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User-Defined Performance Metrics in Collaborative Environment and Infrastructure System Planning

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Abstract: Options assessment and decision-making in environment and infrastructure system planning is becoming increasingly collaborative and multi-disciplinary. Stakeholders and analysts have different priorities and interests and it is beneficial to enable experimenting and learning about the implications of using different measures of system performance. These quantitative measure of system performance are referred to as 'metrics'. Typical examples of metrics can include frequency or length of failure, cumulative deficits, etc. As a model and a stakeholder's understanding of it evolves, it is useful to iteratively refine how metrics are defined, for example testing the implications of different forms of spatial, temporal or statistical aggregation. This talk presents a web interface for Hydra Platform, an open-source tool for sharing data on resource system networks and connecting it to models. Hydra Platform can be used to facilitate multi-resource system modelling such as integrated water and energy systems. Hydra Platform allows for secure and efficient data management, and centralisation of data and models. These features allow multiple analysts to work within the same environment, lowering the likelihood of data errors and miscommunication. A recent feature addition to the online interface is the ability to create user-defined metrics within a particular model. This feature allows analysts or stakeholders to define aggregations of model input or output values to quantify and summarise characteristics of interest. Each metric can be viewed in the interface either in isolation or compared to other metrics in tables or plots. User-defined metrics within a modelling user interface allows diverse users to experiment with and improve the formulation of criteria that evaluate interventions in environment-human resource systems. We present several examples of different metrics defined within water, energy, environment models and integrated models applied in Europe, Africa and Asia.

***Keywords**:* Web-Based Modelling; Metrics; Decision Making; Collaboration; Multi-Sector Planning