Professional Recognition in Student Education (PRiSE)

Written Application Template: Associate Fellowship (D1) / Fellowship (D2)

Please complete the form in full and submit online via Turnitin in Minerva.

(Consult the relevant PRiSE Participant Handbook for full guidance on how to submit your application)

<table>
<tr><td>Title: Dr</td><td>Surname: Birch</td><td colspan="2">Given Name: Cathryn</td></tr>
<tr><td>School/Service: Earth and Environment</td><td>Faculty: Environment</td><td colspan="2">Email address (University): c.e.birch@leeds.ac.uk</td></tr>
<tr><td colspan="4">For which category of HEA Fellowship are you applying?

Fellow</td></tr>
<tr><td rowspan="2">Documents included in this application template</td><td colspan="2">Reflective Account of Professional Practice</td><td>Yes</td></tr>
<tr><td colspan="2">References</td><td>Yes</td></tr>
<tr><td colspan="4">Word count of Reflective Account of Professional Practice: 3133</td></tr>
<tr><td colspan="4">Date submitted: 18/02/2019</td></tr>
<tr><td colspan="4">This is my first submission</td></tr>
<tr><td colspan="4">I am aware that the University of Leeds' accreditation by the HEA to award HEA Fellowships via PRiSE requires applicants to be either a) employed as a member of staff at the University of Leeds; or b) registered as a PGR at the University of Leeds at the time of submission, assessment and award ☑</td></tr>
<tr><td colspan="4">Please tick here if you do <u>NOT</u> consent to the publication of your application, if successful, on Minerva (in whole or part) as part of our suite of resources to support future applicants[1] ☐</td></tr>
</table>

Applicant Guidance

Applications for <u>Fellowship</u>: please complete **the introduction** and **all sections A1 to A5** and include two references. The word limit is 3000 words, +/- 10%. This excludes the introduction, references from your referees and any citations, which do not constitute part of the word limit.

Applications for <u>Associate Fellowship</u>: please complete **the introduction** and a minimum of **two areas of activity from A1-A5**. You also need to include two references. The word limit is 1400 words, +/- 10%. This excludes the introduction, references from your referees and any citations, which do not constitute part of the word limit.

If your application does not comply with the word count it will be returned to you without having been reviewed. You will be invited to edit and resubmit your application to be considered at a later assessment point.

[1] Applications will be anonymised, but it may still be possible for colleagues to identify you from the examples you use.

Reflective Account of Professional Practice

Introduction

This section should include a brief (maximum 300 words) overview of your professional experience of teaching and supporting learning in higher education, and your current roles and responsibilities. This provides useful contextual information to the reviewer, but should not include any of the evidence you rely on to demonstrate the Dimensions of Practice of the UKPSF. This section is not included in the overall word count for your application and it is not part of the assessment.

I have been a University Academic Fellow (UAF, tenure tracked academic staff) in the School of Earth and Environment since July 2015. In 2018 I conceived of, developed and taught two new computer programming modules at levels 2 and 5 (SOEE2710, 10 credits and SOEE5710M, 15 credits). I remain the module leader for these courses, I teach 80% of the material and do all of the marking. Student numbers are set to increase from 20 to approximately 80 in the 2020/2021 academic year when the level 2 module is made compulsory in the Environmental Science degree programme.

For a number of years, I have taught Meteorology on two Atmospheric Science field skills courses (SOEE2700, SOEE3291/SOEE5690), which has included leading outdoor practical activities, classroom teaching, marking and the development of new assessment material. I also deliver lectures and provide examination questions for SOEE1280 Atmosphere of Planet Earth. This strongly aligns to my research in atmospheric science allowing me to deliver research-led teaching.

I am on the Programme Delivery Team for BSc Meteorology and Climate Science and BSc Environmental Science.

I have an undergraduate personal tutor group and in the last 3 years I have supervised two undergraduate dissertations, one MRes project and a number of undergraduate summer research experience students, including a Laidlaw Scholar.

I currently have four PhD students. I lead-supervise three of these. The two students in year 3 and 4 of study already have peer-reviewed published work and are on track for thesis by publication within 3.5 years of starting their PhD. The remaining two students are in year 1. One previous co-supervised student successfully defended her PhD thesis in 2017.

Word count in this section = 273

A1: Design and plan learning activities and/or programmes of study

This section should describe your approach to, and experience of, designing learning activities for individual sessions, modules or programmes of study, depending on your experience. You should outline the curriculum design principles and scholarship that inform your practice, and provide two or three examples that demonstrate these.

***If you are applying for Fellowship**, for this and all other sections you should aim to write approximately 500-600 words.*

***If you are applying for Associate Fellowship** and have selected A1 as one of your two Areas of Activity, you should aim to write approximately 600-700 words.*

In 2018 I conceived of and developed two computer programming skills modules for level 2 undergraduate and postgraduate Environmental Science, Meteorology and Geography students. I was primarily motivated to develop these new modules from my own personal experience and that of colleagues. Our students were starting their undergraduate dissertation or Masters level research projects without the right data analysis and visualisation skills to conduct scientific research. I was also aware of the "skills gap" in this area; a review of skills needs in the Environment sector (NERC, 2012), listed "Modelling" and "Data Management" in the top three most wanted skills and a UK-wide government survey found skill-shortages in job vacancies in "Complex numerical/statistical skills" and "Advanced or specialist IT skills" (DofE, 2018) **[V4]**.

I use computer programming extensively in my own data-intensive research (Birch et al. 2015; 2016) and, thus, the design of the modules and the learning outcomes were very much informed by practical experience and research (i.e. "research-informed teaching, UA and HEA (2016)) **[K1]**. For example, I was aware that the learning outcomes of the course should not only include the ability to analyse and manage large datasets, but should also cover the ability to produce publication-quality visualisations of the data.

I ensured that the modules were well aligned with the learning outcomes of the relevant degree programmes; for example, a learning outcome of the Meteorology and Climate degree programme is the "ability to use a wide range of statistical, computational and observational skills to analyse the behaviour of the atmosphere". Through my role on the Programme Delivery Team for this degree programme, I am currently working towards better integrating computer programming skills into some of the level 3 modules for the 2019/2020 academic year. This is to ensure better continuity of skills teaching through the degree programme.

Whilst planning the design and learning activities for the modules, I reviewed how computer programming is taught through a pedagogical literature search (e.g. Robins et al. 2003; Rubin, 2013) and an assessment of teaching in other Schools within the University of Leeds **[K2,K3,V1,V3]**. Both Physics and Maths teach large (100+) cohorts of students through lectures and demonstrator lead practical sessions. My experience told me that this method would not work well for Environmental Science students as they tend to be less numerate **[V1,V2]**. I decided to take a "blended-learning" approach (Garrison and Kanuka, 2004), where all the teaching time is based in a computer cluster **[K2,K4]**. There is a mixture of delivery methods: short Powerpoint presentations, interactive computer demonstrations lead by myself and programming problems to be completed by the students. An advantage of variation in teaching methods over the 3 hour classes aids student concentration and engagement (Young et al. 2009).

I encourage the students to work on the non-assessed problems in groups by discussing how to go about solving the problem and by helping each other find errors in their code. This fits with the 'learning-by-doing' pedagogic

approach of Dewey (1938), that learning should be relevant and practical, not just passive and theoretical and that learning must involve links between both 'thinking' and 'doing' (Gibbs, 1988) **[V3]**.

Whilst planning the structure and teaching methods of the modules, I observed a computer programming session for PhD students called Software Carpentry **[V3]**. The class is taught by a member of staff who is a former school-teacher and well known for his engaging and appropriate teaching style. This experience helped confirm my choice of practical classroom (rather than lecture) based learning **[K2]** and I picked up a number of really useful tips and techniques, which I brought into my own teaching, such as the use of post-it notes to monitor progress and gather feedback, the use of visual aids to help explain key concepts and ways to make the classes more interactive.

Word count in this section = 631

A2: Teach and/or support learning

In this section you should describe examples that demonstrate your approach to teaching and supporting learning, showing your understanding of how students learn. You may want to include examples that demonstrate appropriate use of learning technology, as well as methods for evaluating the effectiveness of your teaching.

***If you are applying for Fellowship**, aim to write approximately 500-600 words; **if you are applying for Associate Fellowship** and have selected A2 as one of your two Areas of Activity, aim to write approximately 600-700 words.*

I implemented state-of-the-art digital learning technology for the delivery of the computer programming modules. Computer programming is traditionally taught in a text editor on a computer with a Linux (as opposed to Windows) operating system. This method was not practical or appropriate for these courses because (1) there is very limited Linux computer cluster availability on campus, (2) students would not be able to complete coursework outside of class without access to a specialised cluster and (3) the text editor based system can be unintuitive to beginner computer programmers **[V1]**. Instead, I worked closely with University IT experts to develop a new web-based computer programming system that is accessible from any desktop or laptop, does not require expensive software licences and which allows students to practise computer programming through a modern, innovative platform called Jupyter notebooks. The students are able to solve problems with computer code using these notebooks in a web browser with a user-friendly interface, which is a much more intuitive learning platform (Shen, 2014) **[K4]**.

One of the main teaching methods I use in the modules is "live-coding" (Rubin, 2013; Shannon and Summet, 2015) **[K2,V3]**. The technique involves (1) the lecturer typing example programming code into the computer in real time (as opposed to showing pre-written examples) and (2) problem solving that starts with a blank file and the students generate a solution by iteratively testing and revising the solution, guided by the lecturer and class discussion. The students respond well to this teaching technique and find it intuitive, even though the method is usually new to them **[K3]**. This method slows the pace of delivery, allowing students to absorb the information whilst getting first-hand experience of programming. Another advantage is that when I make errors in my computer code, I have to work through finding the solution in front of them, teaching them error checking and problem solving. A few weeks into the course, the students often point out my mistakes before I notice them **[K3]**. The technique also makes the classes more interactive because I am able to ask questions such as "what will be the result of this line of code?" or "who can remember what code we need for this particular task?". Student participation is also increased – they ask questions during live-coding, which shows they are engaged and following the material.

The computer programming modules were new in Semester 1 2018/2019. I was aware that regular student feedback about the course was required within the semester in order to ascertain that the teaching methods were appropriate, the volume and difficultly of work was right, and the examples were relevant. I gathered student feedback on these aspects via post-it notes stuck to the wall in class in the first two weeks, which allowed real-time feedback and short-term adjustment. I also used mid and near-end of semester student surveys for medium term planning and adjustments **[K5,K6]**.

Overall, student feedback was very positive. Students liked the live-coding method but some commented that the pace of my typing too fast to keep up with. In response, I slowed down the pace of my typing and took longer pauses to allow the slower typers to catch up **[V1,V2]**. I also upload lecture slides and worksheets to Minerva at least 2 days before the class, to allow students to go over the material in advance **[V1]**. I also implemented the use of post-it notes for monitoring progress, something I had observed in the software carpentry class: red post-it on top of the student's monitor means "slow down, I can't keep up" and green means "I am keeping up", which allowed me to achieve the correct pace. Official University end of module feedback surveys showed that out of 86 modules in Earth and Environment, my two programming modules were ranked 5th and 7th best in terms of mean percentage of positive survey responses, which is a fantastic achievement for a new module **[K6]**.

Word count in this section = 653

A3: Assess and give feedback to learners

You need to demonstrate here your understanding of the importance of assessment in shaping student learning and the value of feedback. Provide examples that demonstrate a variety of assessment types as well as your rationale for choosing them. Make sure you include an account of how you provide feedback, why you do it that way, and demonstrate the impact of feedback on student learning. You may also want to demonstrate your awareness of quality assurance processes and standards.

***If you are applying for Fellowship**, aim to write approximately 500-600 words; **if you are applying for Associate Fellowship** and have selected A3 as one of your two Areas of Activity, aim to write approximately 600-700 words.*

In early 2018, I implemented changes to the design of assessment materials for a level 2 Atmospheric Science field course. The students work in groups throughout the 2-day activity, designing collection methods, gathering observations in the field and analysing them in class. Previously, the main method of assessment was via individual written reports, submitted at the end of the 2-day activity. The module leader and I felt that there was substantial duplication of work by individuals in each group, which limited the amount of scientific thought and analysis that could be done in the allotted time. We decided to change the assessment method to a single group report, which all group members contribute to **[K2]**. We also trialled a method of peer assessment for teamwork, where each group member was given a number of marks to distribute between their fellow group members, according to the value of each person's contribution (e.g. Planas-Llado et al. 2017) **[V1,V3]**.

The group report method allowed more time to be spent on scientific analysis rather than duplication of written work. The spread of marks between groups remained high, although this was predominantly due to different levels of time management. The students did not respond well to the peer assessment and most gave an equal number of marks to each group member, which did not provide a useful means of assessment. For 2019, the remaining issues will be addressed by changing the assessment methods in a more radical way: the entire activity will become formatively assessed only and instead of group reports, students will present their group's findings via a Powerpoint presentation to the class. Peer pressure and the public speaking aspect will ensure that students remain motivated and feedback will be given immediately (written and orally) from teaching staff and peers. The proposed method will also free up time for deeper scientific thought **[K3]**, as well as providing presentation practice, which is a key skills gap in job applicants (DofE, 2018) **[V4]**.

I designed and implemented the assessment and feedback methods for the computer programming modules, which comprise of two assessed worksheets containing programming problems and a more open-ended research project, where programming skills and data are used to investigate a scientific hypothesis. Both assessment methods require most or all of the skills and methods introduced in the classes, so they fully assess the learning outcomes of the module. The worksheets are completed earlier in the course and are more prescribed, guiding the students through problems at a level that is appropriate to that stage of the course. The coursework brings all the new skills together and assesses the students' ability to apply the new skills to address a research question **[K2]**.

I am aware of the seven principles of good feedback practice (Nicol and Milligan, 2006) and ensure I adhere to them **[V3]**. I am clear about the expectations of assessment and what good performance is by providing (1) the breakdown of marks between style of computer code, scientific interpretation of results and presentation of graphs and maps and (2) examples of best practice in computer programming. I encourage teacher and peer dialogue around learning by providing informal, oral feedback on coding style to students regularly throughout the practical classes. I provide opportunities to close the gap between current and desired performance by going over common mistakes at the start of the following class. I encourage positive motivational beliefs and self-esteem by always providing both positive and negative feedback to all students **[V1]**. I facilitate the development of reflection and self-assessment

in learning by providing the answers to the non-assessed worksheets, with the opportunity to discuss them in the next class.

Word count in this section = 607

A4: Develop effective learning environments and approaches to student support and guidance

This section should describe how you create an effective learning environment, whether real or virtual, which supports learning while demonstrating inclusivity and respect for diversity. You should also provide examples of support you provide, and how it aligns to policy.

***If you are applying for Fellowship**, aim to write approximately 500-600 words; **if you are applying for Associate Fellowship** and have selected A4 as one of your two Areas of Activity, aim to write approximately 600-700 words.*

I currently have two Postdoctoral Researchers and four PhD students in my research group. My supervision philosophy is to treat them all as valuable members of the group. I create a supportive and inclusive research environment **[V1,V2]** by drawing on my own positive experiences during my PhD and through observing and mimicking positive aspects of the supervision techniques of my peers. I schedule one hour per week in my diary for each member of my group; a time when I am available for a supervision meeting if they wish. I arrange for PhD co-supervisors to attend these meetings on a monthly basis. Where the PhD projects have industrial partners, I accompany the student on their first visit to introduce them to staff and to help the student explain their project, this can be very daunting for a 1st year PhD student. When PhD students start I am very clear about expectations of working hours and annual leave. This is to ensure that they feel comfortable in taking leave and that they don't feel that they need to work long hours, which I believe is detrimental to a PhD student's overall performance.

I lead my group by example **[K3]** – I am engaged with departmental activities: I attend and am visible at seminars, social events and meetings. I feel that including myself on a personal level with PhD students, means that I am more approachable and have more of feel for their experiences and difficulties. As a female member of staff in a physical science department that remains male dominated, I feel my visibility as a role model is especially important (Young et al. 2013) **[V2]**.

The Royal Society (2014) reported that over 95% of STEM PhD holders in the UK leave academia **[V4]**. Every 6 months I ask the student about their future career plans and where possible, create networking and training opportunities to help them achieve their career goals **[V4]**. I ensure that students are aware of university procedure and expectations in terms of the 6 month report, transfer viva, 2 year report and thesis style (University PhD Progress Monitoring Policies, 2018) **[K5,K6]**. I ensure supervision meetings are recorded on GRADS and I provide feedback on written work in a timely manner, usually within one week.

Supervision of doctoral students is a form of collaborative problem-solving (Love et al., 1998). My research group have regular meetings together, where students and staff can show their latest work in an informal setting and receive additional feedback from myself and their peers, who are often working on similar problems **[V3]**. I have fostered a supportive learning community, where group members feel like they are part of a team (rather than rivals) and where more experienced staff and students provide some supervision (mainly technical help) to less experienced group members **[K3]**. This makes good use of their skills and frees up my time for effective scientific discussions and planning with them.

I act as a personal tutor for undergraduate students. I ensure that my interaction with them is aligned with the University Personal Tutoring Policy (2014) **[K6]**. I met with each student 3 times per year, discuss academic achievement and career plans, provide references and encourage them engage with the Leeds for Life scheme **[V2]**. I aim to develop a good rapport with each individual early on, making them more likely to approach me later if they are experiencing problems. I have made myself aware of where to seek further University support on

matters such as mental health and disabilities, as it is preferable to have this information before you receive requests for help.

Word count in this section = 600

A5: Engage in CPD in subjects/disciplines and their pedagogy, incorporating research, scholarship and the evaluation of professional practices

You need to demonstrate your commitment to your own professional development, including an account of recent activities. You should provide examples of how you have reflected on your own practice and any changes you have made to it as a result. This section should also include a summary of your future CPD plans.

***If you are applying for Fellowship**, aim to write approximately 500-600 words; **if you are applying for Associate Fellowship** and have selected A5 as one of your two Areas of Activity, aim to write approximately 600-700 words.*

In order to achieve the highest standards possible in my teaching, I am fully committed to my CPD **[K6]**. When I commenced my academic position at Leeds 3.5 years ago, I was relatively inexperienced at teaching. I was aware of this and made an effort to develop my generic teaching skills. I observed lectures and classes given by more experienced staff to get a broad view of good teaching style and delivery methods, how to interact with students and the teaching ethos at the University of Leeds **[V3]**. I attended a number of training courses such as "*Introduction to Learning and Teaching in Lectures*" and "*Building Expertise in Student Education: (2) Developing your teaching practice with large and small groups*", which provided useful tips and introduced me to the relevant pedagogy. For example, the literature on student concentration (e.g. Bligh, 1998) encouraged me to inject different activities or materials at key points during lectures to maintain student engagement **[V3]**.

Prior to developing the computer programming modules, I attended a 1-week course in computer programming in order to sharpen my own skills **[K1]** and to ensure I was aware of recent developments. I also observed teaching on a Software Carpentry course, to witness best practice in course content, delivery methods such as live-coding, the use of visual aids and how to design effective programming exercises **[K2,K3,K4]**. It was the observation of this session that convinced me that teaching programming through live-coding was the right delivery method for my students. During the semester, my teaching mentor observed me teaching a computer programming class. He provided feedback on both my teaching style and course content. Following this I have better engaged students in class discussions to develop computer programming plans, rather than presenting them with a plan **[K5]**. I also had a number of discussions with the Faculty's Blended Learning Enhancement Officer, who provided training on electronic coursework submission that was suitable for my modules **[K4]**.

In the next few months I will act as Internal PhD viva examiner for the first time. I recently attended the course "*Effective Research Student Supervision: The Role of the Internal Examiner*". I have already begun to make the arrangements for the viva, in line with the University PhD Viva Examination Policy (2018), something I would not have known was my responsibility without attending this course **[K6]**.

In the future, my CPD plans involve working towards a gaining a HEA Senior Fellowship. The required prerequisites set out a broad framework for CPD. I plan to attend a number of additional training courses, such as "*Building Expertise in Student Education: (3) What works in Assessment and Feedback*" and "*Building Expertise in Student Education (4) course on Leeds-for-Life and supporting personal tutees*" as I have had no formal training in these areas. I also plan to attend the 2020 Student Education Conference in Leeds and the 2019 Earth and Environment Teaching away day in order to learn from other practitioners **[V3]**.

Within the next two years, I will attend a Software Carpentry Instructor Training course, with the view of becoming a qualified Instructor, which will advance the specific teaching skills I require for effective computer programming education **[K1,K2,V1]**. I also plan to attend the 2020 DigiFest conference, which is a digital education conference, aimed at understanding what the next-generation of students need to thrive in their constantly evolving technological environment. I plan to attend and present at a "Show and TEL" event at

University of Leeds, which showcases Technology Enhanced teaching practices Environment, Maths and Physical Sciences. I will also join the Collaborate Club, which provided online training through Blackboard Collaborate on topics such as Minerva Grade Centre the TopHat classroom response system to Leverage students' devices to take attendance, launch discussions and questions, and get real-time feedback (Meguid and Collins, 2017), two tools where I currently only have basic understanding.

Word count in this section =642

Citations

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Professional Recognition in Student Education (PRiSE)

Reference to support an Individual Application for Professional Recognition

1. Preliminary Details

Applicant's name	**Dr Cathryn Birch**
Category of Fellowship applied for (please indicate as appropriate)	☐ Associate ☒ Fellow ☐ Senior Fellow
Your name	**Andrew Ross**
Job title	**Associate Professor & Director of Undergraduate Education**
School / Service / University	**School of Earth and Environment, University of Leeds**
Contact details	**A.N.Ross@leeds.ac.uk, +44(0)113 343 7590**
Relationship to applicant	**Teaching mentor**
How long have you worked with the applicant? (Insert dates)	**I have known and worked with Cathryn in a research capacity since 2005, and I have been her teaching mentor since she started her university academic fellowship position in Leeds in July 2015.**
Your HEA Fellowship status (if appropriate)	☒ None ☐ Associate Fellow ☐ Fellow ☐ Senior Fellow ☐ Principal Fellow
Declaration	Please check the box below to indicate that you have read and agree to the following statement: *In submitting your reference you are confirming that the applicant's submission relates to their HE professional practice and that your reference is your own work and has been written specifically for this applicant. In cases where the authorship of the reference is in doubt, we may contact you directly to seek confirmation that the reference is your own work. If the professional integrity of the reference is in question it will not be accepted.* ☒ I have read and understood the declaration

2. Reference

In no more than 500 words, please comment on the validity of the evidence in the application. Referees for applicants for the categories of Associate Fellow or Fellow should also attest to the quality of the applicant's teaching and / or support for learning.

I have been a lecturer then associate professor in the school of Earth and Environment since 2005. During that time I have developed and taught a wide range of modules. I have been a programme leader, admissions tutor and I am currently director of undergraduate education in the school. I have also acted as a teaching mentor for a number of more junior colleagues.

As Cathryn's teaching mentor I have talked regularly with her about her teaching and the development of her new computer programming modules. I have also observed her teaching. I can confirm that the information supplied in her application is correct. I have observed her engagement in all aspects of the UKPSF and in her application she has clearly mapped her practice onto these standards.

Cathryn is highly dedicated and committed to student education. Despite being relatively inexperienced in teaching, she has lead the development of the new computer programming modules from the start. She has looked at other similar modules and training across the university and elsewhere in order to inform her design. Based on this, she has developed an innovative "live coding" approach to delivery. I observed this through a peer observation, and was impressed with the way that it worked. Cathryn has produced high quality and effective materials, informed by research, to underpin the module. She delivered the material in an engaging way, making best use of technologies to support the teaching, and used the interactive format well to ensure student engagement. Both informal discussion with students and the formal module feedback show that students have both enjoyed the module and gained significant skills from it. The overall student satisfaction for module was some of the highest in the school last semester.

Cathryn has a reflective approach to her teaching and learning. She has discussed all aspects of her teaching with me and with other teaching colleagues. In particular, she has sought advice about aspects such as assessment and feedback where she has less experience. This is a continuous process. For example Cathryn updated the second assessed worksheet after reviewing student performance on the first worksheet, and discussing it with me. Assessment criteria and feedback were clear and transparent and aligned with the learning outcomes of the module. Overall student performance was very good this year, and Cathryn is already considering how assessments might be modified next year to ensure it continues to support students with less experience and confidence in programming, while also stretching the best students.

Cathryn has already become an active and important member of the programme delivery teams for Meteorology and Climate Science, and Environmental Science. She is providing important input on strategic decisions around programming and research skills beyond just her own modules. This is a valuable part of plans to improve skills delivery in our modules addressing both nationally identified skills gaps and the needs of employers.

Your full name……Dr Andrew Ross……

Date ……04/02/19……

Professional Recognition in Student Education (PRiSE)

Reference to support an Individual Application for Professional Recognition

1. Preliminary Details

Applicant's name	**Cathryn Birch**
Category of Fellowship applied for (please indicate as appropriate)	☐ Associate ☒ Fellow ☐ Senior Fellow
Your name	**John Marsham**
Job title	**Associate Professor**
School / Service / University	**School of Earth and Environment, University of Leeds**
Contact details	**J.Marsham@leeds.ac.uk, +44(0)113 343 6422**
Relationship to applicant	**Has co-taught modules with applicant and co-supervises PhD students**
How long have you worked with the applicant? (Insert dates)	**3.5 years (July 2015 to present)**
Your HEA Fellowship status (if appropriate)	☒ None ☐ Associate Fellow ☐ Fellow ☐ Senior Fellow ☐ Principal Fellow
Declaration	Please check the box below to indicate that you have read and agree to the following statement: *In submitting your reference you are confirming that the applicant's submission relates to their HE professional practice and that your reference is your own work and has been written specifically for this applicant. In cases where the authorship of the reference is in doubt, we may contact you directly to seek confirmation that the reference is your own work. If the professional integrity of the reference is in question it will not be accepted.* ☒ I have read and understood the declaration

2. Reference

In no more than 500 words, please comment on the validity of the evidence in the application. Referees for applicants for the categories of Associate Fellow or Fellow should also attest to the quality of the applicant's teaching and / or support for learning.

I co-supervise two PhD students who are lead supervised by Cathryn (Beth Woodhams and Dean Walker). Cathryn has also helped me with supervision of two of my students (Peter Willets and Miroslav Provod), helping with technical aspects of the work, as well as providing scientific guidance (and is a co-author on published/submitted papers as a result). Cathryn takes a thorough and attentive approach to PhD supervision, with regular meetings and prompt feedback. Praising work, whilst identifying specific actions needed to take it forward. She has given her students opportunities to engage in activities that build their wider research experience and networks (e.g. Cathryn encouraged Beth spent time at Monash University in Australia and to take a leading role a pilot field campaign; Dean attended the Greater Horn of Africa Climate Outlook Forum), whilst she has kept them on a productive research track (Beth has a lead author paper published and one almost submitted, Dean has one submitted).

I have co-supervised one undergraduate summer student with Cathryn. Cathryn took her usual organized and thorough approach to this, and found a well-defined and tractable problem that the student could address with the time and skills they had available, and this (unusually) resulted in a peer-reviewed paper lead authored by the student.

Cathryn is also proactive in engaging with her research group and wider ICAS activities and in encouraging her group to do likewise (e.g. in organizing Thursday group lunches, and attending seminars and group meetings). Undergraduate summer project students, PhDs and PDRAs all attend group meetings together to encourage peer-to-peer learning, and sharing of skills and tools.

I lead the second year Blencathra SOEE2700 field trip. Cathryn has, as she outlines, made valuable contributions to field-trip teaching design, assessment process, teaching materials, course delivery and the marking itself. Her British Mountaineering Council Mountain Leader Award gives her valuable insights into the risk assessment for this course, which involves ascending a Lake District mountain on foot in Spring, sometimes with snow on the summit. Cathryn and I have discussed several possible changes to the course over the years, based on our experience delivering it and student feedback. She has provided important input to the changes implemented, particularly the move to more group assessment, and in future formative rather than summative assessment. The field trip allows staff to interact with students as individuals, and Cathryn is proactive in both the field and classroom in discussing student's results with them, and potential interpretations. She does not simply tell students the answers when asked, but rather tries to steer them to work it out from the information provided, encouraging groups to work together effectively as a team (e.g. through effective task and time-management). Her marking is thorough, and insights gained have fed back to course design. Having read Cathryn's application, I think I will trial ideas at Blencathra that she has used in other modules, in particular the post-it-note feedback at the end of each day.

Your full name……Dr John Marsham……..

Date ……14/02/2019……..