Global Change

International Geosphere-Biosphere Programme

Issue 74 ▮ Winter 2009

PLANETARY BOUNDARIES

Nine identified
Three crossed

Global CO_2 budget
Variations and trends

A vision for 2050
The future could be bright

Cimate-change index
A new tool for the public and policymakers

GLOBAL CHANGE IGBP International Geosphere-Biosphere Programme

www.igbp.net
Earth-system science for a sustainable planet

ICSU International Council for Science

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Global Change primarily publishes articles reporting science from within the extensive IGBP network.

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If you have an idea for a feature article or news, email Science Editor Ninad Bondre ninad.bondre@igbp.kva.se

Editor: Ninad Bondre
ninad.bondre@igbp.kva.se

Director of Communications: Owen Gaffney
owen.gaffney@igbp-kva.se

Graphic designer: Hilarie Cutler
hilarie@igbp.kva.se

Cover image

Maintaining the long-term environmental stability of the Holocene, some experts suggest, will require respecting nine interlinked planetary boundaries that define a "safe operating space" for humanity. As the dials on the image depict, we have already overstepped three of the boundaries.

Welcome to Global Change, the new magazine from the International Geosphere-Biosphere Programme. Global Change is based on our old newsletter, which has had a long and successful history. With the new magazine, we want to broaden our appeal and reach a wider audience. It will be distributed to researchers, policymakers, funders, journalists, pressure groups and others.

This first issue is timed to coincide with the Copenhagen climate talks: many of the articles focus on recent carbon-cycle research. Of course, IGBP research goes much wider than climate change, and this will be reported in coming issues. We sincerely hope that you enjoy our magazine, and we look forward to your feedback.

Owen Gaffney
Director of Communications
owen.gaffney@igbp.kva.se

GLOBAL CHANGE

IGBP International Geosphere-Biosphere Programme

Join the IGBP network

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IGBP core projects

Analysis, Integration and Modelling of the Earth System (AIMES)

Global Ocean Ecosystem Dynamics (GLOBEC)

Global Land Project (GLP)

International Global Atmospheric Chemistry (IGAC)

Integrated Land Ecosystem-Atmosphere Processes Study (iLEAPS)

Integrated Marine Biogeochemistry and Ecosystem Research (IMBER)

Land-Ocean Interactions in the Coastal Zone (LOICZ)

Past Global Changes (PAGES)

Surface Ocean-Lower Atmosphere Study (SOLAS)

Synthesis, integration and exploration

Geoengineering

The role of changing nutrient loads in coastal zones and the open ocean in a high CO_2 world

Global nitrogen assessment and a future outlook

Earth-system resilience: Earth-system prediction

Earth-system impacts from changes in the cryosphere

Megacities and coastal zones

Global environmental change and sustainable development: the needs of least developed countries

The role of land cover and land use in modulating climate

Aerosols

Global environmental change joint projects

Global Carbon Project (GCP)

Global Environmental Change and Food Systems (GECAFS)

Global Water System Project (GWSP)

Global Environmental Change and Human Health (GECHH)

ICSU's global environmental change programmes

DIVERSITAS

International Geosphere-Biosphere Programme

International Human Dimensions Programme

World Climate Research Programme

And their Earth Systems Science Partnership

ICSU International Council for Science

IGBP is an ICSU global environmental-change programme.

IGBP focuses the international research community on the planet's key biogeochemical processes – the carbon, oxygen, nitrogen, water, phosphorus, and sulphur cycles. Our work includes understanding and predicting how these cycles are changing and the impact of human activities on them.