



ICOGS ASIA-PACIFIC NEWSLETTER

No.1, October 1998

CONTENTS

	Page
From ICOGS Secretary for Asia and the Pacific	2
The Australian Geological Survey Organisation (AGSO)	3
Cities Project	5
Geological Survey of Bangladesh	7
GIS in the Geological Survey of Bangladesh	9
Asia and the Pacific members of ICOGS as of 1 October 1998	10

The second edition of "Directory of Geoscience Organization of the World" was published in March 1998, and one copy of the directory was distributed to each organisation in the directory. You could see the same contents in our home page:

[//www.gsj.go.jp/EXT/GsOWDir.html](http://www.gsj.go.jp/EXT/GsOWDir.html)

We would appreciate your suggestions or comments on this directory. We plan to publish the third edition in early 1999.

From ICOGS Secretary for Asia and the Pacific

This is the first issue of the ICOGS Asia-Pacific Newsletter.

The International Consortium of Geological Surveys (ICOGS) was launched by Dr. D.C. Findlay in 1992, on the occasion of the 150th anniversary of the Geological Survey of Canada, with a potential charter as follows (Findlay, Episode, vol.15,109-112, 1992):

- (1) To provide collective leadership in guiding the application of governmental geoscientific knowledge and expertise in order to address the major social and environmental problems affecting the human condition.
- (2) To provide a mechanism for fostering communication and collaboration among major international nongovernmental scientific organizations, such as IUGS, International Council of Scientific Union (ICSU), and International Union of Geodesy and Geophysics (IUGG), and social, economic, and development organizations, such as UNESCO, United Nations Environment Programme (UNEP), and United Nations Development Programme (UNDP).
- (3) To provide a global network for consultation, development of consensus views on major issues, and timely exchange of advice and opinions at senior levels within the world's geological survey organizations.
- (4) To facilitate and to promote the development of major transnational projects that would require the support of a number of government agencies in order to be feasible.
- (5) To facilitate the development of multilateral memorandums of understanding (MOUs) or other instruments that could serve as enabling mechanisms for regional and international cooperations in geoscience projects, as in item 4 above.
- (6) To serve as a clearinghouse for information (Secretariat function); to facilitate the exchange of data, information, and staff amongst participating countries and agencies; and to develop and promote training and technology transfer programs.

Most of us fully support this potential charter. The ICOGS has been holding its meetings in conjunction with global meetings such as the IGC. Dr. Schalke of the Netherlands National Institute of Applied Geoscience TNO now acts as the world-wide ICOGS Secretary.

It was also agreed that it would be practical to carry out ICOGS activities regionally with a regional secretary as a contact point. After almost one year of effort to establish a regional ICOGS for Asia and the Pacific, Dr. Shimazaki (advisor) and I decided as its first real activity to launch its newsletter and to distribute it among the member geological surveys. We believe that the newsletter would facilitate to increase mutual understanding among the geological survey organizations in this region.

I sent a letter to each of member organizations in June 1998, and asked for appropriate articles to be appeared in the newsletter. We have received some from the Australian Geological Survey Organization and the Geological Survey of Bangladesh so far. Although we do not have many articles to publish at present, we think it is important to continue publishing the newsletter regularly. Our present plan is to publish the newsletter at least once a year. And we would publish it more often, if you would send us more contributions.

Any kind of information which may be of interest to other geological survey organizations will be accepted as an article for the future volumes of the newsletter. We especially welcome information such as new trends in your organizations and in your countries. A recent brochure to introduce your organization might be OK, if you have no other article. We hope for your contributions to future issues.

All correspondence relating to the ICOGS Asia-Pacific including its newsletter should be addressed to:

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THE AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION (AGSO)

AGSO is Australia's national geological survey and a research organisation in the Federal Department of Primary Industries and Energy. It provides the geoscientific knowledge base to underpin Government, industry and public decision-making in relation to the sustainable development and management of Australia's natural resources. AGSO's core business is geoscientific mapping and research to support the sustainable development and management of Australia's mineral, energy, soil and water resources.



AGSO has been responsible over the past 50 years for the basic geological and geophysical mapping of Australia (particularly airborne geophysical coverage) and its offshore territories, including its continental shelf and most of Papua New Guinea up to its independence in 1975. Resulting maps and information published by AGSO has provided the geoscientific basis for extensive private sector exploration, which has resulted in the discovery of numerous major mineral deposits and established Australia as one of the world's leading mineral producers. AGSO's geoscience programs have also contributed to the discovery of oil and gas deposits, both onshore and offshore, including the significant offshore Northwest shelf deposits.

AGSO has internationally recognised capabilities in a wide range of geoscientific disciplines, notably multi-disciplinary geoscientific mapping and the preparation of high quality geoscientific maps. With a staff of over 500 and annual budget of A\$54 million, AGSO's programs are implemented through three main research divisions: Petroleum and Marine; Minerals; and Geohazards, Land and Water. Outcomes and products are delivered under multidisciplinary projects using a wide range of professional expertise supported by outstanding laboratory and information technology facilities. A prime focus is to produce high quality geoscientific maps, data sets and analyses of geological, geophysical, geochemical and remotely sensed data using state-of-the-art information management technologies to provide a better understanding of Australia's geology and resource potential. AGSO is currently engaged in major multi-disciplinary geoscientific mapping of Australia's strategically important mineral provinces and petroleum basins.

An increasing priority of AGSO's geoscientific mapping program has been environmental mapping and investigations relevant to developing sustainable management practices covering land, soils, coastal zones and groundwater resources. AGSO also has important projects aimed at mitigating the risk of geohazards (volcanic, seismic, tsunami and land slip) on communities.

These undertakings are dependent on AGSO's multi-disciplinary geoscientific expertise and information technology capabilities, particularly in design, application and management of relational and GIS databases and digital cartography.

AGSO has provided assistance in modern geoscientific mapping methods to several countries, including Argentina, South Africa, Oman, Nepal, Indonesia, Fiji, Nauru, Vanuatu and the Philippines. The main focus has been on institutional strengthening through technology transfer and training which has usually involved joint mapping and evaluation of mineral and petroleum prospective areas, and sustainable management of the environment, particularly groundwater resources for potable and agricultural usage.

New directions

In January 1998 AGSO moved into its new purpose-built facilities at Symonston on the southern side of Canberra. The consolidation of all AGSO on the one site has resulted in an effective and conducive working environment

The Australian Government has placed strong emphasis on the development of the country's natural resources, particularly energy, minerals and agriculture.

A major program, for completion by 2004, is the offshore mapping of Australia's 'frontier' areas in order to secure its resource regime beyond the 200 nautical mile Exclusive Economic Zone under the United Nations Convention on the Law of the Sea (UNCLOS). These areas are estimated to contain petroleum resources roughly equal to all the oil and gas so far discovered in Australia.

AGSO is providing continued support for the National Geoscientific Mapping Accord (NGMA), with particular focus on airborne geophysical mapping over covered areas to determine mineral prospectivity. The final airborne geophysical survey will be flown this year to complete magnetic coverage of all Australia, the data having been acquired over the past 50 years, including, since 1990, 12 million line kilometres of high resolution magnetic and gamma-ray data jointly by AGSO and the State/Northern Territory Geological Surveys.

In keeping with a Government priority for developing Australia's land and water resources, with particular emphasis on agriculture and rural communities, AGSO is providing increasing technological assistance and research in a variety of disciplines, particularly hydrogeological mapping and computer modelling relevant to redressing degradation problems and developing remedial practices. A major focus has been on developing sustainable groundwater resource management practices for the Murray-Darling Basin, the largest area of agricultural production and irrigation in Australia.

An important new development of AGSO's program has been its "Cities Project" - an intensive research program aimed at identifying and evaluating geohazards (earthquakes, landslides, tsunami, reactive clays, geochemical contamination, mine subsidence, coastal erosion, floods and storm surge) and mitigating risks and impacts on communities through risk assessment scenarios, public awareness, advance warning, emergency services and remedial action through measures such as land planning, building codes, computer modelling of vulnerability of engineering life-lines, governmental support and improved insurance knowledge of portfolio risk exposure.

AGSO is well advanced in establishing a unified database system under which all data is centralised in a corporate database, with rigorous constraints on data quality and standardisation. Relevant data can then be accessed for geographic information system (GIS) map production and other usage. A prime AGSO objective is the provision of data and information for use by public and private sectors in planning and decision making.

AGSO has an established web-site at <http://www.agso.gov.au> which provides regularly updated information on the organisation, its activities and products. It also provides access to GIS data through on-line mapping systems and to products through on-line ordering as well as to a number of databases on-line for querying.

Recent AGSO maps of special interest include: The "Basins of Australia" map at 1:6,000,000 scale, which shows the names and outlines of all major onshore and offshore sedimentary basins, including colour coding the depth of basement beneath relevant basins; The "Australian Mining Operations and Significant Mineral Deposits" map at 1:5,000,000 scale which shows the main mines by name and commodity, mineralised regions, relevant infrastructure themes, and main oil-gas fields.

Further information is available from:

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Cities Project

Introduction

The earthquake that struck the NSW city of Newcastle in December 1989 shattered any illusion that Australian urban centres are not at risk from the impact of geological hazards. That relatively small earthquake killed 13 people, seriously injured 106 and caused an estimated \$4 billion in direct and indirect damage. Similarly, the tragic rockfall that killed nine people sheltering under a sea cliff at Cowaramup, near Margaret River in Western Australia, in September 1996 again drew attention to the risks to life and property associated with landslides and other forms of earth movement.

As our cities grow and become more complex, and as buildings and other structures such as dams, pipelines, roads and bridges become older, the level of risk associated with geohazards inevitably increases.

The National Geohazards Vulnerability of Urban Communities Project (better known as the Cities Project) is aimed at finding answers to the many questions associated with the geohazard risk to urban communities. In a progression from the traditional concentration on the hazard phenomena, the Cities Project leads the internationally accepted approach that views risk as a function of both the hazard phenomenon and the vulnerable community on which it impacts.

Services

- *urban earthquake hazard zonations (earthquake microzonations) and computer modelling of earthquake ground shaking*
- *quantitative assessments of landslide hazard*
- *hazard studies related to chronic geohazards eg acid sulphate soils, salinity, expansive clays, natural heavy metal and radon concentrations and coastal erosion*
- *the development of GIS-based decision support tools specifically for emergency managers, urban planners, engineers and risk managers*
- *community risk assessments employing advanced geographic information system (GIS) and process modelling techniques. These analyse information on buildings, utilities and the social and demographic aspects of the community*
- *the development of databases of historic hazard impacts and their consequences*
- *active involvement in community awareness and public education relating to the risks associated with geohazards*

Expertise

The Cities Project draws on AGSO's wealth of expertise in

- *seismic hazard analysis and monitoring*
- *geological mapping and remote sensing*
- *geochemistry*
- *geomorphology*
- *database development*
- *GIS and process modelling applications*

(cont. on the next page)

To this expertise has been added skills and expertise in urban geography, emergency management and information management. Wide-ranging research partnerships have been established with leading-edge specialists.

Pilot studies have been completed for Cairns and Gladstone in Queensland, Homebush Bay in Sydney, Launceston in Tasmania and Adelaide in South Australia. These have been undertaken in close collaboration with local government bodies, utility providers, the geotechnical consulting industry and commercial organisations.

Facilities

The Cities Project takes advantage of long-established AGSO resources including an extensive seismic monitoring network, high level seismic acquisition facilities, state-of-the-art gravity acquisition and analysis capability, and one of Australia's most sophisticated and comprehensive GIS resources (including MapInfo, ARC/Info, ERMMapper and Microstation).

The internationally recognised Risk-GIS methodology developed by the Project, provides the core tool. It exploits the combined power of GIS and modelling techniques to aid risk analysis. Amongst the modelling capabilities available is a suite of programs to model the two dimensional wavefield earthquake shaking in sediments.

Operational Philosophy

The Cities Project has been established to maximise the safety, sustainability and prosperity of urban communities. To achieve this, it develops and disseminates the best available information for urban planners, engineers, emergency managers and risk managers to use in mitigating the effects on the community of the impact of a wide range of hazards.

The above article is from a brochure of an information package on AGSO capabilities, which Dr N. Williams, Executive Director, AGSO kindly sent for this newsletter. The package includes many other brochures, which may be available from AGSO, such as:

*AGSO Earthquake Information and Hazard Assessment
AGSO Isotope and Organic Geochemistry Laboratory
Economic Geology Laboratories
Engineering Services
Geochemistry Laboratory
Geochronology and Isotope Geology
Geological Mapping
Geomagnetism
Gravimetry
Information Management and Visualisation
Institutional Strengthening
International Geoscience
Marine Surveys
Regolith
Remote Sensing and Image Processing
Rockmagnetism and Applied Paleomagnetic Laboratory
Timescales Calibration and Development Project
Volcanology
Water Resource Management*

Geological Survey of Bangladesh



Introduction

Geological Survey of Bangladesh (GSB) is an attached department of the Ministry of Energy and Mineral Resources of the Government of the People's Republic of Bangladesh.

GSB conducts systematic geological mapping and geoscientific activities throughout the country having an area of 147 570 square kilometres from its HQs in Dhaka and a camp office at Bogra.

The manpower-strength of the department is 644 of which 203 is officers (Geologist, Geophysicist, Chemist, Drilling Engineer and Other Officers) and 441 is staff. But at present 157 officers and 351 staff are working totalling 508.

Organisation

Director General is the chief of the Geological Survey of Bangladesh. There are 2 divisions headed by 2 Deputy Director Generals, and 17 branches under the divisions each headed by a Director/ Superintending Geophysicist/Superintending Chemist/Superintending Drilling Engineer. The followings are the Branches of GSB:

- Planning and Implementation & PIU
- Editorial Service
- Geological Mapping
- Stratigraphy and Biostratigraphy
- Coastal and Marine Geology
- Petrology and Mineralogy
- Photogeology, Remote Sensing and Surveying
- Geochemical Exploration
- Analytical Chemistry
- Economic Geology
- Geo-technical & Engineering and Urban Geology
- Drilling
- Publication, Public Relation and Data Centre
- Geophysical Mapping- 1 (Gravity & Magnetic)
- Geophysical Mapping-2 (Seismic & Electric)
- Laboratory and Geophysical Research
- Operation and Co-ordination

GSB has a Computer Cell with Remote Sensing & Geographic Information Systems (GIS) facilities, a Library with books and journals on earth science, a Geological Museum in Dhaka. and a Core Library at Bogra.

Main Functions

- To conduct systematic geological mapping of the country for preparing geological maps.
- To investigate in detail such areas as are indicated by geological mapping to be favourable for accumulation of industrial rocks, mineral fuel, ground water and other natural resources.
- To investigate in detail and conduct extensive geophysical, test drilling and geochemical operation in order to evaluate the known mineral deposits.
- To conduct stratigraphic studies to identify, correlate and determine the sequence of rock units in support of mapping and exploration programmes, including age determination by fossils and other geochronological methods.
- To conduct geological investigation in connection with construction of dams, canals, tunnels, highways, bridges, new townships and other public construction projects so as to advise the sponsoring agencies about geological feasibility of such construction projects.

- To carry out marine geological and geophysical investigation and geomorphological studies of river basins and the delta regions.
- To undertake systematic sampling of mineral fuels and ground water resources and to carry out mineralogical and chemical analysis of the samples.
- To conduct research in various fields of geology.
- To advise the public and private organisations in all matters connected with geology and resources of the earth.
- Delineation of affected areas and find out source and origin of Arsenic in ground water.

Some Important Features

GSB is fully equipped with Rotary Conventional and Wire Line Drilling Units, and capable of drilling up to 2000 metres.

Analytical Chemical Laboratory has been moderately upgraded with Atomic Absorption Spectrophotometer.

Laboratories of the Petrology & Mineralogy and Stratigraphy & Biostratigraphy branches are equipped with modern amenities like X-ray diffractometer and Scanning Electron Microscope (SEM) etc.

Engineering and Geotechnical Laboratory is well equipped to determine geotechnical characteristics of the soil/rock for civil constructions.

Geophysical mapping are being carried on with the help of gravity, magnetic, seismic and electrical methods. GSB has the capability of computerised data processing and well logging.

The department is continually upgrading its capabilities through training of its geo-scientific manpower and procuring the laboratory amenities to provide modern facilities.

Some Achievements

Geological mapping

About 55 000 square kilometres area of the country including the coastal parts have so far been geologically mapped at the scale of 1: 50 000. These mapping programmes have been carried out in plain and hilly areas in different parts of the country.

Geotechnical & Engineering and Urban Geology

The mapping works, at the suitable scales, of important cities (e.g. Dhaka including its surrounding areas, Chittagong, Rajshahi, Barisal, Rangpur, Bogra and Khulna) of the country have been completed.

Drilling

GSB has so far drilled 180 holes in the country with a total drilling depth of about 42 680 metres (140 000 feet) for mineral exploration, stratigraphic studies, testing and to gather other subsurface information.

Mineral Exploration

- Coal—Barapukuria (300*) and Dighipara** of Dinajpur, Khalashpir (143) of Rangpur, and Jamalganj (1053) of Joypurhat districts.
- Peat—Bagiachanda (150) of Gopalganj, Kola Mouza (8) of Khulna, Moulvibazar, and Charkai and Pagla of Sunamganj districts.
- Limestone—Joypurhat (100) of Joypurhat, and Takerghat, Lalghat (12.9) and Bagalibazar (17) of Sunamganj districts.
- Whiteclay—Bijoypur (2.5) of Netrakona, Barapukuria (25), Maddhaypara (15) and Dighipara** of Dinajpur, and Patnitala** of Naogaon districts.

- Glass sand—Balijuri (0.17) of Sherpur, Bahubal and Shahjibazar (8) of Habiganj, Chouddagram (0.30) of Comilla, Bhatara of Moulvibazar, Barapukuria (90), Maddhyapara (17.25) and Dighipara** of Dinajpur districts.
 - Mineral sand—Sea beaches of Cox' Bazar, Moheshkhali and Kutubdia.
 - Hard Rock—Maddhyapara (115) of Dinajpur district.
 - Gravel—Bholaganj (4) of Sunamganj, Patgram of Lalmonirhat, Tetulia (2.5) of Panchgarh, and Chittagong Hill Tracts (1.00) districts.
- *Reserve are in million tons except that of gravel which is in million cubic metre.*
***Reserves have not yet been estimated.*

Publication

GSB published a number of reports on different disciplines of earth science on completed works carried out in different parts of the country. These reports consist of geological/geophysical maps at the scales of 1: 50 000 and 1: 250 000. Three important published maps are i) Geological Map of Bangladesh, ii) Bouger Anomaly Map of Bangladesh and iii) Aeromagnetic Anomaly Map of Bangladesh. These maps are in the scale of 1: 1 000 000. Besides these, the scientists of the department publish their research findings in seminars/symposia and journals in home and abroad regularly.

Future Programmes

1. Completion of the geological mapping for rest of the areas of Bangladesh at the scale of 1: 50 000.
2. Acceleration of mineral exploration activities.
3. Preparation of geotechnical and engineering geological maps for planned urbanisation.
4. Studies for environmental impact assessment and mitigation of natural hazards; specially arsenic contamination in ground water, and cyclone hazard in the coastal areas.
- 5 Establishment of a database in a GIS.

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The above article is from a brochure sent by Mr A.K.M. Khorshed Alam, Deputy Director of the Geological Survey of Bangladesh. He also provided the following article.

GIS in the Geological Survey of Bangladesh

Recently Geological Survey of Bangladesh (GSB) has entered the world of Geographic Information Systems (GIS) through the installation of ILWIS (a remote sensing and GIS software) in its computers. GSB has implemented a project funded by the Government of the People's Republic of Bangladesh to extend its activities in the field of mineral exploration, geological and urban geological mapping; and other geoscientific works. To create a database and share the data among the working geo-scientists of the department a local area network has been installed.

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Asia and the Pacific member of ICOGS (International Consortium of Geological Surveys)

Country: _____

Organization: _____

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