

UC San Diego

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# Pioneering Black Carbon Researcher Receives U.N. ‘Champion of the Earth’ Award

**Scripps Oceanography’s Veerabhadran Ramanathan Leading Efforts to Phase Out Polluting Cookstoves in India**



Veerabhadran Ramanathan, a distinguished professor of climate and atmospheric sciences at Scripps Institution of Oceanography, UC San Diego, whose landmark research showed that cutting emissions of black carbon and other short lived climate pollutants can significantly lessen the impacts of regional and global climate change, improve the health of millions of rural poor, and avoid crop losses, will receive tonight a 2013 Champions of the Earth award, the United Nations’s highest environmental accolade.

The Champions of the Earth prize is awarded annually to leaders from government, civil society, and the private sector, whose actions have had a significant and positive impact on the environment. It is organized by the United Nations Environment Programme (UNEP).

Ramanathan, who was nominated in the Science and Innovation category, and his fellow 2013 Champions of the Earth laureates received their awards at a special ceremony at the American Museum of Natural History in New York. The event will be attended by a host of celebrity activists, including supermodel and UNEP Goodwill Ambassador Gisele Bündchen.

“I am very honored to accept this prestigious award, which recognizes the critical role of science and research in addressing the major environmental challenges of our time,” said Ramanathan. “Policymakers across the world are realizing that through cost-effective actions such as reducing methane emissions from natural gas and oil production, and capturing emissions from waste dumps, or phasing out products using hydrofluorocarbons, or HFCs, major reductions in short-lived climate pollutants can be achieved, with significant add-on benefits for health and food security. As the science shows, fast action on black carbon, methane and HFCs – coupled with major cuts in carbon emissions – can make a critical contribution to achieving low carbon, resource-efficient, and inclusive development for all,” he added.

“We are proud that Prof. Ramanathan is being acknowledged for his science and for his humanitarian efforts, ensuring that research is translated into public policy,” said UC San Diego Chancellor Pradeep K. Khosla. “At UC San Diego, we focus on solutions to real-world problems and this award is well-deserved.”

Ramanathan, who also serves as UNESCO professor of climate and policy at The Energy and Resources Institute University in New Delhi, India, co-led an international research team that in 1997 first discovered the climate impact in Asia of widespread air pollution, known as the atmospheric brown cloud (ABC).

*adran Ramanathan*

Further studies by Ramanathan and fellow researchers highlighted the effects of growing levels of soot and other forms of black carbon, sulfates, ozone, and other pollutants emitted by cities, industry, and agriculture – termed the ‘brown cloud’ – which warm the atmosphere by absorbing sunlight, and are contributing in particular to the accelerated melting of Himalayan glaciers.

Brown clouds can also disturb tropical rainfall and regional circulation patterns such as the South Asian monsoon and reduce agriculture yields, potentially affecting over a billion people on the subcontinent.

Ramanathan's research underlines the idea that cutting emissions of black carbon, methane, hydrofluorocarbons (HFCs), and other substances collectively known as short-lived climate pollutants (SLCPs), with lifetimes of a decade or less, along with mitigation of CO<sub>2</sub> emissions, can reduce the rate of warming by as much as half in the coming decades.

“Leadership and vision will be the hallmarks of a transition to an inclusive Green Economy in developed and developing countries alike. That transition is underway and has been given fresh impetus by the outcomes of last year's Rio+20 Summit,” said UN Under Secretary-General and UNEP Executive Director Achim Steiner. “Prof. Ramanathan and his fellow 2013 Champions of the Earth winners are among those who are providing the science, actions, and policies to scale up and accelerate such transformations. As such, they are lightning rods towards a sustainable 21<sup>st</sup> Century.”

Ramanathan has been among the most prominent scientific voices calling for collective action to cut emissions of short-lived climate pollutants to slow the pace of global warming, and achieve multi-billion dollar health benefits.

Increasing numbers of governments are now heeding that call. Earlier this month, world leaders at the G20 summit in Moscow signed an agreement renewing commitments to reduce SLCPs, in parallel with major reductions in carbon emissions, to effectively tackle climate change.

Following its launch last year, some 60 countries and organizations have joined the Climate and Clean Air Coalition (CCAC), which aims to phase down the use of SLCPs. Ramanathan serves on the coalition's Science Advisory Panel.

A UNEP study in 2011, on which Ramanathan acted as vice-chair and senior contributor, presented 16 actions to cut black carbon and methane emissions, which, if implemented, would save close to 2.5 million lives a year through reduced respiratory illnesses, avoid crop losses amounting to 32 million tons annually, and abate about 0.5° C by 2050.

The report estimated that implementing these measures would help keep average global temperature rise below the internationally agreed-upon 2 °C target, at least until mid-century.

Ramanathan's studies on the climate warming effects of non-CO<sub>2</sub>, pollutants dates back to 1975, when he discovered the super greenhouse effect of a class of halocarbons known as CFCs.

Ramanathan has also translated his research into action, by establishing a project, known as Project Surya, in his native India to phase out inefficient cookstoves in collaboration with The Energy Resources Institute and Nexleaf Analytics.

Inefficient cookstoves – used by some 500 million families in developing countries – are responsible for an estimated 25 percent of all black carbon emissions. Some 3.1 million premature deaths – especially among women and girls – are also caused by inhalation of indoor smoke from cookstoves.

In its first phase, Project Surya used cell phone-based soot sensors to document the indoor exposure of women to black carbon from cookstoves, and demonstrated how the indoor smoke dominated outdoor concentrations of brown clouds in rural areas. Researchers also identified that improved biomass stoves using forced-draft technology drastically cut down fuel (firewood and dung) consumption and black carbon, thus reducing two major climate warming pollutants.

To date, Surya has enabled 2,000 households in three rural regions in India to switch to cleaner-burning technologies. Surya is now embarking on the second phase, in which researchers are setting up a structure for connecting tens of thousands of women with voluntary carbon markets using cell phone-based monitoring of compliance.

Surya is sponsored by UNEP, which also provided some of the funding for the initial phase of the project.

Other winners of the 2013 Champions of the Earth award include Carlo Petrini, the founder of the Slow Food Movement; Izabella Teixeira, Minister of Environment, Brazil; Google Earth; Janez Potočnik, European Commissioner for the Environment; Jack Dangermond, founder of the Environmental Systems Research Institute (ESRI), and Martha Isabel Ruiz Corzo, Director of the Sierra Gorda Ecological Group in Mexico.

## **About Champions of the Earth**

Champions of the Earth, which was launched in 2005, is the UN's flagship environmental award. To date, it has recognized 59 individuals and organizations for their leadership, vision, inspiration and action on the environment. The list of previous Champions laureates include Mongolian President Tsakhia Elbegdorj, Mexican President Felipe Calderon, Chinese actress and environmental advocate Zhou Xun, the Women's Environment & Development Organization (WEDO) and global music legend Angélique Kidjo. Visit <http://www.unep.org/champions/> for more details.

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