

Regional Meeting on Experiences & Best Practices in Environmental Information Development & Management

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Arabian Gulf University Experience in Environmental Data & Information

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Main Topics



- **Presentation of AGU**
- **Status of Environmental Data and Information**
- **Effectiveness & Efficiency of Information systems**
- **Constraints and Barriers (Availability, Accessibility)**
- **Assessment of general Requirements**
- **Regional and International Cooperation**
- **Opportunities for the Future**
- **Lessons Learned and Experiences**
- **Recommendations of Priorities for Action**

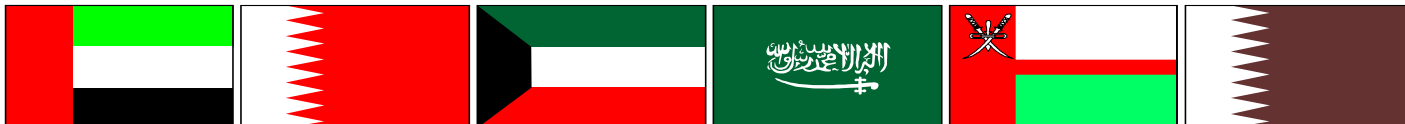
Presentation of AGU



- **The Arabian Gulf University established in 1980**
 - ✓ **Two colleges of medicine and Graduate Studies (Programmes)**

AGU Gulf Member States

AGU Based in the Kingdom of Bahrain



Presentation of AGU (Cont'd)



■ Concept

- ✓ AGU is a regional, non-political, non-profit making institute that aspired to fulfill the developmental needs of the region.

■ Objectives

- ✓ Triple Objectives: Developmental, Political and Cultural.

■ Areas of Specialization

- ✓ Medicine and Medical Sciences
- ✓ Desert and Arid Zone Sciences
- ✓ Biotechnology and Genetic Engineering
- ✓ Technology Management
- ✓ Information Technology
- ✓ Energy
- ✓ Space Sciences
- ✓ Environmental Studies
- ✓ Water Resources
- ✓ Special Education for Slow Learners & Mentally Retarded & the Gifted



■ Sphere of Technological Studies

- ✓ Desert and Arid Zones Sciences (Water, Agriculture, Environment).
- ✓ Biotechnology (Agriculture, Environment, Medicine).
- ✓ Technology Management.
- ✓ Environmental Management.
- ✓ **Supporting Unit of GIS/RS**

■ Sphere of Special Education

- ✓ Talented and Gifted Children.
- ✓ Mental Retardation and Learning Disabilities.
- ✓ Distance Learning

Academic Chairs



■ Support R&D activities related to Environmental Issues.

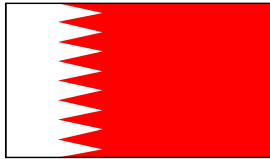
UAE



Sheikh Zayed

Chair of
Environmental
Sciences

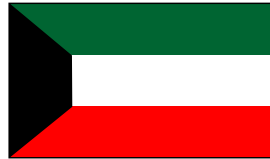
Bahrain



Sheikh Essa

Chair of
Technology
Management

Kuwait



Sheikh Jaber

Chair of
Clinical
Microbiology &
Immunology

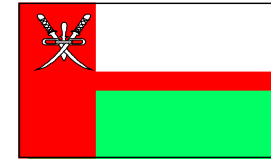
Saudi Arabia



King Fahad

Chair of
Biotechnology

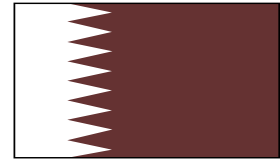
Oman



Sultan Qaboos

Chair of Desert
Agriculture

Qatar



Sheikh Hamad

Chair of
Geographical
Information
System

Status of Environmental Data & Information



■ Analysis of Existing Initiatives and Projects

- ✓ Global Environmental Outlook (GEO)
- ✓ Climate Change in the Kingdom of Bahrain
- ✓ Status of Coral Reefs in the Kingdom of Bahrain
- ✓ Atlas of Desert Habitats in the GCC countries
- ✓ Internal Databases Building

■ Data and Information Availability/ Public Access

- ✓ Technical Reports, and Theses are available both in hardcopy and digital format and accessible to the public in general.

■ Information Policy and Legislations

- ✓ No information policy. All data are transferred to the lead agencies.

■ Institutional Capacity for Managing Environmental data and information.

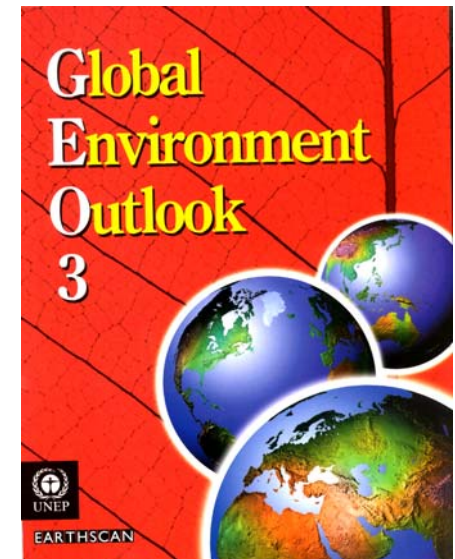
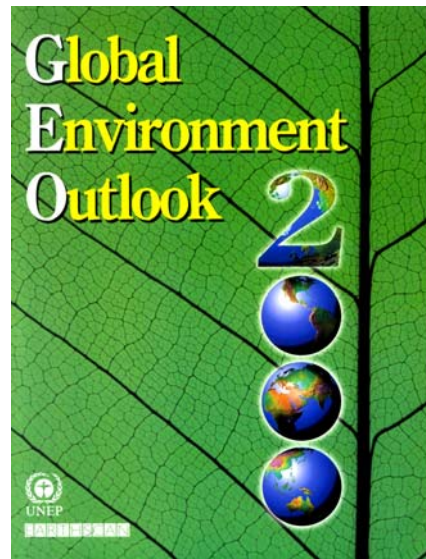
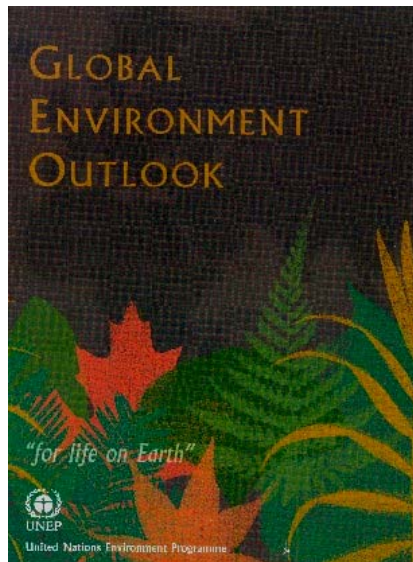
■ Financing of Environmental Data and Information

Global Environmental Outlook in W-A



■ AGU and (ACSAD) are among the collaborating centers working in cooperation with UNEP in preparing the GEO reports for Western-Asia Region:

- ✓ GEO-1 (1997), GEO-2000 (1999), GEO-3 (2002)
- ✓ GEO Year Book 2003, Arab GEO

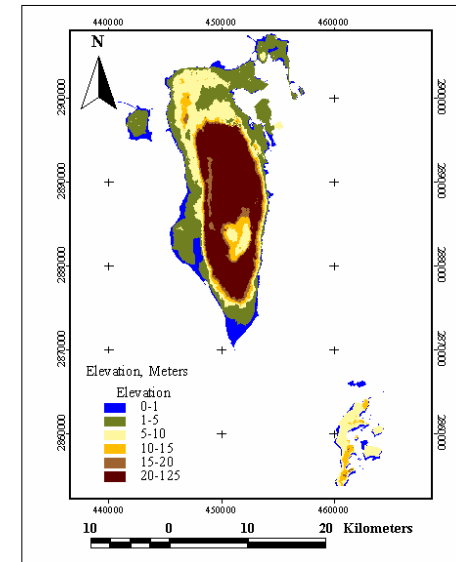
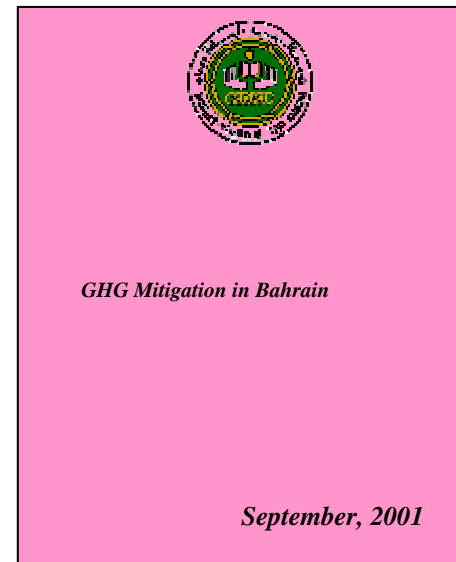
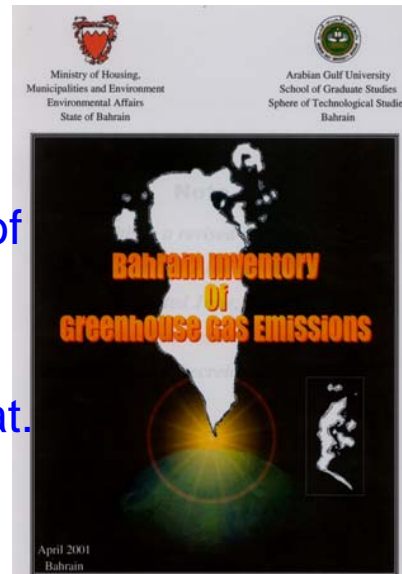


Impact of Climate Change in Bahrain



- Preparation of national communication related to the United Nations Framework Convention on Climate Change (UNFCCC).
- Carried out by a national team from the Ministry, under the supervision of two faculty members of AGU in four steps:
 - ✓ Bahrain Inventory of Greenhouse Gas Emissions (2001).
 - ✓ Greenhouse Gas Mitigation in Bahrain (2001).
 - ✓ Vulnerability Assessment (2003).
 - ✓ Adaptation Measures (2004).

The reports were prepared and a flow of environmental data were accumulated mostly in digital format.



Status of Environmental Data & Information (Cont'd)

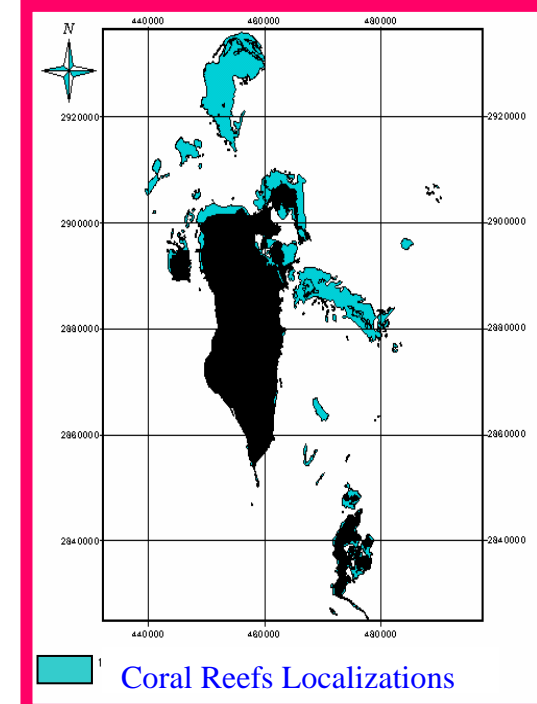


■ Atlas of Desert Habitats for the GCC Countries

✓ A preliminary study was conducted, in order to provide valuable information on natural resources, biodiversity, climate & population.

■ Status of Coral Reefs in Bahrain

✓ Ordered by the General Commission of Bahrain and realized by a team from AGU. The study is emphasizing on the status of coral reefs, the causes of degradation, and proposition of possible solutions for the management of coral reefs.



Status of Environmental D/I (Cont'd)



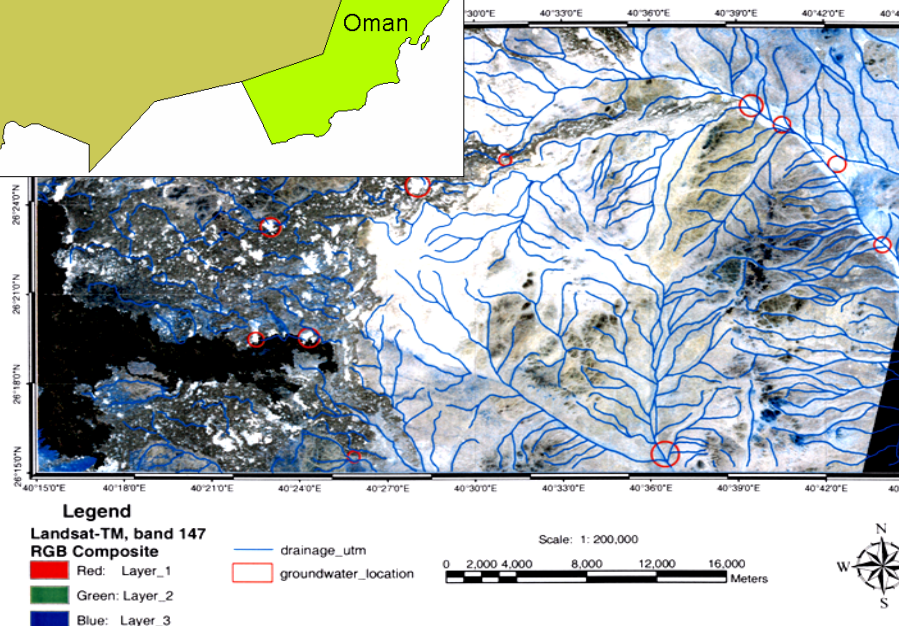
■ Building Internal Databases for GCC Countries

✓ Including boundaries, roads and cities, results of research project, and the archive of satellite imagery. This will facilitate the task for students and faculty members to develop and conduct their research activities.

Database Development

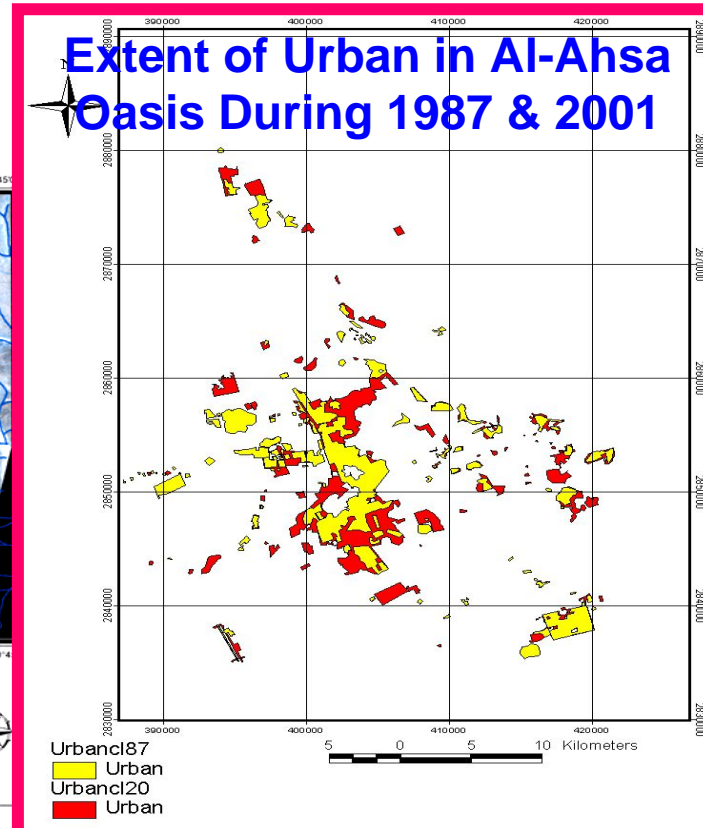


Hotspots for groundwater Exploration



شكل 5-7 أ المواقع المحتملة للمياه الجوفية على صور Landsat-TM

Extent of Urban in Al-Ahsa Oasis During 1987 & 2001



Institutional Capacity for Managing Environmental data and information.



■ Workshops conducted on environment, GIS and RS:

- ✓ West Asia Regional Training Workshop on Integrated Environmental Assessment and Reporting (2001, 2003).
- ✓ The Regional GEO-3 Consultation Meeting for West Asia (2001).
- ✓ Introduction to GIS (2003). Three times.
- ✓ Applications of GIS for Soil Survey (2003).
- ✓ Innovatory Methodologies for Satellite Image Processing and Analysis (2002, 2003, 2004). Three times.
- ✓ Land Use Change Detection and Analysis (2004).
- ✓ Regional Stakeholders Roundtable in Preparation for the World Summit on Sustainable Development WSSD (2001).
- ✓ Arab Region Millennium Ecosystem Assessment (2003).
- ✓ Expert Meeting on the Development of West Asia Web Portal (2002).

■ International Symposia and Conferences

- ✓ Symposium on Desertification & Land Reclamation (1993).
- ✓ International Conferences GIS-1998, GIS-2002, GIS-2004.

Financing of Environmental data/ Info.



■ Existing Initiatives and Projects 1996-2004.

- ✓ Global Environmental Outlook (GEO); Funded by **UNEP** (1996-2004).
- ✓ Climate Change in Bahrain; Funded by **UNEP** (2001-2004).
- ✓ Status of Coral Reefs in Bahrain; Funded by **Bahrain** (2002).
- ✓ Atlas for Desert Habitats in the GCC countries, Funded by **GCC** (2002).
- ✓ Internal Databases Building, Funded by **AGU**.

■ Research Projects Granted from 1990-2000.

- ✓ National Action Plan to Combat Desertification (NAPCD) in Bahrain, UAE & Oman; supported by **UNEP/ROWA/ESCWA** (1992-93).
- ✓ Rapid Assessment of Impacts of Ira-Kuwait Conflict on Terrestrial Ecosystems in Kuwait, Saudi Arabia & Iraq, supported by **UNEP** (1991).
- ✓ Water Resources & Pollution, air pollution, recycling of waste; supported by the Bahrain Center for Studies and Research (**BCSR**).

■ Conclusion

- ✓ The projects are funded mainly by UNEP, by Bahrain, GCC and AGU.

Effectiveness & Constraints of Information systems



■ Effectiveness & Efficiency of Information systems

✓ The actual information system adopted by AGU for data gathering, analyzing, structuring, storing, publishing is effective to answer the proper needs of AGU partners, students and staff, but it is not accessible the public.

■ Constraints and Barriers to manage and Improve Availability and Accessibility of environmental Data and Information.

✓ Some of the constraints to manage and improve availability and accessibility of environmental data and information are related mainly to the structuring, storing and retrieval of data.

Assessment of General Requirements to be Fulfilled by Environmental D/I



■ Environmental Priority Issues

- ✓ Groundwater Modeling and Management of Water Resources.
- ✓ Protected and soil-less Agriculture Technology.
- ✓ Modern Technologies for Monitoring Desertification (GIS/RS).
- ✓ Soil Salinity, Water Logging and Soil Erosion.
- ✓ Urbanization and Land Use Planning.
- ✓ Coastal Zone Management and Development of Marine Resources.
- ✓ Integrated Environmental Assessment.

■ Priority Environmental Information Needs to support Decision-Making

- ✓ Basic Environmental Data to be Accessible to the wide range of Users.
- ✓ Regular Environmental Reporting and Outlook to be conducted.
- ✓ Setting-up and Adoption of Environmental Indicators.

Assessment of General Requirements to be Fulfilled by Environmental D/I



- **Technological Needs for Data to be Easily Accessible**
 - ✓ Structured as regular databases with data dictionary & meta-data.
 - ✓ Stored in the appropriate media, format on and server/computer.
 - ✓ Have the specific software available to display and manipulate satellite imagery and GIS layers.
- **Institutional Needs (Including Training and Finance)**
 - ✓ Training on data gathering, analysis & storage, database design.
 - ✓ Financing pilot studies related to software acquisition and manipulation, data storage, database building (High income).

Regional & International Cooperation



Regional Cooperation

- ✓ Western-Asia Region
- ✓ GCC Countries
- ✓ ALECSO
- ✓ ESCWA
- ✓ ISESCO
- ✓ ACSAD
- ✓ STEMARN



STEMARN



UNIDO



UNEP



ACSAD

International Cooperation

- ✓ UNEP
- ✓ UNDP
- ✓ UNESCO
- ✓ UNIDO



ALESCO



UNESCO

Opportunities for the Future



- Abu Dhabi Global Environmental Data Initiative (AGEDI).
- Regional Web Portal for West Asia.
- Millennium Ecosystem Assessment initiated by United Nations.
- Space Techniques for Disaster Management initiated by the United Nations Office of Outer Space Affairs (OOSA).
- Center for Environmental Information and Assessment.
- New Funded Projects on Environmental Issues.

Lessons Learned and Experiences



- Environmental assessment & reporting, database building, retrospective and prospective analyses & scenarios.
- Inventory and mitigation of greenhouse gas emissions, vulnerability and adaptation to sea level rise.
- Investigation of the status of coral reefs & the main causes of degradation.
- Design of an Atlas for natural resources in desert environment.
- Structuring databases using GIS layers and Remote Sensing imagery.
- Designing of environmental indicators to answer the regional needs .
- Organization of a series of training workshops related to environmental issues as well as GIS/RS applications for environment.
- Elaboration of a series of Action Plan to Combat Desertification (NAPCD).
- Water Resources, Hazardous wastes, air pollution and recycling of waste.
- Rapid Assessment of Impacts of Conflict on Terrestrial Ecosystems.

Recommendations of Priorities for Action



■ Policy.

- ✓ Access to environmental data to be facilitated by the Departments.
- ✓ Joint Publication of the results of projects to be encouraged.

■ Institutional.

- ✓ Set-up regulations on copyright and use of environmental data/Infor.
- ✓ Training workshops & seminars to be conducted for capacity building.

■ Technical.

- ✓ Capacity building and awareness in data handling & data analysis.
- ✓ Data gathering, sharing & dissemination to be encouraged.

■ Financial.

- ✓ Environmental data and information cost to be funded.

■ Sustainability.

- ✓ Data and information standards to be defined, agreed on and adopted.
- ✓ Data archiving facilities to be provided.