UK Research and Innovation

NERC highlight topics

Opportunity status:	Open
Funders:	Natural Environment Research Council (NERC)
Funding type:	Grant
Total fund:	£16,000,000
Maximum award:	£4,000,000
Publication date:	30 November 2020
Opening date:	30 November 2020 16:00 UK time
Closing date:	25 March 2021 16:00 UK time

Last updated: 30 November 2020

Start application

You can apply for funding for research projects which address environmental challenges covered by six new highlight topics.

The highlight topics are:

- ionosphere at multiple scales
- environmental barriers to the spread of zoonotic pathogens
- creating resilient, productive and healthy urban environments
- drivers and climate implications of Antarctic sea ice loss
- urban climate feedbacks
- environmental basis for the prevention of zoonotic pathogen emergence.

Your proposal must address issues within a single highlight topic.

You can apply for funding of up to £4 million (at 80% full economic cost) for up to four years. Funding and duration depend on the highlight topic chosen.

You must be a resident in the UK and employed by an eligible UK research organisation.

Open all

Who can apply

Start date

Projects will start no later than 01 November 2021, except for projects subject to programming of ship-time or aircraft campaigns.

Individual eligibility

Normal individual eligibility applies and is in Section C of the **NERC research grant and fellowships handbook.**

Investigators (PI or Co-I) may be involved in no more than two proposals submitted to this call and may only apply as the PI on one proposal.

No associated studentships can be requested under this call.

Research Organisation eligibility

Normal Research Organisation eligibility applies and is in Section C of the NERC **research grant and fellowships handbook.**

NERC research and fellowship grants for all schemes may be held at approved UK Higher Education Institutions (HEIs), approved Research Council Institutes (RCIs) and approved Independent Research Organisations (IROs). Full details of **approved RCIs and IROs** can be found on the UKRI website.

Equality, Diversity and Inclusion

NERC values equality, diversity and inclusion across all its funding programmes, and actively encourages proposals from diverse groups of researchers.

What we're looking for

Highlight topics

- we have selected six highlight topics of equal priority for this call
- proposals must address issues within a single highlight topic; proposals addressing more than one highlight topic will not be accepted
- where multiple proposals are invited within a highlight topic, they must be independent projects that deliver as stand-alone proposals.

The highlight topics in this call are:

A. Ionosphere at multiple scales: Scientific exploitation of the new EISCAT_3D radar

B. Using system-wide approaches to understand and use environmental barriers to restrict or manage the spread of current and future zoonotic pathogens

C. Creating resilient, productive and healthy urban environments through a novel understanding of ecosystem processes

D. Drivers and climate implications of recent rapid loss of Antarctic sea ice

E. Urban climate feedbacks between street, neighbourhood, and city scale processes

F. Understanding the environmental basis for prevention of zoonotic pathogen emergence

A. Ionosphere at multiple scales: Scientific exploitation of the new EISCAT_3D radar

Objective

To increase our understanding of the ionosphere's fundamental underpinning science by exploiting EISCAT_3D's new capabilities and to by explore the hidden 3D ionosphere in order to predict its impacts on the global earth system.

Strategic context

Understanding the ionosphere is crucial to the sustainability and resilience of both satellite services and electricity supply on which society, the UK and world economies rely.

The ionosphere is an integral part of the interconnected Earth system. It mediates top-down influences of the space environment on weather and climate that are only now being understood and yet to be routinely included in Global Circulation Models (GCMs).

Conversely, bottom-up influences and long-term trends originating in the lower atmosphere also affect the upper atmosphere resulting in a variety of complex interactions. As in all environmental science, cross-scale coupling and unresolved sub-grid scale processes hinder scientific progress.

NERC has invested £6.2 million in the construction of EISCAT_3D, a new £60 million radar facility. EISCAT_3D will become the world's most capable radar for upper atmosphere and space weather research, when it begins operations in 2022. EISCAT_3D will provide the first-ever 3D views of the small-scale ionosphere over northern Europe, in unprecedented detail, with ten times the resolution of the existing EISCAT systems.

It will be uniquely able to study a wide range of processes from sub-second, sub-kilometre scales up to long period variability. This is critical to scientific understanding, as multi-scale coupling is key to understanding and predicting the variability of the ionosphere and upper atmosphere.

Scope

Proposals should seek to understand the role of small-scale ionospheric processes and multi-scale coupling. The large-scale structure and dynamics of the magnetosphere-ionosphere system is now well understood and is largely reproduced by GCMs.

However, important behaviours still defy understanding and prediction because they involve small-scale processes that are hard to measure and/or to capture. For example:

- sub storm evolution from a small-scale instability
- the contribution to upper atmospheric heating from unresolved processes
- small-scale electron density fluctuations that cascade from larger scales
- small-to-medium scale gravity waves from the lower atmosphere that dissipate energy into the lower thermosphere.

Scientific advances

Four UK priority research areas for EISCAT_3D have been identified on multi-scale ionospheric coupling:

1. How to estimate small-scale Joule heating from large-scale measurements and represent this in space weather GCMs? How important is small scale heating to uncertainties in thermospheric drag on satellites and space debris? EISCAT_3D will measure both ionospheric heating and track satellites/debris with high precision.
2. How are small-scale electron density irregularities related to larger-scale ionospheric conditions and structures, such as polar patches? EISCAT_3D will measure electron density irregularities down to 100m, and ~100km conditions under which they occur.
3. What is the small-scale electrodynamic structure of individual auroral arcs? What small-scale processes are important to auroral arc evolution? EISCAT_3D will measure electron density, electron and ion temperatures and electric fields on inner (100 m) and outer (km) scales of an arc.
4. What is the long-term variability of the lower ionosphere and how this reflects the balance between forcing from space weather above and climate below? EISCAT_3D will measure plasma parameters at high resolution at critical altitudes where upward waves from the troposphere break to modify structure and circulation.

Delivery

This highlight topic should be addressed by two projects, each up to the value of £2 million at 80% FEC (£2.5m 100% FEC) and up to four years in duration.

Attention should be given to:

- interfacing efficiently with the **SPF SWIMMR programme** where research on models of the radiation belts, the ionosphere and neutral upper atmosphere is feeding into services provided by the Met Office.
- enabling the wider academic community to access any data produced by these HT projects.

Potential proposers are encouraged to discuss the **EISCAT-3D** radar in advance of submitting a proposal and may contact the UK-EISCAT Support Facility. NERC funds this facility at BAS/RAL to provide advice and support.

B. Using system-wide approaches to understand and use environmental barriers to restrict or manage the spread of current and future zoonotic pathogens

Objective

To use whole system knowledge to identify environmental and ecological connectivity between environmental reservoirs, intermediate animal hosts and people to understand how to break or control a chain of transmission.

Strategic context

Interventions to restrict transmission and spread of zoonotic pathogens such as SARS-CoV-2 have focused on medical or veterinary mitigations and include vaccination, surveillance and contact tracing, and social and cultural fragmentation. Such interventions are all set within an environmental context and success is partially determined by environmental parameters.

There is continually growing human and environmental COVID-19 data (e.g. UKRI urgency scheme and Defra monitoring groups), which we can use to better understand how the environmental component of spread can be managed – for example through ecosystem modification, surveillance, pathogen and host monitoring – and wider interventions in our interactions with the environment.

In doing so, environmental solutions will be identified that break the transmission chain for different types of zoonotic pathogen (e.g. land management, agricultural practice, chemical interventions). A holistic approach will help determine how effective these approaches might be in different seasons and settings, and why.

Scope

Understanding and development of prospective barriers requires collaborative thinking between those who:

- understand species-species transmission
- develop surveillance equipment for monitoring
- develop frameworks and models
- understand ecosystems and landscape scale movements
- those who understand how we use and interact with the environment.

A systems approach requires access and overlay of data such as biodiversity, pathogen, land use and technology layers. Whilst the challenge is to address a pandemic, solutions are likely to be realised at a regional level, delivered in association with local government, business, and society and there is a need to understand the role of the environment ‘in place’.

Scientific advances

Soil, water, air, and vector animals are transmission media that link different parts of local and global environments. Their nexus provides the prospect of environmental barriers in the transmission chain. In developing our understanding of these chains and prospective barriers, we need to advance understanding of the following:

1. How will climate change, shifts in land use, and extreme or multi hazard events affect the spatial distribution of pathogen sources and susceptible groups?
2. Recognising many interactions that affect transmission pathways, can we predict transport routes through the environment (e.g. water courses, ground water reservoirs, and air) and how much will this change for different pathogens or host organisms?

Viable risk assessment methodologies for COVID-19 and wider pathogens data will help identify risks of re-emergence and provide insight to identify the eradication potential or need for acceptance of this and wider pathogen management.

They will provide additional tools for managing future waves by enabling the application of barriers within the environment, instead of relying on only medical and veterinary solutions, as an essential component for control.

This topic will provide the evidence to understand the environmental barriers potential feasibility and place them in an economic and technical context for land management and policy making.

Delivery

This highlight topic should be addressed by up to two projects, each up to the value of £2 million at 80% FEC (£2.5 million 100% FEC) and up to four years in duration. Individual proposals should address both questions.

C.Creating resilient, productive and healthy urban environments through a novel understanding of ecosystem processes

Objective

To understand how the engineered physical complexity and dynamics of urban environments can be optimised to support multiple ecosystem functions and services at landscape scales.

Strategic context

The UK government’s commitment to a green future, through environmental solutions that benefit nature, the economy and society, is a clearly articulated agenda in a variety of policies and plans.

As the UK urban environment expands and the urban population grows, it becomes more apparent the urban environment plays an increasingly important role in the future resilience of UK ecosystems under ongoing climate change.

However, much less is known about the mechanisms driving ecosystem multifunctionality in urban compared to rural environments. A significant knowledge gap exists in the understanding of the interaction between the engineered physical complexity and dynamics of urban environments with the ecosystem services they support, and how that infrastructure can be optimised to support multiple ecosystem functions and services at the appropriate scales.

Engineered solutions, such as green infrastructure, are implemented to tackle urban environmental challenges at local scales. An understanding and appreciation of the wider landscape-scale consequences of urban design decisions is critical if we are to avoid sub-optimal environmental outcomes.

Enhancing the role that urban environments and their design and management decisions play in UK ecosystem resilience, through improving landscape quality and connectivity, requires new knowledge on urban ecosystem structure, function, and dynamics.

Scope

Proposals should build on existing knowledge of urban ecosystem structure, function and dynamics to help inform the regeneration of existing urban areas.

This includes understanding of the role and impact of engineered urban dynamics on the delivery of ecosystems services.

Proposals are expected to seek greater understanding of the biological communities, the linkage and interaction of biology and the urban environment, and suitable metrics to inform on decisions and barrier identification.

Scientific advances

To address gaps and deliver new knowledge of urban ecosystem structure, function and dynamics, research challenges include:

1. How does the structure and complexity of physical urban environmental features alter the structure of the biological communities that underpin ecosystem functions? Examples include trade-offs and functional values over multiple scales.
2. What are the critical mechanisms that link physical and biological complexity to ecosystem multifunctionality? Identifying these mechanisms is essential to develop quantitative methods that improve our understanding of the impacts of design choices on ecosystem function.
3. What combination of physical and biological features of urban environments enhance the resilience of landscape-scale ecosystems?
4. What physical and biological metrics can represent ecosystems functions and how can these be used to inform management decisions to enhance the role of urban environments in UK ecosystem resilience?
5. What enabling mechanisms are required to overcome potential barriers and support successful implementation, performance and outcomes of green infrastructure in urban settings, and can these enablers be adapted to ensure embedding of the underpinning ecosystem science and engineering in green infrastructure design?

Each project must address one or more of questions 1 to 4. All projects must address question 5.

Delivery

This highlight topic should be addressed by up to two projects, each up to the value of £2 million at 80% FEC (£2.5 million 100% FEC) and up to four years in duration. Individual proposals should address one or more of questions 1 to 4; both projects must address question 5.

D.Drivers and climate implications of recent rapid loss of Antarctic sea ice

Objective

To deliver a step-change in our understanding of the Antarctic sea ice system and develop tools to assess impacts on the wider climate system.

Strategic context

In contrast to the Arctic, annual mean sea ice extent (SIE) across the Southern Ocean increased between 1979–2014 at a rate of 1.8% per decade. In spring 2016, this picture changed dramatically: Antarctic SIE decreased at a rate 46% faster than the spring mean and 18% faster than in any previous year.

The precipitous year-on-year decline was such that 2017, 2018, and 2019 all set records for minimum Antarctic SIE across the 40 year-long data set (reference i). The nature of Antarctic sea ice decline differs markedly from that of the Arctic: the rate has been faster, and the change of state during 2016 is unique to the Antarctic.

The sector that contributed most (34% of the 2016 decrease) to the total decline was the Weddell Sea. Over the last 5 years the extent of summer sea ice in the Weddell Sea has decreased by 50%, coincident with large changes in the ocean environment. The 2016 change of state and the rapid SIE decline appear linked to a combination of record storms and the reappearance of a major polynya (reference ii).

However, insufficient data means that details are lacking. Sea ice is a recognised key climate indicator and Antarctic sea ice is a critical part of the global system with key roles in reflecting solar energy, driving global ocean meridional overturning circulation, and absorbing anthropogenic heat and CO_2.

Yet changes in SIE are not reliably captured in models, highlighting major inadequacies either in system-level understanding or the way that processes are represented in models.

Scope

Proposals should deliver a step-change in our understanding of the Antarctic sea ice system and develop tools to assess impacts on the wider climate system.

Proposals are expected to undertake research combining state-of-the-art observational and modelling techniques.

Scientific advances

Improving quantitative process-level understanding of the drivers controlling current Antarctic sea ice extent and their effective incorporation into models, will help the research community take advantages of recent improvements in model resolution.

This will enable the incorporation of smaller-scale processes into the model grid and access to novel operational platforms (e.g. underwater, airborne, satellite), technology and numerical tools.

Projects should seek answer the following research questions:

1. What atmospheric and oceanic processes caused the rapid change in Antarctic sea ice observed (particularly in the Weddell Sea sector) in 2016?
2. Can these processes be represented reliably in models to reproduce observed changes in Antarctic sea ice extent?
3. What has been the short-term effect of the sudden decrease in Antarctic sea ice on global oceanic circulation patterns?
4. Is this a “new normal” and what are the implications for exchange and redistribution of heat and CO_2 over decadal timescales?

Delivery

This highlight topic should be addressed by one project costing up to the value of £4 million at 80% FEC (£5 million 100% FEC) and up to four years in duration.

E. Urban climate feedbacks between street, neighbourhood, and city scale processes

Objective

To improve weather and climate modelling and observational capability that crosses neighbourhood-influenced scales. To provide enhanced evidence to support sustainable, resilient and healthy city development.

Strategic context

Most of the world’s population is experiencing urban climate change, such as urban heat islands, in addition to global climate change. Four and a half million homes in England alone already overheat in summer.

The way we use our cities also affects urban climate; for example, if air conditioning becomes more common, resulting “anthropogenic” heat release from outlets will worsen urban heatwaves. Changes in city life impact temperatures and emissions, such as was seen in the decline of traffic flows and energy demand due to the COVID-19 lockdown in spring 2020.

However, there is a lack of integrated observational and modelling capability to inform how urban environmental change can be optimised to deliver sustainable,

resilient and healthy cities. Only recently have representations of cities been included in weather forecasts.

The UKCP18 climate projections (2.2km resolution) show urban phenomena in new detail. But in order to provide Integrated Urban Services to maintain city operations and inform future development, next generation models need to resolve neighbourhoods (0.1-1km).

This order of magnitude change raises questions as to which processes need to be parameterised or resolved. City scales (~10km) are captured by mesoscale models; and street scale (<0.1 km) currently requires computational fluid dynamic (CFD) models; but the neighbourhood scale lies in a grey zone.

Trade-offs and feedbacks between street, neighbourhood and city scale processes are critical. Furthermore, including anthropogenic effects in models is also crucial to understanding the impacts on the system and assessing low-energy adaptation measures.

Scope

Proposals should seek to include elements of new theoretical frameworks, modelling techniques and synthesis of observational data utilised to answer a specific environmental research question about how to support sustainable, resilient and healthy city development.

Proposals should capture the heterogeneity of city landscapes and the large, local impact of human activity on the atmosphere. Independent projects funded under this topic could span different ranges of scales, i.e. street to neighbourhood, or neighbourhood to city, to improve understanding of urban climate feedbacks.

Scientific advances

Recent developments in modelling and observational techniques can start to address urban climate feedbacks across scales. With increased computing power, the gap between numerical weather prediction (NWP) and computational fluid dynamic (CFD) models is closing.

Good progress has been made at each scale, but the challenges are coupling and physics representation. New techniques are needed to tackle this: for example:

- integrate building vegetation-atmosphere exchange with anthropogenic heat release
- incorporate impacts of realistic urban morphology
- couple NWP and CFD models
- exploit CFD simulations to optimise NWP parametrisation or observation networks.

Observations across scales are needed to understand urban climate processes and to evaluate numerical models. As standard meteorological networks avoid urban areas, there is minimal data in cities. Many of the new data sources are only at street level but there is a need to understand the vertical structure of the atmosphere.

Questions about representativity, accuracy, and how to integrate point observations with volume-averaged model output across a highly heterogeneous landscape need addressing.

It is anticipated that projects would include elements of new theoretical frameworks, modelling techniques and synthesis of observational data to address specific research questions. For example:

1. Green infrastructure is beneficial in terms of health and biodiversity; how can it be planned without adversely affecting city climate and pollution dispersion?
2. How does anthropogenic heat and water vapour release affect neighbourhood temperature and humidity? How can these fluxes be represented in very high resolution (e.g. 0.1km) mesoscale models?
3. How do changes in building form affect predictions of wind and pollution dispersion at neighbourhood and city scales? Hence, what level of representation (e.g. urban canopy, street network, 3D morphology) is required for different models?
4. How can observations and modelling be combined to improve predictions of urban weather and climate?

Delivery

This highlight topic should be addressed by up to two projects, each up to the value of £2 million at 80% FEC (£2.5m 100% FEC) and up to four years.

F. Understanding the environmental basis for prevention of zoonotic pathogen emergence

Objective

To understand the environmental drivers that lead to emergence or re-emergence of zoonotic pathogens including SARS-CoV-2: how and why it originates and how we predict emergence and put in place environmental controls to reduce risk.

Strategic context

Spread of zoonotic pathogens and risk of transmission has accelerated with recent anthropogenic land-use changes such as deforestation, urbanisation, and agricultural intensification. These are all factors that are expected to increase in the future due to human population expansion and increasing demand for resources.

To understand the spread and impact of current zoonotic diseases and the emergence of future pathogens it is necessary to understand the environment supporting their development and transfer.

This topic seeks to address how zoonoses arise – can we identify and so anticipate the kind of environmental change that triggered, or facilitated emergence? How can we use new surveillance and monitoring technology at the relevant scales (individual to ecological and regional) to accommodate climatic and seasonal influences and determine trigger points? Can this data be incorporated within epidemiological tools to combine genomic diversity, pathogen quantification, and environmental fitness of genotypes to improve our proactive response?

Scope

The topic is not concerned with evolution of the organism within humans and its subsequent person-to-person transmission. It is concerned with the environmental change and ecosystem boundaries that are potential key points of change for pathogen emergence and spill over into people or intermediary hosts.

There is a gap in understanding the generality of this biological pattern with understanding based on suspected higher rates of zoonotic disease emergence and spill over in fragmented landscapes and where humans live in close vicinity to wildlife.

Whilst zoonotic pathogens have a wide variety of origins, to understand the environmental basis of their emergence requires the following two research advances to be tackled in parallel.

Scientific advances

This topic seeks to address the following challenges:

1. How do new zoonotic pathogens evolve in the environment, and what is the role of the immediate environment on that emergence? Advancing understanding requires greater insight of pathogen evolution, e.g. can we understand how pathogens circulate in an ecosystem to understand potential for spill over? How fast this can occur? What characteristics of environments or ecosystems correlate to zoonosis emergence, can we understand the causality, and can we describe the environmental change that has triggered emergence?
2. What new surveillance and monitoring approaches provide environmental and pathogen data at the appropriate level, and can these approaches be used to anticipate emergence? Novel pathogen emergence risk assessments are based on the frequency of pathogen genotypes or predicted distribution of reservoir species. Sophisticated technology (see below) and modelling capability allow detection and characterization of potentially dangerous changes in the ecology of infectious diseases in key wildlife reservoirs.

Bringing these research challenges together requires opportunities to be realised from:

- i) digitization and remote sensors for near real time monitoring (e.g. weather, water, irradiation, or moisture) to inform appropriate spatial and time scales and resolve early signals of change
- ii) operating sensors in conjunction with field-based genomic (eDNA, RNA, etc) tools provides new capability to assess and evaluate the likelihood and rates of emergence.

In turn complex data assimilation and visualisation for effective communication will inform how we model predictions of movements between species.

Recognising that aspects of zoonotic pathogen emergence is already extensively funded (such as in the US), proposals will need to clearly articulate how they build on existing and ongoing work.

Delivery

This highlight topic should be addressed by up to two projects, each up to the value of £2 million at 80% FEC (£2.5 million 100% FEC) and up to four years in duration. Individual proposals should address both questions.

Maximum funding values

- the maximum value for proposals under each topic area is either up to £2 million or up to £4 million (Topic D) (at 80% fEC – details provided above)
- any Ship-time and marine facilities (SME) costs do not need to be included within the £2.5 million fEC limit, however it is expected that ship-time and marine facilities will be included within the £4 million limit (£5m fEC; Topic D)
- all other services and facilities should be costed and included within the DI-other budget line on the Je-S form for all topics.

Exceptional permission to exceed the funding limit

- For this call, we will consider exceptional cases for exceeding the £2.5 million or £5 million limit. The process for applying for exceeding limit is the same as for Standard grants (see Section B, paragraphs 14 to 17 of the **Research Grants and Fellowships handbook**). The funding limit will only be extended in exceptional cases and any proposal that exceeds the limit without permission will be rejected.
- For this call, a case for exceeding the maximum limit must be submitted to **researchgrants@nerc.ukri.org** by **18 February 2021** at the latest and you should receive a decision within 10 working days.

Using NERC facilities

Prior to submitting a proposal, applicants wishing to use a NERC service or facility must contact the facility to seek agreement that they could provide the service required.

Applicants wishing to use most NERC facilities will need to submit a mandatory 'technical assessment' with their proposal. This technical assessment is required for aircraft but not for NERC Marine Facilities (NMF – Ship-time and/or marine equipment) and HPC. For NERC, this means a quote for the work which the facility will provide.

A **full list** of the Facilities requiring this quote can be found on the NERC website. The costs for the service or facility (excluding NMF and HPC costs) must be included within the Directly Incurred Other Costs section of the Je-S form and within the facilities section of the Je-S form. Further information on **NERC services and facilities** can be found on the NERC website.

Proposals to some topics may require ship time and other marine facilities. Applicants wishing to use NERC's marine facilities must complete an online Ship-time and Marine Equipment (SME) or Autonomous Deployment (ADF) application form on the **Marine Facilities Planning** webpage.

The SME/ADF number should be included on the Je-S grant proposal form under Services and Facilities. SME/ADFs must be submitted and approved by NERC

Marine Planning by the time the proposal (Je-S form) is submitted, so that a pdf of the SME/ADF can be attached as a facility form. Failure to do so may result in the request not being included in the NERC Marine Facilities Programme.

Applicants intending to apply for NERC's marine facilities should also contact **marineplanning@nerc.ukri.org** to discuss shiptime and equipment needs as soon as possible.

Completed SMEs/ADFs/Pre-Award OSPQs should be submitted by **1 February 2021**.

Applicants requiring Antarctic Logistics Support from NERC British Antarctic Survey must complete a Pre-award Operational Planning Support Questionnaire (OSPQ). This is an online form.

Applicants must email the Antarctic Access Office (AAO) at BAS (**afibas@bas.ac.uk**) as early as possible to discuss their request, stating their name, institution and proposal title. The AAO will set up a new, numbered Pre-award OSPQ and send the link to the applicant along with instructions for completion. The Pre-award OSPQ should be submitted to the Antarctic Access Office and included as an attachment at the full application stage.

Any funding applications that request Antarctic logistic support without having received prior logistic approval will not be accepted. All other services and facilities should be costed and included within the DI-other budget line on the Je-S form.

Data management

The **NERC Data Policy** must be adhered to, and an **outline data management plan** produced as part of proposal development. NERC will pay the data centre directly on behalf of the programme for archival and curation services, but applicants should ensure they request enough resource to cover preparation of data for archiving by the research team.

How to apply

Applicants are encouraged to contact the NERC office at an early stage to discuss any questions on call procedures.

- the Funding Operations team (**researchgrants@nerc.ukri.org**) acts as the first point of contact for highlight topic grant proposals.
- scientific and remit queries should be emailed to **highlighttopics@nerc.ukri.org**.

Notification of intent

- a **Notification of intent** to submit must be submitted by **16:00** on **18 February 2021**

- tell us the focus of your proposed research project, the institutions, investigators and project partners that are expected to be involved and include a title and abstract of your planned work. The abstract will not be assessed, but NERC will use the information to plan the proposal assessment
- full Je-S proposals submitted without a prior notification of intent will be rejected.

Full proposals

- closing date: 25 March 2021
- you must submit your full proposal using the **Joint Electronic Submission system (Je-S)**. When applying select:

- council: NERC
- document type: Standard Proposal
- scheme: Directed
- call: Highlight Topics Round 7

The call will close on JeS at **16:00** on **25 March 2021** and it will not be possible to submit to the call after this time. Applicants should leave enough time for their proposal to pass through their organisation's Je-S submission route before this date. Any proposal that is incomplete, or does not meet NERC's eligibility criteria or follow NERC's submission rules (see **NERC Grants Handbook**), will be office rejected and will not be considered

All attachments, except for letters of support and services/facilities/equipment quotes, submitted through the Je-S system must be completed in single-spaced typescript of minimum font size 11 point (Arial or other sans serif typeface of equivalent size to Arial 11), with margins of at least 2cm.

Please note that Arial narrow, Calibri and Times New Roman are not allowable font types and any proposal which has used either of these font types within their submission will be rejected.

References and footnotes should also be at least 11 point font and should be in the same font type as the rest of the document. Headers and footers should not be used for references or information relating to the scientific case. Applicants referring to websites should note that referees may choose not to use them.

Applicants should ensure that their proposal conforms to all eligibility and submission rules, otherwise their proposal may be rejected without peer review. More details on NERC's submission rules can be found in the **NERC research grant and fellowships handbook** and in the **submission rules** on the NERC website.

Proposals for all topics (up to £2m 80% fEC; except Topic D) should be submitted in standard grant format. Proposals for Topic D (up to £4m 80% fEC) should be submitted in large grant format. Please follow the requirements outlined in Section F of the **NERC research grant and fellowships handbook**.

Please note that on submission to council ALL non-PDF documents are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

Where non-standard fonts are present, and even if the converted PDF document may look unaffected in the Je-S System, when it is imported into the Research Councils Grants System some information may be removed. We therefore recommend that where a document contains any non-standard fonts (scientific notation, diagrams etc), the document should be converted to PDF prior to attaching it to the proposal.

No associated studentships can be requested under this call.

How we will assess your application

Full proposals will undergo expert peer review (see the **assessment process and minimum/optimal review levels of grants**).

Applicants will have the opportunity to respond to reviewer comments before consideration by the highlight topic grants moderating panel, that will allocate final scores and rank proposals based on research excellence and fit to scheme of the scientific objectives (the appropriateness of the research proposed for the highlight topic)

The moderating panel will also examine the strength of the management arrangements and whether the resources requested are appropriate

The moderating panel will be comprised of Peer Review College members, augmented if necessary, by relevant experts from outside the College. The aim will be to use at least half from the core membership of the Peer Review College (expertise and conflicts of interest allowing)

NERC will use the recommendations of the moderating panel along with the overall call requirements and the available budget in making the final funding decisions. The highest ranked proposals will be funded, irrespective of the highlight topic to which they apply. However, the funding limit specified for each highlight topic will be applied.

NERC will not fund two projects with overlapping research. In exceptional circumstances, where the top ranked projects in a topic were overlapping, NERC may fund the third – ranked project instead of the second-ranked project.

Feedback will be provided to both successful and unsuccessful applicants.

Contact details

For eligibility, application process and peer review queries, please contact **researchgrants@nerc.ukri.org**

For scientific and remit queries, please contact **highlighttopics@nerc.ukri.org**

Additional info

Knowledge exchange and impact

- Knowledge exchange (KE) is vital to ensure that environmental research has wide benefits for society and should be an integral part of any research
- A separate Pathways to Impact statement is NOT required, but applicants should still consider how they will or might achieve impact outside the scientific community and include this as part of their Case for Support. Impact activities do not have to be cost-incurring, but relevant costs can be included and must be fully justified within the Justification of Resources statement.

Programme management

- Project PIs are responsible for the management and delivery of their projects. Coordination between projects within a highlight topic is not required.

Reporting requirements

- Successful applicants will be required to report research outcomes on ResearchFish in line with standard UKRI Terms and Conditions. This is required annually and continues for up to five years post grant end
- For strategic research investments, including successful highlight topic grants, NERC additionally requires biannual progress reports.

Timeline

30 November 2020 16:00
Competition opens

1 February 2021 16:00
Facilities forms deadline

18 February 2021 16:00
Notification of intent deadline

25 March 2021 16:00
Competition closes

September 2021
Panel meeting

October 2021
Decision date

1 November 2021
Project start date

Related content

NERC highlight topics

Previous highlight topic funding rounds

Notification of intent to submit

NOTE This is the first phase of our new website – let us know if you have **feedback** or would like to **help us test new developments**.