

# School of GeoSciences Research Training and Development Course

Session 1

# Schedule

09:45 – 10:00	Arrival and introduction	<i>Isla</i>
10:00 – 10:30	Mental health and well-being during a PhD	<i>Isla</i>
10:30 – 11:30	Ethics and your PhD research	<i>Sam Staddon</i>
11:30 – 11:45	Research plan introduction	<i>Isla</i>
11:45 – 12:00	Intro to your RTSG and finances	<i>PGR office</i>
12:00 – 14:00	Lunch	
14:00 – 16:00	Managing your PhD and Research Plan	<i>Isla</i>

# 1. Introduction

# Introductions



## **Dr. Isla Myers-Smith**

Head of PGR Training and Progress

Office: Crew 113

[isla.myers-smith@ed.ac.uk](mailto:isla.myers-smith@ed.ac.uk)

*Plant ecologist with a focus on Arctic ecosystems, biodiversity change, quantitative ecology and data synthesis*

[www.teamshrub.com](http://www.teamshrub.com)

# Research Planning and Management in the Geosciences (RPMG)

## **Wed 18th September 2019 (Murchiston House 1.19)**

Mental health and well-being during a PhD  
Ethics and your PhD research  
Research plan introduction  
Intro to your RTSG and finances  
Managing your PhD and Research Plan  
**Fieldwork Health & Safety**

## **Wed 13<sup>th</sup> November 2019 (Murchiston House 1.19)**

Creating an online presence – social media, branding  
Science communication outside of the Ivory Tower  
PhD and your career – ‘Where can your PhD take you?’  
Research plan progress meeting

## **Wed 16 October 2019 (Murchiston House 1.19)**

Writing skills to support your PhD  
**Time management and forward planning**  
Intro to data management  
Version Control and project management

What you produce:  
Research Plan

## **Wed 30<sup>th</sup> October 2019 (Murchiston House 1.19)**

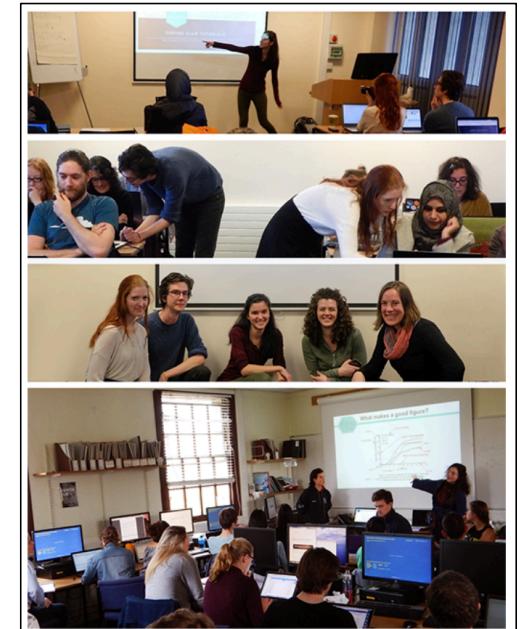
Intro to the confirmation process  
Top tips for scientific writing  
Introduction to Data Visualisation in R

Course organiser:  
Isla Myers-Smith  
[isla.myers-smith@ed.ac.uk](mailto:isla.myers-smith@ed.ac.uk)

# Coding Club – quantitative skills training for research students

<https://ourcodingclub.github.io/>

The screenshot shows the homepage of the Coding Club website. At the top, there is a navigation bar with links: Home, Tutorials, Team, Links, Get involved, and Contact. Below the navigation bar is a large, dark banner featuring a map of the world with various colored dots representing data points. Overlaid on this banner is the text "CODING CLUB: A POSITIVE PEER-LEARNING COMMUNITY" in white, sans-serif font. At the bottom of the banner, there is a smaller text block: "We are an enthusiastic group of ecology and environmental science students and researchers from the University of Edinburgh."



## 2. Mental health and well-being during a PhD

Why are you doing a PhD  
or MSc Research?

What are your expectations?

What are your supervisors' expectations?

Do you currently feel overwhelmed?

When do you think you might  
feel overwhelmed?

What will be the hardest parts  
of your PhD?

Do you have strategies to  
manage stress?

What is your work routine?

## A Scenario

*You just found out about a field research grant application that is due tomorrow. Do you stay up late and write an application?*

Benefits – You might get additional funding allowing you to do more in your field research season. Getting that funding will look good on your CV and maybe help you get the next grant or your future postdoc.

Drawbacks – You might not get the funding. You might miss out on sleep and you have a busy period ahead of you and you need that sleep. You might get sick because there is a cold going around and you already have a sore throat.

## A Scenario

*You just found out about a field research grant application that is due tomorrow. Do you stay up late and write an application?*

There is no right or wrong approach to this scenario. There is no right or wrong way to manage your time or to work on a PhD. Every choice has benefits and drawbacks and you need to balance your research goals with other elements to your life. This is not easy!

Some students choose structure and a 9 to 5 work day. Some students choose to work when they want with more and less intense periods. Find the work-life balance that works best for you.

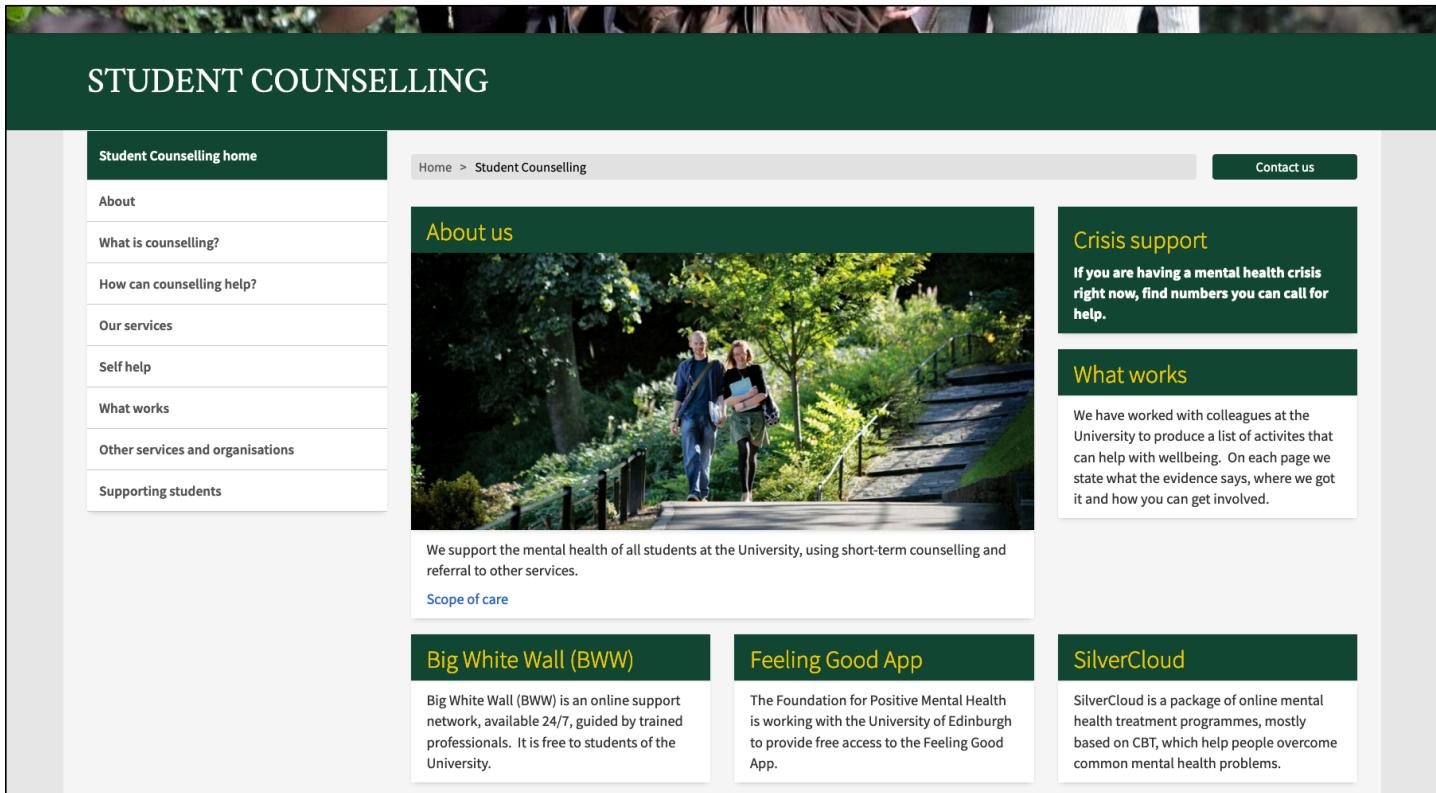
What will be the best parts of your PhD?

## Mental Health and your PhD

- Health and wellbeing are vital to success in Academia
- PhD's can be overwhelming – that feeling is normal
- Particular points of stress are early on when you are figuring out your project
- At the mid point when you might feel lost
- Towards the end while writing up when the task feels daunting or impossible
- Asking for support and sharing your concerns early on is a great way to stay on track
- Reach out to your peers, your supervisors, your advisor and to University Mental Health Services

# Mental Health Resources

<https://www.ed.ac.uk/student-counselling>



The screenshot shows the homepage of the Student Counselling website. The header features a dark green bar with the text "STUDENT COUNSELLING". Below this is a navigation menu with links to "Student Counselling home", "About", "What is counselling?", "How can counselling help?", "Our services", "Self help", "What works", "Other services and organisations", and "Supporting students". The main content area has a light grey background. At the top right of this area is a "Contact us" button. The central part of the page contains a "About us" section with a photograph of two people walking in a park, followed by text about supporting student mental health and a "Scope of care" link. To the right is a "Crisis support" section with a call-to-action for mental health crises. Further down are sections for "What works" (listing evidence-based activities) and three external resource boxes: "Big White Wall (BWW)", "Feeling Good App", and "SilverCloud".

**STUDENT COUNSELLING**

[Student Counselling home](#)

About

What is counselling?

How can counselling help?

Our services

Self help

What works

Other services and organisations

Supporting students

Home > Student Counselling

Contact us

**About us**



We support the mental health of all students at the University, using short-term counselling and referral to other services.

[Scope of care](#)

**Crisis support**

If you are having a mental health crisis right now, find numbers you can call for help.

**What works**

We have worked with colleagues at the University to produce a list of activities that can help with wellbeing. On each page we state what the evidence says, where we got it and how you can get involved.

**Big White Wall (BWW)**

Big White Wall (BWW) is an online support network, available 24/7, guided by trained professionals. It is free to students of the University.

**Feeling Good App**

The Foundation for Positive Mental Health is working with the University of Edinburgh to provide free access to the Feeling Good App.

**SilverCloud**

SilverCloud is a package of online mental health treatment programmes, mostly based on CBT, which help people overcome common mental health problems.

## 2. Ethics and your PhD research

## 4. Intro to your RTSG and finances

# Research Training Support Grants

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/4-finance>

## 4. Finance

This chapter contains finance information such as Research Training Support Grants, fieldwork costs, external purchases, Tutoring and Demonstrating, Conferences and Scientific Meetings, Maternity pay and other finance matters for PGR students.

### 4.1 Research Training Support Grant

#### Research Council Funded Students

**Students funded via NERC** receive an annual allowance of £1,150 as standard. Students on the E3 DTP may have Additional Research Costs attached to your project (your first supervisor would know how much). These will be added to your RTSG account. You cannot use your RTSG after your stipend ends which means that RTSG should be spent before the end of the last month of stipend covered by NERC. RTSG cannot be used to pay for flights, accommodation or fees to conferences/ events which will happen after the funding ends.

Any RTSG funds not provided by NERC (i.e. by a CASE partner or through another source) are not restricted in the same way and will depend on the provider's policy. You should check with them if unsure.

# Research Training Support Grants

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/4-finance>

## Students funded by other sources

**School/ University funded students (i.e. PCDS, EGRS, and Enlightenment studentships)** receive an RTSG of £1000 per year for students on physical science projects and £500 per year for those on social science programmes. This is provided as part of your studentship.

**Students funded by industry or research grants** will sometimes receive an individual RTSG but in some cases any additional costs will be paid directly from your source of funding. If you are funded this way, you should contact your first supervisor to find out.

**Self-funded Students** are invoiced for additional programme costs (APCs) by Registry Fees as part of your tuition invoice annually. These are normally set at £1000 per year for a physical sciences students, but this may be more where particular research costs require additional funding. These are usually set at £500 per year for Human Geography students. If you are unclear how much these will cost, the amount is included on your admission letter.

When you have paid your tuition invoice, the money you have paid for APCs is transferred to the School and placed in your RTSG for you to use during your programme.

Any self-funded students who do not use the funds in your RTSG during your programme should contact [pgrsupport.geos@ed.ac.uk](mailto:pgrsupport.geos@ed.ac.uk) after you graduate to request a refund of these funds and PGR Support will contact Finance to authorise this.

Both self and school/ university funded-students can use the funds in your RTSG until you receive your award letter from College. However, any IT expenditure after the end of the prescribed period in excess of £250 will require a letter of support from your supervisor authorising the expenditure.

# Research Training Support Grants

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/4-finance>

## How to use your RTSG

The RTSG is paid into an individual account which is managed jointly by the student, who can sign off for expenditures up to £100. Expenditure in excess of £100 must be authorised by the supervisor. Access to these accounts is at [www.geos.ed.ac.uk/internal/finance/rcosts\\_student/](http://www.geos.ed.ac.uk/internal/finance/rcosts_student/). These accounts are expected to cover ALL research costs such as analyses, travel & conferences, car hire, equipment purchase, access to high performance computing and data storage, thesis production, publication costs (for non-RCUK-funded students), etc.

In order to make a claim you must be registered on the university's eExpenses system so that you can be reimbursed directly via BACS. The application form is available below and should be returned to the School's Finance office.

 [eExpenses application form \(27.53 KB PDF\)](#)

You can buy services within the School from this account, or elsewhere in the University by use of Purchase Orders. If you are asked to pay via an Electronic Internal Transfer (EiT) then you must complete a Purchase Order Requisition form and send the form to [orders.geos@ed.ac.uk](mailto:orders.geos@ed.ac.uk) and they will send you an iT when they have raised the Purchase Order. You will find the necessary form in the Finance section of the website- <https://www.ed.ac.uk/geosciences/intranet/finance>

The codes you need in order to claim from your RTSG are-

**Cost centre 508CNS**

**Job code G00001**

If you have questions about the use of your RTSG or if you have one, please contact [pgrsupport.geos@ed.ac.uk](mailto:pgrsupport.geos@ed.ac.uk)

# Research Training Support Grants

## RESEARCH TRAINING SUPPORT GRANTS

[School of GeoSciences home](#)

**RTSG**

### RTSG Accounts for Supervisors

Students who wish to spend amounts above £100 from their RTSG accounts must obtain approval from one of their supervisors.

All the students you supervise should be displayed in the search panel.

### 3. Research plan introduction

# What is Science?

## Science

From Wikipedia, the free encyclopedia

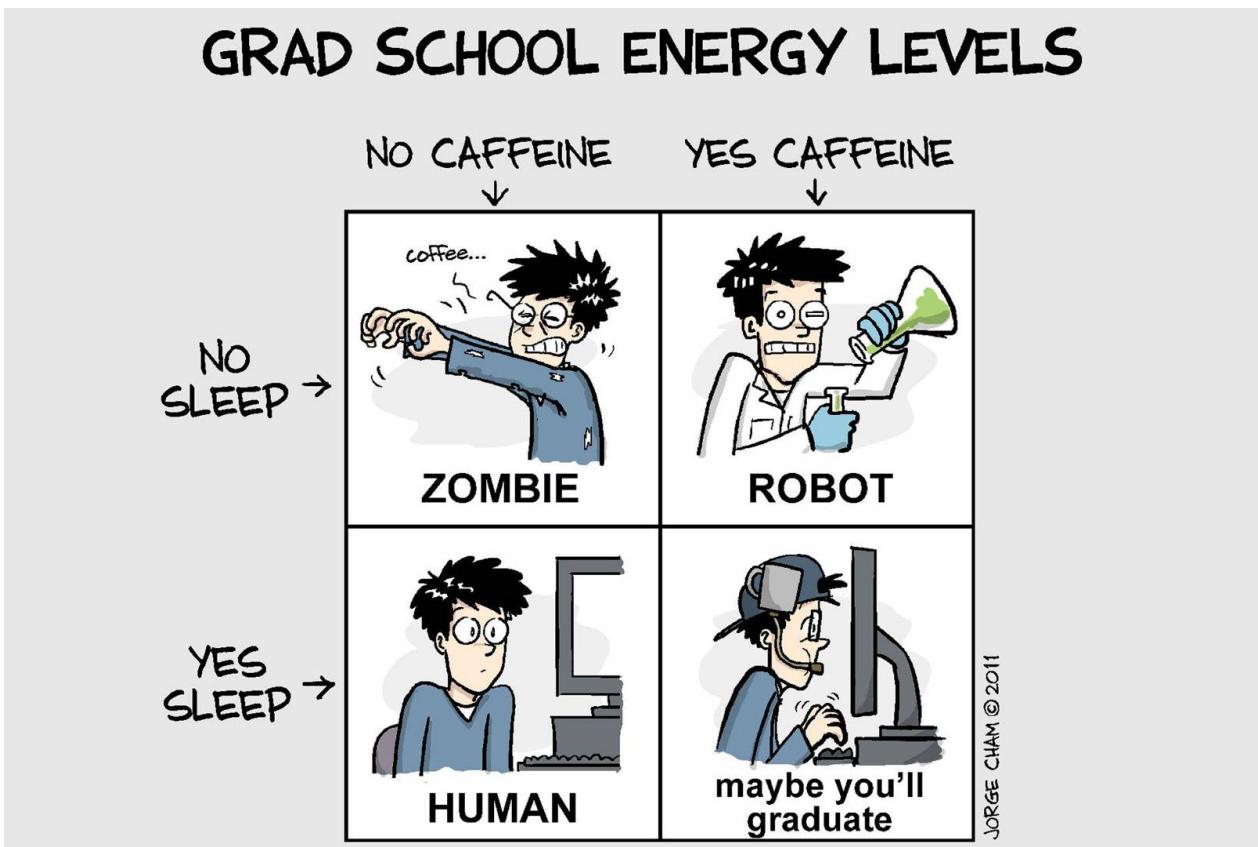
Science (from the Latin word *scientia*, meaning "knowledge") is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe. - Wikipedia



# What disciplines do we have represented here?



# What is a PhD (or MSc Research)?

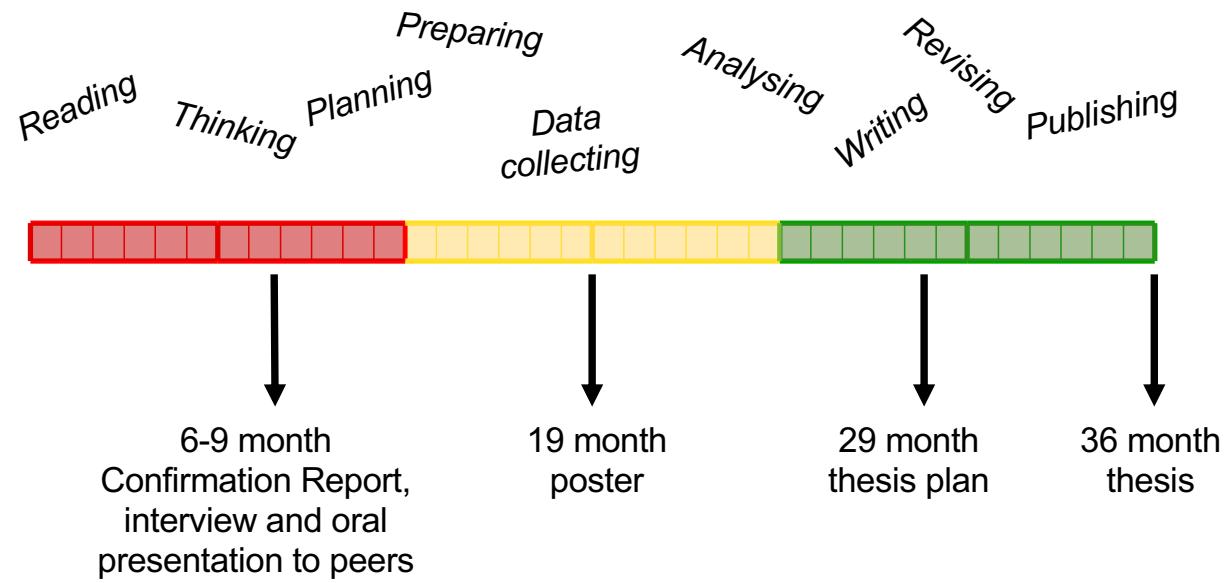


How do they vary...  
by discipline,  
around the world,  
for each person?



**Ph.D.** Black cloth lined with blue silk shot with brown, bordered with three inches of red silk

# Your PhD



## What are the stages of a PhD?

- Identify the research topic (broad field)
- Review the literature
- Set the research questions and hypotheses
- Determine the methodology
- Collect the data
- Analyse the data
- Write up for publication

## What makes a good PhD?

- Passion for the subject
- Novel ideas
- Rigorous scientific process
- Careful planning
- Taking things one step at a time

# Your PhD

To succeed you need a plan!



**The University of Edinburgh**  
**School of Geosciences**

**Quantifying distribution shifts of plant species under climate change:  
a comparison of the tundra and savannah biomes**

**PhD Plan**  
**Mariana García Criado**  
**PhD candidate in Atmospheric and Environmental Sciences**  
**December 6th, 2017**

**LUNCH!**

## 5. Managing your PhD and Research Plan

# What is scientific research?





<https://www.youtube.com/watch?v=42QuXLucH3Q&t=353s>

# A reproducibility Crisis?

SCIENCE

## Psychology's Replication Crisis Is Running Out of Excuses

NATURE | COMMENT

Reproducibility: A tragedy of errors

IS THERE A REPRODUCIBILITY CRISIS?



©nature

## Why Most Published Research Findings Are False

John P. A. Ioannidis

The Washington Post  
Democracy Dies in Darkness

Many scientific studies can't be replicated. That's a problem.

## Scientific Errors

- Fraud – don't do this one! – 0.3% of scientists admit falsifying research data within last 3 years
- Coding error – Professional programmers have about 15 – 50 errors per 1000 lines of delivered code
- Model specification errors – statistical or process-based models
- Model assumption errors – process-based models
- Statistical error – ~ 50% of papers include at least one statistical error, ~ 8% that error changes the result

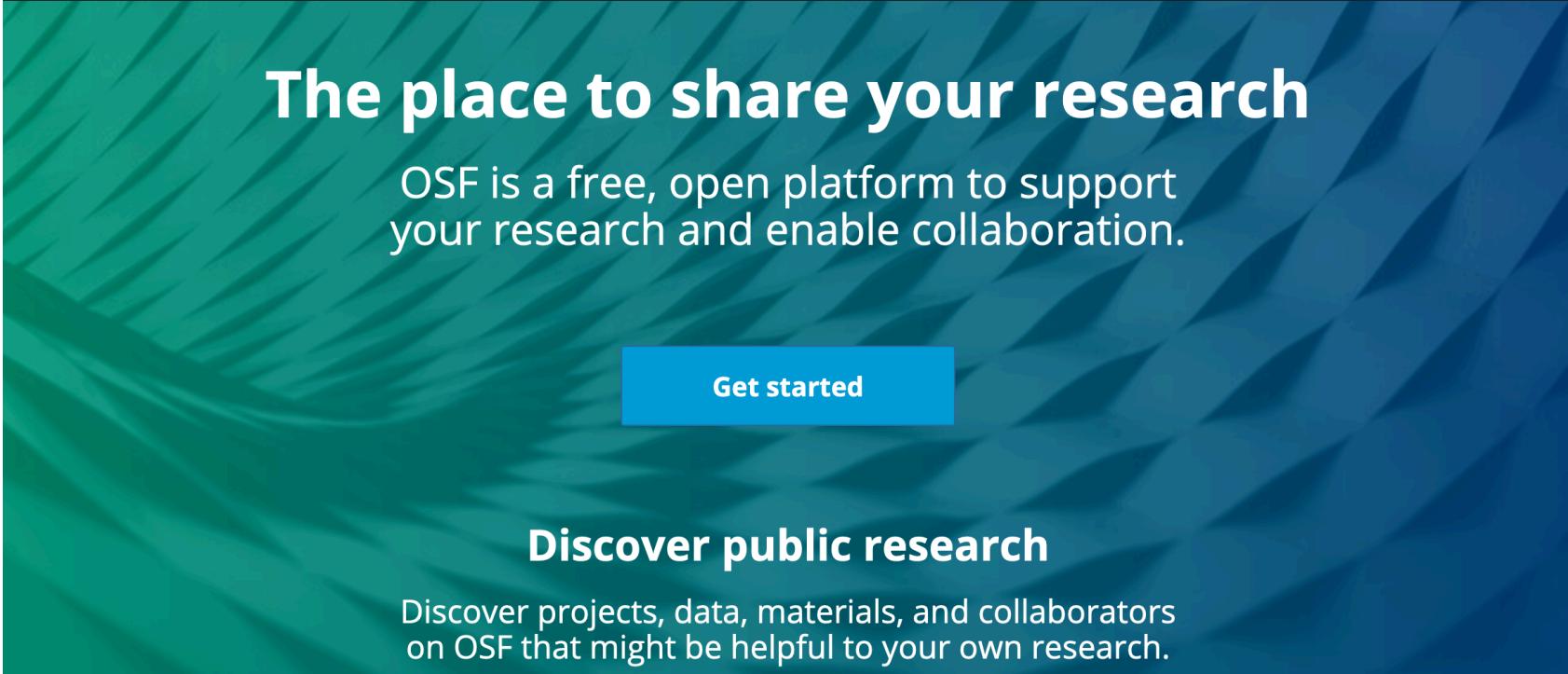
# Scientific Errors

- Experimental design errors
- Technical errors
- Communication errors
- Publication bias
- Analytical Error – 50% of ecology and evolution researchers admit to conducting post-hoc analyses
  - P-hacking
  - Effect size hacking
  - Etc.

## What is the solution?

- Do studies with larger sample sizes
- Replicate important results
- Show magnitudes of estimates - effect sizes, don't use – significance tests
- Practice open science – make code and data public
- Pre-register hypotheses and analyses
- Publish negative results

<https://osf.io/>



The OSF homepage features a large, vibrant green-to-blue gradient background with a subtle leaf-like texture. At the top, a dark navigation bar contains the "OSFHOME" logo with a blue flower icon, and links for "Search", "Support", "Donate", "Sign Up", and "Sign In". The main headline "The place to share your research" is displayed in large, white, sans-serif font. Below it, a subtext explains OSF's purpose: "OSF is a free, open platform to support your research and enable collaboration." A prominent blue button with white text reads "Get started". In the bottom right corner of the banner, there is another call-to-action: "Discover public research". Below this, a descriptive paragraph encourages users to "Discover projects, data, materials, and collaborators on OSF that might be helpful to your own research."

OSFHOME ▾

Search Support Donate Sign Up Sign In

# The place to share your research

OSF is a free, open platform to support your research and enable collaboration.

[Get started](#)

## Discover public research

Discover projects, data, materials, and collaborators on OSF that might be helpful to your own research.

# What is a research plan?



**The University of Edinburgh**  
**School of Geosciences**

**Quantifying distribution shifts of plant species under climate change:  
a comparison of the tundra and savannah biomes**

**PhD Plan**  
**Mariana García Criado**  
**PhD candidate in Atmospheric and Environmental Sciences**  
**December 6th, 2017**

Who are you writing your  
research plan for?



## What should it contain?

- Literature review
- Chapter by chapter plan?
- Hypotheses
- Research Questions
- Predictions
- Anticipated results
- What those results might mean?
- Conceptual figures
- References
- Gantt Chart of your timeline
- Etc.

## What should it contain?

- This is the basis for your confirmation report
- You prepare it in discussion with your supervisory team
- You receive feedback on it
- You adapt the content for your confirmation report
- It provides the framework for your PhD research management
- It stimulates discussion with your supervisors and peers
- Etc.

# How to come up with your research ideas?

- What are the current views that are being expressed?
- Are there any gaps in existing knowledge on the topic that could be addressed?
- Has the research you propose been done before?
- What interesting areas do they appear to have overlooked?
- Are there alternative lines of enquiry beyond those already indicated which seem not to have been explored?
- What are the areas of dispute in the subject?
- Are there inconclusive or contradictory data?
- What are the underlying assumptions in which others have viewed the context of their work? Are these flawed?

# How to come up with your research ideas?

Take time to think!

*"For every hour in the field, spend a day thinking before you go".*

*Sergey Zimov*



## What next?

- Start reading the literature
- Start meeting with your supervisor
- Start discussing what you are reading and exchange ideas
- Start building a plan – it will be iterative
- What are the big questions you could answer
- What are the different themes of research you could undertake
- How might those themes fit together in one PhD

## What next?

- Identify what skill sets do you need to carry out the research
- Start training in those skills
- Start writing – try outlining and writing a paragraph a day
- Start sketching out hypothesized relationships with data
- Make your self a mind map
- If you are stuck – start a file and work on the title page! Just start putting pen to paper or fingers to keys.

# What is the point of the confirmation process?

 **Crime Muse** @katejmclachlan · 30 May

I had my **Confirmation** of Candidature **Panel** on Monday & my proposal was deemed too ambitious. 'Won't be too much work' to pare back. Since then I've made muesli bars, apricot bliss balls, chocolate custard & currently planning macadamia white choc cookies. **#phdlife #phdchat**

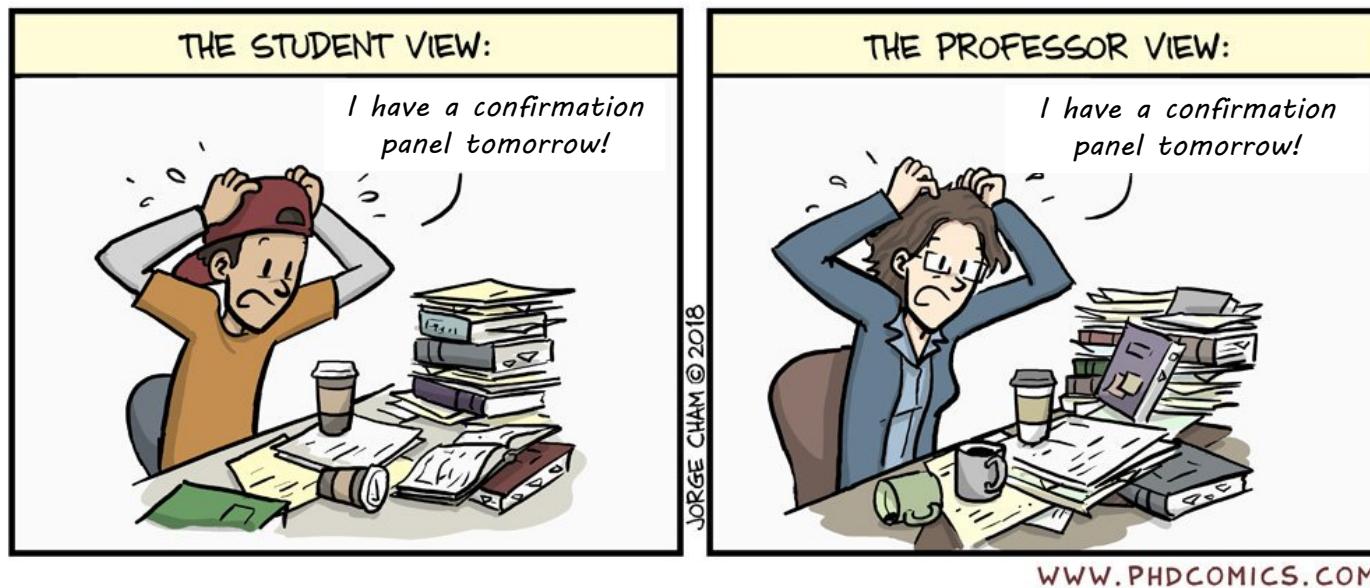


**GIF**

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[Show this thread](#)

# What is the point of the confirmation process?



# Confirmation Process

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/7-training-progress-review-and-monitoring>

## 7.4 Confirmation Report: Months 6-9 for Full Time Student, Months 12-18 for Part Time Student

### 7.4.1 Aims of PhD Confirmation

Although there is no formal change of degree status during Year 1, it is essential to review and 'examine' progress of students normally within the first 6–9 months for Full-Time students (12-18 months for Part-Time students). The purpose of Confirmation is to check that: (a) the student is capable; (b) the project is working and feasible; (c) the supervisory team is adequate; (d) the necessary resources are available.

Students in the ESRC 1+3 model (Masters + 3 year PhD) will have two progression points: (1) their satisfactory completion of the Masters will confirm progress to PhD; (2) during Year 1 of the (+3) PhD they will undergo Confirmation in line with School policy and as specified below.

Confirmation involves three components: the Confirmation Presentation, the written Confirmation Report, and the Confirmation Panel.

PGR offers workshops for Year 1 PhD students to provide guidance and advice in preparing for Confirmation. These are usually run in conjunction with the Institute for Academic Development (IAD).

### 7.4.2 Confirmation Presentation (Student responsibility)

- A short (normally 10-15 minutes) illustrated presentation outlining the research proposed, followed by 5 minutes of questions.
- Normally delivered at the Annual PGR Conference in spring.
- Attended by the student's supervisor/s, Advisor and preferably all academic members on the student's Confirmation Panel.
- The Seminar content should include: the research question/s, the rationale for the research, relevant theoretical and methodological issues, technical and procedural aspects of data collection and analysis. If appropriate it may report on initial findings.

# Confirmation Process

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/7-training-progress-review-and-monitoring>

## 7.4.3 Confirmation Report (Student responsibility)

- A written report circulated to the Confirmation Panel members 10 working days in advance of the scheduled Confirmation Panel meeting and also attached by the student to the student online first year review.
- Students can receive feedback from the supervisor/s on a draft version of the Confirmation Report if appropriate time is allowed.
- The Confirmation Report is a fully-illustrated and referenced written report. Students should consult with supervisor on the length of this report (maximum length 10,000 words) which should contain:
  1. A statement of the research topic and the research question, if appropriate;
  2. An account of the research context, including background to the topic, a rationale for its relevance to contemporary scholarship, and a brief review of relevant literatures;
  3. An account of the proposed research design, methods of data collection and analysis (including a statement on ethics) and, where appropriate, any results obtained from the PhD research so far (results are not expected for all students);
  4. Preliminary identification of the key thesis chapters and/or publications arising from the research (as appropriate);
  5. A detailed plan for the next 6 months;
  6. An outline plan for the next 18 months;
  7. A data management plan
  8. A brief overview of the supervisory arrangements
  9. An assessment of resources needed to complete the project;
  10. The Ethics Determination Form.

# Confirmation Process

<https://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/pgr-handbookstudents/7-training-progress-review-and-monitoring>

## 7.4.5 Confirmation Table

<b>Month in Year 1 (assuming September start)</b>	<b>Action</b>	<b>Responsibility</b>
Months 1-2 (October-November)	Find advisor and inform PGR support  Student meets Advisor  Meet with Advisor	Supervisor   Student
Month 4 (January)	Attend PGR training workshop 'Preparing for Confirmation'	Student
Month 6 (March)	Nominate Panel members.	Advisor in consultation with supervisor/s and student
Months 6-7 (March-April)	Arrange Confirmation Panel meeting	Advisor
Months 7-8 (April-May)	Submission of Confirmation Report to Confirmation Panel members (including supervisor/s) 10 working days before Confirmation Panel and attachment to the student online first year review	Student
Months 7-9 (April-June)	Confirmation Panel meeting	Members of the Confirmation Panel
Months 7-9 (April-June)	Completion of the Confirmation Report Form- <a href="http://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/forms">http://www.ed.ac.uk/geosciences/intranet/student-support/postgraduate-research-support/forms</a> and submission of this to <a href="mailto:pgrsupport.geos@ed.ac.uk">pgrsupport.geos@ed.ac.uk</a>	Advisor
Months 7-9 (April-June)	Director of PGR to review panel's recommendation and form is returned to Advisor.	PGR Support
Months 7-9 (April-June)	Advisor to return approved confirmation panel report to student and supervisor so it can be attached to student's first annual review.	Advisor/ Student/ Supervisor

## Remember

- A PhD is a 3 year degree (a MSc is a 1 year degree)
- Keep things manageable
- Ambition is great, but temper that with reality when appropriate
- Not all PhD manuscripts get published in Nature or Science
- Figure out where your research will fit in
- Check out other papers in those journals and get a feel for how much work will be required

# Remember

Your PhD is an individual journey. Each student has a different experience and outcome. Make this experience your own!

