



New director at World Climate Research Programme

DR DAVID Carlson has been appointed the new director of the World Climate Research Programme (WCRP). He was formerly Director of Atmospheric Technology for the US National Center for Atmospheric Research and is currently serving as Chief Editor for Earth System Science Data. Dr Carlson directed the International Programme Office for the International Polar Year 2007-2008.

IGBP secretariat staff changes

IN SEPTEMBER this year, Office Manager Charlotte Wilson ended her formal association with IGBP to embark on a career as a consultant. Charlotte joined IGBP in 1999 and facilitated several key achievements throughout the years including IGBP's first synthesis and the Planet Under Pressure conference. She will continue to assist with IGBP tasks from her new office in Irvine, Scotland. Finance Coordinator Britta Boström left IGBP in October this year to take up a new position. Britta joined IGBP in 2005; her skills and experience were instrumental in meeting reporting requirements and the timely completion of projects. We wish both Charlotte and Britta the very best in their future endeavours. We also welcome Linlin Olsson as the new finance coordinator. Linlin has worked with major

businesses and comes with extensive financial experience.

UNFCCC scientific meeting

THE 40TH session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) took place 4-15 June 2014 in Bonn, Germany. IGBP Executive Director Sybil Seitzinger presented the latest findings from the four global environmental change programmes at the meeting, which provides a forum for climate negotiators to discuss the science. The presentations focused on climate extremes and integrated scenarios for biodiversity and climate.

IHDP closes

ON 30 JUNE, the International Human Dimensions Programme on Global Environmental Change (IHDP) closed its doors after 24

successful years. IHDP was a close and valuable partner: it co-sponsored several IGBP core projects and participated in numerous collaborative activities including major conferences and workshops. Most of IHDP's projects have already initiated the transition to Future Earth.

Dearing wins Murchison Award



JOHN DEARING, a longstanding member of IGBP's Past Global Changes project, has been awarded the prestigious Murchison Award (2014) by the Royal Geographical Society (UK). Dearing was chosen to receive the award in recognition of his "publications contributing to the understanding of environmental change".

FIVE GLOBAL HUBS FOR FUTURE EARTH

THE SECRETARIAT for the new, ten-year research initiative Future Earth has been announced. The preferred bidder is an international consortium of lead organisations from Canada, France, Japan, Sweden and the United States. The new secretariat was announced by the International Council for Science on behalf of the members of the Science and Technology Alliance for Global Sustainability (the Alliance).

Over 20 expressions of interest were received for the secretariat. Following a two-day bidders' conference hosted in Paris, consolidated final bids were reviewed

on the basis of their vision, capability, organisational model and management plan and funding.

Future Earth's secretariat (<http://www.futureearth.org/secretariat>) will span three continents with five global hubs. These hubs will be complemented by a number of regional hubs

in Latin America, Asia, Europe and the Middle East. Discussions to develop an African hub are under way, with plans in other regions also under consideration.

More information, key contacts, and statements from members of the Alliance are available on the ICSU website (www.icsu.org).



The news, which came as a surprise to most, was met with jubilation at first. But this quickly turned to concern when the numbers were crunched.

The Global Carbon Project's Corinne Le Quéré said, "The best these commitments may be able to do is move the world away from the extremely high levels of climate change that we are currently on track for."

Most commentators agree the deal is a signal to the markets and other nations about the possibility of an ambitious deal at COP 21 in Paris next year.

Changes ahead for the core projects

THE IPO of the Integrated Land Ecosystem - Atmosphere Processes Study (iLEAPS) will move from Finland to China in 2015 to be hosted by Nanjing University and the Jiangsu Provincial Collaborative Innovation for Climate Change (CIC3). Tanja Suni, who has helped to develop the project over the past few years, will stand down as executive officer. IGBP wishes her all the best with her future assignments.

IGBP welcomes Sebastien Boillat and Fabiano Scarpa as the Global Land Project's (GLP) executive officer and project officer respectively. GLP is currently hosted by the National Institute of Space Research (INPE), Brazil, and will remain there until the end of the year. The project is entering its second phase as a Future Earth initiative and has received a number of bids to host its international project office beginning January 2015. The proposals are currently under review.

In September this year, Eric Saltzman stepped down as Chair of the Surface Ocean - Lower Atmosphere Study (SOLAS) project to

FUTURE EARTH: FORGING NEW CONNECTIONS

FUTURE EARTH should work "beyond the natural sciences to forge new research interactions with the social sciences, business and law", according to IGBP Chair James Syvitski in an interview published in the October issue of *Nature Climate Change*.

"My proudest moment as chair was supporting the transition between IGBP and Future Earth", Syvitski noted. He was confident that the five hubs of the global secretariat would facilitate region-specific discussions between government leaders, development agencies and scientists. He also hoped that the regional hubs would facilitate engagement with a broader range of stakeholders and "dialogue outside the research community".

Syvitski felt that closer ties with government and industry would directly influence environmental

messaging and policy change in a regional context. He noted that Future Earth would need to interact with a much wider range of stakeholders than what the global-change programmes have traditionally engaged with. He emphasised the need for new funding models to support a "long-lasting Future Earth programme".

"Future Earth is about creating networks so individuals can draw on the knowledge and skills of others," Syvitski said. The successful Rivers in Anthropocene conference, for example, attracted natural and social scientists and "even included the fine arts". "It was exciting to see what each community brought to the table, to learn from one another and get over our reluctance to have this conversation."

In response to a query on water security and management, Syvitski



IGBP Chair James Syvitski

Wendy Broadgate

bemoaned the paucity of collaborative efforts like the multi-country Mekong River Commission. Solving problems related to water requires looking beyond not only national boundaries but also disciplinary boundaries: in this context Future Earth could draw on IGBP's recognition of the importance of interconnections among regions and different parts of the Earth system, he said.

take up an appointment with the US National Science Foundation. The project has initiated a search for a new chair. Paul Monks, co-chair of the International Global Atmospheric Chemistry (IGAC) project, rotates off at the end of 2014. Mark Lawrence will join Alan Goldstein as the new co-chair. We thank both Eric and Paul for their leadership and service to the IGBP community.

Sander van der Leeuw will serve as the co-chair of the Analysis, Integration and Modelling of the Earth System (AIMES) project along with Peter Cox. The Global Carbon Project welcomes Nebojsa Nakicenovic (International Institute for Applied Systems Analysis)

and Rob Jackson (Stanford University) as its new co-chairs.

Jean Ometto, researcher at INPE and former IGBP science liaison in Brazil, will coordinate activities at the Brazil regional office in place of Patricia Pinho, who has taken a position at the University of Sao Paulo. We wish Patricia the best in her new role.

ICSU General Assembly

DURING the past three decades, thousands of volunteer scientists across the globe have come together under the umbrella of the global-change programmes to deepen our understanding of the Earth

system. Their contributions were a focus of the first day of the General Assembly of the International Council for Science (ICSU), held in September in Auckland, New Zealand.

Delegates to the major three-day event heard how the combined efforts of the four global-change programmes – co-sponsored by ICSU – have made important scientific advances and underpinned major policy assessments such as the Intergovernmental Panel on Climate Change (IPCC). "The value of the global-change programmes is putting together the big picture. The sum is greater than the parts," said Sybil Seitzinger, Executive Director of IGBP.

2014 GLOBAL CARBON BUDGET RELEASED FOR UN SUMMIT

EMISSIONS from fossil fuels and deforestation in 2014 are set to reach a new 40-billion-tonne record high, 2.5% above 2013 levels, according to the latest carbon budget released by IGBP's Global Carbon Project. China, the world's largest emitter of carbon dioxide since 2006, accounts for 28% of the emissions, followed by the US (14%) and Europe (10%). For the first time, China's per capita fossil-fuel emissions exceed those of Europe.

The budget was published in the open-access journal *Earth System Science Data Discussions*. It was accompanied by three analyses relating to the climate target that seeks to prevent global average surface temperature from rising more than two degrees Celsius above pre-industrial temperatures – the so-called two-degree target agreed at the Copenhagen conference in 2009.

The analysis concluded that total future CO₂ emissions cannot exceed 1200 billion tonnes for a likely (66%) chance of meeting the two-degree target. Nations have agreed that going beyond this limit risks "dangerous" climate change. At the current rate of CO₂ emissions, this 1200-billion-tonne CO₂ "quota" will be used up in around 30 years – or one generation.

Unless new technologies to keep carbon out of Earth's atmosphere are developed and deployed on a large scale, global emissions will need to reduce by more than 5% each year over several decades for a reasonable chance of keeping climate change below 2°C.

"China's emissions now exceed the US and Europe's emissions combined. This is an interesting trend

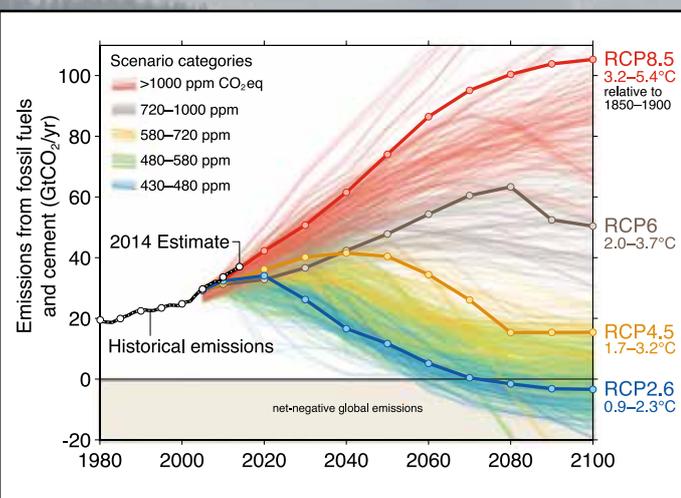
and shows the important role China will play in addressing the climate challenge," said Professor Sybil Seitzinger, Executive Director of the International Geosphere-Biosphere Programme (IGBP).

The world's second largest emitter, the United States, saw emissions grow 2.9%. This bucks a trend of declining emissions since 2008. While improvements have been made to reduce energy consumption and carbon intensity, economic and population growth coupled with a reversion to coal consumption are driving emissions upwards.

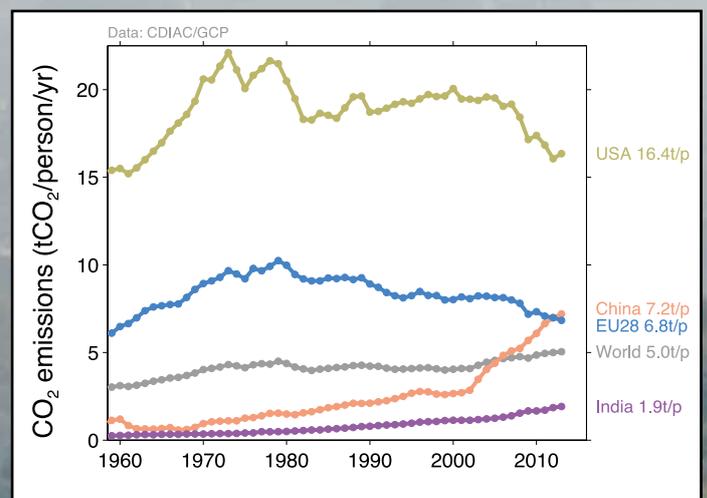
Emissions in the European Union, which ranks third among the biggest emitters, fell 1.8% on the back of a weak economy. Deep emission cuts in some countries offset a return to coal led by Poland, Germany and Finland. Whereas national emissions are falling, Europe exports about one third of its emissions, largely to the emerging economies. When these "consumption" emissions are accounted for, EU emissions can be seen to have only stabilised.

India's emissions are growing fastest of the big four, and account for 7% of total emissions. Emissions are on course to surpass Europe's by 2019.

The carbon budget was timed to inform the UN Climate Summit in New York, which took place on 23 September. The summit, billed as the largest gathering of world leaders to discuss climate since the 2009 UN Climate Summit, was not intended to lead to legally binding outcomes. Rather it was an effort by UN Secretary-General Ban Ki-moon to create momentum for an ambitious international agreement at the COP 21 negotiations in Paris in 2015.



Observed emissions and emission scenarios. Over 1000 scenarios from the IPCC Fifth Assessment Report are shown in the figure.



Top fossil-fuel emitters (per capita).

Lead author Professor Corinne Le Quéré, Director of the Tyndall Centre for Climate Change Research in the UK, said: "We are nowhere near the commitments necessary to stay below 2°C of climate change, a level that will be already challenging to manage for most countries around the world, even for rich nations."

The launch of the carbon budget coincided with the start of a large climate march in New York that attracted over 310,000 people according to its organisers. The budget received widespread international media coverage, including articles on the BBC, Bloomberg, *Financial Times*, *Newsweek*, *The Guardian*, *Der Spiegel*, *The Japan Times*, *China Daily*, *China Dialogue* and three articles or blogs in the New York Times. The FT Chinese published a commentary by two of the authors, Corinne Le Quéré and Dabo Guan.

MORE INFORMATION

www.globalcarbonproject.org/carbonbudget/

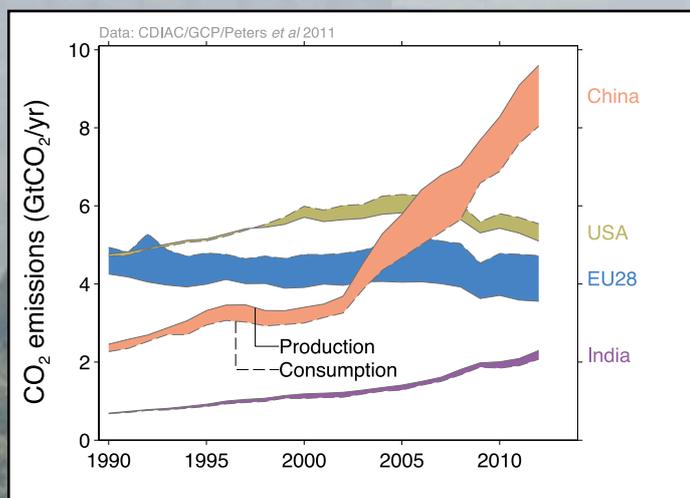
www.globalcarbonatlas.org

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Fuss S (2014) *Nature Climate Change*, doi:10.1038/nclimate2392

Le Quéré C *et al.* (2014) *Earth System Science Data Discussions*, doi:10.5194/essdd-7-521-2014

Raupach M R *et al.* (2014) *Nature Climate Change*, doi: 10.1038/NCLIMATE2384



Consumption-based emissions (carbon footprint). This provides an alternative perspective on emission drivers.



Celebrating three decades in Sweden

FOR almost three decades, the home of IGBP's secretariat has been in Stockholm at the Royal Swedish Academy of Sciences.

On 20 October, we held an event at the academy to celebrate this anniversary. The event coincided with the annual meeting of IGBP's Officers (our executive committee).

The IGBP community and supporters from funding agencies and government joined us for an evening where we discussed IGBP's achievements and legacy as it prepares to transition to the new Future Earth initiative.

Indeed, representatives from the new Future Earth global hubs also attended the event. They were meeting in Stockholm to finalise plans for the transition to the permanent secretariat.

IGBP's first director Thomas Rosswall described the early workings of the secretariat. Effective international communication was one of the first challenges. Back in 1986 email was a strange curiosity to be treated with scepticism and suspicion.

Current Executive Director Sybil Seitzinger opened the event. She spoke of her first interactions with IGBP and how its global perspective helped shape her career.

Current chair James Syvitski from the University of Colorado, Boulder, took to the floor and discussed how IGBP's syntheses helped shape concepts such as the Anthropocene and

planetary stewardship.

Anders Granlund, lead policy specialist for climate and environment for the Swedish International Development Cooperation Agency (Sida), has been a long-time supporter of IGBP. He challenged Future Earth to do more to engage the global south. This is where international capacity must be built and retained. Anders Turesson, senior advisor to the Swedish Government, spoke of the value to policymakers of the Intergovernmental Panel on Climate Change (IPCC), which has close ties to IGBP. Swedish meteorologist Bert Bolin was instrumental in creating both organisations.

IGBP's Deputy Director Wendy Broadgate invited guests to speak about their own experiences with IGBP. Secretariat staff and scientists past and present offered personal reflections on their time with IGBP including atmospheric physicist Henning Rodhe, former chief climate negotiator to Sweden Bo Kjellen and Dennis Ojima from Colorado State University. Ojima is now part of the Colorado hub of Future Earth but began his career as a scientist in the first IGBP secretariat back in 1986.

In December 2015, IGBP will host a legacy event at the American Geophysical Union meeting, San Francisco, to officially mark the end of IGBP. IGBP's projects will transition fully to Future Earth at that time.



Thomas Rosswall and Henning Rodhe