Executive summary

The EVO Pilot (EVOp) was an ambitious two year project to test the value of new cloud technologies for connecting and integrating fragmented data, models, and tools to deliver new holistic approaches to environmental challenges. The need for such an approach has become increasingly clear as we seek to improve food, water and energy security. These all require a new way of working which spans disciplines and organisations, and that breaks down science-culture boundaries. If successful, the project would demonstrate the vision and opportunities for further funding, attract academic, policy, industry, and global partners, and create a step-change in the way that NERC science is delivered and exploited.

The final deliverables were -

- A tested web service using local, national and global exemplars
- Future funding
- An informed and engaged community

This was achieved through establishing a project team which had a mix of computer specialists, environmental scientists (from across 13 organisations) and an end-user stakeholder group covering a range of organisations. The work was organised into a series of packages which cooperated closely to deliver the overall vision. The packages covered; leadership and management; cyber infrastructure; modelling; and tested exemplars.

The exemplars were chosen to engage with end-users and explore barriers and opportunities at three spatial scales; local, national and global, focused on such topics as flooding, diffuse pollution and uncertainty in climate change projections. Thus the project combined a 'narrow and deep' testing using these exemplars with more 'broad and shallow' explorations of issues such as vocabularies and semantics, data security and legal issues. Many briefings and presentations of the project were given via meetings and workshops throughout the lifetime of the project to potential end-users ranging from Defra and public agencies, to the water industry, academic audiences, and industry bodies such as the Information Assurance Advisory Council. A major conference was organised in Oct 2012 to showcase opportunities for national and international initiatives working in this area at the Royal Geographical Society. The project's Stakeholder Group provided guidance and support throughout the project, ensuring that this was not another IT 'white elephant' but of real value to organisations that are challenged daily with tackling complex environmental problems.

All the deliverables have been achieved with a community of postdocs, academics and end-users who are all now familiar and excited about the opportunities of the approach. New funding is in place from a variety of sources including the Government's Big Data Initiative, the international Belmont Forum and the NERC-TSB joint Environmental Data call, all of which have acknowledged the role of the EVOp in securing the funding. A final report including experiences of barriers and opportunities encountered during the lifetime of the project is available on the EVOp website (www.evo-uk.org) providing a legacy to be exploited by the whole community as they explore the potential of application of these new cloud technologies for environmental science.

The opportunities are many, and other initiatives that are already in progress include: real-time integrated monitoring of the environment to produce real-time alerts; modellers 'cloudifying' their models and creating user-friendly web interfaces for increased accessibility and testing; work to establish international standards and vocabularies; software developments to enhance inter-operability, and much, much more.