

Earth impacts linked to human-caused climate change

A new NASA-led study shows human-caused climate change has made an impact on a range of Earth's natural systems, including permafrost thawing, plants blooming earlier across Europe, and lakes declining in productivity in Africa.

"This is the first study to link global temperature data sets, climate model results, and observed changes in a range of physical and biological systems to show the link between humans, climate and impacts," noted Cynthia Rosenzweig of NASA's Goddard Institute for Space Science and lead author of the study, published in *Nature*. Rosenzweig and her colleagues also found the link between human-caused climate change and observed impacts on Earth holds true at the scale of individual continents, particularly in North America, Europe and Africa.

To arrive at the link, the scientists built and analysed a database of more than 29 000 data series pertaining to observed impacts on Earth's natural systems. The data were collected from about 80 studies. Observed



impacts included changes to physical systems, such as glaciers shrinking, permafrost melting, and lakes and rivers shrinking.

Biological systems were impacted in a variety of ways, such as leaves unfolding and flowers blooming earlier in the spring. In aquatic environments, plankton and fish are shifting from cold-adapted to warm-adapted communities.

Sediments tell story of China's history of mining

A new geochemical study illuminates 7 000 years of mining and metal use in central China and links these trends to fluctuations in airborne pollution during the Bronze Age and other military and industrial periods in Chinese history.

The study, which could help scientists better understand the accumulative environmental effects of human activity in the region since prehistory times, was published in the July issue of the American Chemical Society's *Environmental Science & Technology* journal.

Using carbon-dated core sediments taken from Liangzhi Lake in Hubei province, Xiang-Dong Li and colleagues were able to track metal deposit trends at the lake dating back to 5 000 BC. Liangzhi Lake is located in an important region in the development of Chinese civilisation.

Beginning in about 3 000 BC concentrations of copper, nickel, lead and zinc in the sediments began to rise, indicating the onset of the Bronze Age in ancient China, the researchers found. In the late Bronze Age (475 BC to 220 AD), an era corresponding with numerous wars, sediment concentrations of copper increased 36% and lead by 82%. Copper and lead were used extensively to make tools and weapons.

To download the full article, go to <http://dx.doi.org/10.1021/es702990n>

DRC wetlands receives international recognition

An area of the Democratic Republic of Congo containing the largest body of freshwater in Africa has been added to the Ramsar Convention's list of Wetlands of International Importance.

This makes it the largest region ever to be designated as such. At more than 6.5 million hectares, the Ngiri-Tumba-Maingombe area is twice the size of Belgium, and has one of the highest concentrations of biodiversity anywhere in the world. It is also a major carbon sink.

Previously, the largest Ramsar wetland was the 6.3 million hectare Queen Maude Gulf Migratory Bird Sanctuary in Canada. The Congo basin is also the site of the world's third-largest Ramsar wetland, the 5.9 million hectare Grand Affluents area of the Congo River and major tributaries declared earlier this year.

Source: WWF

Sediment scrubbing technology tested in US river

Scientists from the University of New Hampshire's (UNH's) Contaminated Sediments Centre have been testing an innovative way to treat polluted sediment in coastal waterways at the edge of the Cochecho River.

Rather than dredging up the sediment, the project team has created a patch black geotextile mats designed to cap and stabilise pollution in place. Over the next two years UNH professors Kevin Gardner and Jeffrey Melton with their team of students will monitor these mats to evaluate the effectiveness of this new approach. "We need to know how these mats behave when they are buried under mud



for a few years, compared to how they performed in the laboratory," explained Prof Melton.

The mats comprise a mixture of reactive materials sandwiched between two layers of geotextile fabric, creating a sort of quilt that traps pollutants but allows water to flow through. The reactive 'filling' of this quilt contains three different substances

that bind and stabilise different pollutants. One such substance – a patented technology based on a natural form of phosphorus – treats toxic heavy metals associated with industrial pollution, such as lead, copper, zinc and cadmium.

UN scheme starts to clean up Kenyan capital

A new initiative by the United Nations Environment Programme (UNEP) aims to help the Kenyan government deal with air pollution, waste management and the clean-up of rivers in the country's capital, Nairobi.

The initiative, drawn up by UNEP in cooperation with the government, the city council, donors and the UN Human Settlements Programme (UN-HABITAT), will work in conjunction with the government's Nairobi Metro 2030: A Vision for a World-Class Metropolis plan. "We are determined, through a combination of financial, scientific and technical support to explore how best to assist in the transformation of Nairobi into a vibrant, healthy and functioning capital city in the twenty-first century with the lessons learnt available for other developing metropolitan areas in and outside Kenya," said UNEP Executive Director Achim Steiner.

Among other goals, UNEP aims to assist in finding a new site for the Dandora dumping site, which gets 2 000 t of rubbish each day at present, to a new modern sanitary landfill site in Ruai. Dandora is a major health hazard for people living and working nearby and a key source of pollution into the Nairobi River.



An estimated 300 points of direct discharge of sewage, heavy metals, oils and other pollutants into the Nairobi and Ngong rivers have been identified. One of these sources is the Dagoretti Slaughter House that processes more than 400 animals a day. Under the new initiative, waste will instead be used to fuel a biogas power plant, whose output has been estimated to have the potential of generating enough off-grid electricity for more than 1 000 homes in the surrounding area.

The project also includes plans for the rehabilitation of the Nairobi Dam with the first element being an Environmental Impact Assessment of the proposed engineering interventions for the restoration works.

New weapon in fight against corruption

The World Bank Institute (WBI) has released a practical guide to help companies faced with corruption in the public procurement arena.

The guide, *Fighting Corruption through Collective Action – A Guide for Business*, was created to help companies fight back against the insidious impacts of corruption and, along with its companion Web portal, outlines proven methods to fight marketplace corruption through collective action between business and other stakeholders.

"The purpose of this guide is to establish a level playing field and assist firms who would otherwise have to abandon doing business in a corrupt environment," reported Djordjija Petkoski, WBI programme leader. "It should become a staple component of a company's approach to promoting ethics and to managing the risk of fraud and corruption. Equally, the guide should also be of interest to enlightened governments and other organisations which share the goals of eliminating corruption from business dealings."

For more information, visit: www.fightingcorruption.org

Concrete jungle healthier for frogs



Frogs living in urban environments seem to be better off than their counterparts living in farm areas, a US study has found.

Zoologists from the University of Florida (UF) found that toads in suburban areas are less likely to suffer from reproductive system abnormalities than toads near farms – where some had both testes and ovaries. "As you increase agriculture, you have an increasing

number of abnormalities," noted Prof of Zoology Lou Guillette.

Several past studies have suggested a link between herbicides commonly used in farming and sexual abnormalities in tadpoles and frogs. The UF study is reportedly the first study to compare abnormalities in frogs from heavily farmed areas with frogs from partially farmed and completely suburban areas. In so doing, it highlights the difference between the impact of agriculture versus development.

"Our study is the first to explicitly ask, of these two areas of human disturbance, do we see a greater proportion of abnormal animals in one versus another," Prof Guillette said. "Because the results implicate agriculture, future research can narrow the focus to agricultural chemicals."

Spotlight on international water careers

A new publication, which places the spotlight on careers in the international water sector, is now available.

A World of Opportunities – Working in the International Water Sector, is a collaborative effort from the International Water Association, *Water21* magazine and the my-water-career.com website. The annual publication aims to provide valuable information for those making early career decisions. Containing articles covering key issues affecting the water sector and profiles of individuals working within it, the publication highlights the significance of the sector and the diversity of career opportunities that exist.

To request a free copy go to www.survey.bris.ac.uk/iwa/career-book