

**SOUTH AFRICAN NATIONAL COMMITTEE  
for the INTERNATIONAL UNION OF GEODESY & GEOPHYSICS**

**ANNUAL REPORT FOR THE PERIOD  
1 January 2007 to 31 December 2007**

**1. Executive Summary**

The national committee formed in March 2005 was disbanded in December 2007. Prof Charles Merry the former chairman of IUGG – SA has retired and his position replaced by Dr Isabelle Ansorge. A new committee will be selected at the next IUGG – SA meeting which is scheduled for the 10<sup>th</sup> March 2008. There are a number of fresh faces on this committee and the demographic disparity which existed in the past has been reduced.

South African scientists took an active part in the affairs of the Union and its associations, with several scientists holding executive positions in working groups and commissions. There are a large number of ongoing research projects in the field of geodesy and geophysics in South African, several of them with international participation. Although scientists in South Africa tend to work within subject areas that follow the disciplines represented by the seven associations of the union, it is encouraging to see that several of the projects are cross-disciplinary in nature, and that scientists working in as diverse disciplines as geodesy, physical oceanography, meteorology, geomagnetism and geodynamics are working together.

Membership of the IUGG is invaluable to geoscience endeavours in South Africa. This membership provides an opportunity for South African geoscientists to benefit from attendance at international meetings such as the IUGG 2007 held in Perugia, Italy, to participate in study groups and commissions and to be involved in international research. There are also financial benefits in the form of reduced subscriptions and registration fees. In addition, through IUGG-SA young South African and SADC researchers and postgraduate students have been encouraged to attend a number of international conferences. Funding supporting their travel costs have improved and approx. 80% of these applicants have been successful in receiving full or partial funding.

<b>Headings</b>	<b>Activities completed- January to December 2007</b>	<b>Activities planned- January to December 2008</b>
<p>2. Background &amp; Composition of National Committee</p>	<p>The International Union of Geodesy and Geophysics (IUGG) consists of seven member associations:</p> <ul style="list-style-type: none"> <li>• International Association of Geodesy (IAG)</li> <li>• International Association of Geomagnetism and Aeronomy (IAGA)</li> <li>• International Association of Hydrological Sciences (IAHS)</li> <li>• International Association of Meteorology and Atmospheric Sciences (IAMAS)</li> <li>• International Association for the Physical Sciences of the Oceans (IAPSO)</li> <li>• International Association of Seismology and Physics of the Earth's Interior (IASPEI)</li> <li>• International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)</li> </ul> <p>These member associations are semi-autonomous in terms of their research agendas and internal structures. The South African National Committee for the IUGG reflects this structure in that the membership consists of national correspondents for each association, plus additional members selected for their expertise. The membership at the end of the year is as follows:</p> <p>It must be noted that Prof Charles Merry has retired as chairman of IUGG-SA and this position has been replaced by Dr Isabelle Ansorge, formerly the representative of IAPSO. It is hoped that committee members listed below will retain their involvement in IUGG-SA.</p> <p>Dr Isabelle Ansorge University of Cape Town (Chairman)</p> <p>Dr J Hermes (IAPSO) - University of Cape Town  Ms J Cole - Council for Geoscience  Prof D Hughes (IAHS) - Rhodes University  Dr P Kotzé (IAGA) - Hermanus Magnetic Observatory  Dr L Linzer (IASPEI) - CSIR Mining Technology</p>	<p>A new committee will be appointed in March 2008.</p> <p>Efforts will continue to be made to identify suitable candidates for appointment to the committee in order to change the demographic distribution.</p> <p>An effort will be made to identify a suitable candidate to represent the newly formed International Association of Cryospheric Sciences (IACS).</p>

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	<p>Mr M Majodina (IAMAS) - South African Weather Service  To be confirmed (Prof JS Marsh has retired) (IAVCEI) - Rhodes University  Mr A Parker (IAG) - Chief Directorate: Surveys &amp; Mapping  Mr GC Schulze - South African Weather Service</p> <p>Two members of the committee are black and four are female.</p> <p>It must be noted that on July 4, 2007, at the 10th IUGG General Assembly in Perugia, Italy, the IUGG Council decided to launch the International Association of Cryospheric Sciences, IACS as the 8th IUGG Association. IACS is now a sister organization to long established Associations such as those for Hydrological Sciences (IAHS), Meteorology and Atmospheric Sciences (IAMAS) and Physical Sciences of the Oceans (IAPSO). The decision by the IUGG Council was mainly reached in recognition of the fact that the study of the Cryosphere has to be seen on equal footing to investigations of other components of the Earth system. With the initiation of IACS, its predecessors, the International Commission for Snow and Ice (ICSI) and the Union Commission on Cryospheric Sciences (UCCS) are superseded.</p> <p>IACS comprises five Divisions that address:</p> <ul style="list-style-type: none"> <li>▪ Snow and Avalanches</li> <li>▪ Glaciers and Ice-sheets</li> <li>▪ Marine and Freshwater Ice</li> <li>▪ Cryosphere, Atmosphere and Climate</li> <li>▪ Planetary and other Ices of the Solar System</li> </ul>	
3. Participation by South Africans in Union activities		

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3.1. Size of local community	It is difficult to quantify the size of the local community, as the IUGG does not have individual membership, and only a few of the associations have individual membership. If one takes into account membership of these associations and membership of relevant local societies there could be over 400 South African scientists participating in activities related to the mandate of the IUGG. The number involved with individual associations ranges from as few as half a dozen (IAG) to over 200 (IAMAS).	No significant change is expected in the size of the local community
3.2 South Africans serving on Unions or its subsidiary bodies	<p>South African scientists are actively involved in the affairs of the seven associations and it is hoped that a scientist will be formed to represent the 8<sup>th</sup> association IACS:</p> <p><i>IAG:</i> Mr R Wonnacott is a member of the steering committee for Commission 1 (Positioning) and is chairman of sub-commission 1.3d: Africa. Dr L Combrinck is a member of this sub-commission.</p> <p><i>IAGA:</i> Dr P Kotzé is vice-chairman of IAGA Working Group V-OBS: Magnetic Observations. Dr L-A McKinnell is vice-chairman of the URSI Working group G1: Ionosonde Network Advisory Group.</p> <p><i>IAHS:</i> Prof D Hughes is a vice-president of the International Commission on Surface Water. Dr P Ashton is a vice-president of the International Commission for Water Quality. Dr S Lorentz is a vice-president of the International Commission on Tracers.</p> <p><i>IAPSO:</i> Dr I. Ansorge has been nominated onto the executive committee for IAPSO</p> <p><i>IASPEI:</i> Dr M. Grobbelaar of the CGS was elected to serve on the International Federation of Digital Seismographic Networks (FDSN) WG-1 Station siting and instrumentation.</p> <p><i>IYPE:</i> In addition, a new committee, chaired by Prof M. de Wit, was formed to represent South Africa's involvement in the International Year of Planet Earth (IYPE).</p>	<p>Membership of these committees and commissions will continue until the next IUGG General Assembly, scheduled for 2011 in Melbourne, Australia.</p> <p>In addition, a number of meetings have been planned:</p> <ul style="list-style-type: none"> <li>IAHS – Canada, Macedonia, Uganda</li> <li>IAMAS – Spain</li> <li>IAGA – Greece, USA</li> <li>IAVCEI – Iceland</li> <li>IAG – Germany, Poland</li> <li>IAPSO – South Africa</li> <li>ICSU – Mozambique</li> <li>IASPEI – Japan</li> <li>IGC - Norway</li> <li>IYPE – France, Tanzania</li> </ul> <p>The CGS won the bid to host the IASPEI 2009 General Assembly in Cape Town. A number of staff members are on the LOC.</p>

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	<p><i>IPY</i>: 2007 also saw the continuation of the committee for the International Polar Year – Dr Ansorge, Dr P. Cilliers, Prof A. Hughes</p> <p>URSI National Committee: (Commission K Representative, Dr P Cilliers Commission G Representative, Dr Lee-Anne McKinnell, Dr E Mravlag, Commission H Representative, Dr A Collier, Prof A Hughes)</p> <p>COSPAR National Committee (Dr Lee-Anne McKinnell, Prof A Hughes)</p>	
<p>3.3 Attendance of International Congresses/Workshops</p> <ul style="list-style-type: none"> <li>• Number of conferences attended</li> <li>• Number of South African delegates</li> <li>• Number of papers presented</li> </ul>	<p>2007 marked the IUGG symposium, which was held in Perugia, Italy in July 2007</p> <p>Unfortunately, this conference was poorly organised and facilities available were not adequate to house the sheer number of attendees. Perugia offered a very pleasant cultural, historical, and scenic backdrop for the conference unfortunately there were not enough hotel rooms in the city to accommodate all the meeting participants. The lodging situation was further exacerbated by the crush of visitors to Perugia for the Umbria Jazz Festival. Furthermore, early bird registration costs of Euros 480 were excessive preventing a large number of scientists from attending the conference. A plan for 3-day and 7-day passes has now been put forward to reduce the registration fee – in particular for people planning to attend for only a short period.</p> <p>The final statistics of the Perugia IUGG 2007 General Assembly showed that 109 participants (including 1322 students) from 90 countries arrived and registered in Perugia for the 2007 IUGG General Assembly. 6990 abstracts were accepted for presentation, 220 scientific sessions were convened, and 99 meetings were held. The Council selected Melbourne, Australia, as the site of the 2011 IUGG General Assembly. The dates of the 25th IUGG General Assembly will be announced as soon as possible, but the first half of July is most likely.</p> <p>South African scientists were well represented at this National Assembly with a total of 9 researchers present. A total of 8 oral presentations were given and 11 joint posters presented.</p>	<p>South African scientists will also be attending other meetings such as those of URSI, IRI, ICSU, SCAR, SCOR, COSPAR and the European Geosciences Union.</p>

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	<p>A total of 29 international conferences and workshops were attended in 2007. Of these, eight were held in South Africa and the others ranged from Italy, Ethiopia, Germany, Czech Republic.</p> <p>A total of 84 South African scientists participated in these meetings.</p> <p>64 papers were presented at these meetings.</p>	
<p>3.4 Capacity Building with regard to Membership of National Committee and involvement of young scientists in International Meetings</p>	<p>Ten young scientists attended international meetings in 2007. Of these, two were female and three were black.</p> <p>Furthermore, at the 5<sup>th</sup> Inkaba ye Africa Workshop, held at Wild Coast Sun during October, 15 MSc / PhD students attended and gave presentations, of which all can be regarded as capacity building candidates.</p>	<p>Efforts will continue to be made to identify potential candidates for support.</p>
<p>3.5 Organisation of Union related Conferences in South Africa</p>	<p>The following IUGG-related (but not sponsored) meetings were held in South Africa in 2007:</p> <p>SAGA 10<sup>th</sup> biennial meeting at Wild Coast Sun. 17 People of the CGS attended the conference, including 4 young scientists. Staff were involved in 15 presentations at the conference</p> <p>WIOMSA - Durban</p> <p>South African Symposium of Atmospheric Sciences, Pretoria 2nd GEO Summit, CTICC, Cape Town</p> <p>SANAP PI Symposium 2007, Stellenbosch, South Africa</p> <p>UKZN--KTH Workshop, Hermanus Magnetic Observatory</p> <p>South Africa-French LiDAR Workshop, Innovation Hub, Pretoria</p> <p>5<sup>th</sup> Inkaba ye Africa Workshop, Wild Coast Sun</p>	<p>The following IUGG-related (but not sponsored) meetings will be held in South Africa in 2008:</p> <p>XIII IAGA Workshop on Magnetic Observatories, Golden, USA, 9-19 June 2008.</p> <p>Workshop on Space Physics to be held at Hermanus as part of the 75<sup>th</sup> anniversary celebrations of HMO.</p> <p>SANAP Symposium will be held in Cape Town.</p> <p>IAPSO – Cape Town</p>

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	GEOS - Cape Town	
3.6 Contribution by members to documents and publications		
3.7 Report back on recommendations made during the in depth review		
4. Value to the Community and Benefit to South Africa	<p>South Africa's continued membership of the IUGG is critical to the development of research in geodesy and geophysics in South Africa. This membership provides an opportunity for South African geoscientists to benefit from attendance at international meetings, to participate in study groups and commissions and to be involved in international research. Membership also has financial benefits: it is possible to obtain reduced subscriptions for some of the journals published by the associations; young scientists and scientists from developing countries (South Africa is considered to fall in this category) can receive waivers of registration fees and assistance with subsistence costs when attending IUGG and association meetings. The IUGG member associations are also prepared to assist with the organisation of scientific meetings in South Africa, and to provide partial financial support for delegates from developing countries to attend such meetings.</p> <p>Geodesy and geophysics are disciplines that cut across international boundaries hence continued membership to IUGG will not only be of benefit to South Africa but Africa in general. Very few African countries are members of IUGG hence South Africa, with its access to an international body such as the IUGG, will be able to play a leading role in geodesy and geophysics on the continent to support the ideals and objectives of NEPAD and to support the ICSU initiatives for Africa.</p>	
5. Public Society Interfaces and Outreach Programmes – self initiated or facilitated by ICSU	Geodesists and geophysicists at HartRAO, the Council for Geoscience (CGS) and Hermanus Magnetic Observatory (HMO) participate in the schools outreach programmes of those organisations. Staff from CGS and hydrogeologists from the Universities of Rhodes and KwaZulu-Natal participate in the SASOL Science Week. An amateur radio club has been started at HMO, to encourage school pupils to become more aware of opportunities in space science. Oceanographers at UCT regularly give presentations to	These activities will continue in 2008 – through thematic platform months such as Antarctica month, biodiversity month and space physics.

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	<p>clubs, organised groups and schools.</p> <p>In addition, the Grahamstown SCi-Fest has proven to be an extremely successful platform in advertising scientific research and career opportunities in nSouth Africa. 2007 marked the beginning of the 2007-2008 International Polar Year, and 3 stands were secured during the festival to advertise all polar activities (space physics, oceanography, vegetation, atmospheric studies) conducted by South African researchers.</p> <p>The “science for school” journal Quest has published a large number of interesting articles relating to activities being conducted during IPY.</p> <p>The CGS hosted an open day, which was attended by a large number of schools. In addition, 14 girls spent a day at the CGS in their “Bring a girl-child to work” initiative.</p> <p>The Council for Geoscience, in conjunction with the Department of Minerals and Energy, facilitated a 'Careers in Mining' exhibition at the Bapong Rural Area in Brits, on 7th August 2007. The exhibition was attended by more than a thousand learners from the surrounding targeted schools.</p>	<p>Students have been encouraged to submit an essay, poem, song or artwork to the South African National Committee for the International Year of Planet Earth. The 5 top entries will win a trip to the Paris launch in February 2008.</p> <p>In addition, the International Year of Planet Earth was launched in Paris in February 2008. A stand depicting earth related sciences has been secured for the Sci-Fest in April 2008.</p> <p>Quest has been approached to publish a special edition for IYPE.</p>
6. Research Highlights/ New Initiatives in South Africa	<p>A large number of ongoing initiatives continued in 2007 and will continue in 2008. Some of these are:</p> <p>NELSAM: Natural Earthquake Laboratory in South African Mines. Sponsored by International Continental Scientific Drilling Program, National Science Foundation, Continental Dynamics Program</p> <p>AfricaArray is an initiative to promote coupled training and research programmes for building and maintaining a scientific workforce for Africa’s natural resource sector. AfricaArray is a new Pan-African initiative to address the problem of limited capacity in geophysics in Africa. Core partners in AfricaArray are the University of the Witwatersrand (South Africa), the CGS (South Africa) and Penn State University (USA).</p> <p>Inkaba ye Africa: This is a joint research initiative of the German and South African earth</p>	<p>These projects will continue in 2008.</p> <p>The GEF funded Agulhas Current Large Marine Ecosystem project (ASCLME) has been finalised and it is hoped that during the course of 2008 projects will be secured and funds awarded. Furthermore, a large initiative of ASCLME is to train a new generation</p>

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	<p>science community. Inkaba ye Africa is a model of multi-disciplinary collaborative research, undertaken by 15 government and academic institutions in South Africa and Germany. A geomagnetic field survey was conducted in southern Africa by HMO in collaboration with GfZ Potsdam as part of this project.</p> <p>The AFREF (African geodetic reference frame) project continues. This project, supported by the IAG, aims to establish a network of continuously-operating GPS receivers throughout Africa, for the purpose of providing a fundamental co-ordinate reference frame for geodesy and for the measurement of crustal motion.</p> <p>Southern Ocean Climate and Biodiversity Study (SOCAB) has been funded for another 5 years. The main research question to be addressed by this proposed multi-disciplinary research programme is how large-scale processes in the Southern Ocean influence climate variability and biodiversity.</p> <p>IPY activities at SANAE base in Antarctica include geomagnetism and GPS related research projects.</p> <p>GLORIA North West University (Potchefstroom) is participating in the IHY/IPY 2007 on energetic electron precipitation at SANAE, L=4.1, in collaboration with the GLObal RIometer Array (GLORIA).</p> <p>New ionosonde, funded by Department of Communications, installed at Hermanus during 2007.</p> <p>Geomagnetism field survey results indicate possibility of geomagnetic jerk in progress over southern Africa.</p> <p>MA-RE A new umbrella for all marine sciences has been formed. The Marine Research Institute initiative integrating all marine related sciences into a single body is located at the University of Cape Town.</p>	<p>of African marine scientists and intensive training cruise have been planned throughout 2008.</p>

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7. Science Education	<p>The activities provided to the general public by geophysicists are also made available to schools groups. Geodesists and geophysicists at HartRAO, CGS and HMO participate in the schools outreach programmes of those organisations. Staff from the Council for Geoscience and Hydrogeologists from the Universities of Rhodes and KwaZulu-Natal participate in the SASOL Science Week. Oceanographers at UCT regularly give presentations to clubs, organised groups and schools. HMO has started an amateur radio club for school pupils. CGS hosted an open day, attracting 1600 visitors and scholars from 40 schools, and its Geoscience museum hosted exhibitions related to youth and women in geoscience.</p> <p>Dr Linzer has been awarded a grant to study seismic exploration in the USA, with a view to teaching this subject in South Africa as part of the education component of AfricaArray.</p> <p>SAASTA has approved a large number of projects through their thematic platform months i.e. Antarctica month. The main aim of these months is to develop public awareness in related scientific activities.</p> <p>Sci-Fest in Grahamstown continues to be a huge draw card for young scholars interested in pursuing a career in the sciences.</p>	<p>These activities will continue in 2008.</p> <p>A new project “Class Afloat” encouraging young scholars to get more involved in the marine sciences is underway. In 2008, 2 scholars from the LEAP school in Pinelands will participate on a cruise to the Prince Edward Islands in the Southern Ocean onboard the SA Agulhas.</p>
8. Financial assistance received by South Africans direct from ICSU bodies during 2007	<p>A number of members from the committee received financial support to attend the IUGG National Assembly in Perugia, Italy. These included Dr Ansorge and her student Jonathan Durgadoo who received funding from IAPSO, Prof Merry from IAG.</p>	<p>Funding will be sought for scientists to attend a number of IUGG related workshops or meetings throughout 2008. The exact meetings will be discussed at the first IUGG-SA meeting in 2008.</p>