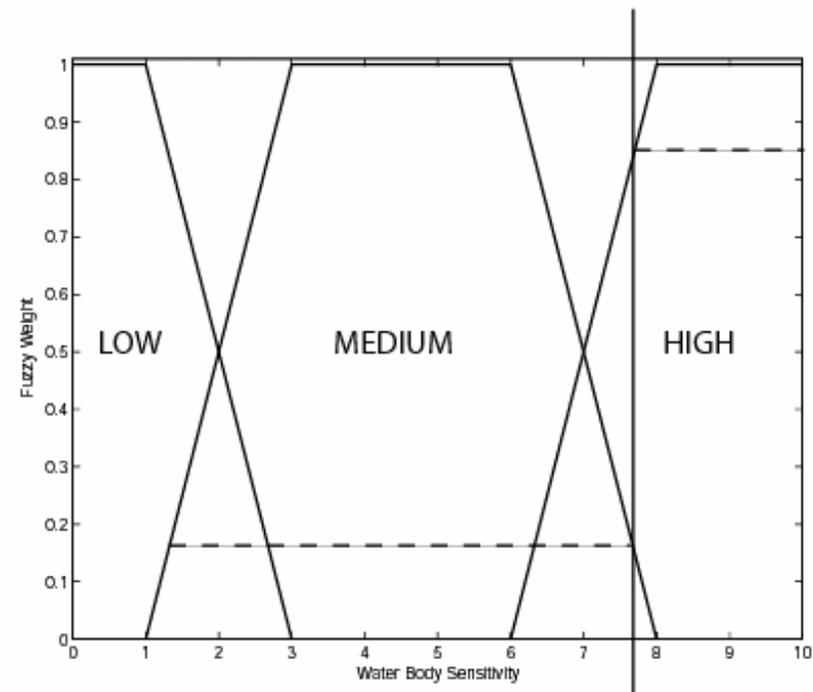
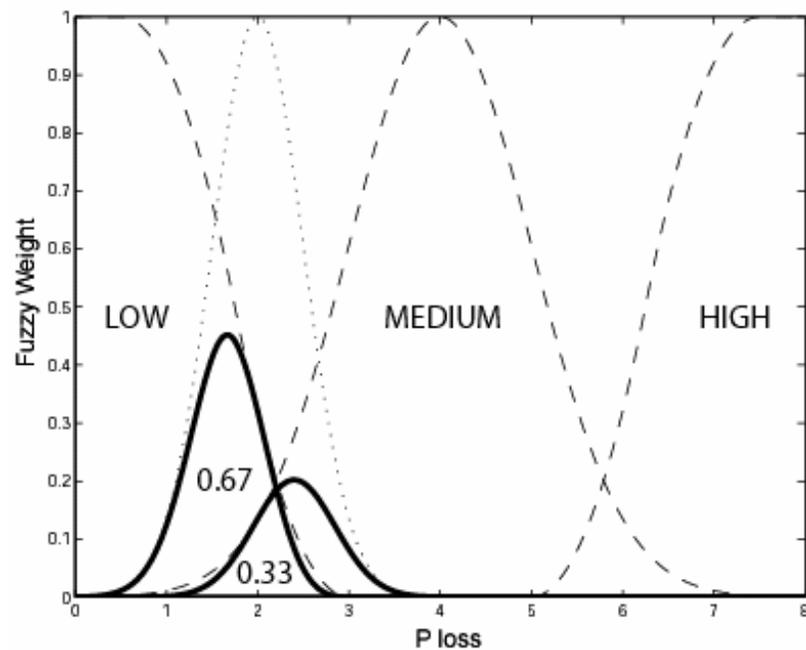
What complexity of models is required for the different tasks laid out in the WFD? - Specifically, what complexity and resolution is required to effectively identify CSAs?

What is the minimum level of spatial information required to reduce uncertainty to an acceptable level?

Should we also specify critically sensitive periods? – WG2

Are the regulating bodies and politicians of member countries able to deal with the truth about the accuracy of our predictions?

**END**



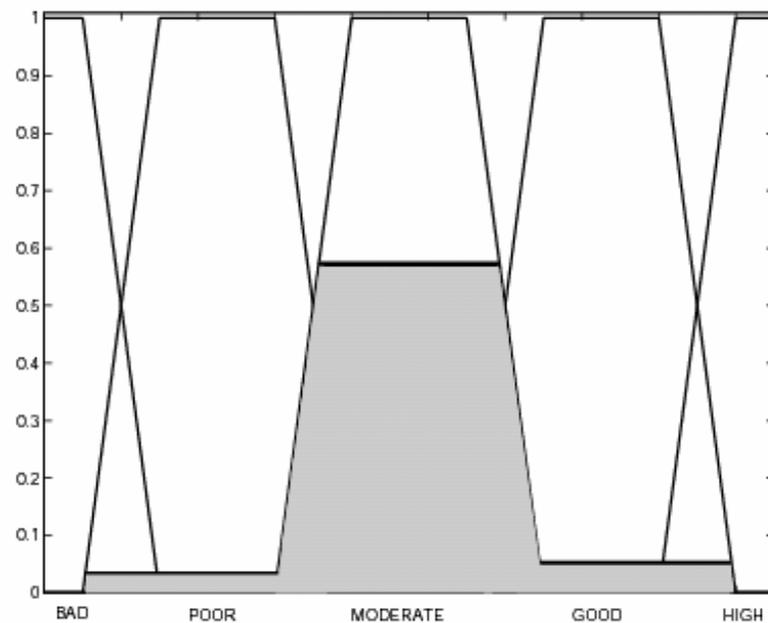
LOW AND MEDIUM = MODERATE ( $0.67 \times 0.15 = 0.1$ )

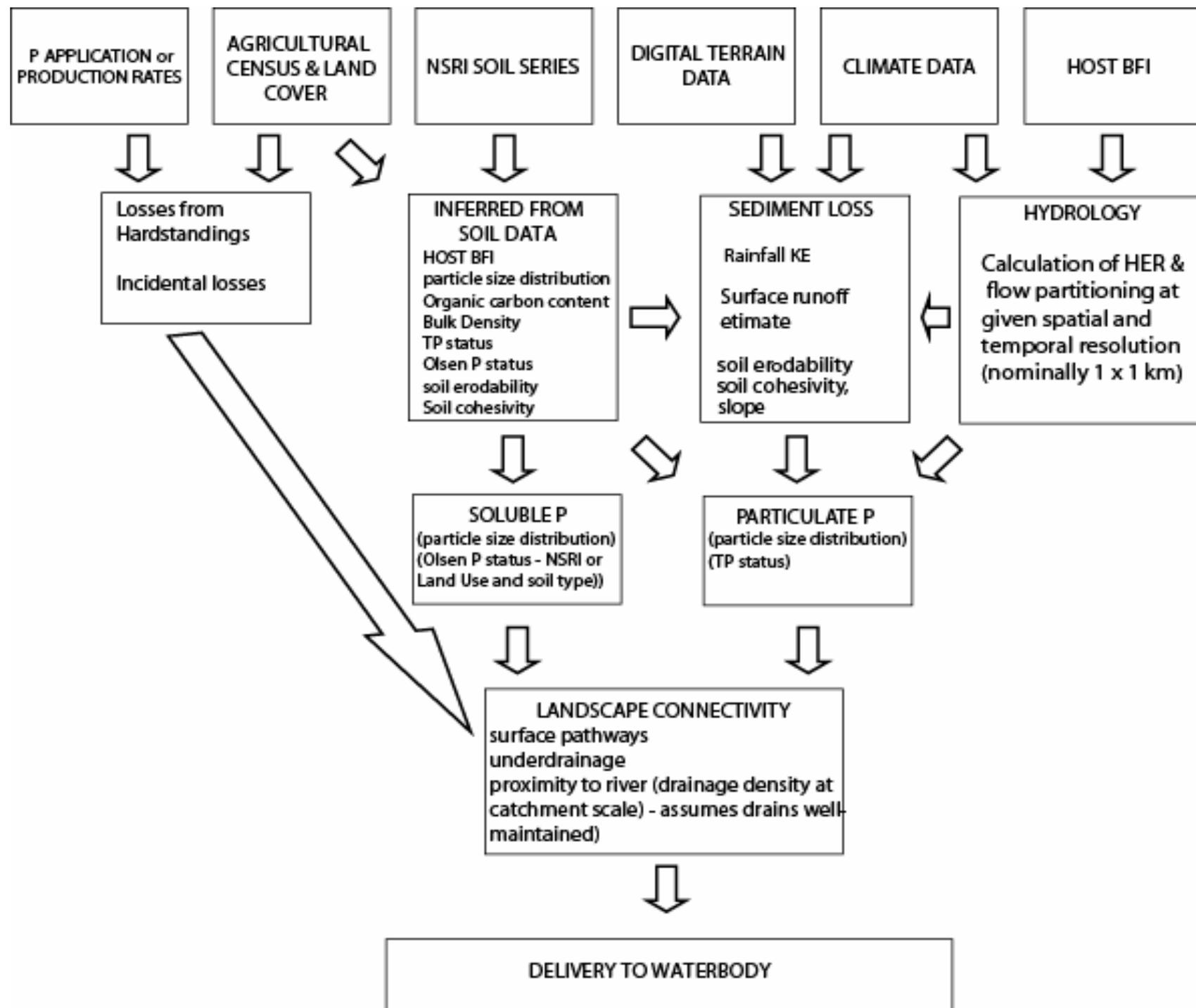
LOW AND HIGH = MODERATE ( $0.67 \times 0.82 = 0.54$ )

MEDIUM AND MEDIUM = GOOD ( $0.33 \times 0.15 = 0.05$ )

MEDIUM AND HIGH = POOR ( $0.33 \times 0.82 = 0.27$ )

$$f = \text{MAX}$$





NAME ..... CONCEPTUAL MODEL .....

MODEL COMPONENT ..... EXPERT FAMILIARITY RATING .....

TYPOLOGY .....



# AGRONOMIC PRACTICE

