NEWS and VIEWS

Sharing Place, Learning Together
We have just published the paper about our "Sharing Place, Learning Together" project published in the Medical Journal of Australia. It outlines the background, philosophy and aspirations of our collaboration with the Maningrida College and Djelk Rangers (see the attached). We are also co-hosting an exhibition at the Medical History Museum of the University of Melbourne called "Venom: Fear, Fascination and Discovery". This exhibition, which includes indigenous art work and perspectives, on the venom theme, within the Exhibition catalogue, is reviewed in the attached article featured in The Age Newspaper (For more details see http://www.theage.com.au/entertainment/art-and-design/fatal-fascination-poised-to-strike-at-art-20130723-2qhb0.html ). It includes some box jellyfish-related artwork from a Maningrida College student and is open to the public during the week. The exhibition is proving quite popular with local science school groups. It closes on 24 August.


INDIGENOUS ASTRONOMY

Indigenous Astronomy with Duane Hamacher
It has been a very busy year and the scholarship and outreach on Australian Indigenous Astronomy is at an all-time high. With a few special astronomical events, such as the annular eclipse in May and the arrival of Comet ISON later this year, public interest in astronomy is high and this is a great time to engage students and the public with Indigenous culture.

Scholarship
It has been a busy but productive year for Indigenous Astronomy research. John Goldsmith submitted his doctoral thesis entitled “Cosmos, Culture and Landscape: communicating and sharing Australian Aboriginal sky knowledge” at the International Centre for Radio Astronomy Research, Curtin University in Perth under the supervision of Prof. Steven Tingay. John is an environmental scientist, curator, and
respected astrophotographer. Much of his ethnographic fieldwork was carried out at the Wolfe Creek meteorite crater, known to the local Jaru people as Kandimalal.

At Macquarie University, Robert Fuller is underway with his MPhil project researching Kamilaroi astronomy in north-central NSW under the guidance of Prof. Ray Norris. Bob is a retired American Air Force pilot who earned a degree in anthropology in the US. Ray gave a talk on Aboriginal Astronomy for a Pacific cruise and led a trip across Australia to important sites regarding Aboriginal culture and astronomy with the famous astronomer Fred Watson. Tui Britton, an astrophysics PhD candidate at Macquarie, is working with Duane Hamacher at UNSW to research Polynesian astronomy. Tui, who is of Maori descent, recently published a paper on meteors in Maori culture in WGN and presented a poster on the subject at the Astronomical Society of Australia’s annual meeting at Monash University.

Trevor Leaman, a scientist, engineer, and astronomy educator from Launceston Planetarium, recently completed a Masters degree in astronomy from Swinburne University in Melbourne. For his research project he re-analysed the field-notes of Daisy Bates to learn more about the astronomy of Aboriginal people near Ooldea, South Australia. This research has revealed many interesting leads, such as the possibility that the local Aboriginal people noted the variability in brightness of the red-giant star Betelgeuse in the constellation Westerners call Orion (first suggested by Serena Fredrick who competed an MPhil in Aboriginal astronomy at the University of Leicester in the UK, under the supervision of Prof Clive Ruggles).

At UNSW, Duane Hamacher submitted an ARC grant to study Torres Strait Islander astronomy and with Prof Martin Nakata, is preparing an ARC grant for the Aboriginal Sky Stories Project with Microsoft Research and the WorldWide Telescope. Duane received a small grant to work with elders in the Central West to learn about Wiradjuri astronomy. This project will be carried out with the help of Trevor Leaman. UNSW research assistants David Pross and Robert Pankhurst are busy surveying rock art on the Central Coast and Sydney Basin and collecting stories from elders and custodians regarding the link between the rock art and astronomy.

Paul Curnow at the University of South Australia continues to educate the public about Aboriginal astronomy and helps maintain the very successful Facebook group “Aboriginal Skies”, which has over 1,000 followers.

This year has seen a diverse array of scholarship regarding Indigenous astronomy:

- Hamacher, D.W. & O’Neill, C. (2013). The Discovery and History of the Dalgaranga Meteorite Crater, Western Australia. Australian Journal of Earth Sciences, Vol. 60(5), pp. 1-11. (This crater was discovered by an Aboriginal stockman and may have had significance to the local Aboriginal people.)
The 13th annual Australian Space Sciences Conference will be held at the University of New South Wales from 30 September to 2 October 2013. Duane Hamacher is on the Program Committee and will be chairing a special session dedicated to Indigenous Sky Knowledge. We expect several great talks for this session, which will be published as refereed papers in the ASSC proceedings. Expected presenters include John Goldsmith (invited), Bob Fuller, Trevor Leaman, Duane Hamacher, Toner Stevenson, and David Pross. The conference will be followed by a special networking session for those in the group to plan out the future of the discipline.

Online Presence

Australian Indigenous Astronomy Blog (Posts for 2013):
- A Shark in the Stars: Astronomy and Culture in the Torres Strait (Thursday, July 11, 2013)
- Stories Under Tagai: Traditional Stories from the Torres Strait (Sunday, July 7, 2013)
- Baidam – The Shark Constellation (Wednesday, July 3, 2013)
- Mullyangah the Morning Star (Saturday, May 18, 2013)
- Bahlou the Moon and the Daens (Thursday, May 9, 2013)
- Jangurna Story: Indigenous Astronomy in Western Australia (Friday, May 3, 2013)
- Rock Art and Ancient Knowledge of Astronomy (Thursday, May 2, 2013)
- The Mystery of Parna (Wednesday, May 1, 2013)
- Arcturus: Food and Seasonal Change (Wednesday, February 27, 2013)

Facebook:
- Aboriginal Skies
- Australian Indigenous Astronomy

Twitter:
- @AboriginalAstro

Education

The Nura Gili Centre for Indigenous Programs is an academic and support unit for Indigenous Students and programs at UNSW. As part of the undergraduate major in Indigenous Studies, Duane Hamacher developed two new units that will be taught next year, starting Semester 1. Both units can be taken as General Education (GenEd) units and are available to all UNSW students. The motto for both of these units is “learning by doing”, where the educational process is focused more on hands-on projects, tutorials, fieldtrips, excursions, and laboratory exercises rather than lectures.

ATSI 2015: Science and Indigenous Knowledge

This unit focuses on the intersection between Indigenous knowledge systems and Western science. Students will explore how knowledge of the natural world is developed and utilised for practical and social purposes, and how the traditions maintain this knowledge for successive generations. In ATSI 2015, students will study systems of scientific thought developed by Indigenous Australian cultures and explore a variety of areas in which Indigenous Knowledge can contribute to answering important questions about climate change, natural resource management, medicine, and other topics of interest. Students will consider the influence of colonisation on scientific research and policy and that influenced the treatment of Indigenous Australians. Students will show how current collaborations between Western science and Indigenous Knowledge rupture the continuity of colonialism and illustrate how Western science can benefit from a knowledge system that has evolved over thousands of years.

ATSI 3016: The Astronomy of Indigenous Australians

This unit focuses on the ways in which astronomical knowledge is generated, applied, and recorded in oral and material culture. Students will learn the history, theory and methods of cultural astronomy followed by a conceptual study of positional astronomy and celestial mechanics to understand how the sky works. Students then explore systems of Indigenous Knowledge with respect to astronomical objects and phenomena, both in
Guided in-class projects will arm students with the tools necessary to critically analyse oral traditions and material culture for astronomical knowledge and explore ways Indigenous and Western astronomy can work together to inspire future generations of astronomers through education and outreach. The unit involves an Industry Project where the students will use their knowledge and talents to work with museums, observatories, art galleries, and educators to develop tools, programs, exhibits, or materials for education and outreach.

**Recruiting Postgraduate Students**

Dr Duane Hamacher at UNSW is actively seeking students who would like to pursue a Master of Philosophy (MPhil) or Doctor of Philosophy (PhD) researching Indigenous astronomy, mathematics, or geomythology. These projects may involve surveying archaeological sites, talking with elders, exploring library and museum archives in Australia and overseas, and developing educational programs. Students need a Bachelor’s degree to apply for an MPhil or a Bachelor’s with Honors to apply for a PhD. Students with from academic backgrounds are suitable. Indigenous students are encouraged to apply. Interested parties should contact Duane at d.hamacher@unsw.edu.au

**Outreach**

Duane Hamacher will be giving a talk on Indigenous Astronomy for a TEDx NorthernSydneyInstitute event called “This Way Up!” on 28 August 2013. He recently gave the first of two talks for Murray Arts’ Charcoal Night, where high school students learn about astronomy. He gave a talk on Torres Strait Astronomy for the annual Astronomical Society of Australia meeting at Monash University in July and wrote a subsequent article for The Conversation. In May, he spoke to Indigenous Students from across the Central West, NSW about astronomy and Indigenous culture in Condobolin, sponsored by the Lachlan Catchment Management Authority. Duane then led a networking event for the CSIRO Scientists in Schools program in June and gave a short interview on SBS Radio to discuss the role of astronomy in rock art. Earlier this year, he gave an interview on The Wire discussing meteors in Aboriginal culture and spoke about Aboriginal Traditions of Meteorite Craters at Sydney Observatory.

Bob Fuller gave a short talk on Aboriginal astronomy at Macquarie University’s Astronomy Open Night and Prof Ray Norris gave a School of Physics colloquium on the subject at the University of Sydney.

Listen to Dr. Rangi Matamua from the Society of Māori Astronomy Research and Traditions (SMART) in New Zealand talk about Maori astronomy.

**Aboriginal Skies Facebook page**

Paul Curnow informed me that he now has 1,052 people on his Aboriginal Skies Facebook page: https://www.facebook.com/pages/Aboriginal-Skies/156305897720881

**RESOURCES**

**Indigenous students relish lessons in heritage**

Noel Pearson, a well-known Indigenous Australian, is a regular commentator in The Australian newspaper: The task of preserving Aboriginal languages and culture deserves mainstream support. The Weekend Australian, 13-14 July 2013, p. 16.

**Indigenous knowledges in a changing world**

This symposium was held at the Charles Darwin University in April this year. Where available, video and PowerPoint presentations from the Symposium are provided at http://www.cdu.edu.au/cdss2013/presentations.html
**Papers presented at the recent ASERA Conference in Wellington**


**Abstract** In this study, we present a pedagogical framework for informing the teaching of science in a culturally responsive manner in northern Canadian communities where self-governance agreements have placed imperative on changes to not just the what or content of science education, but also the teaching practices associated with the teaching of science. We provide a description of the processes used to develop this framework and then present an account from teachers who are using the framework to inform their teaching. Further, we provide qualitative and quantitative data to give some preliminary indication of the influence of teachers’ adjusted practice on student learning. Finally, we describe our ongoing work in the northern Canadian context and the potential significance of the work to the wider education community where Indigenous peoples seek a learning experience beyond that framed by current educational practice.


**Abstract** Science students’ learning and engagement have been strongly connected to effective teaching practices that support the students’ cultural capital and identity. When science pedagogy and curriculum are integrated with aboriginal culture, student participation in school science is increased. Because of its unique indigenous identity, Australasia’s science teachers have an opportunity to integrate cross-cultural science teaching into the classroom. The question arises as to how culturally competent are our science teachers to utilise the students’ indigenous knowledge? Teachers from a New Zealand secondary school were asked questions investigating proficiency with elements of Maori culture aligned with the NZ Teachers Council’s “Graduating Teacher Standards”. Questions such as “What is the local iwi (tribe) in your area?” and “How do you praise your students in Te Reo Maori (Maori language)?” were put to teachers from different subject specialised backgrounds. On average, non-science teachers displayed low aptitude and small improvement after professional development was offered throughout the duration of the project. In contrast, science teachers showed a noticeable progress with identical research conditions. I argue that differences in the teachers’ acquisition of indigenous knowledge for the project could be another illustration of the impact of positive relationships that exist in any learning environment, in this case between the researcher and participants of the research project. We will again focus on cultural aptitude by asking the same research questions to this presentation’s audience. We will discuss the results of this anonymous investigation, the differences with the case study results (if any) and the relevance for incorporating indigenous culture into the sciences.


**Abstract** This paper presents an analysis of the perceptions of an ‘indigenous perspective’ as presented by 140 pre-service science education students. The students were required to choose a concept in science, and then incorporate their notions of an indigenous perspective relative to their chosen science concept. The students presented their science concept and indigenous perspectives using concept maps or mind maps. In this study their concept and mind maps were considered to represent their constructed understandings or perceptions. The maps were analysed for the relationship constructs presented between knowledges. Concepts were drawn from seven overlapping and interrelated areas of Western science: seasons and weather, astronomy, plants, animals, resources, and ecology. The students’ responses highlighted that an indigenous perspective is a relational construct between Western science knowledge, indigenous knowledge and knowledge application. This analysis presents science and indigenous perspectives as a complex web of inter-related knowledges. This complex representation moves from Science Understanding (content) to a conceptualisation of Science as a Human Endeavour.
Indigenous Knowledge Symposium  
Protecting Country and Connecting the Expertise  
Adelaide, SA  
30 September 2013

The David Unaipon College of Indigenous Education and Research would like to invite you to an Indigenous Knowledge Symposium.

Indigenous peoples have a long tradition of meeting to share ideas, consolidate knowledge and collectively sustain natural resources. In keeping with this tradition, Kaurna Elder Uncle Lewis O’Brien is leading an Indigenous knowledge symposium on connecting knowledge around water and land sustainability.

Speakers will include Professor Veronica Arbon from the Arabana people of the Central Deserts, Dr Chris Matthews from the Quandamooka people of Minjerribah and Professor Deborah McGregor who is Anishinabe from Whitefish River First Nation, Canada. Through gathering together Indigenous scholars with expertise in such areas as water conservation, forestry and fire mitigation, and through considering the interplay between traditional knowledge and western science around environmental management, this symposium aims to generate dialogue and expand our discussions on how best to care for our most precious resource—our country.

For more information and to register visit unisa.edu.au/indigenousknowledge

IOSTE Eurasian Regional Symposium & Brokerage Event Horizon 2020.  
Antalya, Turkey  
30 October - 1 November 2013

The main aim of this event is to discuss science and technology education issues and to provide information about European Union - New program "Horizon 2020" calls for proposals related to science, technology, engineering and mathematics (STEM) education and bring all stakeholders together (universities, research institutions, civil society organisations, SMEs, public bodies, science centres etc.) to promote partnerships among potential coordinators and partners in a fruitful networking environment.

You can find further information on the symposium web page: www.ioste2013.org

Dr.Bulent Cavas  
IOSTE-Mediterranean Region Representative

---

CALENDAR OF EVENTS

This is mostly a summary of upcoming conferences. More details may have been given in this or previous bulletins as shown. A web-based contact is usually included. Inclusion of conferences in this list is not to be read as an endorsement of the conference.

2013

August 2013  
**September 2013**
2-7 September: 10th Conference of the European Science Education Research Association (ESERA), Nicosia, Cyprus (http://www.esera2013.org.cy/) (Feb13)


29 September – 3 October: 4th World Conference 2013, Kuching, Sarawak, Malaysia (http://www.worldste2013.org/) (April12)

**October 2013**

**November 2013**
11-14 November: Fifth International Conference on Science and Mathematics Education (CoSMEd 2013), Penang, Malaysia (http://www.recsam.edu.my/cosmed/index.html) (Oct12)


**December 2013**

**2014**

**March 2014**
30 March – 2 April: NARST 2014 Annual International Conference, Pittsburgh, PA, USA (https://www.narst.org/annualconference/futureconf.cfm)

**July 2014**

**August 2014**

**Future Australasian Science Education Research Association (ASERA) conferences**
2015 – Perth (host: University of Western Australia)
2016 – Canberra (host: University of Canberra)