



## Climate change happening 'faster and sooner' – report

The pace and scale of climate change may now be outstripping even the most sobering predictions of the last report of the Intergovernmental Panel on Climate Change (IPCC).

An analysis of the very latest, peer-reviewed science indicates that many predictions at the upper end of the IPCC's forecasts are becoming ever more likely. Meanwhile, the newly emerging science points to some events thought likely to occur in longer-term time horizons, as already happening or set to happen far sooner than had previously been thought.

The *Climate Change Science Compendium 2009*, released earlier this year by the United Nations Environment Programme, point to losses from glaciers, ice-sheets and the polar regions which appear to be happening faster than anticipated. The Greenland ice sheet, for example, has recently seen melting some 60% higher than the previous record of 1998.

"The report is a wake-up call. The time for hesitation is over," says United Nations Secretary-General Ban Ki-moon. "We need the world to realise, once and for all, that the time to act is now and we must work together to address this monumental challenge. This is the moral challenge of our generation."

Among others, the compendium points to perennial drought conditions already being observed in South-eastern Australia and South-western North America. Projections suggest that persistent water scarcity will increase in a number of regions in coming years, including southern and northern Africa, the Mediterranean, much of the Middle East, a broad band in Central Asia and the Indian subcontinent.

To download the full report, go to [www.unep.org/compendium2009/](http://www.unep.org/compendium2009/).

## Historical agreement opens door for world's largest transboundary biosphere reserve

The governments of Croatia and Hungary have signed a joint declaration to establish a transboundary biosphere reserve along the Mura, Drava and Danube rivers in 2010.

This represents the essential core of a much larger riverine protected area linking Austria, Slovenia, Croatia, Hungary and Serbia. Once established the transboundary protected area will be the world's first biosphere reserve to be commonly shared and managed across five countries.

The agreed reserve between Croatia and Hungary will protect a 500 km section of the Mura, Drava and Danube river system in both countries, connecting over 630 000 ha including highly valuable natural and cultural landscape.

The area is a hot spot of rare natural habitats in Europe such as large floodplain forest, gravel and sand banks and oxbows. It is home to the highest density of breeding pairs of the white-tailed eagles (*Haliaeetus albicilla*) in Europe and hosts endangered species such as little tern (*Sterna albifrons*), black stork (*Ciconia nigra*), otter (*Lutra lutra*) and sturgeons (*Acipenser* sp.) as well as being an important stepping stone for more than 250 000 migratory water fowl every year.

## Pretty Cape tulips pestering Aussie pastures

CSIRO and the Department of Agriculture and Food Western Australia (DAFWA) are collaborating in an attempt to outwit one of southern Australia's worst agricultural weeds – the Cape tulip.

Cape tulips were introduced to Australia from South Africa in the mid-19<sup>th</sup> century as garden plants. Since then they have become major pasture weeds in Western Australia, South Australia, Victoria and New South Wales. They are unpalatable and poisonous to livestock.



A one-year study has been initiated to see if it would be feasible to control one and two-leaf Cape tulips (*Moraea flaccida* and *M. miniata*) using the rust fungus *Puccinia moraceae* as a biological control agent. Plant pathologist Dr Louise Morin is testing various rust isolates to see how pathogenic they are on the Cape tulips occurring in Australia as well as testing them on a few key closely-related, non-target plant species.

According to CSIRO Entomology's Dr John Scott Cape tulips appear to be suitable targets for biological control as they are only a few close relatives among Australian native species and no related crops. The local place to look for possible biological control agents for Cape tulips was their home range. Earlier CSIRO surveys in South Africa identified three biological control agents, of which the rust appears the most promising.

This initial study, funded by DAFWA, will yield information on the aggressiveness of the rust on Cape tulips and assist in determining its biological control potential. "It will also provide preliminary information on the susceptibility of non-target plant species to the rust. This is an important step in deciding if the rust should undergo future comprehensive host-specificity testing," noted Dr Scott.



Turkish student, 18-year-old Ceren Burçak Dag won the 2009 Stockholm Junior Water Prize. The young woman won the coveted honour by developing an innovative method for generating energy through piezoelectric pulses from falling rain drops.

## Researchers go underground to reveal 850 new species

An Australian team of researchers have discovered 850 new species of invertebrates, which include various insects, small crustaceans, spiders, and worms, in underground water, caves and micro-caverns amid the harsh conditions of the Australian outback.

The team – led by Prof Andy Austin (University of Adelaide), Dr Steve Cooper (South Australian Museum) and Dr Bill Humphreys (Western Australian Museum) – has concluded a comprehensive four-year survey across arid and semi-arid Australia. “What we have found is that you do not have to go searching in the depths of the ocean to discover new species of invertebrate animals – you just have to look in your own back yard,” said Prof Austin. “What we have discovered is a completely new component to Australia’s biodiversity. It is a huge discovery and it is only about a fifth of the number of new species we believe exist underground in the Australian outback.”

Only half of the species discovered thus far have been named. Generically, the animals found in underground water are known as ‘stygofauna’ and those from caves and micro-caverns as ‘troglifauna’.

## Farmers growing and protecting significant amount of world’s trees

Agriculture, particularly in the developing world, is often associated with massive deforestation. However, scientists from the World Agroforestry Centre have demonstrated in a new study that almost half of all farmed landscapes worldwide include significant tree cover. The study made use of detailed satellite imagery.

The World Agroforestry Centre is one of 15 centres supported by the Consultative Group on International Agricultural Research (CGIAR). The centre’s study is said to be the first to quantify the extent to which trees are a vital part of agricultural production in all regions of the world. It reveals that on more than a billion hectares – which make up 46% of the world’s farmlands and are home to more than half a billion people – tree cover exceeds 10%.

“The area revealed in this study is twice the size of the Amazon, and shows that farmers are protecting and planting trees spontaneously,” reported Dennis Garrity, the centre’s DG. “The problem is that policymakers and planners have been slow to recognise this phenomenon and take advantage. Trees are providing farmers with everything from carbon sequestration, to nuts and fruits, to wind-breaks and erosion control, to fuel for heating and timber for housing.”

The scientists found that about 10 million km<sup>2</sup> of agricultural land have at least 10% tree cover. That includes 3,2 million km<sup>2</sup> in South America, 1,9 million in sub-Saharan Africa and 1,3 million in Southeast Asia. According to the report, ‘trees are an integral part of the agricultural landscape in all regions except North Africa and West Asia.’

## Is your shower-head making you sick?

Your showerhead might be making you sick, says US researchers following a recently published study.

The team from the University of Colorado at Boulder found that along with their daily shower, people might be getting a dousing of pathogenic

bacteria. Water spurting from showerheads can distributed pathogen-filled droplets that suspend themselves in the air and can easily be inhaled into the deepest part of the lungs.

For the study, researchers used high-tech instruments and laboratory methods to analyse roughly 50 showerheads from nine cities in seven American states. They concluded about 30% of the devices harboured significant levels of *Mycobacterium avium*, a pathogen linked to pulmonary disease.

It is not surprising to find pathogens in municipal waters, said project leader Norman Pace, however, some *M. avium* and related pathogens were found clumped together in slimy ‘biofilms’ that clung to the inside of showerheads at more than 100 times the ‘background’ levels of municipal water. “If you are getting a face full of water when you first turn your shower on, that means you are probably getting a particularly high load of *M. avium*, which may not be too healthy.”

Symptoms of pulmonary disease can include tiredness, a persistent, dry cough, shortness of breath, and general weakness. Immune-compromised people such as pregnant women, the elderly and those suffering from other diseases, are more prone to experience such symptoms.

So is showering bad for you? “Probably not, if your immune system is not compromised in some way. But it is like anything else – there is a risk involved,” said Pace.

## Buff tomatoes fed on urine diet



Using human urine as a fertiliser produces bumper crops of tomatoes that are safe to eat, according to scientists.

Surendra Pradhan, an environmental biology researcher at the University of Kuopio, Finland, and colleagues gave potted tomato plants one of three treatments: mineral fertiliser, urine and wood ash, urine only, and no fertiliser. Urine is high in nitrogen, phosphorus and potassium.

Yields for plants fertilised with urine quadrupled and matched those of mineral-fertilised plants. The urine-fertilised tomatoes also contained more

protein and were safe for human consumption. The research was published in the August edition of the *Journal of Agricultural and Food Chemistry*. A pilot programme based on the research is to be launched this month.

According to Pradhan, further studies will be done to assess how acceptable the idea of collecting urine is in different cultures. His team will also investigate ways of decontaminating any faecal matter in urine collected from a toilet using a jerry can.

Source: *SciDev.Net*