

Results of competition:

Solving business problems with environmental data – Feasibility studies

Total available funding for this competition was £4m from the Technology Strategy Board and the Natural Environment Research Council.

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
ADAS UK Ltd (lead) University of Nottingham Environment Agency	Using environmental data to improve great crested newt surveying.	£185,111	£138,956
Project description (provided by applicants)			
<p>This feasibility project will apply cutting edge next generation DNA sequencing methodologies (NGS) to ecological surveys with specific reference to an endangered UK amphibian, the Great Crested Newt (GCN). GCN are a protected species which makes it an offence to move or kill them, or disrupt their habitat. As such land that is earmarked for re-development and with potential to harbour GCN populations (ponds) will need to be surveyed for GCN. This can be a costly process and one that delays the development of land. The proposed methodology to be evaluated within this study has the potential to not only survey this species, but all animal species within a particular ecosystem, in parallel, by analysis of the trace amounts of environmental DNA (eDNA) which had been released into that environment from the sloughing of cellular material from the animals within that ecosystem. eDNA monitoring by NGS will allow cost-effective species monitoring in environmental surveys, with potentially greater sensitivity than those surveys that are currently carried out by conventional trapping/sighting methodologies.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Assimila Ltd (lead) CABI	Crop pest and disease warning system for food security in the developing world	£92,956	£79,008
Project description (provided by applicants)			
<p>The project is concerned with developing agri-environmental services for developing countries by bringing together data on crop pests and diseases in the CABI Knowledge Bank with weather data and other environmental sources of information, including satellite data, freely available on the Internet. The resulting information will be used to develop value added services which will be offered on a commercial basis to agribusinesses globally. CABI will use revenues from the commercial sales to support the maintenance of the Knowledge Bank as an open-access global public good and hence create a virtuous cycle of more local information, leading to better information products, higher revenues and hence an ever expanding local networks across the world giving better advice.</p>			

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Building Research Establishment Limited (lead) Met Office Exeter University	Solar Performance Mapping and Operational Yield Forecasting	£195,821	£130,666
Project description (provided by applicants)			
<p>This project will use metrological and satellite data from the Met Office in combination with electricity generation data from solar photovoltaic (PV) installations from the BRE National Solar Centre to develop (i) a method of generating accurate geographical representations of solar generation potential across the UK and (ii) capability for short term forecasting of UK-wide radiation and site specific solar generation from utility scale solar plants.</p> <p>The research produced by this technical feasibility project will have commercial applications across the value chain of the UK solar industry, particularly in grid and asset management and supporting investment confidence.</p> <p>The innovative step is to use accurate generation data from existing UK solar installations in combination with Met Office observations for metrological and satellite data, to build accurate mapping and forecasting capability for solar generation. End users are included to verify the planned commercial solutions.</p>			

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Building Research Establishment Limited (lead) Axa UK plc MapFlow	Property flood resilience database (PFR-d)	£199,675	£129,789
Project description (provided by applicants)			
<p>This project will develop a Property Flood Resilience Database (PFR-d), which will combine environmental datasets on flood risk with resilience measures undertaken. The project is innovative as the PFR-d is a gap in the market, or a 'missing piece of data' for insurers that could assist in providing more appropriate pricing for risks in high flood risk areas, or where properties have suffered repeat flooding events. The partners, BRE, AXA and Mapflow, are key players in flood resilience. The project will use existing datasets including flood risk information in the form of maps and exposure zones and data held by insurers on flood risk across the UK. A prototype PFR-d will be developed through the research, which will encompass the framework for the PFR-d (combining existing datasets with the new PFR-d). The project will also include dissemination and awareness raising activity amongst the insurance and flood resilience sectors. The development of the PFR-d will allow the resilience of buildings to be increased by encouraging investment in the Property Level Protection market and flood resilience measures by homeowners and businesses.</p>			

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Courtyard Agriculture Ltd (lead) ADAS UK Ltd	Development of a soil zoning algorithm to improve productivity of arable farmers	£120,441	£83,437
Project description (provided by applicants)			
<p>This project will test the concept of a novel method for defining and predicting key soil characteristics within arable fields through the combination of satellite data, existing national soil maps and height data. In recent years the importance of managing soil according to its local characteristics has been increasingly recognised. The need to plan farming activities around the soil resources available will increase yields in an economically and environmentally sustainable way. Existing soil maps provide a general guide as to the characteristics of the soil in a locality, but are not spatially precise enough to enable variations in soil characteristics to be picked up within fields, or even within farms. Satellite imagery can provide detail on spatial variation of soil properties, but is limited in its ability to tell us what that variation is. Combining these two data sources, along with high resolution terrain data, will better predict local soil characteristics at a field level. This will support sustainable intensification of arable farming in the UK and generate business opportunities for the project partners within both the agriculture sector and beyond.</p>			

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E4TECH (UK) LTD (lead) Rezatec Limited DRAX Power Limited University of Edinburgh	Environmental data use for determining the temporal carbon flow consequences of biomass for energy	£145,488	£110,967
Project description (provided by applicants)			
<p>Renewable energy targets have led to a growth in demand for woody biomass, in turn leading to a re-assessment of methods for defining sustainable forest management and forest carbon stock. Well managed forest can be both productive and sustainable, maintaining a positive carbon balance whilst providing all sorts of ecosystem services. However, lack of data and tools to quantify the effect of forestry management brings uncertainty to the effectiveness of bioenergy policy as a climate change mitigation measure and poses a risk to the bioenergy and other wood processing sectors. In this project E4tech, Rezatec, the University of Edinburgh and Drax will develop a methodology to accurately identify the temporal carbon impacts of biomass removal from forests. Information will be extracted from different environmental datasets (satellite, radar and on the ground measurements) using information retrieval algorithms and linked to a forest growth model. The result will be a service that helps businesses in the wood industry understand the GHG impact associated to a given forest biomass feedstock and prove compliance with sustainability criteria to its stakeholders.</p>			

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Eco-metrica Limited (lead) Scotland's Rural College E.ON New Build & Technology Limited	Using environmental data to help industry invest in the UK biomass market	£122,861	£89,026
Project description (provided by applicants)			
<p>Biomass produced from perennial energy crops, Miscanthus and short-rotation coppice, can reduce the carbon intensity of energy production. The UK Government has had incentive policies in place, targeting farmers and power plant investors to develop this market, but growth has been slower than anticipated. Market expansion requires farmers to select to grow these crops, and the construction of facilities to consume them. This project develops and uses environmental data linked to a model of biomass supply and demand to improve our understanding of the behaviour of the energy crop market in the UK. The project is led by a consulting company (Ecometrica) developing a data platform that will be available to potential market participants, based on scenario results from a market model developed by academic researcher (SRUC). Realistic market scenarios will be developed and tested using the decisions facing a major energy market participant (E.ON). The outcome will be a credible set of business scenarios of market development useful for both government and private investors, and information on the environmental impact, including the lifecycle carbon cost.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
eCountability Ltd (lead) NERC Forest Research Yorkshire and the Humber Ecological Data Trust	Feasibility Study for a Spatial Decision Support Tool for Business Use in Biodiversity Offsetting	£62,104	£53,313
Project description (provided by applicants)			
<p>eCountability is leading a team that is aiming to prove the viability of an innovative new spatial Decision Support System targeted at enabling the construction industry to meet its environmental obligations whilst maintaining or improving national levels of biodiversity. Biodiversity offsetting is increasingly being used to ensure that development can proceed while protecting natural capital. The UK government sees it as central to reconciling economic growth with biodiversity protection and has published a Green Paper with commitment to announce proposals by the end of 2013. Major developers in the construction and energy sectors need access to high quality environmental data and an efficient process to assess and deliver biodiversity offsets so that developments can go ahead without delay. This project brings together a consortium of the leading national and local environmental data providers, experts in the biodiversity offsetting concept and geospatial solutions and one of the UK's leading construction companies.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
EDPR UK (lead) CEH Edinburgh	Foraging behaviour of large gulls and the implications for offshore wind site selection	£200,000	£144,882
Project description (provided by applicants)			
<p>There are many environmental factors which influence the spatial location of offshore wind farms but there is a lack of data on many and this makes it difficult for marine spatial planners and developers to make an accurate risk assessment of the suitability of a site for offshore wind development. Large gull species have recently been identified as a key bird species which may be particularly susceptible to collision risk from offshore wind farms. The proposed project is to identify the foraging behaviour of large gull species to determine the potential implications for future offshore wind energy sites. This project will track the foraging behaviour of large gull species during the breeding season and, using existing environmental data sets, identify spatial links with marine habitats and opportunistic prospects to identify patterns and the drivers to this behaviour. A historical assessment will also be made using European Seabirds at Sea data. The results will then be applied to potential future areas of search to identify the potential risks to offshore wind development.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Element Energy Limited (lead) UK Power Networks (Operations) Limited Met Office Scottish and Southern Energy Power Distribution Ltd	Forecasting Climate Change Impacts on Electricity Distribution Loads at Network Asset Level	£174,109	£123,351
Project description (provided by applicants)			
<p>In response to growing electricity demand and on-site generation, distribution network operators (DNOs) in the UK are forecast to spend over £43 billion in the coming four decades on reinforcing the network that delivers electricity to UK homes and businesses. To help DNOs plan this task, they have access to forecasting tools that predict the impacts of population growth, energy efficiency improvements and low carbon technology uptake on network loads by specific region and individual asset. However, there is currently no way of quantifying how climate change impacts on demand (e.g. more summer cooling and less winter heating) and distributed generation (e.g. changing average solar insolation and wind levels) will influence the extent of network upgrades required. In this project, we will assess the feasibility of combining Met Office climate forecast data with DNO load data to determine the size and network location of potential climate change impacts on load. To do this, we will develop a prototype tool that combines these datasets to predict climate change load impacts and likelihood, resolved to individual network assets and regions, under various climate change scenarios.</p>			

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Environment Systems (lead) Limagrain UK Limited University of Leeds	Developing breeding strategies for a variable climate	£106,678	£90,663
Project description (provided by applicants)			
The project is a collaboration, led by Environment Systems Ltd, with Leeds University Institute for Climate and Atmospheric Science (ICAS) and Limagrain Ltd. The intention is to carry out a feasibility study addressing the potential for developing a tool, using meteorological data, along with other environmental datasets, to be used by crop breeders for producing new and improved arable crop varieties, more resilient to a fluctuating climate, more stable for helping global food security and with less impact on the environment.			

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Fugro GEOS Limited (lead) University of Leeds	Improving Forecasts of African Dust Storms for Oil and Gas Operations	£159,225	£127,885
Project description (provided by applicants)			
Fugro GEOS and the University of Leeds are collaborating on a project to designed to improve dust forecasting for the Energy industry operating in North Africa. The project will seek to use knowledge derived from the NERC sponsored Fennec project, and to combine this with EUMETSAT data products, Fugro GEOS atmospheric modelling and in-situ data provided by an International Oil Company. The project aims to help the oil industry to reduce risk to its operative working in the remote harsh climate of North Africa.			

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Global Climate Adaption Partnership (UK) Limited (lead) Aster Group Limited University of Bath University of Manchester	Aster Housing Association climate change risk and cost diagnosis	£104,224	£89,134
Project description (provided by applicants)			
<p>This feasibility study will prototype an Adaptation Planning Service for businesses in the UK. The APS integrates: 1) a needs assessment based on business processes, 2) interactive risk diagnostic and profiling tools, 3) quantitative data and models of impacts, and costs and benefits of adaptation actions, and 4) a strategic planning application to incorporate climate resilience in business decision processes. A key feature is the visual, interactive mapping of present and future climate change hazards, linked to decision trees and scorecards for potential adaptation options. The APS aides communication with business managers in developing effective means for reducing the economic and business costs of climate impacts.</p>			

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Global Surface Intelligence Ltd (lead) University of Edinburgh	Global Monitoring of Soil Carbon from Space	£113,056	£95,064
Project description (provided by applicants)			
<p>Global Monitoring of Soil Carbon from Space - soils store vast amounts of carbon globally and have a major role to play in climate change mitigation, adaptation and food security. Sustainable management of soil carbon requires an understanding of soil carbon stocks under relevant land uses. Traditional methods for measuring soil carbon are impractical, expensive, and therefore not relevant to schemes where large-scale carbon sequestration is the primary objective. This project will develop a methodology combining big data processing, machine learning, ecosystem modelling and remote sensing to provide a wide-scale and cost-effective way to monitor soil carbon changes over time. The data will be available online via an easy to use web based interface and the end users will be able to draw in the boundaries of their areas of interest and extract this data without any specialist expertise. The end-users of the package will be organisations looking to quantify, monitor or evaluate changes in soil carbon for; sequestration, off-setting, agriculture, or for environmental purposes.</p>			

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High Efficiency Heating UK Limited (lead) University of Leicester	Identification of Sites for Micro-hydropower On Rivers Through Applied Satellite and Environmental Data (ISMORTASED)	£139,937	£120,491
Project description (provided by applicants)			
<p>Most rivers in the UK can produce much more hydropower than is currently being exploited, albeit at small but very numerous sites. The problem being solved by this project is the identification of sites where micro hydropower turbines, of different types and sizes, might easily and inexpensively be deployed to the benefit of the local communities and without damage to the environment. This can be achieved by accessing and combining data sets from government agencies, such as the Environment Agency, with data from existing satellite-based earth observation service providers. In revealing the potential of individual sites on rivers where "green" electricity can be produced 24 hours a day, we will stimulate growth in renewable energy jobs, cut carbon emissions and establish localised secure supplies of electricity.</p>			

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HL Hutchinson Limited (lead) Farmade Management Systems Limited The Technology Research Centre Ltd Centre for Ecology & Hydrology (CEH) University of Leeds	Techno-economic feasibility of a system to measure farm environmental impact towards a Sustainable Intensification Audit & Management System- SIAMS	£163,364	£125,736
Project description (provided by applicants)			
<p>To measure ‘sustainable intensification’ we must compare crop yield (intensification) and gross margin (economic sustainability) with relevant, quantifiable environmental impact indicators (environmental sustainability). The main environmental indicators farmers should consider are Water Management/Pollution; Greenhouse Gas Emissions & Biodiversity. We propose to develop a system to assimilate, calculate & display this environmental impact data alongside yield, quality & fiscal performance data to create a valuable representation of farm physical, financial and environmental performance on a field by field basis. This feasibility study will look at the potential of utilising data already stored within GateKeeper (a farm data software tool) and several other data sources, combined with new farm scale data in a series of models, fused in a single software system we call SIAMS. These models will help the farm manager & agronomist identify & modify their agronomic inputs avoiding wasteful & potentially harmful applications. Subject to feasibility study results we will then need to develop the data fusion platform & possibly two systems for capturing & analysing localised flora & fauna data. This technology could position UK agriculture at the forefront of precision farming and sustainable intensification.</p>			

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HR Wallingford Limited (lead) Willis Limited The Scottish Association for Marine Science	HARIMAP (Harmful Algae Risk Index MAP)	£124,044	£85,389
Project description (provided by applicants)			
<p>HARIMAP provides a way for the insurance industry to set insurance premiums for fish farms and other marine aquaculture in relation to algal blooms. Algal blooms are natural events, but they can be harmful to marine animals such as farmed fish and shellfish. Shellfish exposed to algal blooms can also be toxic or even fatal to humans and as such exposed farms are closed until the event has passed and cleared. These closures are both costly to the owner and the insurance company who insures against such events. In order to set realistic insurance premiums, the insurance industry needs a way of scoring the risk of algal blooms at a given location in the ocean where aquaculture may be sited. HARIMAP takes data from satellites and numerical models to generate such a risk score that can be presented as a map and used alongside standard maps and charts of the marine environment. The products are delivered by SeaZone, which is an established supplier of marine data products.</p>			

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Image Cat Limited (lead) Jeremy Benn Associates Ltd	Flood Foresight: Near real-time assessment of flood impact potential for the insurance and civil contingencies sectors	£199,649	£149,737
Project description (provided by applicants)			
<p>We aim to develop a demonstrator for real-time flood monitoring & impact assessment for re/insurance and civil contingency sectors. This “Foresight” system provides a technical harness for a diverse and disparate set of environmental data, including river gauge data, hazard maps and assets at risk. The system, delivered as a webservice, will be compatible with existing business intelligence and decision support tools currently used. “Foresight” will provide: multi-temporal updates of forecast flood hazard based on live environmental data feeds; geographic intersection of a spatial database of exposed assets with dynamic hazard maps; near real-time alert warnings based on user thresholds of risk tolerance; assessment of potential impact from unfolding flood events, in days and hours before peak flood. “Foresight” allows users to reduce response times and ensure efficacy and appropriateness of response decisions. The 12-month project will prove the methodological and technical foundation for future implementation of a multi-hazard, multi-territory impact forecasting webservice for a range of sectors. Advisors include Lloyd’s of London, Oasis LMF and the UK Cabinet Office.</p>			

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In Touch Limited (lead) Carillion Plc Lancaster University Business Enterprises Ltd	Smart Clean	£254,902	£199,999
Project description (provided by applicants)			
<p>The Project is a feasibility study to determine how valid it may be to use environmental data combined with traffic volume and behaviour, in using this to reasonably predict potential 'hot spots' where water pollution may be likely to occur at problematic levels as a result of toxins from roads.</p> <p>Where toxins are forecast to cause a detriment to waterways impacting aquatic life and vegetation, this information may be used to inform highways maintenance operational decisions in terms of what maintenance activities to carry out and at what point in time, taking into account the type of toxins, upcoming rainfall, locations to sensitive waterways and so on. This study will determine the viability of this approach to enable smarter maintenance of UK roads and gullies.</p>			

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Infoterra Limited (lead) The University of Edinburgh	SAREDD - An operational service providing reliable forest degradation information using satellite radar data	£149,954	£123,704
Project description (provided by applicants)			
<p>The monitoring of tropical forest degradation has a major contribution to make to the global challenge of climate change and the wellbeing of those who live in these environments. Compared to tropical deforestation, the monitoring of forest degradation has not received the same level of research and significant challenges remain. Astrium Geo-Information Division, University of Edinburgh and the Gabon Ministry of the Environment have created a partnership to develop a system that uses satellite radar data to deliver annual maps of tropical forest degradation. The launch of the Sentinel-1 satellite by the European Space Agency in 2014 will provide substantial amounts of radar data over the tropics and the project will develop techniques that will integrate those images with other datasets to produce the required maps. This will take place within a system capable of processing the large amounts of data involved and providing an efficient means of distribution. A prototype system using currently available radar data will demonstrate the feasibility of the proposed service.</p>			

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International Synergies (lead) University of Birmingham Highways Agency Birmingham City Council Environment Agency	Novel materials for the built environment	£91,000	£52,000
Project description (provided by applicants)			
<p>The project will evaluate the use of data on waste arisings to identify where waste streams can potentially be utilised as low-carbon, and/or low-cost, alternative raw materials (ARM) for major infrastructure (construction) projects. This will benefit businesses generating waste materials by identifying alternative uses for their waste streams within the construction sector, potentially reducing disposal costs and/or generating additional income. There is a growing awareness of the sustainability costs (environmental, economic and social) associated with construction as well as growing awareness of the potential to reuse or recycle waste materials. Currently a lack of information on the availability of ARMs and a lack of coordination across major projects prevents the reuse of many materials. This project will test the feasibility of using environmental data to develop a system that signposts ARMs for infrastructure projects, and has the potential to deliver cost savings and carbon savings. The Environment Agency will provide the data and act in an advisory capacity to the project.</p>			

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JBA Consulting (lead) Scottish Renewables Met Office National Oceanography Centre	ForeCoast Marine: A strategic decision support tool for the marine renewable energy sector	£133,284	£96,076
Project description (provided by applicants)			
<p>Conducting Operation and Maintenance (O&M) activities in the marine environment brings with it significant business risks for the energy sector. At present, the scheduling of O&M activities for renewable energy arrays fails to integrate fully the available environmental and business data in order to plan for the impact of sea-state and weather conditions. When uninformed decisions are made with respect to the environment, significant commercial and H&S risks result. The aim of this project is to investigate the feasibility of improving O&M strategies through the development of a prototype O&M decision support tool, branded ForeCoast Marine. This tool will, for the first time, integrate multiple weather and sea-state forecast data (i.e. environmental data), O&M activity data (i.e. business data) and innovative software to inform and guide operations up to five days in advance. This will allow end users to minimise its commercial and H&S risks and increase its environmental resilience.</p>			

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Landmark Information Group (lead) Telespazio Vega UK Limited NIAB-CUF Satellite Catapult	Quantifying the relationship between potato crop groundcover and SAR coherence measurements of vegetative cover	£156,346	£127,810
Project description (provided by applicants)			
<p>Information describing potato crop canopy development is a key measurement for in-season crop management, irrigation scheduling and final yield forecasting. Outputs from these systems are used to optimise inputs (e.g. water), maximise crop value and provide data to the downstream processing chain. Traditional, manual methods, of collecting groundcover are labour intensive and provide little information about the spatial variability of crop development. Satellite observations can provide insight into spatial variability but can be temporally limited and often require collection of expensive ground truthing data. This project aims to combine low-cost ground truthing data, crowd-sourced via a smart phone app, with satellite radar data, that can meet the temporal resolution required for reliable results in potato crop management systems. This will create fit for purpose data which can be used to improve and expand the accuracy and reliability of potato crop management systems.</p>			

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Magellium Limited (lead) Soilessential Limited	CropForecast	£198,023	£148,517
Project description (provided by applicants)			
<p>The CropForecast project proposes to improve crop disease forecasting using high resolution earth observation data, accurate digital elevation models and local weather data. Such improvements will increase the efficiency, sustainability, and profitability of crop production. The current approach to crop disease forecasting has limited spatial resolution and can only generally provide forecasts at a multiple field scale. The proposed approach would allow more precise forecasting at a sub-field level to be achieved. The initial focus will be to track, predict and ultimately limit the spread of potato late blight (<i>Phytophthora infestans</i>) in the UK. The proposed system will give farmers an early warning system that highlights the risk to their crops based on incoming weather patterns, detailed elevation and aspect information and remotely sensed data from satellites using sophisticated modelling techniques.</p>			

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Maxeler Technologies Limited (lead) British Geological Survey Thames Water Utilities Limited	On Demand Environmental Modelling: Groundwater Modelling as a Service for Flood and Drought Decision Support Planning	£154,811	£129,780
Project description (provided by applicants)			
<p>Modelling of groundwater is currently used for long term management of water resources but this has potential as a decision support tool during stress periods such as drought and flooding. Achieving this will require modelling on shorter timescales (weeks or months) and different data sources (i.e. forecasted rainfall). In this project, the partners will develop a prototype of a web-service to provide on-demand groundwater modelling. Such a tool will be interactive, enabling planners to explore the results of alternative courses of action under different scenarios and utilize a combination of current, historical and forecast datasets. Three organisations will contribute: Maxeler Technologies, with a track record in developing and delivering High Performance Computing hardware and software; the British Geological Survey, with a track record in developing groundwater models and supporting decision making; will work together to develop a product intended to meet the requirements of Thames Water, a large water supply utility, as customer. If successful this will be extended as a platform for delivery of multiple environmental models for the UK and global market.</p>			

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Microensure (UK) (lead) University of Reading	A toolbox for incorporating satellite-based data into weather index based insurance (SatWin toolbox)	£182,587	£153,665
Project description (provided by applicants)			
<p>Climate extremes, such as very low or high rainfall, expose African farmers to catastrophic losses with devastating impact on livelihoods. These are exacerbated by lack of access to traditional insurance. Since 2005, MicroEnsure has pioneered an alternative -- weather index-based insurance (WII). Rather than insuring a proven loss, WII pays out if a weather index is breached.</p> <p>Until recently, WII has been available only to farmers living within close proximity to a rain gauge. Thirty years into the environmental satellite data era, there is now the potential to use these datasets to insure the millions of farmers who do not live near a rain gauge. This project will develop technologies to scale out WII in a safe and sustainable manner that will enhance the livelihoods of some of the poorest people in the world - while establishing the UK as global leader in the microinsurance industry.</p>			

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Remote Sensing Applications Consultants Limited (lead) NERC Anglian Water Services Limited	Land Cover Plus: national agricultural land cover information for the water industry	£126,842	£100,359
Project description (provided by applicants)			
<p>Anglian Water needs detailed, up to date and consistent information on cropping within its drinking water catchment to better understand catchment risks and to target mitigation measures with greater accuracy and efficiency. The forthcoming Copernicus Sentinel-1 mission is designed specifically to service operational applications, including agriculture, with much improved all-weather frequent repeat radar imagery. Land Cover Plus will investigate the feasibility of integrating such satellite data with the UK Land Cover Map, produced by CEH, to generate an annual agricultural land cover layer. To achieve this, RSAC Ltd will develop an innovative automated parcel-based crop classification technique based on temporal curve matching that is robust enough to cope with regional and temporal variations in crop phenology. Target customers for annual crop maps include all 22 UK water companies, agricultural suppliers and government agencies. There are also many possible overseas customers. RSAC and CEH will work together to develop the market for Land Cover Plus and formulate an appropriate business model for exploitation of project results.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Rezatec Limited (lead) British Sugar plc Rectory Farmhouse Limited	Optimising sugar beet growth yields through use of space and environmental data	£196,890	£141,568
Project description (provided by applicants)			
<p>The project "Optimsing Sugar Beet Growth Yield through use of Space and Environmental Data" assesses the feasibility of combining earth observation (EO), environmental and in situ farm data to improve harvest productivity for growers of sugar beet and to enhance their capacity to manage the environment around the nation's sugar beet crop. The project brings together British Sugar (BS), Rezatec and Rectory Farmhouse Limited as consortium partners and the British Beet Research Organisation (BBRO) provides in kind support to the project. The project utilises the nation's investment in the capture of environmental data and in the processing of satellite information by leveraging existing national environmental data sets such as those provided by the Met Office and the CEMS (Centre for Environmental Monitoring from Space) at Harwell to process captured data. The project plans to make available improved sugar beet crop growth models to help UK growers maintain their leadership position in the face of increased competitive challenges worldwide.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Sainsbury's Supermarket Limited (lead) BioCarbonTracker University of Leeds Grantham Institute ESRI (UK) Limited M&W Mack Limited Chingford Fruit Limited	Using macro environmental data to support long term adaptation, management and mitigation of sustainability and climate change issues within agriculture and supply chains to the UK food retail sector	£185,000	£144,000
Project description (provided by applicants)			
<p>This project brings together the University of Leeds and Grantham Institute with commercial developers from BioCarbon Tracker and ESRI UK to provide Sainsbury's with insights into site-specific, multi-parameter environmental risk profiles, both for now and for future forecasting. Risk profiles will combine three categories of data: multiple layers of geospatial data for environmental conditions; combined with crop models and production conditions (to predict performance); and linked to corporate data (such as supplier locations, supply chains, procurement volumes). Outputs from geoprocess models will indicate risks - by type and location - that affect product quality, availability or cost and allow model-based analysis of sustainability and risk. Within the project, ArcGIS Online will be used to share findings with Sainsbury's suppliers for specific sites, which will be validated with growers' direct experiences. The development of this system will provide insights to Sainsbury's and its vast network of suppliers to make them more competitive in the global market. Insights will ultimately inform investment decisions and contractual arrangements to shape supply chains of the future.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Scottish Hydro Electric Power Distribution plc (lead) Scottish Environment Protection Agency	VALUES - VALuing Land Use change and Ecosystem Services	£198,529	£163,005
Project description (provided by applicants)			
<p>The VALUES project seeks to combine environmental data sets to build a prototype Geographical Information System (GIS) based tool which will support identification of optimum routes for large scale corridor style infrastructure developments in terms of the social, economic and environmental cost of land-use change, and also identifies areas of high ecosystem services value where mitigation action would be of particular benefit.</p> <p>In this business led collaborative project, infrastructure developer Scottish Hydro Electricity Transmission Plc, the North of Scotland Electricity Transmission system owner, is partnering with the Scottish Environment Protection Agency, Scotland’s environment regulator. Both partners are end users for the tool being developed. This innovative partnership, generally on opposing sides of project consenting, aims to promote shared understanding between the two by developing a common approach and joint tool. Other end users will be consulted through a programme of stakeholder engagement throughout the project.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Sea Level Research Limited (lead) AIMES Grid Services CIC Peel Ports Limited Met Office National Oceanography Centre Minesto Atlantic Container Line UK Limited	Intelligent Prediction for Cargo Traffic Routing (iPrediCTOR)	£198,013	£136,319
Project description (provided by applicants)			
<p>The iPrediCTOR project is led by Sea Level Research and aims to produce locally optimised sea level predictions to reduce costs in the port, shipping and offshore energy industries. The project combines cutting edge Machine Learning techniques with observations from tide gauges and marine weather data and cloud computing infrastructure to generate precise sea level predictions from weather forecasts. These predictions, which account for the surge on top of the tide, will deliver a number of major benefits: Improved scheduling for ships, leading to reduced fuel and operating costs; optimisation of port logistics and cargo loading, leading to a more efficient supply chain; better scheduling of maintenance visits for offshore energy companies with less aborted trips, leading to reduced operating costs for wind farms and tidal energy production; and greater navigational safety since the amount of water under keel will be more accurately known. With containerisation continuing to grow, ships becoming ever bigger and the vast expansion of offshore renewable energy the development of an accurate prediction system will facilitate optimal decision making and reduced costs.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Shoothill Limited (lead) Environment Agency RailMet Limited Shropshire Council	"RiverAlerts "	£139,548	£104,661
Project description (provided by applicants)			
<p>RiverAlerts' is the world's first live river level alerting system aimed at anyone in the UK wishing to know the live river level, river flow, borehole readings, rainfall gauges or water temperature (where available) for England and Wales.</p> <p>The system uses data supplied by the Environment Agency to allows end user to set search for a gauge via a river name, catchment or location and also lets the user set a 'Alert threshold' so that when a river level reaches the desired height, flow, temperature, etc. they will get an alert via email, social media and Smart Phone app.</p>			

Results of competition:

Solving business problems with environmental data – Feasibility studies

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Stevenson Astrosat Limited (lead) British Geological Survey The Scottish Association for Marine Science Heriot-Watt University	WaveCERT	£196,746	£163,532
Project description (provided by applicants)			
<p>WaveCERT will provide a tidal and wave power planning and monitoring tool innovatively helping marine renewable providers to choose the best spot to install their equipment using space data.</p> <p>WaveCERT utilises satellite data so all observations are conducted remotely; this gives three main benefits:</p> <ul style="list-style-type: none"> - A site's potential output can be determined remotely and frequently thus minimising the cost and danger of field expeditions. - The near term output of the site can be predicted repeatedly (by potentially up to 72 hours in advance.) - The effect of sediment build-up can be modelled so steps can be taken to minimise the negative effects of build-up and support more environmental and effective site selection for this new energy. 			