**Earth Observation Summit**
**Department of Commerce**
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**Opening Remarks**
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Ministers and representatives of 33 countries and the European Commission, Secretary Powell, Secretary Evans, Secretary Abraham, Chairman Connaughton, Secretary Norton, Director Colwell, Administrator O'Keefe, Undersecretary Lautenbacher, and honored guests. On behalf of President Bush, I am pleased to welcome you to the Earth Observation Summit.

Your very presence here today signals the importance of global cooperation in monitoring and understanding the behavior of our planet. The task is a difficult one, but success will bring enormous benefits to every nation.

From the earliest dawn of human enterprise, men and women have struggled to understand their physical environment. Every culture at every stage has paid close attention to the plants and animals, the succession of the seasons, and the patterns of the weather upon which they have depended for their survival. Throughout history the journals of farmers, merchants, and explorers have preserved meticulous records of weather, of ocean conditions, and other features of nature. Sometimes patterns emerged that could be used to plan for the future. The ancient Egyptians, for example, relied upon the predawn appearance of Sirius, the brightest star in the sky, to signal the forthcoming inundation of the Nile, and the beginning of the annual agricultural cycle. And autumn follows summer after spring which follows winter. But, nearly every year, accompanying these eternal cycles of the seasons are important and often disruptive environmental events. All too often, the phenomena of Nature seem capricious, and humans helpless except for prayers and rituals.

Increasingly, in our age, the rituals have been informed by science. It is useful to ask what value science brings to a tradition of empirical observation extending back to prehistoric times. Science is not merely observations, but also *hypotheses* that provide a coherent framework. Isaac Newton began the systematic approach to global phenomena in nature in 1686 with his explanation of the tides, and by 1735 the British scientist George Hadley had developed a theory accounting for the trade winds. But the actual patterns of winds and currents over the earth were not pieced together into practical maps until the 1850's. Observations for these charts had been recorded for a long time by numerous people from many countries. One of Nature's curiosities arising from these charts was the narrowness of ocean currents on the western side of the ocean basin, quite different than the wind pattern. The theoretical enigma was not solved for another hundred years. Theory is important, but it is not enough. When it comes to the fluid motions of air and

water, and whatever might be carried with them, it is necessary to gather data painstakingly from widely dispersed locations over long periods of time.

Today we have marvelous new tools to reduce the effort and increase the effectiveness of global data-gathering. Instrumentation and information technology – in this case space-borne sensors, the world wide web and powerful computing – have created unprecedented opportunities for collecting and synthesizing the mass of data needed for practical applications. Unfortunately, the mere possession of these tools is not enough. The example of El Niño shows us why.

In the El Niño phenomenon, elevated sea surface temperature in the equatorial eastern Pacific shifts the atmospheric Jet Streams in middle latitudes of both hemispheres. Afterwards, for several months, local weather patterns change in places very far from the eastern Pacific, such as Africa and even the monsoon over the Indian Ocean. Unraveling this complex phenomenon required observations on land, sea, and air, by many instruments – some were fixed at specific locations; some were carried in the ocean, air and space by ships and planes and satellites. About ten different nations contributed data. So called "general circulation models" – computer programs of global atmospheric motions running on powerful supercomputers - helped to illustrate the global pathways.

No single country can claim credit for cracking the El Niño code, or for capturing the new knowledge in forecasts that have saved lives and property. The international scientific community solved the mystery by working together within key international organizations, including the World Meteorological Organization and UNESCO's Intergovernmental Oceanographic Commission. You will hear from their leaders and other leaders of international environmental programs later in this meeting.

Today we know that the complex machinery of Earth's environment harbors many phenomena similar to El Niño, but more difficult. Decoding them will require increased commitment of governmental leaders no less than increased ingenuity of scientists.

Environmental observations and science are international in scope and in the very nature of their activity. International cooperation is a pre-requisite for their success. The objectives of the Intergovernmental Ad Hoc Working Group are to strengthen regional observing networks, augment them, sustain them, coordinate them, and propose ways of using new technologies to integrate their products and make them even more valuable for all nations.

On behalf of the Administration, I wish to thank the organizers of this conference for bringing a vision of intergovernmental cooperation to these important tasks. Today's Earth Observation Summit, tomorrow's inaugural meeting of the Intergovernmental Ad Hoc Working Group, and other conferences during the coming year serve to launch a new era of Earth observations on a trajectory of success. Please take advantage of this unique opportunity to share problems, issues, and solutions.

Thank you for investing your own time and energy in this effort to understand environmental issues that affect all people. We will all benefit from your success.