

ACADEMIC COLLABORATION AGREEMENT (LONG FORM)

THIS AGREEMENT dated 21 February 2018 is made BETWEEN:

- (1) **THE UNIVERSITY COURT OF THE UNIVERSITY OF ST ANDREWS**, a charitable body registered in Scotland under registered number SC013532 and incorporated by the Universities (Scotland) Act 1889, as amended by the Universities (Scotland) Act 1966, whose administrative offices are at College Gate, North Street, St Andrews KY16 9AJ, United Kingdom (hereinafter "St Andrews" or the "Lead University") and
- (2) **INSTITUTO DE INVESTIGACIONES DE LA AMAZONÍA PERUANA**, RUC Nº 20171781648, whose administrative offices are at Avenida José A. Quiñones km. 2.5, Apartado Postal 784, Iquitos, Perú, duly represented by its president Dr. LUIS EXEQUIEL CAMPOS BACA (hereinafter "IIAP" or the "Collaborating Institution")

each a "Party" and collectively "the Parties"

WHEREAS

- A. The Lead University was the lead applicant in a proposal to the Funding Body, for a research project called *Carbon Storage in Amazonian Peatlands: Distribution and Dynamics* ("the Project") as set out in Schedule 1; and
- B. The Collaborating Institution(s) was a Partner Organisation in the proposal submitted to the Funding Body for the Project; and
- C. The Funding Body has awarded a contract to the Lead University to carry out the Project and this is set out in Schedule 2 ("the Contract"); and
- D. The Lead University wishes the Collaborating Institution(s) to carry out a portion of the project as envisaged in the proposal to the Funding Body.

THE PARTIES HEREBY AGREE

In the event of any conflict between the terms of this Collaboration Agreement and the terms of the Contract, then the terms of the Contract will prevail.

This Agreement sets out the terms under which the Parties shall perform the Allocated Work:

1. DEFINITIONS

The following expressions shall have the following meanings in this Collaboration Agreement including its recitals, unless the context requires otherwise:

'Allocated Work'	shall mean the research allocated to each Party, as defined in the Project at Schedule 1
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'Arising Intellectual Property'	shall mean any Intellectual Property which is generated or first reduced to practice by any Party or Parties directly as a result of the work undertaken in accordance with this Collaboration Agreement
'Background Intellectual Property'	shall mean any Intellectual Property excluding Arising Intellectual Property owned or controlled by any Party prior to commencement of or independently from the Project, and which the owning Party contributes or uses in the course of performing the Project
'Co-investigator(s)'	shall be Dr Eurídice Honorio at the Collaborating Institution
'Confidential Information'	shall mean any Background Intellectual Property disclosed by one Party to the others for use in the Project and any Arising Intellectual Property in which that Party owns the Intellectual Property
'Funding Body'	shall mean NERC
'Intellectual Property'	shall mean intellectual property of any description including but not limited to all inventions, designs, information, specifications, formulae, improvements, discoveries, know-how, data, processes, methods, techniques and the intellectual property rights therein, including but not limited to, patents, copyrights, database rights, design rights (registered and unregistered), trade marks, trade names and service marks, applications for any of the above
'Principal Investigator'	shall be Dr Ian Lawson at the Lead University, or his successor as agreed by the Funding Body
'Project Period'	shall be from 1 December 2017 to 30 November 2020.

In this Collaboration Agreement, references to Clauses and Schedules refer to clauses and schedules of this Collaboration Agreement; and the singular form of any word includes the plural, and vice versa, as required by the context.

2. THE PROJECT

- 2.1 The Parties will each use their reasonable endeavours to collaborate on the Project as described in Schedule 1 of this Collaboration Agreement including any modifications, deletions or expansions approved in writing by all Parties. The Parties to this Collaboration Agreement shall be bound *mutatis mutandis* by the terms and conditions

of the Contract, which form part of this Collaboration Agreement; except that provisions of the Contract that are particular to the Lead University and/or other parties to the Contract shall apply only to those parties.

- 2.2 The Project shall be performed by or under the direction and supervision of the Principal Investigator and Co-investigator(s).
- 2.3 In respect of the Allocated Work, each Party will use its reasonable endeavours to provide adequate facilities; to obtain any requisite materials, equipment and personnel; and to carry out the work diligently within the scope allowed by its funding. Although each Party will use its reasonable endeavours to perform the Project, no Party undertakes that work carried out under or pursuant to this Collaboration Agreement will lead to any particular result, nor is the success of such work guaranteed. For the avoidance of doubt, nothing in this clause purports to permit any Party to reverse engineer or otherwise analyse any of the materials provided to it under this Collaboration Agreement except in accordance with the provisions of this Collaboration Agreement and to the extent applicable by law.

3. PAYMENT

- 3.1 The Funding Body has undertaken to provide funding for the Project and the Lead University shall act as recipient of the funding for the Parties. The sole financial obligation of the Lead University under this Agreement shall be to forward the payments allocated to the other Party, in accordance with Schedule 3 of this Agreement.
- 3.2 In the event that the Funding Body requires the reimbursement by the Lead University of any sums paid under this Collaboration Agreement, then to the extent that such requirement arises from the acts or omissions of a Collaborating Institution, the Collaborating Institution hereby agrees to reimburse the Lead University the sum received by the Collaboration University together with any interest charged thereon.
- 3.3 The funding received by IIAP will be administered by IIAP as special funds ("por encargo"), administered through a bank account to be opened by IIAP expressly for purposes of this Agreement.

4. PUBLICATION AND CONFIDENTIALITY PROCEDURES

- 4.1 Subject to Clauses 4.5 and 4.6, each Party will use all reasonable endeavours not to disclose to any third party any Confidential Information nor use for any purpose except as expressly permitted by this Collaboration Agreement, any of another Party's Confidential Information.
- 4.2 No Party shall incur any obligation under clause 4.1 with respect to information which:
- 4.2.1 is known to the receiving Party before the start of the Project Period, and not impressed already with any obligation of confidentiality to the disclosing Party; or
- 4.2.2 is or becomes publicly known without the fault of the receiving Party; or

- 4.2.3 is obtained by the receiving Party from a third party in circumstances where the receiving Party has no reason to believe that there has been a breach of an obligation of confidentiality owed to the disclosing Party; or
 - 4.2.4 is independently developed by the receiving Party; or
 - 4.2.5 is approved for release in writing by an authorised representative of the disclosing Party; or
 - 4.2.6 the receiving Party is specifically required to disclose in order to fulfil an order of any Court of competent jurisdiction provided that, in the case of a disclosure under the Freedom of Information (Scotland) Act 2002, none of the exemptions in that Act applies to the Confidential Information.
- 4.3 If any Party receives a request under the Freedom of Information (Scotland) Act 2002 or any other applicable legislation to disclose any Confidential Information, it will notify and consult with the other Party. The other Party will respond within five working (5) days after receiving notice if the notice requests assistance in determining whether or not an exemption in that Act (or other applicable legislation) applies.
- 4.4 The Parties acknowledge that the Confidential Information which they disclose to one another pursuant to this Agreement may be shared with the University of Leeds and the University of Edinburgh on a need to know basis for the sole purpose of carrying out the Project, and the Parties agree to such disclosure without the need to be notified of it. The Parties' treatment of any Confidential Information of the University of Leeds or the University of Edinburgh received pursuant to performance of the Project shall be in accordance with clauses 4.1 to 4.3 above.

Publications:

- 4.5 The Project will form part of the actual carrying out of a primary charitable purpose of the Parties; that is, the advancement of education through teaching and research. There must therefore be some element of public benefit arising from the Project, and this is secured through the following sub-clauses.
- 4.5.1 This Collaboration Agreement shall not prevent or hinder registered students of any Party from submitting for degrees of that Party theses based on results obtained during the course of work undertaken as part of the Project; or from following that Party's procedures for examinations and for admission to postgraduate degree status.
 - 4.5.2 In accordance with normal academic practice, all employees, students, agents or appointees of the Parties (including those who work on the Project) shall be permitted:-
 - 4.5.2.1 following the procedures laid down in Clause 4.6, to publish results, jointly where applicable, obtained during the course of work undertaken as part of the Project; and

4.5.2.2 in pursuance of the Parties' academic functions, to discuss work undertaken as part of the Project in internal seminars and to give instruction within their organisation on questions related to such work.

- 4.6 Each Party will use all reasonable endeavours to submit material intended for publication to the other Parties in writing not less than thirty (30) days in advance of the submission for publication. The publishing Party may be required to delay submission for publication if in any other Party's opinion such delay is necessary in order for that other Party to seek patent or similar protection for material in respect of which it is entitled to seek protection, or to modify the publication in order to protect Confidential Information. A delay imposed on submission for publication as a result of a requirement made by the other Party shall not last longer than is absolutely necessary to seek the required protection; and therefore shall not exceed three (3) months from the date of receipt of the material by such Party, although the publishing Party will not unreasonably refuse a request from the other Party for additional delay in the event that property rights would otherwise be lost. Notification of the requirement for delay in submission for publication must be received by the publishing Party within thirty (30) days after the receipt of the material by the other Party, failing which the publishing Party shall be free to assume that the other Party has no objection to the proposed publication.
- 4.7 The provisions of Clause 4.1 and 4.2 shall survive for a period of three (3) years from the date of termination of this Collaboration Agreement. The provisions of Clause 4.5 shall survive for a period of one year from the date of termination of this Collaboration Agreement.

5. INTELLECTUAL PROPERTY RIGHTS

- 5.1 For the avoidance of doubt all Background Intellectual Property used in connection with the Project shall remain the property of the Party introducing the same. No Party will make any representation or do any act which may be taken to indicate that it has any right, title or interest in or to the ownership or use of any of the Background Intellectual Property of the other parties except under the terms of this Collaboration Agreement. Each Party acknowledges and confirms that nothing contained in this Collaboration Agreement shall give it any right, title or interest in or to the Background Intellectual Property of the other Parties save as granted by this Collaboration Agreement. The Parties agree that any improvements or modifications to a Party's Background Intellectual Property arising from the Project which are not severable from that Background Intellectual Property will be deemed to form part of that Party's Background Intellectual Property.
- 5.2 Each Party grants the other a royalty-free, non-exclusive licence for the duration of the Project to use its Background Intellectual Property for the sole purpose of carrying out the Project. No Party may grant any sub-licence over or in respect of the other's Background Intellectual Property.
- 5.3 Each Party shall own the Arising Intellectual Property generated by its employees, students and/or agents under the Project and shall ensure that it secures ownership of

such Arising Intellectual Property from its employees, students and agents. Subject to the terms of the Contract, the Party owning any Arising Intellectual Property shall be entitled to use and exploit such Arising Intellectual Property as that Party sees fit, and subject always to Clauses 5.6 and 5.7.

- 5.4 Each Party shall promptly disclose to the other(s) all Arising Intellectual Property generated by it and each Party shall co-operate, where required, in relation to the preparation and prosecution of patent applications and any other applications relating to Arising Intellectual Property.
- 5.5 Where any Arising Intellectual Property is created or generated by two or more Parties jointly as a result of the activities specifically in this project and it is impossible to segregate each Party's intellectual contribution to the creation of the Arising Intellectual Property, the Arising Intellectual Property will be jointly owned by those Parties in equal shares. The owners may take such steps as they may decide from time to time, to register and maintain any protection for that Arising Intellectual Property, including filing and prosecuting patent applications for any Arising Intellectual Property, and taking any action in respect of any alleged or actual infringement of that Arising Intellectual Property. If one or more of the owners does not wish to take any such step or action, the other owner(s) may do so at their expense, and the owner not wishing to take such steps or action will provide, at the expense of the owner making the request, any assistance that is reasonably requested of it.
- 5.6 Any joint owner of any of the Arising Intellectual Property may commercially exploit the Arising Intellectual Property upon consultation and agreement with the other Party. In such circumstances, the Party which is commercially exploiting the Arising Intellectual Property will pay the other Party a fair and reasonable royalty rate/revenue on the value of any products or processes commercially exploited by it which incorporate any Arising Intellectual Property taking into consideration the respective financial and technical contributions of the Parties to the development of the Arising Intellectual Property, the expenses incurred in securing intellectual property protection thereof and the costs of its commercial exploitation and the proportionate value of the Arising Intellectual Property in any such product or process.
- 5.7 Each Party is hereby granted an irrevocable, non-transferable, royalty-free right to use all Arising Intellectual Property generated in the course of the Project for academic and research purposes, including research involving projects funded by third parties provided that those parties gain or claim no rights to such Arising Intellectual Property.
- 5.8 If any Party (the "Exercising Party") requires the use of Background Intellectual Property of any other (the "Other Party") in order to exercise its rights in Arising Intellectual Property (whether solely or jointly owned) then, provided the Other Party is free to license the Background Intellectual Property in question, the Other Party will not unreasonably refuse to grant or delay granting a licence to the Exercising Party so that the Exercising Party may use such Background Intellectual Property for the purpose of exercising its rights in Arising Intellectual Property.

6. ASSIGNMENT

No Party will assign this Collaboration Agreement without the prior written consent of the other Parties, such consent not to be unreasonably withheld, denied or delayed.

7. WITHDRAWAL

7.1 Any Party (the "Withdrawing Party") may withdraw from the Project upon six (6) months prior written notice to the others, where it considers withdrawal justified on the grounds that no further purpose to the Project would be served by the Withdrawing Party continuing in the Project. Withdrawal by the Withdrawing Party will only take place after discussions with the other Party. Such discussions to occur within three (3) months of submission by the Withdrawing Party of notice to withdraw, after which the Parties will confirm to the Withdrawing Party the official date of withdrawal ("Date of Withdrawal").

7.2 In the event of withdrawal of a Party, the Lead University will make all reasonable attempts to reallocate the obligations of the Withdrawing Party under this Collaboration Agreement to another existing Party or a new Party acceptable to the remaining Parties to this Collaboration Agreement and the Funding Body provided that such Party agrees to be bound by the terms of this Collaboration Agreement. If the reason for withdrawal is that the work allocated to the Withdrawing Party is no longer viable, the Lead University shall discuss with the Funding Body the re-allocation or reimbursement of funds in accordance with the Contract.

7.3 The Withdrawing Party shall not from the Date of Withdrawal be entitled to recover any of its costs incurred in connection with the Allocated Work and shall, from the Date of Withdrawal, comply with any conditions that may be imposed pursuant to Clause 7.1 which shall include (without limitation);

7.3.1 rights granted to the other Parties in respect of the Withdrawing Party's Background Intellectual Property shall continue for the duration of the Project solely for the purposes of carrying out the Project, subject to the restrictions contained in this Collaboration Agreement;

7.3.2 to the extent that exploitation of any other Party's/Parties' Arising Intellectual Property is dependent upon the Withdrawing Party's Background Intellectual Property, then the Withdrawing Party shall, to the extent that it is free to do so, grant to the other Party a non-exclusive licence to such Background Intellectual Property on fair and reasonable terms to be agreed;

7.3.3 the Withdrawing Party shall grant to the other Parties a non-exclusive, royalty-free licence to use the Withdrawing Party's Arising Intellectual Property for the purposes of carrying out the Project. For the avoidance of doubt any exploitation of such Withdrawing Party's Arising Intellectual Property will be dealt with in accordance with Clauses 5.5 and 5.6;

7.3.4 all rights acquired by the Withdrawing Party to the Background Intellectual Property and Arising Intellectual Property of the other Parties shall cease

immediately other than in respect of the Withdrawing Party's interest in any jointly owned Intellectual Property under Clause 5.5.

8. TERMINATION

- 8.1 A Party (the 'Terminating Party') may terminate its involvement in this Collaboration Agreement by giving ninety (90) days prior written notice to the Lead University of its intention to terminate if the other Party (the 'Party in Breach') commits a material breach of the terms of this Collaboration Agreement, or is persistently in breach of this Collaboration Agreement in such a manner that the Terminating Party is hindered in its ability to carry out its obligations in the Project. The notice shall include a detailed statement describing the breach. If the breach is capable of being remedied and is remedied within the ninety (90) day notice period, then the termination shall not take effect. If the breach is of a nature such that it can be fully remedied but not within the ninety (90) day notice period, then termination shall also not be effective if the Party involved begins to remedy the breach within that period, and then continues diligently to remedy the breach until it is remedied fully. If the breach is incapable of remedy, or a persistent breach, then the termination shall take effect at the end of the ninety (90) day notice period in any event.
- 8.2 All rights acquired by the Terminating Party to Background Intellectual Property and Arising Intellectual Property of the other Parties shall cease immediately other than in respect of the Terminating Party's interest in any jointly owned Intellectual Property; the Terminating Party shall, however, continue to comply with the obligations under Clause 7.3.
- 8.3 Each Party agrees to notify the other Party(s) promptly if at any time their key academic is unable or unwilling to continue the direction and supervision of the Allocated Work. Within sixty (60) days after such incapacity or expression of unwillingness that Party shall nominate a successor to replace their key academic. The other Party will not decline unreasonably to accept the nominated successor. However, if the successor is not acceptable on reasonable and substantial grounds, then either (i) such Party will be asked to withdraw from the Project in accordance with Clause 7.2; or (ii) this Collaboration Agreement may be terminated by giving ninety (90) days' written notice to the other Party(s).
- 8.4 The expiration of the Project Period, or the termination of this Collaboration Agreement under Clauses 8.1 or 8.3, shall cause the termination with effect from the date of expiry or termination of the obligations imposed on the Parties under Clause 2.
- 8.5 If any Party (a) passes a resolution for its winding-up; or if (b) a court of competent jurisdiction makes an order for that Party's winding-up or dissolution; or makes an administration order in relation to that Party; or if any Party (c) appoints a receiver over, or an encumbrancer takes possession of or sells an asset of, that Party; or (d) makes an arrangement or composition with its creditors generally; or (e) makes an application to a court of competent jurisdiction for protection from its creditors generally; the remaining Party shall either suspend or terminate that Party's involvement in the Project. Any removal of the defaulting Party shall be effective as of the date of the

receipt of such notice whereupon the provisions of Clause 7.3 shall apply to the defaulting Party.

- 8.6 In the event that it is agreed by all the Parties that there are no longer valid reasons for continuing with the Project the Parties may decide by unanimous vote to terminate this Collaboration Agreement. In the event of such termination each Party shall be reimbursed for all costs and non-cancellable commitments properly charged in accordance with this Collaboration Agreement and incurred or committed up to the date of termination, providing that such funds have been or are able to be recovered from the Funding Body. For the avoidance of doubt, no Party shall be required to contribute to any losses suffered by another Party in circumstances where costs have not been recovered from the Funding Body.

9. LIMITATION OF LIABILITY

- 9.1 No Party makes any representation or warranty that advice or information given by any of its employees, students, agents or appointees who work on the Project, or the content or use of any materials, works or information provided in connection with the Project, will not constitute or result in infringement of third-party rights.
- 9.2 No Party accepts any responsibility for any use which may be made of any work carried out under or pursuant to this Collaboration Agreement, or of the results of the Project, nor for any reliance which may be placed on such work or results, nor for advice or information given in connection with them.
- 9.3 The Parties undertake to make no claim in connection with this Collaboration Agreement or its subject matter against any employees, students, agents or appointees of the other Parties (apart from claims based on fraud or wilful misconduct). This undertaking is intended to give protection to individual researchers: it does not prejudice any right which a Party might have to claim against any other Party.
- 9.4 The liability of any Party for any breach of this Collaboration Agreement, or arising in any other way out of the subject-matter of this Collaboration Agreement, will not extend to loss of business or profit, or to any indirect or consequential damages or losses.
- 9.5 In any event, the maximum liability of either Party under or otherwise in connection with this Collaboration Agreement or its subject matter shall not exceed the monies received by any Party under this Collaboration Agreement as detailed in Schedule 3.
- 9.6 Nothing in this Collaboration Agreement limits or excludes either Party's liability for:
- 9.6.1 death or personal injury resulting from negligence; or
- 9.6.2 any fraud or for any sort of other liability which, by law, cannot be limited or excluded.
- 9.7 If any sub-clause of this Clause 9 is held to be invalid or unenforceable under any applicable statute or rule of law then it shall be deemed to be omitted, and if as a result

any Party becomes liable for loss or damage which would otherwise have been excluded then such liability shall be subject to the remaining sub-clauses of this Clause 9.

10. NOTICES

The Lead University's representative for the purpose of receiving reports and other notices shall until further notice be:

Head of Research Business Development and Contracts
The Gateway
North Haugh University of St Andrews
St Andrews
KY16 9RJ United Kingdom

Email: busdev@st-andrews.ac.uk
Tel: +44 (0) 1334 462006

The Collaborating Institution's representative for the purpose of receiving reports and other notices shall until further notice be:

Research collaborator contact: Dr. Eurídice Honorio Coronado, Instituto de Investigaciones de la Amazonía Peruana (IIAP), Av. José A. Quiñones km 2.5, Iquitos, Perú ; ehonorio@iiap.org.pe, Telf. 0051-65-265515 / 265516 Annex 117.

Research Programme Leader: Dr. Dennis del Castillo Torres, ddelcastillo@iiap.org.pe, Telf. 0051-65-265515 / 265516 Annex 122.

Financial Officer: Nicéforo Ronald Trujillo León, rtrujillo@iiap.org.pe, Telf. 0051-65-265515 / 265516 Annex 110.

Administrative Officer: Julio Izquierdo Sánchez, jizquierdo@iiap.org.pe, Telf. 0051-65-265515 / 265516 Annex 114.

11 FORCE MAJEURE

- 11.1 A Party shall not be liable for failure to perform its obligations under this Collaboration Agreement, nor be liable to any claim for compensation or damage, nor be deemed to be in breach of this Collaboration Agreement, if such failure arises from an occurrence or circumstances beyond the reasonable control of that Party (excluding an obligation to make payment).
- 11.2 If a Party affected by such an occurrence causes a delay of three (3) months or more, and if such delay may reasonably be anticipated to continue, then the Parties shall, in consultation with the Funding Body, discuss whether continuation of the Project is viable, or whether the Project and this Collaboration Agreement should be terminated.

12. GENERAL

- 12.1 Clause headings are inserted in this Collaboration Agreement for convenience only, and they shall not be taken into account in the interpretation of this Collaboration Agreement.
- 12.3 Nothing in this Collaboration Agreement shall create, imply or evidence any partnership or joint venture between the Parties or the relationship between them of principal and agent.
- 12.4 Each Party shall ensure that it has well defined arrangements for investigating and resolving allegations of research misconduct. Where an allegation of research misconduct arises in respect of an individual Party's participation in the Project and leads to a subsequent formal investigation, the relevant Party shall inform Lead University and the Funding Body of the investigation and its outcome. Where an allegation of research misconduct arises in respect of several Parties' participation in the Project, the relevant Parties will work together to determine how the allegation will be investigated and reported.
- 12.5 No Party shall use the name or any trademark or logo of any other Party or the name of any of its staff or students in any press release or product advertising, or for any other commercial purpose, without the prior written consent of the Party(s).
- 12.6 Except as otherwise expressly provided for herein, the Parties confirm that nothing in this Collaboration Agreement shall confer or purport to confer on any third party any benefit or any right to enforce any term of this Collaboration Agreement for the purposes of the Contracts (Rights of Third Parties) Act 1999.
- 12.7 This Collaboration Agreement and its Schedules (which are incorporated into and made a part of this Collaboration Agreement) constitute the entire agreement between the Parties for the Project and no statements or representations made by any Party have been relied upon by the other in entering into this Collaboration Agreement. Any variation shall be in writing and signed by authorised signatories for each Party.
- 12.8 This Collaboration Agreement shall be governed by English Law and the English Courts shall have non-exclusive jurisdiction to deal with any dispute which may arise out of or in connection with this Collaboration Agreement.
- 12.9 The Parties may prepare a Spanish-language translation (or a translation into any other language) of the Agreement for administrative purposes. However the Parties agree that the English-language version of this Agreement shall take precedence over any such translation in the event of any dispute between the terms of such documents.
- 12.10 If any dispute arises out of this Collaboration Agreement the Parties will first attempt to resolve the matter informally through designated senior representatives of each Party to the dispute, who are not otherwise involved with the Project. If the Parties are not able to resolve the dispute informally within a reasonable time not exceeding two (2) months from the date the informal process is requested by notice in writing they

will attempt to settle it by mediation in accordance with the Centre for Effective Dispute Resolution (CEDR) Model Mediation Procedure.

12.11 If any one or more clauses or sub-clauses of this Collaboration Agreement would result in this Collaboration Agreement being prohibited pursuant to any applicable competition law then it or they shall be deemed to be omitted. The Parties shall uphold the remainder of this Collaboration Agreement, and shall negotiate an amendment which, as far as legally feasible, maintains the economic balance between the Parties.

12.12 This Collaboration Agreement may be executed in any number of counterparts, each of which when executed (and delivered) will constitute an original of this Collaboration Agreement, but all counterparts will together constitute the same agreement. No counterpart will be effective until each party has executed at least one counterpart.

EXECUTED as an agreement:

SIGNED for and on behalf of the University
Court of the University of St Andrews

Name:

Position:

Signature:



HANA POLASKOVA
Deputy Head of Research Business,
Development & Contracts
University of St Andrews

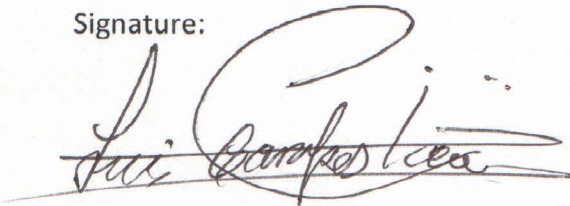
21/2/2018

SIGNED for and on behalf of INSTITUTO DE
INVESTIGACIONES DE LA AMAZONÍA
PERUANA

Name: Luis Exequiel Campos Baca

Position: President

Signature:

A handwritten signature in dark ink, appearing to read 'Luis Campos Baca', with a large, stylized initial 'L' and 'C'.

Schedules:

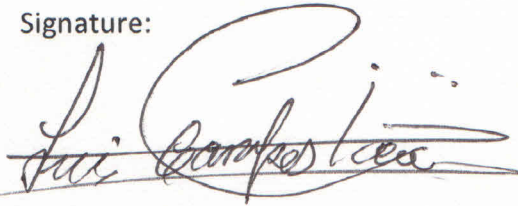
- Schedule 1: The Project (including Allocated Work)
- Schedule 2: The Contract (award letter)
- Schedule 3: Breakdown of costs to Collaborating Institution

SIGNED for and on behalf of **INSTITUTO DE
INVESTIGACIONES DE LA AMAZONÍA
PERUANA**

Name: Luis Exequiel Campos Baca

Position: President

Signature:

A handwritten signature in dark ink, appearing to read 'Luis Campos Baca', with a large, stylized flourish above the name.

Schedules:

- | | |
|-------------|---|
| Schedule 1: | The Project (including Allocated Work) |
| Schedule 2: | The Contract (award letter) |
| Schedule 3: | Breakdown of costs to Collaborating Institution |

NERC
Polaris House, North Star Avenue, Swindon, Wiltshire,
United Kingdom SN2 1EU
Telephone +44 (0) 1793 411500
Web <http://www.nerc.ac.uk/>

COMPLIANCE WITH THE DATA PROTECTION ACT 1998

In accordance with the Data Protection Act 1998, the personal data provided on this form will be processed by NERC, and may be held on computerised database and/or manual files. Further details may be found in the guidance notes

Standard Grant PROPOSAL

Document Status: With Council
NERC Reference: NER00075/1/1

Standard Grant JAN17 Panel C

Organisation where the Grant would be held

Organisation	University of St Andrews	Research Organisation Reference:	LAWROU_AMAZO2
Division or Department	Geography and Sustainable Development		

Project Title [up to 150 chars]

Carbon Storage in Amazonian Peatlands: Distribution and Dynamics

Start Date and Duration

a. Proposed start date	01 October 2017	b. Duration of the grant (months)	36
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Applicants

Role	Name	Organisation	Division or Department	How many hours a week will the investigator work on the project?
Principal Investigator	Dr Ian Lawson	University of St Andrews	Geography and Sustainable Development	4
Co-Investigator	Dr Katherine Roucoux	University of St Andrews	Geography and Sustainable Development	3
Co-Investigator	Dr Edward Michard	University of Edinburgh	Sch of Geosciences	3
Co-Investigator	Dr Tim Baker	University of Leeds	Sch of Geography	2
Co-Investigator	Professor Matthew Williams	University of Edinburgh	Sch of Geosciences	1

Technology

Is this project technology-led?

☐ No

Describe the type of technology being developed and its application to NERC science: an indicator of the level of maturity of the technology should be included (up to 500 characters).

Collaborative Centres

Please check the appropriate button if this proposal is being submitted under the auspices of either NCAS or NCEO, and has been explicitly agreed with the centre administrator.

☐ NCAS

NCEO	
Neither	Yes

Objectives

List the main objectives of the proposed research in order of priority [up to 4000 chars]

We will address the project's aims to (a) make a step change in the precision and accuracy of our knowledge of tropical peat distribution and (b) develop a capacity for predicting and monitoring future changes to tropical peatland carbon cycles, via the following objectives:

1. Substantially improve our ability to infer the distribution of below-ground carbon from satellite observations in the largest known peatland complex in Amazonia, the Pastaza-Marañón Foreland Basin (PMFB), Peru.
2. Evaluate the performance of our new method for inferring the distribution of below-ground carbon in four other floodplain contexts in western Amazonia. Depending on the results of this evaluation we may be able to use our method to infer peat carbon storage across the whole of Amazonia.
3. Describe and explain peat carbon storage dynamics, using paleoenvironmental approaches to measure changes on timescales from decades to centuries, in order to understand how the stability of the carbon storage function of peatland ecosystems has varied across the PMFB landscape.
4. Determine the present-day hydrological and productivity envelopes of the carbon storage function of PMFB peatlands. We will collect field data to determine the relationships between seasonally-varying water table height, rates of litter production, and rates of litter/peat decay in the litter layer, acrotelm, and catotelm. Using a published cohort-based peat accumulation modelling framework (HPMTrop) we will estimate, for two key sites, the limits of hydrological and productivity change beyond which peat accumulation would cease. We will independently evaluate this model's ability to predict peat presence/absence and long-term apparent carbon accumulation rates using hydrological, productivity and litter decomposition data from 16 further sites spanning a wide range of hydrological conditions.
5. Develop the ability to predict and monitor future change in peatland carbon storage across the tropics, by evaluating and refining two complementary process-based models: (a) the peat accumulation module of the CLIMBER2-LPJ land-surface model, which is intended for global-scale (0.5 degree resolution) assessment of ecosystem change under future climate change scenarios; (b) DALEC, a simple soil carbon model which can be used in a Bayesian data assimilation framework to infer and thereby monitor ongoing changes in the terrestrial carbon cycle from earth observation data.

Summary

Describe the proposed research in simple terms in a way that could be publicised to a general audience [up to 4000 chars]
This proposal aims to make a step change in the precision and accuracy of our knowledge of the distribution of peatlands in the tropics, and to develop a capacity to predict and monitor future changes to the carbon storage function of these peatlands.

Tropical forest ecosystems are important for carbon storage. The densest 'carbon hotspots' occur where peat underlies the vegetation. Peat is an organic soil formed by the accumulation of plant litter, often over thousands of years, usually under waterlogged conditions which limit micro-organism activity and inhibit litter decomposition.

Given that they store so much carbon per unit area, tropical peatlands should be priorities for conservation. Unfortunately, it is not currently known with certainty where peatlands occur. Even using satellite imagery, it is challenging to distinguish forest overlying peat from forest occurring on dry soil. Mapping peat deposits in the field by trial and error is impractical given the large areas of remote terrain involved.

This proposal builds on an extensive record of research into tropical peatlands by the research team. Our group has worked extensively in the Pastaza-Marañón Foreland Basin (PMFB) in Peruvian Amazonia. Here, in one of the highest-rainfall regions of Amazonia, the existence of extensive bodies of peat was only revealed by a publication in 2009. Since

then, we have undertaken extensive fieldwork and laboratory analyses, and have developed an algorithm that uses remotely-sensed (satellite) data to predict the distribution of vegetation types associated with peat in the PMFB. On this basis we estimate that there is more than 35,000 square km of peat in the PMFB, making it by far the largest known peatland complex in Amazonia.

Our results were used to build the science case for the first ever carbon-conservation project funded by the Green Climate Fund, a major, intergovernmental, UN- and UK-backed climate mitigation project. We now want to develop the science base further to enable similar projects throughout the scheme.

Our first aim is to substantially develop and improve our current method for inferring the distributions of vegetation, peat and carbon from satellite data, by addressing fundamental gaps in our understanding of the controls on these distributions and by testing a set of technical improvements. We will then test how well our model works on floodplains in other parts of Amazonia. Ultimately we want to know how widespread peat is across the whole of Amazonia.

Our second aim is to develop, for the first time, the ability to predict and monitor future changes to tropical peatland carbon stocks. It is already possible to predict carbon accumulation patterns in northern peatlands from climatic and topographic data, and hence to predict how carbon accumulation may change under future climate scenarios (e.g. climatic drying), but a lack of basic data has prevented similar modelling from being attempted in the tropics. Recent advances in our modelling and remotely-sensed data are also opening new possibilities for monitoring present-day changes to the carbon cycle.

In order to achieve our second aim, we will study the pattern of peatland carbon storage through the last several thousand years, measure the rates at which litter is added to the peat and removed by decomposition today, and determine how these rates are affected by variations in hydrological regimes. We will use this information to determine, using a process-based model of peat accumulation, the conditions required for peat to accumulate. By doing so we will be able to evaluate and refine two complementary, simpler process-based models of peat distribution and carbon cycling that are suited to prediction and monitoring on a pan-tropical scale.

Academic Beneficiaries

Describe who will benefit from the research [up to 4000 chars].

1. Project partners Pimán, Householder and Lähleñoja, who generated pioneering field data which opened up peatland research in Peru, Brazil and Ecuador. Collaboration with analyses and publications in this project will extract new value from their existing datasets.

2. Project Partner Kleinen brings expertise in peat distribution modelling at global scales (0.5 degree resolution). Our work, at scales from individual peatlands to the whole Amazon, will provide insights into the processes and patterns operating at a sub-grid scale, and a target for model validation. We will work with Kleinen to maximise the relevance of our work to developing the next generation of global-scale land cover models.

3. Project Partner Frokings's work on patterns of peat carbon accumulation over time at individual sites is currently restricted to modelling peatlands in Indonesia. This project will test the extent to which the HPMTrop model can be applied more generally, enabling his group to work on larger-scale issues of pan-tropical relevance.

4. The remote sensing aspect of our project will lead to a toolkit of data, scripts and methodologies enabling other groups to test their own models of peat distribution based on remote sensing, and extend our approach to regions beyond Amazonia. Many desk-based remote-sensing projects have been conducted in wetland and/or peatland mapping, but the ground-reference datasets needed to validate those studies are scarce.

5. The field of tropical ecology will benefit from better characterization of poorly known Amazonian peatland forest

ecosystems. One area of fundamental scientific interest is the potential, via a combination of palaeoecology, floristics, and genetics, for learning about community assembly processes in tropical forests. An important element of tropical ecology is conservation science, where we will contribute academically alongside the policy-related aspects of our impact plan.

6. The field of palaeoecology will benefit from the innovative integration of palaeoecological approaches with other fields in pursuit of applied outcomes, and from a consolidated palaeoecological narrative from this region, one of very few in the tropics with an emerging, detailed understanding of ecosystem dynamics on decadal to millennial timescales.

7. The field of peat science will benefit from a deeper understanding, based on severely-needed datasets, of the fundamental controls on peat distribution. Ours will be only the second comprehensive study of litter production and decomposition in tropical peatlands.

8. We will continue to help to shape the field of tropical peatland research in the UK and overseas. We play a significant role in fostering research into tropical peatlands through e.g. chairing meetings of the UK Tropical Peatlands Working Group and leading collaborative publication, and in international networks e.g. PAGES-CPEAT.

Impact Summary

Impact Summary (please refer to the help for guidance on what to consider when completing this section) (up to 4000 chars)

1. Governments and carbon investment markets will benefit from a stronger science base on the distribution and vulnerability of tropical carbon stores. This is important because, in the wake of the UNFCCC Paris COP21 agreement in December 2015, increased investment of taxpayer money in carbon-based development projects will occur. For example, the UK government has committed US\$1.2 billion to the UN-backed Green Climate Fund (GCF). It is important that this money is spent as efficiently as possible.

2. Stakeholders involved in developing and applying for carbon-based climate change mitigation projects will benefit by being better informed about the location and prospects of peatland 'carbon hotspots'. These stakeholders include NGOs (e.g. in Peru, PROFONANPE, a fund for promotion of protected natural areas) and governmental and quasi-autonomous agencies (e.g. our project partners IAP), who may apply for and/or benefit from funding under schemes such as the GCF. Our remote-sensing based model of the distribution of peatland carbon has already been used to form the science base for a GCF project.

3. Organisations involved in monitoring and protecting natural resources in the tropics (for example, NGOs such as the WWF, and government bodies such as SERNANPE, the national parks agency in Peru), will benefit from improved tools for monitoring change in peatland ecosystems. In our main study area, the Pastaza-Marathon Foreland Basin, our project will enlarge the network of forest census plots and improve the quality of data collected (e.g. by installing permanent peat measurement poles). A more widely applicable tool will be provided by our evaluation of the use of data assimilation techniques to detect changes in hydrological behaviour and carbon cycling remotely.

4. Communities living in around tropical peatlands will benefit, as our science will enable carbon-based investment projects that are compatible with sustainable development goals, reducing poverty and increasing community resilience.

5. Conservation NGOs and other non-academic institutions outside our study regions will benefit from access to our methodologies and datasets, packaged in an accessible form as a toolkit for peatland carbon distribution estimation and modelling. This will facilitate other groups to carry out their own assessments of peatland carbon storage.

6. Practising conservation scientists in western Amazonia will benefit, via a knowledge-exchange workshop hosted by Project Partners IAP to promote peatland science and carbon conservation in the region.

7. The media and general public will benefit, via press releases and other outreach activities.

Summary of Resources Required for Project

Financial resources				Summary of staff effort requested	
Summary	Fund heading	Full economic cost	NERC contribution	% NERC contribution	Months
Fund heading	Directly				
	Staff	263115.00	210492.00	80	Investigator 12.75
	Travel & Subsistence	36115.00	28892.00	80	Researcher 72
	Other Costs	65836.00	68748.80	80	Technician 0
	Sub-total	385166.00	308132.80		Other 0
Directly Allocated	Investigators	69729.36	55783.49	80	Visiting Researcher 0
	Estates Costs	74572.00	59657.60	80	Student 0
	Other Directly Allocated	3975.00	3180.00	80	Total 84.75
	Sub-total	148276.36	118621.09		
Indirect Costs	Indirect Costs	266500.00	213200.00	80	
	Total	799942.36	639953.89		

Research Council Facilities

£ 25410

Details of support sought or received from any other source for this or other research in the same field.

Awarding Organisation	Awarding Organisation's Reference	Title of project	Decision Made (Y/N)	Award Made (Y/N)	Start Date	End Date	Amount Sought / Awarded (£)
NERC Radiocarbon Laboratory	1797.0414	Quantifying and understanding tropical peatland spatial distribution and carbon storage in Central Africa	Y	Y	01/03/2014	01/03/2014	8320
NERC Radiocarbon Laboratory	1747.1013	Peatland development and sensitivity to climatic change at two sites in Amazonian Peru	Y	Y	28/04/2014	28/04/2014	6860
NERC Radiocarbon Laboratory	1688.0313	Determining and explaining the spatial distribution and carbon storage of peats in the Congo Basin, Central Africa	Y	Y	02/07/2013	02/07/2013	5220

Proposal is related to a previous proposal to NERC

Reference Number	How related?
NE/P002072/1	Resubmission

[illegible]

Staff

[illegible]

Directly Incurred Posts

Travel and Subsistence		Total £
Destination and purpose		
Outside UK	Travel within Peru to install loggers, dendrometer bands, decomposition bags at 16 sites, incl. setting up 4 new forest census plots. Team of 4 for 32 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	2304
Outside UK	2 x return visits to loggers/decomposition bags at 16 sites. Team of 2 for 20 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	1440
Outside UK	Fieldwork to collect transects of peat depth measurements at 20 locations. Team of 2 for 60 days (2 days per site plus travel time) at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	2880
Outside UK	Fieldwork to Yasuni. Team of 2 for 10 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide, return flights Iquitos-Quito £300	1080
Outside UK	Fieldwork to Nanay. Team of 2 for 10 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	480
Outside UK	Fieldwork to Rio Negro. Team of 2 for 10 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide, return flights Iquitos-Manaus £500, internal travel to field sites £100	1680
Outside UK	Visits to Project Partners (Householder (Germany), Froking (US), Kleinen (Germany)) for one PDRA. 3 days each trip, flights £250, £500, £250. £55 pppn accom/subsistence, £50 transfers	1835
Outside UK	Fieldwork in Peru: Initial visit to Nueva York. Team of 7 for 10 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	1080
Outside UK	14 return visits to Nueva York. Team of 2 for 4 days at £12 pppn accom/subsistence, £16 per day travel, £8 per day for guide	2688
Outside UK	Travel costs enable networking with NGOs and government ministries. 6 x return flights Iquitos-Lima at £70, taxis £100, 12 nights at £30 pppn accom/subsistence in Lima	1120
Outside UK	Workshop at IIAF, Iquitos: Return flights UK-Iquitos for TRB, ETM, TTL at £1100, transfers at £50, 7 days at £24 pppn.	4982
Within UK	Project meeting at St Andrews - travel and subsistence for project partners Froking (US), Kleinen (Germany), flights £600, £250, accom/subsistence for 3 nights at £85 pppn	1045
Within UK	UK travel for 6 2-day project meetings in St Andrews: Rail fares Leeds-St Andrews £109, Edinburgh £24, £65 pppn accom/subsistence for 3 people	2112
Outside UK	Conferences, one person each at EGU (flight £250, transfer £50, registration £300, 5 nights at £85 pn), ATBC (£600, £80, £300, 5 nights at £65), INQUA (£100, £50, £300, 5 nights at £65)	2975
Outside UK	UK-Iquitos return flights for 4 project team members at start of project (TTL, TRB, PDRA 1 & 2) at £1100, transfers at £50, accom/subsistence in Iquitos for 4 nights at £24 pppn	4984
Outside UK	UK-Peru return flights for PDRA 3 x 3 during gaps in fieldwork to allow analyses in the UK, flights at £1100, transfers at £50	3450
Total £		36115

Other Directly Incurred Costs		Total £
Description		
Hydrological equipment: 26 MiniDiver loggers at £522 ea, 10 BarcoDiver loggers at £426 ea, diver reading unit £240, redox meter £616, rainfall gauge x 2 at £500 ea, clipwell materials £200		19886

NER000751/1

Page 9 of 14

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ALOS-PALSAR 2 100 m L-band scenes covering the duration of the field data collection for two field areas, to be purchased from JAXA at reduced cost	8000
Pollen analysis consumables for 100 samples at £7 per sample for consumables (i.e. centennial resolution in 5 sequences of 2000 years)	700
210Pb dating (Scottish Association for Marine Science): 2 cm contiguous samples through the top 50 cm of peat in 5 cores at £40.60 per sample	5075
C, N concentrations by elemental analysis, 500 samples at £9.56 per sample	4780
Russian-type peat core/ranger set	2498
Translation costs for toolkit handbook	200
Equipment and consumables for measuring productivity/decomposition: drying oven, £1100; balance, £955; freezer, £200; mesh, £200; root ingrowth core, £50; FTIR consumables, £500	3005
Survey and census equipment: GPS, 2 units at £4250 ea, battery and solar charger, 2 units at £300, laser rangefinder £350, diameter tape £45, labels £150, sample bags £200, dendrometer bands £250, permanent peat measurement poles £50, field notebooks £50	10195
Safety equipment for field teams: snake-proof boots £70, ponchos £35, mosquito nets £210, first aid kits £140	455
Camping equipment: tents 2 x £200, water purification equipment £200, cooking equipment £150	750
IT equipment: laptops (2 at £500), hard drives (2 at £50 ea)	1100
Sample shipping	500
Research permits x 5 at £160 ea	800
70 AMS radiocarbon age determinations @£363 per sample (NERC Radiocarbon Facility, East Kilbride)	25410
Computing services: 2 TB of backed-up, secure networked storage at U. Edinburgh, £700; 5 core-years of high-performance computing at U. Edinburgh, £880	1580
Recruitment costs	1000
Total £	85936

Other Directly Allocated Costs		Total £
Description		
Infrastructure Technicians		3875
Total £		3875

Research Council Facilities

details of any proposed usage of national facilities

Name of Facility	Units	Cost £	Proposed Usage
NERC Radiocarbon Facility (Environment, East Kilbride)	77	25410	70 AMS radiocarbon age determinations (77 analytical units) on individually plant macrofossils where possible and on bulk peat (modern roots removed) otherwise, includes: 10 dates in each of 5 new peat sequences (c. 2 kyr long) to determine age/depth relationships (50 dates); basal peat dates for 16 census sites to give age of peat initiation (16 dates); 4 further dates in a previously studied peat core to produce an age model with centennial scale resolution.
Total £		25410	

Project Partners: details of partners in the project and their contributions to the research. These contributions are in addition to resources identified above.

1	Name of partner organisation	Division or Department	Name of contact
	University of New Hampshire	Earth, Oceans, and Space	Dr Steve Froking
Direct contribution to project		Indirect contribution to project	

NER000751/1

Page 10 of 14

Date Saved: 16/01/2017 16:16:42
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Description	Value £	Description	Value £
cash		use of facilities/ equipment	
equipment/ materials		staff time	
secondme nt of staff		other	
other		Sub-Total	
Sub-Total	0	Total Contribution	3000

Name of partner organisation	Division or Department	Name of contact
Research Inst of the Peruvian Amazon	Forests	Dr Dennis Del-Castillo
Direct contribution to project	Indirect contribution to project	
Description	Value £	Description
cash		use of facilities/ equipment
equipment/ materials		staff time
secondme nt of staff		other
other		Sub-Total
Sub-Total	0	Total Contribution

Name of partner organisation	Division or Department	Name of contact
Max Planck	Meteorology	Dr Thomas Kleinen
Direct contribution to project	Indirect contribution to project	
Description	Value £	Description
cash		use of facilities/ equipment
equipment/ materials		staff time
secondme nt of staff		other
other		Sub-Total
Sub-Total	0	Total Contribution

Name of partner organisation	Division or Department	Name of contact
Karlsruhe Institute of Technology (KIT)	Unlisted	Dr John Householder
Direct contribution to project	Indirect contribution to project	
Description	Value £	Description
cash		use of facilities/ equipment
equipment/ materials		staff time

secondme nt of staff	other	Access to dataset	49000
other	Sub-Total		49000
Sub-Total	0	Total Contribution	49000

Name of partner organisation	Division or Department	Name of contact
Field Museum of Natural History	UNLISTED	Dr Nigel Pitman
Direct contribution to project	Indirect contribution to project	
Description	Value £	Description
cash		use of facilities/ equipment
equipment/ materials		staff time
secondme nt of staff		other
other		Sub-Total
Sub-Total	0	Total Contribution

Name of partner organisation	Division or Department	Name of contact
Arizona State University	Life Sciences	Dr Ouli Lathienodia
Direct contribution to project	Indirect contribution to project	
Description	Value £	Description
cash		use of facilities/ equipment
equipment/ materials		staff time
secondme nt of staff		other
other		Sub-Total
Sub-Total	0	Total Contribution

Total Contribution from all Project partners

£75501

(a) Scientific Area (mandatory)

Assign % relevance (in multiples of 5) to one or more areas, totalling 100%.

Assign priorities (in order of importance)	Scientific Area	%
Atmospheric		
Earth		
Freshwater		
Marine		100
Terrestrial		
	Total = 100%	

(b) ENRI (mandatory)

Assign % relevance (in multiples of 5) to one or more ENRIs, totalling 100%.

Assignment Area	%
Scientific Area	20
Biodiversity	
Environmental Risks and Hazards	20
Global Change	60
Natural Resource Management	
Pollution and Waste	
Total	100%

OTHER INFORMATION

Nominated Reviewers

1	Name	Organisation	Division or Department	Email Address
	Professor Susan Page	University of Leicester	Geography	sep5@le.ac.uk

Nominated Reviewers

Notified reviewers			
2	Name	Organisation	Division or Department
	Professor Paul Applin	Edge Hill University	Geography
			Email Address
			paul.applin@edgehill.ac.uk

Nominated Reviewers

Notified reviewers				
3	Name	Organisation	Division or Department	Email Address
	Professor Stephen Slich	University of Exeter	Geography	s.a.slich@exeter.ac.uk

Nominated Reviewers

Notified contact person(s)		Division or Department	Email Address
4	Name		
	Professor Zicheng Yu	Earth & Environ Science Dept	yz12@lehigh.edu

Proposal Classifications

Research Area:

NERC's primary Research Areas (second level) are listed here (Research Areas<a>), but other Research Areas can be selected which may relate to other Research Councils. Up to five of these Research Areas may be chosen, and a percentage should be attributed to each such that the total is 100. To add or remove Research Areas use the links below.

literatures below	Topic	Indicator %	Keyword
Subject	Quaternary Science	0	Biogeochemical cycling
Geosciences	Quaternary Science	0	Dating
Geosciences	Quaternary Science	0	Holocene

Geosciences	Quaternary Science	0	Peat bogs
Geosciences	Quaternary Science	30	
Terrestrial and freshwater environments	Biogeochemical Cycles	0	Pollen analysis
Terrestrial and freshwater environments	Biogeochemical Cycles	0	Carbon cycling
Terrestrial and freshwater environments	Biogeochemical Cycles	0	Wetlands
Terrestrial and freshwater environments	Biogeochemical Cycles	40	
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Biogeochemical cycles
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Conservation
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Forests
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Soil carbon
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Terrestrial ecosystems
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Tropical ecosystems
Terrestrial and freshwater environments	Ecosystem Scale Processes	0	Vegetation change
Terrestrial and freshwater environments	Ecosystem Scale Processes	30	

Qualifiers

Qualifiers are terms that further describe the area of research. Please ensure you complete this section if relevant. To add or remove Qualifiers use the links below.

Type	Name
Geographic Area	South America
Project Engagement by Sector	Academic Users
Project Engagement by Sector	General Public
Project Engagement by Sector	Other Public Sector
Project Engagement by Sector	Press and Media

Free-text Keywords:

Free-text keywords may be used to describe the science within your application in more detail. These will facilitate reviewer-matching and may form the basis of a more detailed classification in the future.

Add freetext keywords below (50 character max per keyword):

Free-text keywords may be used to describe the science within your application in more detail. These will facilitate reviewer-matching and may form the basis of a more detailed classification in the future.
Add free-text keywords below (50 character max per keyword):

Proposal for additional ODA-related funding

The key problems that we are attempting to address with this additional funding are (a) the need to build capacity among local researchers in Peru to support (e.g.) applications for development funding linked to carbon conservation through schemes such as the Green Climate Fund and REDD+; (b) a specific lack of information on the economic usefulness of peatlands to local communities, which makes it difficult to devise appropriate management strategies; (c) the need to improve awareness among local researchers, NGOs and policy-makers of the significance of peat for land management and socio-economic development (given that it is only in the last decade that it has become clear that Peru holds large quantities of peat); and (d) limited opportunities for knowledge transfer between Peru and other countries which have significant peat stocks and which face comparable challenges and opportunities (e.g.: Republic of Congo, Indonesia).

Planned activities

- i. We request partial salary buyouts for two scientists based at our project partner IILAP, in order for them to be fully embedded in the project, receive extensive training, extend our impact activities, and undertake dialogues with researchers internationally. We have two individuals in mind, both of whom have permanent posts at IILAP.
 - a. The first is an early-career scientist who holds a masters degree in carbon cycling, and is very well placed to be trained to understand the natural science and policy-relevant aspects of peatland research and to build on our work in future. We request a total of 12 months' partial salary buyout for this individual, distributed across the three years of the project. They will:
 - i. Help to coordinate and participate in stakeholder meetings and workshops in Lima and Iquitos;
 - ii. Liaise with stakeholders throughout the life cycle of the project, including interacting with the Regional Government of Loreto, Peru, in relation to the development of its wetlands map and conservation strategy;
 - iii. Help to draft selected communications to stakeholders;
 - iv. Contribute to drafting applications for protected area status for peatlands, and lead a workshop for local NGOs (e.g. Instituto del Buen Común) on this topic;
 - v. Participate in part of our fieldwork campaign and receive on-the-ground training in research skills specific to peatland research;
 - vi. Develop and deliver a knowledge exchange session for staff and students at the National University of the Peruvian Amazon and at the Scientific University of Peru, with support from the Project team;
 - vii. Attend a meeting of the International Peatland Society in Rotterdam.

- b. The second is a social scientist who has worked extensively with local communities on development issues, although not explicitly in peatland settings. We request 6 months' partial salary buyout for this individual. They will:
 - i. Participate in a fieldwork campaign, to receive training in the natural science aspects of peatlands.
 - ii. Design and undertake a pilot project in one of the villages near our main study site, Nueva York, with the aim of understanding how local communities use the peatlands and what benefits they receive from them. Methodologically, this project will explore the use of participatory mapping, which has been used successfully in dryland forest settings in other parts of Peruvian Amazonia. This will be, to our knowledge, the first attempt to quantify the social value of peatlands in Peru. A short report on the initial findings will help to inform stakeholder discussions, initiatives to bring further carbon conservation funding to Peru, initiatives to set up protected areas; it will also inform the design of future interdisciplinary research projects and strengthen the capacity of Peruvian researchers to lead such projects.
 - iii. Help to coordinate and participate in stakeholder meetings in Lima and Iquitos.
 - iv. Attend a meeting of the International Peatland Society in Rotterdam.
- We request, for these individuals, 50% salary contributions, travel and subsistence costs to enable them to participate in our fieldwork campaigns, travel and subsistence costs to enable them to attend stakeholder meetings in Lima, and travel and subsistence costs to enable them to attend the International Peat Meeting in Rotterdam in September 2018.
- We request additional support for translation of our papers, maps, reports, website, and toolkits into Spanish and (for the benefit of scientists working in Francophone Africa) French. We will recruit translators in Peru and Republic of Congo.

SFC ODA GCRF 2017-18

"Valuing Amazonian Peatlands"

PI: Dr Katherine Roucoux

Collaborators: Dr Ian Lawson, Prof Nina Laurie, Dr Althea Davies, Dr Tim Baker (U. Leeds), Dr Michael Gilmore (George Mason University), Dr Dennis del Castillo Torres (Instituto de Investigaciones de la Amazonia Peruana (IIAP))

Planned activities involving IIAP

A researcher from IIAP will help to plan and execute an anthropological field campaign in 2018, working with local communities to record and map the resources/values (socio-cultural, economic) of peatlands in the Pastaza-Marañón Fan, Loreto, Peru.

Costs

Salary contribution to RA 1, 42 days

£1349.88

Schedule 2: The Contract (Award Letter)

(Please see attached)

Head of Department
Research Funding Office
University of St Andrews
Gateway
St Andrews, United Kingdom
KY16 9SS

Grant Ref: NE/R000751/1

Date: 14 July 2017

Dear Head of Department

GRANT OFFER: Research Grant, Standard Grant FEC
GRANT TITLE: Carbon Storage in Amazonian Peatlands: Distribution and Dynamics

The NERC is offering a grant towards the cost of the above project, subject to the terms and conditions set out below.

Return of the 'Offer Acceptance' will be taken as acceptance of the grant on the terms stated. If you are unable to accept the grant you should return a 'Decline' confirmation as soon as possible. Upon receipt of the 'Offer Acceptance' a 'Start Confirmation' request will be issued.

Grants are cash limited and expenditure against the grant must not exceed the value awarded apart for reasons stated in the standard terms and conditions.

Please note copies of this letter have not been sent to the grant holder and co-investigators (as appropriate); it is your responsibility to distribute copies as is necessary.

Yours faithfully

Grants Pre Award Team
RCUK Grants
A service provided on behalf of NERC

Organisation: University of St Andrews
Grant Holder: Dr Ian Lawson

Grant Title: Carbon Storage in Amazonian Peatlands: Distribution and Dynamics
Starts: 1 October 2017 Ends: 30 September 2020 Duration: 36

GRANT VALUE

Funds Awarded

	Authorised FEC (£)			RC Contribution (£)			% FEC
	net	Indexation	Total	net	Indexation	Total	
DI - Staff	263,115	4,286	267,401	210,492	3,428	213,920	80
DI - T&S	36,115	588	36,703	28,692	471	29,363	80
DI - Other Costs	60,526	986	61,512	48,421	789	49,209	80
DA - Investigators	69,729	1,136	70,865	55,783	909	56,692	80
DA - Estate Costs	74,572	1,215	75,787	59,658	972	60,629	80
DA - Other Directly Allocated	3,975	66	4,040	3,180	52	3,232	80
Indirect - Indirect Costs	266,500	4,341	270,841	213,200	3,473	216,673	80
Total Value of Award	774,532	12,615	787,148	619,626	10,092	629,718	

Cost of Access to Facilities
(Funds not awarded to Grant Holding Organisation)

25,410

STAFF

Staff Summary

	Authorised FEC net	RC Contribution net	Number Of Staff Months
Investigator	69,729	55,783	12
Researcher	253,115	210,492	72

Staff and DI Investigator Details

Start Date	End Date	Duration	FTE Percent	Name or Post Identifier	Summary Fund Heading	Authorised Cost (Excluding Indirect)
1 October 2017	30 September 2020	36	100	PDRA 1 (Edinburgh)	Directly Incurred	131558.00
1 October 2017	30 September 2020	36	100	PDRA 2 (St Andrews)	Directly Incurred	131557.00

DA Investigator Details

Average Hours/week	Name or Post Identifier
2	Dr T Baker
4	Dr I T Lawson
3	Dr ETA Michard
3	Dr K H Roucoux
1	Professor M Williams

EQUIPMENT DETAILS

Description	Delivery Date	Country Of Origin	Total Value
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FACILITY AND SERVICE DETAILS

Facility	Cost of Access	Number of Units
NERC Radiocarbon Facility (Environment), East Kilbride	25,410	77

PROJECT PARTNERS

Organisation	Department	Last Name	First Name	In Kind Value (£)	Monetary Value (£)
Arizona State University	Life Sciences	Lahteenoja	Cui	7,000	0
Field Museum of Natural History	UNLISTED	Pitman	Nigel	4,101	0
Karlsruhe Institute of Technology (KIT)	Unlisted	Householder	John	49,000	0
Max Planck	Metecology	Kleinen	Thomas	2,400	0
Research Inst of the Peruvian Amazon	Forests	Del-Castillo	Dennis	10,000	0
University of New Hampshire	Earth, Oceans, and Space	Froking	Steve	3,000	0

GRANT ADDITIONAL INFORMATION

GRANT CONDITIONS

Costs relating to the requested facility have been awarded notionally, and will be paid directly to the facility.

You are required to discuss your facility requirements with the facility manager, and make an application to use the facility through the facility steering committee.

Facility contact details can be found here: <http://www.nerc.ac.uk/research/sites/facilities/ist/>

CALL CONDITIONS

The Outline Data Management Plan and Case for Support for successful proposals will be made available to the NERC Environmental Data Centres and where appropriate, used by them to draft, in collaboration with the Principal Investigator, a full Data Management Plan (DMP). This full DMP should be mutually agreed between the Data Centre and the Principal Investigator within six months of the start date of the grant.

Peer Review College Membership

The Principal Investigator is required to consent to membership of the NERC Peer Review College. If a membership invitation is issued by NERC during the period of award (grant acceptance to grant closure). Failure to accept membership without adequate reason, or unsatisfactory performance as a Peer Review College member, could lead to the application of sanctions in the form of withdrawal of eligibility to apply for NERC research grants for a period of 12 months.

RESEARCH COUNCIL CONDITIONS

SCHEME CONDITIONS

Introduction

Terms and Conditions of Research Council IEC Grants

These terms and conditions relate to grants, comprising Research Grants and Fellowships, costed and funded on the basis of full

economic costs (FEC), calculated in accordance with the TRAC methodology (universities and other higher education bodies) or by an equivalent methodology by other Research Organisations.

Grants awarded by the Research Councils are made to Research Organisations on the basis of this single set of core terms and conditions. The Research Councils are:

- Arts and Humanities Research Council (AHRC)
- Biotechnology and Biological Sciences Research Council (BBSRC)
- Economic and Social Research Council (ESRC)
- Engineering and Physical Sciences Research Council (EPSRC)
- Medical Research Council (MRC)
- Natural Environment Research Council (NERC)
- Science and Technology Facilities Council (STFC)

Individual Councils may add additional conditions to the grant to reflect the particular circumstances and requirements of their organisation, or the nature of a particular grant. Acceptance of a grant constitutes acceptance of both the core conditions and any additional conditions. Any request by the grant holder to the council to vary these terms and conditions must be submitted through the Je-S grants maintenance facility and approved in writing by someone authorised to do so on behalf of the Council.

The Research Councils reserve the right to vary these terms and conditions the latest version is available on the RCUK website here: <http://www.rcuk.ac.uk/funding/granatics>

Definitions

Research Council: any of the bodies listed above.

Grant support for a proportion of the full economic costs of a project. A Grant may be either a Research Grant or a Fellowship. Research Grant: a contribution to the costs of a stated research project which has been assessed as suitable for funding through the procedures established by the relevant Research Council.

Fellowship Grant: an award made through a fellowship competition providing a contribution to the support of a named individual. It covers the cost of the time dedicated by the fellow to their personal research programme, and may or may not include research support costs.

Grant Holder: the person to whom the grant is assigned and who has responsibility for the intellectual leadership of the project and for the overall management of the research. The Grant Holder is either the Principal Investigator (in the case of a Research Grant) or a Research Fellow (in the case of a Fellowship Grant).

Co-Investigator: a person who assists the Grant Holder in the management and leadership of a project.

Research Organisation: the organisation to which the grant is awarded and which takes responsibility for the management of the research project and the accountability of funds provided.

Full Economic Costs (FEC): a cost which, if recovered across an organisation's full programme, would recover the total cost (direct, indirect and total overhead) including an adequate recurring investment in the organisation's infrastructure.

Directly Incurred Costs: costs that are explicitly identifiable as arising from the conduct of a project, are charged as the cash value actually spent and are supported by an audit record.

Directly Allocated Costs: the costs of resources used by a project that are shared by other activities. They are charged to projects on the basis of estimates rather than actual costs and do not represent actual costs on a project-by-project basis.

Indirect Costs: non-specific costs charged across all projects based on estimates that are not otherwise included as Directly Allocated Costs. They include the costs of the Research Organisation's administration such as personnel, finance, library and some departmental services.

Exceptions: Directly Incurred Costs that Research Councils fund at 100% of FEC, subject to actual expenditure incurred, or items that are outside FEC.

Transparent Approach to Costing (TRAC): an agreed methodology used by universities and other higher education bodies for calculating full economic costs.

Funding Assurance Programme: a programme of visits and office-based tests to seek assurance that grant funds are used for the purpose for which they are given and that grants are managed in accordance with the terms and conditions under which they are awarded.

Data Protection Regulations

The Research Councils will use information provided on the grant proposal for processing the proposal, the award of any consequential grant, and for the payment, maintenance and review of the grant. This may include:

- Registration of proposals, operation of grants processing and management information systems.
- Preparation of material for use by referees and peer review panels.

- Administration, investigation and review of grant proposals
- Sharing proposal information on a strictly confidential basis with other funding organisations to seek contributions to the funding of proposals.
- Statistical analysis in relation to the evaluation of research and the study of trends.
- Policy and strategy studies.

To meet the Research Councils' obligations for public accountability and the dissemination of information, contents of funded research proposals will also be made available on the Research Councils' websites and other publicly available databases, including Gateway to Research, and in reports, documents and mailing lists.

After completion of the grant, the Research Council may contact the Grant Holder concerning funding opportunities or events, or for the purposes of evaluation. In some instances, the Research Council may wish to authorise an affiliate organisation to contact the Grant Holder on its behalf. It is assumed that, by agreeing to these terms and conditions, the Research Organisation consents to this on behalf of the Grant Holder, but if the Grant Holder prefers not to be contacted in this way, he or she should state this to the Research Council. Grant Holders may choose to opt out at any point, provided they comply with all other terms and conditions associated with the grant.

Freedom of Information Act and Environmental Information Regulations

Attention is drawn to the provisions of the Freedom of Information Act 2000 (FOIA) and the Environmental Information Regulations (EIRs). Research Councils have issued Publication Schemes which set out the types of information publicly available on their websites or published as documents. In addition, Research Councils have an obligation to respond to specific requests and may be required to disclose information about or provided by Research Organisations. In some cases the Research Council may consult the Research Organisation before disclosure, but it is under no obligation to do so. If a Research Organisation considers that any information it provides to a Research Council would be subject to an exemption under FOIA or the EIRs it should clearly mark the information as such and provide an explanation of why it considers the exemption applies and for how long. The Research Council will consider this explanation before disclosure, but it is not obliged to accept it as binding.

Where a Research Council determines that a Research Organisation is holding information on its behalf that it requires in order to comply with its obligations under FOIA or EIRs, the Research Organisation undertakes to provide access to such information as soon as reasonably practicable on request of the Research Council and in any event within 5 working days.

In some cases Research Organisations may be directly responsible for complying with FOIA and the EIRs. In such cases the Research Councils accept no responsibility for any failure to comply by the Research Organisations.

Grant Conditions

RGC 1 Responsibilities of the Research Organisation

-The Research Organisation must ensure that any part of the Full Economic Cost of the project not funded by the Research Council grant is committed to the project before it starts.

-The Research Organisation must ensure that the Grant Holder and co-investigators are made aware of their responsibilities and that they observe the terms and conditions of grants.

-The Research Organisation must ensure that the research supported by the grant complies with all relevant legislation and Government regulation, including that introduced while work is in progress. This requirement includes approval or licence from any regulatory body that may be required before the research can commence.

-The Research Organisation is expected to adopt the principles, standards and good practice for the management of research staff set out in the 2008 Concordat to Support the Career Development of Researchers, and subsequent amendments. The Research Organisation must create an environment in which research staff are selected and treated on the basis of their merits, abilities and potential. It must ensure that reliable systems and processes are in place so that the principles of the Concordat are embedded into practice within the Research Organisation. It must ensure compliance with all relevant legislation and Government regulation, including any subsequent amendments introduced while work is in progress.

-The Research Organisation is responsible for compliance with the terms of the Equality Act 2010 including any subsequent amendments introduced while work is in progress; and for ensuring that the expectations set out in the RCUK statement of expectations for equality and diversity are met.

The Research Organisation is expected to adopt the principles, standards and good practice for public engagement with research set out in the 2010 Concordat for Engaging the Public with Research: <http://www.rcuk.ac.uk/pe/Concordat/>

-The Research Organisation must create an environment in which public engagement is valued, recognised and supported. It must ensure that reliable systems and processes are in place so that the principles of the Concordat are embedded into practice within the Research Organisation.

-The Research Organisation must appoint a Research Fellow as an employee for the full duration of the award.

-The Research Organisation must integrate the Research Fellow within the research activities of the host department, whilst ensuring that he or she is able to maintain independence and focus on their personal research programme.

-The Research Organisation must notify the Research Council of any change in its status, or that of the Grant Holder, that might affect the eligibility to hold a grant.

-The Research Organisation must ensure that the requirements of the Employing Organisation under the Department of Health's Research Governance Framework for Health and Social Care (or equivalent) are met for research involving NHS patients, their organs, tissues or data, and that the necessary arrangements are in place with partner organisations. Where it also accepts the responsibilities of a Sponsor (as defined in the Governance Framework), it must also ensure that the requirements for Sponsors are met.

-The Research Organisation must ensure proper financial management of grants and accountability for the use of public funds.

-The Research Organisation must ensure that adequate business continuity plans are in place to ensure that operational interruptions to the research are minimised.

RGC 2 Research Governance

It is the responsibility of the Research Organisation to ensure that the research is organised and undertaken within a framework of best practice that recognises the various factors that may influence or impact on a research project. Particular requirements are to ensure that all necessary permissions are obtained before the research begins, and that there is clarity of role and responsibility among the research team and with any collaborators. The Research Councils expect research to be conducted in accordance with the highest standards of research integrity and research methodology.

RGC 2.1 Research Ethics

The Research Organisation is responsible for ensuring that ethical issues relating to the research project are identified and brought to the attention of the relevant approval or regulatory body. Approval to undertake the research must be granted before any work requiring approval begins. Ethical issues should be interpreted broadly and may encompass, among other things, relevant codes of practice, the involvement of human participants, issues or data in research, the use of animals, research that may result in damage to the environment and the use of sensitive economic, social or personal data.

RGC 2.2 Use of Animals in Research

Wherever possible, researchers must adopt procedures and techniques that avoid the use of animals. Where this is not possible, the research should be designed so that:

- The least sentient species with the appropriate physiology is used.
- The number of animals used is the minimum sufficient to provide adequate statistical power to answer the questions posed.
- The severity of procedures performed on animals is kept to a minimum. Experiments should be kept as short as possible.
- Appropriate anaesthesia, analgesia and humane endpoints should be used to minimise any pain and suffering.

The provisions of the Animals (Scientific Procedures) Act 1986, and any amendments, must be observed and all necessary licences must have been received before any work requiring approval takes place.

Please see "RGC 5 Changes in Research Project" in the event of any proposal to change the arrangements for use of animals in a Research project.

RGC 2.3 Medical and Health Research

The Research Organisation is responsible for managing and monitoring the conduct of medical and health research in a manner consistent with the Department of Health's Research Governance Framework for Health and Social Care (or equivalent). There must be effective and verifiable systems in place for managing research quality, progress and the safety and well-being of patients and other research participants. These systems must promote and maintain the relevant codes of practice and all relevant statutory review, authorisation and reporting requirements.

Research involving human participants or data within the social sciences that falls outside the Department of Health's Research Governance Framework must meet the provisions and guidelines of the ESRC's Research Ethics Framework. While this research may involve patients, NHS staff or organisations, it is defined as research that poses no clinical risk or harm to those who are the subjects of research. Research Organisations must ensure that appropriate arrangements are in place for independent ethics review of social science research that meets local research ethics committee standards.

Significant developments must be assessed as the research proceeds, especially those that affect safety and well-being, which should be reported to the appropriate authorities and to the Research Council. The Research Organisation must take appropriate and timely action when significant problems are identified. This may include temporarily suspending or terminating the research. The Research Organisation is responsible for managing and monitoring statutory requirements for which it accepts responsibility, for example, in relation to legislation on clinical trials, use of human organs, tissues and data.

Guidance by the MRC on the conduct of medical research, and by ESRC on the conduct of social science research, provided on behalf of all Research Councils, must be observed.

RGC 2.4 Health and Safety

The Research Organisation is responsible for ensuring that a safe working environment is provided for all individuals associated with a research project. Its approach and policy on health and safety matters must meet all regulatory and legislative requirements and be consistent with best practice recommended by the Health & Safety Executive.

Appropriate care must be taken where researchers are working off-site. The Research Organisation must satisfy itself that all

- Administration, investigation and review of grant proposals.
- Sharing proposal information on a strictly confidential basis with other funding organisations to seek contributions to the funding of proposals.
- Statistical analysis in relation to the evaluation of research and the study of trends.
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To meet the Research Council's obligations for public accountability and the dissemination of information, contents of funded research proposals will also be made available on the Research Council's websites and other publicly available databases, including Gateway to Research, and in reports, documents and mailing lists.

After completion of the grant, the Research Council may contact the Grant Holder concerning funding opportunities or events, or for the purposes of evaluation. In some instances, the Research Council may wish to authorise an affiliate organisation to contact the Grant Holder on its behalf. It is assumed that, by agreeing to these terms and conditions, the Research Organisation consents to this on behalf of the Grant Holder, but if the Grant Holder prefers not to be contacted in this way, he or she should state this to the Research Council. Grant Holders may choose to opt out at any point, provided they comply with all other terms and conditions associated with the grant.

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RGC 1 Responsibilities of the Research Organisation

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- The Research Organisation must ensure that the Grant Holder and co-investigators are made aware of their responsibilities and that they observe the terms and conditions of the grant.
- The Research Organisation must ensure that the research supported by the grant complies with all relevant legislation and Government regulation, including that introduced while work is in progress. This requirement includes approval or licence from any regulatory body that may be required before the research can commence.
- The Research Organisation is expected to adopt the principles, standards and good practice for the management of research staff set out in the 2008 Concordat to Support the Career Development of Researchers and subsequent amendments. The Research Organisation must create an environment in which research staff are selected and treated on the basis of their merits, abilities and potential. It must ensure that reliable systems and processes are in place so that the principles of the Concordat are embedded into practice within the Research Organisation. It must ensure compliance with all relevant legislation and Government regulation, including any subsequent amendments introduced while work is in progress.
- The Research Organisation is responsible for compliance with the terms of the Equality Act 2010 including any subsequent amendments introduced while work is in progress, and for ensuring that the expectations set out in the RCUK statement of expectations for equality and diversity are met.
- The Research Organisation is expected to adopt the principles, standards and good practice for public engagement with research set out in the 2010 Concordat for Engaging the Public with Research: <http://www.rcuk.ac.uk/pe/Concordat/>
- The Research Organisation must create an environment in which public engagement is valued, recognised and supported. It must ensure that reliable systems and processes are in place so that the principles of the Concordat are embedded into practice within the Research Organisation.
- The Research Organisation must appoint a Research Fellow as an employee for the full duration of the award.
- The Research Organisation must integrate the Research Fellow within the research activities of the host department, whilst ensuring that he or she is able to maintain independence and focus on their personal research programme.
- The Research Organisation must notify the Research Council of any change in its status, or that of the Grant Holder, that might affect the eligibility to hold a grant.

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-The Research Organisation must ensure that adequate business continuity plans are in place to ensure that operational interruptions to the research are minimised.

RGC 2 Research Governance

It is the responsibility of the Research Organisation to ensure that the research is organised and undertaken within a framework of best practice that recognises the various factors that may influence or impact on a research project. Particular requirements are to ensure that all necessary permissions are obtained before the research begins, and that there is clarity of role and responsibility among the research team and with any collaborators. The Research Councils expect research to be conducted in accordance with the highest standards of research integrity and research methodology.

RGC 2.1 Research Ethics

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RGC 2.2 Use of Animals in Research

Wherever possible, researchers must adopt procedures and techniques that avoid the use of animals. Where this is not possible, the research should be designed so that:

- The least sentient species with the appropriate physiology is used.
- The number of animals used is the minimum sufficient to provide adequate statistical power to answer the questions posed.
- The severity of procedures performed on animals is kept to a minimum. Experiments should be kept as short as possible.
- Appropriate anaesthesia, analgesia and humane endpoints should be used to minimise any pain and suffering.

The provisions of the Animals (Scientific Procedures) Act 1986, and any amendments, must be observed and all necessary licences must have been received before any work requiring approval takes place.

Please see "RGC 5 Changes in Research Project" in the event of any proposal to change the arrangements for use of animals in a Research project.

RGC 2.3 Medical and Health Research

The Research Organisation is responsible for managing and monitoring the conduct of medical and health research in a manner consistent with the Department of Health's Research Governance Framework for Health and Social Care (or equivalent). There must be effective and verifiable systems in place for managing research quality, progress and the safety and well-being of patients and other research participants. These systems must promote and maintain the relevant codes of practice and all relevant statutory review, authorisation and reporting requirements.

Research involving human participants or data within the social sciences that falls outside the Department of Health's Research Governance Framework must meet the provisions and guidelines of the ESRC's Research Ethics Framework. While this research may involve patients, NHS staff or organisations, it is defined as research that poses no clinical risk or harm to those who are the subjects of research. Research Organisations must ensure that appropriate arrangements are in place for independent ethics review of social science research that meets local research ethics committee standards.

Significant developments must be assessed as the research proceeds, especially those that affect safety and well-being, which should be reported to the appropriate authorities and to the Research Council. The Research Organisation must take appropriate and timely action when significant problems are identified. This may include temporarily suspending or terminating the research. The Research Organisation is responsible for managing and monitoring statutory requirements for which it accepts responsibility, for example, in relation to legislation on clinical trials, use of human organs, tissues and data.

Guidance by the MRC on the conduct of medical research, and by ESRC on the conduct of social science research, provided on behalf of all Research Councils, must be observed.

RGC 2.4 Health and Safety

The Research Organisation is responsible for ensuring that a safe working environment is provided for all individuals associated with the research project. Its approach and policy on health and safety matters must meet all regulatory and legislative requirements and be consistent with best practice recommended by the Health & Safety Executive.

Appropriate care must be taken where researchers are working off-site. The Research Organisation must satisfy itself that all

Parental leave pay is payable by the Research Council only for directly incurred staff that are funded for 100% of their contracted time on the grant (apart from staff acting as principal or co-investigators unless they are also research fellows or research assistants funded by the grant).

Grant funds within the announced cash limit, may be used to meet the costs of making a substitute appointment and/or extending the grant to cover a period of parental leave for staff within the directly incurred and exceptions fund headings (excluding the principal and co-investigators, unless they are also research fellows or research assistants funded by the grant). The duration of a grant will be extended only if the period can be accommodated within the maximum period allowed for extensions. Directly Allocated and Indirect funds will not be increased as a result of such extensions.

Research Grants: Research Grant funds may be used to meet the costs of paid parental leave only to the extent that it is taken during the original period of the grant. The Research Organisation will be responsible for any liability for parental leave pay for staff supported by the grant outside the original period of the grant, if, for example, the original end date of a grant falls while a member of research staff is part-way through her maternity leave, the Research Organisation will be responsible for that part of the maternity leave which is taken after the original end date.

Fellowship Grants: Fellows are entitled to take parental leave in accordance with the terms and conditions of the fellow's employment. If requested, consideration will be given to allowing a fellowship grant to be placed in abeyance during the absence of the Research Fellow for parental leave, and the period of the fellowship extended by the period of leave. Consideration will be given to requests to continue the fellowship on a flexible or part-time basis to allow the Research Fellow to meet caring responsibilities.

RGC 10 Sick Leave

The Research Organisation will be compensated at the end of the grant to cover any additional net costs, that cannot be met within the cash limit, of paid sick leave for staff within the Directly Incurred and Exceptions fund headings (excluding the principal and co-investigators, unless they are also Research Fellows or Research Assistants funded by the grant) who fulfil the qualifying conditions of the Research Organisation. The net cost is the amount paid to the individual less the amount the Research Organisation can recover from HMRC.

Sick pay is payable by the Research Council only for directly incurred staff that are funded for 100% of their contracted time on the grant (apart from staff acting as principal or co-investigators unless they are also research fellows or research assistants funded by the grant).

Grant funds within the announced cash limit, may be used to meet the approved costs of making a substitute appointment and/or extending the grant to cover a period of sick leave for staff within the directly incurred and exceptions fund headings (excluding the principal and co-investigators, unless they are also research fellows or research assistants funded by the grant). The duration of a grant will be extended only if the period can be accommodated within the maximum period allowed for extensions. Directly Allocated and Indirect funds will not be increased as a result of such extensions.

Research Grants: Research Grant funds may be used to meet the costs of paid sick leave only to the extent that it is taken during the original period of the grant. The Research Organisation will be responsible for any liability for sick leave pay for staff supported by the grant outside the original period of the grant. Where there is a continuous period of sick leave in excess of 3 months, the Research Organisation may apply to the Research Council to discuss the possibility of a substitute appointment to safeguard progress on the project. Where a Research Assistant has been on sick leave in excess of 3 months the Research Organisation must comply with all their obligations to consider reasonable adjustments before making a substitute appointment. Where a Research Assistant has been on sick leave for an aggregate (not necessarily continuous) period in excess of 3 months, where this is due to a single condition or a series of related conditions, the Research Organisation may request an extension to the duration of the project.

Fellowship Grants: Fellows are entitled to take sick leave in accordance with the Research Organisation's terms and conditions. If requested, consideration will be given to allowing a fellowship grant to be placed in abeyance during the absence of the Research Fellow due to sick leave, and the period of the fellowship extended by the period of sick leave. The additional salary costs for the fellow (pro rata to their percentage FTE on the fellowship) should be claimed, as necessary, at the end of the extended period.

RGC 11 Equipment

RGC 11.1 Procurement of Equipment

The procurement of equipment, consumables and services, including maintenance, must comply with all relevant national and EU legislation and the Research Organisation's own financial policy and procedures. Accepted procurement best practice in the higher education sector must be observed. For all equipment and services where the contract value is more than £25,000, excluding VAT, professionally qualified procurement staff must be consulted before the procurement process begins, and, where appropriate, at the market research stage, and must approve the order/contract before it is placed with a supplier.

RGC 11.2 Ownership of Equipment

Equipment purchased from grant funds is primarily for use on the research project for which the research grant was awarded, and belongs to the Research Organisation. In certain circumstances the Research Council may wish to retain ownership throughout the period of the grant and possibly beyond. In such cases, the grant will be subject to an additional condition.

The Research Council must be informed if, during the life of the research grant, the need for the equipment diminishes substantially or it is not used for the purpose for which it was funded. The Research Council reserves the right to determine the disposal of such equipment and to claim the proceeds of any sale. Any proposal to transfer ownership of the equipment during the period of the

grant is subject to prior approval by the Research Council. After the research project has ended, the Research Organisation is free to use the equipment without reference to the Research Council, but it is nevertheless expected to maintain it for research purposes as long as is practicable.

RGC 11.3 Use of Equipment

Where there is spare capacity in the use of the equipment, the Research Council expects this to be made available to other users. Priority should be given to research supported by any of the Research Councils and to Research Council-funded students.

RGC 11.4 Use of Equipment Funds

Any proposal to purchase an item of equipment in the last 6 months of the grant is subject to prior written approval by the Research Council. The Research Council will wish to be assured that the item of equipment is essential to the research.

Equipment funding is ring-fenced and transfers into or out of the equipment headings, whether under Directly Incurred or Exceptions, is not permitted.

RGC 11.5 Equipment Data

In line with the recommendation made in the "Efficiency, effectiveness and value for money" report (<http://www.universitaes.ac.uk/highereducation/Documents/2015/EfficiencyEffectivenessValueforMoney.pdf>), all new equipment purchased over £138,000 (£115,000 ex VAT) using public funding sources should be discoverable through the equipment data.ac.uk national database to enable greater sharing.

RGC 12 Transfer of a Grant to another Research Organisation

The Research Organisation must send a request via the Grant Maintenance facility in Je-S if the Grant Holder intends to transfer to another organisation. If this organisation is eligible to hold grants, and is able to provide a suitable environment to enable the project to be successfully completed, the expectation is that the grant would be transferred with the Grant Holder. Written agreement to this is required from both the relinquishing and receiving organisations; this will normally be triggered automatically by the initial request to Je-S.

The Research Council will wish to be assured that satisfactory arrangements have been agreed that will enable the project to be undertaken, or to continue, in accordance with its research objectives. If suitable arrangements cannot be agreed, the Research Council will consider withdrawing its support or terminating the grant.

Where there is a basis for continuing involvement by the relinquishing organisation, agreement should be reached between both organisations on the apportionment of work and the distribution of related funding.

Grants will not be re-costed following transfer. The unspent balance of Directly Incurred and Exceptions costs will be transferred to the receiving Research Organisation. In the case of Directly Allocated and Indirect costs, a pro rata share, based on the time elapsed on the grant at the point of transfer, will be transferred to the receiving research organisation. The receiving organisation will be required to confirm, by return of an offer acceptance, that it will provide any additional resources needed to complete the project.

RGC 13 Change of Grant Holder

Research Grants: The Research Organisation must consult the Research Council via the Grant Maintenance facility in Je-S if it is proposed to change the Grant Holder, for example, following retirement or resignation. Where the Grant Holder is transferring to another organisation eligible to hold a grant, the provisions of RGC 12 Transfer of a Grant to another Research Organisation will apply. In other circumstances, the Research Organisation may nominate a replacement Grant Holder. The Research Council will wish to be assured that the replacement meets the eligibility criteria and has the expertise and experience to lead the project to a successful conclusion, in accordance with its research objectives.

Fellowship Grants: A fellowship grant is awarded on the basis of a named individual's suitability to undertake and benefit from the period of research therefore changes to the Grant Holder are not permitted. The resignation of the Research Fellow, or the termination of their employment, constitutes the end of the grant for the purpose of submitting a final report and the Council's financial liabilities.

RGC 14 Annual Statement

The Research Organisation may be sent a statement to return each year showing payments made by the Research Council during the previous financial year for all the grants it holds. Where a statement is required, the Research Organisation must certify, by returning the statement, that:

-Expenditure has been incurred in accordance with the grant conditions, and
-Those grants shown as current are continuing.

No further payments will be made until the annual statement has been received and accepted by the Research Council.

RGC 15 Expenditure Statements

The Research Organisation must complete and return an expenditure statement within 3 months of the end date of a grant. If it is not returned within this time then the terms stated in "RGC 19 Organisation Sanctions" will apply. Once an expenditure statement has been received and the expenditure incurred has been reconciled against payments made, it will be considered as final.

Parental leave pay is payable by the Research Council only for directly incurred staff that are funded for 100% of their contracted time on the grant. (Apartment staff acting as principal or co-investigators unless they are also research fellows or research assistants funded by the grant).

Grant funds, within the announced cash limit, may be used to meet the costs of making a substitute appointment and/or extending the grant to cover a period of parental leave for staff within the directly incurred and exceptions fund headings (excluding the principal and co-investigators, unless they are also research fellows or research assistants funded by the grant). The duration of a grant will be extended only if the period can be accommodated within the maximum period allowed for extensions. Directly allocated and indirect funds will not be increased as a result of such extensions.

Research Grants: Research Grant funds may be used to meet the costs of paid parental leave only to the extent that it is taken during the original period of the grant. The Research Organisation will be responsible for any liability for parental leave pay for staff supported by the grant outside the original period of the grant. If, for example, the original end date of a grant falls while a member of research staff is part-way through her maternity leave, the Research Organisation will be responsible for that part of the maternity leave which is taken after the original end date.

Fellowship Grants: Fellows are entitled to take parental leave in accordance with the terms and conditions of the fellow's employment. If requested, consideration will be given to allowing a fellowship grant to be placed in abeyance during the absence of the Research Fellow for parental leave, and the period of the fellowship extended by the period of leave. Consideration will be given to requests to continue the fellowship on a flexible or part-time basis to allow the Research Fellow to meet caring responsibilities.

RGC 10 Sick Leave

The Research Organisation will be compensated at the end of the grant to cover any additional net costs, that cannot be met within the cash limit of paid sick leave for staff within the Directly Incurred and Exceptions fund headings (excluding the principal and co-investigators, unless they are also Research fellows or Research assistants funded by the grant) who fulfil the qualifying conditions of the Research Organisation. The net cost is the amount paid to the individual less the amount the Research Organisation can recover from HMRC.

Sick pay is payable by the Research Council only for directly incurred staff that are funded for 100% of their contracted time on the grant (apart from staff acting as principal or co-investigators unless they are also research fellows or research assistants funded by the grant).

Grant funds, within the announced cash limit, may be used to meet the approved costs of making a substitute appointment and/or extending the grant to cover a period of sick leave for staff within the directly incurred and exceptions fund headings (excluding the principal and co-investigators, unless they are also research fellows or research assistants funded by the grant). The duration of a grant will be extended only if the period can be accommodated within the maximum period allowed for extensions. Directly allocated and indirect funds will not be increased as a result of such extensions.

Research Grants: Research Grant funds may be used to meet the costs of paid sick leave only to the extent that it is taken during the original period of the grant. The Research Organisation will be responsible for any liability for sick leave pay for staff supported by the grant outside the original period of the grant. Where there is a continuous period of sick leave in excess of 3 months, the Research Organisation may apply to the Research Council to discuss the possibility of a substitute appointment to safeguard progress on the project. Where a Research Assistant has been on sick leave in excess of 3 months the Research Organisation must comply with all their obligations to consider reasonable adjustments before making a substitute appointment. Where a Research Assistant has been on sick leave for an aggregate (not necessarily continuous) period in excess of 3 months, where this is due to a single condition or a series of related conditions, the Research Organisation may request an extension to the duration of the project.

Fellowship Grants: Fellows are entitled to take sick leave in accordance with the Research Organisation's terms and conditions. If requested, consideration will be given to allowing a fellowship grant to be placed in abeyance during the absence of the Research Fellow due to sick leave, and the period of the fellowship extended by the period of sick leave. The additional salary costs for the fellow (pro rata to their percentage FTE on the fellowship) should be claimed, as necessary, at the end of the extended period.

RGC 11 Equipment

RGC 11.1 Procurement of Equipment

The procurement of equipment, consumables and services, including maintenance, must comply with all relevant national and EU legislation and the Research Organisation's own financial policy and procedures. Accepted procurement best practice in the higher education sector must be observed. For all equipment and services where the contract value is more than £25,000, excluding VAT, professionally qualified procurement staff must be consulted before the procurement process begins, and, where appropriate, at the market research stage, and must approve the order/contract before it is placed with a supplier.

RGC 11.2 Ownership of Equipment

Equipment purchased from grant funds is primarily for use on the research project for which the research grant was awarded, and belongs to the Research Organisation. In certain circumstances the Research Council may wish to retain ownership throughout the period of the grant and possibly beyond. In such cases, the grant will be subject to an additional condition.

The Research Council must be informed of, during the life of the research grant, the need for the equipment diminishes substantially or it is not used for the purpose for which it was funded. The Research Council reserves the right to determine the disposal of such equipment and to claim the proceeds of any sale. Any proposal to transfer ownership of the equipment during the period of the

grant is subject to prior approval by the Research Council. After the research project has ended, the Research Organisation is free to use the equipment without reference to the Research Council, but it is nevertheless expected to maintain it for research purposes as long as is practicable.

RGC 11.3 Use of Equipment

Where there is spare capacity in the use of the equipment, the Research Council expects this to be made available to other users. Priority should be given to research supported by any of the Research Councils and to Research Council-funded students.

RGC 11.4 Use of Equipment Funds

Any proposal to purchase an item of equipment in the last 6 months of the grant is subject to prior written approval by the Research Council. The Research Council will wish to be assured that the item of equipment is essential to the research.

Equipment funding is ring-fenced and transfers into or out of the equipment headings, whether under Directly Incurred or Exceptions, is not permitted.

RGC 11.5 Equipment Data

In line with the recommendation made in the "Efficiency, effectiveness and value for money" report (<http://www.universiteitsak.ac.uk/highereducation/Documents/2015/Efficiency/EffectivenessValueForMoney.pdf>), all new equipment purchased over £138,000 (£115,000 ex VAT) using public funding sources should be discoverable through the equipment data.ac.uk national database to enable greater sharing.

RGC 12 Transfer of a Grant to another Research Organisation

The Research Organisation must send a request via the Grant Maintenance facility in Je-S if the Grant Holder intends to transfer to another organisation. If this organisation is eligible to hold grants, and is able to provide a suitable environment to enable the project to be successfully completed, the expectation is that the grant would be transferred with the Grant Holder. Written agreement to this is required from both the relinquishing and receiving organisations; this will normally be triggered automatically by the initial request to Je-S.

The Research Council will wish to be assured that satisfactory arrangements have been agreed that will enable the project to be undertaken, or to continue, in accordance with its research objectives. If suitable arrangements cannot be agreed, the Research Council will consider withdrawing its support or terminating the grant.

Where there is a basis for continuing involvement by the relinquishing organisation, agreement should be reached between both organisations on the appointment of work and the distribution of related funding.

Grants will not be re-costed following transfer. The unspent balance of Directly Incurred and Exceptions costs will be transferred to the receiving Research Organisation. In the case of Directly Allocated and indirect costs, a pro rata share, based on the time elapsed on the grant at the point of transfer, will be transferred to the receiving research organisation. The receiving organisation will be required to confirm, by return of an offer acceptance, that it will provide any additional resources needed to complete the project.

RGC 13 Change of Grant Holder

Research Grants: The Research Organisation must consult the Research Council via the Grant Maintenance facility in Je-S if it is proposed to change the Grant Holder, for example, following retirement or resignation. Where the Grant Holder is transferring to another organisation eligible to hold a grant, the provisions of "RGC 12 Transfer of a Grant to another Research Organisation" will apply. In other circumstances, the Research Organisation may nominate a replacement Grant Holder. The Research Council will wish to be assured that the replacement meets the eligibility criteria and has the expertise and experience to lead the project to a successful conclusion, in accordance with its research objectives.

Fellowship Grants: A fellowship grant is awarded on the basis of a named individual's suitability to undertake and benefit from the period of research therefore changes to the Grant Holder are not permitted. The resignation of the Research Fellow, or the termination of their employment, constitutes the end of the grant for the purpose of submitting a final report and the Council's financial liabilities.

RGC 14 Annual Statement

The Research Organisation may be sent a statement to return each year showing payments made by the Research Council during the previous financial year for all the grants it holds. Where a statement is required, the Research Organisation must certify, by returning the statement, that:

- Expenditure has been incurred in accordance with the grant conditions, and
- Those grants shown as current are continuing.

No further payments will be made until the annual statement has been received and accepted by the Research Council.

RGC 15 Expenditure Statements

The Research Organisation must complete and return an expenditure statement within 3 months of the end date of a grant. If it is not returned within this time then the terms stated in "RGC 19 Organisation Sanctions" will apply. Once an expenditure statement has been received and the expenditure incurred has been reconciled against payments made, it will be considered as final.

Organisation do not intend that any of these terms and conditions should be enforceable by any third party.

SCHEDULE 3**BREAKDOWN OF COSTS TO INSTITUTO DE INVESTIGACIONES DE LA AMAZONÍA PERUANA**

Summary Totals	Indexed fEC Total in US dollars including VAT
Directly Incurred Costs:	
Salaries	\$14,720
Consumables	\$1,942
Bank charges	\$900
Additional Budget	\$1,439
Total	\$19,001

The Collaborating Institution shall invoice the Lead University

(i) on or after signature of this Agreement for the sum of US \$16,962 ("the Initial Payment"); and

(ii) on or after 1 January 2019 but by no later than 15 December 2020, for up to US \$2,039, being the balance of actual expenditure incurred during the Project (and not accounted for in the Initial Payment).

The Lead University shall pay the Collaborating Institution within 30 days of said invoices, subject always to receipt of funds from the Funding Body.

The Collaborating Institution shall also provide costs statements quarterly in arrears on the basis of actual expenditure incurred, in US dollars (US\$) (i) between 1 December 2017 and 28 February 2018 and (ii) during March 2018 and (iii) thereafter, against the budget headings listed in this Schedule 3.

All invoices should be addressed to:

Financial Advice and Support for Geography and Sustainable Development, The University of St Andrews, Finance Advice and Support, The Gateway, North Haugh, St Andrews, Fife KY16 9RJ

Tel: +44 (0) 1334 462006

Email: geofas@st-andrews.ac.uk

Reference number: 15489 (Please include this on all invoices)