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Re: Specialist Meeting on Volunteered Geographic Information, December 13-14, 2007

Dr. Goodchild,

I was very intrigued by a recent message I received from the University of Arizona representative to UCGIS concerning a proposed specialist meeting on volunteered sources of geographic (and presumably, other) sources of information. This topic and the questions you raised are central to my research and technology transfer programs in Arizona. They represent challenges faced by the scientific community and managers hoping to use volunteered data provided outside traditional networks, challenges to the R&D community developing the tools to facilitate information flow, and challenges to the general public who might benefit through participation. If the dialog you hope to encourage would benefit from someone who works at the interface between research, its application, and the public, I may be able to contribute.

My rather unusual role in academia and among those who specialize in geographic information research and application may shed some light on why my interest in volunteered data and citizens science is so strong. When I joined the faculty of the University of Arizona in 2001 I was tasked with fulfilling a progressive – and untested – vision of blending creative discovery and innovative technology from the Earth sciences with the mandate and infrastructure of a Land Grant institution to serve Arizona's communities. The need for a systematic approach to addressing unmet demand for Earth science research results and geospatial technology became apparent in the mid 1990's during an interagency collaborative dialog between NASA Space Grant, NASA Science Mission Directorate, USDA-CSREES, representatives of several Land Grant universities, and later, NOAA Sea Grant. These entities recognized that by working together they could provide the elements necessary to create a conduit for knowledge exchange among researchers, application developers, and stakeholders. Through this they envisioned facilitating the practical use of Earth observations, modeling and systems engineering, geospatial applications and decision support tools, and innovations in geospatial technology, while simultaneously informing the research and development community about evolving user needs. The result? The creation of the *Geospatial Extension Program*, which was first piloted in Utah, Mississippi and Arizona, and has now been established in 14 states.

In our approach, we consider translational science (moving basic research findings to end-users while simultaneously communicating user needs to scientists) and technology transfer to be active terms, implying interaction between researchers, technology sponsors and users that results in actual innovation and the adoption of a new product or procedure. Translational research and technology transfer are personal acts, requiring advocates with keen observational power and insight. My role in this approach is that of a *knowledge broker*, or the two-way conduit between research/applications development and practice, working as an intermediary between the source of information and the ultimate user, encouraging and supporting the adoption of new technology or innovations and “spanning the social distance” to and from his or her clients.

In order to realize the vision of the cooperating partners, it has been necessary to fully understand and then attempt to address those factors that might encourage or discourage adoption of Earth systems science and geospatial technology including a considerable investment in what has been aptly termed in a recent National Research Council study as the *valley of death*—between the point where research has been validated and practical use begins. I address this by developing programs aimed at tackling the barriers to adoption, ranging from education through efforts to increase access to and contribution of geo-referenced data to facilitating the use of geographic information in web applications and decision support systems.

I am currently a principle investigator in four initiatives that address different aspects of volunteered geographic information. In each, the same questions you have posed for the December 2007 discussion in Santa Barbara have been core to program design and systems development and are a major part of our internal project team discussions. I list the initiatives here to give you a sense of what we are up to.

Youth-Driven Community Asset Mapping is an effort to empower disadvantaged youth¹ at multiple levels: a) geospatial technology skill development and spatial literacy b) understanding how to set goals and pose the right questions, c) data collection, validation, integration and presentation, and d) obtaining a voice and having a say in the decisions being made that impact them.

Project BudBurst² is an exciting citizen science campaign to track spring events across the nation launched in 2007. It is focused on monitoring when plants leaf (a.k.a. bud burst) and flower to help the scientists, natural resource managers and the general public understand our changing environment. It is part of the [USA-National Phenology Network](#), a consortium of scientists, natural resource managers and database and web application developers. The network's purpose is collecting and analyzing data and making it publicly available to better understand and adapt to changes in the environment.

The Floral Report Card³ is a proposed NSF Informal Science Education initiative that aims to provide strategic opportunities for the general public to discover and understand how their environment, especially plant communities, is changing relative to climate. We hope to inspire interest in science and transform it into active, citizen science participation through interpretive display gardens (“climate change monitoring gardens”), interactive kiosks and Internet-based interfaces, and associated materials about the effects of climate change on plant populations for visitors at 13 US botanic gardens and arboreta.

Inducing Sustained Physical Activity among Youth through Innovative Integration of GPS, GIS and Online Social Networking Technology is a proposal submitted to the USDA NRI Obesity Prevention program through a novel, and we feel, innovative partnership of Earth and nutritional scientists. Our approach is focused on the instant gratification technologies pervasive in youth culture today, including cell phones, text/image messaging, and online social networking. We propose to embrace the rapidly progressing integration of mobile smartphone and location-based technologies and the ability to rapidly upload personal maps and place-based photos to social networking websites of choice, accomplished with web services (e.g., a My Activities Map *widget*) that will provide adolescents the ability to track, map, and calculate their physical activity, and share the events (and associated text and images) with their friends in their current online social networks.

I am pleased to learn you are exploring this topic and would be very interested to both learn from and contribute to the discussions that are planned for December.

Sincerely,



Barron J. Orr
Associate Professor and Geospatial Extension Specialist
Associate Director, UA/NASA Space Grant Program

¹ We have worked with homeless youth in downtown Tucson, a group of Native American youth struggling to survive in an urban setting, products of the juvenile justice system seeking to do community service, and adolescents struggling to create community in a high-traffic town on the U.S. – Mexico border.

² Project BudBurst is a collaborative effort of the Chicago Botanic Garden, Plant Conservation Alliance, ESRI, the National Science Foundation, the USA-National Phenology Network, University Corporation for Atmospheric Research, The University of Arizona, the University of Montana, the University of California, Santa Barbara, the University of Wisconsin-Milwaukee and the University of Wisconsin-Madison. BLM, NSF and Plant Conservation Alliance provided funding for the spring 2007 event.

³ The “Floral Report Card” is an NSF Informal Science Education proposal submitted by the Chicago Botanic Garden and 12 other similar institutions in partnership with the University of Arizona. The proposal has passed phase 1 and is currently under phase 2 review.