



DEWA/GRID-Europe

Bulletin No. 1 - 2008 (January - June)

Volume 10, Issue 1, September 2008

New Ramsar sites mapped

by Andrea de Bono

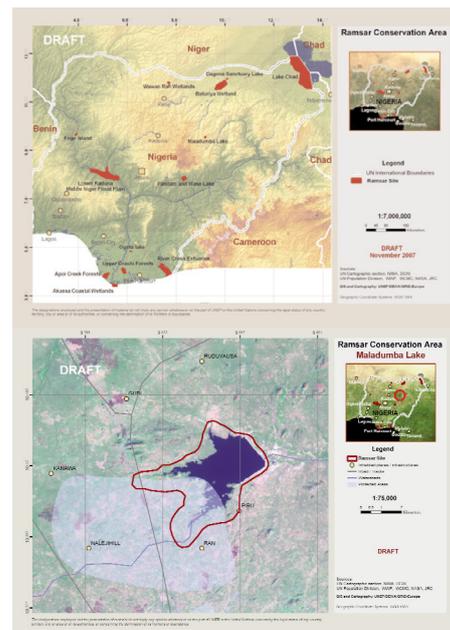
The Federal Ministry of Environment of Nigeria has designated an additional nine wetlands for the Ramsar List, following on from the designation of "Lake Chad Wetlands in Nigeria" all effective as of 30 April 2008. Taken together, the sites present a fascinating array of wetland types, including swamp forests, river floodplains, mangroves and lakes, and all are extremely important for their support for flora and fauna, and for the ecosystem services they provide for the local communities. Most or all of them are formally state-owned, but in practical terms under the customary control of local families and communities, which

brings with it in some cases a challenging set of threats and opportunities.

The WWF Global Freshwater Programme has supported the Ministry in developing these designations, with the contributions of Professors Ogunkoya and Dami of the Department of Geography, University of Maidugui, and the Niger Delta Wetlands Centre. UNEP/DEWA/GRID-Europe contributed in the preparation of the site maps.

GRID-Europe delimited the sites contour on the basis of Ramsar Officer suggestions with the further support of GIS data sets. In order to finalize the site borders with the greatest accuracy possible, the following GIS data sets were used:

- Elevation data model at 90 m resolution (SRTM).
- Global Land Cover map (GLC 2000).
- Landsat images.
- The World Database on Protected Areas (WDPA) from WCMC.
- Data sets including infrastructure such as inhabited places, roads, and rivers.



Maps of the proposed Ramsar conservation areas

The final outputs, including maps and GIS data sets, were sent to the Ramsar Office for final checking and validation. ■

Inside this issue

New Ramsar sites mapped

UNEP Yearbook 2008

Earth Observation (EO) Data Sharing and Information Networking workshop

Climate change and official statistics

French version of "Africa, atlas of our changing environment" launch

New UNEP/ROE Intranet application for Country profiles

Old cartographic Mosaic

Geneva Metropolitan pilot project on landcover

Division of Early Warning and Assessment Office for Europe

11 ch. des Anémones

1219 Châtelaine

Switzerland

Tel. + 41 22 917 8294

Fax + 41 22 917 8029

Web: www.grid.unep.ch

E-mail: infogrid@grid.unep.ch

Editors: Diana Rizzolio, Ron Witt

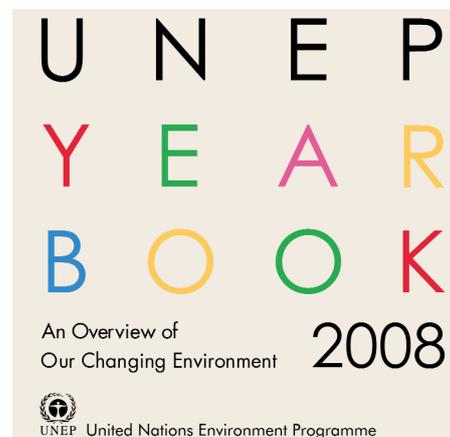
UNEP Yearbook 2008

by Diana Rizzolio

The UNEP Year Book 2008 (formerly the GEO Year Book) is the fifth annual report on the changing environment produced by the United Nations Environment Programme in collaboration with many world environmental experts, and with inputs from GRID-Europe.

The UNEP Year Book 2008 highlights the increasing complexity and interconnections of climate change, ecosystem integrity, human well-being and economic development. It examines the emergence and influence of economic mechanisms and market-driven approaches for addressing environmental degradation, as well as recent research findings and policy decisions that affect our awareness of and response to changes in our global environment.

Certain core data sets from the GEO Data Portal, managed by GRID-Europe,



UNEP Yearbook 2008 Cover

were used to illustrate the report, including the key indicator on progress with ratification of Multilateral Environmental Agreements (MEAs). ■

Earth Observation (EO) Data Sharing and Information Networking workshop

by Ron Witt

As a continuation of past interactions to improve capacities for environmental data handling and analysis, and to facilitate related interactions among government and civil society experts in this field, the "EO Data Sharing and Information Networking Workshop" was held to introduce and explore the very meaning of these concepts with representatives from the three countries of the South Caucasus (Armenia, Azerbaijan and Georgia). The EO Data Workshop was both an occasion to take stock of the current status of relevant activities, projects and levels of practice/expertise in the three countries (and across the region), and offer some potential solutions to current barriers or shortcomings in these data-related realms.

The EO Data Workshop was organized by UNEP/DEWA/GRID-Europe in conjunction with Georgian partners, the Ministry of Environmental Protection (GMEP) and the Center for Monitoring and Prognostication ("forecasting"; CMP).

Day One of four was organised to introduce the overall plan for the Workshop and give the three delegations sufficient time to prepare a series of presentations on their national situation in terms of current data

sharing practices, availability of data and related management capabilities, and perceived needs/gaps. There were also national presentations given on EO data activities/projects and examples of "good practices" in data sharing already in place and functioning.

Days Three to Four focused on international, regional and national examples of data sharing and information networking, and current uses of environmental data and remote sensing at regional/national levels in the South Caucasus. This was done both through presentations and follow-up discussions, in which members of all three delegations and international staff (UN et al.) were able to describe their experiences, along with successes and failures and "lessons learned" in these realms.

Two representatives of UNDP-Tbilisi took part in the EO Data Workshop, and explained the "One UN" approach in the context of the Caucasus countries, along with the entire UNDAF process there, with Georgia as a current example.

In the end, the three delegations endorsed a series of proposals for future data sharing/networking activities/potential projects in the South Caucasus region as follows:

- development of a S. Caucasus Regional Data Portal for data sharing among the three countries (and this data portal would also have a specific role in supporting "early warning" of impending disasters/threats and alerts);
- a harmonized land cover mapping project for the region using international standards (e.g. LCCS); and
- a potential second Caucasus Environment Outlook (CEO-2) assessment report based on scientific data.

UNEP pledged that it would assist the three countries of the S. Caucasus in scoping and defining these projects in detail, along with an effort to obtain related funding that would be needed, as long as the countries confirm their interest in same. Realisation of even one of these three project concepts would go a long way to fostering trans-boundary cooperation in environmental data sharing and improved understanding of environmental change and problems across the South Caucasus. ■

Climate change and official statistics

by Jaap van Woerden

Climate change is high on the political agenda at all levels. The global official statistics community presently treats the issue of climate change in a rather *ad hoc* manner, with many differences among regions, countries and organizations. The "Conference on Climate Change and Official Statistics", hosted by Statistics Norway in Oslo, and organized by the United Nations Statistics Division (UNSD) in collaboration with the Statistical Office of the European Communities (Eurostat) and the World Bank, addressed the challenge of how official statistics can contribute to the measurement and monitoring of the different aspects of climate change and to bring together all current activities into a coherent framework. It was attended by 116 participants representing 55 countries (national statistical offices and environmental ministries) and 15 international organizations.

UNEP/DEWA has teamed up with UNSD to help improve the collection and availability of environmental data, most notably through the Joint Questionnaire on Environment Statistics – which in turn is coordinated with the OECD/Eurostat Joint Questionnaire.

The conference acted as a forum for the exploration of ideas and established an agenda for future action by the global official statistics community, which will be submitted to the 40th session of the UN Statistical Commission for discussion and endorsement in February 2009.

The presentations and the discussion showed that there is a huge demand for more and better statistics to understand the driving forces, pressures, impacts of and responses to climate change. Engaging more with IPCC and UNFCCC on a formal basis, as well as transfer of knowledge to countries, are regarded as urgent steps to be taken on the way to improve the availability of consistent climate data of high quality. However, much of the data demand is beyond the competence of official statistics and national statistical offices.

The core competence of official statistics is to deal with the present and the past processes. Many offices do not have the resources to address these issues and do not have environment statistics programmes. On the other hand, the existence of national climate change strategies in more and more countries, as well as the high interest in this conference suggest that there is a change in

momentum, and that countries' interest in environment statistics is increasing.

Indicators are valuable tools to convey important messages for policy formulation, decision-making and the general public. Indicator sets are policy-driven and country-specific, and must have a clear practical value. Thus there is a need to develop a new "basket" of global climate change indicators, and more work may be needed for the further development and implementation of the System of Integrated Environmental-Economic Accounts (SEEA), a framework used in environmental-economic analysis in various, mainly developed, countries. A step-wise approach and the development of simplified standard tables that many countries can implement is an essential part of the agenda. Much more also has to be done on the use of geographical information systems (GIS) and on the development of spatial data infrastructures. There is a great potential in the use of GIS for spatial analysis of the impacts of and vulnerability to climate change and for the integrated analysis of different types of information. ■

Launch of the french version of "Africa, atlas of our changing environment"

by Pascal Peduzzi

Following the success of "One Planet Many People, an atlas of our changing environment", UNEP launched a new atlas focusing exclusively on Africa. The official launch was made at the African Ministerial Conference on the Environment (AMCEN) in Johannesburg as well as in London. Given that the Atlas was published both in English and French, the French version was launched on 10 June 2008 in Geneva at the International Environment House, followed by a press conference at the "Palais des Nations" and two radio broadcasts.

The Atlas aims to provide visual evidence of ecological assets, transboundary issues and environmental changes to make the public and decision-makers aware of these.

It also tells stories of local changes in all 54 countries over 400 pages. Graphs draw attention towards Millennium Development Goal (MDG) 7: Environmental Sustainability. The stories are supported by 316 satellite images, 319 ground photos and 151 maps.

All material is non copy-righted, and available for free use. The Atlas itself can be downloaded at: na.unep.net/atlas/AfricaAtlas

Key findings

Many African countries made environmental improvements in the field of water and sanitation, but few countries have expanded protected areas – currently numbering over 3,000 across the continent. However, loss of forest is a major concern in 35 countries. In Cameroon, deforestation converts an

equivalent of 700 football fields per day, and Africa is losing more than four million hectares of forest every year, twice the world's average deforestation rate.

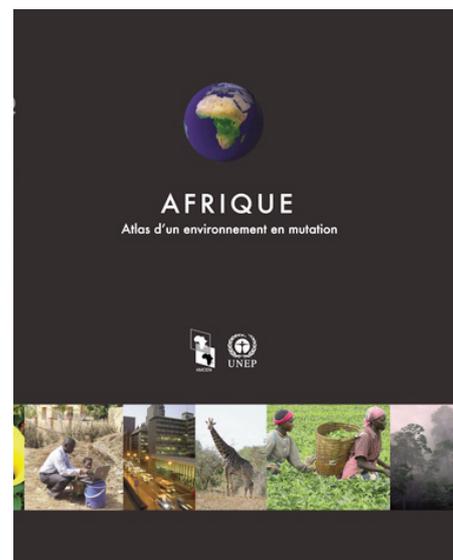
Biodiversity loss is a major issue in 34 countries, while land degradation / soil erosion is a major worry for 32 countries in Africa. The Atlas revealed that some areas across the continent are losing over 50 metric tonnes of soil per hectare per year.

Other problems include desertification, as well as water stress, rising pollution and coping with rapid urbanization. Over 300 million people on the continent already face water scarcity, and areas experiencing water shortages in Sub-Saharan Africa are expected to increase by almost a third by 2050.

Climate change is emerging as a driving force behind many of these problems and is likely to intensify the already dramatic transformations taking place across the continent. Although Africa produces only four per cent of the world's total carbon dioxide emissions, its inhabitants are poised to suffer disproportionately from the consequences of global climate change.

Africa's capacity to adapt to climate change is relatively low, with projected costs estimated to reach at least 5-10 per cent of GDP.

Finally, transboundary issues are a key feature of Africa's environment, from international river basins to cross-border air pollution. Refugee migrations are also causing further pressure on the environment, with major population movements due to conflict but also increasingly as a result of food and



Africa Atlas, available in French and English

water shortages. Cooperative approaches involving several bordering countries are becoming essential for conserving and enhancing shared ecosystems if they are to remain productive into the 21st century.

Taking advantage of the latest space technology and Earth observation science, including the 36-year legacy of the US Landsat satellite programme, the Atlas serves to demonstrate the potential of satellite imagery in monitoring ecosystems and natural resources dynamics. This in turn can provide the kind of hard, evidence-based data to support political decisions aimed at improving management of Africa's natural resources. ■

New UNEP/ROE Intranet application for Country profiles

by Yaniss Guigoz & Jean-Philippe Richard

UNEP's Regional Office for Europe (UNEP/ROE) needs a restricted internet space (intranet) where its staff can exchange, post and find useful information. One of the most important types of information concerns countries, in the form of "country profiles". These must provide basic facts on countries such as official contacts, information on and links to governments, geographic information, statistical figures and maps, environmental issues, and the activities/projects of UNEP and other international bodies in countries.

In order to manage such data more easily, GRID-Europe was approached to re-develop the country profiles section of the former ROE intranet, and develop a new tool for this purpose.

GRID-Europe developed this application since early 2008 on a ROE dedicated server hosted in-house. It offers the possibility for authorized ROE staff to remotely manage country profiles including contact information for each country through a web browser. In addition, some elements like indicators and maps are linked to the GEO Data Portal by a webservice; this country profile information is now integrated and visible in the ROE intranet. ■

ROE Intranet - Norway Country profile

Old cartography Mosaic

by Bernard Kriess, Jean-Michel Jaquet & Diana Rizzolio

GRID-Europe has been working the last 10 years on several land cover studies and projects for the Geneva Canton Territorial Department. Among these a project on developing a mosaic using 19th-century maps has been conducted.

The Geneva Canton Cadastral Surveying Agency (DCMO) holds in its records map surveys established by Guillaume Henri Dufour in 1837-1838, and updated in 1871. The mapping was carried out individually for each Geneva Canton administrative division and has been manually reviewed and annotated by municipalities until the early 20th century. Only the municipality of the city of Geneva was not covered by the Dufour maps. This gap was filled by the Grange map surveys between 1896 and 1911.

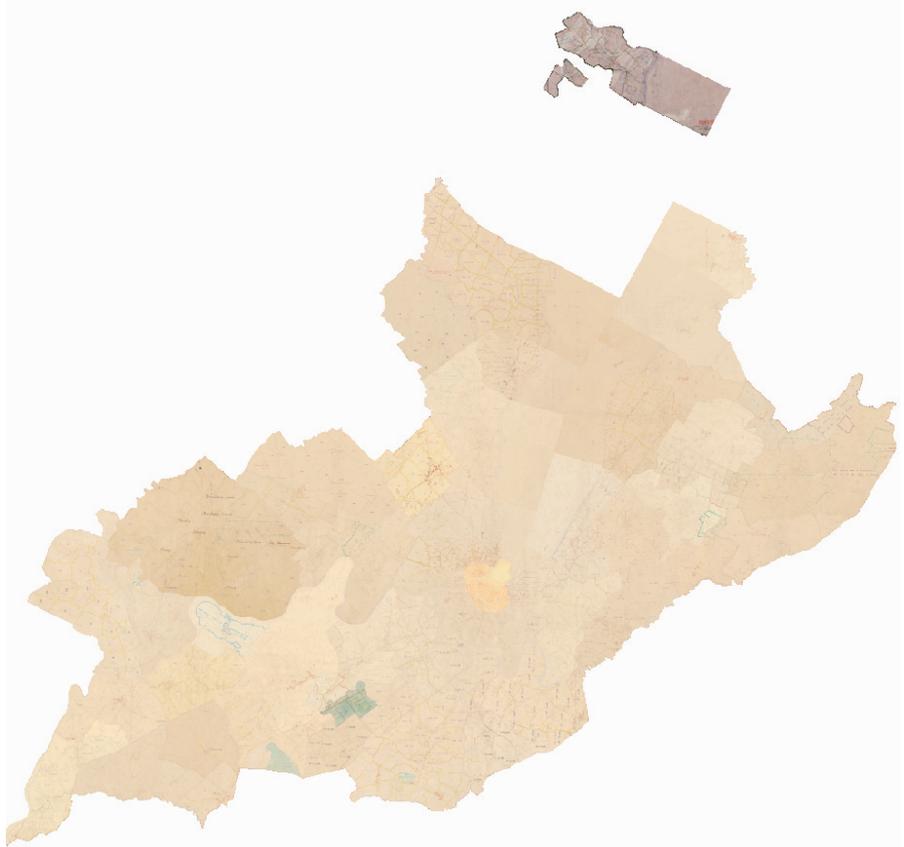
These records have been scanned, but not georeferenced, and are therefore of very limited use. The DCMO wants to make available digitally a cantonal mosaic of these maps, and superimpose it on topographic maps and vectors disseminated via "SITG", the geomatic web portal of the state of Geneva.

Because of the nature of the original Dufour maps, the aim of this project was not to deliver a high resolution product, but rather a layer of information, to get an idea of increasing human activities, via buildings and infrastructure development at the time of the advent of modern cartography. To develop the mosaic of the region, a simplified methodology using a GIS software (ArcGIS) has therefore been adopted.

The project objectives included:

- Georeferencing and developing a mosaic of the Dufour and Grange maps for the 48 administrative divisions of Geneva (10 m).
- Addressing the major problems of coincidence of objects at the boundaries.
- Equalize as far as possible the colors of the maps and remove artifacts.
- Delivering the mosaic as a digital file, by municipality.

Archived scanned maps, non-georeferenced, have been provided for each of the 48 municipalities of the canton of Geneva. The documents have been scanned in their current state of conservation by DCMO at the resolution of 0.84 meters per pixel. For the City of Geneva, excerpts of the 55 plans were provided by the DCMO digitized, georeferenced and assembled. The city has undergone major transformations in the late 19th century, resulting in some gaps and dif-



Mosaic of the Canton of Geneva delivered to DCMO

ferences in the alignment of buildings and roads at the junction of two maps.

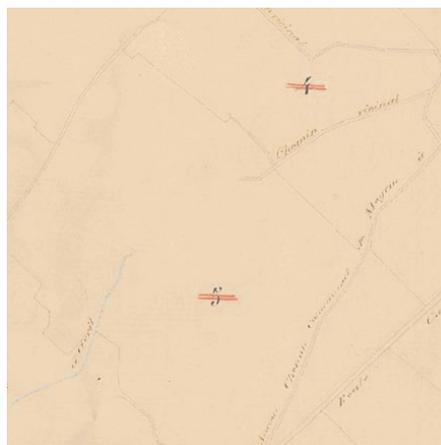
To assemble the mosaic, the maps were cut using extracts of the actual georeferenced administrative divisional boundaries.

Anchor points corresponding to old buildings and administrative boundaries were selected on topographic maps (scale 25 000) for display in ArcGIS with the vector layers of SITG. The resulting mosaic seeks to respect the appearance and content of the original maps.

The final products included the mosaics for each of the 48 municipalities and for the canton. ■



Mosaic of the Bardonnex municipality



Evolution of Meyrin municipality territory



Geneva Metropolitan pilot project on landcover

by Stefan Schwarzer & Jean-Michel Jaquet

A pilot study to test the ability to map land cover of the *metropolitan project Franco-Vaud-Geneva* has been conducted by GRID-Europe for the Territorial Department of the Geneva Canton. The test was conducted on a sub-area of 120 km², between Versoix and Divonne-les-Bains, representing 3% of total area.

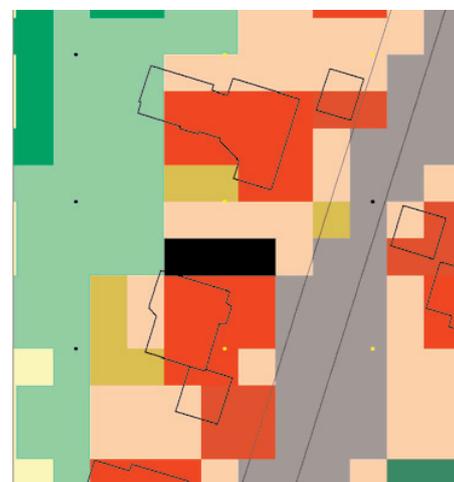
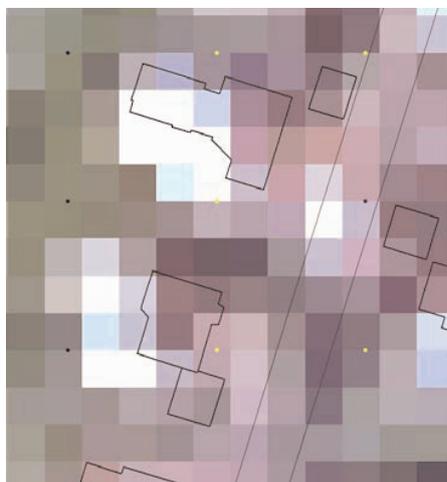
Using raster data (SPOT mosaic 5-10 m resolution and MNA) and vector data from three political entities, a methodology for the extraction of thematic information has been tested and applied. This object-oriented process includes a multi-resolution segmentation of the image, producing vector objects (polygons), which are then labeled thematically based on multiple criteria (spectral, morphological, contextual).

This methodology led to the CCSol Agglo-Pilot map, which reflects land cover using a legend with 23 classes. This map has an overall accuracy of 72% (as measured by the *kappa* coefficient). While the performance exceeds 80% for most classes, the borders of some buildings and urban green areas show classification errors reaching 70%. These difficulties are primarily due to the 10 m resolution of SPOT mosaic, which is of the same magnitude as urban objects.

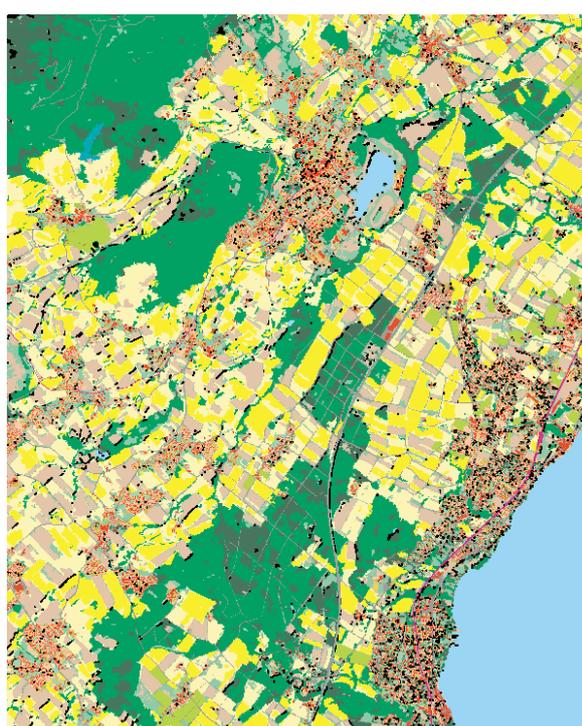
The comparison between the high-resolution map available for the city of Versoix (CCSSol) and CCSol Agglo-Pilot in terms of statistical coverage of the soil showed little difference.

Some of the classification errors could be solved by improving basic data (removal of topographical changes, adding vectors for lakes and rivers) and the improvement of the algorithms implemented in the software *eCognition* used to analyse the images.

This pilot project was based on previous studies made by GRID-Europe from 2002. With the results obtained and by implementing the improvements suggested, it would be possible to produce a land cover map for the entire Geneva metropolitan area. The mandate for this new project was given to GRID-Europe and will be concluded in early 2009. ■



Effect of resolution reduction on the classification performance. High: 25 cm orthophoto and land cover map CCSol. Low: Spot Image 5-10 meters (square yellow) and land cover CCSol-Pilote-Agglo.



- Autre bâtiment
- Habitation
- Chemin de fer
- Culture intensive - dense
- Culture intensive - peu dense
- Eaux
- Forêt conifères
- Forêt feuillus
- Ombre
- Parc ou grand jardin
- Parking ou terrasse
- Pâturage de montagne
- Pourtour des bâtiments
- Routes
- Surface verte
- Tennis
- Terrain de foot (artificiel)
- Terre nue
- Verger
- Végétation urbaine: arbre
- Végétation urbaine: mixte
- Végétation urbaine: gazon

CCSol-Pilote-Agglo - Product delivered



Read GRID-Europe
Environmental Alert Bulletins,
available at www.grid.unep.ch

www.unep.org

United Nations Environment Programme
DEWA/GRID - Europe
Ch. des Anémones 11, CH-1219 Châtelineau
Tel: +4122-9178294
Fax: +4122-9178029
info@grid.unep.ch



GRID-Europe's latest outputs & major contributions

Coastal degradation leaves the Caribbean in troubled waters - Environment Alert Bulletin 11 - UNEP/GRID-Europe - Four pages

La dégradation des côtes: les Caraïbes en eaux troubles - Bulletin d'Alerte Environnementale 11 - PNUE/GRID-Europe - Edition 4 pages

Human induced harmful algal blooms - Environment Alert Bulletin 12 - UNEP/GRID-Europe - Four pages

Les activités humaines causent la prolifération d'algues nuisibles - Bulletin d'Alerte Environnementale 12 - PNUE/GRID-Europe - Edition 4 pages

Africa: Atlas of our changing environment - Publication - UNEP/DEWA North America - 374 pages

Afrique : Atlas d'un environnement en mutation - Publication - UNEP/DEWA North America - 374 pages

UNEP Yearbook 2008 - Publication - UNEP - 52 pages

Cartographie à résolution moyenne de la couverture du sol - Rapport - Mandat AGGLO - RAPPORT FINAL DE L'ETUDE-PILOTE - Jean-Michel Jaquet et Stefan Schwarzer

Géoréférenciation de la couverture Dufour du canton de Genève - Rapport - ASSEMBLAGE - Mandat Dudour

Maladumba Lake Ramsar conservation area - Map

Nigeria Ramsar conservation areas - Map

