



A virtual observatory in a real world: building capacity for an uncertain future

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Environmental managers and policy makers face a challenging future trying to accommodate growing expectations of environmental well-being, while subject to maturing regulation, constrained budgets and a public scrutiny that expects easier and more meaningful access. To support such a challenge requires new tools and new approaches. The VO is a new initiative from the Natural Environment Research Council (NERC) designed to deliver proof of concept for these new tools and approaches. The VO is at an early stage and we first evaluate the role of existing 'observatories' in the UK and elsewhere both to learn good practice (and just as valuable – errors) and to define boundaries. A series of exemplar 'big catchment science questions' are posed - distinguishing between science and society positions – and the prospects for their solution are assessed. The VO vision of being driven by these questions is outlined as are the seven key ambitions namely:

- i. being driven by the need to contribute to the solution of major environmental issues that impinge on, or link to, catchment science
- ii. having the flexibility and adaptability to address future problems not yet defined or fully clarified
- iii. being able to communicate issues and solutions to a range of audiences
- iv. supporting easy access by a variety of users
- v. drawing meaningful information from data and models and identifying the constraints on application in terms of errors, uncertainties, etc
- vi. adding value and cost effectiveness to current investigations by supporting transfer and scale adjustment thus limiting the repetition of expensive field monitoring addressing essentially the same issues in varying locations
- vii. promoting effective interfacing of robust science with a variety of end users by using terminology or measures familiar to the user (or required by regulation), including financial and carbon accounting, whole life or fixed period costing, risk as probability or as disability adjusted life years/ etc as appropriate

Portal structures pivotal to communicating these ambitions are presented and emphasis is given to the importance of the 'environmental cloud', the cloud computing that facilitates the required interoperability across data sets, models, visualisations etc. The timetable for delivering a proof of concept evaluation is outlined.