ANU1: Long-Term Biodiversity and Climate Change in Asia-Pacific

Hosted by the Australian National University
24 June – 12 July 2013

What can the past tell us about our future? Much of what we know of the deeper past comes from the remains of microscopic organisms and sediment found in depositional settings around the world. In Australia and the Asia-Pacific region there is a rich body of evidence for past changes in climate and biodiversity that is only just beginning to be explored. The course combines in-class learning and a fieldtrip to the Wet Tropics of northeast Queensland, with ‘hands-on’ experience in field collection and analysis of a range of paleo-environmental indicators including pollen, charcoal, seeds, biogenic silica, and stable isotopes.

(clockwise): Satellite image of Australia and the region during the 1997 El Niño; Traditional garden in the highlands of PNG; Microscopic image of pollen from cultivated Sweet Potato; Collecting cores from mangrove swamp in the Torres Strait
More Course Details

The key aim of this course is to provide participants with an understanding of how to reconstruct past environments and the implications this information might have for the conservation and survival of life on Earth. The 3 week course combines in-class learning, a 7 day fieldtrip to the Wet Tropics of northeast Queensland, and ‘hands-on’ laboratory based experience to introduce the analysis of paleo-environmental remains. The participants will experience in-field collection and analysis of a range of paleo-environmental indicators (e.g. pollen, charcoal, seeds, biogenic silica, and stable isotope analysis). This training will provide the student with sufficient knowledge to plan and execute research related to long-term changes in biodiversity and climate change in the region.

Key topics:

- Biodiversity across the Asia-Pacific Region
- Reconstructing past environments through the fossil record
- Climate change during the Quaternary Period (last 2.6 million years)
- The Anthropocene and predicting future environmental change
- Environmental dynamics: Extinctions, thresholds and resilience
- Detecting human impacts on the environment through time
- Managing our future through restoration ecology
Field Trip

Schedule

29 June: Fly from Canberra to Cairns and drive by minibus to Lake Eacham Rainforest Lodge.

30 June – 2 July: Explore the diverse environments of the Atherton Tablelands along a transect from humid rainforest through to dry savannas, visiting iconic paleo-environmental sites along the way.

3 July: Conduct field work in a swampland adjacent to rainforest reserve as part of an ongoing restoration ecology project in collaboration with CSIRO.

4 – 5 July: Visit the Canopy Crane research facility in the heart of the Daintree Rainforest and see mangrove swamps near Cairns.

6 July: Visit to the Great Barrier Reef environments near Cairns with local marine scientists.

7 July: Return to Canberra.

Target Audience

Completion of first year units in one or more of the following: Environmental Science, Archaeology, Conservation Biology, Natural Resource Management. Must have a keen interest and a willingness to engage in fieldwork and laboratory analysis (using microscopes).
Learning Outcomes & Assessment

Learning Outcomes

On satisfying the requirements of this course, students will have the knowledge and skills to:

1. Describe the natural and anthropogenic drivers of past environmental change at a global as well as regional level.
2. Describe and explain the techniques that are used to reconstruct past environmental conditions in Australia and abroad.
3. Analyze and reconstruct past environmental conditions using appropriate field and laboratory techniques.
4. Interpret paleo-environmental data from a range of sedimentary contexts.
5. Reflect on the natural and human influences that explain past environmental conditions and be able to communicate these in ways appropriate to a range of audiences.
6. Present research data in a journal article format.

Assessment

All laboratory and field trip sheets must be submitted in order to achieve a final grade. Assessment will be based on:

- Tutorial presentation (summarize selected journal article/s: 5%)
- Exam (25%)
- Field trip report (30%)
- Poster presentation (30%),
- Laboratory analysis quiz (10%)
- Laboratory analysis report (10%)

Contact hours: 62 total contact hours + 36 field trip hours (estimate)

Credit equivalent: 6 credit units (the standard credit units for an ANU course)
**Accommodation**

Accommodation while in Canberra will be at Bruce Hall, an on-campus residence.

Students must arrive by: Sunday 23 June 2013.

Students will be able to check in from: 2pm, Sunday 23 June 2013.

Check-out date: 10am, Saturday 13 July 2013.

**Costs**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>Tuition fees</strong></td>
<td>AUD 3,090 (waived for IARU incoming students)</td>
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<td>ANU students will attract a HECS liability</td>
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<td><strong>Accommodation including any deposits</strong></td>
<td>AUD 795</td>
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<tr>
<td><strong>Other deposits</strong></td>
<td>N/A</td>
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<tr>
<td><strong>Field Trip</strong></td>
<td>Approx. AUD 1,750 (including field trip flights, accommodation and meals)</td>
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<td>ANU will subsidize AUD 1,250</td>
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<td><strong>Textbook Fees</strong></td>
<td>AUD 50. Certain material will be required before the course.</td>
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<td>Other reading material will be provided.</td>
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<td><strong>Miscellaneous Fees</strong></td>
<td>AUD 40 for poster printing</td>
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<tr>
<td><strong>Living Expenses</strong></td>
<td>All meals are included with accommodation. An estimate of an additional AUD 100 per week as spending money. Cost will vary according to each student’s personal spending habits.</td>
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FAQ

1. **Can I participate in more than one GSP course at your University, concurrently?**
   Unfortunately, as the two ANU courses are held in different locations they cannot be taken concurrently, or sequentially.

2. **If I am accepted, when will I receive more course details, such as course content, reading lists, timetables, payment schedule & cancellation policies, campus maps and other logistics details?**
   It is expected that course details such as timetables and reading lists for each course will be provided by the course convener at least two weeks prior to the commencement of the course. Other logistical information, including accommodation details, payment schedules etc., will be provided in the ANU GSP information pack that is sent to each student following their accepting their offer of a place on the program. It is expected that this will be in the week commencing 23 April 2012.

3. **Will I have access to student facilities such as computer labs, libraries and health services at the hosting university?**
   Yes, you will receive an ANU student identification card that will entitle you to access to ANU student facilities. Students travelling from overseas are strongly advised to purchase travel insurance before their departure.

4. **Will I need a visa to attend this GSP course?**
   In most cases a Visitor or Tourist Visa will allow you to study in Australia for up to three months. As soon as you have accepted your offer, you should contact your nearest Australian visa office for information on your specific visa requirements. Further information may be accessed at [http://www.immi.gov.au/](http://www.immi.gov.au/).

   On request the ANU GSP coordinator can provide supporting letters for your visa application.

5. **How can we interact with other participants and GSP alumni before the course?**
   Please visit our GSP Facebook page and join the various events groups to meet informally with other GSP participants as well as alumni. Please contact the IARU GSP Coordinator ([iaru.gsp@anu.edu.au](mailto:iaru.gsp@anu.edu.au)) for any questions concerning your participation in the GSP.

You can direct your questions about course credits and scholarships to your home institution. More details about the application process and deadlines will be available in the "How to Apply" page.
Further Information

Contact: iaru.gsp@anu.edu.au