First of all, Congratulations to Dr. Mary Ellen Mazey—I am very proud of her!

When I look at America’s Public Higher Education System, I see the very essence of our nation and the recognition of what has made our country great. I see expansion of opportunity through greater access to higher education as the very foundation of the world’s oldest democracy and economic viability.

Today I would like to focus on the broader challenges facing our nation and higher education, discuss key strategic areas for geographers in a complex and rapidly changing world and then place these challenges and strategies in the context of opportunities—both within the context of higher education and within the context of geography.

I believe the title of the National Academy of Science, National Academy of Engineers, and Institute of Medicine report of last year (2010) captures the urgency of our situation—“Rising above the gathering storm, revisited: Rapidly approaching Category 5.” In my opinion, the storm has arrived and it is how we as a nation and also how we as geographers respond to this challenge that in many ways will shape the future of U.S. higher education as well as the discipline of geography, and indeed the future of our nation.

The U.S. recession, major budget cuts, and overall global economic turmoil have brought stress to most of academia. Our national meeting in geography was held last spring in Seattle, Washington and in Washington, Washington State University and University of Washington are down approximately 50% in their state appropriation in just over 2 years. This theme was re-enforced at the Association of Public and Land-grant Universities meeting recently; very few states are not impacted by the significant economic downturn. We, in Idaho, are down in our state appropriations just over 20% in the last 3 years. Again, I’m sure most of you in higher education can share similar stories you have heard or where you have experienced the significant dis-investment in higher education in the recent years.
In a recent study by Inside Higher Education (2011), presidents at public and private institutions across the U.S. said the key issues they face are: the need for targeted budget cuts - including looking at eliminating or combining academic programs, hiring freezes, and the need to increase tuition while being sensitive to access and inclusion.

Simultaneously at the federal level, higher education faces additional issues - e.g. increasing regulations of higher education entities including definitions of credit; new requirements for accreditation; suggestions of a national general education requirement; significant cuts in the Federal Pell Grant program; and the termination of federal ear-marks. There is also the complex transitions in the US and global economy that relate to: 1) new knowledge jobs requiring post-secondary education; 2) growth in multinational companies; 3) economic dynamism in the context of fast growing entrepreneurial companies; 4) rapid growth in the digital economy---in the context of e-commerce – e.g. amazon.com, ebay.com, or buy.com; 5) growth in global human population to 9 billion people and a doubling of food demand in the next 30 to 40 years, 6) growth in innovation capacity—in the context of leveraged capital not just the amount of capital, and 7) environmental change and efforts toward sustainability. At the same time last year’s National Academy of Science report said that in a recent ranking of the IT and Innovation Foundation alone, the U.S. was sixth in global innovation based competitiveness but 40th when you look at the rate of change over the past decade. In the context of higher education, a recent article in Educause, suggests we will likely face more pressure to relook at topics like general education, that we will have different faculty faces of the future—with more impact of IT—and more global faculty and student mobility—with more non-traditional students, and more pressure to demonstrate value of higher education in the U.S. as it transitions more toward the context of a private good versus a public good. At the same time, we build more lifelong partnerships with our alumni and university friends and focus on the most pressing research questions that address our changing earth.

The U.S. is falling further and further behind as far as educational attainment—among 25 to 34 year olds with some level of post-secondary certificate or degree—we are now 16th in the world—with just over 40 % of our population in that category. Korea and Canada are near the top relative to success. In addition to the above trends, China has now replaced the U.S. as the world’s number one
high technology exporter, and in less than 15 years China has moved from 14th
place to second place in published research articles—behind 1st place U.S.

I believe during this time of tremendous change in higher education, geography as
a discipline must continue to be recognized for its value to higher education and
to our country. Truly, this is a time of great opportunities for geography.
There was a time—back 30 years ago when geography was threatened on some
campuses. Now over 10,000 people attend our national meetings as people have
rediscovered geography. In many ways, as Stanford ecologist, Hal Mooney has
suggested, we are living in the “era of the geographer.” This is a time when the
discipline of geography’s long standing concern with the changing spatial
organization and material character of the earth’s surface and the reciprocal link
between humans and environment are increasingly becoming central to science
and Society. One significant marker of the relevance of geographic analysis is the
growing number of scientists from other disciplines employing geographic
concepts and techniques – economist, biologists, landscape architects, computer
scientists, etc. At the same time, geographic approaches and techniques alone
are not sufficient to address the sweeping changes that are remaking our planet,
but they are essential components of multi-disciplinary tasks that can help
unravel complex changes the earth is confronting.

On August 29, 2005, Hurricane Katrina struck New Orleans, Louisiana and
adjacent coastal areas; over 1,500 deaths and $50 billion in physical damages.
Katrina was 1) not just an environmental event; it was a human – environmental
event; 2) the storm’s impact was not evenly distributed and recovery has been
uneven- some neighborhoods have still not recovered; others have had minimal
population loss. How were people able to adapt? 3) Processes that led to Katrina
operated at multiple and interlocking scales; and 4) interpreting spatial and
temperature analysis helped understand Katrina.

Consistent with the message in “Understanding the Changing Planet: Strategic
Directions for the Geographical Sciences,” by the National Research Council
(2010), I believe the geographical sciences have opportunities to develop
strategies in four key directions that compliment crucial societal needs at scales
that vary from local to global. These are:
1) How to understand and respond to environmental change - how the changing physical environment is impacting the earth’s surface; how best to preserve biological diversity; how climate and other environmental change—ex: sea-level rise is impacting millions of people—affecting human vulnerabilities. Increasing population, urbanization, industrial development, climate change have all modified earth and depleted natural resources. Although there has been previous work documenting climate variability, soil erosion, water degradation, the human role often is not understood. A more complete understanding of phenomena like varying vulnerabilities of different ecosystems can fundamentally guide to policy decisions. Geographic scientists have found role socioeconomic factors in habitat ecosystem modification at times counterintuitive—certain forms swidden agriculture can be beneficial- in ways they mimic natural disturbance. The majority of some biomes, e.g. Mediterranean woodlands and shrublands have already been converted to cultural landscapes. Today, Tropical forest systems and wetlands are being hit hard by destruction with implications for plant and animal extinctions. With climate change, there is a resurgence of vector-borne diseases, e.g. West Nile virus; and expanded human/solar radiation issues. There is an emergence of new land change science based on biophysical and socio cultural dimensions - an example is my research in Botswana on desertification.

2) How to promote sustainability - How and where will 9 billion people live? How will we sustain feeding 9 billion people? How will there be enough water? How does where we live affect health? Many cities will struggle to accommodate the rapid rise in population; the spread of cities to rural areas will impact on rural food production, etc.; and we need to ensure availability of food supplies globally. With urbanization, in the U. S., the average size of single family residence in 1970 was 1,500 per square foot (139 square meter), but grew to 2,519 per square foot (234 square meter) in 2008; up 60%. In China, it grew from 8 per square meter in 1978 to 26 per square meter in 2005 for residence space. What are the implications? Local adaptation strategies may conflict with wise practice. One community in the north coast Australia’s New South Wales, policy requires new residence develop to maintain vegetative cover/wildlife habitat for koala population. The result causes lower density with more dependence on cars/fuel to travel greater distances to residences. Although food production continues to increase, it is estimated 43% of people in sub-Saharan Africa are chronically undernourished; compared to 22% in South Asia; urbanization in China continues,
and since late 1980’s, millions of hectares agricultural lands have been lost to urban growth. As incomes rise, people consume more meat and processed foods, demand more fruits and vegetables with fewer blemishes, and want these fresh produce year around – this is straining global food production.

3) How to recognize and cope with rapid spatial re-organization of economy and society - need to understand increasing and variable mobility; the relationship between virtual (e.g. internet) and physical mobility; globalization exacerbating economic disparities in many places, raising concerns about the needy and creating social unrest; and need to understand territorial and resource agendas of influential governments in the context of territorial boundaries and resource scarcity.

4) How to leverage technological change for betterment of society and environment. Since ancient times observed, mapping of earth integral to geographic research. Recent advances through remote sensing/GIS/GPS have helped us observe, analyze and visualize changing dynamics human/earth system. Web sites provide critical spatial information - empowers opportunity but also must protect privacy.

So in the context of these four strategic themes in geography, what are the action items with these themes that will create opportunities for geography? I feel these opportunities revolve around six themes: 1) our need to be more entrepreneurial, 2) our need to demonstrate leadership in engagement, 3) our need to continue to provide leadership in sustainability initiatives, 4) our need to lead in education about global connections, 5) our ability to lead in inter-disciplinary work, and 6) the need for us to provide perspectives of increasing diversity. In the context of these six themes, I believe a number of the strategic directions are again articulated in the 2010 National Research Council report: Understanding the Changing Planet: Strategic Directions for the Geographical Sciences.

1) Being more entrepreneurial---and by entrepreneurial—I mean being more innovation and creative and where we have joint venture opportunities to take advantage of partnerships. As I said earlier, in the broader context, this is a time of tremendous and rapid spatial reorganization of the economy and society – and geography is best positioned to offer innovative insights to help understand how
such issues as the impact of economic globalization is affecting local regions or how geopolitical shifts influence peace and stability. At the campus level, geographers have opportunities, for example, to develop creative workshops that businesses, community leaders or politicians might access that would help them more fully understand the global geospatial reorganization in the context of their unique interests and markets. We also have opportunities to be more entrepreneurial through applications of technologies, e.g. GIS to address issues in communities, states and nations. These approaches help us understand the growing limitations of natural resources.

2) In the context of **engagement**, it is time for geography to be fully engaged across our campuses and states. But geographers also need to reclaim their roots in field courses and training for our students - many universities are expanding their efforts in service learning - reaching out to communities to address issues like water management and community planning. Geographers are well positioned to provide leadership with such efforts. A recent *Time* article “Finishing School” summarized the tremendous strides made in Finland when field experiences were integrated into the traditional classroom learning. Geographers are well positioned for leadership in this area. Geographers can also provide more engaged learning models using innovative geospatial technology approaches that can differentiate us as on the leading edge on our campuses. As the NRC report suggests, through use of geospatial technologies and geo-statistics we can engage our campuses, state, and beyond through better approaches to observing and analyzing our changing world; we also need to lead understanding of societal implications of citizen mapping and mapping citizens.

3) **Sustainability** is another key theme. It’s one in which geographers must be seen as leaders in the development of curricula around sustainability as well as leading university wide efforts in sustainability at every scale. Again, the NRC report theme of environmental change reminds us of the context of a key geography question focused on how we respond to physical change, preserve biodiversity and understand points of vulnerability in the human-environmental system.

4) **Global connections** is another key theme that needs no explanation relative to the need for geographers - but scaling issues of community to region to nation
and world are so important and still not well understood - geographers must be leading in this effort.

5) Another key theme is the need for more cross-disciplinary research – and geographers have a strong tradition in this area. But we need to be visible leaders (but also partners), for example at the University of Idaho, we have geographers who are recognized as leaders on our campus and in the region for their climate change research. We’ve already proven that integration of new ideas and diverse approaches strengthens our discipline rather than diminishes it. We have also helped include the importance of human factors and decision making in climate change and local environment decision-making in the broader context of environmental change. At the University of Idaho, we’ve employed a “toolkit” concept to bring people from across our campus together for a more robust look at key research questions versus leaving us in smaller islands of inquiry.

6) Finally, we must position our discipline to help with the tremendous changes that are occurring in our country and world in population structure and transitions. For example, how is economic globalization affecting inequality and what is the demographic transition in the U.S. doing to influence current and future geopolitics?

Overall, this is a time of opportunity for geographers—but we must be visible from the individual to department to professional society level to ensure our continued success in a rapidly changing higher education environment. Departments must have a vision and provide leadership. Certainly, there are those demoralized by the down economy—but we must continue to promote the discipline across our campuses and beyond, be student-centered, be willing to think differently at the way they do business, be collegial with a can-do attitude. At the same time, I believe our discipline is positioned to control our own destiny while offering key solutions to many of our world’s most pressing challenges. We have what it takes to address many of the challenges that lie ahead. What we must do know is commit ourselves to step forward and lead.