

Earth Institute News

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Scientists to Map Out Earth's Soil

New tool will help explain and solve world's greatest environmental threats



In western Kenya, soil erosion causes large gullies to form

New York, February 17, 2009 — Some of the answers to the world's greatest challenges -- such as climate change, food security, and water scarcity -- lie right beneath our feet. Responding to these and other critical issues, a group of scientists from around the world announced today an ambitious new plan to digitally map the Earth's soil and its properties. Scientists, industry leaders, and government officials gathered at Columbia University to launch GlobalSoilMap.net, a pioneering new tool that will shape future policy making, especially in those regions of the world most vulnerable to environmental shocks.

Knowledge of the world's soil resources is fragmented and dated. GlobalSoilMap.net will provide accurate soil information in real-time as well as state of the art analysis of soil properties, meeting the needs of various stakeholders, including policymakers, the climate change community, farmers, other land users, and scientists.

" On the current trajectory we will not meet our Millennium Development Goal to cut hunger by half by 2015," said Jeffrey Sachs, director of the Earth Institute at Columbia University. "We need to speed up, and fortunately can do so if we mobilize much greater global cooperation. Today's meeting speaks to the MDG hunger challenge and many others as well, including climate change, agriculture deficiency, nutrition, and water availability. Soil mapping is one of the pillars to the challenge of sustainable development and the Earth Institute is proud to be a founding partner in this undertaking."

Work has already started in sub-Saharan Africa, through an \$18 million grant awarded to the International Centre for Tropical Agriculture (CIAT) from the Bill & Melinda Gates Foundation and the Alliance for a Green Revolution in Africa (AGRA) to create Africa Soil Information Service (AfSIS). AfSIS will be the first-ever, detailed digital soil map of that region's 42 countries. The Nairobi-based Tropical Soil Biology and Fertility Institute of CIAT will lead this effort.

" The best science and technology available must be deployed immediately if Africa's soils are to be managed in a sustainable manner," said Kofi Annan, chairman of AGRA and former UN Secretary-General, in a pre-written statement. "Fortunately, this is exactly what is happening. I refer to the Africa Soil Information Service -- AfSIS for short. AfSIS is a most welcome addition to the arsenal of tools deployed against the scourge of hunger in Africa, and I heartily congratulate the scientists who developed the project."

The global digital soil map will use enormous advances in technologies for accurate collection and prediction of soil properties. Conventional soil maps, which are based on technology that existed before the computer, only provide descriptive, static information and are difficult to decipher for those outside the soil science community. Digital soil maps, which are essentially a spatial database of soil properties, are quantitative, dynamic, and will be comprehensible to scientists, policy makers, and government officials.

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(347) 753-4816 (mobile)
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“ Improved soil management for better crop productivity is crucial for providing food security – an intensifying challenge in the context of population growth, increasing numbers of hungry people, and the impacts of climate change on agriculture,” explained Pedro Sanchez, director of AfSIS and director of Tropical Agriculture and Rural Environment Program of the Earth Institute at Columbia University. “This initiative will provide farmers, policy makers, and scientists crucial information on how to address declining soil fertility in regions such as sub-Saharan Africa,” Sanchez continued.

Part of the funding will also provide initial support for the formation of the global consortium that is developing the methodology and raising funds for GlobalSoilMap.net. The consortium, which is led by World Soil Information (ISRIC), also includes the Earth Institute at Columbia University, the US Department of Agriculture - Natural Resources Conservation Service, the Brazilian Agricultural Research Corporation, the Joint Research Centre of the European Commission, the Commonwealth Scientific and Industrial Research Organization (Australia), the University of Sydney, the Chinese Academy of Sciences, and the French Research Institute for Development.

The information system will be freely accessible on the Internet. A ministry of agriculture, for example, can access GlobalSoilMap.net to anticipate fertilizer needs for farmers. Government officials will draw on the information to understand the extent of soil erosion and costs for addressing it. Scientists will utilize the data to forecast the effects of climate change. The Center for International Earth Science Information Network (CIESIN), a center at the Earth Institute, will work with regional partners around the world to integrate and deliver the data using rapidly developing information and communication technologies.

