GDEST 2008: Geospatial Sciences for Sustainable Development in Africa

Opening Remarks:
Lee Schwartz
Office of the Geographer and Global Issues
U.S. Department of State

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I would like to join the previous speakers in welcoming this group of select experts, scholars, and colleagues to the start of what I am confident will be three days of productive scientist-to-scientist dialogue on geospatial science activities, challenges, and opportunities. Emerging geospatial science and technology not only comprises a field that is near and dear to all of us here, but – if applied appropriately – also promises to benefit and sustain development activities throughout Africa.

I'm proud to hold the title of U.S. Geographer, and I take my role quite seriously. In fact, when I speak publicly I tend towards emphasizing the importance of geography so much that I risk being considered a geographic determinist. On the occasions when I SUCCEED in eliciting such an accusation, I usually am content in feeling as if I've done my job in promoting the visibility and use of our craft.

It is with just this kind of optimism for the role of geography in mind that I have high hopes that the use of GIS, Remote Sensing, and other geospatial tools and analyses can be applied by our discipline's collective group of researchers, methodologists, and practitioners in a way that will, indeed, make a difference. Our challenge in promoting a dialogue along these lines for the next several days is to work together to insure that happens.

This is the second international keynote I've given since I was named to my current position a little over a year ago. The first one was at the North American Land Cover Summit, where I was asked to impart my wisdom despite the fact that I know nothing about North America and very little about land cover. And now, having taken the lead on behalf of the US Science Adviser, Dr. Fedoroff, in initiating this GDEST conference on the use of geospatial sciences in Africa, I am here speaking to you despite the fact that I do not pretend to be either a technical expert in geospatial science or deeply knowledgeable about any of Africa's regions.

Okay, you might be thinking then, just what is it that I DO know?

What I do OFFER is my experience in the Department of State as the director of a research and analysis office that every day is trying to figure out how best to apply its knowledge of geography and its expertise in geospatial research, tools, and applications to decisions that are being made by those in our government who are formulating policies and making decisions. My Bureau reports directly to our Sec'y of State, who – like the top ministers in all of our governments – is an extremely busy official with complicated and competing priorities. The challenge I face is how to make geospatial sciences seem relevant to her decision-making process and, ultimately, to a more effective foreign policy.

During the course of the next several days, I'm sure we will see that this is a common challenge we all face as scientists trying to make a difference. The relationship between our scientific activities and the implementation of solid policies – for good governance, effective management, and a more humane treatment of our societies – is critical as we move our dialogue forward.

I am going to leave it to the group of American experts we brought over here as part of our GDEST team to share some of their specific observations as we work jointly to address our common challenges.

But from my own particular expertise, I do want to emphasize one point up front and that is, it is most important to have not only a clear vision of where we are moving in the applications of geospatial sciences, but also to speak in a clear language and a unified voice. In order for us, as geospatial scientists, to be effectively heard by a broader audience, we need to do better at translating our language to a language that is understood by those who control budgets, set priorities, and develop doctrine. Too often, we meet in domestic and international fora where we speak only to one another, in terms that only we understand, as we move slowly from lessons learned to lessons learned as our science and applications move forward at a much greater speed than our dialogue.

This includes the delivery of digital data and visual products as well, and I frequently use the example of disaster response – an area about which I do have a certain amount of expertise – as one where we as a community regularly pat ourselves on the back for a job well done, ignoring the fact that we still aren't getting the right kinds of geospatial information to first time responders in a useful format and in a timely manner. (Lessons learned in geospatial science focus on geek-to-geek),

(KNOWING OUR CUSTOMERS IS KEY)

This is not the first time my office has come to Africa to look at the potential for Geospatial science and technology to support sustainable development. In 2001, the same partnership that worked to put together this GDEST effort – the State Department's Bureau of Oceans, Environment and International Scientific Affairs and the Office of the Geographer, together with USAID, NASA, the US Geological Survey, the Association of American Geographers, the Environmental Systems Research Institute, and others – worked to conceive the Geographic Information for Sustainable Development project that US Secretary of State Powell brought to the World Summit on Sustainable Development in Johannesburg in 2002, and which resulted in a series of conclusions and recommendations issued by the National Academies of Sciences "Down to Earth" report.

I'm pleased to say that since that time there has been continued growth in the use of GIS applications, Environmental Information Systems, cross-boundary management projects, information sharing networks and platforms, and the use of remotely sensed data as part of collaborative regional programs on earth observation.

It is with these successes in mind that we meet here today, with the goal of seeing how we can work together towards deepening the sustainability and importance of these cooperative national, regional, and global initiatives. Since the World Summit on Sustainable Development, the US Department of State has also institutionalized the role of the Science and Technology Adviser to the Secretary of State, and that office has lent its leadership and strength to the use of science for diplomacy, which is what the State Department's GDEST dialogues are all about.

I had not originally planned as part of my comments today to get into the details of our GDEST initiatives, preferring to remain more in a listening mode to find out more about all of your activities and research. But a number of you last night expressed curiosity about just what GDEST is, so I thought I'd review this briefly for you, since it doesn't appear in detail in any of the information we have shared with you to date. GDEST activities are designed to help scientists in the United States increase their interactions with scientists from other parts of the world on emerging science that has important implications for global economics, sustainable development, humanitarian response, national security, and other issues of importance to int'l. relations.

Overall GDEST activities have the objectives:

- **To provide leading US and other science and engineering researchers an opportunity to jointly explore research directions and challenges;**
- **To provide US researchers with exposure to a broad sample of specialists in other countries, particularly promising young scholars, in order to facilitate future international collaboration; &**
- **To identify common interests between current and future U.S. and international research leaders in selected emerging fields.**

Previous GDEST activities, beginning in 2005, focused on:

- **Sensors and sensor systems (in Japan);**
- **Quantum information and coherence (in Germany);**
- **Agricultural biotechnology (in India);**
- **Genomics and new tools for combating infectious diseases (in China);**
- **Bioinformatics (in South America)**

For our discussions this week, however, it is important to emphasize the context of ongoing geospatial activities throughout Africa. That is:

- **There are active networks of scientists and practitioners that have begun to direct the progress of geospatial science applications;**
- **An increased dialogue on spatial data infrastructure and data access policies is taking place, as is**
- **A growth in the development of academic and technical geospatial science curricula;**
- **There is an emergence of private-sector geospatial enterprises attempting to meet the region's analytical and mapping needs; as well as:**
- **A concrete effort to establish a regional space program that benefits from the initiatives taken by South Africa and Nigeria.**

Despite this progress over the past decade, many of the same constraints identified since the early-1990s, and again in our Down To Earth Report and elsewhere, remain valid today, and I will let our team of experts address some these in the first panel.

I should also note that our science adviser's concerns about elevating the use of science and technology as diplomacy has been echoed very recently in a number of international meetings. Just earlier this month, in fact, many of you are aware that a "Science With Africa" conference took place in Addis Ababa, jointly organized by the African Union and the UN Economic Commission for Africa.

Addressing the opening meeting of this conference, Abdoulie Janneh, the ECA's executive secretary, pointed out that Africa was "the only region yet to fully exploit the great potentials of using science and technology as an engine of growth and development."

In his keynote address at the same meeting, Mohamed Hassan, president of the African Academy of Sciences and executive director of the Academy of Sciences of the Developing World , argued that, "without a critical mass of scientists globally trained on the spot and based in Africa, the continent's effective participation in research and international development will remain a utopia."

And there was also concern about the gap between political commitments to take action, and the apparent lack of follow-through.

Edward Ayensu, chairman of Ghana's Council of Scientific and Industrial Research, complained at the meeting that, "We speak in fora such as this continuously and our ministers are experts in these areas. And, yet, when it comes to the time for us to do something, nothing happens."

At another international meeting earlier this month in Brussels, the World Food Program's Executive Director Josette Sheeran highlighted the increasing food vulnerability of growing numbers of countries and peoples because of the combination of soaring oil and energy prices, the effects of climate change, growing demand from countries like India and China, and the use of crops to produce biofuels. She warned of the potential that this scenario had for a rise in instability and conflict in the most vulnerable of countries. And these are ALL topics that geospatial science should take the LEAD in addressing, since we arguably are better positioned to address them than any other single scientific discipline. (There's my geographic determinism rearing its ugly head!)

Before closing, I would like to pose a number of questions in an effort to stimulate some thinking for our joint consideration during this conference:

1. **Where are the high potential areas for US engagement in geospatial science and technology? Is it in the facilitation of access of new earth observation data streams? Is it in the development of new models, methodologies and algorithms to analyze the data and turn them into relevant information? Is it primarily in providing capacity building and training? Or is it in the facilitation of joint research? But the more important question is WHAT ARE THE BEST MECHANISMS to achieve progress on ALL fronts: access to data, information, modeling and capacity building?**

2. **Since the World Summit on Sustainable Development, are we making real progress in bridging the digital divide? How can we facilitate greater access and use of georeferenced data in governments and civil society? How is <u>this</u> part of the <u>e-</u> government challenge that most governments are trying to address in their "e-government policies"?**

3. **What strategies have been successful in the design and implementation of legal and regulatory frameworks that promote the development of spatial data infrastructure? Who seems to be successful in facilitating interoperability, and open and transparent data exchange?**

4. **What seem to be the obstacles to the operational use of Geospatial tools for decision-support, particularly in those sectors that most directly benefit from the application of geospatial analysis? How can stakeholders play a constructive role in overcoming these obstacles? What are some creative initiatives, either through development assistance or science and technology cooperation, whereby donors can play a more constructive role?**

I want also to acknowledge the efforts and initiatives that have already taken place both throughout Africa and globally, and emphasize that we, as a community, need to be acutely aware of the dangers of either diluting or duplicating these accomplishments. Our GDEST follow-on collaborations need to make use of an already existing calendar of events to maximize the effectiveness of our information sharing efforts. In particular, the upcoming AARSE conference in Accra (Oct, 2008), the IGRSS conference to be held right here in Cape Town (July 2009), and the Africa GIS conference in Kampala (in late 2010) offer excellent opportunities to link to large constituencies that are already in place.

On a personal note, I started my comments today by referring to my role as the US geographer, a position that has existed since 1921. Among the many reasons that I am honored to hold this position is that it allows me to continue the work of my predecessor, Bill Wood, who for those of you who don't know, died of brain cancer nearly three years ago. Bill was the driving force behind the US government's efforts to help bridge the digital divide at the World Summit, thinking that it would be a shame if our country could not offer some real DELIVERABLES at that global event.

In fact, it was because of Bill's singular efforts that the Shuttle Radar Topographic Mission data were first processed and made available for Africa. Bill was not only a visionary, but he was a dear friend to many of us here with the American delegation today, and I know he would be pleased to see that we are trying to follow up on some of the activities he initiated.

In conclusion, Africa offers excellent opportunities to foster the growth of geospatial science as a leading edge of international diplomacy. Geospatial science and technology has a demonstrated value in addressing the many challenges that the continent faces in areas such as natural resources management, urbanization, environmental stewardship, economic livelihoods and development, climate change, health, and governance. The charge to our GDEST team is how to effectively engage Africa's experts in shared areas of interest. We hope our discussions over the course of the next several days will point us in the right direction, and will also serve both to cement the bonds that already exist as well as lead to new partnerships and collaborations.

Ultimately, we hope this dialogue will not only help promote careers'-worth of fruitful interaction, exchanges, and research, but also lead to applications of geospatial science and technology in a manner that will make a difference in preserving both the environment and livelihoods throughout Africa. As I indicated at the beginning of my talk, I remain an optimist, because I am convinced of the value of our science, and the talent of our practitioners.

Thank you.