

# MACQUARIE UNIVERSITY

## Department of Physical Geography Discipline Profile

22 June, 2000

### The Nature of the Discipline

The discipline of Physical Geography studies spatial and temporal aspects of the natural world and the interaction of the physical, biological, and human domains. It encompasses a variety of sub-disciplines that seek to understand the history and dynamics of interactions between the atmosphere, hydrosphere, cryosphere, lithosphere and biosphere. The impact of humans within this biophysical system is central to the discipline.

Physical Geography deals with the biophysical environments of the Earth system and has strong links with other disciplines such as human geography, geology, biology, mathematics, physics, chemistry, and applied sciences such as engineering and mining. Research in Physical Geography ranges from field- or library-based research to computer modelling. At Macquarie University the Physical Geography Department is represented by two main groups; the Geoecologists and the Atmospheric Scientists; and two specialist centres; the Climatic Impacts Centre (CIC), and the Natural Hazards Research Centre (NHRC). Physical Geography staff at Macquarie University have expertise in most elements of the discipline and because of the structure of the Division of Environmental and Life Sciences and the Department there is a higher level of collegiate interaction than is usually found in Physical Geography Departments elsewhere. The Department has placed an emphasis on the application of its research and teaching to real life problems, and community needs are providing an increasing motivation.

There are two centres within the Department. *The Natural Hazards Research Centre* was established in 1994 with grants from the insurance industry. The Director is a full-time member of staff, seconded from the Department. This Centre has expanded research collaboration on natural hazards within Australia, the Asia-Pacific region and Europe. It continues to develop innovative models for hazard, vulnerability and risk assessment appropriate to industry and government needs; attract post-graduate students; and to foster understanding between industry and hazard specialists. The *Climatic Impacts Centre*, a joint venture between Physical and Human Geography, bridges expertise in climate, human health, urban and industrial planning. The Centre emphasizes postgraduate and postdoctoral research and undertakes impacts research of national importance. It has links with many other research institutions.

### Experience and Achievement in Teaching and Curriculum Development

Physical Geography teaches, or contributes to teaching, the Bachelor of Science (BSc), Bachelor of Arts (BA), Bachelor of Environmental Science (B. Env. Sci), Bachelor of Marine Science and named degrees in Geographical Information Sciences. Coherent study exists in Geography, Physical Geography, Geoecology, Atmospheric Science, Resource and Environmental Management and Geographical Information Sciences. The primary 100-level unit is GEOS117 and Staff share responsibility for GEOS112 with Earth and Planetary Sciences and GEOS114 with

Human Geography. At 200-level five units are taught and Staff share GEOS265 and GEOS264 with Human Geography. At 300-level the Physical Geography Department teaches a range of specialist units and shares GEOS371 with Human Geography.

The Department significantly revised its undergraduate program in 2000 following a review of its teaching loads. Despite these changes, teaching loads remain too high. The actual teaching load components that any individual handles will vary from unit to unit and year to year. All Staff would usually contribute to all levels of undergraduate teaching and typically, a Staff member would contribute to ~25% of a 100-level unit, 50% of a 200-level unit and ~50% of a 300-level unit. The Head of Department attempts to maintain load equity based on teaching hours across the Department in part by allocating funds to support tutorial assistance and marking assistance to Staff who teach in the larger units. Other commitments such as research, administration and community outreach are also taken into account in the Department's workload model.

Honours and postgraduate teaching are key priorities within the Department. Honours in Physical Geography is an intensive teaching year and it would be unusual for an academic to supervise more than two full-time (or equivalent) Honours students at one time. Staff strongly encourage Honours students to publish their results. The Department encourages Postgraduate students to seek external funding where possible to support their projects. Funding, papers, conference presentations, prizes and other recognition of the Department's students reflect the contributions made by the supervisor(s). Postgraduate research degrees (PhD and Masters by research) are common and it is a priority for the Department to attract more of these students. Staff may also co-supervise or co-teach students in other departments or universities. Regular contact between supervisor and student is expected and seminar/workshop sessions are established at all levels to allow students to report to the Department and receive feedback. Theses can be in a conventional format or by papers, but it is expected that students will publish the major findings of their research.

Staff in Physical Geography have led changes in the mode of teaching via the incorporation of Information Technology into our units. Computer Aided Learning and Information Technology including the Internet have become important parts of many units. Regular review of unit content and teaching success including student feedback through SETS and/or on-line feedback is expected of all staff on a regular basis.

- *Associate Lecturers* have a sound knowledge of their subject matter, and are capable of providing competent lectures, tutorials and practicals. They contribute to unit development and the preparation of teaching materials. Supervision of Honours and Postgraduate students would usually be as an associate supervisor.
- *Lecturers* have a sound knowledge of their speciality and are able to teach effectively in lectures, tutorials, practicals and in the field. They should contribute to unit development (including innovative developments) and the preparation of teaching materials. Supervision of Honours and Postgraduate students is common.
- *Senior Lecturers* have made a substantial and effective contribution to teaching over several years. This includes a record of developing and regularly convening one or more units, preparing new teaching materials, leading curriculum and innovation development,

and regularly supervising Honours and Postgraduate students.

- *Associate Professors* have made a substantial, effective and sustained contribution to teaching at all levels including Honours and Postgraduate supervision. Effective leadership in curriculum reform of units and courses and/or innovative teaching is normal.
- *Professors* have made an effective and sustained contribution to teaching at all levels. Effective leadership in curriculum reform of units and courses and/or innovative teaching is clear and sustained.

The expected teaching responsibilities of academics do not vary greatly at different academic levels. Unit convenorship tends to be limited to Lecturer and above. The main distinguishing elements for more senior staff is the clear and sustained leadership in curriculum review development, the utilization of innovative practices, the number of Honours and Postgraduate students and the publication of teaching-related textbooks or other means of disseminating their expertise.

### **Achievement in Research, Scholarship and Professional Consultancy**

All Staff are expected to maintain an active research program. The Department recognises the strategic aims in the University Research Strategic plan and tries to follow these. The Department has developed strong research collaboration with numerous Federal, State and commercial organisations.

Scholarship and research are usually released via publication of papers in refereed journals, book chapters or entire books. The initial release of research results may be through conference proceedings. The peer-review refereeing of the publications is seen as a key aspect of any product to ensure quality is maintained. Research work may also be disseminated to a wider audience through contributions to atlases, encyclopaedias, review articles in journals, or other media. Some Staff may publish key findings in industry publications. However, the style of publications, and the length of articles published by any individual is likely to vary according to the type of research they are involved in. Both sole and joint authorship is normal as the need for larger research grants and a team approach to research topics becomes more common.

Research in Physical Geography is often based on commissioned research and consultancies. This is in accordance with the Department's strategy to maximize the relevance of academic endeavour to real world problems. While output from such work may be subject to periods of confidentiality which delay publication, peer reviewed publications from consultancy is expected and strongly encouraged.

The diversity of research interests, techniques and forms of publishing which are found within Physical Geography means that it is inappropriate to specify norms. Staff would be able to demonstrate publication of original research involving new concepts, data sources, technologies, methodologies, original fieldwork or combinations of these; publication of substantial review papers

and perspectives on research in progress; completion and publication of significant applied studies; and success in securing funding for research. The expected scholarship of Staff can be summarised as follows:

- *Associate Lecturers* are able to demonstrate that they are establishing an ongoing research program consistent with their expertise. Publication of the major findings from a PhD is normal and would include at least one publication in the peer reviewed literature (on average) annually<sup>1</sup>. Initial funding requests for future research should be secure and include internal grants (MUNSSs, MURGs etc). Plans for future research activity, which may include consultancy, and strategies for the funding of this work should be clearly under development.
- *Lecturers* have established an ongoing research program consistent with their experience and expertise. Publication of the major findings from a PhD is normal and includes at least one publication in the peer reviewed literature (on average) annually. Initial funding for future research is secure and includes internal grants (MURGs etc) and external grants (Small ARCs for example). Applications for Large ARCs/SPIRTs or similar external funding or the submission of Consultancy projects would have been made, but these will not necessarily have been successful. Plans for future research activity, and strategies for the funding of this research are clear.
- *Senior Lecturers* have made a substantial and effective contribution to research and publication beyond their PhD and to have established a strong national reputation. Some publications may be in the form of larger works such as books or monographs which have drawn together their longer period of research effort. At least one publication in the peer reviewed literature each year would be normal. Research funding should be secure and include external funding. Future plans for research and consultancy and methods of obtaining funding to support these plans would be clear. It would be common for Senior Lecturers to have successfully supervised a number of postgraduate students in their general area of research interest.
- *Associate Professors* have made a substantial, effective and sustained contribution to research and to have established a national and/or international reputation in their field(s). Specific performance criteria would include at least one publication a year and on-going successful external funding applications. There may be a history of successful consultancies and these would have clearly led to peer reviewed publications in many instances. Evidence of team building including significant numbers of Honours and Postgraduate students would exist. Leadership in encouraging and guiding more junior Staff would be expected.
- *Professors* have made a substantial, effective and sustained contribution to research as outlined above and to have established a national and/or international reputation in their field(s). Specific performance criteria would include at least one publication a year and on-going successful external funding applications. There may be a history of successful

---

<sup>1</sup>“One publication” is based on one DETYA C1 equivalent publication

consultancies and these would have clearly led to peer reviewed publications in many instances. Evidence of team building including significant numbers of Honours and Postgraduate students would probably exist. Leadership in encouraging and guiding more junior Staff would be demonstrable.

A principal difference between more junior and senior staff in Honours and Postgraduate teaching is that there is a tendency for research teams to be developed by Staff at more senior levels. The development of a research team is a demonstration of leadership since it implies planning, foresight and an ability to resource a group through external funding.

### **Contribution to Department, Division and University Administration**

Within the Department of Physical Geography all academic staff carry a share of administration which often includes representation on Divisional and University level committees etc. The Head of Department is an elected position with a heavy administrative load (although this is compensated by a reduction in teaching load). The Head of Department attempts to share the burden of administrative tasks and the most significant responsibilities usually fall to the more senior academic staff.

All Staff are expected to play an active part in student advising and the Student enrolment process. Open Days are seen as a collective responsibility.

- *Associate Lecturers* rarely handle a significant administrative role although they may act as a Departmental representative on a Divisional Committee.
- *Lecturers* handle one significant administrative role at Departmental or Divisional level.
- *Senior Lecturers* have two or three significant administrative roles at Departmental, Divisional or University level. A Senior Lecturer tends to be responsible for a significant portfolio within the Department such as responsibility for Postgraduate Students, the Undergraduate Program or Research. A Senior Lecturer could be Head of Department.
- An *Associate Professor* or *Professor* enjoy two or three significant administrative roles. Both Associate Professors and Professors are proactive in identifying, and developing strategies to take advantage of opportunities.

Assessment of the role played by an individual member of Staff in these activities of activity is a difficult matter of judgement that must be balanced against all other attributes and achievements of the individual. However, the Department recognises the importance of Staff being able to highlight and demonstrate their contribution to these areas and specifically highlight and demonstrate their effectiveness and successes in Management and Leadership.

### **Contribution to Professional Associations**

Physical Geography staff are usually members of several professional organisations relevant to their work and experience. The Department encourages Staff to play a more active role in such bodies as office bearers, conference organizers, editors of journals, etc. Professional organizations of this nature often have international status and play an important role in disseminating research information, fostering public debate about issues, providing advice and direction for government and industry at all levels, and maintaining essential communication links through the discipline. A significant role for all Staff at all levels is the review of manuscripts for professional journals and the review of grant applications for external funding bodies.

### **Contributions to the Community**

All Staff are encouraged to play an active role in presenting and sharing their expertise with the wider community and in extending the image and goodwill of the University. Academic staff are involved in the deliberations of government departments and in providing advice and liaison with bodies like the Board of Senior School Studies. Staff may sit on promotion or appointment panels and may contribute to curriculum development or the HSC examination process. Such links generally are of greater benefit to the outside body than to the University or the individual involved but are seen as an important part of the University's community relations role.

In conjunction with other parts of the Division, Physical Geography staff take an active part in preparing and presenting in-service courses to High School geography teachers. Occasional special lectures to HSC students are common as are invited articles on course content and teaching methods. Other community bodies which benefit from input from Physical Geography staff include; Courts of Law, Local Government, Catchment Management Committees and numerous resident action groups.

All community relations activities are inevitably time consuming and the more tasks that any individual undertakes the more frequently they are asked to do others. They are an important part of any Physical Geographer's professional activity but the demands on senior staff can become so great that few individuals can satisfy all requests.

Assessment of the role played by an individual member of Staff in these activities of activity is a difficult matter of judgement that must be balanced against all other attributes and achievements of the individual. However, the Department recognises the importance of Staff being able to highlight and demonstrate their contribution to these areas.

A.J. Pitman, 16 June, 2000