

INTER-DIVISION IX-X / WORKING GROUP ENCOURAGING THE INTERNATIONAL DEVELOPMENT OF ANTARCTIC ASTRONOMY

CHAIRPERSON Michael G. Burton
MEMBERS Maurizio Busso, Eric G. Fossat,
James P. Lloyd, Mark J. McCaughrean,
Christian Spiering, Shoji Tori

PROCEEDINGS BUSINESS MEETING on 23 August 2006

1. Introduction

The business session of the Working Group followed the completion of Special Session 7, *Astronomy in Antarctica*. The proceedings of this meeting are published in *Highlights in Astronomy*, Volume 14 (Ed. K. A. van der Hucht, 2007, CUP). The session involved 18 papers spread over 5 sessions, together with a further 18 poster papers. A dinner was also held in Prague following the first day of the Special Session.

2. Proposal to establish an Antarctic Astronomy research programme in SCAR

Currently there are five Scientific Research Programs within SCAR, the Scientific Committee for Antarctic Research. A motion has been put forward to SCAR to make Astronomy the sixth. This would place Astronomy on an equal footing with the other science disciplines in Antarctica for the first time. A preliminary proposal needs to be prepared for the meeting of the SCAR Executive in May 2007. Assuming this is accepted, a full proposal will then go to the 2008 SCAR meeting.

The following background briefing was provided by Jeremy Mould (NOAO) and John Storey (UNSW):

Astrophysical observations require minimum interference from the Earth's atmosphere, low thermal background, low absorption, and high angular resolution. The moderate "launch costs" for Antarctic plateau observatories make them an attractive alternative to space.

Astronomy from the Antarctic came of age in the last decade with a cosmological result of major significance. Balloon-borne millimetre observations of the cosmic microwave background from the first BOOMERANG flight led directly to the discovery of the zero-curvature Universe. Sub-millimetre astronomy has also prospered in the Antarctic: the South Pole Telescope is expected to deliver a large-area survey of the hot gas in clusters of galaxies with a uniquely uniform redshift distribution; this will probe the nature of 'dark energy', the biggest constituent of a 'flat' Universe.

Now is the time for SCAR to initiate, as its sixth program, Astronomy & Astrophysics from Antarctica, aimed at understanding the overarching ecological processes in the Universe, the birth of stars and of planetary systems around other stars, the return of heavy element enriched materials to the interstellar medium, and the formation of molecular clouds.

SCAR will add value by fostering international collaboration in order to permit goals to be achieved that are beyond those of single national programs. SCAR's approach to broad scientific programs is to define themes within the program. Some themes for AAA (Antarctic Astronomy & Astrophysics) will be exoplanet biosignatures, high angular resolution, time domain astrophysics, microwave cosmological background radiation studies, and the physics of molecular clouds.

In the next two years the AAA Planning Group will consult with the community, clarify the objectives of the research in these and other proposed astrophysical themes, and create a roadmap that will allow groups to make progress toward achieving these goals.

The notion of precursor projects is a useful one in road-mapping. National goals will differ for facilities of common interest. It is important to pursue the scientific goal of a facility all the way to the science. A multi-wavelength approach will be necessary to meet SCAR's expectations for a full AAA program. Multidisciplinary links outside astronomy also need to be addressed in the roadmap.

SCAR can enhance the scientific value of Antarctic astronomy by moving to establish the AAA Scientific Research Programme at this time. The benefits of coordination and international collaboration will be keenly felt. A strong AAA program will also strengthen the accomplishments of SCAR, which exists to promote frontier science driven coordination and collaboration.

The AAA Scientific Research Programme planning group will be made up of members of the existing AAA Action Group plus other contributors, and will produce a preliminary proposal for the 2007 SCAR Executive with a view to submission of a full, formal proposal to the 2008 SCAR meeting in St Petersburg. Once the AAA Scientific Research Programme is established, the AAA Expert Group will be dissolved.

Following a discussion, a call for volunteers to participate in writing the proposal was made. One aspect of this proposal that was discussed, in particular, was its role in providing a roadmap for future astronomical developments in Antarctica.

3. Proposal for the IAU to join SCAR as an ICSU member

Following discussions held at the recent SCAR meeting in Hobart, Australia (July 2006), the meeting considered whether IAU should be approached to join SCAR as an ICSU member. The meeting resolved to ask the IAU Executive to make such a request. Note: the ensuing discussions have indeed resulted in the IAU Assistant General Secretary, Ian Corbett, writing to SCAR, on behalf of the Executive, with such a membership request.

4. Limiting artificial backgrounds in Antarctica

Albrecht Karle spoke about the need to consider limiting artificial electromagnetic backgrounds in Antarctica so as not to interfere with pristine sites. The issue has arisen at the South Pole because of the possible interference of the Super Darn radar with the ICECUBE neutrino telescope. Chris Martin described discussions within the South Pole Users Committee (SPUC) regarding the issue. As developments continue at other sites over the plateau it is important to ensure that pristine sites for astronomy do not get compromised by inadvertent artificial backgrounds. It was noted that liaison with Commission 50, Protection of Existing and Potential Observing Sites, would be useful in this regard.

5. Continuation of the Working Group

The meeting discussed the continuation of the Working Group, and agreed that it provides a useful role and should continue. Michael Burton was re-elected as chair.

Michael G. Burton
chair of the Working Group