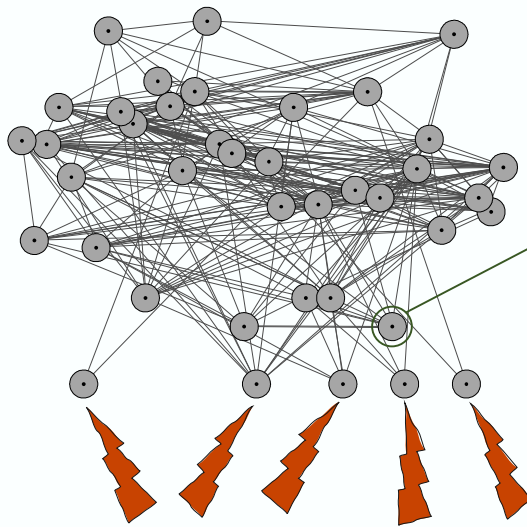


# Predicting extinction

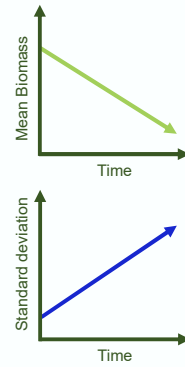
Tom Malpas – [tdmalpas1@sheffield.ac.uk](mailto:tdmalpas1@sheffield.ac.uk)

Environmental risk assessment is changing.  
 More stress. More species. More models!  
 But how to best monitor vulnerability to stress?  
 How do we predict where and when extinction will happen?

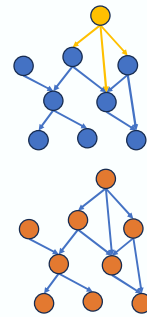
10,000 food webs:  
 (probabilistically generated)



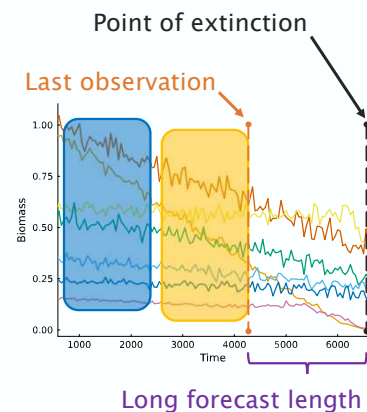
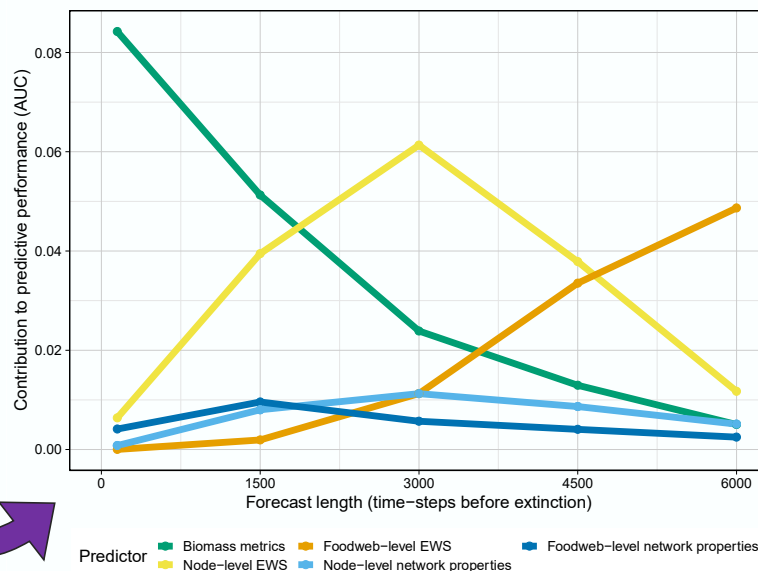
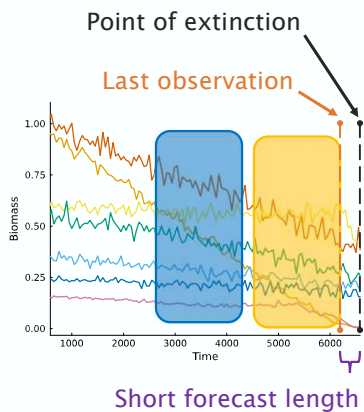
**Timeseries Predictors:**  
 1. Change in biomass  
 2. Early Warning Signals (e.g. standard deviation of biomass)



**Network Predictors:**  
 1. Node-level properties (e.g. trophic level, number of predators)  
 2. Food web properties (e.g., species richness)



Stress (reduction in producer growth rate)



With short forecast lengths biomass metrics work best.  
 But a longer forecast length gives more time for mitigation.  
 At longer forecast lengths early warning signals become more influential.

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 Claudia Rivetti<sup>2</sup> & Andrea Gredelj<sup>2</sup>

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