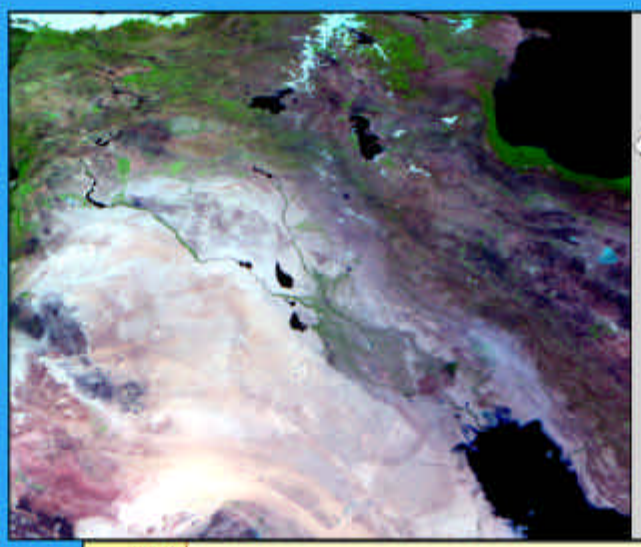
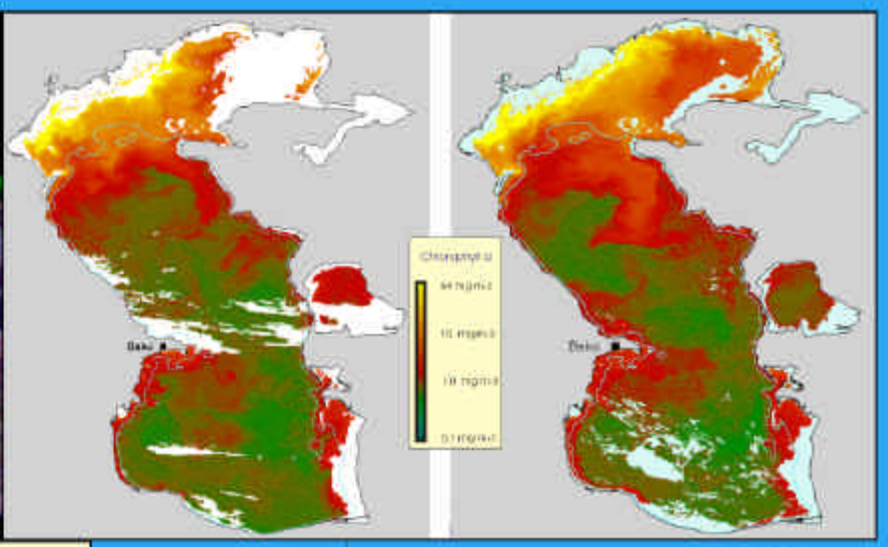
UNEP/GRID-GENEVA

2001 ANNUAL REPORT





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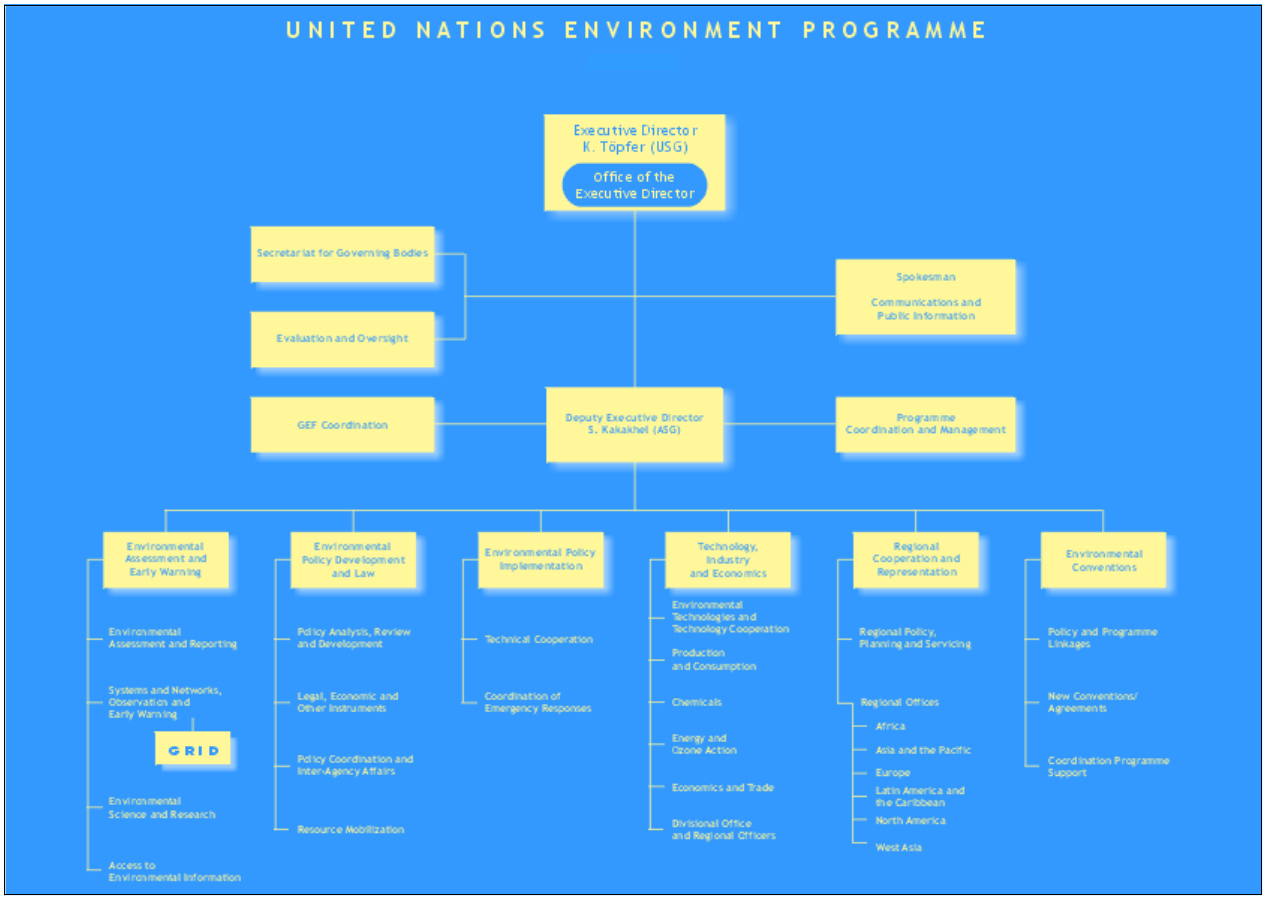
The mission of the United Nations Environment Programme is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.



GRID-Geneva Annual Report 2001

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Table of Contents

Message from UNEP Headquarters

It gives me great pleasure to observe that the GRID-Geneva Partnership between UNEP, the Swiss Agency for the Environment, Forests and Landscape (SAEFL) and the University of Geneva has matured and borne fruit, considering that the office has developed even further as a key UNEP centre for assessment and early warning activities. The impressive array of outputs and services described in this report illustrates the essential support to UNEP's early warning and assessment mandate provided by GRID-Geneva in 2001. Confidence in GRID-Geneva's success was underscored with the renewal of the Partnership Agreement for a new four-year term (2002-2005), simultaneously providing an excellent model of collaboration between a local, a national and an international organisation.

The World Summit on Sustainable Development (WSSD) to be held in Johannesburg in September 2002 will be a key environmental milestone in defining our future. One of the main goals of this summit is to find out how much has really changed since the "Earth Summit" one decade ago in Rio de Janeiro. To do this we need reliable and up-to-date information. In early 2002, UNEP will be publishing its Global Environment Outlook, GEO-3, providing a regional and global review of the state of the environment and related policy measures, that will become an invaluable tool for all WSSD participants. Another major resource is the innovative web-based environmental information system, UNEP.Net, which includes the GEO Data Portal. GRID-Geneva has played a vital role in supporting both the GEO process and in the development of UNEP.Net, two major activities which form the backdrop to much of UNEP's work, and the value of which cannot be underestimated.

Amongst the highlights of GRID-Geneva's work in 2001 was its assessment study bringing to the forefront the scale and dimensions of a major environmental disaster, the destruction of the Mesopotamian marshlands. This constitutes another wake-up call on how the human footprint is irreversibly degrading our fragile planet. The office is also carrying out cutting-edge analytical work in the field of early warning and human vulnerability, important devices in UNEP's toolbox for tackling environmental problems and threats.

On the occasion of the renewal of the GRID-Geneva Partnership agreement, I take this opportunity to thank the Government of Switzerland for their cooperation and generous support. I would also like to congratulate GRID-Geneva's Advisory Board and its staff for their hard work and tireless efforts in taking UNEP's mandate forward. As we prepare to address growing environmental challenges in 2002, I am confident that GRID-Geneva will continue to support UNEP in fulfilling its responsibilities in caring for the environment.

Greetings from the University of Geneva

Collaboration between the University of Geneva and the United Nations Environment Programme (UNEP) dates back to 1986, when the GRID centre was inaugurated in Carouge. At the time, the University seconded two distinguished researchers to the fledgling institution. An intense collaboration has developed ever since. This includes scientific and logistical support by the University to GRID-Geneva, which for its part offers students and young researchers the possibility to carry out internships and a chance to pursue a professional career.

The University of Geneva is currently the second largest University in Switzerland both in terms of number of students and professors. On the other hand, it is certainly the leading Swiss academic institution collaborating with international organizations. This is in large part due to the presence of the European Organisation for Nuclear Research (CERN) in Geneva, but also to the great mixture of international organizations, NGOs and other institutions associated with the United Nations Office in Geneva.

The University of Geneva first turned to multi-disciplinary environmental research and training with the creation of the University Centre on Human Ecology (CUEH) in 1976, which was followed by the establishment of the University Centre for the Study of Energy Problems (CUEPE) in 1978. Moreover, within the Faculty of Sciences, several departments and laboratories became increasingly oriented towards environmental issues. A faculty centre focusing on the natural sciences of the environment was launched in 1990, as well as a Diploma programme in the natural sciences of the environment. Various partnerships have also placed the University of Geneva in a strategic network with the University of Lausanne, the University of Neuchatel and the Federal Polytechnic School of Lausanne (EPFL). Finally, to reinforce the University's relationship with international organizations, the Geneva International Academic Network (GIAN) was founded in 1999.

In 2001, the University of Geneva was extremely pleased to renew its engagement with the "GRID-Geneva Partnership" for another four years. I am confident that our excellent collaboration will mutually strengthen both the University's and GRID-Geneva's capabilities in understanding and addressing the environmental challenges of our age.

Mathias Thomann

Maurice Bourquin

Rector
University of Geneva

Year in Review

The year 2001 proved to be one which confirmed the place of GRID-Geneva in UNEP's firmament of outposted centres, in more ways than one. Firstly, the full engagement of GRID-Geneva staff in the GEO-3 preparation process demonstrates that the office is fulfilling its promise to provide non-stop support via European regional coordination, and the global core data underpinnings. Secondly, the increasingly prominent role played by GRID-Geneva staff in the development of "UNEP.Net", the global environmental information system, showed that the office remains at the cutting edge of applying advanced information technologies to deliver environmental information.

Finally, the crowning achievement of 2001 was the year-end renewal of the GRID-Geneva "Partnership" Agreement between UNEP, the Swiss Agency for Environment, Forests & Landscape (SAEFL) and the University of Geneva. The initial agreement (1998 through 2001) was thus extended for another four years (2002-05), with a higher overall level of support guaranteed by the partners. The signing of this agreement by UNEP's Executive Director, the head of Switzerland's SAEFL and the University of Geneva's Rector is a clear sign of the confidence which these three institutions have in GRID-Geneva to "deliver the goods" which the three partners have come to expect from one of UNEP's most advanced centres in the production of environmental data and value-added information.

It was also a significant year in the sense that the World Summit for Sustainable Development (WSSD or the "Rio+10" conference) is right around the corner, and the GRID-Geneva office was involved in many ways to help UNEP and DEWA prepare for this major event on the environmental calendar. In particular, the early warning analyses and related results stemming from a number of project activities are helping to shape the message and proposals that UNEP will take forward in Johannesburg. It is clear that overall, the health of our planet is not improving, and this is manifest in many area studies such as the near-disappearance of the Mesopotamian marshlands, the increasing number of climate anomalies (with local/regional impacts) and human vulnerability on the upswing due to a number of factors, both natural and anthropogenic. Information systems such as PREVIEW developed by GRID-Geneva aid in monitoring these problems, and are complemented by GIS and remote sensing analyses which help both to qualify and quantify land use, vegetation and other specific changes.

Although there are occasional "success stories" of environmental recovery, this should by no means lead us to become casual "environmental optimists": far too much damage is still taking place, in too many regions of the world, with resulting negative impacts both on ecosystems and humans. GRID-Geneva is in the process of planning a number of assessment studies for the year 2002, which will also help to shine the spotlight on areas of the planet suffering from the often heavy hand of humankind.

The year 2002 is also the "International Year of the Mountain", and at least two major activities led by GRID-Geneva serve as direct contributions to this UN-wide initiative. One is the preparation of the first-ever integrated report on the environment of the Caucasus region, the "Caucasus Environment Outlook", and the other is the continued development of the Alps website "System of Observation and Information on the Alps (SOIA)" for the eight Alpine countries of western/southern Europe. The first product will be released in time for the WSSD as a complement to the global GEO-3 report; the second is an ongoing activity which provides a wealth of environmental data on the Alps.

Thus, while the year 2001 was an extremely busy and productive one at the GRID-Geneva office, we have every expectation that 2002 will be ever-more so, bringing its own challenges in the service of DEWA and UNEP. GRID-Geneva has every intention of meeting and surpassing what was accomplished one year earlier, and look forward to being able to say "we succeeded", in 2003.

Ron Witt

DEWA Regional Coordinator- Europe and Manager GRID-Geneva

Regional Coordination of the GEO-3 European Processes

As the year 2001 was approximately mid-stream in the entire GEO-3 preparation process, it encompassed a series of global and regional meetings and the bulk of the report writing and editing. European regional coordination activities carried out by DEWA~Europe during 2001 involved first and foremost a series of frequent contacts and exchanges with the European Collaborating Centres (CCs). This included but was not limited to: the Central European University (CEU in Budapest); the European Environment Agency (EEA in Copenhagen); Moscow State University; the Regional Environment Centre for Central and Eastern Europe (REC in Szentendre, Hungary); the Institute of Public Health and Environment (RIVM in Bilthoven, the Netherlands); and finally, the GRID-Tbilisi office in Georgia for the separate but related report on "Caucasus Environment Outlook (CEO)".

At the global level, the "Second GEO-3 Production Meeting" was held at San Miguel Regla in Mexico in early April 2001, and involved a total of some 50 persons from the GEO-3 UNEP Headquarters and regional teams, and the approximately 35 CCs and other specialised centres. Participants were grouped in several plenary and regional sessions to assemble the first nearly complete drafts of Chapter 2 on "State of Environment and Policy Retrospective (1972-2002)". Other major chapters on "Human Vulnerability" and "Future Outlooks" were discussed in some detail. There were also opportunities to present underlying processes for GEO such as capacity building and the still-evolving GEO Data Portal, which provides the underlying data used by the UNEP Headquarters and regional teams, the CCs and GEO-3 editor in the report's preparation.

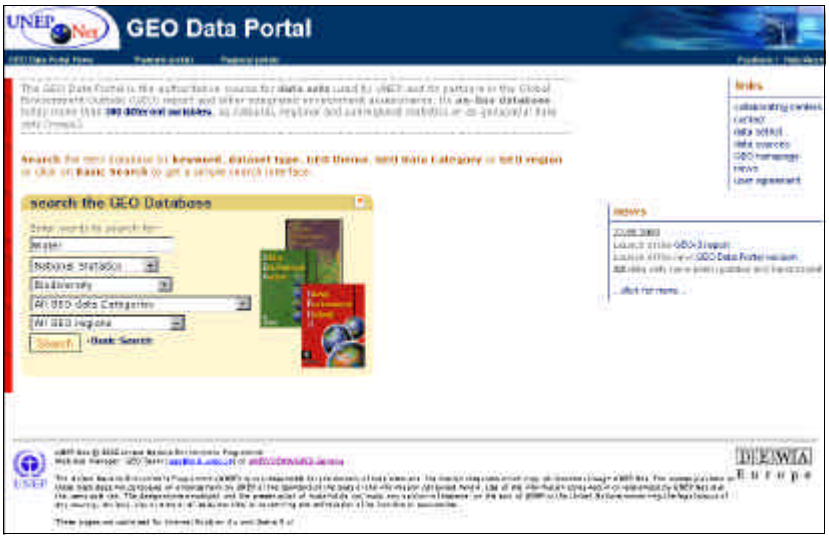
A European Regional Consultation on GEO-3 was the next milestone, which took place in Geneva in June 2001 and was co-organised by DEWA~Europe and the Regional Office for Europe (ROE). The purpose of this regional meeting with representatives of European governments, other UN agencies, representatives of civil society and the European CCs, was to obtain their initial feedback on the draft GEO-3 text, in particular Chapter 2, and to inform them on the GEO-3 preparation process. Over 50 persons, mostly from governments, took part in the European Regional Consultation. This allowed the GEO-3 Headquarters and Regional team to hear the general reactions and collect specific comments on the draft Chapter 2 texts, both through the plenary discussions, as well as via written contributions from some of the participants.

During the remainder of 2001, both the global and regional sections of the draft Chapter 2 were re-written and harmonised, and these were further reviewed by the CCs and a long list of experts. A final meeting of DEWA's Regional Coordinators with the GEO team at UNEP Headquarters took place in December to "sign off" on the Chapter 2 drafts. By the end of the year, the Chapter had been largely finalised and was being polished, along with the rest of GEO-3, to go to the publishers in early 2002.

For the Caucasus sub-region, a special reporting process complementary to GEO-3 was organised jointly by DEWA~Europe and ROE, with funding from these same offices and the Swiss Federal Agency for Environment, Forests and Landscape (BUWAL). An "exploratory meeting" on the utility of such a report had already been held in Tbilisi, Georgia, with representatives of regional governments in November 2000. Work on the preparation of the CEO report got underway in 2001. Again, the overall process was coordinated by DEWA~Europe with regular support from ROE. UNEP's GRID-Tbilisi was the executing centre that organised the CEO drafting, along with a team of consultants and focal points from the four Caucasus countries (Armenia, Azerbaijan, Georgia and the Russian Federation). By the end of 2001, the first draft of the CEO report had been largely completed, and planning was underway for a regional consultation with the governments and other interested parties in Spring 2002.

This GEO sub-process sheds light on the poorly understood and unique natural environment of the Caucasus, and is structured along the same lines of the global GEO report. Given the mountainous nature of the Caucasus region as a whole, it also serves as a UNEP contribution to the "International Year of the Mountain" to be celebrated in 2002. Launching of the CEO report is scheduled for June 2002, well in advance of the WSSD in Johannesburg.

Filling the Data Gap: GEO Data Portal



The GEO Data portal is now accessible to the public at the following website: http://geodata.grid.unep.ch/

Launched in October 2000, the GEO Data Portal is a comprehensive on-line database holding an ever-growing body of global environmental statistics and maps. The Portal has effectively become the standard data reference for the GEO process both within UNEP and for external partners. It has been primarily developed to support GEO-3 authors and contributors with statistical and geo-spatial data sets at multiple levels (sub-regional, regional and global). Steady enlargement of the database took place in 2001, which now holds more than 340 data variables. Data sets may be displayed and queried on-line by means of maps, graphs and tables. As the GEO report is organised at the sub-regional and regional levels, national data sets acquired through various partner organizations have been aggregated by GRID-Geneva to the desired spatial scales. A considerable proportion of the data variables received were thus spatially reorganised, and have been regularly integrated into the GEO Data Portal.

Data set selection for the GEO Data Portal has been guided by the GEO-3 Data Strategy. Conceptually, these relate to: (i) societal driving forces; (ii) environmental pressures; (iii) state-of-the-environment; and (iv) impacts on natural ecosystems and human health. To the extent possible, data have been sourced from primary global and regional providers, such as the Food and Agricultural Organisation, World Bank, International Energy Agency and various UN organizations. Temporally and subject to availability, the data selected cover GEO-3's 30-year retrospective period since the Stockholm Conference (i.e. 1972-2002). Certain variables will be bolstered with quantitative information for the different scenarios, extending to the year 2030 and beyond.

Additional functionality has been added to the Portal during 2001 to strengthen the analytical capacity of the network of GEO Collaborating Centres and other key partners. This includes the development of:

- Graphs to visualize the evolution ('trend') of a variable over a given time period for a specific country or region. Visual synoptic shots often assist to better understand the significance of certain data sets, and to track the direction of key variables over time.

- A histogram application to obtain the absolute distribution of the values for a selected variable. Users are thus able to make an informed selection of the appropriate classification method and to determine its significance.

- A utility to explore the extreme values for a given variable by displaying the range of minimum and maximum values. This function also enables a better understanding of the values, their distribution and order of magnitude.

Coordination with other UN organizations, GEO Collaborating Centers and other key partners at the regional and sub-regional level will help to further improve functionality and contents of the Portal, and to bridge existing data gaps. A new version of the Portal is being developed, with improved look-and-feel and full integration into the wider UNEP.Net information system.

Beyond GEO: broader assessment data support

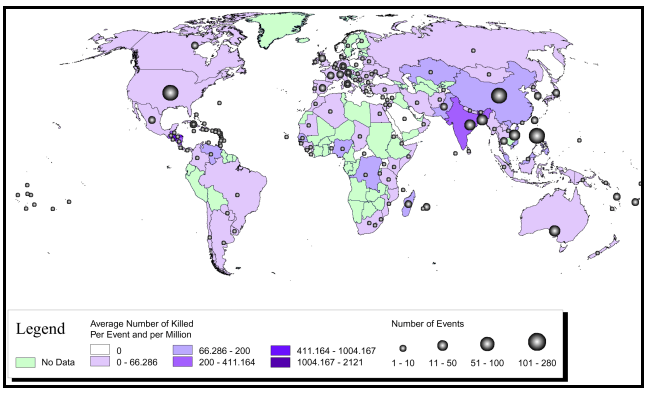
In order to provide a better and more structured support in terms of harmonised data and information for UNEP's assessment activities, DEWA/GRID-Geneva initiated a project in 2001 under the title of "global/regional data support". While this support consists mainly of follow-up GEO Data Portal development, it includes several other aspects such as: data documentation, data collection, gap-filling and harmonisation; communication with users; and preparation of value-added products. During the course of 2001, a small team was formed at GRID-Geneva to realise these objectives. The GEO-3 Data Compendium, both CD-ROM and hard-copy volumes, is planned as a first "special product" to accompany the GEO-3 publication in 2002.

Global Vulnerability Index

Extensive work on human vulnerability and risk to natural hazards was carried out in 2001. In partnership with the Bureau for Crisis Prevention and Recovery of the United Nations Development Programme (UNDP/BCPR), UNEP/GRID-Geneva is developing an indicator known as the Global Risk and Vulnerability Indexing Trend per Year (GRAVITY). Ranking the world's countries in terms of their risk and vulnerability to natural disasters, the index takes into account both the population exposed to each hazard, as well as the capacity to cope with such events, which is largely dependent on their socio-economic status. A small multi-disciplinary team was formed at GRID-Geneva to carry out the study. Research methodology was based on both statistical modelling and spatial analysis using Geographical Information Systems (GIS). Correlations between geophysical and socio-economic factors and the number of disaster victims were computed in order to allow comparison between countries. The ultimate objective is to identify the most vulnerable countries in order to prioritise donor assistance allocation. Progress realised by countries in tackling natural disasters over the short-term is also considered to promote efforts by national authorities to implement measures alleviating population vulnerability.

Mt. Etna captured by Landsat 7 satellite on the first day of its eruption on 13 July 2001. A state of emergency came into effect as rescue workers were called on to arrest rivers of lava and assist nearby residential towns covered in plumes of smoke and ash. It is the impact of such natural catastrophes that the GRAVITY project aims to assess. Image courtesy: Stuart Snodgrass, NASA Goddard.

A risk exists when there is an overlap between population presence and a potential hazard occurrence. A preliminary task is therefore to identify where disaster events are most likely to strike human settlements. Countries are not equally exposed to natural hazards. Differences in geophysical factors (slope, elevation, proximity to coast, geological fault, inter-tropical location,) are critical parameters influencing the occurrence and severity of natural hazards. People live in these high risk-prone areas for multiple reasons. These include lack of alternative choices, accessibility to resources (such as fishing communities for those near coastal zones, fertile soils around volcanoes and flood plains) and also ignorance of the risks involved due to low frequency (return period) of most events.



Wind storm events as recorded by CRED (1980 – 2000).
(Data sources: EM-DAT: The OFDA/CRED International Disaster Database, Université Catholique de Louvain - Brussels - Belgium.)

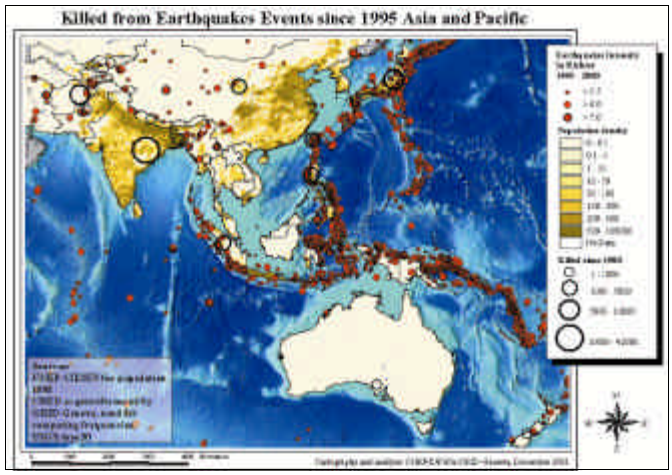
Disasters examined in the GRAVITY project include windstorms, floods, earthquakes and volcanic eruptions. With growing population and infrastructure build-up, societies are facing an increased risk of higher casualties. Thus, far the international community has largely reacted after disaster events have taken place. Using appropriate measures of risk reduction, however, the casualty toll in many cases could be significantly reduced. Although there are no means of stopping earthquakes or cyclones from happening, reducing risk may be realised in several ways. Examples of prevention measures include dam construction to contain floods and slope stabilisation to decrease the number of landslides. Other alternatives include assisting populations living in hazard-prone areas to adopt appropriate settlement planning, enforcement of high construction standards, and access to information and early warning systems as well as acquiring appropriate equipment for on-site intervention. Prevention, mitigation and preparedness

capabilities should also be enhanced. All of these strategies are targeted at risk reduction, either by decreasing hazards through prevention or decreasing vulnerability by reinforcing population resilience.

In any given area, the risk of human losses will largely depend on the frequency and intensity of the event (hazard), as well as on the number of people living in the region. In uninhabited areas, hazard frequency clearly poses no risk to human life and vice-versa. Physical exposure, however, does not explain all the differences apparent between countries. Black circles on the map (right) depict the number of victims caused by earthquakes. It can be noted that for an equal number of persons exposed, there is a significant discrepancy in the number of victims between some countries. This largely depends on population vulnerability, which can be defined as the capacity of a population to cope with disasters, or its "resilience".

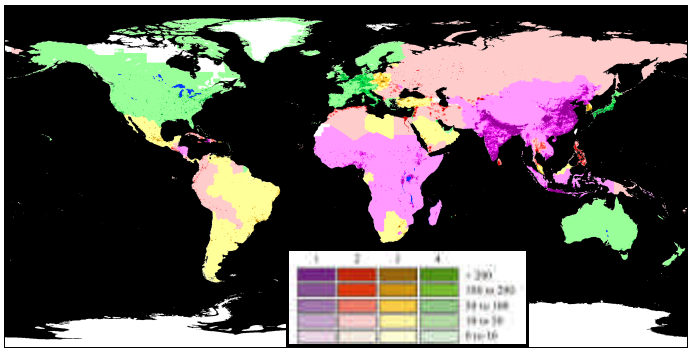
In the map below, an attempt has been made to map country vulnerability to natural hazards. In this scheme, countries have been grouped into four categories from poor (1) to rich (4), based on their per capita Gross Domestic Product. This in turn has been overlaid with population density data divided into five classes of intensity. The hypothesis is that maximum vulnerability is experienced in areas falling in the lowest GDP category (dark purple) and having the highest population density. The lowest vulnerability thus occurs in the richest and lowest-density areas (light green). By multiplying the number of persons exposed per year by their vulnerability, it is possible to evaluate average expected losses. Due to the long intervening period between two earthquakes, results need to draw on data covering a lengthy time period.

UNDP will incorporate the results of the GRAVITY project in the World Vulnerability Report, which it plans to publish in August 2002 in time for the World Summit on Sustainable Development (WSSD). Some



of the key outputs produced by the GRAVITY project include identification of socio-economic factors leading to higher vulnerability, and compilation and modelling of flood, volcano, earthquake and cyclone events. The data sets produced will be accessible via the GRID-Geneva website as well as through the PREVIEW-IMS application. In the next phase, the study will be supplemented with drought physical exposure and in-depth statistical analysis.

The results of the GRAVITY study were presented at various international workshops on risk and vulnerability assessment. These meetings also helped strengthen GRID-Geneva's network with organisations and experts involved in risk and vulnerability research, and several new collaborative projects have been outlined with the University of Columbia, the World Bank and the World Meteorological Organisation.



Human Vulnerability Map: Poorest countries (1) displayed in magenta and richest countries (4) in green. Changes in intensity indicate differences in population density. (http://www.grid.unep.ch/activities/earlywarning/preview/ims/index.htm)

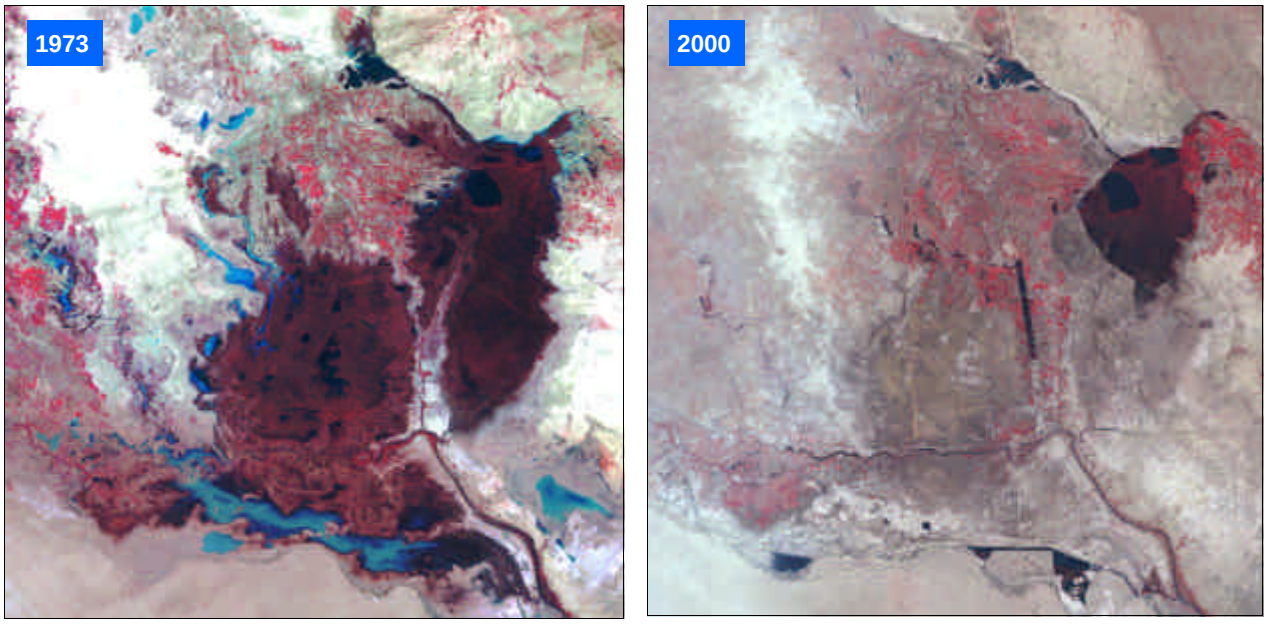
Satellite Images Reveal Ecological Catastrophe in Mesopotamia

In May 2001, UNEP drew the world's attention to a hitherto unreported environmental disaster: the destruction of the Mesopotamian marshlands, a unique freshwater ecosystem of global significance to biodiversity and ancient human communities. The findings were announced by UNEP's Executive Director Dr. Klaus Töpfer at a press conference in Washington DC on the occasion of a NASA donation of a unique set of satellite imagery to help UNEP assess global environmental change. Qualifying the wetland's loss, Dr. Töpfer described it as "a major ecological disaster, comparable to the drying of the Aral Sea and the deforestation of Amazonia". An official launch of the publication *The Mesopotamian Marshlands: Demise of an Ecosystem* took place later on at the Stockholm Water Symposium in August 2001.

Situated at the confluence of the Tigris and Euphrates rivers in southern Iraq and extending partly into Iran, the Mesopotamian marshlands are the largest wetlands in the Middle East covering an original area between 15,000 to 20,000 square kilometres in extent. Unique human communities, known as the Marsh Arabs or Ma'dan, descendents of the Sumerians and Babylonians have lived in this rare water world for millennia. A mosaic of wetland habitats from tall reed-beds and deep water lakes to seasonal mudflats sustains a teeming wildlife, including millions of migratory birds and endemic and endangered species.

Drawing on historical and recent satellite imagery, the assessment study which was carried out by GRID-Geneva graphically documents with hard evidence the stunning scale and speed at which the wetlands have disappeared. It concludes that about 90% of the freshwater ecosystem had dried up by May 2000, with devastating impacts on people, wildlife and fisheries.

Wetland desiccation is attributable to two main causes: upstream dams and drainage schemes. With more than 30 large dams, the Tigris and Euphrates are amongst the most intensively dammed rivers in the world. These dams have substantially reduced the water available for downstream ecosystems and eliminated the floodwaters that nourished the marshlands. As river flows ebbed to an all-time low, the stage was set for the implementation of a massive drainage programme, which brought about the downfall of the entire ecosystem. A complex array of canals, sluices and embankments, were constructed in southern Iraq in the early and mid-1990s, preventing any water from replenishing the marshlands. Deprived of water, the reeds died and the wetlands regressed into salt-encrusted desert. A degraded one thousand-square kilometre tract, the trans-boundary Al-Hawizeh/Al-Azim marshes straddling the Iran-Iraq border, is all that remains of the extensive wetland complex. Yet even this last vestige is rapidly dwindling, as its water supply is impounded by new dams and diverted for irrigation



In the infrared satellite images above, dense vegetation (mainly *Phragmites* reeds) appears as dark red patches, while irrigated agriculture shows up as bright red. By 2000, most of the marshes have disappeared and appear as olive to greyish-brown patches, indicating dead vegetation on moist to dry ground.

Ecological Catastrophe in Mesopotamia

Wetland destruction has shattered Marsh Arab society, eclipsing their unique way of life. At least 40,000 of the estimated half-million Marsh Arabs have sought refuge in neighbouring Iran, while the rest are internally displaced within Iraq. Disappearance of marshland habitat has also had a catastrophic impact on wildlife, with an estimated 66 species of waterfowl at risk including darters, ibises, cormorants, herons, pelicans and flamingos. Rare mammals such as a sub-species of the smooth-coated otter are now thought to be extinct. Coastal fisheries in the northern Persian Gulf, dependent on the marshlands for nursery and spawning grounds, have also experienced a sharp decline, while endemic fish species could be stamped out.

In response to this environmental disaster, UNEP is recommending a basin-wide recovery strategy based on an international agreement for sharing of the waters of the Tigris and Euphrates, that would guarantee an adequate water supply to the marshes. To help catalyse this process, UNEP is consulting with riparian countries regarding the preparation of a comprehensive scientific assessment of the Tigris-Euphrates basin, which should provide the scientific underpinnings for the improved management of the twin rivers. On-site remedial measures include re-evaluation of the role of dams and drainage canals and their modification where necessary, with a view to maintaining a minimal water flow to the marshlands and reinstating managed flooding. Meanwhile, priority needs to be given to the protection of the remaining wetlands of Hawr Al-Hawizeh/Al-Azim on the Iran-Iraq border.

Nik Wheeler

The marshlands' teeming wildlife includes millions of migratory birds.

Analysis of the Landsat imagery revealed that 90% of the wetlands had disappeared by 2000.

A Global and Regional Environmental Information System~ UNEP.NET

The Division of Early Warning and Assessment (DEWA) has initiated a global partnership under the banner "UNEP.Net", that brings together a broad range of information providers in a joint scheme directed at servicing the growing environmental data needs of decision-makers and the general public, while using state-of-the-art Internet technology.

UNEP dot Net is accessible at http://www.unep.net/

Launched during the twenty-first session of UNEP's Governing Council in February 2001, UNEP.Net represents a concrete measure in support of the Aarhus Convention to improve public access to environmental information. It does so instantly and effectively via the Internet, while respecting the intellectual property rights of the data creators. A suite of UNEP.Net environmental portals serve as the main channel of communication. Functioning as a decentralized information system of remote environmental databases, servers and websites, and equipped with dynamic applications such as a user-driven map-generating facility, UNEP.Net enables users to consolidate authoritative information from a variety of sources for improved environmental management solutions. Through hyperlinks, comprehensive query and integrated reporting with information on UNEP.org and other partner sites, these portals act in complementary fashion, yet remain developmentally independent.

After the UNEP.Net start-up meeting in October 2000, a second meeting was held at UNEP Headquarters in June 2001. Here, the initial plans were discussed and elaborated, resulting in a detailed work plan with task descriptions for all GRID centres and other partners. The suite of UNEP.Net portals focuses on the major global environmental themes addressed within the Global Environmental Outlook, as well as the major regions of the world. As one of UNEP's main centres for global assessment and information management, GRID-Geneva is a major contributor to the development of UNEP.Net portals, being responsible for those on the European region, GEO Data, Socio-economic information, Urban Environment (with UN-Habitat), Early Warning & Vulnerability (with UNEP Headquaters and GRID-Sioux Falls) and the West Asia region (with the Regional Office for West Asia, ROWA).

Following the Nairobi meeting, the need for a standard portal design and a versatile catalogue system was recognized, allowing for a virtual distributed yet uniform information system. GRID-Geneva has been actively involved in the design work, and also started to implement and fill the catalogue system in the course of 2001. The catalogue follows the standards of FGDC and Dublin Core, to be integrated in the overall ISO meta-data standard in 2002. Prototypes have been developed and reviewed for a new, UNEP.Net compatible GEO Data Portal and for the European, Urban Environment and Socio-economic portals. Several of these portals are scheduled to be publicly launched by mid-2002.

Prototype template of the European Regional Portal which is scheduled to go on-line by mid-2002.

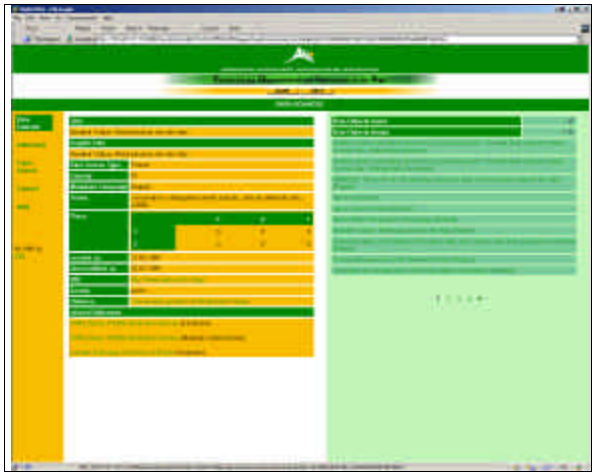
Catalogue of Data Sources

Development and management of environmental meta-data, a systematic method for documenting data and information sources, is one of GRID-Geneva's well-established areas of expertise. Since early 1990, GRID-Geneva played a key role in the development of UNEP's Meta-data Directory (MdD) documenting the information assets of the GRID network and partner organisations. After the release of the latest version (3.07) of the MdD in 2000, GRID-Geneva meta-data activities in 2001 focussed mainly on documenting data sources for the recently established UNEP.Net information portal and for UNEP's flagship publication, the Global Environment Outlook report (GEO-3) to be published in 2002.

At the regional and local levels, GRID-Geneva has concentrated on the consolidation of meta-data projects for Swiss and European partners based on the Catalogue of Data Sources (CDS) documentation system.

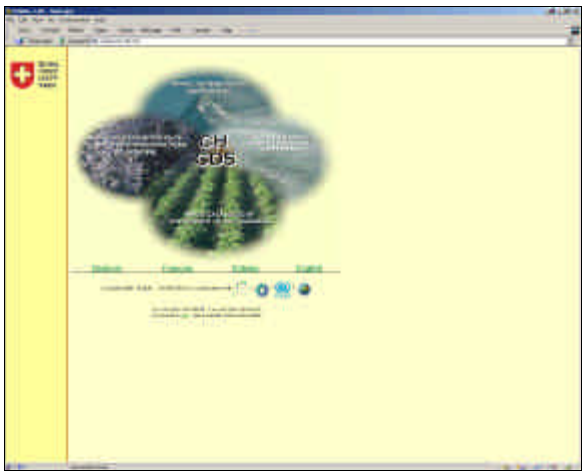
Alpine-CDS

The Alpine Catalogue of Data Sources (Alpine-CDS) is a wide-ranging reference tool for environmental information about the Alps. It provides key meta-data documenting the roles of Alpine institutions and their data holdings. The Alpine–CDS has been jointly developed by the System for Observation of and Information on the Alps (SOIA) and the Swiss Agency for the Environment, Forests and Landscape (SAEFL), with technical support from GRID-Geneva. SOIA is the information system of the Alpine Convention, which includes Austria, France, Germany, Italy, Liechtenstein, Monaco, Slovenia and Switzerland.



The Alpine-CDS is accessible at http://www.soia.int/

In 2001, the Alpine-CDS continued in a interim transition phase pending high-level policy decisions on the way forward. Only minor enhancements were therefore made to the Alpine-CDS website and WebCDS-Alpine tool. Monaco's assumption of SOIA's presidency in Autumn 2001 has helped reinvigorate the project. The various activities carried out by GRID-Geneva on behalf of Switzerland for the SOIA working group pertain to the SOIA website, the Alpine CDS, and the development of a database on climate change indicators in the Alps. To assist Convention countries reactivate their respective SOIA activities, a Task Force meeting was held in Bern, Switzerland from 10-11 December. The first in a series of three planned meetings that remain to be confirmed, the goal here was to enable national delegations to finalise their outputs before the upcoming Alpine conference in October 2002 and the establishment of a permanent secretariat for the Alpine Convention in 2003



The Swiss-CDS allows users to perform an extensive search of available Swiss environmental data. (http://www.ch-cds.ch)

Swiss-CDS

The Swiss Catalogue of Data Sources (CH-CDS) provides reference information on Swiss environmental organisations and data collections. Developed by SAEFL with support from GRID-Geneva, this electronic catalogue is meant to facilitate access to Swiss environmental information sources and data sets. It also responds to Switzerland's obligations under the Aarhus Convention on strengthening public access to information.

GRID-Geneva developed a new software application enabling systematic analysis of Swiss CDS website visitors, as well as the utilization of the on-line search facility "WebCDS". The application developed stores the contents of the log files created by the Internet server in an MS-Access database. Drawing on the log database, the application can generate customized reporting for defined time-periods, as well as summarize the information in graphic formats. Analysis of web surfers provides greater insight and understanding about who is consulting the CH-CDS website and what type of information users needs.

Since the launching of the WebCDS in 2001, 8,700 unique visits have been registered with a monthly average of 650 visitors of whom 500 are first-time surfers. As for the application's utility, more than 23,000 queries have been carried out. Most frequently searched topics include water, carbon dioxide emissions, wastes and energy. The results also show that Cantonal and Federal authorities constitute an important proportion (32%) of those surfing the CH-CDS website. Users who access the portal via Internet providers and organisations having their own connection account for half of all consultations (48%), followed by universities and research institutes from around the world (15%). While most users are based in Switzerland (76%), a significant number of surfers originate from the United States (18%), followed by Germany (3%).

The Swiss CDS was updated in June 2001, and now holds 3,521 meta-data descriptions of various environmental data sets (data, reports, maps, tools, etc.) and 2,444 addresses from two cities, 15 cantons and 16 federal agencies. New CDS developments in 2001 included discussions on a CDS data standard compatible with ISO 19115 and Internet solutions for rapid on-line publication and updating of data. Different versions of the European Environment Agency's WebUpdate tool were also tested, but these have not yet been finalized. Finally, GRID-Geneva developed a module for on-line WinCDS updating as an alternative solution that may be more appropriate within certain cantonal administrations.

Geneva-CDS

Developed in parallel with the Swiss-CDS, the Geneva-CDS (CDS-GE) is a key management tool for environmental information held by Geneva's government agencies. On behalf of the Canton of Geneva, GRID-Geneva has been maintaining the CDS-GE since 1999 and which was again updated during the course of the year. In 2001, the Geneva-CDS team was also able to broaden its network with international partners. A key date was the "CDS and e-EIONET Work Conference" which provided an important forum to meet with a wide range of organizations, most notably the French Environment Institute (IFEN). Inclusion of regional partners has been a major aim of the Geneva-CDS, especially the neighbouring French administrative departments of Ain and Haute-Savoie.

CEROI-Geneva

The proposal to develop a "Cities Environment Report on the Internet" (CEROI) for Geneva was first introduced by GRID-Geneva to local authorities in early 1999, in support of Local Agenda 21 activities. GRID-Geneva was responsible for collecting the relevant information from local government agencies and preparing its publication on the Internet. Launched in April 2001, the portal (http://www.geneva-city.ch/ceroi/) provides a comprehensive account of the major environmental issues facing Geneva and assesses how human activity is impacting on the local environment, as well as offering ways to protect and enhance its quality.

Officiating the launching of the CEROI-Geneva website (left to right): Ron Witt, Regional Coordinator of UNEP's DEWA/GRID-Geneva; Robert Cramer, State Councillor for Geneva's DIAEE, and Alain Vaissade, Mayor of the City of Geneva.

The CEROI programme was set up by UNEP/Habitat in collaboration with the International Council for Local Environmental Initiatives (ICLEI) as a practical means to implement Agenda 21 at the local level. It also follows on the recommendations of the Aarhus Convention on improving access to environmental information for sound decision-making and general awareness-raising for the public.

Water Resources and Wetlands e-Atlas


Greg Gibson

During 2001, GRID-Geneva was closely involved in the development and implementation of the World Conservation Union's (IUCN) Water Resources and Wetlands e-Atlas. Designed to serve as a decision-support tool, the e-Atlas will link, integrate, and communicate relevant information on freshwater resources management. As a web-based information service, it aims to provide timely access to water resources data of relevance to policy and management issues. The information will be presented in the form of dynamic maps, vital graphics, statistics and annotated text to explain the complex issues involved. The partners of the e-Atlas are, besides IUCN and UNEP/GRID-Geneva, the International Water Management Institute (IMWI), the University of New Hampshire (UNH) and the World Resources Institute (WRI).

The e-Atlas is being developed to address the fragmented state of existing freshwater data and to improve accessibility thereof by users. Scattered data sets therefore need to be brought together for analyses and to allow proper integrated river basin management.

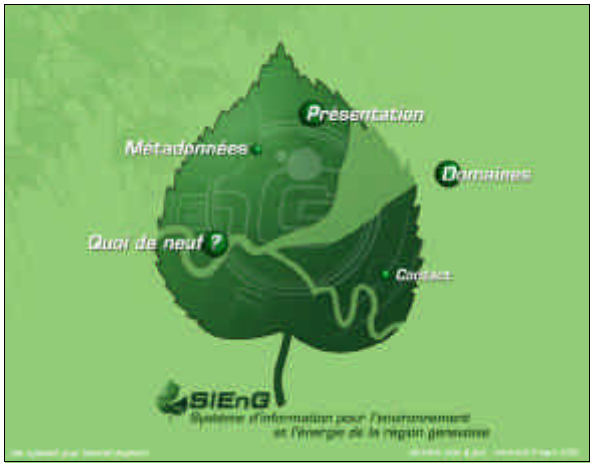
Development of the e-Atlas is planned in two phases. In the first stage, a functional prototype and a core network will be created to link policy and management issues with available data. The objective at this stage is to ascertain the feasibility of the entire project, develop a technical framework and a well-designed prototype. To this end, the partners are in the process of reviewing available data sets and policies at multiple spatial scales. The second phase, to be carried out over a three-year period, entails the establishment of a collaborative network to implement the e-Atlas as a fully operational tool accompanied with the delivery of specific products.

Three issues will be examined by the e-Atlas, these being: (i) climate change; (ii) river basin management; and (iii) the conflict between agriculture and nature. By providing key baseline data and building a collaborative network focusing on global challenges, the e-Atlas should provide important policy and management support. Subsequently, the scope of the e-Atlas may be expanded to include other relevant policy or management tools.

"Environmental Information System for the Geneva Region" (SIENG)

Within the framework of its partnership with the Canton of Geneva established in 1998, UNEP/GRID-Geneva was commissioned in collaboration with a private information technology enterprise (NCSLab) to develop a dynamic internet-based Environmental Information System (EIS) known by the French acronym SIEnG. In tandem with Geneva's Catalogue of Data Sources, this tool enables various government departments participating in the SIEnG to make available information about Geneva's environment to the general public and interested organisations. Accessible data sets range from hydrological maps of Geneva Canton to documents describing environmental protection projects carried out by Geneva Canton. The website is organised around 11 key thematic subjects (e.g. air, waste, energy, etc.), which are in turn sub-divided into a hierarchy of sub-themes.

The value of this interactive website is not limited to its on-line publishing facility, but stems equally from the fact that it is wholly dynamic and does not require a webmaster. In practice, all SIEnG partners are responsible for certain sections of the website which they can update in real-time, guided by an automated step-by-step procedure.



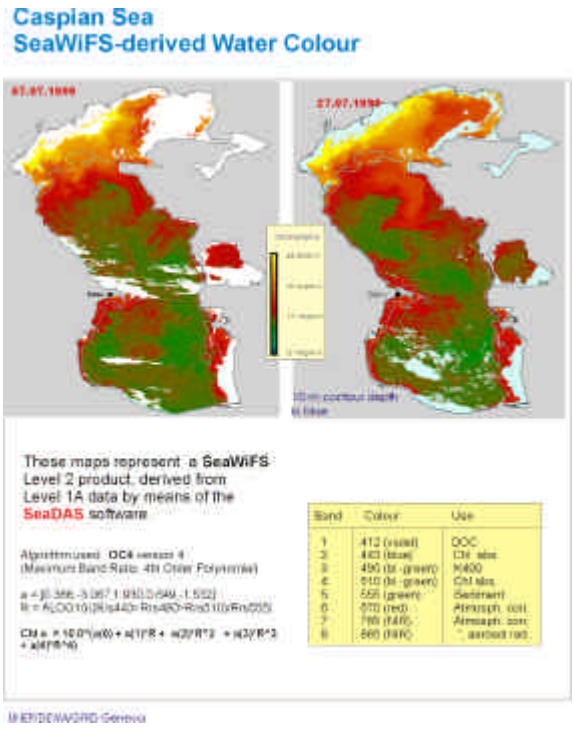
The SIEnG website is hosted by GRID-Geneva and may be accessed at: http://www.sieng.ch/

Water Resources and Wetlands e-Atlas

UNEP/GRID-Geneva has been involved in providing data and information management support to the Caspian Environment Programme's Programme Coordination Unit (CEP/PCU) since its establishment in 1998. A concrete example of this expanding cooperation was realised when GRID-Geneva carried out a Data and Information Management (DIM) Training Workshop for member countries of the CEP, which was held at and co-organised with the CEP/PCU, in Baku, Azerbaijan in July 2001.

Twenty representatives from the five Caspian littoral countries: Azerbaijan, Islamic Republic of Iran, Kazakhstan, Russian Federation and Turkmenistan attended the workshop. Specifically tailored to the needs of CEP member countries, the training workshop provided participants with a global overview of the key components of an Environmental Information System. This included an introduction to Geographic Information Systems, meta-data catalogues and standards, remote sensing applications and techniques, as well as Internet-based applications.

GRID-Geneva also provided participants with geo-spatial data sets including satellite imagery of the Caspian region on a CD-ROM, including a comprehensive inventory of data sources. With a better understanding of GIS, remote sensing and data documentation methods and equipped with baseline geo-spatial data, national experts are now ready to launch a fully-fledged Caspian Information System ("CaspSIS").



UNEP/GRID-Geneva will continue to provide advice and technical back-stopping to CEP countries and the PCU, including additional geo-spatial and statistical data sets and hands-on training modules. Other follow-up activities will focus on securing additional resources for CEP/PCU activities, including donor support and negotiating software licenses, as well as improved coordination of UNEP-led activities in the Caspian region.

Nuclear Power Sites Database

One of the key geo-spatial data sets created by GRID-Geneva is the "Nuclear Power Sites of the World". Based on information supplied by the International Atomic Energy Agency (IAEA), this global geo-referenced database constitutes the most authoritative guide publicly available on nuclear power reactors in the world. The first version based on 1995 data was comprehensively updated in 2001 to reflect the state of nuclear power sites as of end-1999. In the latest version, 249 nuclear power plants are indexed with a total number of 563 reactors of which 463 are operational, 35 are under construction and 92 have been closed down. Principally intended to be used for locating nuclear power sites on a global scale, the data bank contains not only the geographical coordinates but also much useful thematic information on attributes such as country, site name, type of reactor, status of reactor, capacity and number of reactors per site. Finally, a large poster has been prepared depicting nuclear power reactors in the world.

A global geo-referenced database holding information about more than 600 nuclear research reactors has also been created. In a related pilot project, two GIS applications have been developed enabling users to visualise various types of nuclear power plants and radioactive waste in Taiwan, as well as to query their thematic attributes.

Maps for International Watercourses Cooperation

GRID-Geneva provided GIS support for the Green Cross-led project "Water for Peace". The project focuses on international water conflict prevention and strengthening integrated water basin management. It is being carried out in preparation for the Third World Water Forum, to be held in Kyoto, Japan in March 2003.

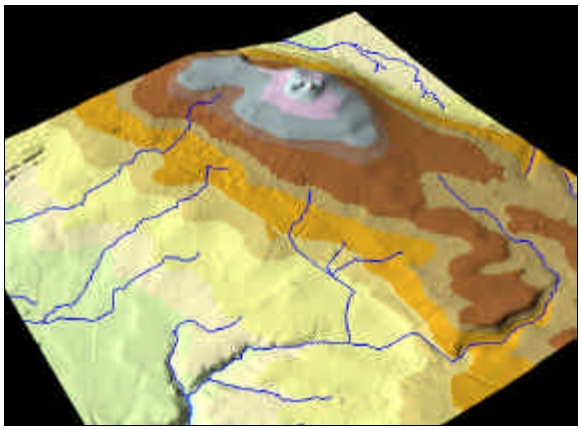
Six trans-boundary basins were selected for in-depth study: the Danube, the Jordan, the Okavango, the Parana-La Plata, the Volga and Volta. In each basin, potential and actual causes of conflict, and opportunities for cooperation between states and stakeholders will be identified, and measures to promote international integrated water resources management will be initiated. Depending on the basin, the work will focus on different aspects of water conflict prevention. These range from increasing civil society participation, training of local authorities, institution building, facilitating dialogue between states, addressing the tensions raised by privatisation, and clarifying legal principles and regulations related to trans-boundary water management.

Custom-made maps for the six trans-boundary river basins have been prepared and include information features such as watershed boundaries, international frontiers and marine areas, hydrologic systems and major dams. A suite of thematic maps are to follow, based on a wide range of data layers such as land cover/land use, precipitation and engineering structures. These maps are intended to serve as a common baseline to help facilitate dialogue between states and key stakeholders.

A sample of one of the maps prepared by UNEP/GRID-Geneva. Shown here is that of the Jordan basin.

Testing of High Resolution Terrain Models

In a first of its kind, Geneva's "Geomatic Service" carried out a LIDAR (Light Detection and Ranging) data recording campaign by helicopter in Spring 2000. Similar to the more familiar radar, LIDAR sends short pulses of laser light to compute a very high-resolution topographic model of the earth's surface. UNEP/GRID-Geneva examined digital elevation models (DEMs) produced by LIDAR and performed a series of quality controls. Among the tests were those for various artifacts and suggested methods to attenuate residual "noise". Several applications for the LIDAR-derived models are envisaged including: (i) accurate ortho-rectification of high-resolution colour aerial photographs, (ii) 3-D modelling of buildings, to be used for traffic noise exposure assessment and cellular phone network planning, (iii) tree height and volume estimation and (iv) flood zone mapping in very flat areas.



Virtual hydrographic network computed by and overlaid on a 3-D rendering of the one-metre Digital Terrain Model.

GRID-Geneva Advisory Board

Composed of representatives from SAEFL, the University of Geneva and UNEP, the GRID-Geneva Partnership Advisory Board convened twice during 2001 to review progress in the implementation of the work plan, as well as the status of staffing, budget and project activities. One of the main activities facilitated by the Advisory Board in 2001 was the renewal of the Partnership Agreement for the next four-year period (2002-2005). The Board expressed its overall satisfaction with the sound and steady growth attained, and for the high-quality products and cutting-edge services provided by the GRID-Geneva team, which has boosted UNEP's capacity and strengthened its cooperation with international, regional and Swiss institutions.

Advisory Board Members

Mr. Dan van Ravensway Claasen, Deputy Director, DEWA/UNEP
(alternate representative: Mr. Arthur Lyon Dahl, Director, Coral Reef Unit)

Prof. Andràs November, University of Geneva/IUED

Dr. Frank Perrez, Head, Global Affairs Section, International Affairs Division, SAEFL

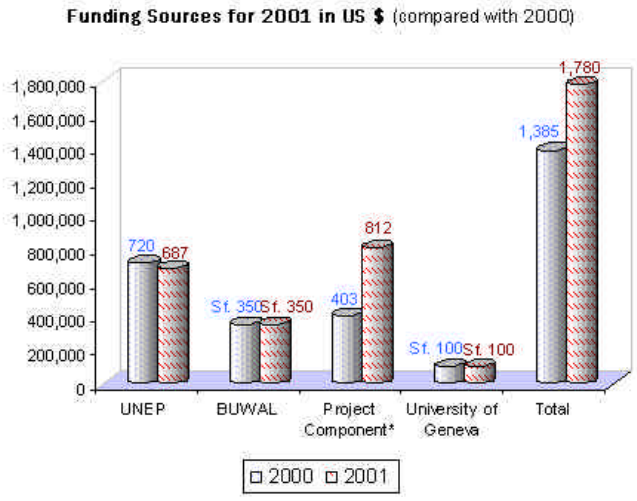
Mr. Nicholas Perritaz, Senior Scientific Officer, Research and Monitoring of the Environment, SAEFL

Mr. Frits Schlingemann, Director and Regional Representative, UNEP/ROE
(alternate representative: Ms. Francoise Belmont, Deputy Director, ROE)

Prof. Walter Wildi, Director, University of Geneva/Institut Forel
.

GRID-Geneva Budget Expenditure 2001

	US $
Operating Costs	
Personnel	1,430,000
Infrastructure (hardware/software/networks)	124,000
Miscellaneous (communications/travel/other)	115,000
Total	1,669,000
Balance Sheet	
Total Payments	1,780,000
Total Disbursements	1,669,000
Net Financial Status (as of 01/01/02)	111,000

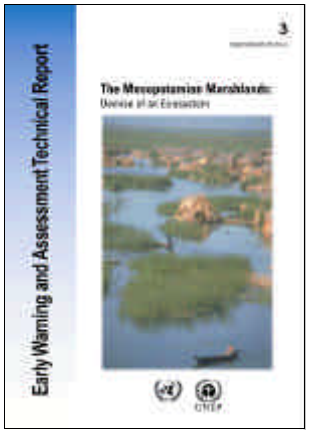


* Project Component: US $465,000 from UNEP; US $346,000 from BUWAL and others.

Selected GRID-Geneva Outputs

Publications

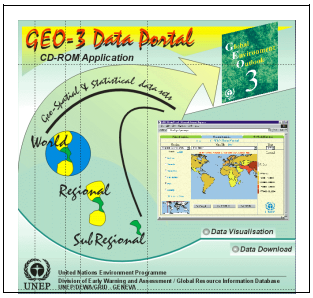
***The Mesopotamian Marshlands: Demise of an Ecosystem*, UNEP/DEWA/GRID-Geneva and GRID Sioux Falls, August 2001.**



Drawing on satellite imagery, this assessment study shows how 90% of the Mesopotamian marshlands have been lost mainly due to drainage schemes and upstream damming. Of global significance to biodiversity and ancient human communities, the destruction of the Middle East's largest wetland represents one of the great ecological catastrophes in the modern era.

CD-ROMs

GEO Data Portal CD-ROM



A CD-ROM version of the GEO Data Portal has been developed for partner organizations with poor Internet connectivity to assure them with easy and reliable access to data. Extracted from the GEO-Data Portal, the CD-ROM holds a wide variety of national and regional statistics and geo-spatial data sets about nine key environmental themes, covering a thirty-year period from 1972-2002.

WinCDS Tools, August 2001

Developed to enhance the Swiss-CDS and Alpine-CDS applications, this CD-ROM contains the following tools: WinCDS, Update, Printing, and User Manager.

Cartographic and Poster Products

Maps

1. World Land Cover Map
2. Indigenous and Traditional Peoples in the World's Terrestrial Ecoregions
3. World Vulnerability Map (based on population density and Gross Domestic Product)
4. Drainage Schemes in Southern Iraq
5. Mesopotamian Marshlands: Land Cover 1973 and 2000
6. Floods Events by Watershed (1980 -2000)
7. Flood Physical Exposure at National Level
8. Cyclones Physical Exposure at National Level
9. Volcanic Eruptions (1980-2000)
10. Volcanoes Physical Exposure at National Level
11. Earthquake Events (1980-2000)
12. Earthquake Physical Exposure at National Level
13. Danube River Basin
14. Jordan River Basin
15. Okavango River Basin
16. Parana-Plata River Basin
17. Volga River Basin
18. Volta River Basin
19. UNEP in the European Region (revision 2001)

Posters

21. Nuclear Power Sites of the World and Status of Reactors (Operating, Under Construction or Shut Down), status as of 31 December 1999.

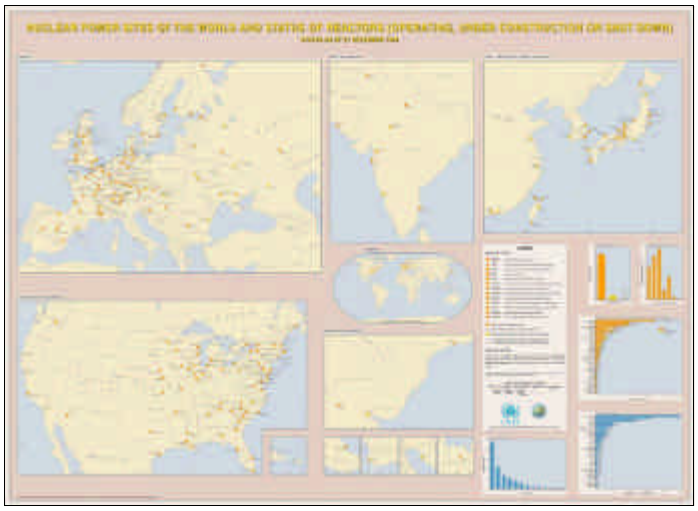
22. UNESCO World Heritage Sites

The twenty-fifth session of UNESCO's World Heritage Committee, which oversees the implementation of the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), was held in Helsinki, Finland from 11-16 December 2001. UNEP/GRID-Geneva was commissioned to prepare posters, maps and electronic databases for two World Heritage Sites for submission at the meeting as sample examples for a comprehensive mapping database. Selected sites included the "Discovery Coast Atlantic Forest Reserves in Brazil" and the "Vallée de Mai Nature Reserve in Praslin Island, Seychelles". A long-term cooperation between UNESCO/World Heritage Centre and UNEP/GRID-Geneva is proposed to develop a standard digital map database of World Heritage Sites.


VALLÉE DE MAI NATURE RESERVE - PRASLIN ISLAND (SEYCHELLES)


I R A N
I R A Q


DISCOVERY COAST ATLANTIC FOREST RESERVES (BRAZIL)



Conferences, Workshops and Missions

GRID-Geneva organised and/or participated in the activities of the following workshops, conferences and missions during the year 2001.

UNOOSA, Twenty-first session of the Inter-Agency Meeting on Outer Space Affairs, Vienna, Austria, 22-24 January

World Meteorological Organisation (WMO), World Water Assessment Programme's (WWAP) Data and Database Workshop, Geneva, Switzerland, 26 January

UNEP Governing Council Twenty-First Session (GC 21), Nairobi, Kenya, 5-9 February

UN Geographic Information Working Group (UNGIWG), Second Global Meeting, Rome, Italy, 5-7 March

University of Geneva/GRID-Geneva, Training on Remote Sensing for Secondary School Teachers, Geneva, Switzerland, 6-8 March

UNEP/Regional Office for West Asia, Consultative Meeting on Assessment of the Euphrates and Tigris River Basins, Manama, Bahrain, 12-15 March

UNEP/DEWA, The 2nd GEO-3 Production Meeting, San Miguel Regla, Mexico, 2-6 April

Canton and City of Geneva/GRID-Geneva, Official Launching of the Cities Environment Report on the Internet (CEROI) for Geneva, International Environment House, 23 April

GRID-Geneva, "Partnership" Advisory Board Meeting at University of Geneva, 9 May

UNEP/ROE and DEWA-Europe, GEO-3 Regional Consultation in Geneva, Switzerland, 6-7 June

UNEP/DEWA, IEA/GEO Process Workshop, Arendal, Norway, 3 - 6 July

Global Observation of Forest Cover (GOFC), Fire Workshop on Satellite Product Validation, Lisbon, Portugal, 9 –11 July

Caspian Environment Programme/GRID-Geneva, Data and Information Management Training Workshop for CEP countries, Baku, Azerbaijan, 16 - 19 July

UNEP/DEWA, GEO Data and Human Vulnerability Index Meeting, Geneva, Switzerland, 23-24 July

Stockholm Water Symposium, Stockholm, Sweden, 12 - 18 August

IATFNOAA, Workshop on Vulnerability Assessment Techniques VAT II, Charleston, South Carolina, U.S. A., 13-15 August

UNEP/ROE, RIO+10 European Regional Preparatory Meeting, Geneva, Switzerland, 24-25 September

ISDR-IATF, Working Group 3 Meeting, Geneva, 3 - 4 October

European Environment Agency/SAEFL, CDS and e-EIONET Work Conference, Thun, Switzerland, 7 - 9 October

UNDP/ZENEB, Measuring Vulnerability to Food-Insecurity under the conditions of Drought, Bonn, Germany, 12 - 13 October

GRID-Warsaw, Fourth Meeting of the European GRID-Centers, Warsaw, Poland, 23-24 October

UN Open House, Palais des Nations, Geneva, 27 - 28 October

UNEP-Shell Meeting of GEO-3 Scientific Experts, London, UK, 31 October

GRID-Geneva, “Partnership” Advisory Board Meeting, 1 November

Aarhus Convention Second Workshop, Yerevan, Armenia, 14-17 November

Earthwatch Working Party Seven Meeting, 10-11 December

SAEFL, Eighth Meeting of the SOIA Working Group, Bern, Switzerland, 10-11 December

DEWA~Europe, Global/Regional Data Portals, Standards and Tools, Geneva, Switzerland, 17-19 December

GRID-Geneva, Ceremony to Renew the GRID-Geneva Partnership, Geneva, Switzerland, 21 December

GRID-Geneva Staff in 2001

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GEO3 GIS & Data Management

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UNEP.Net Contents Developer

Frederic Vogel
CDS Geneva Canton Administrator

Ron Witt
DEWA Regional Coordinator - Europe and Manager GRID-Geneva

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Karine Zuercher
Web Designer and Programmer

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Grégory Giuliani
Caspian Sea Imagery Analysis

Frédéric Mouton
PH.D., Statistics

Ola Nordbeck
Certificate of Geomatics, University of Geneva

Acronyms

Alpine-CDS - Alpine Catalogue of Data Sources
BCPR - Bureau of Crisis Prevention and Recovery (UNDP)
CC - Collaborating Centre
CD-ROM - Compact Disc - Read Only Memory
CDS - Catalogue of Data Sources
CEE - Central and Eastern Europe
CEO - Caucasus Environment Outlook
CEP/PCU - Caspian Environment Programme/Programme Coordination Unit
CEROI - Cities Environment Reports on the Internet
CEU - Central European University
CH-CDS - Swiss Catalogue of Data Sources
CIS - Commonwealth of Independent States
DEM - Digital Elevation Model
DEWA - Division of Early Warning and Assessment (UNEP)
DIAEE - Department of Interior, Agriculture, Environment and Energy (Canton of Geneva)
EEA - European Environment Agency
ESA - European Space Agency
EIS - Environmental Information System
ESRI - Environmental Systems Research Institute
GDP - Gross Domestic Product
Geneva-CDS - Geneva Catalogue of Data Sources
GEO - Global Environment Outlook
GIS - Geographic Information System
GRAVITY - Global Risk and Vulnerability Indexing Trends per Year
GRID - Global Resource Information Database (UNEP)
IAEA - International Atomic Energy Agency
ICLEI - International Council for Local Environmental Initiatives
IEH - International Environment House
IFEN - French Environment Institute
IUCN - World Conservation Union
IMS - Internet Map Server/Solutions
JRC - Joint Research Centre (of the European Commission)
LIDAR - Light Detection and Ranging
MdD - Meta-data Directory
MSU - Moscow State University
NASA - National Aeronautics and Space Administration (U.S.A.)
OCHA - Office for the Coordination of Humanitarian Affairs (U.N.)
PREVIEW - Project for Risk Evaluation, Information and Early Warning
REC - Regional Environment Centre for Central and Eastern Europe
RIVM - Dutch National Institute of Public Health and Environment
ROE - Regional Office for Europe (UNEP)
ROWA - Regional Office for West Asia (UNEP)
SAEFL - Swiss Agency for the Environment, Forests and Landscape (BUWAL/OFEFP)
SIEnG - Information System for Environment and Energy of the Geneva Region
SoE - State of the Environment
SOIA - System for Observation of and Information on the Alps
UN - United Nations
UNCHS - United Nations Centre for Human Settlements (Habitat)
UNDP - United Nations Development Programme
UNEP - United Nations Environment Programme
UNESCO - United Nations Educational, Scientific and Cultural Organisation
UNGWIG - United Nations Geographic Information Working Group
WRI - World Resources Institute
WSSD - World Summit on Sustainable Development
WWF - World Wide Fund for Nature International
WWW - World Wide Web

The UNEP/GRID Network

To learn more about GRID activities in your region, please contact the Coordinator of GRID or the GRID Centre(s) nearest to you:

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