Announcement of Opportunity:
Space Weather Innovation, Modelling, Measurement and Risk (SWIMMR)

S4: Forecasting from the Sun to L1

Call launched: 7 May 2020
Closing date: 11 June 2020, 16:00

1.   Summary

STFC invites proposals relating to the improvement of forecasting techniques for solar wind propagation from the Sun to the Earth. This topic forms part of the Space Weather Innovation, Modelling, Measurement and Risk (SWIMMR) project which is funded as part of the UK Research and Innovation (UKRI) Strategic Priorities Fund (SPF). SWIMMR is managed jointly by STFC and NERC, and is funded by UKRI which has allocated ~£20M to this programme. The UK Met Office will be the end user of models and instruments developed in SWIMMR.

The maximum amount of STFC funding available for this call is £450,000. UKRI's funding contribution for proposed projects will be at 80% of FEC (with the standard exceptions paid at 100% FEC). Indexation at the prevailing rate will be applied at the time of award.

2.   Background

2.1   Strategic Priorities Fund

The Strategic Priorities Fund (SPF) has been set up to build upon the vision of a 'common research fund' set out in Sir Paul Nurse's independent review of the Research Councils. The fund will drive an increase in high-quality multi and interdisciplinary research and innovation, ensure that UKRI's investment links up effectively with Government departments' research priorities and opportunities, and ensure that the system is able to respond to strategic priorities and opportunities.

2.2   SWIMMR Objectives

SWIMMR aims to significantly improve the UK's space weather monitoring and forecasting capabilities, especially mitigating those risks with the highest potential for economic and societal impact. The programme aims to benefit both governmental and commercial sectors. The resultant world-leading space weather forecasting and mitigation capability will not only safeguard our considerable national investment in space-based infrastructure but will also confirm the UK's reputation as an international leader, with potential to collaborate with key partners internationally.

This programme is driven by the UK's ever-increasing reliance on modern technology. This includes our growing dependence on space-based systems for communications, global

positioning and time-keeping. It also supports our aspirations to become a leading space-faring nation, based on capabilities to both launch and support UK-licensed space assets. As well as operation of satellites and other space technology, SWIMMR addresses space weather effects on ionosphere dependent and affected systems, radiation effects on avionics, and the effects of geomagnetically induced currents (GICs) on power distribution grids.

SWIMMR involves a programme of activities involving STFC and NERC together with academic, industrial and governmental stakeholders. This coordinated approach across multiple partners will support a step change in capability, by greatly increasing the range of space weather monitoring and prediction services offered by the Met Office and by developing new instruments and facilities to service the UK stakeholders affected by space weather hazards. The UK Met Office, as the UK delivery agency for space weather forecasts, will be the primary end user for the models and instruments delivered by this research-to-operations programme.

2.3   Scope of the SWIMMR project

The primary purpose of SWIMMR is to transition space weather research to operations (at the UK Met Office) in order to provide new forecasting and analysis capabilities. SWIMMR projects are very likely to draw on earlier research council funded projects and/or research funded by other agencies.
SWIMMR consists of a number of largely independent projects, further described below:

- S1: Improved in-situ radiation measurements for space and aviation
- S2: Technology testing and modelling
- S3: Research to Operations support
- S4: Forecasting from Sun to L1
- S5: Ground radiation monitor network
- S6: Space weather impact assessment study
- N1: Satellite radiation risk forecasts
- N2: Aviation risk forecasts
- N3: GNSS and HF aviation forecasts
- N4: Ground effects forecasts
- N5: Satellite drag forecasts.

Projects S1-S6 will be delivered by STFC, while projects N1-N5 will be delivered by NERC. This Announcement of Opportunity only addresses the STFC call for project S4.

3.   Equality, Diversity and Inclusion

The long term strength of the UK research base depends on harnessing all the available talent and the Research Councils have together developed the ambitious UK Research and Innovation Equality, Diversity and Inclusion Action Plan

In line with the UK Research and Innovation Diversity Principles, STFC expects that equality and diversity is embedded at all levels and in all aspects of research practice. We are committed to supporting the research community in the diverse ways a research career can be built with our investments. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcome applications from academics who job share, have a part-time contract, need flexible working arrangements or those currently committed to other longer, large existing grants. Please see our Equality and Diversity webpages

4.   Project Requirements

The general, technical and project specific requirements shall be addressed and their compliance shall be described in a compliance table forming part of the Case for Support.

4.1   General Requirements

1. Project Cost. The project cost shall be less or equal to the specified budget, defined both in section 1 (above) and at the end of the project description (below). Any proposals costing more than the available budget will not be assessed.
2. Relevant dates. These are given in Section 11 and should be adhered to; however if your ability to respond is likely to be affected due to the Coronavirus pandemic, please contact us and we will be happy to discuss this with you.
3. Licencing. Please see Section 4.4, Licensing and Knowledge Exchange.
4. Liaison. Project proposals shall demonstrate ongoing project liaison with the Met Office to aid integration of the project outputs with the Met Office Space Weather Operations Centre (MOSWOC) operational forecasting environment.
5. Linkages. Project proposals shall highlight any linkages with other projects in the SWIMMR programme, or other relevant projects.
6. Dependencies. Project proposals shall clearly identify any critical dependencies on factors outside the control of the project team, including obligations to external groups and organisations.
7. Milestones. Project proposals shall provide a list of milestones and associated delivery dates. Milestones can be either technical reports or deliverables (to UKRI and the Met Office), see below.
8. Delivery Plan. Project proposals shall demonstrate a credible delivery plan. (Note that STFC, on advice from the Programme Board, may choose to close projects which are consistently failing to deliver against those agreed milestones and deliverables and this will be reflected in the grant conditions.

4.2   Technical Requirements

The goal of this work is to produce new forecast systems that can be operationally implemented at MOSWOC. In the sections below, the Met Office requirements for operational acceptance are listed. The project proposers should demonstrate that their proposal meets the essential criteria, and aim to address the desirable criteria. Discussion with the Met Office prior to submission is advised.

4.2.1   User Requirements

Essential:
1. Assimilation Timeliness. For models where data assimilation is required, data shall be assimilated in near-real-time (NRT).
2. Forecast Timeliness. Forecasts shall be produced with an appropriate timeliness (usually NRT).
3. Forecast Validity. Forecasts shall be produced with a validity appropriate to the application.
4. Model Robustness. Models shall run successfully and generate realistic outputs for a range of space weather conditions. Consideration of extreme space weather conditions should be incorporated wherever possible.
5. Model Type. Models shall be data driven rather than climatological, unless infeasible or inappropriate.
6. Model Skill. Statistical verification skill scores and other metrics shall be defined and recorded to inform both forecasters interpretation and benchmarking.

7. Autonomy. Models shall be capable of running automatically, without human intervention.
8. User Documentation. The models shall be accompanied by a description and guide to model use and limitations, supplemented with references to associated published papers.

Desirable:
1. Ensembles. Models should support ensemble operation (unless deterministic models can be shown to perform better).

4.2.2   IT Requirements

Essential:
1. Environment. Models shall be developed to run under the Linux operating system at the Met Office, for both on-premises and Amazon Web Service (AWS) operation.
2. Language. The source code shall be delivered and the models shall be written in Fortran, Python or Java. C may also be acceptable for critical models. Appropriate versions of the above languages shall be discussed with the Met Office before submission of the proposal.
3. Software Libraries. Models shall not have dependencies on (non-standard) software libraries not currently supported by the Met Office. Applicants are advised to contact the Met Office to discuss this.
4. Model Resilience. In the case of data or model failure due to technical issues, fall-back options shall be provided to maintain a continuous forecasting capability. These can include using a simpler configuration, other initialisation strategies, repeat forecasts, or alternative input data sources.
5. IT Robustness and Error logging. Models shall be written to an acceptable standard and shall handle errors appropriately and informatively, allowing Operational Service and IT Support teams to both understand and resolve problems.
6. Quality Assurance. The proposal shall be able to demonstrate that the model will be developed and delivered to a good standard, with version control, error handling, code review and acceptance testing.
7. Data Licensing. In addition to a royalty free, non-exclusive licence for any model, licenses and terms of use for any input data shall be obtainable and described.

Desirable:
1. Data Requirements. All input and output data requirements should be clearly stated to help ensure the highest level of compatibility with other SWIMMR projects.
2. Efficiency. For computationally expensive models, which are chosen to run on the Met Office High Performance Computer (HPC) rather than AWS, the code should be parallelised to ensure HPC operation (supported OpenMP and MPI protocols).

5.   S4: Forecasting from the Sun to L1

5.1   Background

Solar wind structures, such as Coronal Mass Ejections (CMEs) can produce significant space weather impacts, such as geomagnetic storms, on arrival at Earth. They therefore have significant implications for the operation of technological infrastructure, making it important to predict both their time of arrival and their characteristics on reaching Earth, in particular the component of the solar wind magnetic field in the geomagnetic meridian direction (Bz).

In order to be able to put effective mitigation measures in place, key requirements for solar wind monitoring should include improvements in forecast accuracy and lead time, as well as techniques to determine the possible error range of models, for example by placing realistic confidence limits on the arrival time of solar wind events and the potential severity of their impacts. In order to gain the trust and acceptance of forecasters and end users, such models need to have sufficiently quantitative prediction capabilities that their reliability and accuracy can be easily assessed.

5.2   Objectives

The objective of this project is to develop or enhance a near-real-time (NRT) forecast capability for solar wind propagation from the Sun to the Earth (L1 point) and/or to demonstrate techniques which will better quantify the confidence limits on such models, in terms of their ability to predict the range of possible arrival times and space weather impacts of solar wind structures impinging on the Earth.

5.3   Required Deliverables

This call seeks proposals that will deliver to the Met Office models, products and services which must include:
- A forecast of arrival time and magnetic polarity for solar wind structures at the terrestrial L1 point.
- Error bounds (or confidence limits) on the above quantities, which should vary appropriately as a function of time and characteristics before event arrival.
- Ability to generalise these predictions to intermediate positions along the Sun-Earth line and (as far as possible) to other key locations, such as spacecraft locations in the inner heliosphere.
- Ability to hindcast events for the purposes of model validation and verification.
- In conjunction with the Met Office, a system of web displays which are updated by the forecasts, supplemented by forecaster tools where appropriate.

It is important to note that the Met Office already utilises the WSA-ENLIL (Cone) model, including a CME only ensemble, to predict CME arrival time at L1. The Met Office also uses another solar wind prediction model, based on 27 day recurrence. The Met Office does not envisage replacing WSA-ENLIL and therefore this work should be focussed on either complementary capability or improvements to the use of WSA-ENLIL. If replacement is a possible outcome of your proposal, then please engage with the Met Office at an early stage in the proposal development phase.

5.4   Research elements

It is expected that research will focus on key issues to reduce forecasting uncertainty, which are likely to include one or more of the following:
- Initialisation of models, using solar or coronal data
- Reduction of uncertainty through the use of data assimilation techniques
- Improvement of ensemble techniques for better determination of forecast accuracy
- Novel techniques to optimise model computation speed or improve parallel operation

Other topics will be considered provided a compelling case is made. Research must demonstrate how the forecasting will be improved.

5.5   Assumptions and Dependencies on other SWIMMR Projects

It is expected that the capability delivered to the Met Office will include a NRT model of the solar wind in the inner heliosphere, covering at least conditions on the Sun-Earth line.

Project S3 (Research to Operations support) will develop an IT infrastructure which allows model developers to make their models operational in a software environment similar to the one used by MOSWOC. This will allow verification and validation, and reliability testing, of S4 to be undertaken by the model developers in their own institutions, greatly easing the process of operationally implementing the model at the UK Met Office. The proposers may assume that a sufficiently mature version of this infrastructure will be in place by June 2021, with a design definition available by March 2021. SWIMMR S4 model developers will be expected to contribute to the IT infrastructure requirements definition (environment, data availability, firewalls etc) in order to ensure compatibility of that system with their model.

It is expected that the forecasts will make extensive use of NRT data including heliospheric imager data and solar coronal measurements to drive the models. Any new system must include reasonable provisions to include data from new instruments that may be developed in other SWIMMR or related space weather projects.

5.6 Milestones

The following table of milestones illustrates the expectations of STFC and the Met Office for this project. The proposers are at liberty to propose different milestones which may better represent their proposal.

Table 1: Exemplar Milestones

DN1.1	Report on the key risk factors, service requirements, the research models, data streams and integrated design architecture	9 months
DN1.2	Delivery of a prototype operational system to forecast solar wind conditions and impacts via MOSWOC	18 months
DN1.3	Report on verification, validation and potential enhancements of the operational system at MOSWOC	27 months
DN1.4	Report on research activities to improve forecasting skill and their implementation	30 months
DN1.5	Final report on the system and research advances	30 months

5.7 Budget and Timescales

This topic will be addressed as a single project up to the value of £450,000 at 80% FEC, with an end date no later than 31 March 2023.

6. Project governance, reporting, data management, knowledge exchange and liability

6.1 Governance

Each funded project will be managed as a single entity by the Principal Investigator (PI) who will report to the SWIMMR Senior Programme Manager (SPM) at the Rutherford Appleton Laboratory operating on behalf of STFC and NERC.

The programme is managed and overseen by the SPF SWIMMR Programme Board, which is advised by the SPF SWIMMR Strategic Advisory Committee. Funded projects will be required to work with the SPF SWIMMR coordination team and engage with cross-programme activities.

6.2 Reporting requirements

There are a number of reporting requirements as described below and will be included as an additional grant condition on the successful award. All reports shall be delivered to the SPM.

- **Journal Papers and Technical Reports.** Applicants are encouraged to submit journal papers. In addition, and as appropriate to the project, technical reports forming deliverable milestones are required.
- **Progress Reports.** Short (~3-pages) progress reports are required every three months to enable the SPF SWIMMR Programme Board to track progress. The SPM will provide a template for these reports. The applicant should be prepared to respond to reasonable requests for additional information.
- **Final Report.** A detailed final technical report shall be delivered.
- **SWIMMR Meetings**. Successful applicants are expected to attend an annual SWIMMR symposium. It is anticipated these symposia will be at STFC RAL or at the Met Office or in Swindon.
- **Project Meetings.** Successful applicants are expected to coordinate six monthly progress meetings at which STFC, NERC and the Met Office will be represented.
- **Researchfish.** SWIMMR participants are required to engage in the monitoring and evaluation of the programme by the Programme Management to facilitate the assessment of the programme in reaching its goals and supporting future funding calls.
  SWIMMR lead participants, from both research and industrial teams are required to complete a survey to support evaluation at the project start, project end and 5-10 years post project end (final time frame tbc following programme end). All grants are to be reported on through the Researchfish portal at least annually, and SWIMMR participants are requested to make reference to the Researchfish guidance at Annex 1 to ensure all required reporting parameters are included in annual submissions. Questions regarding monitoring and evaluation should firstly be directed to Project Manager Mila de Vere (mila.de.vere@stfc.ac.uk) or Programme Manager Ian McCrea (ian.mccrea@stfc.ac.uk), and if further clarification is needed, Evaluation Programme Manager Fiona Larner (fiona.larner@stfc.ukri.org).

6.3   Data management

In accordance with STFC policy, projects are expected to complete a data management plan. This should be submitted as an attachment to the JeS pro forma and is a mandatory requirement for all proposals to this call. The plan should be no longer than two pages of A4. The plan, together with any costs associated with it, will be considered and assessed by the normal peer review process. The data management plan should explain how the data will be managed over the lifetime of the project and, where appropriate, preserved for future re-use. Applications that do not have a data management plan will not be accepted. More information can be found in the Research Grants Handbook.

6.4   Licensing and Knowledge Exchange

Applicants are requested to submit a document providing information on Licensing and Knowledge Exchange, as required by the Met Office, which should cover two areas as follows:
The first relates to intellectual property and licensing. Above all other considerations, SWIMMR seeks to transition research to operations in the Met Office. Consequently, it is critically important that the Met Office can use the foreground IP (including models, data and technology) developed in SWIMMR and, where necessary, also use the background IP (Including models, data and technology) on which the foreground research is based. Consequently, each project proposal shall be accompanied by a statement at the start of the document such that:
"All institutions and individuals, forming part of this proposal, will grant a royalty free, irrevocable, non-exclusive licence for foreground and dependent background IP (including

models, data and technology) to the UK Met Office for research and non-commercial operations, excluding the following [*insert a schedule of models, data and technology which are not owned by the proposers*]. This noting that foreground and background IP remains exclusively owned by the originator."
 A proposal without this statement will not be assessed.

The second requirement of this document is to identify Knowledge Exchange (KE), with associated delivery costs identified where relevant. (These activities do not have to be cost-incurring; it is not a requirement to include funded activities. Any funds required to carry out any proposed, outcome-driven activities identified within this **must** be fully justified within the Justification of Resources statement.)

Please note that in SWIMMR, this document should focus on interactions with the Met Office, scientific dissemination and public understanding. Engagement with other stakeholders should not be addressed since this will be the responsibility of the Met Office.

Please note that a grant condition will be added to the grant to state that there must be a formal IP agreement between the proposers and the Met Office. If such agreement is not in place and IP issues are addressed, STFC may withdraw the grant.

This document should be submitted under "other attachments".

7.   Liability

On acceptance and adoption of the models, data and technology, the Met Office will assume liability for their operational use.

8.   Application process

8.1   Limitations

1. **Capital and Infrastructure Expenditure** (e.g. to build, develop or maintain facilities). These are ineligible costs.
2. **Consumables:** Consumables items essential for the conduct of the research shall only be requested up to a limit of £10,000 per item.
3. **PhD Funding.** No projects shall apply for PhD funding as part of this call.

8.2   Application Process

Where necessary, applicants are encouraged to contact the STFC Programme Office at an early stage to discuss any questions on call procedures (SWIMMRSTFC@stfc.ac.uk). Scientific and remit queries should be emailed to the Senior Programme Manager (SPM) (ian.mccrea@stfc.ac.uk)

Applicants are also encouraged to discuss their proposal with the Met Office by the date specified in Table 4. Please contact the Met Office, via: simon.machin@metoffice.gov.uk or david.jackson@metoffice.gov.uk.

Full proposals must be submitted using the Joint electronic-Submissions system (JeS). Please select Document Type - 'Standard Proposal', Scheme - 'Standard', Call – "SWIMMR S4".

Applicants must ensure that their proposal is received by STFC by the specified time on the closing date. The JeS system will close at that time and proposers will not be able to submit

to STFC after that time. Proposers should leave enough time for their proposal to pass through their organisation's JeS submission route before the closing date and time. Any proposal that is incomplete or does not meet the eligibility criteria of STFC will be rejected and will not be considered.

Due to the uncertainty caused by the Coronavirus pandemic, if any potential applicants are interested in applying to this Call but impacted by the measures being put in place by UK government, please contact us and we will be happy to discuss this with you.

All attachments, with the exception of letters of support and services/facilities/equipment quotes, submitted through the Je-S system must be completed as specified in the JeS helptext: https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/CaseforSupportandAttachments/STFCspecificrequirements.htm

The correct attachment type should be used in JeS as that determines whether attachments are visible to panel members. Attachments must not exceed the page limits specified for the attachment type and scheme, regardless of the number of component Research Organisations.

Attachments should be converted to PDF and checked prior to attaching to the proposal in JeS, as PDF conversion of documents with any non-standard fonts (scientific notation, diagrams etc.) can result in changes, such as missing data or increased document length.

8.3   Tables to be embedded in Case for Support

Two supporting tables are required for inclusion in the Case for Support. These tables will form an important part of the assessment process.

- Milestone Plan
  The Case for Support shall list and describe a series of milestones which may be reports and/or deliverables. Exemplar milestones have been provided in Table 1 (above), but these may be adapted to suit the proposal.

- Compliancy Table
  A compliancy table shall be incorporated into the Case for Support to illustrate compliance or otherwise. The required format is described in Table 2.

Table 2: Compliancy Table

Requirement	Compliance (Yes, No, Partial)	Explanatory comments
GENERAL REQUIREMENTS		
Budget		
Model Licence		
etc		
TECHNICAL REQUIREMENTS		
User Requirements		
Assimilation Timeliness		
etc		
IT Requirements		
Robustness		
etc		

PROJECT SPECIFIC REQUIREMENTS		
etc		
etc		

8.4   Summary

The following table summarises the documents which shall be submitted to STFC via the JeS system.

Table 3: Document Submission Requirements

Document or attachment type	Requirements
Proposal Form	JeS proforma. The topic being addressed should be clearly indicated in the first line of the objectives.
Case for Support	Comprising a common *Previous Track Record* incorporating all Research Organisations involved (up to **3** sides of A4), and a common *Description of the Proposed Research* (up to **20** sides of A4 including all necessary tables, references and figures). The latter will include a Compliancy Table following the format in Table 6 and also a Milestone Table. The justification of resources of up to **4** pages in length must be included in the case for support. This should include
GANNT Chart	A scheduling chart and other relevant plans and participant responsibilities (up to **2** sides A4).
Data Management Plan	A 2 page data management plan should be submitted detailing the requirements as set out on the STFC website
Letters of Support	Letters of support can only be attached to the lead proposal. Project Partner. Letters from the Met Office or other stakeholders are not expected.
Other attachments	Please submit the Licensing and Knowledge Exchange document up to **2** sides of A4 under this heading.
Proposal cover letter	This attachment should not be used except to flag up a significant issue to the STFC Programme Office (e.g. a potential conflict of interest).

9.   Eligibility

Individual and organisational eligibility is detailed in on the UKRI eligibility web pages.

UKRI 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.

Public Sector Research Establishments (PSREs) with 10 or more researchers with PhDs (or equivalent) are eligible to apply. If PSREs wishing to apply have not previously applied for UKRI funding and are not currently designated IRO status they will be required to complete an eligibility form, to ensure they have the required research capacity, systems and controls in place to manage the research and grant funding. PSRE applicants should contact STFC Programme Office at the earliest opportunity to discuss their interests in applying.

UKRI's funding contribution for proposed projects will be at 80% of FEC (with the standard exceptions paid at 100% FEC). Indexation at the prevailing rate will be applied at the time of award.

10. Assessment process

Full proposals will be assessed by a streamlined peer review process involving consideration by a specially convened, expert, international assessment panel that will meet in July 2020. Representatives from the Met Office as the end user will also be present.

Applicants (PI plus a maximum three others) will be invited to present (likely virtually) and discuss their proposal with the Panel. The Panel's assessment will be based both upon the quality of the proposal documentation and the clarification provided by the applicants at interview. The assessment criteria to be used will be as follows:
- Excellence. Originality and quality of the proposed research/innovation activities and the potential of the proposal to deliver original, high quality activities of national importance and international standing.
- Fit to Scheme. Proposals will be directly scored against the degree to which they address the objectives and scope of the relevant topic of the SWIMMR call as detailed in the General, Technical and Project Specific Requirements set out in this document. Proposals which do not strongly meet the criteria of the call will not be considered for funding.
- Management arrangements. This includes resources and the effectiveness of the proposed management structure.
- Track record of applicants to demonstrate the ability to deliver the project.

Please note:
- There is no outline/EOI stage under this call.
- Proposals will not be sent to external reviewers, therefore there will not be a PI/applicant written response to reviewers' comments stage; PIs will be invited to attend the assessment panel meeting to address any questions.
- Applicants will be given limited feedback from the Panel summarising the reasons why the proposal was successful/unsuccessful. No further feedback will be available.

The recommendations of the Assessment Panel for each proposal will be considered by the SWIMMR Programme Board. The Board will make recommendations on the overall fit and coherence of the S4 proposals in line with the expected interdependencies and any needs for further cross theme/cross programme coordination. A portfolio approach will be used to ensure the breadth of the scope is addressed. STFC will use the recommendations of the assessment panel and the SWIMMR Programme Board, along with the overall call requirements and the available budget in making the final funding decisions.

Please note that grants are awarded under the standard UKRI grant conditions. Additional grant conditions will also be added regarding reporting requirements and a formal IP agreement between the proposers and the Met Office.

11. Timetable

Table 4: Timetable

Announcement published	May 2020
Deadline for initial discussion with the Met Office	29 May 2020

Deadline for submission of full proposals	11 June 2020
Peer review panel assessment	Mid-late July 2020
SWIMMR Programme board meetings	Mid July 2020
Latest date for award notification	31 August 2020
Latest start date for projects	1 October 2020
Project completion	31 March 2023

12.   Contacts

For eligibility, submission, and peer review queries, please contact Sarah Garlick, STFC Programme Office: SWIMMRSTFC@stfc.ac.uk

For scientific and remit queries, please contact the Senior Programme Manager (SPM): ian.mccrea@stfc.ac.uk

For Met Office inquiries please contact:
simon.machin@metoffice.gov.uk or david.jackson@metoffice.gov.uk

Enquiries relating to technical aspects of the Je-S form should be addressed to the Je-S helpdesk Email: JeSHelp@je-s.ukri.org. The Helpdesk is staffed Monday to Thursday 8:30 am to 5pm and Fridays 8:30am to 4:30pm (excluding public and other holidays).

13.   Useful links

Below is a list of links applicants may find useful when applying for UKRI grants:

Peer Review Framework

ResearchFish

Equality and Diversity

Unconscious Bias

JeS Handbook

STFC Research Grants Handbook

UKRI Terms and Conditions

Annex 1

UKRI Guidance for Outcomes Reporting of SWIMMR projects on Researchfish

Background

UK Research and Innovation uses the researchfish online system to collect information on the outcomes that have arisen from UKRI-funded research and training. Recipients of UKRI funding are required to report emerging outputs, outcomes and impacts for the duration of their awards and for up to five years beyond. Captured outputs are crucial for demonstrating the benefit of SWIMMR activities. Information provided will be made publicly available through the Gateway to Research portal. Following the submission period, UKRI and the Department for Business, Energy and Industrial Strategy (BEIS) will review the information submitted to researchfish as part of our ongoing monitoring and evaluation activities.

Deadlines

Outcomes can be entered into researchfish at any time, but once a year there is a formal submission period when researchers are required to confirm that their outcomes information is accurate and up-to-date. The UKRI submission period normally takes place **between early February and mid-March.**

Section Guidance

The researchfish system provides general guidance about how to use the system and provide information that is of interest to funders. The following tables provide additional guidance about reporting on SWIMMR awards that should be used to **supplement regular reporting**.

A. Common Question Set

Section	Guidance

Collaborations and Partnerships	Within the answers of the section '*details of the collaborator(s) and/or partner(s)*' please:
	• Identify the collaborations/partnerships that were included as part of the original application
	• Identify any additional collaborations/partnerships within that arose during the course of the award and where appropriate, highlight the extension of collaborations/partnerships beyond the lifetime of the award
	• Include collaborations/partnerships that are not directly related to SWIMMR but have arisen due to contacts made through the programme and identify them as such if relevant
	• Classify the collaborations based on the following list:
	    ◦ STFC-NERC collaboration
	    ◦ STFC/NERC-Industry collaboration
	    ◦ STFC/NERC-University collaboration
	    ◦ STFC/NERC-Other research council collaboration
	    ◦ Industry-Industry collaboration
	    ◦ University-University collaboration
	    ◦ University-Industry collaboration

Further funding	Within your answers to this section please: • Identify any further funding obtained by participants of your SWIMMR project, including collaborators, for both space weather research and that outside the field.
Next Destination	Within your answers to this section please:

Section	Guidance
	• Identify the next destination of participants from all participants in your project, including those outside your organisation
Engagement Activities	No additional guidance for SWIMMR awards
Artistic & Creative Products	Within your answers to this section please: • Provide details of the subsequent use of the outcome • Please describe any technology that has been developed/built/commissioned in UK labs due to SWIMMR • Please indicate if any models or products from SWIMMR have been adopted or had any interest shown from the international community
Medical Products, Interventions & Clinical Trials	
Research Databases & Models	
Research Tools & Methods	
Software & Technical Products	
Influence on Policy, Practice, Patients & the Public	No additional guidance for SWIMMR awards
Intellectual Property & Licensing	If available, please include the total value of turnover and the share of turnover attributed to SWIMMR partners
Spin Outs	No additional guidance for SWIMMR awards
Awards & Recognition	No additional guidance for SWIMMR awards
Use of Facilities & Resources	In addition to existing facilities, please include new facilities and resources created from SWIMMR in this section, and outline the future use and impact in the 'subsequent impacts' box (as well as any current use if already ongoing)

Other Outputs & Knowledge / Future Steps	Must be completed for all SWIMMR awards. Please add a new entry in this section for each title below and include the information described. If further information is available that is not covered by these entries, please add as many other entries as required to cover the outputs of the award.
	Entry 1: Publications
	• If a publications has co-authorship across disciplines
	   o state DOI, state disciplines involved
	• If a publication has involved a UK/UK or UK/international collaboration
	   o State DOI, state countries involved, state affiliation of lead and/or senior author
	Entry 2: MIDRI
	We are interested in any multi-disciplinary research and innovation that has taken place, whether or not outputs such as IP or publications have arisen from it. Please outline here if applicable:
	• Number of projects/teams involved in MIDRI before, during and after the programme, including those directly related to

Section	Guidance
	SWIMMR and those created through SWIMMR contacts but on separate projects. • Number of researchers working across different research fields before, during and after funding. • New MIDRI funding schemes proposed due to inspiration from SWIMMR • Involvement in any further cross-UKRI funding initiatives since SWIMMR started <u>Entry 3: Participant Mobility</u> For the participants in the study, please state • Number of researcher positions created in the study • Number of participants making an upward move in career trajectory as a result of the project, both when joining the project and leaving. If there are no entries under categories 1-3 included, it will be presumed that none were established during the project.

B. Mandatory Additional Questions

The use of Mandatory Additional Questions (MAQs) varies by each UKRI council and so some of the individual MAQs listed below may not be included against your award. You are still able to provide the information against individual outcome types included in the Common Question Set (see Section A). In addition, you may also enter relevant information against the 'Other Outputs and Knowledge / Future Steps' section of the Common Question Set.

Section	Guidance
Key Findings	No additional guidance for SWIMMR awards.
Narrative Impact	Please include any new buildings, major infrastructure or equipment that has been installed or built as a result of SWIMMR.
Secondments	Please describe any secondments that have involved people moving temporarily into the SWIMMR programme or that have arisen from being involved in the SWIMMR programme. Please include the institutions involved, the direction of secondment (i.e., to/from SWIMMR), the time frame and any outcomes or impacts that have arisen from this.