

Beijing to Bioneers

TECHNOLOGY FUELING GRASSROOTS MOVEMENTS FOR A BRAVE NEW WORLD

EARTH SCOPE

 *The Chinese did not invent Digital Earth, but their* consistent promotion of it is responsible for an international community of ardent supporters. The Chinese Academy of Sciences recently hosted the 6th International Symposium on Digital Earth (ISDE) in Beijing. Hundreds of scientists, students, and business and government managers convened this past September to examine the progress made since China organized the first ISDE in 1999.

Google Earth, the omnipresent poster child for Digital Earth, was almost lost among the glitzy crowd of vendors hawking their three-dimensional Earth viewing products. Aggressive start-up firms, as well as leading satellite data



vendors, presented an impressive array of technologies and satellite data wares that would have seemed beyond belief a short decade ago. How this potential is expressed in the daily lives of educators, students, and citizens, as well as government and industry, will make up the great story of the 2010 decade.

The next decade will be the time for major societal shifts due to increasing

TIM FORESMAN, PHD, is president of the International Center for Remote Sensing Education and can be reached at foresman@earthparty.org.

pressure for economic transparency and reregulation, to international policing and visibility of terrorist-criminal enterprises, and to climate change impacts. Spatial information will increasingly be used to bring communities together to discuss and confront disruptions in economic-social systems. Globalization concerns will become more evident as the transfer of goods and money become readily apparent and traceable using Digital Earth technologies.

How do we know these trends will happen? Because educated and capable people now know that high-visibility observation and documentation are possible and provide demonstrative impacts on media and social movements. Dramatic examples from Google Earth applications are growing by hundreds of thousands each month. Engaged citizens are learning how to monitor and broadcast the great calamities of our time in vivid 3D living color through the Internet.

A refreshing range of applications was exhibited and discussed in Beijing. Two graduate students from the University of Abuja, Nigeria, Fanan Ujoh and Isa Kwabe, were exploring how to apply multi-temporal remote sensing data to assess the land tenure controls on one of the world's largest slums outside Lagos. With limited tools and fewer financial resources, they could envision accomplishing their research and using the results to promote policy changes in

the government. NASA's Worldwind or Google Earth represent freely accessible software platforms that these humble Nigerian students can apply with highbrow-corporate results.

An inspirational professor of humble means, Dr. R.S. Kumar of Annamalai University in Tamil Nadu, India, shared with the Beijing audience his efforts to provide better emergency response planning and operations for his community using satellite data and Digital Earth tools along the southeast coast of India, south of Chennai.

His efforts have helped the Indian farming community to literally improve their chances of survival by providing them a better understanding of the landscape and by deriving optimal methods for seeking elevated flood shelters during monsoons or tsunamis. Using satellite-based maps, this dedicated professor has begun discussing other issues, like water-well locations and optimal crops that can benefit vulnerable people. Digital Earth approaches can, and do, open opportunities to stimulate community dialogs that influence self-governance behaviors.

Across the Pacific from the Beijing conference, Bioneers celebrated their 20th year with keynote speakers sharing their recent exploits using Digital Earth methodologies. Bioneers is a diverse community of scientists, philosophers, socially responsible business leaders, community leaders, and caring Earth stewards whose ranks are growing into the tens of thousands. Topics of discussion exchanged at this year's annual conference ranged from toxic chemicals in infants' blood to green job entrepreneurs, from fair trade economics to socially responsible corporate leadership, and from Amazonia natives using Google



2



3

◀ **FIGURE 1.** Chief Almir of the Surui Amazon tribe. Courtesy of Google Earth. Photo credit: Denise Zmekhol, ZD Films.

▲ **FIGURE 2.** Rebecca Moore of Google Earth Outreach training Surui tribal leaders. Courtesy of Google Earth. Photo credit: Andrea Ribeiro.

▲ **FIGURE 3.** Two young Surui using a laptop. Photo credit: Fernando Bizerra, BG Press, courtesy of the Amazon Conservation Team, Brazil.

Earth technology to creating sustainability maps for New Mexico's future.

One universal lesson carried over from the Apollo moon landings is to look at the Earth as a whole living ecosystem, one that is self-contained with critical life support systems. Digital Earth technology is enabling the Bioneers community to share this whole-world perspective through engaged field work and network partnerships.

Chief Almir Narayamoga Surui captivated the Bioneers community with a stunning story of his experiences in the western Brazilian state of Rondônia. His Surui Amazonian tribe has been combating aggressive loggers to protect the tribe's way of life and save remnant rain forests. Eleven tribal chiefs have recently been murdered there, allegedly by powerful loggers and miners usurping the Surui's land. Chief Almir, a 32-year-old tribal chief (*Figure 1*), organized his fellow chiefs to fight this destruction by conducting surveys on the history of the Amazon, and on the current situation and by leveraging an unusual partnership he forged with Google. He is using Google Earth's high-tech tools to help his Surui people visibly tell their story to protect their forest and culture.

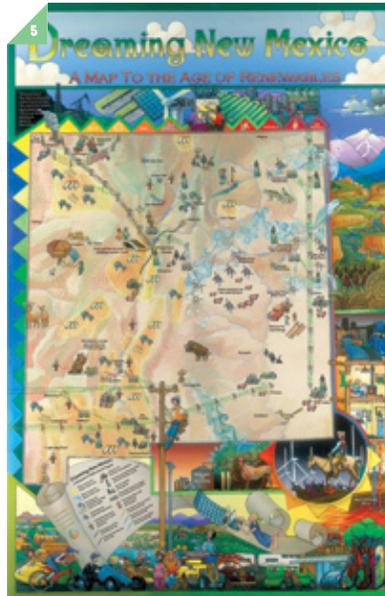
Google Earth's Rebecca Moore, who helped train the Surui tribe leaders (*Figure 2, 3*), also spoke at Bioneers about using Google Earth's Outreach program to support nonprofits, communities and indigenous peoples around the world. Chief Almir and Ms. Moore convincingly validated applying Google's mapping tools to address the systemic problems of environmental conservation, human rights, and cultural preservation.

Remote sensing convincingly portrays the raw demarcation of land use development surrounding and encroaching on

EARTH SCOPE

the pristine Amazon rain forest (**Figure 4**). Indigenous people are now using online mapping and Digital Earth technology (3D visualization tools such as Google Earth, Maps and SketchUp) to communicate across cultural bridges regarding the high stakes involved with Amazonian deforestation. Chief Almir believes that mapping tools and the GeoWeb can empower the Surui and other tribes to “take control of their own destiny” and improve their chances of survival.

Up north, New Mexico is also experiencing a self-governance experiment called Dreaming New Mexico. This project is boldly mapping the sustainability options for New Mexico’s citizens “to imagine a positive future for the people, the energy systems, land, waters and the future generations” (**Figure 5**). Co-led by Kenny Ausubel, Bioneers’ founder, and Peter Warshall, this



these complex landscape-level challenges (**Figure 6**).

The second decade in the 21st Century should prove exciting. We have acknowledged the practicality of sustainability practices in the face of climate change. We are witnessing previously disenfranchised, indigenous people of the Amazon raise their voices and visible profile over the Internet to protect their very existence. Evidence is building on how communities in America, both north and south, can use Internet mapping technologies and methods to marshal support and redirect their futures. We will surely witness more wondrous and widespread applications of remote sensing and Digital Earth technology in this brave new world. We are witnessing the Digital Earth pioneers. ☘



▲ **FIGURE 4.** *Surui tribal lands denoted by the full forest canopy cover (courtesy of Google Earth).*

▲ **FIGURE 5.** *Dreaming New Mexico Futures map (courtesy of Bioneers).*

▲ **FIGURE 6.** *San Juan power plant, New Mexico (courtesy of Bioneers).*

project is applying the same methodologies, and much the same remote sensing/Digital Earth technology, to focus the state’s citizens and leaders on both practical and visionary solutions towards sustainability. The Dreaming New Mexico Initiative is an

innovative program that uses best practices and social activists’ networks to bring about positive ecological and social transformation at the local and regional level. Project leaders are leveraging Google Earth applications to communicate successfully

For more information on these topics, please visit the following web sites.

<http://earth.google.com/outreach/amazon3.html>

www.amazonteam.org/

<http://bioneers.org>

www.dreamingnewmexico.org/