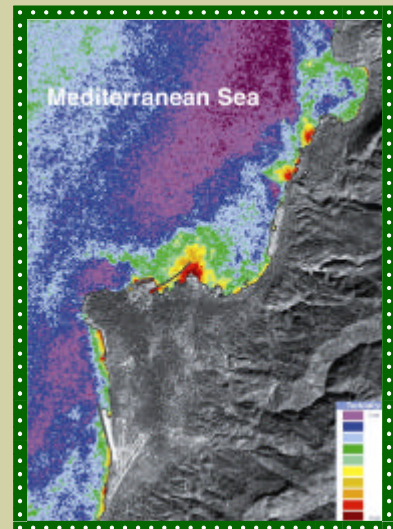


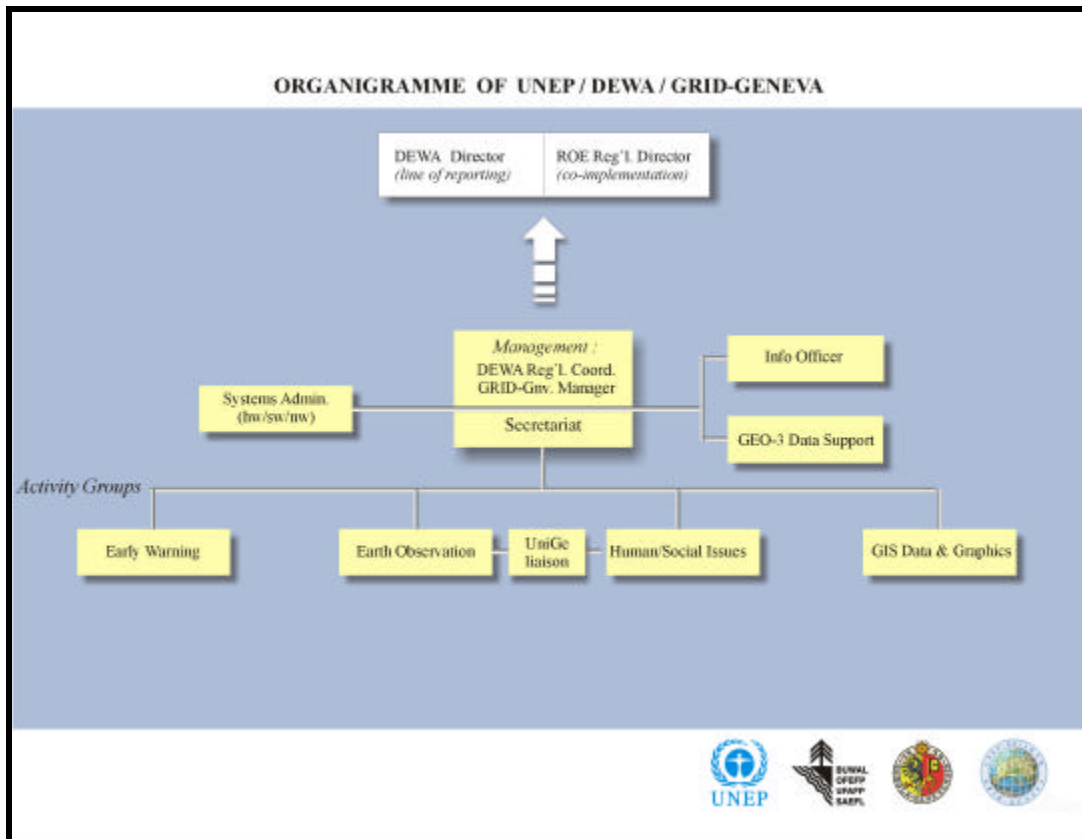
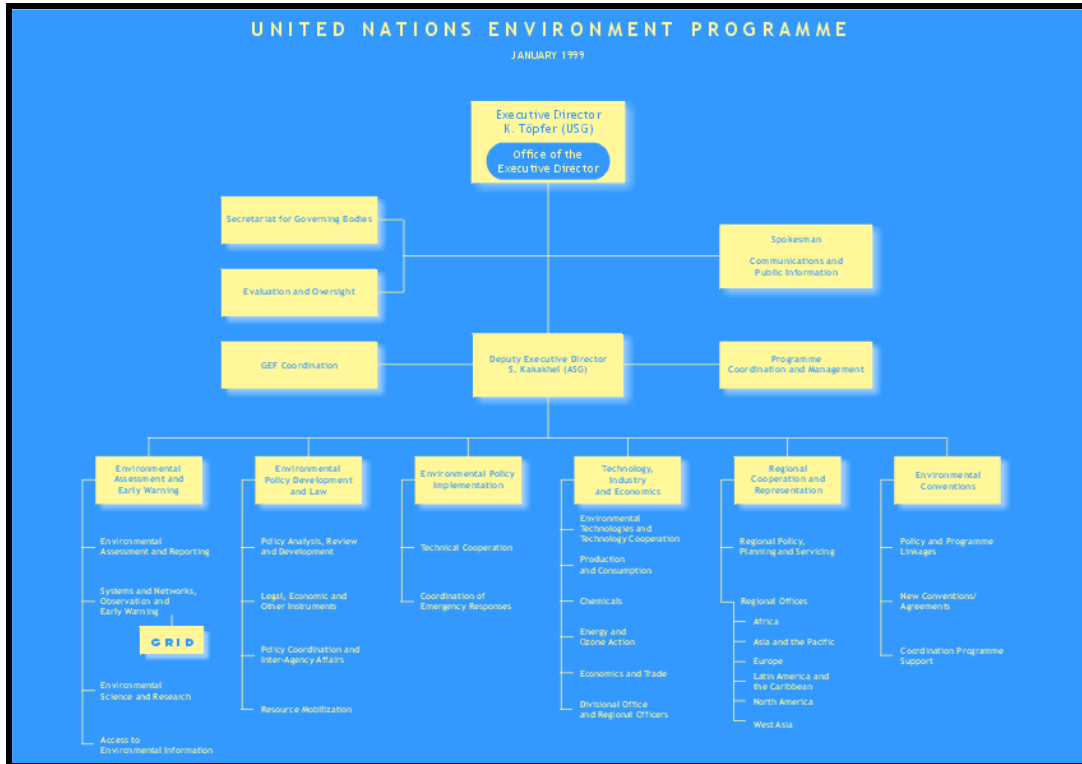


UNEP/GRID-GENEVA ANNUAL REPORT 2000



UNEP's Mission

"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 2000

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Message from UNEP Headquarters

Fostering development and co-ordination of a global network of data and information centres, such as UNEP/GRID-Geneva, presents both a tremendous opportunity and, at the same time, a great challenge for UNEP and its Division of Early Warning and Assessment (DEWA). I believe the development and activities of UNEP's network of partnerships and centres, exemplified by the UNEP/GRID foundations, is indeed creating an unprecedented UNEP and UN framework for the delivery of comprehensive environmental data and information to the world's decision-makers and citizens.

It is clear to me that UNEP/GRID-Geneva fills a key place on the UNEP global team with distinctive major and regular outputs being delivered on early warning issues, and baseline support to environment assessments and reporting. As our European regional representation, UNEP/GRID-Geneva also carries out critical liaison activities and helps to further develop our partnerships with other international agencies, regional entities and national governments in Europe. UNEP/GRID-Geneva likewise helps maintain our science reputation in terms of employing "cutting-edge" technological capabilities and informatics solutions.

The opportunity presented by the advanced capabilities of UNEP/GRID-Geneva and indeed, the other partner centres around the world, is that we already have a well-adapted system and network for collecting, integrating and disseminating value-added information on the state of the regional and global environment, with which UNEP can target major environmental problems facing the world of today and the near-future.

One of the associated challenges of directing the global DEWA networks, and UNEP/GRID in particular, is how to focus our activities and bring their collective resources to bear on a limited number of priority environmental issues and problems and doing so in such a way that the whole is indeed greater than the sum of the parts.

While I take this opportunity to salute UNEP/GRID-Geneva for the past and current work, we must recognise that presently the GRID family of centres has not reached its true potential as a networked team. By leading and engaging partnerships with Switzerland (Swiss-BUWAL), the University of Geneva and many others, we can deliver information to the world and serve as a model for other environmental centres and ministries.

To better our performance as the global authority for the global environmental commons, UNEP must be at the right place at the right time with *just* the sort of

information that a diverse community of decision-makers needs. To change the exorbitantly financed destructive effects of "development" and serve the disadvantaged end of societies, we must learn how to take into consideration environmental and human causes-&effects and impacts. This is precisely why we have begun work on and implemented UNEP's world-class global environmental information system "UNEP.Net" (UNEP *dot* Net). Since last year, UNEP/GRID-Geneva has been a major player in the design of this ultimate "one-stop-shop" for environmental data in support of assessment, early warning and decision-making across the international spectrum of nations, organisations and citizen users.

From the inception of this complex exercise to develop UNEP.Net, staff of UNEP/GRID-Geneva has played a key role in the process through the provision of state-of-the-art applications, data and value-added information. UNEP/GRID-Geneva's leadership role in developing the global database support system for GEO will prove to be one of UNEP's seminal "killer applications". Once we have assembled a critical mass of environmental data, information and on-line functionality with UNEP.Net, we anticipate that this new system will go a long way towards rationalising not just our own, but the general public's access to much of what UNEP/GRID and the rest of UNEP have to offer. At the same time, UNEP.Net will also provide relatively elegant mapping solutions on-line, allowing even non-experts to pose and answer basic questions about the state of the world's environment, as well as what is happening in their own region or country.

I am fully confident that the UNEP global team can continue to count on UNEP/GRID-Geneva to play an essential role in the next phase of developing UNEP.Net, and the underlying GEO and early warning applications. Paramount to UNEP's success in fulfilling its Herculean charter, is an increased role of the Geneva team in our corporate strategies, implementation, and communications. I am steadfast in confidence regarding this team's capacity to meet these challenges.



Timothy W. Foresman
Director
UNEP/Division of Early Warning and Assessment

Greetings from the Swiss Environment Agency

When on 15 June 1998 the partnership agreement between UNEP, the University of Geneva and the Swiss Federal Agency for the Environment, Forests and Landscape (SAEFL) on the continued operation of GRID-Geneva was concluded, expectations were high. A strong GRID-Geneva was envisioned helping policy-makers take well-informed decisions and playing an important catalyzing function for international collaboration and joint action on emerging threats of regional and global environmental degradation. Today, we can only congratulate GRID-Geneva for having succeeded in going beyond these initial expectations. GRID-Geneva has developed a reputation for excellence, and what at first seemed to have been a pragmatic institutional arrangement ensuring a predictable and stable financial basis for the important work of GRID has turned out to be an innovative partnership bringing together institutions working at different levels, deepening the cooperation between science and practice and allowing integration of international, national and local activities on environmental information management. I would like to commend GRID-Geneva wholeheartedly for this impressive success.

While we are looking back on what has been achieved in the last year, the preparations of Rio +10 enter a critical phase. It becomes evident that not all the goals formulated at Rio have been successfully realized. In fact, it seems that human-induced environmental challenges and threats have increased in recent years. The World Summit on Sustainable Development will be a key moment to critically assess the implementation of decisions taken at the UN Conference on Environment and Development in June 1992 in Brazil and to inject a new spirit of cooperation and urgency in order to agree on effective measures and action in the common quest for sustainable development.

I hope that such measures will include the ratification, implementation and enforcement of existing instruments (namely the Kyoto Protocol; Convention on Biological Diversity and Biosafety Protocol), the filling of gaps in the actual environmental regime (e.g. there are no sufficient international rules with regard to forests, water and environmental liability) and the strengthening of international environmental governance by underlining and reinforcing UNEP's role as the central pillar of the global environmental architecture. However, the willingness to cooperate is a fundamental prerequisite to successfully address the challenges before us. Thus, states have finally to agree that cooperation is not a limitation but an inherent element of their sovereign rights as

members of the global community. Information about existing environmental interdependencies will certainly be a fundamental stimulant for such a constructive willingness to cooperate.

GRID-Geneva will therefore have to play an important role during the process leading to the World Summit on Sustainable Development. Its ability to deliver reliable and timely information to decision-makers will be crucial not only in order to identify the major challenges and threats before us, but also for stimulating a new spirit of cooperation across frontiers, be it state, institutional or cultural borders or differences of interest. Therefore, I would like not only to congratulate GRID-Geneva for its past achievements but also to underline its importance for the future. This assures my confidence in the future success of the exceptionally fruitful cooperation and partnership between UNEP, the University of Geneva and the Government of Switzerland.



Dr. Philippe Roch

**Director
Swiss Federal Agency for Environment, Forests
and Landscape (SAEFL)**

About GRID-Geneva

The GRID Network

The Global Resource Information Database is a worldwide network of 15 environmental data centres managed by UNEP's Division of Early Warning and Assessment (DEWA) from its headquarters in Nairobi, Kenya. GRID aims to provide and facilitate access to environmental data and information for decision-making and policy setting, to underpin UNEP's review of the state of the world's environment and provide early warning on emerging environmental threats. Typically, GRID centres specialise in the preparation and provision of value-added environmental information products using tools such as remote sensing, Geographic Information Systems (GIS), and by developing client-specific databases and Internet websites. With centres now established in all regions of the world, the GRID network is strategically positioned to mobilise high-quality and up-to-date environmental information to enhance decision-makers' capabilities in the sustainable management of the planet's resources.

GRID-Geneva

GRID-Geneva was established in 1985 as a pioneering centre of the GRID network. The principal role of GRID-Geneva is to underpin UNEP's assessment activities and its efforts to support global and regional environmental decision-making, by improving access to high-quality data about the state of the world's environment, and which is primarily channelled through UNEP's Global Environmental Outlook (GEO) programme.

As part of its information management function, GRID-Geneva has compiled over the years an extensive archive of global, regional and other geo-spatial databases, and is currently using state-of-the-art information technology to make its core data holdings, as well as those of international partners, accessible to the global community through Internet-based applications. Currently, this includes development of the GEO-3 Data Portal for use by UNEP's network of Collaborating Centres.

In June 1998, UNEP/GRID-Geneva broadened its institutional base and support with the signing of a "Partnership Agreement" with the Swiss Federal Agency for the Environment, Forests and Landscape (SAEFL) and the University of Geneva. One of GRID-Geneva's roles on behalf of the Partnership is to serve as the unique GRID-Geneva francophone centre for the global GRID network.

The GRID-Geneva office is also responsible for coordinating the European programme of UNEP/DEWA and serves as its main contact point with European (mostly Geneva-) based UN agencies, and with various regional institutions such as the European Environment Agency (EEA) and the European Commission's Joint Research Centre (EC/JRC). In addition, the office also carries out capacity building activities, and collaborates on specific projects with sub-regional organisations in Central and Eastern Europe and the Mediterranean region.



Location

GRID-Geneva is located at the International Environment House (IEH), in Geneva's Châteline suburb and within short distances from the Geneva city-centre and the main UN offices at the Palais des Nations. The IEH brings together under a single roof an array of United Nations and non-governmental organisations active in the field of environment and sustainable development. The Environment House aims to provide a convivial atmosphere for fostering synergies and encouraging partnerships between the different organisations, secretariats and numerous other environmental institutions inside the house, as well as in the larger Geneva area. GRID-Geneva staff have been instrumental in proposing and examining opportunities to promote the adoption of 'green practices' within the IEH, including use of solar panels and recycling of waste material.

Year in Review

The "millennium year" 2000 was at once a year of expansion and consolidation for GRID-Geneva. Expansion because both the number of project activities in which the Partnership Office was involved, and the budget for carrying out this expanded series of activities, increased significantly (the budget was up over 40% in comparison with 1999). Consolidation in the sense that greater efforts than ever before were expended to focus on priorities of UNEP's Division of Early Warning and Assessment (DEWA), and simultaneously to reinforce GRID-Geneva's capacity to respond to environmental information needs. These are chiefly in the realms of data support activities for environment assessments in general, and GEO-3 in particular; and the preparation of materials (maps, posters, reports, websites) relating to early warning issues such as environmental change, freshwater, biodiversity, marine pollution, etc. Some of the most significant results are described in this report.

One of the signature project activities that began mid-way in the year 2000 is a new on-line environmental information system to underpin the preparation of UNEP's Global Environment Outlook (GEO-3) report, known as the "GEO Data Portal". This unique web-based tool allows UNEP's network of some 40 Collaborating Centres and other partners around the world to have access to over 200 standardised and verified statistical and geo-spatial "core data sets" to develop their inputs for GEO-3. The aim is to strengthen the scientific and empirical basis of the GEO report series, and render its contents more comparable between all regions of the world.

Another area of increased focus is regional and/or thematic environment assessments dealing with emerging environmental problems and threats, particularly those of a transboundary nature, post-conflict assessments and environmental emergency situations. In the regions of Mesopotamia (Tigris-Euphrates river basin), Southeastern Europe and West Africa, GRID-Geneva was called upon to supply information materials or report directly on environmental stress, typically caused by human pressures on the natural environment. At the same time, GRID-Geneva has continued its more hazards-based early warning activities with significant updating and enhancement of its on-line information system on environmental disasters (PREVIEW). In a related activity, GRID-Geneva was commissioned by UNDP's Emergency Response Division (ERD) to develop a global vulnerability index for natural disasters in late 2000.

Mainstream GIS and remote sensing projects and capacity building activities to support the use of relevant information systems and tools for environmental assessment continued under funding

from the United Nations Fund for International Partnerships (UNFIP). Some of the notable projects included the implementation of an on-line version of the "Africa Environmental Information System (EIS)", as well as support to the Lebanese Environment and Development Observatory (LEDO). The suite of meta-database activities being carried out for the SAEFL advanced into a more mature phase of development, including the Swiss and Alpine CDSs and the Canton of Geneva's version of the CDS as well. At the same time, GRID-Geneva played a major role in the early development of UNEP's global environment information network system known as "UNEP.Net", the prototype of which was completed in the last quarter of 2000. Several of the aforementioned applications are already included in or linked to UNEP.Net, allowing consultation by UNEP's entire user community and other clients around the world.

Finally, GRID-Geneva multiplied its efforts aimed at greater regional coordination on behalf of DEWA. In addition to managing the European region's inputs into the GEO process and other environmental assessments, improved networking with the far-flung European GRID centres from Moscow to Norway to Tbilisi was made to help rationalise activities in-line with DEWA priorities.

It is both our hope and expectation that the year to come will continue these trends and show GRID-Geneva to be an ever-more effective instrument of UNEP and DEWA's programme.



Ron Witt

**DEWA Regional
Coordinator- Europe and
Manager GRID-Geneva**

Supporting the Global Environment Outlook Process

Coordinating the European Region's Inputs into GEO-3



UNEP/ROE in collaboration with DEWA-Europe organised an exploratory meeting in early December in Tbilisi, Georgia, to discuss the development of a sub-regional GEO-3 report for the Caucasus.

The Global Environment Outlook (GEO) is UNEP's flagship assessment series which reports on the changing state of the world's environment. GEO is published biennially and is based on a region-by-region analysis of environmental conditions and trends. The third edition GEO-3 is due for release in 2002. While global supervision of the whole process is provided by the GEO Management Team at UNEP Headquarters in Nairobi, Kenya, activities at the regional level are managed by the Regional Coordinators of the Division of Early Warning and Assessment (DEWA), with support from UNEP's Regional Offices. DEWA/GRID-Geneva is thus responsible for coordinating European regional inputs into the GEO process.

A number of important activities were carried out in 2000 to assure that the GEO-3 process stayed on track in the region. A start-up meeting for European Collaborating Centres (CCs), which include the Central European University (CEU), the European Environment Agency (EEA), Moscow State University (MSU), the Regional Environment Centre for Central and Eastern Europe (REC), and the Dutch National Institute of Public Health and Environment (RIVM), was held on 21-23 June in Geneva. The meeting charted a "regional road map" for sections dealing with State of the Environment (SoE) reporting and policy analysis. Discussions also dealt with defining European CCs' roles and methods for integrated SoE/policy assessment. Immediately thereafter, the CCs began to carry out the real work of preparing initial inputs for Chapter 2 on integrated State-of-Environment and policy analyses.

Chapter 3 on "Outlooks", which addresses future scenarios and vulnerability analysis, was dealt with at a meeting in Cambridge, UK, from 11-15 September.

Some 35 persons from all regions, including selected CCs and other international experts on scenarios, participated in the discussions. Four global scenarios were developed, and then elaborated from a regional perspective. The scenarios were further discussed and refined at a European Expert Consultation meeting held at CEU in Budapest, Hungary in early November. The meeting brought together experts on scenario development to discuss and expand on the initial set of regional "future outlooks" for Europe, to be included in Chapter 3. Four preliminary scenarios (known as Conventional Development, Policy Reform, Fortress World and Great Transition) were presented by their respective authors, and the merits and shortcomings of each discussed by the participants.

The consultations in Budapest succeeded in eliciting significant and useful inputs laying down the basis for ongoing European scenario development work, and catalysed the preparation of contributions to Chapter 3 on "future outlooks". These scenarios were also presented as prototypes at a global meeting held in Geneva in mid-December 2000, where representatives from each of UNEP's six global regions prepared the first rough draft of the overall Chapter 3.

Also within the framework of the GEO-3 regional process, a meeting jointly organised by UNEP's Regional Office for Europe (ROE) and DEWA/GRID-Geneva was held in early December in Tbilisi, Georgia, to explore the development of a sub-regional GEO-3 report for the Caucasus. The reaction from national and other participants was largely positive, and given adequate funding from UNEP and external donors, then such a report will be under preparation in 2001.

Supporting the Global Environment Outlook Process

A Global Database to Support GEO-3 Assessment

In association with partner institutions, GRID-Geneva is carrying out an essential activity underpinning UNEP's Global Environmental Outlook (GEO) assessment and production work, by providing GEO Collaborating Centres (CCs) and other partners with access to a wide variety of "core data sets" from internationally recognized sources. Through the use of such a "one-stop shop" as the GEO-3 Data Portal, regional and sub-regional GEO inputs are being harmonized and streamlined, while allowing better substantiation of the results presented.

The data sets have been selected on the basis of the outlined GEO-3 Data Strategy, which in turn is the culmination of long-standing deliberations on core data needs for global environment assessments within UNEP and sister organizations. In broad terms, these data relate to:

- ◆ societal *driving forces* such as population, economic growth, energy, consumption patterns;
- ◆ environmental *pressures* such as air emissions and waste disposal;
- ◆ *state-of-the-environment* in terms of quality of air, water and land;
- ◆ *impacts* on natural ecosystems and human health (biodiversity loss, land degradation and water stress);
- ◆ societal *responses* in the form of environmental legislation and international conventions.

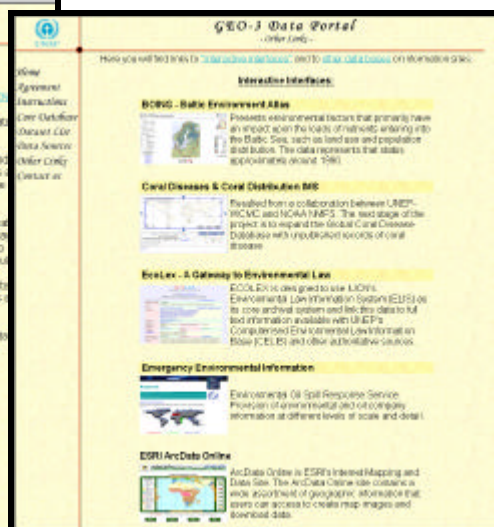
To support the ongoing GEO-3 activities, a pragmatic start was made in 2000 to develop the core database, applying innovative Internet and GIS technology for easy and efficient data access to a collection of existing data sets. By the end of the year, more than 100 data variables had been made available in the form of country statistics, regionally

aggregated statistics or geospatial data (maps). Temporally, the data selected all cover to the extent possible GEO-3's 30-year retrospective period since the Stockholm Conference (i.e. 1972-2002), while inclusion of quantitative information for the different scenarios is to be made available in the course of 2001. Through the GEO-3 Portal, data can be visualized and queried on-line, and also be downloaded for further use if so desired. Documentation (meta-data) and hyperlinks to relevant sources and useful Internet sites are included as well.

Coordination with UN organizations and other GEO global and regional data partners is being taken up in order to further develop the core database and address critical information needs and data gaps. This should pave the way for the creation of a comprehensive, reliable and easily accessible world-wide empirical database for global environmental assessment and reporting purposes.



The GEO-3 Data Portal is available for use by all GEO Collaborating Centres and other UNEP partners.



Early Warning Activities and Environment Assessments

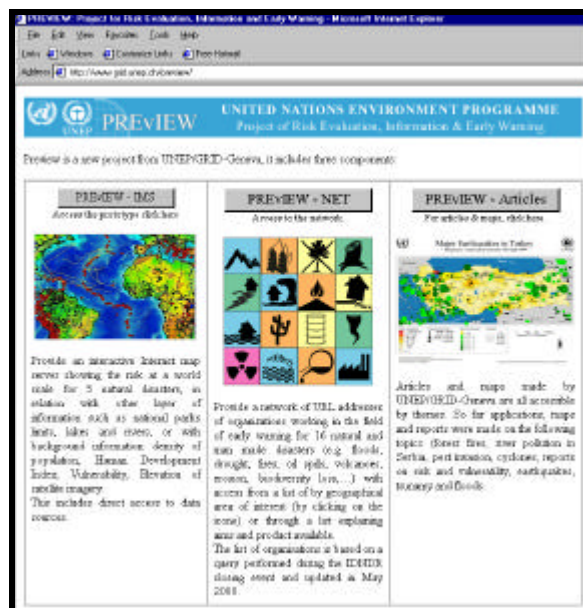
In 2000, ReliefWeb - the on-line news service of the United Nations Office for the Coordination of Humanitarian Affairs - reported the occurrence of twenty-nine floods, ten major earthquakes, nine droughts, six hurricanes, and three mud and landslides. Thus far, the international community has largely reacted after such disasters have taken place. Financial support has been mainly earmarked for aid and relief efforts, while relatively little has been channelled towards preventative and mitigating activities. Yet there is a critical need to develop a culture of prevention based on landscape management and urban planning, and increasing education and awareness-raising campaigns. The International Strategy for Disaster Reduction (ISDR) also underlines the fact that the challenge is not merely one of informing decision-makers, but prompting the implementation of appropriate measures aimed at reducing the number of disaster-related victims. This may be realised by expanding and improving preventative programs, strengthening emergency response capacity and through the provision of timely alerts.

In 2000, GRID-Geneva's early warning activities were geared towards maximising information dissemination about hazards and building synergies and networks with partner organisations. The Internet has been the principle medium of broadcasting, providing access to a network of partners, on-line reports, interactive maps, satellite imagery and data sets.

An On-line Information Service on Environmental Disasters

The **Project for Risk Evaluation, Information and Early Warning (PREVIEW)** was launched to help service decision-makers and the general public's information needs about environmental disasters. Functioning essentially as an Internet gateway, the PREVIEW portal guides users to a network of more than two hundred organisations active in various domains of early warning. Users may launch queries by type of environmental disaster (e.g. floods, drought, earthquakes, fires, etc.) and navigate through descriptive lists or geographically via dynamic maps.

An interactive website using Internet Map Server (IMS) technology has been developed allowing users to visualise and analyse the impacts of natural disasters by overlaying past events with socio-economic and physical-geographic information layers, including satellite imagery. Risk maps may



The PREVIEW website may be accessed at <http://www.grid.unep.ch/preview/>

also be generated by integrating data about population vulnerability, frequency and magnitude of disasters, thereby helping to identify potential environmental risks for various regions of the globe.

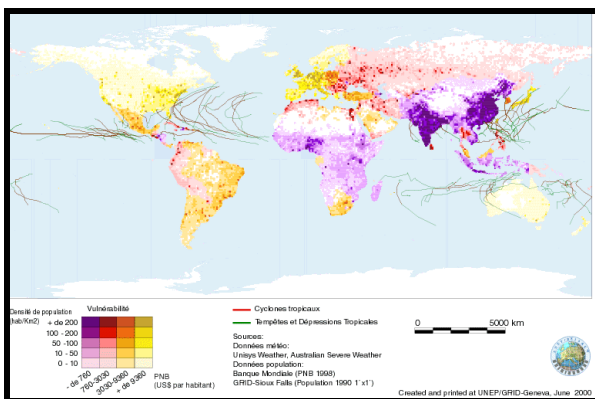


The IMS platform allows users to rapidly generate risk maps of various hazards, and to highlight their potential impacts on various regions of the world.

Early Warning Activities and Environment Assessments

Developing Indicators for Global Vulnerability Mapping

Assessing the vulnerability of countries to environmental disasters provides important insight in identifying priority regions requiring preventative actions. This issue was addressed in a United Nations Development Programme (UNDP) "Expert Meeting on Vulnerability and Risk Analysis and Indexing" in September 2000. One of the meeting's main recommendations was to develop a global risk/vulnerability index. This is a complex endeavour as hazards vary in type, frequency, magnitude, coverage (global/local) and duration. The inherent difficulties of



Maps are powerful tools for communicating environmental risks to decision makers and the general public. The above illustrates the trajectory of cyclones in 1998-1999 in relation to vulnerable populations. Areas of high vulnerability appear in purple.

comparing droughts in Africa with earthquakes in South America, for example, illustrates the complexity of dealing with a wide range of hazards in a systematic manner. Yet there is an urgent need to classify risks posed by natural and man-made hazards, in order to direct international assistance for prevention where it is most needed. As a follow-up project to the meeting's proposal, UNDP's Emergency Response Division commissioned GRID-Geneva to develop a vulnerability index based on a statistical analysis highlighting correlations between geophysical and socio-economic factors and the number of disaster victims, which is to be implemented in 2001.

Monitoring Forest and Wildfires

Monitoring the state of forest fires world-wide is one of the ongoing early warning activities undertaken by GRID-Geneva. Reports on the status of forest and wildfires were issued on a regular basis in 2000, supplemented with maps and satellite images, and rendered easily accessible via the Internet. Since initiating wildfires observation in 1998, GRID-Geneva

has noted a discernable lack of information on the fire situation in Africa. To address this data gap, a project was launched in collaboration with the Joint Research Centre of the European Union (EU/JRC) to help evaluate the significance of fire outbreaks in Africa. JRC is supporting the study in an important way by furnishing SPOT Vegetation satellite imagery, while GRID-Geneva is carrying out image analysis.

Madagascar was selected as a pilot country to test a fire detection methodology in light of the potential damage that uncontrolled fires could have on its extremely rich biodiversity. Fieldwork has also been conducted during the high fire season to identify precise positions of burned areas and to determine the key characteristics of fire scars. Based on results obtained, the implementation of a broader fires' monitoring system for Africa will be considered in collaboration with partner organisations.

Monitoring Cyanide Spread in the Danube River Basin

Not long after the end of the Balkans conflict, concern over regional water quality in the Danube river basin was rekindled following news of a cyanide spill from a gold and silver mine in Baia Maria, western Romania, on 30 January 2000. Large fish kills were reported, particularly in Hungary. The spill was carried by the Tisza River through Hungary to Yugoslavia, where it continued flowing down to the Danube. In response to a request for an emergency evaluation by the governments of Romania, Hungary and the Federal Republic of Yugoslavia, UNEP and the UN Office for Co-ordination of Humanitarian Affairs (OCHA) set up a Rapid Assessment Mission (RAM) composed of 20 scientists to monitor the extent and impacts of cyanide pollution. GRID-Geneva provided GIS expertise to prepare and regularly update a map tracking the course of the cyanide spill as it progressed along the tributaries of the Danube River. The map shows the region of the cyanide spill, concentrations of cyanide at measured points along the river system, principal populated areas and natural and protected zones nearby.

The final UNEP/OCHA report, entitled "Cyanide Spill at Baia Mare, Romania", was released in mid-April and reported that levels of cyanide concentration in the river Danube in Yugoslavia are not an immediate threat to human health. The report, however, recommended close monitoring of pollution downstream. Both the report and map are accessible from the GRID-Geneva website.

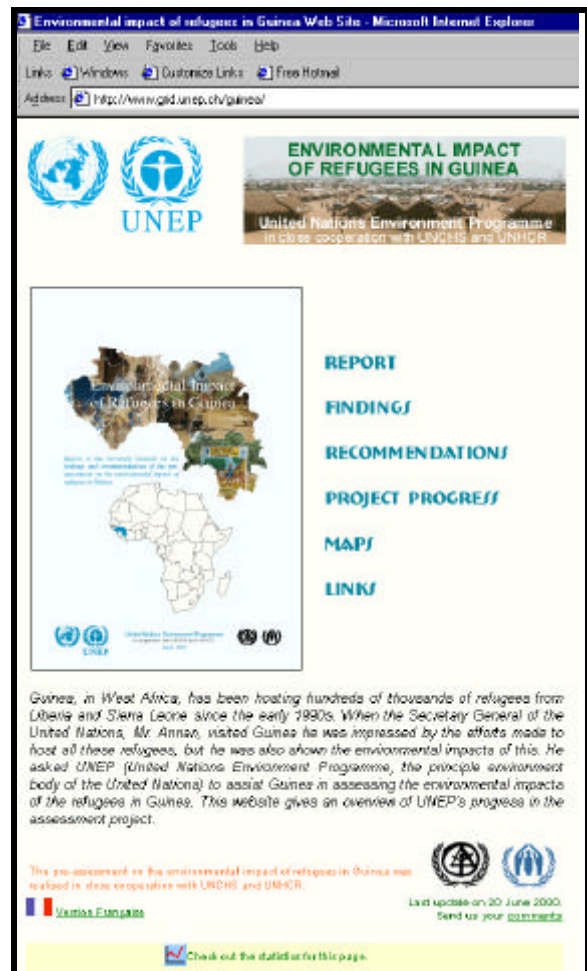
Early Warning Activities and Environment Assessments

Environmental Impacts of Refugees in Guinea

At the request of the Government of Guinea, the UN Secretary General Mr. Kofi Annan called on UNEP to examine the environmental impacts of some 600,000 refugees in southern Guinea who had fled conflicts in neighbouring Sierra Leone and Liberia. The UNEP-led assessment, which was undertaken in cooperation with the UN Centre for Human Settlements (Habitat) and the UN High Commission for Refugees (UNHCR), was based upon a desk-study followed by a joint field mission to affected areas in Guinea.

The conclusions of this study were released in a report on 15 March 2000, highlighting the significant impact that refugees have had on the natural resource base in southern Guinea, seriously undermining long-term environmental sustainability. Both rural areas and urban centres have been impacted by the large population influx. In rural areas, where the refugee camps are situated, increasing demand for food crops has led to the conversion of natural land and forest areas to agriculture, with severe impacts on biodiversity and water systems. Urban centres have also been hard-pressed to cope with refugee populations, in some cases exceeding the original population. This has generated important waste removal and water supply problems, leading to the total collapse in sanitation management systems in certain urban centres, with potentially dire human health implications.

The UNEP-led team called on the United Nations to develop an action plan to incorporate sustainable use and management of natural resources in rural areas and also develop a programme to improve capacities for urban environmental management. In response, the UN plans to seek donor support for the preparation of a comprehensive environmental action plan and a series of self-contained projects aimed at



The Guinea Report can be downloaded from GRID-Geneva's website at: <http://www.grid.unep.ch/guinea/>

preventing environmental degradation in Guinea.

GRID-Geneva was closely involved in the report's preparation, providing GIS and cartographic support as well as various graphical outputs. The office also designed and developed a website for the Guinea project and assumed responsibility for the report's layout. The full report, "Environmental Impact of Refugees in Guinea" and related information products including maps, are accessible from GRID-Geneva's website (<http://www.grid.unep.ch/guinea/>).



Use of wood in a refugee camp, Guinea.

Early Warning Activities and Environment Assessments

Monitoring Environmental Change in the Tigris-Euphrates Basin

In collaboration with UNEP's Regional Office for West Asia, GRIDs-Geneva and Sioux Falls embarked on a joint study to examine environmental change in the Tigris-Euphrates drainage basin. Remotely sensed imagery (Landsat MSS/ETM and Corona), as well as other ancillary data, are being used to assess changes that have taken place in the region over the past 30 years (1970-2000). The core of the watershed is shared by four countries: Turkey, Syria, Iraq and Iran. In addition to large-scale ecosystem disruption, the Tigris-Euphrates river system has attracted growing international attention in recent years due to the high water stress facing this semi-arid region, which is becoming a growing source of geo-political tension between riparian countries.

The Tigris-Euphrates watershed has undergone extensive land-cover and land-use changes as a result of major hydraulic works and associated development schemes implemented when riparian countries entered the 'Age of Dams' in the late 1950s and which is continuing into the twenty-first century. The project focuses on two key environmental "hot spots" that have undergone the greatest changes in the last decade: the headwaters of upper Mesopotamia; and the marshlands of lower Mesopotamia at the confluence of the twin rivers. In the headwater region, hundreds of kilometres of species-rich mountain valleys and terrestrial ecosystems have been inundated by a series of reservoirs created by a succession of large dams.

Originally covering an estimated area of 15,000 - 20,000 km², the Mesopotamian marshlands are one of the world's great wetlands whose aquatic ecosystem has supported unique human communities for millennia. In addition to being the largest wetlands in West Asia, their global significance stems from the role they play in the intercontinental migration of birds, and for sustaining endemic flora and fauna, important jewels in the biodiversity crown. Located in the downstream section of the basin in southern Iraq and extending partly into Iran, the marshlands have been devastated by massive drainage schemes,



The Tigris-Euphrates Drainage Basin - darker area shading and outlined in blue - has undergone extensive environmental change over the past 30 years. There is an urgent need for improved consultation and cooperation between riparian states on sharing the rivers' waters.

the cumulative impact of upstream damming and war damages.

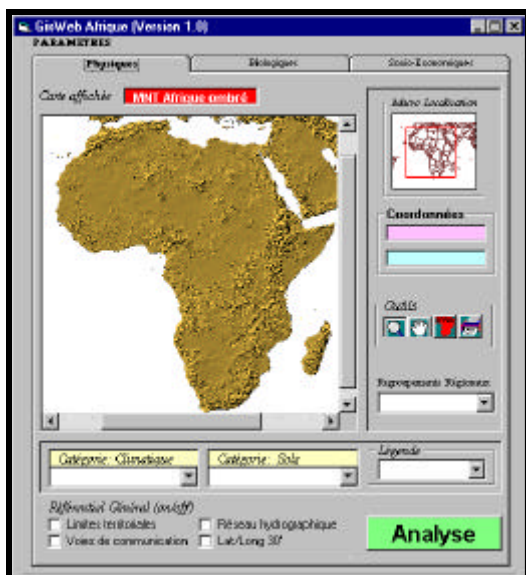
The results of this study are to be published in spring 2001 and will be accompanied by an interactive website, a suite of maps and posters to help raise regional and global awareness about the scale and significance of environmental change. UNEP hopes that such scientific assessments will promote a better understanding of the challenges facing transboundary waters in the Middle East, both in terms of development and ecosystem needs, and as well encourage the international community to assist riparian countries to reach agreement on sharing the rivers' waters.

GIS and Remote Sensing Services

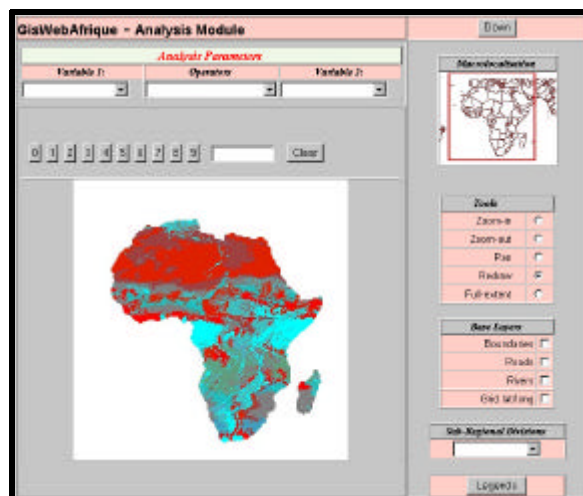
Delivering GIS Services via the Internet

In 1999, GRID-Geneva and the United Nations Institute for Training and Research (UNITAR) launched a joint project, which aims to disseminate Geographic Information System (GIS) technology to a wider community of users through the Internet. For this purpose, a software program called "GISWeb", was developed to create fast, dynamic mapping from digital spatial databases placed on the web. Initially, a prototype version of the software focusing on the African continent was developed and released on CD-ROM in early 2000, and an Internet version was completed later in the year. The spatial analytical capacity of the software application has been improved and expanded beyond the regional approach, and adapted to various geographical scales including the sub-regional, national and local levels for any area of the world. In this context, a training workshop was organised for government technical employees in Dakar, Senegal from 31 January – 6 February 2000, and hosted by the Centre de Suivi Ecologique (CSE). Participants gained hands-on experience in constructing GIS databases, which resulted in the development of a "GISWeb" for Senegal based on information layers supplied by national institutions.

In addition to extending the geographic scope of the application, work has been underway on improving and expanding the functional utilities of GISWeb, including the ability to combine different information layers to produce analytical maps and tabular results obtained from mathematical or logical operations.



GISWeb Africa is available on CD-ROM and is accessible via Internet. It is accompanied by a user guide and manual.



GISWeb includes a map calculator utility providing real-life GIS analysis capabilities on the fly.

These enhancements will offer real-life GIS capabilities at the decision-maker's fingertips. GISWeb will use the GRID network's extensive data set holdings as well as that held by partner organisations, but will initially focus on those relating to drought and desertification in Africa. Follow-up steps will focus on adding new functionalities to GISWeb, in order to render it more versatile and robust to carry out complex analyses. For this purpose, UNITAR with the support of DEWA/GRID is soliciting support from donors to continue the development of the application. Meanwhile, the GISWeb software is being tested by various users and is to be further modified in light of their feedback.

Strengthening the Assessment Capacity of UNEP Partner Organisations

Given the underlying importance of regional inputs to the Global Environmental Outlook (GEO) process, UNEP has over the years channelled considerable support towards building a global network of Collaborating Centres (CCs) to collect data on their sub-regions and carry out environmental assessments, as well as vulnerability and scenario development. In order to ensure effective participation by all CCs in a harmonised and integrated manner, UNEP in collaboration with the UN Institute for Training and Research (UNITAR) and with financial backing from the UN Fund for International Partnerships (UNFIP) launched a joint training programme to strengthen CC analytic and

GIS and Remote Sensing Services

reporting capacities. Towards this end, UNITAR and GRID-Geneva held a series of regional training seminars for several of the CCs and other UNEP partner institutions. The immediate objective of these workshops was to enhance CCs' substantive contributions to the GEO process, as well as to build up their environmental observation, assessment and early warning capabilities in the longer term.

In the last quarter of 2000, four regional training sessions were organised. The first of these was held for West Asia CCs in Manama, Bahrain from 18-20 August. This was followed by workshops for European CCs in Budapest, Hungary from 2-6 October, for African CCs in Harare, Zimbabwe, from 6-10 November, and for Latin American and Caribbean CCs in San José, Costa Rica, from 11-15 December. The core component of the training module focused on data handling, management and integration of core data sets, which directly responds to some key issues raised by the GEO process such as: what type of data should be used, for what purpose, and how will these data be validated? The need for CCs to acquire state-of-the-art and appropriate information technology to enable them to generate, share and disseminate their environmental information capital in a timely and effective manner was also examined.

Mapping the Spread of Indigenous Peoples in Major Ecoregions

As part of its "Living Planet" campaign, the World Wide Fund for Nature (WWF) International launched an innovative project to facilitate partnerships with indigenous, tribal and traditional peoples in ecoregion-based conservation. Initial steps included the identification of indigenous peoples living in each of the world's ecoregions. Their locations were then mapped in relation to a select list of two hundred outstanding ecoregions in the world for priority conservation, known as the "Global 200". Ethno-linguistic groups identified include all indigenous, tribal and traditional peoples of the world, although not only ethno-linguistic



GRID-Geneva (with UNITAR) organised regional training workshops on data management and handling for GEO Collaborating Centres and other UNEP partners.

groups fall into these categories. The results reveal a very significant overlap between the world's biodiversity-richest areas and high concentrations of distinct cultures.

GRID-Geneva provided Geographic Information System (GIS) support in data compilation and assemblage for WWF's map on "Indigenous and Traditional Peoples in the Global 200 Ecoregions", which was displayed at the EXPO 2000 in Hannover, Germany. GRID-Geneva also developed an interactive web version of the map allowing users to perform instantaneous querying and other useful functions. The map is hosted at UNEP's Internet-based environmental information network, known as "UNEP dot net".

The map below assembled by UNEP/GRID-Geneva for WWF International, illustrates the distribution of indigenous peoples living in some of the world's most exceptional habitats.



GIS and Remote Sensing Services

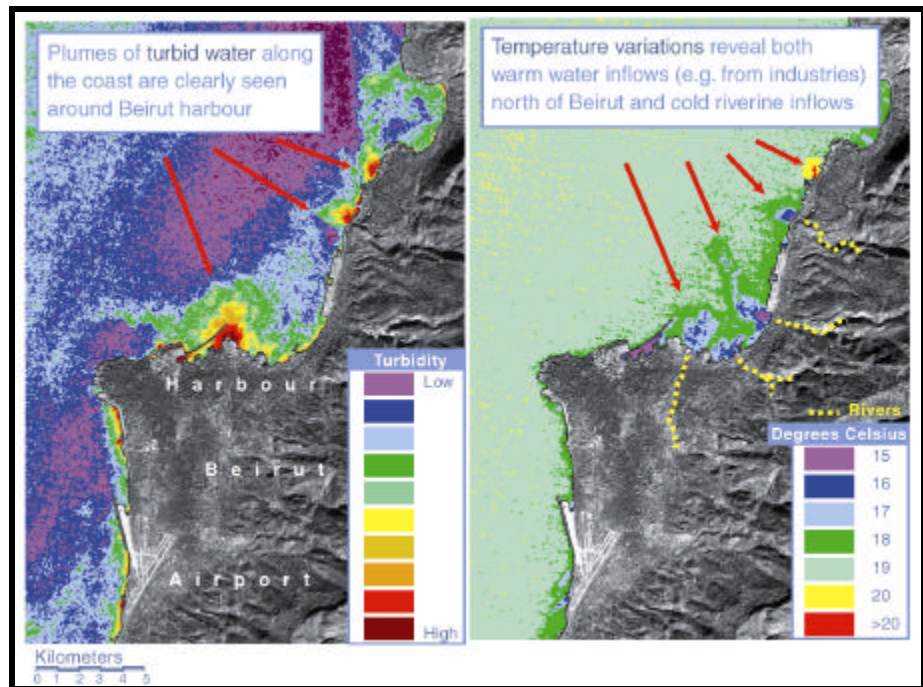
Remote Sensing Training for Lebanon's Environment Observatory

During 2000, GRID-Geneva continued its work to develop a Coastal Information System (CIS) for Lebanon, a project launched in 1998 in collaboration with the Centre for Environment and Development in the Arab Region and Europe (CEDARE) and the Lebanese Environment and Development Observatory (LEDO). The project's immediate objective is to develop a CIS for Lebanon by integrating coastal zone geographic information and marine water quality data derived from satellite image analysis. More specific problems to which the project aims to contribute a solution include: (i) reducing pollution of coastal waters, (ii) improved management of public access to beaches and (iii) controlling coastal erosion. Once operational, the CIS will be handed over to the Lebanese authorities, which will assume responsibility for its use and updating.

Within the context of this work, GRID-Geneva organised a two-week training course on remote sensing applications for a staff member of the LEDO. Located in the Lebanese Ministry of Environment, LEDO was created in 1999 and in the initial set-up phase is being supported by the United Nations Development Programme and the European Commission. LEDO is mandated to develop and co-ordinate an extensive environmental information base for the country, including the CIS. The LEDO trainee was provided with hands-on exercises on the basic principles of remote sensing and carried out image analysis tasks on the project pilot study area (the coastal zone approximately 50 km north and south of the capital Beirut).

Several core data sets were provided by LEDO, including a complete set of scanned 1:20,000 maps of the country. Once geo-rectified, these maps will constitute the topographic base to which all other data layers will be adjusted and overlaid. GRID-Geneva digitised several nautical charts of the

Lebanese coastal zone in order to generate a digital bathymetry model (DBM). The DBM will serve to help interpret the satellite imagery. Landsat 7 imagery of Lebanon, recorded in 1999 and 2000, has been supplied by GRID-Sioux Falls and, based on the test exercises, was deemed suitable to map land-derived sources of marine pollution.



Landsat 7 satellite imagery is being used to monitor environmental pollution in the Eastern Mediterranean sea.

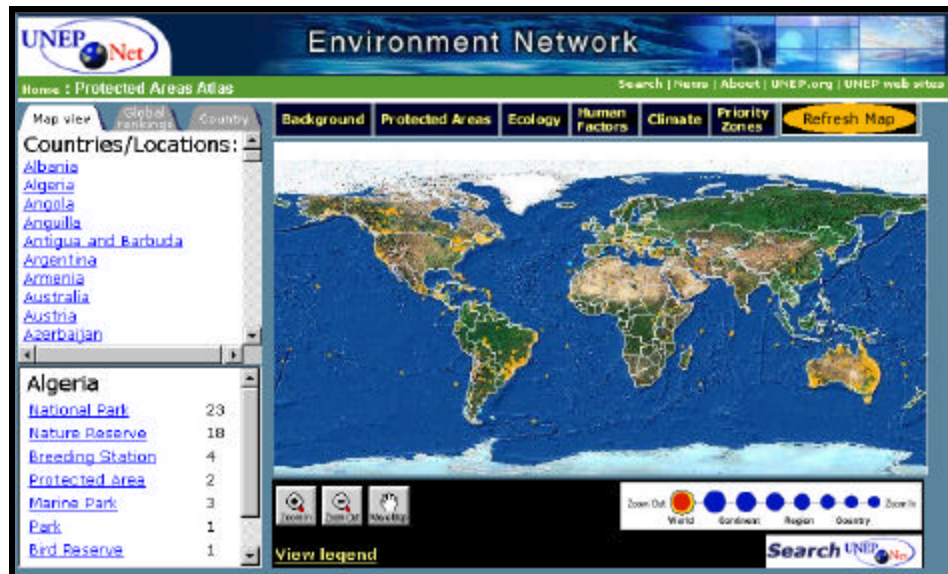
Bands 1-4 of Landsat 7 provide a good overview of the level of turbidity (e.g. river plumes) in the Lebanese coastal waters at a resolution of 30 meters (figure 1), whereas band 6 reveals sea temperature variations (e.g. warm and cold water plumes) at 60 meters resolution (figure 2). Panchromatic Band 8 provides an additional visual impression of land features at a resolution of 15 meters. Follow-up steps will include qualitative analysis of key parameters, namely turbidity and temperature, to locate areas of suspected marine pollution.

Data Management & Information Technology Support

UNEP dot Net: A Freeway to Global Environmental Data

The Division of Early Warning and Assessment (DEWA) is pioneering 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. Developed in collaboration with industry, academia, governments and NGOs, UNEP partners include world leaders in GIS technology, Environmental Systems Research Institute (ESRI) and a distinguished authority on disseminating the environmental message, National Geographic. The partnership uses the UNEP.Net environmental portal as the main channel of communication, launched during the twenty-first session of UNEP's Governing Council in February 2001. The portal is a concrete measure in support of the Aarhus Convention to improve public access to environmental information, and it does so instantly and effectively via the Internet, while respecting the intellectual property rights of the data creators. Functioning as a decentralized information system of remote environmental databases and servers, and equipped with dynamic applications such as a user-driven map-generating facility, UNEP.Net enables users to consolidate 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 sites act in complementary fashion, yet remain developmentally independent. As one of UNEP's main centres for global assessment and information management, GRID-Geneva has been a major contributor to the development of the UNEP.Net portal.

In early October 2000, a start-up meeting was held in Redlands, California, at ESRI which laid down the foundations of UNEP.Net, and prepared a preliminary prototype for the proposed information system. A technical team comprised of staff from GRIDs-Arendal, Geneva, Nairobi and the World Conservation Monitoring Centre (WCMC) as well as UNEP headquarters, was formed to develop the



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

applications for the portal. Working intensively for a five-week period in Redlands, the development team was backstopped by other GRID centres on a case-by-case basis. GRID-Geneva was responsible for the development of several Internet Mapping Solutions (IMS), allowing for the dynamic visualisation of environmental information. A main theme, "protected areas", was chosen to illustrate the application's functions and utility. Information on protected areas was compiled from a wide range of sources, including ESRI, GRID centres, IUCN, UNESCO, WCMC and WWF, dealing with a variety of issues including national parks, human pressure zones, fires' incidence, population density, ecoregions, endangered species and more. For the first time now, users are able to access protected areas-related information via a single website powered by this IMS tool. Other applications developed by GRID-Geneva deal with the location of nuclear power plants and population density and the relationship between WWF's priority ecoregions for conservation and indigenous peoples.

One of the major components of the portal is the UNEP Net Catalogue, which is a versatile reference tool for geospatial environmental information produced by UNEP and partner organisations. It provides key meta-data describing UNEP's data holdings that will be of use to decision-makers and scientists, as well as the general public. Along with other UNEP centres and partners, GRID-Geneva actively participated in documenting its data sets for input to the Catalogue.

Data Management & Information Technology Support

Catalogue of Data Sources

In 2000, GRID-Geneva was closely involved in developing products based on the European Environment Agency's (EEA) meta-data tool, known as the Catalogue of Data Sources (CDS). Three major products were developed and enhanced, namely the Alpine-CDS, Swiss-CDS and Geneva-CDS. At the same time, GRID-Geneva has continued its work on updating and enhancing UNEP/GRID's Meta-data Directory (MDD).

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 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 backstopping from GRID-Geneva. Currently available in English, plans are underway to translate it into the languages of all Alpine Convention member



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

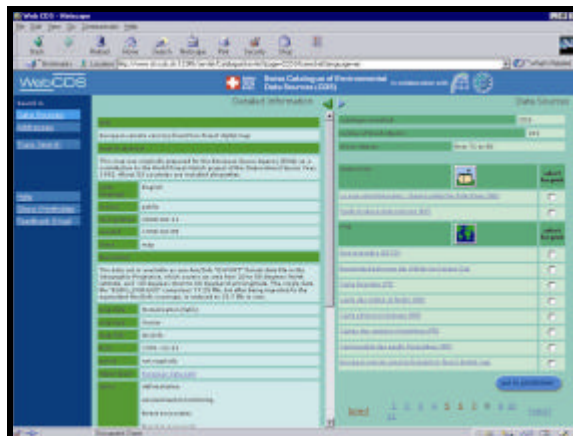
countries. The Alpine-CDS presently holds 2,753 addresses and 1,133 metadata, and its multi-lingual support system allows for searches to be made simultaneously in a dozen European languages.

On the request of Switzerland, a web portal is also under preparation which will provide access to the various services offered by SOIA. GRID-Geneva has been mandated to host and manage both the meta-database and website at least until 2002 when a permanent Secretariat of the Alpine Convention, along with a new coordination unit, will be established.

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. The CH-CDS website (<http://www.ch-cds.ch>) was officially launched on the Internet on 16th June 2000 in a joint ceremony attended by representatives from Geneva Canton's Department of Interior, Agriculture, Environment and Energy (DIAEE), SAEFL and UNEP.

The types of data collected, the methodology used and the contact persons are some of the key information included in the Swiss CDS. To date, 16 cantons, 19 federal agencies and two cities are participating in the project on a voluntary basis. The catalogue currently holds 2,551 addresses and 3,690 meta-data descriptions of environmental data sets.



The Swiss-CDS allows users to perform an extensive search of available Swiss environmental data.

Geneva-CDS

GRID-Geneva has been commissioned by the DIAEE since 1999 to maintain and update the Geneva-CDS (CDS-GE). Developed in parallel with the Swiss-CDS, the CDS-GE is considered by the Canton of Geneva to be a critical management tool, as it documents for the first time in a "one-stop-shop" all environmental information held by Geneva's government agencies. To facilitate the collection of meta-data from the various partners, a network of some 30 contact points

has been established. During the course of this year, GRID-Geneva staff have provided regular information and training sessions to partners on new utilities developed for CDS-GE.

Updating of the GRID Mdd

Version 3 of the GRID Meta-Data Directory (Mdd) was completed and disseminated in June 2000. The GRID Mdd is an electronic catalogue of environmental data sets, allowing GRID Centres and other users to know "who holds what data and information assets and where". Updating of the GRID Mdd was funded by NASA's Goddard Space Flight Center (GSFC) since late 1998.

The new version of GRID's meta-data management tool offers new functionalities and a more user-friendly interface for users. The GRID Mdd now contains 1083 entries describing spatial data holdings of participating centres. The updated information has also been transferred to NASA's Global Change Master Directory (GCMD).



Support to City of Geneva's Environmental Web Products

EIS for the Geneva Region

On the request of DIAEE, GRID-Geneva developed a web portal for an Environmental Information System (EIS) for the Geneva Region, known by its French acronym SIEnG. This is a multi-sectoral project involving various government departments that aims to provide an integrated platform for accessing environmental and energy-related information in the Lake Geneva region. The SIEnG website (<http://www.geneve.ch/sieng/>) was launched in the framework of the Swiss Catalogue of Data Sources (CDS) on 16 June 2000.

CEROI-Geneva

The proposal to develop a City Environment Report on the Internet (CEROI) for Geneva was first introduced by GRID-Geneva to local authorities in 1998, in support of Local Agenda 21 activities. With financial support from the City of Geneva and an earnest willingness by government agencies to provide the necessary information, considerable progress was realised in developing the CEROI-Geneva project in 2000. Pertinent environmental indicators were identified and a protocol for information sharing and website maintenance was prepared. The CEROI-Geneva portal will be officially inaugurated in Spring 2001, and will be jointly managed by the partner organisations.

UNEP Balkans Website

In a follow-up phase to the work of the Balkans Task Force (BTF), UNEP created in August 2000 a Balkans Unit to "initiate a humanitarian environmental clean-up project in the Federal Republic of Yugoslavia and to address war-related environmental damages". GRID-Geneva designed and developed the UNEP Balkans website, with a view to ensuring timely and transparent access to information for partner organisations and scientists, as well as the general public and media. This includes state of environment reports for countries in the region, mission reports, thematic maps, and a special dossier on depleted uranium. The UNEP Balkans website may be consulted at: <http://balkans.unep.ch/>

The UNEP Balkans website, hosted and maintained by GRID-Geneva,



and maintained by GRID-Geneva, provides the latest information on environmental rehabilitation activities in the region. A wide range of information products are on offer including mission reports, press statements, maps and photos.

In Service of the Partnership: GRID-Geneva Advisory Board

The GRID-Geneva Partnership Advisory Board, composed of representatives from SAEFL, the University of Geneva and UNEP, convened twice during 2000 to review progress in the implementation of the programme of work and status in all areas, including staffing plans, budget and project proposals. Overall, the Board expressed its pleasure with the diversified activities and increasing responsibilities assumed by the office within the framework of the assessment and early warning mission of UNEP, as well as for providing important services to partner agencies. The annual accounts were judged to be in a sound situation, and the office was given the "green light" to continue several new project activities with additional partners, as well as providing market-oriented consultancy services in 2001.

Advisory Board Members



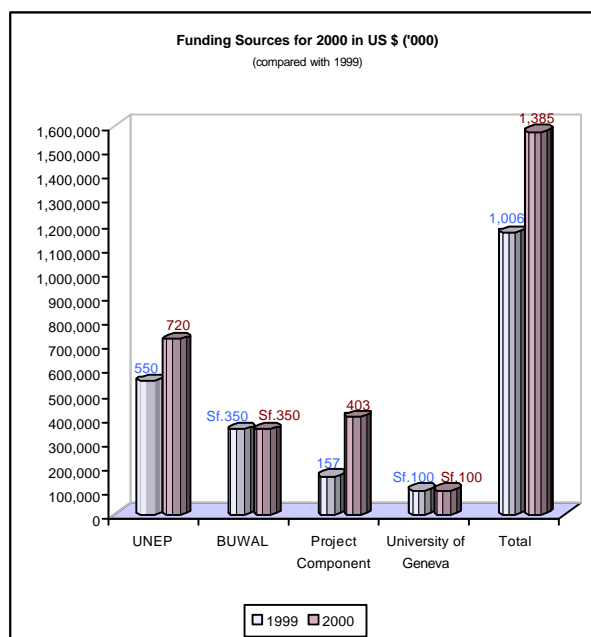
GRID-Geneva Budget Expenditure 2000

Operating Costs

Personnel	US \$ 978,000
Infrastructure	116,500
(hardware/software/networks)	
Miscellaneous	226,500
(communications/travel/other)	
Total	1,321,000

Balance Sheet

Total Payments	1,384,764
Total Disbursements	1,321,000
Net Financial Status	63,764
(as of 01/01/01)	



Selected GRID-Geneva Outputs

Publications

Environmental Impact of Refugees in Guinea, UNEP/UNHCS/UNHCR, March 2000.



This report documents the findings of a UNEP led pre-assessment mission, undertaken in collaboration with the UNCHS and UNHCR, on the environmental impacts of refugees in Guinea. The report, which was produced on the request of the UN Secretary General, provides recommendations on mitigating environmental degradation and calls for the development of an action plan on sustainable resource use in rural areas and improving capacities for urban environmental management. GRID-Geneva was closely involved in the report's preparation, providing GIS and cartographic support as well as various other graphical inputs.

“Down to earth”: Soil degradation and sustainable development in Europe, EEA/ UNEP, 2000.



The third in a series of joint annual messages released by UNEP and the EEA, this report provides a broad assessment of soil conditions in the pan-European region. It describes the degradation of soil, its relevance in the European and global contexts, and the links between soil and sustainable development. The report is mainly addressed to policy makers and the general public.

Cyanide Spill at Baia Mare, Romania, UNEP/ OCHA Assessment Mission, March, 2000.

This report summarises the findings of a joint UNEP/ OCHA and ROE-led investigative mission to areas affected by the cyanide spill at Baia Mare, Romania and was carried out by a team of 20 scientists during the period February 23 to March 6, 2000. It included sampling analysis and discussion with local authorities and NGOs in the affected areas. The report provides background information; an assessment of the spill; and recommendations for the future action. GRID-Geneva provided GIS/ cartographic support monitoring the progress and extent of the spill.

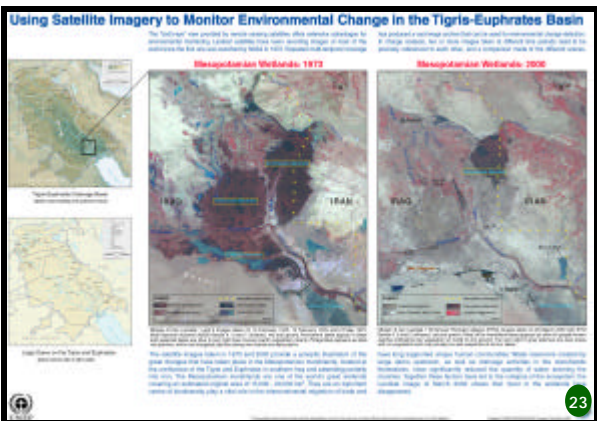
Cartographic and Poster Products

Maps

1. Course of the Cyanide Spill through S/E European Rivers (Danube Basin ~ Lapos, Szamos, Tsiza, Danube)
2. Environmental Impact of Refugees in Guinea Regions
3. Guinea Refugee Areas
4. Visited Refugee Camps in Guinea
5. Environmental Impact of Refugees in Forecariah Area, Guinea
6. Environmental Impact of Refugees in Gueckedou Area, Guinea
7. Tigris and Euphrates Drainage Basins
8. Tigris and Euphrates Sub-basins
9. Dams on the Tigris and Euphrates Rivers
10. Population Density in the Tigris and Euphrates Basins
11. Northern Iraq
12. Fires in Ethiopia
13. Flooding in Central and Eastern Europe
14. Indigenous and Traditional Peoples in the Global 200 Ecoregions (in collaboration with WWF)
15. Land Cover/Land Use in Central America (in collaboration with IUCN)
16. Sites Identified as being Targeted by Ordnance Containing Depleted Uranium during the 1999 Kosovo Conflict
17. UNEP Assessment Mission to Kosovo - Visited Sites
18. Topographic Map of Madagascar (Scale: 1: 1,000,000)
19. Radar Map of Madagascar
20. Earthquakes since 1980 having caused 1,000 or more deaths
21. Annual Probability of Earthquake Occurrence within 200km with Magnitude Greater than 5,4 on Richter Scale

Posters

21. Satellite Applications for Disaster Impact Assessments
22. Using GIS and Remote Sensing to Develop a Coastal Information System for Lebanon
23. Using Satellite Imagery to Monitor Environmental Change in the Tigris Euphrates Basin
24. Nuclear Facilities around the World



Major Conferences, Workshops and Missions

GRID-Geneva organised and/or participated in the activities of the following workshops, conferences and missions during the year 2000.a

UNEP/TIE, Coordinating Meeting on Tourism,
Paris, France, 20-21 January

Plan Bleu, Establishing an Information System for
Environmental Monitoring
Sophia-Antipolis, France, 24-28 January

UNEP, GEO-3 Internal Coordination Meeting
Nairobi, Kenya, 31 January-3 February

OSS/UNITAR/GRID-Geneva, National Training
Workshop on GISWeb-Africa
Dakar, Senegal, 29 January-5 February

UN-OOSA, Inter-Agency Meeting on Outer Space
Affairs
Vienna, Austria, 2-4 February

GRID-Geneva, Advisory Board Meeting
Bern, Switzerland, 12 April

UNEP, Special Session of Governing Council
Malmö, Sweden, 29-31 May

Official launching of the Geneva-CDS and Swiss-
CDS by SAEFL and Canton of Geneva
Geneva, Switzerland, 16 June

UNEP, GEO-3 Regional Meeting of European
Collaborating Centres
Geneva, Switzerland, 21-23 June

"Nuit de la Science" (Science Night)
Geneva, Switzerland, 7 July

UNDP/DSSP, Expert Meeting on
Vulnerability and Risk Analysis
and Indexing
Geneva, Switzerland,
11-12 September

UNEP, GEO-3 Meeting on Chapter
3 "Outlooks" Production
Cambridge, United Kingdom,
11-15 September

ETC-CDS International
Symposium 2000
Hannover, Germany,
28-29 September

UNEP, Global Environmental Information Networking
and Information System Design Workshop
Redlands, California, USA, 28 September-6 October
UNEP/UNITAR, Regional Training Workshop on
Data/Information Management for GEO-3
Manama, Bahrain, 2-6 October

CTM ERS/RAC, Mediterranean Environment
Remotely Sensed Information Web (MERSI-Web)
Rabat, Morocco, 25 October

CRTS, Middle East and African Remote Sensing
International Symposium (MARISY 2000)
Rabat, Morocco, 26-27 October

GRID-Geneva, Advisory Board Meeting
Geneva, Switzerland, 3 November

UNEP, European Experts Consultation on GEO-3
Chapter 3 'Outlooks'
Budapest, Hungary, 6-8 November

GRID-Geneva, Biodiversity Assessment Mission
Madagascar, 10 - 28 November

UNEP, Exploratory Meeting on the Preparation of a
Sub-regional GEO-3 Report for the Caucasus
Tbilisi, Georgia, 4-7 December

UNEP/UNITAR, Regional Training Workshop on
Data/Information Management for GEO-3
San Jose, Costa Rica, 11-15 December



UNEP/DEWA Staff Retreat (Nairobi, Kenya, November 1999)

GRID-Geneva Staff

Karine Bachmann
Consultant, CEROI-Geneva

Barbara Bierhuizen
GIS/Remote Sensing Analyst and Mediterranean
Capacity Building

Hy Dao
Head, Meta-data and Socio-Economics Unit

Dominique Del Pietro
GIS Specialist

Linda Duquesnoy
Administrative Assistant & Secretary

Yaniss Guigoz
Consultant, GEO-3 Data Specialist

Frederic Jacot-Guillarmod
Consultant, GRID Meta-data Directory (MdD)

Akiko Harayama
Consultant, GEO-3 Data Specialist

Jean-Michel Jaquet
Head, Earth Observation Unit

Roman Kanala
Consultant, Systems Administrator

Heidi Krapf (at SAEFL, Bern)
Consultant, Alpine CDS and Alpine Indicators

Carlos Munoz
Consultant, GIS Web Programming and Data
Management

Carolien ten Oever
GIS/Remote Sensing Officer

Hassan Partow
Information Officer

Pascal Peduzzi
GIS/Remote Sensing Officer

Jean-Philippe Richard
Consultant, Alpine and Swiss CDS Data Specialist

Diana Rizzolio
Consultant, Balkans Task Force (BTF) Information
Officer

Stefan Schwarzer
Consultant, GEO3 GIS & Data Management

Frederic Vogel
Consultant, CDS Geneva Canton Administrator

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

Jaap van Woerden
Consultant, GEO3 Data Coordinator

Guest Researchers in 2000

John Bigazaza
Certificate of Geomatics, University of Geneva

Bruno Chatenoux
B.Sc. Geology, University of Geneva

Christian Herold
B.Sc. Geology, University of Geneva

Didier Morend
Ph.D. Geology, University of Geneva

Frank Ostermann
B.A. Geography, University of Hamburg

Henry Rueff
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Walter Silverio
M.Sc. Geology, University of Geneva

Fabiana Succetti
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Acronyms

Alpine-CDS - Alpine Catalogue of Data Sources
BTF - Balkans Task Force
CC - Collaborating Centre
CEDARE - Centre for Environment and Development in the Arab Region and Europe
CD-ROM - Compact Disc - Read Only Memory
CDS - Catalogue of Data Sources
CIS - Coastal Information System
CEE - Central and Eastern Europe
CEROI - Cities Environment Report On the Internet
CEU - Central European University
CIS - Commonwealth of Independent States
CSE - Centre de Suivi Ecologique (Senegal)
DBM - Digital Bathymetry Model
DEWA - Division of Early Warning and Assessment (UNEP)
DIAEE - Department of Interior, Agriculture, Environment and Energy (Canton of Geneva)
EEA - European Environment Agency
EIS - Environmental Information System
ESRI - Environmental Systems Research Institute
GCMD - Global Change Master Directory
Geneva-CDS - Geneva Catalogue of Data Sources
GEO - Global Environmental Outlook
GIS - Geographic Information System
GRID - Global Resource Information Database (UNEP)
GSFC - Goddard Space Flight Centre
IEH - International Environment House
IMS - Internet Map Server/Solutions
JRC - Joint Research Centre (of the European Commission)
LEDO - Lebanese Environment and Development Observatory
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)
SoE - State of the Environment
SOIA - System for Observation of and Information on the Alps
UN - United Nations
UNCHS - United Nations Conference on Human Settlements (Habitat)
UNDP - United Nations Development Programme
UNEP - United Nations Environment Programme
UNFIP - United Nations Fund for International Partnerships
UNHCR - United Nations High Commission for Refugees
UNITAR - United Nations Institute for Training and Research
WCMC - World Conservation Monitoring Centre
WWF - World Wide Fund for Nature International
WWW - World Wide Web

The UNEP/GRID Network

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