Remarks by the Honorable Sean O'Keefe
NASA Administrator
U.S. Climate Change Science Program Planning Workshop
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Good morning to every one back home in Washington and thank you Jim Mahoney for that very gracious introduction. Please allow me to extend my greetings to Secretary Bodman and Doctors Marburger, Obasi, Moss and Garman. I am honored to be included on the program in such distinguished company.

As noted, I'm speaking to you from Anchorage, Alaska, where I am on my way to Tokyo for a meeting of the Heads of Agency's of our partners on the International Space Station program. And while I regret not being able to be with you in Washington, I felt this conference is so important that I wanted to make an effort to address you via satellite link.

Of course, I am speaking to such an impressive gathering of scientists from throughout the United States and 30 different countries precisely because we face an incredibly complex challenge that will require our best scientific thinking, research and analysis.

Addressing the climate science challenge absolutely requires the sustained collaboration of the world's scientists and scientific agencies to help develop critical information that will enable national and world leaders to make sound policy judgments about the global climate change phenomenon.

On behalf of NASA, a storied agency that takes seriously our mission goal of "understanding and protecting the home planet," I'd like to plainly and enthusiastically give my assurance on three key points.

First, NASA is committed over the long haul to developing a flotilla of 26 Earth observing satellites and other technologies that will help provide scientists a solid foundation for understanding the complex Earth climate system. We are well on our way to this goal, with deployment of the first phase of our Earth Observing System slated to be complete by 2004.

Second, in addition to developing and managing these unique Earth observing systems, NASA will effectively disseminate to you the data and information we produce, and also will continue to make a significant investment in on-the-ground scientific research.

Finally, once we have placed our entire constellation of satellites in orbit, NASA will help transition this capability to a sustainable observational system, and will forge ahead in

developing additional cutting-edge Earth observational technologies.

As we approach the end of the calendar year, I think it's worth noting how far we've progressed in supporting the U.S. Global Change Research Program. We are nearing completion of deployment of the first series of Earth Observing System satellites. We have successfully launched 14 EOS satellites over the past five years, with three more in the next few weeks.

With the recent successful launches of the NASA-French Jason oceanographic satellite, the Aqua satellite to study the global water cycle and GRACE, the twin Gravity Recovery and Climate Experiment satellites, 2002 has been a particularly eventful year for NASA.

In addition, we look forward in the weeks ahead to launching three important instruments: First, ICEsat, which will help measure changes in the topography and mass of Earth's ice sheets and their role in Earth's weather and climate. Second, the SeaWinds Scatterometer, which will measure near-surface wind velocity—both speed and direction—under all weather and cloud conditions over Earth's oceans. And third, the SORCE satellite, which will help improve understanding of the influences of solar variability on Earth's climate.

All of the satellites I've mentioned, and those yet to come, will open a new window on the world by providing amazing views of the Earth that we have never seen before. Further, they are providing key data on the major uncertainties in climate that are the priorities of the U.S. Climate Change Science Program. These satellites will allow us to look globally at the global carbon cycle, the Earth's water cycle, atmospheric composition, and land cover change—to enable you to address with more confidence the key scientific questions that motivate the U.S. Climate Change Science Program.

Indeed, we believe that NASA is uniquely situated with our scientific, technological and system engineering expertise to deliver the global view from space that is essential to understanding global-scale changes in our lifeboat in space.

Scientifically, we play a leading role in working with a variety of partners to forge interdisciplinary research that links oceans, atmospheric and land processes.

Technologically, NASA invents the imagers, radars and lasers needed to probe the Earth system, structure and dynamics.

I might add that even from here in central Alaska, where the north pole is still quite far away, and hard for scientists to get to, it is remarkable that advanced systems on NASA spacecraft are opening a window on these icy regions 16 times every day.

Now as noted, we also bring important systems engineering expertise to the table of global change research. Through this expertise, NASA can provide an "end-to-end" approach to studying our planet – from basic research and space-based observations to Earth system modeling and working with partners to make use of this information in their decision making processes.

We will do all that in the context of a well-planned, integrated, and sustaining research program that is strongly supported by the President and his administration.

And let me underscore the point about the comprehensive nature of our strategy that I just mentioned. We recognize that all the space hardware and terabytes of data in the world doesn't amount to anything unless we produce products that are useful to you and help support the development of a strong research community.

That is why we are determined that our data and information system will provide to researchers around the globe, in a timely manner, relevant high fidelity data so you can bring your intellectual fire power to bear on the subject.

To accomplish this goal, we are working through a variety of partnerships to create, distribute and use our data products. NASA is currently leading an interagency effort in partnership with academia to establish a common climate modeling framework, and

are working with industry to help them meet their climate modeling requirements with their next generation computing products. We also are researching new data management and communications technologies to enable multiple satellites to be flown as a constellation, with data products generated on orbit and delivered directly to users' workstations. And we are partnering with the government agencies responsible for such vital services as weather forecasting, energy forecasting and crop assessment to develop useful new highly tailored applications of remote sensing data.

In all, NASA is committed to devoting one-third of our Earth Science budget to supporting researchers and the utilization of the capability we are providing. So, as you can see, we are about much more than satellites and data streams.

I'd like to make one other point about the composition of the research community, and I think it is an important point. Since we all know this incredible research effort will span the work of generations, we must all do our part to ensure there is a next generation of scientists to carry the torch of research and understanding into the future.

At NASA we take this challenge very seriously. And that is why we have made inspiring the next generation of scientists, engineers and explorers one of our core mission goals. We are

working to engage our youth in a number of ways. We provide educators with useful curriculum support materials, many of which help spark the interest and imagination of students by highlighting our Earth science research. We produce technology-based teaching tools and strategies that are grounded in or derived from NASA's missions. We send our best people to visit schools and talk about career opportunities in science and engineering fields. We offer summer job opportunities and scholarships for promising college students. And we provide opportunities for students and faculty to participate "hands on" in NASA research, much of which of course is undertaken by our Earth Science Enterprise. I trust that many of the organizations represented in the Climate Change Workshop are engaged in similar activities to help inspire and motivate the next generation of scientists.

Finally, let me assure you that those bright young scientists who we hope to produce through our educational pipeline will not have to reinvent the wheel when they start their professional careers. We will assure long-term continuity of global observation data primarily through the transition of our new measurement technologies to partners with the charter for routine, operational observation such as the National Oceanic and Atmospheric Administration. And we are also working with NOAA and the Defense Department, on the next generation weather satellites that

will provide improved weather prediction while eliminating duplication of effort across the government.

While all this goes on, NASA will move forward to invent the next generation of Earth remote sensing capabilities. Currently, we are leading the progression from passive remote sensing—based on reception of naturally reflected light—to active remote sensing, using radars and lasers to actively probe the Earth's land surface, atmosphere, oceans, and ice. These active sensors promise to yield three dimensional views of objects such as land and ocean topography, forest canopy structure and the vertical profile of clouds and aerosols in the atmosphere.

Indeed, I believe the stage is set for great progress. The President and his cabinet are serious about the research we are pursuing in order to understand and protect our home planet. We recognize that human behavior is playing a part in the functioning of the Earth's climate system and we need to address this issue with great care. And NASA and our partner agencies are bringing a lot of resources to the table to help address the complex issues associated with global climate change.

But there are also plenty of challenges ahead. In conclusion let me mention a few.

As noted, we must recruit and develop our workforce so that we are able to address key climate change scientific questions over

a sustained period of time. And that's why our collective focus on education is so important.

It is also imperative to consider the kind of education we provide our rising young scientists and engineers. While it is important to train specialists, it is also necessary to encourage talented scientists to appreciate and be able to tackle the interdisciplinary nature of Earth systems studies.

I believe as we look forward to future activities, we must maintain a balance between providing consistent, long-term observations of our planet and the need to examine and explore new questions about the Earth System. We must be open-minded about this in our program planning.

Similarly, we must be vigilant in our management and stewardship of massive amounts of Earth science data, so that researchers are guaranteed the timely delivery of these data.

Speaking of usefulness, we need to constantly strive to improve our computer models to the point that they truly mimic the behavior of the Earth System, providing us the ability to accurately predict future climate behavior.

All of this will allow the scientific community to provide objective assessments about the state of the planet, and clearly communicate these findings to decision makers and the general public.

And I can assure you with all the clarity of a clear sky day in a beautiful Alaskan fiord, that together with our partner agencies, NASA is determined to tackle these challenges.

Thank you again for inviting me to speak to your assembly. You have my best wishes for a most successful conference.