

UNCOVER

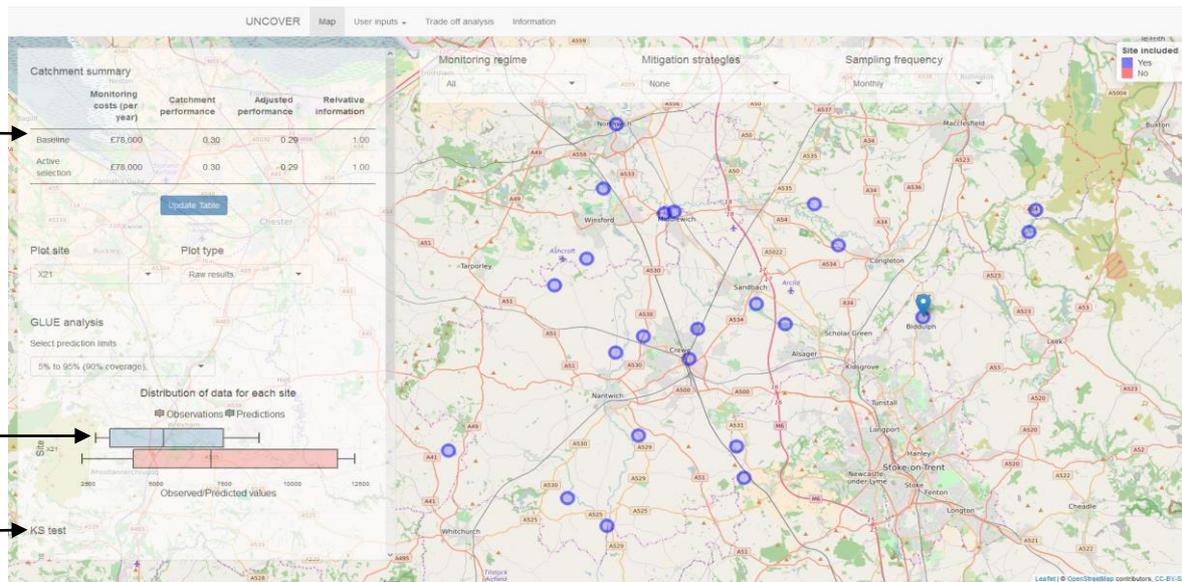
Trade-Off and Uncertainty Analysis for Environmental Model Ensembles

UN.CO.V.E.R. (UNiversal Computer-based Visual Exploration of Risks) provides a software tool for analysing trade-offs between competing objectives and risks in integrated catchment management.

Environmental decision-making is rarely based on optimising a single objective, but typically involves trade-offs between the simultaneous achievement of multiple goals (services and risks), e.g. flood protection and ecosystem habitat quality or power plant cooling and water supply, under the presence of considerable uncertainty. Uncertainty is contributed by limited data with measurement errors, by incomplete models and by a lack of clearly define critical decision making thresholds, among other things.

UNCOVER allows a user to combine multiple data sources and models, implementing specified goals and management strategies and test their robustness and compare whole catchment performance and costs.

Hundreds of thousands of simulations from any ensemble experiment (any distributed model) can be uploaded (e.g. using the HYPE model) and UNCOVER computes performance measures for you at a local and catchment scale. These can be compared against open data observations for any decision variable. Users can explore trade-off analysis to look for near-optimal solutions using pareto-front analyses, uncertainties using GLUE, and in **a new approach brush parameters to represent mitigation strategies** and explore the consequences.

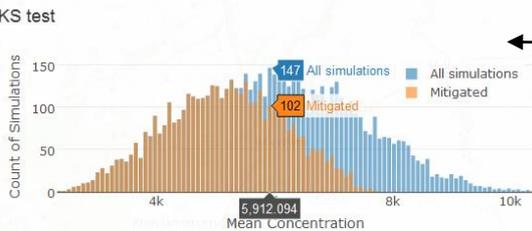


New business information to compare costs against whole catchment performance measures

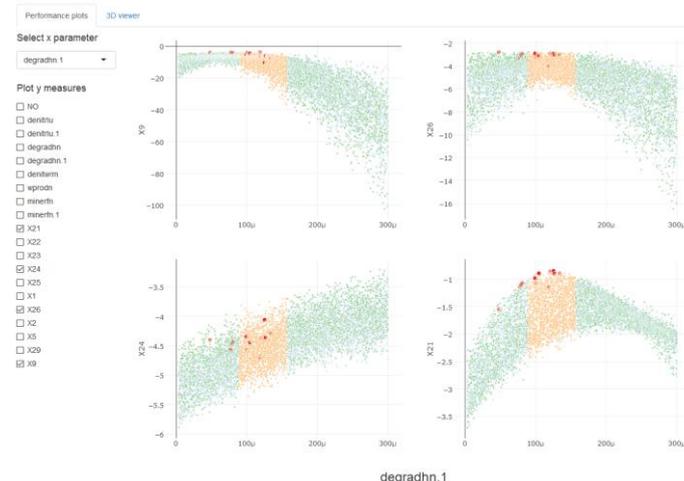
GLUE uncertainty bounds using likelihoods based on performance measures that UNCOVER computes

Mitigation scenarios, represented by part of the parameter space can now be explored and compared to a baseline

Exploring uncertainties for Hype model of the River Weaver catchment in NW England



Mitigation scenarios and trade-off analyses can now be undertaken and performance around the catchment can be assessed against baseline



Performance for different model parameters

To learn more about how UNCOVER can help you, please contact Barry Hankin (Barry.Hankin@jbaconsulting.com) or Rob Lamb (Rob.Lamb@jbaconsulting.com)



SWITCH-ON has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No. 603587