



# GEOS7900

## Research Frontiers: Advances in Earth and Environmental Sciences

Session 1, Weekday attendance, North Ryde 2020

*Department of Earth and Environmental Sciences*

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#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff Simon Turner <a href="mailto:simon.turner@mq.edu.au">simon.turner@mq.edu.au</a>
Credit points 10
Prerequisites Admission to MRes
Corequisites
Co-badged status
Unit description This foundation unit deeply engages students with the broad topics, big questions, strategies, new directions of scientific thought and break-through methods currently dominating research in Earth and Environmental Sciences. Activities undertaken include tailored workshops and presentations by research groups and academics, seminar attendance, directed reading of research papers, and discussion and critiquing of wide-ranging research topics and trends. Students demonstrate their understanding of current research and develop their science communication skills through presentation of a seminar and written reports based on the research frontiers explored.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

- ULO1:** demonstrate an understanding of current scientific issues in earth and environmental sciences
- ULO2:** critically evaluate current scientific methodologies and organizations in this research field
- ULO3:** competently access, use and synthesize relevant scientific information
- ULO4:** present ideas and concepts clearly with supporting evidence

## Assessment Tasks

### Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

## General Assessment Information

### ASSIGNMENTS/ RESEARCH PAPER

The assignments will consist of a paper, which results from your reading on individually selected topics, related to the weekly discussions. The first short assignment will consist solely of a synopsis of two presented research papers, presented in the form of a *Nature News and Views* article. The second, larger, paper is an in-depth analysis of one of the discussion topics. The paper you submit should be in the form of a paper for submission to the journal; *Journal of Geophysical Research*. It should be typed, double spaced, and about 3000 words in length and adequately illustrated with appropriate figures.

Two seminars will be given during the course of unit, each on one paper up for discussion in a given week. The format should be as per a conference presentation. The seminars will be assessed, as is student participation in the critical discussion of each paper.

### EXTENSIONS AND PENALTIES:

Whenever possible requests for an extension should be submitted prior to an assignment's due date. Late assignments will be date stamped and a penalty of 10% per day (Monday to Friday) will be deducted from the total mark.

### ACADEMIC HONESTY AND PLAGIARISM.

Plagiarism involves using the work of another person and presenting it as one's own. If you use

the work of another person without clearly stating or acknowledging the source, you are falsely claiming that material as your own work and committing an act of **PLAGIARISM**. This is a very serious violation of good practice and an offence for which you will be penalised. You should read the University's policies and procedures on plagiarism. These can be found at: [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html)

The policies and procedures explain what plagiarism is, how to avoid it, the procedures taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

As such, all assignments must have a signed "Faculty of Science" (FoS) assignment cover sheet attached. These sheets are available from the Science centre or from the FoS WEB page.

## UNIVERSITY POLICIES

Macquarie is developing a number of policies in the area of learning and teaching. Approved policies and associated guidelines and procedures can be found at Policy Central: <http://www.mq.edu.au/policy/>. There you will find the University's policy and associated procedures on assessment, Special Consideration and grade appeal.

## Delivery and Resources

### Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: [https://ask.mq.edu.au/account/pub/display/unit\\_status](https://ask.mq.edu.au/account/pub/display/unit_status)

### Lecture Times

**Time:** Wednesdays, 3-5pm.

**Venue:** 12SW Room 301.

### TEXTBOOK AND TECHNOLOGY USED

There is no set textbook for this unit, but a number of reference texts worth considering are:

QE509.4.D38/1999      Davies G.F., Dynamic Earth, Plates, Plumes and Mantle Convection,

1999

QC806.F625	Fowler C.M.R., The Solid Earth, 1990
QE501.T83	Turcotte D.L. & Schubert G., Geodynamics, 1982
QE509.4 .S38 and Planets,	Schubert G., Turcotte D.L., Olson, P., Mantle Convection in the Earth 2001

The unit also has a WEB site which can be found through the Online Learning @ MQ WEBSITE at <http://learn.mq.edu.au/>. This site contains information such as the papers to be discussed in class. At the start of the year you should be issued with a username and password to access all the WEB sites available for the units you have taken. This will get you into the front page of the GEOS700 WEB site. Please note that some sections within the WEB site require an internal username and password; the username is **geos700** and please see, or call me to obtain the password. Information for students about access to online units is available at

<https://learn.mq.edu.au/webct/RelativeResourceManager/25994001/Public%20Files/uw/software.html>

Below is a list of references that may be helpful in expanding certain aspects of the unit.

## REFERENCES

QC806.A515	Anderson D.L., Theory of the Earth, 1989
QE501.A7513/1984	Artyushkov E.V., Geodynamics
QB501.N47	Beatty J.K. & Chaikin A. (Eds), The New Solar System (3rd ed.), 1990
QE509.B75	Bott M.P., The interior of the Earth (2nd ed.), 1982
QE501.4.P35.B88	Butler R.F., Paleomagnetism, 1991
QE527.7 .C66/2001	Candie K.C., Mantle Plumes and their record in Earth History, 2001
QC806.C65	Cook A.H., Physics of the Earth and Planets, 1973
QE511.4.C683/1986	Cox A. & Hart R.B., Plate tectonics: how it works, 1986
QC806.D39	De Bremaecker J-C, Geophysics: The earth's Interior, 1985
QB501.N18	Dermott S.F. (Ed), The origin of the Solar System, 1977
QE501.E67/1990	Ernst W.G., The Dynamic Planet

QC827.I7	Irving E., Paleomagnetism, 1964
QE509.E234/1998	Jackson I, The Earth's Mantle, 1998
QE509.J27/1992	Jacobs J.A. Deep Interior of the Earth, 1992
QE509.E232/2000	Karato S. et al, Earth's Deep Interior, 2000
QE511.4.K43/1996	Kearey P. & Vine F.J., Global Tectonics (2 <sup>nd</sup> Ed), 1996
QE35.E18	McElhinny M.W., The Earth, its Origin, Structure and Evolution, 1979
QE501.4.P35.M35/2000	McElhinny M.W. & McFadden, Paleomagnetism: continents and oceans, 2000
QC816.M4	Merrill R.T. & McElhinny M.W., The Earth's Magnetic Field, 1983
QC816.M47/1996	Merrill R.T., McElhinny M.W. & McFadden P.L. The magnetic field of the Earth: palaeomagnetism, the core, and the deep mantle, 1996
QE511.4.H57/2000	Richards et al, The History and Dynamics of Global Plate Motions, 2000
QE501.S3/1982	Scheidegger A.E., Principles of Geodynamics
QC806.S54/1997	Sleep N.H. & Fujita K., Principles of Geophysics, 1997
QE26.2.C35	Smith D.G. (Ed), The Cambridge Encyclopaedia of Earth Sciences
QC806.S65	Stacey F.D., Physics of the Earth (2nd & 3rd eds.), 1977 & 1992
QE511.44.G46	Summerfield M.A., Geomorphology and Global Tectonics, 2000
QE340.B55	Veevers J. J., Billion-year earth history of Australia and neighbours in Gondwanaland, 2000
QE340.B552	Veevers J.J., ATLAS of Billion-year earth history of Australia and neighbours in Gondwanaland, 2001

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)

- [Special Consideration Policy](#) (**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](https://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Changes since First Published

Date	Description
11/02/2020	Dates and details