Aerospace Seminar

Director, Mortenson Center in Engineering for Developing Communities

Friday, January 11, 2019 | DLC | 12:00 P.M.

Abstract: Nearly a billion people in the world lack access to safe drinking water, two billion have inadequate sanitation facilities, and three billion use firewood for their daily energy needs. These resource limitations are among the leading causes of death, and economic and political insecurity. Exacerbating these problems are the global effects of climate change. In many countries, service providers often provide access to clean water, safe sanitation, and affordable energy. However, in many developing countries there remains a significant gap between their intent and the impacts measured over time.

A combination of technologies may help address these asymmetries and enable improved decisions and response. Remote sensing from satellite-based instruments can forecast drought, floods and famine. A new generation of cubesats can provide global data coverage. In-situ sensors can monitor water resources, air quality, and global health program delivery.

This seminar will discuss several programs designed and managed at CU Boulder. Presently, partners are installing satellite-linked sensors on boreholes in arid regions of Kenya and Ethiopia. We are monitoring over 1.5 million people's water supply, and scaling to 5 million. Roughly half of water systems are functioning at any given time. We aim to achieve continuous functionality. In a water filter and cookstove program in Rwanda, instruments were used to monitor health behaviors, correlate adoption to health outcomes, and monetize program impact through carbon finance and "health credits". This effort reached over 1.6 million people and demonstrated a 30% reduction in the prevalence of diarrhea and respiratory illness among children under 5.

Bio: Evan Thomas is Director of the Mortenson Center at CU Boulder and a tenured Associate Professor in the Civil, Environmental and Architectural Engineering and Aerospace Engineering Sciences Departments.

His background is in water and air testing and treatment for both developing communities and spacecraft. Evan conceived, designed and directed a $25 million public health intervention in Rwanda that reached 350,000 households with cookstoves and 102,000 households with water filters.

Evan previously spent six years at NASA Johnson Space Center working on microgravity fluid management technologies and water recovery systems for spacecraft hardware. He has a PhD in Aerospace from CU Boulder and a Masters in Public Health from the Oregon Health and Science University.