

# WORKSHOP 3

## NATURE MANAGEMENT IN A CLIMATE PERSPECTIVE

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This workshop is for managers tackling complex wetland management problems where there are potential conflicts between water and nature management.



# DEALING WITH UNCERTAINTY

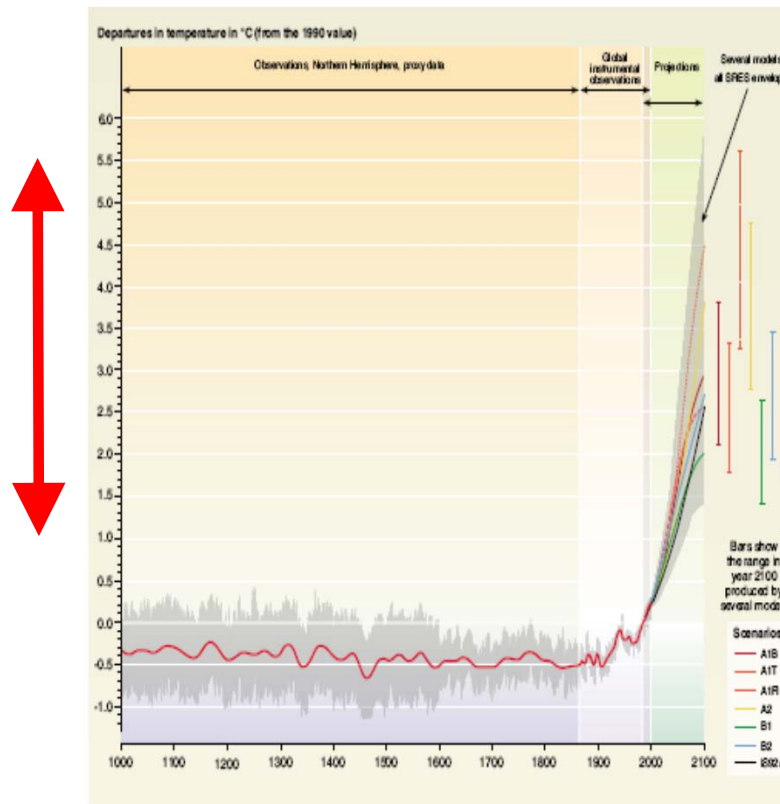
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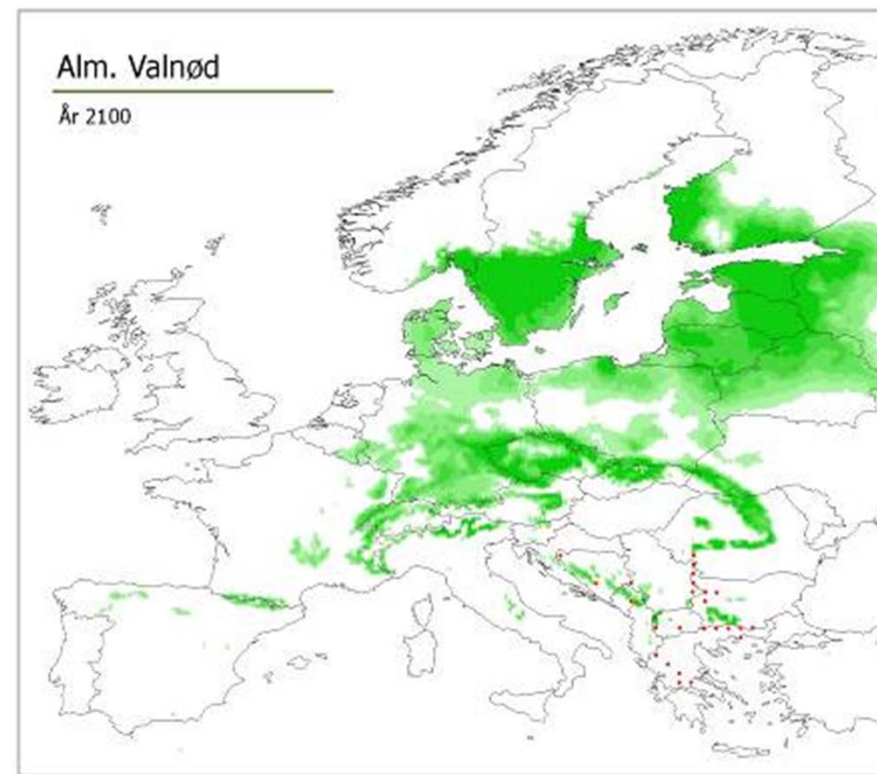
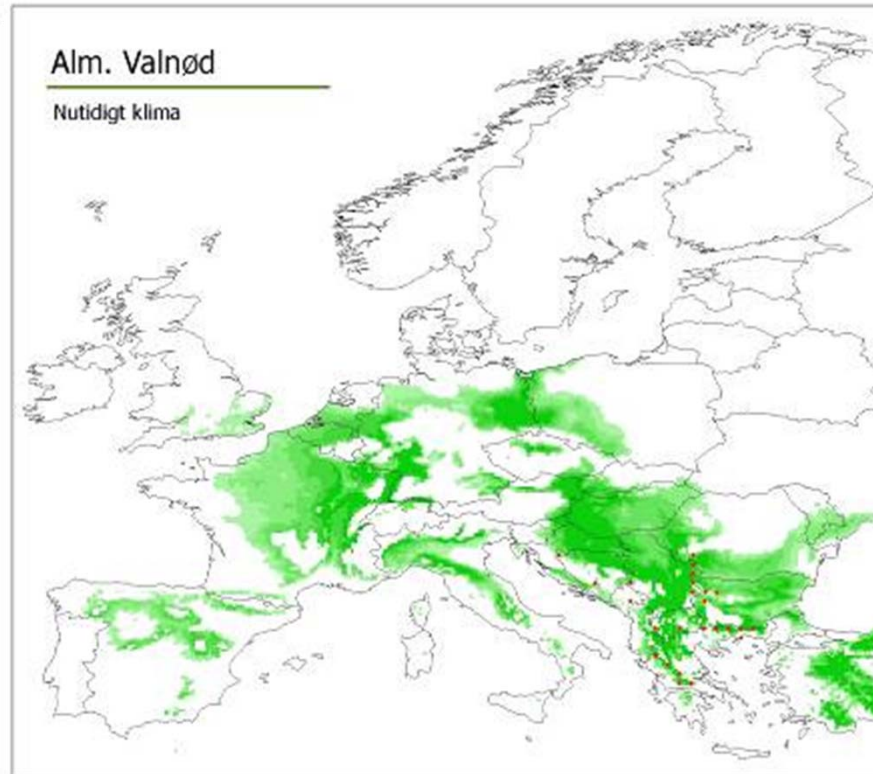
## THE NEED FOR MODEL-BASED DECISION SUPPORT

- › The world is undergoing **rapid change** and **consequences** for natural, economic and social systems have to be dealt with
- › Due to connectedness among these systems, the consequences of making **wrong policy decisions are serious and potentially catastrophic**
- › Nevertheless, in spite of all uncertainties and serious potential consequences, **policy decisions have to be made**
- › **Predictive tools** are needed: what will the future bring and what should we do about it?
- › **How to deal with uncertainty?**

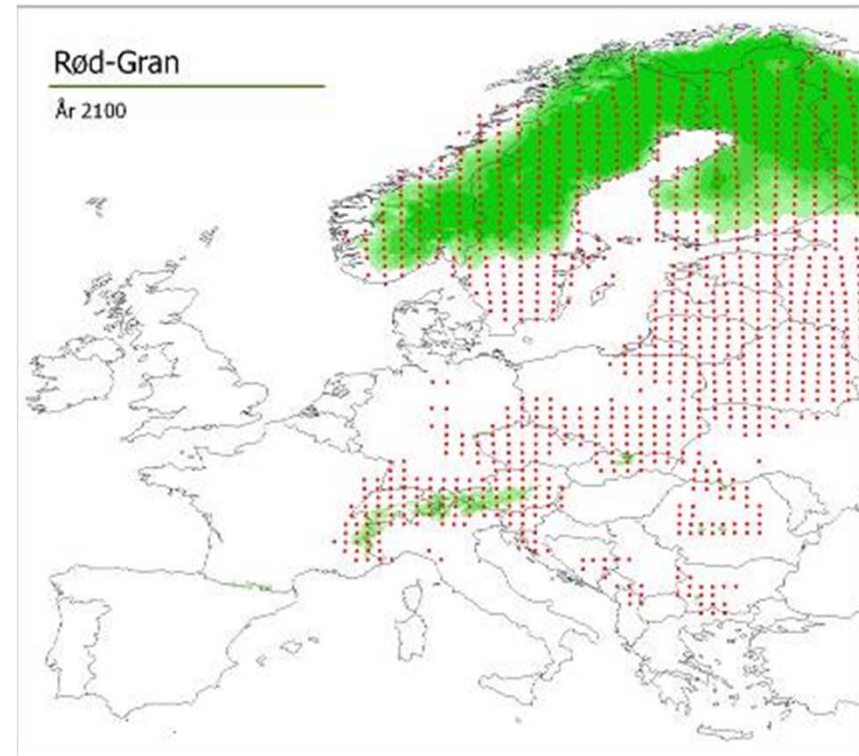
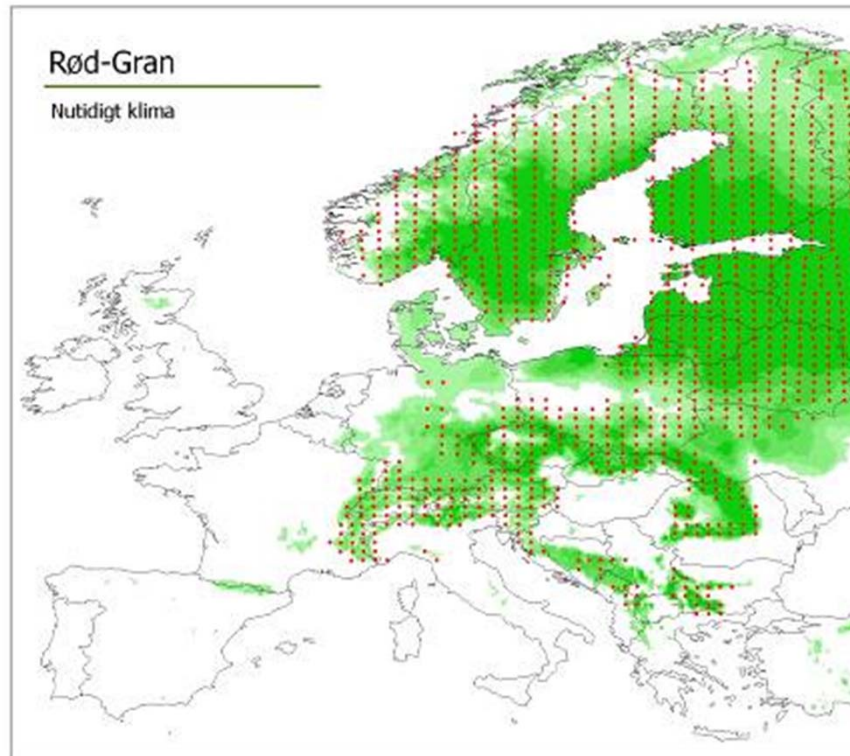
## EXAMPLES OF UNCERTAINTY: GLOBAL CIRCULATION MODELS BASED ON IPCC'S SCENARIOS



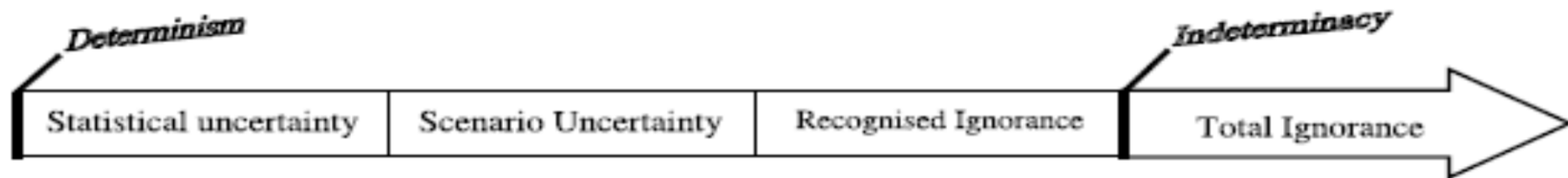
## MODEL EXAMPLE: COMMON WALNUT – A NEW SPECIES IN DENMARK?



## MODEL EXAMPLE II: NORWAY SPRUCE – A SPECIES LOST?



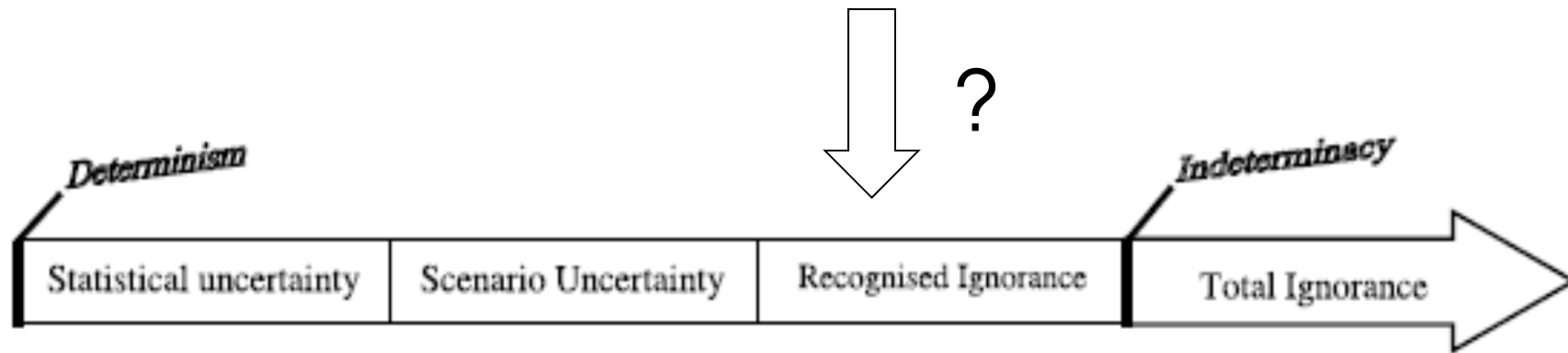
## UNCERTAINTY: BETWEEN DETERMINISM AND TOTAL IGNORANCE



Walker et al. 2003. Defining Uncertainty in *Integrated Assessment*

- **Statistical uncertainty** is any uncertainty that can be described adequately in statistical terms. Measurement uncertainty and sampling error
- **Scenario uncertainty**. Scenarios are plausible futures based on a consistent set of assumptions. They are not verifiable and therefore beyond statistical uncertainty
- **Recognised ignorance** is fundamental uncertainty about the mechanisms and functional relationships being studied.
- **Total ignorance** implies a deep level of uncertainty, to the extent that we do not even know that we do not know.

## STATUS – WHERE ARE WE NOW?





## QUESTIONS:

- Should we focus on better methods to handle uncertainties and risk assessment in complex systems?
- Is intensive monitoring (data- and knowledge sharing) for adaptive management the solution?
- How important is collaboration on different geographic scales and between science and managers?
- ... ?