

## ANNUAL REPORT FOR THE PERIOD 1 January 2006 to 31 December 2007

### 1. Executive Summary

The South African astronomy community has a high profile within the IAU (and related international astronomy organizations), with a disproportionate representation and participation in the committees and activities of the Union. A challenge we are managing is to ensure that we have a pipeline of young South Africans who will ensure that this situation continues into the future. These young astronomers are also needed to take up the opportunities provided by the major astronomy instruments that exist and are being built in the region: SALT, HESS and MeerKAT.

A number of initiatives to increase the number of young astronomers are currently being undertaken, and more are being planned. These initiatives have been developed in close collaboration with the DST and NRF, and other state and private institutions. Maximum use is being made of international partners linked to SALT, HESS and MeerKAT/SKA in order to ensure that our students and young astronomers get the very best research opportunities.

The commissioning phase of the SALT telescope continues, and early science results have started to be produced. There is every confidence that SALT will be one of the premier optical facilities in the world.

The research team associated with the HESS gamma-ray telescope were awarded the prestigious Descarte Prize for the unique results being produced by the telescope. The South African participant in this consortium is the University of the North West.

The SKA community has short-listed South Africa as a suitable site for the SKA, together with Australia. This decision was supported by the perception by our peers that South Africa has the technical competence to host this major instrument. The accomplishments of the MeerKAT project team were a major factor in driving this positive sentiment. The MeerKAT has now been accepted as a key component of the international SKA project plan.

2009 has been designated the International Year for Astronomy, and South Africa will play a major role in the planned activities. Our participation is being managed by Mr Kevin Govender of SAAO.

The National Committee has not met formally for two years because of scheduling problems and lack of pro-active support from the secretariat. A meeting will be held in 2008, and the existing committee membership will be reviewed.

| Headings  | Activities completed- January to December 2007  | Activities planned- January to December 2008   |
|---|---|--|
| 2. Background & Composition of National Committee (Please indicate if any of the members of the committees have previously been capacity building candidates) | <p>The National Committee meets once every three years, some months before the IAU General Assembly. The committee did not meet in 2007. The present committee consists of:</p> <ul style="list-style-type: none"> <li>• Prof. JL Jonas (Chair), HartRAO/Rhodes University</li> <li>• Dr A Beesham, University of Zululand</li> <li>• Prof. P Dunsby, University of Cape Town</li> <li>• Prof. AP Fairall, University of Cape Town</li> </ul> | <p>The composition of this committee will be reviewed in 2008. Many members have served long periods on the National Committee and need to be rotated off and replaced with younger individuals.</p> |

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|   | <ul style="list-style-type: none"> <li>• Dr P Martinez, SAAO</li> <li>• Prof. J van der Walt, Potchefstroom University</li> <li>• Dr PA Whitelock, SAAO</li> <li>• Dr C Cress, UKZN</li> <li>• Dr T Medupe, SAAO</li> <li>• Dr S Goedhart, HartRAO (development member – Dr Goedhart is not yet a member of the IAU)</li> </ul> <p>The demographic composition of this committee is:<br/>Black: 3, White: 7, Female: 3. Male: 7</p>   |   |
| 3. Participation by South Africans in Union activities        |   | •   |
| 3.1. Size of local community                                  | <ul style="list-style-type: none"> <li>• The on-line database of active IAU members indicates that there are 62 South African members (56 male &amp; 6 female).</li> </ul>  | <ul style="list-style-type: none"> <li>• We maintain a list of individuals who are eligible for IAU membership, and their names are forwarded to the IAU prior to the General Assembly. The criteria for IAU membership are set at a high level, and there is no junior membership category for recent graduates. Therefore a number of young South African astronomers are not members, but they are eligible for financial support to attend IAU conferences and symposia.</li> </ul> |
| 3.2 South Africans serving on Unions or its subsidiary bodies | <ul style="list-style-type: none"> <li>• Prof Brian Warner: <ul style="list-style-type: none"> <li>○ Serves on the Executive Committee of the IAU as a Vice-president.</li> <li>○ Member of the Resolutions Committee.</li> <li>○ Member of Organizing Committee of Commission 41 – History of Astronomy.</li> <li>○ Scientific Organizing Committee, IAU Symposium 240, “Binary Stars as Critical Tools and Tests in Contemporary Astronomy”</li> </ul> </li> <li>• Dr Peter Martinez: <ul style="list-style-type: none"> <li>○ Chair of Commission 25 – Stellar Photometry and Polarimetry.</li> <li>○ Member of Organizing Committee of Division IX – Optical and Infrared Techniques.</li> <li>○ Member of Organizing Committee of Commission 27 – Variable Stars.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Mr Kevin Govender will be leading the South African involvement in IYA2009.</li> </ul>   |

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|   | <ul style="list-style-type: none"> <li>○ Member of Programme Group for World Wide Development of Astronomy (Commission 46).</li> <li>○ Scientific Organizing Committee, Special Session 5, IAU General Assembly 2006.</li> <li>• Prof Phil Charles: <ul style="list-style-type: none"> <li>○ Member of Nominations Committee.</li> <li>○ Scientific Organizing Committee, IAU Symposium 238, “Black Holes: from Stars to Galaxies – across the range of masses”</li> </ul> </li> <li>• Prof Patricia Whitelock: <ul style="list-style-type: none"> <li>○ Member of Organizing Committee of Division VII – The Galactic System.</li> <li>○ Member of Organizing Committee of Commission 33 – Structure and Dynamics of the Galactic System.</li> <li>○ Member of Organizing Committee of Commission 46 – Teaching of Astronomy.</li> <li>○ Member of Working Group for Future Large Scale Facilities.</li> <li>○ Scientific Organizing Committee, Joint Discussion 13, IAU General Assembly 2006.</li> <li>○ Scientific Organizing Committee, Special Session 1, IAU General Assembly 2006.</li> </ul> </li> <li>• Prof Renee Kraan-Korteweg: <ul style="list-style-type: none"> <li>○ Member of Organizing Committee of Commission 28 – Galaxies.</li> </ul> </li> <li>• Prof O de Jager <ul style="list-style-type: none"> <li>○ Scientific Organizing Committee, Joint Discussion 1, IAU General Assembly 2006.</li> </ul> </li> <li>• Mr Kevin Govender <ul style="list-style-type: none"> <li>○ Chair of International Year of Astronomy (IYA2009) Global Cornerstone Project – “Developing Astronomy Globally”.</li> </ul> </li> </ul> |   |
| <p>3.3 Attendance of International Congresses/Workshops</p> <ul style="list-style-type: none"> <li>• Number of conferences</li> </ul> | <ul style="list-style-type: none"> <li>• XXVIth IAU General Assembly, Prague, 2006, including IAU Symposia 235 thru 240, Joint Discussions 1 thru 17 and Special Sessions 1 thru 7.<br/>21 South Africans attended, at least 10 papers presented, including 4</li> </ul>  | <ul style="list-style-type: none"> <li>• The community will attend and present at IAU meetings as appropriate.</li> </ul> |

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| <p>attended</p> <ul style="list-style-type: none"> <li>• Number of South African delegates</li> <li>• Number of papers presented by South Africans (indicate any special invitations, e.g. keynote/ plenary talks)</li> </ul> | <p>students (P=paper, S=student):<br/> D. Block (P), R. Booth, S. Bryan (PS), S. Buchner (PS), D. Buckley (P), P. Charles (P), L. Crause (S), O. de Jager (P), B. de Swardt (S), I. Glass (P), Y. Hashimoto (P), A. Kniazev (P), P. Martinez (P), R. Medupe, J. Menzies, D. Smits, A. Tiplady, P. Vaisanen, J. van der Walt, B. Warner, P. Whitelock.</p>  |   |
| <p>3.4 Capacity Building with regard to Membership of National Committee and involvement of young scientists in International Meetings</p>  | <ul style="list-style-type: none"> <li>• Our capacity development initiative has resulted in the appointment of two young scientists to the National Committee as full members, and one as a development member. She will become a full member once she has become a member of the international parent body.</li> <li>• We strongly encourage all young astronomers to attend international meetings. We facilitate the necessary funding from the NRF, the National Facilities the IAU, and other instruments such as the EU Marie Curie student fellowships.</li> </ul> | <ul style="list-style-type: none"> <li>•</li> </ul>   |
| <p>3.5 Organisation of Union related Conferences in South Africa</p>  | <ul style="list-style-type: none"> <li>• The IAU Executive met in Cape Town in 2007. This meeting included the President and all Vice-presidents of the IAU, and the IAU permanent staff.</li> </ul>   | <ul style="list-style-type: none"> <li>• None planned – local community too busy with development of new astronomy facilities.</li> </ul> |
| <p>3.6 Contribution by members to key documents and publications (please indicate why they are regarded as key)</p>   | <ul style="list-style-type: none"> <li>• Professor Justin Jonas was a member of a ten person international team that drafted the specifications for the Square Kilometre Array (SKA). This document will be the basis for all future work on the SKA.</li> </ul>   |   |
| <p>3.7 Report back on recommendations made during the in depth review (indicate what were the recommendations and what progress has been made to attend to them.)</p>   | <ul style="list-style-type: none"> <li>•</li> </ul>  | <ul style="list-style-type: none"> <li>•</li> </ul>   |
| <p>4. Value to the Community and Benefit to South Africa</p>  | <ul style="list-style-type: none"> <li>• Astronomy has been identified as a driver for science, technology and community development by the South African government. The SALT and MeerKAT telescope projects have major collateral benefit programmes associated with them.</li> </ul>  |   |
| <p>5. Public Society Interfaces and Outreach Programmes – self initiated or facilitated</p>   | <ul style="list-style-type: none"> <li>• The National Facilities (SALT, SAAO &amp; HartRAO) have very active and successful science awareness programmes. Several thousand learners are exposed to astronomy and “big science”</li> </ul>  | <ul style="list-style-type: none"> <li>• Mr Kevin Govender will be leading the South African involvement in IYA2009.</li> </ul>           |

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|---|--|--|
| by ICSU   | <p>through these programmes. Teacher workshops are also part of these programmes.</p> <ul style="list-style-type: none"> <li>• The SALT, SKA and MeerKAT projects have attracted significant media coverage.</li> </ul>  |  |
| 6. Research Highlights/ New Initiatives in South Africa (indicate what benefits will these bring for SA)                        | <ul style="list-style-type: none"> <li>• The HESS consortium won the prestigious EU Descarte Prize.</li> <li>• The first science results from SALT are being published.</li> <li>• South Africa was short-listed, along with Australia, as a suitable site for the SKA.</li> <li>• The Astronomy Geographic Advantage Act has been passed by Parliament. This Act provides protection for astronomy sites in South Africa, and establishes a Radio Astronomy Reserve in the Northern Cape.</li> </ul>  | <ul style="list-style-type: none"> <li>•</li> </ul>  |
| 7. Science Education (Any activities involving teachers, students, school curriculum development, graduate student development) | <ul style="list-style-type: none"> <li>• Both SAAO and HartRAO run programmes for school learners and teachers. The HartRAO visitor's centre attracts up to 120 learners per day.</li> <li>• Through the Astronomy Geographic Advantage Programme, the astronomy community is working closely with DST and the NRF to grow the number of young astronomers. The NASSP initiative is one of the initiatives that is producing a good stream of students.</li> <li>• The SKA project includes a substantial Human Capital Development Programme, which is being developed in close collaboration with DST and other government departments.</li> </ul> | <ul style="list-style-type: none"> <li>• The Astronomy Geographic Advantage Programme (AGAP) will develop further in collaboration with DST and NRF.</li> <li>• The MeerKAT Human Capital Development Programme is planning interventions from school level through to senior academic positions.</li> </ul> |
| 8. Financial assistance received by South Africans direct from ICSU bodies during 200   | <ul style="list-style-type: none"> <li>• Mr Kevin Govender was part of an IYA2007 delegation to the UN Headquarters in November 2007. This visit was fully funded by the IAU.</li> <li>• Two students were partly funded to attend the IAU General Assembly in the Prague.</li> </ul>  | <ul style="list-style-type: none"> <li>• Opportunities will be pursued as and when required.</li> </ul>  |