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## **Black Carbon Emissions are 3-5 Times More Damaging Than Previously Thought**

*Project Surya finds climate model simulations underestimated impact of black carbon*

Washington, D.C., June 14, 2011 – Black carbon soot is a potent climate pollutant that is causing up to half the warming in the Arctic region, and also much of the warming in the Himalayan-Tibetan Plateau, two super critical ecosystems that are warming two to three times faster than the global average.

New evidence presented today gathered from the Gangetic Plains at the base of the Himalayas shows that black carbon soot may be even more damaging to this region of the world. Using cell phones as monitors, in a first of its kind experiment, measurements by Professor V. Ramanathan show that black carbon emissions are 3 to 5 times greater than represented in model simulations.

“Black carbon’s damage to the Himalayan-Tibetan Plateau is bad news for the hundreds of millions of people—perhaps billions—who depend on the “Third Pole” for dry season irrigation needed for the crops that feed them,” said Durwood Zaelke, President of the Institute for Governance and Sustainable Development (IGSD).

The Tibetan Plateau—the planet’s largest store of ice after the Arctic and Antarctic— is warming about three times the global average, with temperature increases of 0.3°C or more per decade measured for the past half-century. Since the 1950’s, warming on the Tibetan side of the Himalayas has contributed to retreat of more than 80% of the glaciers, and the degradation of 10% of its permafrost, permanently frozen ground, in the past ten years. Permafrost holds vast stores of CO<sub>2</sub> and methane trapped in the frozen ground which, if released, could trigger abrupt runaway warming.

“But there is good news here as well,” he added. Ramanathan and his daughter, Dr. Nithya Ramanathan, have enlisted local women and cell phones to help with the black carbon measurements of their indoor cooking – a source of black carbon pollution that is a major killer of women and children. “By changing the way they cook, the growing army of women enlisted by Ramanathan and his daughter can save the Himalayan Plateau,” said Zaelke, while also saving their own lives and the lives of their children. He added, “of course they will need help from their governments and international partners.”

By cutting their black carbon emissions from cooking, the women of Asia also can prevent the monsoon from shifting. Literally billions of people depend on the monsoons for the water for their crops and drinking. Zaelke said, “This may be even more important than saving the Himalayas.”

Air pollution, monsoon floods and droughts are three of the most serious environmental threats

to over 60% of the world population living in Asia. In South Asia, a two-to-three-fold increase in soot loading from present day levels could substantially weaken the monsoon circulation, decrease rainfall by more than 25% and significantly increase the frequency of drought.

The importance of black carbon soot was further confirmed today in the UNEP/WMO report “Integrated Assessment on Black Carbon and Tropospheric Ozone.” According to the Summary for Policy Makers of the report, full implementation of the 16 identified emission reduction measures of black carbon and ozone precursors could avoid 2.4 million premature deaths, mainly women and children, with more than 80% of the health benefits occurring in Asia.

The report found existing technologies can cut local air pollutions, save millions of lives and billions of dollars in crop losses annually, while also cutting the rate of global warming by half – increasing the chances of keeping temperature rise below 2 degrees C, or even 1.5C.

Reducing these short-lived climate forcers, including black carbon, tropospheric ozone, and methane can have immediate health, climate and agricultural benefits. Unlike CO<sub>2</sub>, which can remain in the atmosphere for centuries, these pollutants last only days to weeks in the atmosphere.

Black carbon is a key warming agent for glaciated regions, including the Himalayan-Tibetan Plateau in Asia. It also contributes to the warming in the Arctic, where the white ice and snow acts as a defensive shield that reflects heat back to space. The Arctic is currently warming at twice the rate of the global average, and melting there is predicted to contribute to sea levels to rise of as much as 5 feet by the end of the century, according to a new study in May by the International Arctic Monitoring and Assessment Program (AMAP). This is more than two and a half times higher than the sea level rise projected in 2007 by the Intergovernmental Panel on Climate Change.

Another common air pollutant is methane, which interacts with sunlight and other volatile compounds to form ground-level ozone, or smog. Reducing ground-level ozone can help increase crop yields. It also can help restore the ability of forests, grasslands and mangroves to sequester carbon, a function now being degraded by ground level ozone.

In 2009, Zaelke, Ramanathan, Nobel Laureate Mario Molina and others, published a paper in the *Proceedings of the National Academy of Sciences*, that outlined strategies to achieve near-term climate benefits by reducing short-term climate warming agents, including black carbon and tropospheric ozone. The Molina paper also included measures to phase down another powerful climate forcer, hydrofluorocarbons, or HFCs, by using the Montreal Protocol treaty. “Global warming is a dauntingly complex issue,” Zaelke said. “Fortunately, there are many actions that we can take today that can produce immediate cooling and save millions of lives. Knowing what’s at stake, we cannot afford to wait.”

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