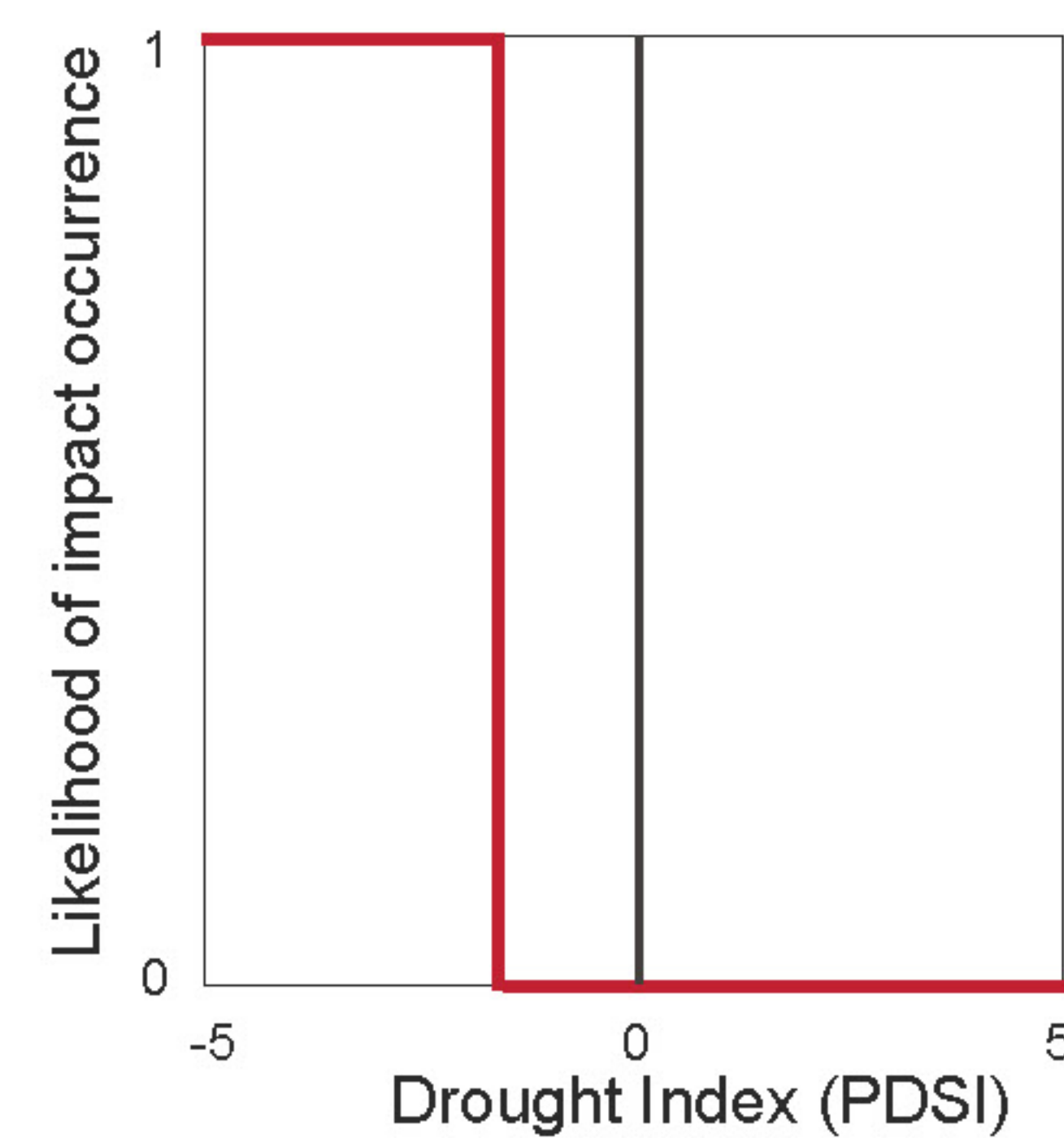


Reconstructing Droughts Beyond the Hydro-Meteorological Indicators: What can we Learn from Impacts in the US Drought Impact Reporter?

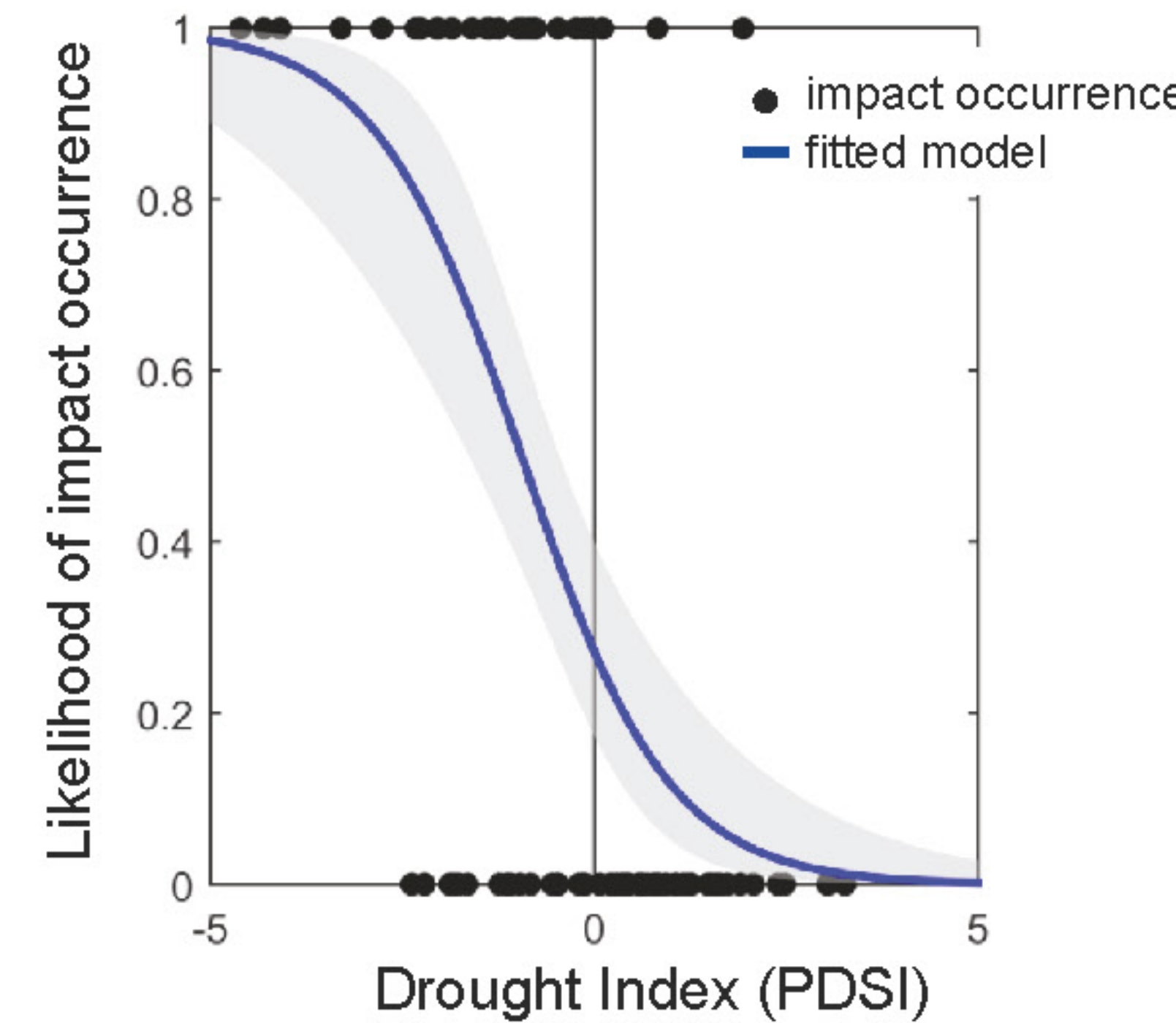
Kelly H. Smith⁽¹⁾, Erik Tjardeman^{(2)*}, Sophie Bachmair⁽²⁾, Cody L. Knutson⁽¹⁾, Lucy J. Barker⁽³⁾, Nicole Wall⁽¹⁾, Tonya Bernadt⁽¹⁾, Kerstin Stahl⁽²⁾

Motivation

Decision maker: „I want to be able to anticipate drought impacts associated with levels of drought severity to help protect public well-being!“



Scientist: „Our probabilistic impact models are data-driven; we need more impact occurrence monitoring to reduce the uncertainty!“



Questions

How can we jointly decrease this uncertainty in impact prediction to a level that is acceptable for decision making? What is an acceptable level?

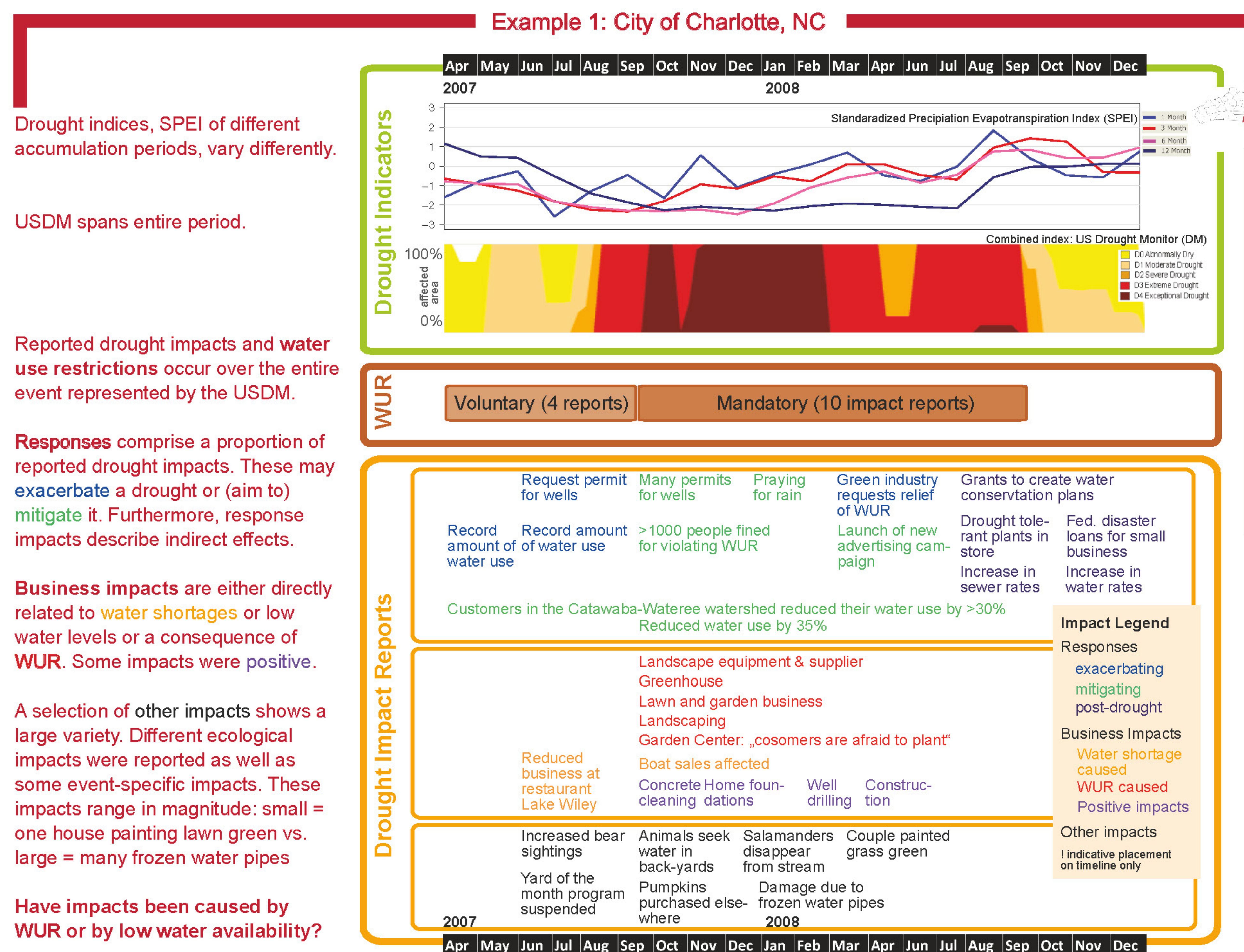
Objectives

To use drought impact reports to reconstruct drought events beyond the hydro-meteorological indicators

To reveal sources of uncertainty in impact prediction due to the characteristics of impact data

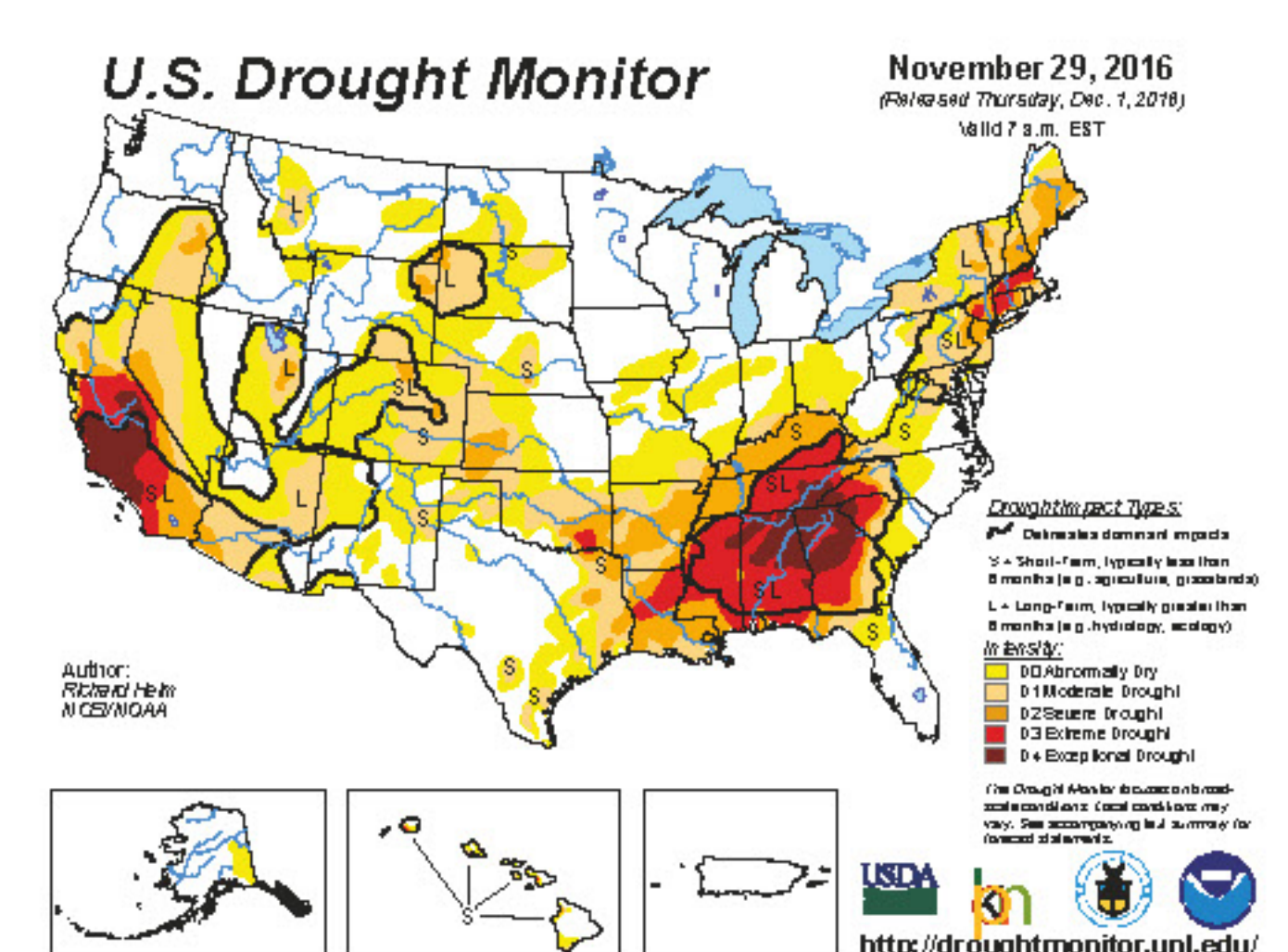
Drought Reconstruction

Qualitative and semi-quantitative visual analysis of drought indices used in drought monitoring, impact reports and the number of impacts, as well as the water usage restrictions imposed



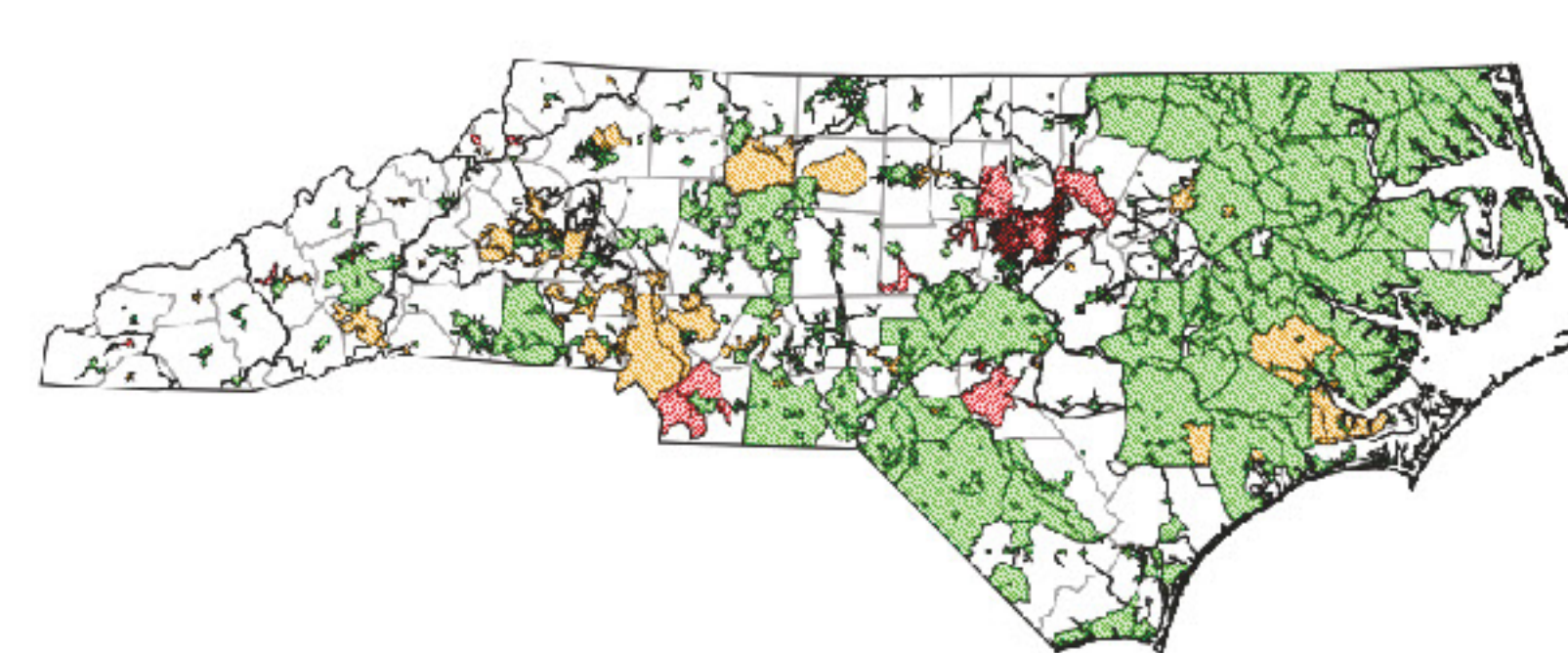
Data for Drought Reconstruction

Drought Indicators



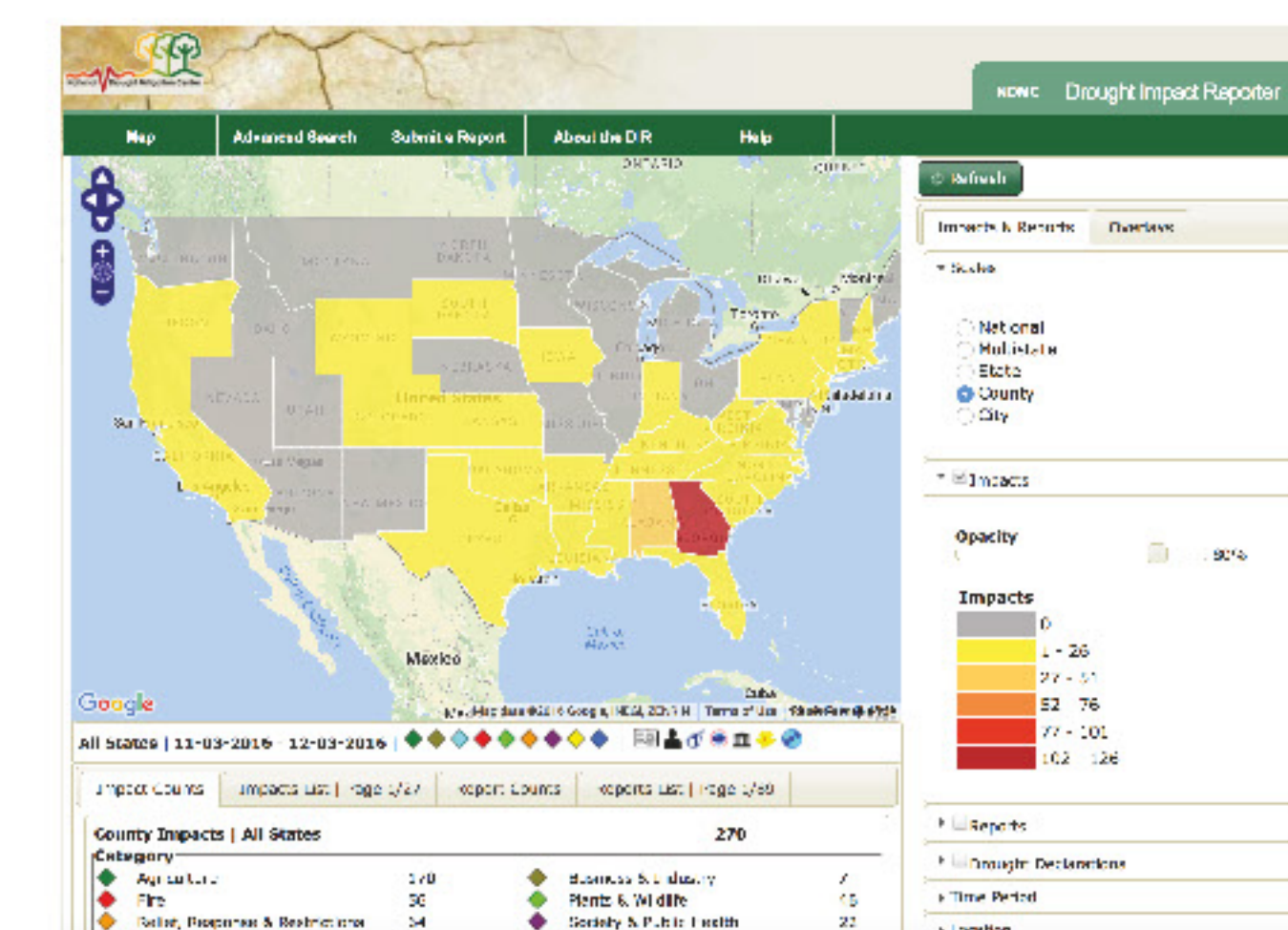
Sources:
US Drought Risk Atlas droughtatlas.unl.edu
US Drought Monitor droughtmonitor.unl.edu

Water Use Restrictions (WUR)



Source:
Impact reports and State of North Carolina Drought Monitoring
http://www.ncwater.org/Drought_Monitoring

Drought Impact Reports



Source:
US Drought Impact Reporter
droughtreporter.unl.edu



Towards impact-oriented drought early-warning

Textual impact descriptions may inform users about historical analogues, including drought impacts in similar drought hazard situations; for statistical analysis and modeling, however, standardized impact data is needed.

One way towards achieving this is to work with stakeholders to identify existing and potential drought impact data networks, design a monitoring strategy for key impacts and identify models with an acceptable level of uncertainty for decision makers.

Remaining challenges include a changing vulnerability and drought mitigation policies, affecting the measures and hence the impacts. These also need to be monitored.