

# GLOBAL CHANGE NEWSLETTER

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## Communicating IGBP's Science – Special Edition

by Susannah Elliott, Science Communicator, IGBP

**“Communications for large science programmes is too often seen as a separate “follow-up” activity that takes place at the end of the research process... It is absolutely essential, however, that communications be enhanced at all stages of our research...to ensure that our research questions are framed more effectively and that the relevant science and policy communities “buy in” to those research initiatives.”**

*Larry Kohler, Executive Director, International Council for Science (ICSU)*

I learnt my first lesson about communication in large organisations from “slime moulds”. While doing a PhD in cell biology I found myself studying these strange soil creatures and it was love at first microscope viewing.

Living a solitary existence as individual cells when times are good (i.e. abundant food), they participate in a bizarre ritual that sees them aggregating into microscopic cooperatives when they fall on hard times. From initial chaos when cells appear to pile one on top of the other, they organise themselves into a highly efficient mobile working station. Together they are able to achieve things that none can do alone and in most cases the outcome is survival.

As a cohort of individuals how does this new creature function?

The secret of their success is in their perfected internal communication. With a combination of cell shape and chemical messages they stay in touch with each other, forming a distributed network with a common vision (survival). If a cell loses the ability to communicate effectively, it literally drops off the end of the moving “slug”.

### Inside-out

Communication is so much more than sending out press releases. It is how you manage information, how effectively this information is provided to members of the network and external audiences and how this helps to maintain the sense of goodwill and support that the network depends on. The success of an external

communication strategy depends on building a strong internal communication base.

Let's take an example. Organisation “X” has a message it wants to tell the public. Unfortunately, though, not everyone within the organisation knows what this message is and some have a different understanding of the message. After a flurry of public

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relations activity, the media is alerted to the message and takes the bait. But “the media” is an untamed beast with a mind of its own and certain journalists go fishing for information within hidden crevices of the organisation. Without effective internal communication channels, no one is quite sure who has said what to reporters. What appears is a series of confusing media reports with contradictory messages depending on who in the organisation the journalists had managed to talk to.

This scenario is simplistic but it is in fact quite common for many organisations in times of crisis. Investigative journalists looking for controversy can get some of their “best” stories from organisations with poor internal communication because it enables them to get conflicting information from the same source.

This is not to say that we must all think alike, but that the differing views need to be acknowledged and discussed before “hanging the washing on the line”. Scientific debate can be very damaging when its first airing is public (classic examples include cold fusion, life on Mars and the age of Australian Aboriginal culture).

It is also a sad fact of media life that some journalists earn their living by writing articles for a group who want to discredit particular organisations that they see as a threat (not to downgrade the art of journalism, which in many cases is performed by hard working and committed people working to unbelievable deadlines). As an

organisation working in a controversial field of science, this is something that IGBP needs to be aware of and prepared for *before* conducting major media campaigns.

Getting IGBP science out to the many groups of people who need to know about it is an integral part of our work. In this special issue of the NewsLetter we highlight perspectives on and approaches to communicating the exciting science coming out of the core projects, the synthesis project, the Open Science Conference and the more integrative work beginning as the programme moves into its next phase.

### Putting our brains together

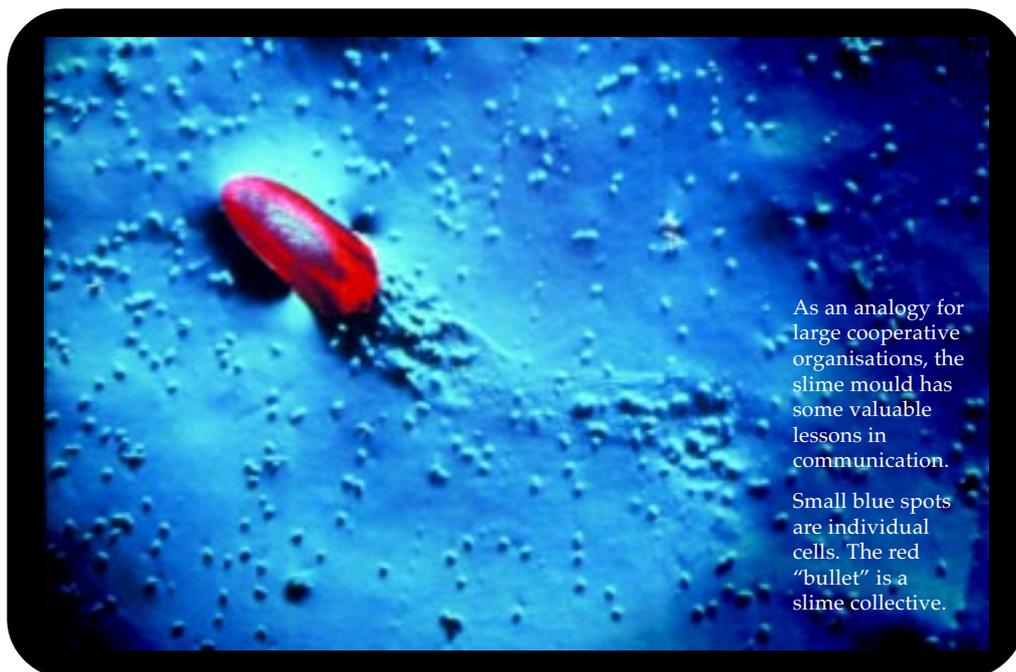
With these issues in mind, we have run a series of communications planning sessions at the IGBP secretariat and at International Project Offices (IPOs) that aim to further develop internal communication channels as we build up our external communication effort. These planning

sessions have focussed attention on communication i) within the secretariat and within IPOs, ii) between the secretariat, IPOs and other members of the network, and iii) with “the outside world”.

As a result of these sessions, we have defined internal and external target audiences, developed a plan for a new IGBP Web site (implementation of this plan has begun), streamlined our own communication efforts within the secretariat and re-directed human resources into much needed new areas (see “Re-introducing the Secretariat” on pages 6-7).

With each target audience (both internal and external), we need to ask “what are their needs?” and “what are we doing/ what more could we be doing to fulfill their needs?”. This avoids the “one-way” communication street that often results when you only think about the needs of the organisation. From these simple questions come new strategies and tactics for communicating both internally and externally. The development of the communication plan is a

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As an analogy for large cooperative organisations, the slime mould has some valuable lessons in communication.

Small blue spots are individual cells. The red “bullet” is a slime collective.

“Communications for large science programmes is too often seen as a separate “follow-up” activity that takes place at the end of the research process. It is absolutely essential, however, that communications be enhanced at all stages of our research programmes. Large interdisciplinary, global and regional research programmes require extensive and inclusive communications among relevant disciplines at the very beginning—to ensure that research questions are framed more effectively and that the relevant science and policy communities “buy in” to those research initiatives. During implementation, communications helps ensure that appropriate (re: disciplines, geography, gender, etc) scientists are at the table. We also need to improve our communications skills to facilitate the sharing and evolution of our methodologies, as well as our ability to reflect and to take into account relevant insights from our own local societies, cultures and social and economic practices. Communications should play a vital role in ensuring that the science community is effectively informed of the research results. Greater efforts are required, however, to help policy makers and society understand the relevance, reliability and possible limits of those research results, including new initiatives to promote dialogue among relevant parties.”

*Larry R. Kohler (Executive Director, ICSU)*

“I would like to suggest that we have closer connections and send scientific reports to the international NGOs like Greenpeace and WWF. In my opinion this would be a great task to explain IGBP results to these people and they will spread the word and influence the policymakers. Then instead of national policymakers (who will be contacted by the involved national scientists already) I would concentrate on international organisations like UNESCO, UNEP, FAO and World Bank etc. It would also be a good idea to provide the scientists with material they could present to the politicians in their respective countries.”

*Sabine Lüttkemeier (BAHC IPO)*

“Successful communication depends also on knowing where an issue is on the scientific and political agendas. When the issue is mostly on the scientific agenda — you want to communicate with

other scientists. As the issue moves onto the political agenda, you need to communicate with the media. When the issue is firmly on the political agenda, it makes sense to communicate also with policy-makers. Corollary — when an issue is still in the “scientific capacity building phase” it makes no sense (and could be damaging) to communicate in great detail with policy-makers.”

*Jill Jaeger (Executive Director, IHDP)*

“Doing what we are trying to do without an effective communication strategy is little more use than teaching in the absence of learning. Our first priority should be to develop a reputation for timely, topical, interesting and well reasoned science-based statements - that doesn't imply non-controversial or 'consensus'. Our main targets have to include policy makers and funding agencies and I suppose that these can be reached without using the public media; even so, I believe use of the media along the lines already set out would greatly enhance the likely success of any communication strategy.”

*Frank Oldfield (Executive Officer, PAGES)*

## What do you think?

What is your response to the increased emphasis on communication in IGBP?

Where should IGBP be heading in terms of communication and who should be our main targets? Should the media play a primary role?

Your ideas on the direction of IGBP's communication effort are welcome and extremely valuable as we develop the IGBP communications strategy.

“I am of the opinion that proper & timely communication should be one among the top priorities of IGBP. In addition to scientists, sustained efforts must be made to communicate with policy makers & the public on key environmental issues & Earth System Science as a whole.”

*S. Krishnaswami, (SC-IGBP member)*

“One of the criticisms that I have heard against IGBP is that they never committed themselves (ourselves) to deliver a product for policy makers, politicians, administrators... Our mandate was to do research, almost for the sake of it. The community is tired of that. An emphasis on communication must be closely linked to the development of a strategy that will identify a 'recipient' of this information. General, all-embracing statements targeting every relevant body or community are not useful. Personally, I consider essential to commit IGBP to deliver a product for politicians and policy makers. This product would be the value added of the programme. It will be based on the research done at grassroots level, but it would never be done without IGBP.”

*Manuel Barange (Executive Officer, GLOBEC)*

# Latest News on the Open Science Conference

by Will Steffen, Executive Director, IGBP

**The scientific programme of the Global Change Open Science Conference is now firmly established, with 80% of the plenary speakers confirmed, most of the parallel sessions under active development, the call for abstracts for the poster sessions set for late September, and the Dutch science tours largely in place.**

The Conference's host nation, the Netherlands, has a rich scientific tradition and has made strong contributions to global environmental change research. Conference week (9-13 July 2001) begins with a relaxed day of visits to Dutch scientific institutions, a chance to meet Dutch colleagues and to see global change research 'in action'.

Organized around an integrated mix of plenary sessions, parallel sessions and poster viewing, the 4-day Conference programme allows the presentation of both research highlights on major themes and the broad spectrum of individual research projects contributing to international global change science.

The OSC opens by focussing on four issues of major societal importance – air quality, the carbon cycle, water resources and food systems. The format is based on paired talks: one by a scientist highlighting major achievements and the other(s) by policy or private sector representatives posing challenges for the future. For example, the carbon session features Bob Watson, the Chair of the Intergovernmental Panel on Climate Change (IPCC), presenting our most recent scientific understanding, with the policy challenges presented by Ruud Lubbers, President of the Board of Trustees of WWF and former

Prime Minister of the Netherlands, and by the CEO of a major global energy company (speaker under negotiation).

Days 2 and 3, the heart of the Conference, present some of the exciting scientific advances of the past decade, drawing primarily on the state-of-the-art output of the IGBP synthesis and on the most recent findings from work in IHDP and WCRP. The sessions are organized around broad integrative themes encompassing several Earth System science disciplines, with a particular emphasis on regional-global linkages.

Highlights of these days include a palaeo double-header on past changes in climate and the Earth System; presentations on the dramatic changes to climate and the cryosphere in the high latitudes and on the direct effects of changing land cover on climate; and talks on the institutional challenges of managing the carbon cycle and on the horizontal linkages between land and ocean through the coastal zone.

The Conference's last day presents the visionary and creative new approaches for studying the thresholds, nonlinearities and teleconnections of a complex planetary system in which human activities are intimately interwoven with natural proc-

esses. It will outline a research programme for the current era of increasing human domination of many global-scale processes – the 'Anthropocene' era.

Some of the more intriguing sessions in this 'forward-look' day are organized around provocative questions challenging Earth System science over the next decade and beyond: Who needs biodiversity? Can technology spare the planet? The plenary programme closes with a session pointing strongly to the major societal goal of Earth System science – the transition to global sustainability.

Please visit the Conference homepage for the most recent version of the programme, including all confirmed speakers.

With the plenary programme now largely confirmed, increasing attention is being given to developing the parallel sessions. These focus more strongly on specific areas of global change research, yet retain much of the integrative flavour of the Conference as a whole. Most sessions have arisen from initiatives of the core projects of IGBP, IHDP and WCRP, with much linking across projects.

Examples of parallel session themes include: "Putting People into the Earth System: Victims or Villains, Disturbance or Solution?", "Fire and Global Change", "El Niño-Southern Oscillation in the Context of Past and Future Climate Variability", and "Megacities and Global Change". The full suite of parallel sessions will be finalized by late October.

One of the most stimulating and enjoyable parts of any large

Conference are the poster sessions. These give the chance to see the large variety of research from around the world that contributes to the global environmental change programmes, and to meet many old colleagues and make many new friends.

There is a strong emphasis on the role of posters in the Conference, with three dedicated sessions with generous time (2.5 or 3 hours each), a reception with refreshments organized around the opening poster session, and a spacious poster viewing area that will allow all posters to remain on display for the entire duration of the Conference.

The posters will be organized around 8 broad global change themes, with clusters of posters arranged around more specific topics within each broad theme. The main poster themes are:

- Earth System, Planetary Metabolism and Global Element Cycles
- Looking Back to the Future: Palaeo Studies of the Earth System
- Water Cycle, Water Resources, Water Security
- Climate Variability and Climate Change
- Oceans and Coasts
- Atmosphere and its Interfaces; Air Quality
- Sustaining the Land: Food, Biodiversity and Other Services
- The Human Enterprise and Global

Sustainability: Industry, Transport, Institutions, Vulnerability

The second announcement for the Conference, with the call for abstracts for poster presentations, will be distributed in late September. Abstract submissions can also be made via the Internet; please see the Conference homepage.

Registration is now open via the Internet and we encourage as many participants as possible to register early to avoid the last minute rush.

**Will Steffen**

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# Global Change Open Science Conference

The Earth's environment and habitability are now, as never before, affected by human activities. This conference presents the latest scientific understanding of natural and human-driven changes on our planet. It will examine the effects on our societies and lives, and explore what the future may hold. Co-sponsored by IGBP, IHDP and WCRP, the Conference will emphasize the results of IGBP synthesis culminating from a decade of global change research, and will point the way forward towards the next decade of Earth System science.

10-13 July 2001  
Amsterdam,  
The Netherlands

Poster Abstract  
submissions open  
September 2000



CHALLENGES OF A CHANGING EARTH

Registration now open via the Conference Home Page

[www.sciconf.igbp.kva.se](http://www.sciconf.igbp.kva.se)

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continuously evolving process and progressive stages will be made available on the new IGBP web site for your ongoing input.

In a highly complementary process, the people in the IPOs who are responsible for developing core project web sites met recently in Bern, Switzerland to discuss how we can better support each other in our communication efforts and move towards greater integration of individual web sites (see article by Edmund Carlevale on page 11). There is now an email list and common web site that enables us to discuss issues as they arise and put our brains together to find common solutions.

### Building up to something big

These efforts are of tremendous importance as we prepare ourselves for the Open Science Conference, *Challenges of a Changing Earth*, in Amsterdam next year

(see update on page 4) when, along with IHDP and WCRP, we will be under public scrutiny.

As well as the Open Science Conference, IGBP is organising mini symposia at two major science conferences in San Francisco that attract international media attention and a broad spectrum of scientific interest. The first will be at the AGU (American Geophysical Union) Fall meeting in December this year and the other at the AAAS (American Association for the Advancement

of Science) annual meeting in February 2001. With a targeted approach we can maximise our efforts and avoid the problems associated with indiscriminate press releases and uncontrolled media attention.

**Susannah Elliott**

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In short, an effective communication strategy involves team effort. With a clear understanding of the role each of us plays in communication, we have a much greater chance of succeeding with larger external communication campaigns and a greater chance of responding appropriately in times of crisis. A Science Communicator is an initiator or catalyst who focusses attention on communication channels and tools. Thus please think of me as a resource - I am here to help you communicate IGBP science to our target audiences.

### IGBP at the AAAS meeting (15-20 February 2001)

Earth System Science: the quiet revolution

The scientific understanding of the Earth system is undergoing a revolution that has yet to hit the public mind. This symposium will present the latest knowledge about the complex functioning of our home planet

**Prof Lonnie Thompson**, (Byrd Polar Research Center, Ohio State University)

Disappearing glaciers: Evidence of a rapidly changing Earth

**Prof Emilio Moran** (LUCC Focus 1 Office, Anthropological Center for Training and Research on Global Environmental Change, Indiana University)

What's driving land-use change? Myths and realities

**Prof Roger Pielke (Senior)**, (BAHC Focus 4 Office, Department of Atmospheric Sciences, Colorado State University)

Human landscape changes - their role in changing climate

**Dr Will Steffen** (IGBP Secretariat, Royal Swedish Academy of Sciences)

Rhythms, thresholds and surprises: The revolution in Earth System Science

### IGBP at the AGU fall meeting (15-19 December 2000)

Global Change and the Nature of the Earth System: The IGBP Synthesis

The session will feature three presentations on our latest understanding of the role of the three major compartments of the Earth System – oceans, atmosphere and land – in the functioning of Earth, as well as three highly integrative talks on (i) the direct linkages between the land surface and the climate system, (ii) the dynamics of the global carbon cycle, with special emphasis on human perturbations to this system, and (iii) a palaeo perspective on Earth System dynamics.

**Prof John Schellnhuber**, Potsdam Institute for Climate Impact Research (confirmed): *Earth System Analysis*

**Prof Berrien Moore III**, University of New Hampshire: *The Global Carbon Cycle*

**Prof Thomas F. Pedersen**, University of British Columbia: *The Importance of the Past to the Future*

**Dr Pavel Kabat**, Winand Staring Centre (Netherlands): *Does Land Surface Matter in Climate and Weather?*

**Prof Guy Brassuer**, Max Planck Institute for Meteorology: *The Changing Chemistry of Earth's Atmosphere*

**Prof Hugh Ducklow**, The College of William and Mary: *Ocean Biogeochemistry and the Global Carbon Cycle: Towards a New Synthesis.*

**Prof Ian Noble**, Australian National University: *The Terrestrial Biosphere in the Earth System: Player or Passenger?*

# Visual communication

by John Bellamy, IGBP Secretariat

**If a picture paints a thousand words, what form would the IGBP picture take? To express ourselves visually, do we all need to be artists? Communicating our message visually will take a lot of thought, but if we follow the basic communication principle, our task will be a success.**

The visual appearance of a book or poster or website or any other two-dimensional communication medium is all too often thought to be cosmetic. A layer of glitter applied at the tail end of a project. An attempt to make the project look presentable, or conform to others.

However, if we consider that when the message of the medium is communicated visually, the final appearance of the medium will depend entirely on the message itself. The message would be responsible for its own form. As a simple example, if I want to visually communicate the message "big red square" then my visual communication would appear something like figure 1a. How many of you (the readers) looked for the figure caption before you found the figure? Not many I hope. If we reverse the process, i.e. look at the shape in figure 1b, I can communicate what it is without you having to read the caption at all. Visual communication, sometimes known as graphic design, is that process. If the next step in complexity would be something like "green triangle inside red circle" (figure 2) then much further down the line would be the message "environmental science is important". Communicating that message visually will take a lot of thought, but if we follow the basic principle outlined above, our task will be as successful as the message communicated in figure 1b.

Visual communication is what its name says it is. Communication that is visual.

## A solution to a problem

The visual form that our communication will take will be a

solution to a problem. In every problem lie the fundamentals of the solution. Therefore it is important to have a clear understanding of the problem before the solution can be found. Two major factors need to be defined before the communication problem can be solved. The "audience" and the "message". Somewhere between these two factors lies the solution to our problem.

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Figure 1a. Big red square



Figure 1b.



**John Bellamy**  
Graphic Designer

I studied two-dimensional visual communication before “desktop publishing” and “the Internet” were everyday terms for a designer. As technology advanced I had the chance to catch up with digital production soon after moving to Stockholm. IGBP and I began flirting with each other in the beginning of 1999 - my predecessor was leaving for her homeland and my time at Liber, Sweden’s largest publisher of schoolbooks, was

coming to an end. For both parties, I think it was an obvious union. My present duties include the digital production of IGBP publications including newsletters, scientific reports, brochures, flyers and posters. I am responsible for all in-house graphics and for creating the visual aspects of the organisations internal and external communications from conceptual sketches to final digital documents suitable for printing. The international aspect of my job is perhaps the most rewarding. The design and communication aspects are surprisingly the most challenging.

The new emphasis on communication across IGBP as a whole is gathering momentum, as highlighted in this issue of the IGBP NewsLetter. To meet the communication challenges as the IGBP community moves towards Phase II, the Secretariat has restructured to enhance our effort in both internal and external communication.

Here we introduce the new line-up in Stockholm, including some ‘new faces’ who have just joined



**Will Steffen**  
Executive Director

My scientific wandering began with a PhD in inorganic chemistry, and a subsequent period as a research chemist. At CSIRO (Commonwealth Scientific and Industrial Research Organization) in Canberra, I then tried my hand at science management, writing and communication, and science editing, all in the field of environmental physics. My IGBP connec-

tions began a decade ago with my appointment as Scientific Officer for the GCTE core project. My move to Stockholm and the IGBP post have challenged me to broaden even further my scientific horizons from chemistry and terrestrial ecology to the very broad range of disciplines encompassed by IGBP, and its partners. The last two and a half years have been the most stimulating and intellectually challenging of my career, and my goal is to help keep IGBP at the absolute forefront of international Earth System science. With a family in Canberra, I have gotten to know the flight crews on the British Airways London-Sydney hauls very well. Stockholm to Canberra must be the world’s longest commute! When not in an aeroplane, at a meeting or behind the desk, I enjoy walking, rock climbing and photography.



**Charlotte Wilson**  
Database Coordinator

Before moving from Scotland to Sweden I was employed by an American based company, which manufactured and sold chemicals throughout the world. My job was dealing with and being responsible for Customer Services and Exports. Now I have moved over to the “other side” and I am glad to be involved with an organisation like

IGBP who deals with environmental issues. Working with my varied duties here at IGBP and also with my fellow work-mates is extremely enjoyable and educational. I have 3 children, Charlene, Mandy and Craig and my Swedish “viking” whom I live with is called Anders. I love relaxing by reading and listening to Gaelic music and enjoy swimming. As often as we can, Anders and I drive up to the family cottage and go for long walks or fishing.

## Re-introducing

the team and some more ‘familiar faces’ taking on new responsibilities to support the communication effort.

Four people will play a central role in the communication and information area: Susannah Elliott, who leads the overall communication effort; Sofia Roger, who assumes responsibility for coordinating information flow across the Programme; John Bellamy, who provides high-quality expertise in graphics design; and Charlotte Wilson, who is tackling the difficult task of database construction and maintenance.

Internet communication will be critically important for the IGBP community. Building on an ex-



**Sofia Roger**  
Information Coordinator

After a couple of years at Stockholm University studying literature, English, and religion, I thought it a good idea to take a break from studying and do something completely different. That something turned out to be a job at the IGBP secretariat, and it also turned out to be so much fun that I postponed going back to my studies. After two years at the secretariat I find myself moving into new

and exciting tasks, and very happy to stay on. In my spare time I enjoy reading, singing (classical), and dancing. Being very interested in languages and cultures, I am now also attempting to learn Italian.



**Susannah Elliott**  
Science Communicator

After completing a PhD in cell biology in Sydney in the early 1990's, I took a leap into the unknown when I applied for a job as a science communicator with a local university. Eight years on and many communication campaigns under the bridge, I can now say that it was the right move at the right time. During this period I worked as an editor, writer and communications consultant and devel-

oped a series of national media briefings and round table discussions with journalists, scientists and policy makers in Australia. Now I find myself on the other side of the globe being challenged in new ways and loving it. I have a husband who works on Malaria and a two year-old who works on his parents. I look forward to working with everyone in IGBP to improve the way we communicate both internally and externally.



**João Morais**  
Deputy Director,  
Social Sciences

After graduating in History I witnessed 'history in the making' when Mozambique, a Portuguese colony, became independent in 1975 after a decade-long war. Having learned from the Greek classics that 'time is a kindly god' I decided to take no risks: having helped organise a new research department, and while civil war ravaged my home country, I researched in Uppsala, Sweden (1985-87), before taking an appointment at the Tropical Research Institute in Lisbon and completing a PhD (1988) at Oxford

University (UK) in environmental archaeology. Enjoying multicultural processes and historical reconstruction of past societies I lectured methodology of the social sciences, before joining the IGBP secretariat in 1995, where I was asked to help bridge the natural and social sciences. Living in diverse political and cultural 'landscapes' made me aware of the fragility of an Earth System at the mercy of the human enterprise. Sailing the Indian Ocean and the Stockholm archipelago I learned that there are still 'endless frontiers' to be known, preserved and shared. Back to land and a bilingual family, I realise that Global Change makes me feel at home every time I miss my roots.

## the Secretariat

cellent base already established by the group of Webmasters (see article in this NewsLetter), we in the Secretariat are gearing up for a major overhaul of our homepage, and indeed our entire information system. A professional consultant is being engaged to help us set up an integrated webpage/information system. Sofia Roger will be the ongoing webmaster for the IGBP web site.

In addition a new member of the Secretariat will be joining us shortly to work with Elise Wännman on finance and administration. This will ensure the continuation of these essential services at a high level.

Over the coming months, we hope that most of you get a chance to meet the Secretariat team, even if just electronically, and interact with us as we upgrade our communication effort.

We believe that this restructure of the Secretariat will not only maintain the existing high standards of service in terms of scientific coordination and integration and in administration of the programme, but will significantly enhance both our internal and external communication performance.

### Will Steffen



**Elise Wännman**  
Director for Finances

I have been employed at IGBP since 1989 to take care of finances, personnel and some administration and to be the link to our host, the Royal Swedish Academy of Sciences. Before I came to the IGBP I worked in national and international economy and finance for the University of Technology in Stockholm.

During my years at IGBP I have worked for four Executive Directors and I have survived. Must be thanks to the fact that during winter I try to take a week of holiday for skiing and in the summer time I like to be out in the beautiful Stockholm archipelago in our little boat.



**Wendy Broadgate**  
Deputy Director,  
Natural Sciences

A marine chemist by training, I spent 9 years investigating trace gas emissions from the oceans, serving my time on the high seas - for my sins, at high latitudes! Much of my work was carried out within the IGAC and JGOFS framework. In addition to my post doctoral research at the University of East Anglia in the UK, I was coordinator for the marine component of the UK programme, Atmospheric Chemistry Studies in the Oceanic Environment (ACSOE). I worked with scientists both

within the UK and internationally. My roles ranged from preparing research proposals and organising logistics for major cruises to communication of results. I thoroughly enjoyed the challenge of science management which led me to apply for my current post at IGBP. After only a short time here at the Secretariat, I am already feeling at home in Stockholm and am excited by the international and multidisciplinary challenges of working in Earth System Science.

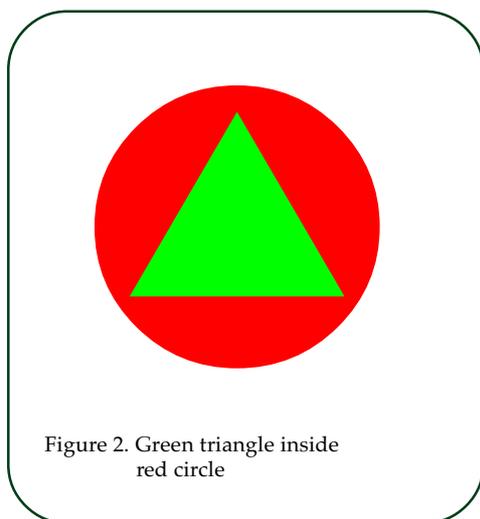


Figure 2. Green triangle inside red circle

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## Know your audiences

Audiences fall into a whole range of categories. Old, young, big, small, male, female etc. etc. and always a complex mixture of these categories. To communicate with them, and in this case, to communicate with them visually, we need to understand their respective languages and perceptions of things visual. Visual perception is a personal thing, based on our own understanding and relationship to whatever it is we see. A short, old male for example will have a different visual perception of an image, to that of a tall, young female.

Visual communication works best when it uses techniques that are familiar to the target audience. Symbols and signs that are familiar to the target audience as well as familiar routines will be the most effective visual language to use. But visual language like spoken language is alive. It develops and changes constantly, so to communicate accurately we need to be aware of just how our audience interprets messages. New words are invented and old words gain new meanings. Images, like words also gain new meanings. An image of planet Earth for example can mean many exciting things to somebody born in the 1940s - rocket

ships, space voyage and the progression of man to boldly go where no one has gone before - the future. But for the younger generations, the same image could mean something entirely different, natural science and even a concern for the future of our environment - the present. The same image for two separate audiences can mean many different things. It is easy to see how the same image could be used to communicate different messages to different audiences.

## What do you want to say?

The message we want to communicate is also an important ingredient to the eventual visual communication. What we want to say must determine how we say it. A simple greeting like "good morning" can be made to mean a variety of things. Cheerfully called, it may make us feel happy to be awake. Shouted loudly, it may make us wish we were still asleep. This rule is true when applied to all communication. Colour, shapes and words can all be adjusted to visually express messages. A portrait photo for example can be taken from above, portraying the subject as small or humble. The same subject can be made to appear large and imposing if the portrait is taken at an angle below the subjects eye level. Typography, photography and illustration can be arranged to "tilt" our message to speak to our chosen audience in the way that we want them to hear our words.

## Form follows function

The form of the visual communication must be dictated by its function.

What the message is and at whom it is aimed will define this

function. The angle of our message combined with the visual perception of the audience will provide the form of the visual communication. This leaves no room for "pretty pictures" or "flashy graphics". They will only contaminate our message and hinder the communication. With any piece of visual communication it is important that whatever appears on the paper or screen can be justified. Anything that can not be justified will not lend itself to our quest, which is to communicate our message in the most effective way to our target audience.

Whenever you next receive a message, take a second look at its visual form. Ask yourself how it works and how it worked on you. If it is a piece of printed media, how are the images angled and what does the typography do to amplify the text? Try to find the motivation behind each colour or shape you see in its form. Be critical of advertising campaigns. Are they aimed at you or another audience? How does it appeal to that audience? Is it successful? Why? If the things that you notice are successful, it is because they follow the basic principles that I have demonstrated in this article.

With a clear insight into what it is that the IGBP wants to tell about itself and its science coupled with an accurate definition of the audiences it wants to reach, the external communication efforts will succeed. If we apply this principle and its method to all visual elements of the communication it will paint a thousand words about our cause, accurately and effectively before the text has even been read.

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## Networking the Web

by Edmund Carlevale IGAC IPO and the IGBP Webmasters group

**Fifteen webmasters from the IGBP Secretariat and its Core Project Offices met in Bern, Switzerland this past June for a three-day workshop designed to facilitate communication among IGBP webmasters, and to develop common tools and design standards for IGBP web sites.**

The Bern meeting evolved out of a series of informal meetings held on the sidelines of IGBP's "Communication Meeting" in Cuernavaca, Mexico this past February. That meeting, organized to discuss the implementation of IGBP's Phase II, highlighted the growing importance of the web as an essential communications tool. While newsletters and journal articles remain important outlets of communication, CPO web sites are providing ever more diverse and substantive content. The web is the single most widely used tool with which IGBP and its core projects interact with project members, other core projects, and the wider science community.

IGBP webmasters present at the Cuernavaca meeting met informally to discuss their work, and quickly discovered that they shared a sense of isolation, as well as feeling overwhelmed by their increasing responsibilities. The consensus was that the web was an exciting but daunting challenge, demanding a variety of distinct skills.



The discussions in Cuernavaca produced two immediate resolutions: one, that IGBP webmasters should work together to assist each other, and second, by working as a group, they should evolve a coherent set of tools and techniques to facilitate their work, with the eventual goal of producing an IGBP-wide integrated web-based information system.

As a result of these initial discussions, the group produced the following set of recommendations for the IGBP and each of its core projects.

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### The Bern Recommendations

The internet is the most important resource available to the IGBP and its core projects for internal and external communication. This resource is presently underestimated and underfunded. The IGBP web presence should be a unified system with distributed core project components, thereby mirroring and facilitating the IGBP Earth system science effort. Creation of such an integrated web system will require significant resources including money, people and training as well as continuous interaction with project scientists.

The Bern meeting was a valuable first step towards this goal. Our recommendations for continued progress include:

- (1) A full-time professional webmaster at the IGBP Secretariat;
- (2) Separation of administrative and information management duties at the IPO level;
- (3) An IGBP-wide communication strategy liaison group, representing both scientists and information managers, and chaired by a member of the Scientific Committee or the IGBP science communicator.

# Building dialogue between scientists and policy makers!

by Mario Catizzone, Senior Scientific Officer, European Commission

**At the United Nations Conference on Environment and Development (United Nations, 1992) a major consensus was reached that “environment” and “development” are strongly linked and interdependent. The entire scientific community was called upon to work on the identification of major issues for preserving the natural world for the benefit of present and future generations of human life. Researchers are now being asked to translate the principle of “sustainable development” into pragmatic actions. This new scenario makes the researchers re-define their role and their ongoing activities.**

## The sustainability challenge

This stimulated the growth and awareness of the concept of “sustainable development”. Although these words may have different interpretations, they clearly indicate the need to modify the current principles governing the relationship between mankind and world resources. A major effort is required of researchers, because they must provide new and safe ways to use world resources.

## Bridging the gap

An important aspect of the sustainability challenge is the urgent need to bridge the gap between policy-makers and scientists. In meetings with researchers one frequently hears complaints that politicians and decision-makers are not aware of the present scientific situation or knowledge. Researchers often use this as an alibi to justify their isolation. They demand that potential users and their related needs be identified. But users/beneficiaries at various levels have already expressed their needs.

The demands for information are defined politically, as they are included in official government documents on agricultural policy, transport networks, territorial planning, development forecasts, environmental policies, etc. They rarely ask for raw data, they are much more often interested in solving practical problems or in clearly identifying specific needs.

On the other hand, policy-makers consider scientists and researchers to be “peculiar” people able to exist in their own laboratory or scientific world, without any real contact with everyday life and basic truths.

Both biases are wrong. Behind policy-makers it is possible to find several academics that advise them in small-scale environmental analysis. At the same time, and increasingly often, the administrative structures of municipalities, provinces and regions in industrialised countries have their own technical infrastructures and collect data for their territorial planning requirements. Their technical offices are staffed with professionals who are also trained in environmental science. Such professionals have developed their own ways of interpreting a territory.

## Importance of dialogue and communication

The gap between these professionals and scientists is one of the hardest to bridge, as each party defends his scientific speciality. It is also necessary to bridge the gap to build a common understanding between all other players/stakeholders: practitioners, politicians, NGOs, entrepreneurs, professionals, decision-makers, public authorities, etc.

It is not only a matter of information transfer or communication technologies. There is a specific need for reciprocal understanding that entails time, attention, and awareness. Special care should also be devoted to overcoming the human resistance to dialogue between different communities. Each of us is familiar with internal confrontation within our own community. To create the conditions for genuine mutual understanding we should probably concentrate major efforts on demonstration activities to be defined jointly by the actors and the researchers.

The dialogue/involvement of stakeholders/actors is a major concern and is presented in almost every scientific document as the real challenge. Innovative administrative approaches to integrating management and science could provide large dividends for understanding the mechanisms of European environments such as combining environmental, managerial and socio-economic scientists on a team to design, conduct and analyse the research.

Scientists and researchers have great consideration for information dealing with international research bodies (eg IGBP, GTOS,

GCOS, GOOS, WCRP, GEF, GIM, GRID, IHDP, etc.) and less interest in the content of the international "policy" documents which outline the needs and questions of the international community. I will not list here all the bibliographical references on Population, Desertification, Human Behaviour, Biodiversity, Water, Climate change, etc. but many of these documents are immediately available on the WWW and should be consulted.

## The way forward

Despite successive waves of major world meetings with various objectives, the signing and launching of several conventions, and attempts to organise a world-wide observation network on global data, even international organisations are wondering how they can adapt their structures to the challenges of the next millennium. This creates new opportunities for global environmental change science, and in some cases it is the scientists themselves who are seizing the initiative.

The new challenges emerging are:

- to consider *sustainable development* and the concept of sustainability as the logical aim to be attained for the well-being of all people;
- to accept the *ecosystem as integrator* element for environmental concerns;
- to identify *industry, transport, tourism, agriculture* (including forestry and fishery) and *energy* as the main sectors related to the environment.

Disciplinary divisions of knowledge were created by human beings, and particularly by scientists, in order to illustrate things that otherwise were difficult to explain. But the "real" world does not need definitions. The concept of "Consilience" launched by eminent ecologist, E. O. Wilson, challenges us to recombine the "different" areas of knowledge: Biology, Social

Science, Ethics and Environmental Policy. These four fields are linked and disciplinary boundaries within natural sciences are disappearing to be replaced by "shifting hybrid domains in which consilience is implicit"

It is human nature to resist change to some extent. The most important thing is to participate in the debate and to work together to enable these different rivers and magmas to converge in one and the same site and discover the possible consilience. This is in the interest of science and, overall, of the Planet.

This article was extracted from chapter one of *From Ecosystem Research to Sustainable Development* published by the European Union.

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## Global change workshops: the Stockholm series

by João Morais, Deputy Director, Social Sciences

**The Global Change workshop and lecture series was carried out as part of the IGBP "synthesis project", which aims to integrate and synthesise 10 years of international research on global environmental change. The initiative was sponsored by the Royal Swedish Academy of Sciences (KVA), the Millennium Committee, the Foundation for Strategic Environmental Research (MISTRA), Stockholm University and the Swedish University of Agricultural Sciences in collaboration with the IGBP Secretariat based at KVA.**

The five Stockholm workshops and lecture series are an important complement to the IGBP synthesis project, and designed to deal with "hot topics in global change". The 3-day workshops —

aimed at pulling together the latest research results and new understanding on particular topics — were followed by a series of individual lectures. The latter were particularly designed

to provide state-of-the-science reports to the Swedish scientific community and the general public. As another tangible output, a concise scientific paper based on each workshop is being submitted to *Science* for publication.

**Nutrient Interactions with the Carbon Cycle in Terrestrial, Marine, and Coastal Systems, 25-27 October 1999.**

The carbon cycle has been a central topic of research in the post-Kyoto policy arena. A crucial aspect in understanding the nature of the carbon cycle, particularly human impacts on the

biophysical systems, is the interaction between carbon and nutrient cycles. This first workshop in the Stockholm series examined the pre-human dynamics of the global carbon cycle, as recorded in the Vostok ice core record, and debated the role of carbon-nutrient interactions in controlling the dynamics of the cycle. In particular, the workshop noted that atmospheric CO<sub>2</sub> concentration is now nearly 100 ppmv higher than pre-industrial levels, and has risen to that concentration at a rate at least 10 and possibly 100 times faster, than at any other time in the past 420,000 years. We have driven the Earth System from the tightly bounded domain of glacial-interglacial dynamics. Are we in a transition period to a new, stable domain? If so, what are the main forcing factors and feedbacks of this transition? What will be the climatological features of a new domain? What will be the responses, and feedbacks, of Earth's ecosystems? How, when, can and should we return to the pre-industrial domain?

#### **Global Change and the Continental Aquatic Systems, 7-9 February 2000.**

Earlier research on the water cycle has focused on its role in climate. More recently, the emphasis has shifted to water resources and human impact on the water cycle in its own right. IGBP has established a water group to co-ordinate and integrate research on water that has been carried out in the relevant core projects in a rather fragmented way up until now. The workshop sought to answer key questions such as how biogeochemical cycles have been and will be affected by changes of rivers and ground water fluxes, how water resources have been modified since the development of agriculture and how climate change and anthropogenic changes may affect future water resources. The workshop has emphasised the multiple impacts on land and water use generated through biogeochemical changes

and aimed at synthesising our current understanding of direct, human-driven impacts on the hydrological cycle, the implications for water quantity and quality, and the feedback effects on biogeochemical cycling.

#### **Human modification of the Biosphere: key drivers of land-use and land-/cover change processes, 13-15 March 2000.**

For the coming decades land-use and land-cover change will be more important than climate as a "driver" of global change. The workshop debated a few of the "myths" and "oversimplifications" (e.g. that population pressure and poverty drives deforestation) as well as how to increase our understanding of the driving forces of land-use/cover change. Hence the need to develop a consensus view on the most important drivers and combination of drivers of land-use change in different situations. By means of empirically tested case studies the discussions focused on "if" and "how" key variables (such as population, consumption, technology, institutions, biophysical factors, values, etc.) and the key question: "What do we know for sure on drivers of land-use change?" The final report will focus on hot issues such as pathways of tropical deforestation, rangelands modifications, patterns of agricultural intensification (e.g. land scarcity, capitalisation pattern and policy intervention) and urbanisation/rural land impacts and processes in different developmental and geopolitical contexts.

#### **Production of Food and Fibre, 3-5 April 2000.**

Changes to the Earth system have immediate impacts on activities crucial to human welfare. With a current human population of 6.4 billion and a billion being added every 12 years, our ability to produce food and fibre to meet the demands of this expanding population has

come into question; the Green Revolution appears to be running out of steam. Global change makes the uncertain task of feeding the expanding population even more uncertain. This workshop focused on (i) the implications of global change for our capability to produce sufficient food over the next 3-4 decades and (ii) the environmental consequences of increasing food production to the required levels. In particular, the implications of increasing food production for Earth's major biogeochemical cycles were explored.

#### **Regional Aspects of Global Change, 2-4 May 2000.**

There is growing interest in sub-global scales of global environmental change, especially at the regional scale. Global change itself is comprised of innumerable and complex sets of activities and phenomena which operate at local and regional scales, and the impacts of global change are interpreted and dealt with by policy and resource management decisions almost entirely on national and regional scales. The workshop discussed a number of regional syntheses and addressed two aspects of the scale issue of global change research. These included (i) our ability to scale process-level understanding of global change processes on small (e.g. "patch-level") and intermediate scales and (ii) how to realistically factor global change effects in a systems approach. The latter will have to look into the management of biological systems already being impacted by a number of other important influences (e.g. globalisation of economies).

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## People and events



### Re-Opening the LUCC International Project Office

*Helmut Geist, Executive Director of LUCC*

The International Project Office (IPO) of the Land-Use and Land-Cover Change (LUCC) Joint Core Project of IGBP/IHDP is operational again from 1 August this year. Following an interim period in Bonn (IHDP), the LUCC Office is now attached to the Department of Geography at the University of Louvain in Louvain-la-Neuve, Belgium.

Thanks to Eric Lambin, chair of the LUCC Scientific Steering Committee (SSC), the rectorate of the Université Catholique de Louvain (UCL) agreed in February to host the office. Due to the hard work of the Federal Office for Scientific and Technical Affairs (OSTC) of the Belgian Government (in particular, M. Desmeth, M. Vanderstraeten and B. Decadt), funding was approved by the Minister of Science Policy in Belgium in July. The office will continue its work up to March 2003 on the basis of Belgian and LUCC support.

Other parts of the budget come from IGBP and IHDP, and it is planned that additional funding will come from competitive research grants through the local Administration de la Recherche (UCL/ADRE), e.g., EU ENRICH programme, U.S. National Science Foundation, etc. Given a common understanding between UCL, LUCC and OSTC, the project period may be extended beyond March 2003.

UCL is located about thirty kilometers southeast of the heart of Brussels in the Wallonian part of Belgium. At the local Department of Geography, several (new) professors, postdoc researchers and doctoral students have already been involved in LUCC-related activities.

Last year, the Belgian Government began to support LUCC-related activities by funding postdoctoral fellows who conduct major synthesis activities. Thus, the location of the IPO at the UCL Department of Geography promises to maximise interactions with the SSC Chair (at UCL/GEOG) in a stimulating academic environment. IPO funding will also maximise benefits for the host country by channelling information from the international Global Environmental Change Programmes to the Belgian scientific community, and from Belgian expertise to the international level, through a Local Scientific Committee (LSC), operating as a co-ordinating unit to liaise with the scientific work of the LUCC-IPO.

Appointed by a joint decision of the LUCC-SSC and UCL is Helmut Geist as Executive Director, managing the IPO together with Suzanne Serneels (Scientific Officer) and Annette Loomis (Administrative Assistant). Administratively, they depend on the Chair of UCL/GEOG and on the LUCC-SSC and its Chair for scientific direction. Their major responsibility is to assist the LUCC-SSC in planning and carrying out innovative scientific research and to assure the transfer of knowledge from project research to the IGBP and IHDP communities. Continued on back page



The office will serve as a much-needed channel of communication between scientists working in different countries on various aspects of global change. Important early tasks of the IPO are to – (i) contribute to the synthesis of results produced under the Core Project (monitoring LUCG input into Open Science Conferences, etc.), (ii) produce a newsletter (by end of September), (iii), organise the next LUCG-SSC meeting (January 2001), (iv) submit proposals, and (v) assist the SSC in collating information on national and regional programmes of global change related to the Core Project. The LUCG community owes special thanks to the former staff of the LUCG IPO at Barcelona, to Ike Holtmann (Bonn) managing the interim office, and Eric Lambin for his commitment to getting the location of the office finally settled.

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## Correspondence

In future we want to reserve this space for 'Letters to the Editor'. Letters can be in response to an article in an earlier edition of the Newsletter or about IGBP science/issues in general. Please keep letters as brief as possible (maximum of 200 words) and send to Susannah Eliott at the IGBP Secretariat (Email: [Susannah@igbp.kva.se](mailto:Susannah@igbp.kva.se), Fax: 46 8 16 64 05).

In coming editions of the IGBP Newsletter ...

- Special edition on LBA (Amazonian global change research)
- Cleansing power of the Atmosphere
- Measuring CO<sub>2</sub> concentration
- More on Earth System dynamics



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