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to the
Committee on Science and Technology
Subcommittee on Energy and Environment
United States House of Representatives
Status Report on the NPOESS Weather Satellites
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Chairman Lampson, Ranking Member Inglis, and Members of the Subcommittee, I am pleased to appear before you today to describe OSTP and interagency activities related to the National Polar-orbiting Operational Environmental Satellite System (NPOESS) weather satellite program. As you requested, I will discuss the ongoing interagency assessment of the impacts of removing or "de-manifesting" several Earth observing and space environment sensors from the NPOESS spacecraft during the 2006 restructuring of the program. I will also describe certain other important climate-related activities of potential interest to the Committee.

First let me briefly outline the NPOESS program and its history. The NPOESS effort was established through Presidential Decision Directive in 1994, with the goal of integrating the polar weather capabilities developed by the Department of Defense (DOD) and the Department of Commerce (DOC) into one next-generation program that would support both civil and military weather requirements. The role of the National Aeronautics and Space Administration (NASA) was to improve the remote sensing capabilities of the operational system through the insertion of new technologies. The idea was to have one next-generation program that would support both civil and military weather requirements and to align overlapping and complementary capabilities to increase efficiency and data synergy. As planning evolved, a number of other Earth observing and space environment sensors and capabilities were incorporated into the basic program, making NPOESS (as envisioned at that time) a key component not only for operational weather forecasting, but also for research on climate, oceans, and space weather.

Oversight of the NPOESS program is provided jointly by the three agencies through an Executive Committee, and funding is divided equally between DOD and DOC. Within this tri-agency framework, DOD is responsible for major program acquisitions (conducted through the Air Force), DOC's National Oceanic and Atmospheric Administration (NOAA) is responsible for satellite operations, and NASA is responsible for developing new technologies. Development and other activities within the program are managed by an integrated program office. These arrangements for NPOESS are unique within the Federal government, and many consider it the most complex environmental satellite system ever developed.

Previous communications to Congress during hearings and in Executive Branch correspondence have reported numerous technical, developmental, and management challenges in the NPOESS program since its inception, resulting in various cost increases and scheduling delays. In late 2005, the NPOESS integrated program office determined that projected cost over-runs for NPOESS would exceed the 25 percent threshold triggering a breach of the Nunn-McCurdy statute, thus requiring the Secretary of Defense to certify that the program meets the following

criteria: it is essential to the national security, no alternatives provide equal or greater military capability at less cost, new estimates of the program acquisition unit cost are reasonable, and the management structure is adequate to manage and control program costs. Accordingly, DOD worked with DOC and NASA through the first half of 2006 to restructure the NPOESS effort in order to address the significant cost over-run and reduce program risk. In this certification process, the agencies gave highest priority to preserving continuity in operational terrestrial weather forecasting capabilities – the original focus of the program. The ultimate decision regarding the restructuring of NPOESS was announced on June 5, 2006.

The current restructured NPOESS program includes four NPOESS satellites operating in two orbits, augmented by data from a European weather system using several sensors provided by the United States in a third orbit. (In contrast, the program before restructuring had planned on flying six NPOESS satellites in three orbits.) To decrease costs and help maintain continuity in operational weather capabilities, the three agencies also decided to remove several Earth observing and space weather-related sensors from the baseline NPOESS program budget – effectively removing these sensors from NPOESS – and to de-scope certain other instruments in terms of performance. It is important to note that NPOESS, as restructured, still satisfies many climate data requirements. In addition, the recertified program retains funding within the NPOESS baseline for the reintegration of the de-manifested sensors should a way be found to provide them from outside the program. Nevertheless, the potential impacts to the climate science program continue to raise concerns.

When my office (OSTP) learned of these decisions, we convened an interagency meeting in late June 2006, including representatives from NASA, NOAA and the NPOESS integrated program office, to (1) gain a better understanding of the projected capabilities of the revised program, (2) explore the implications of these changes for climate and ocean research activities, and (3) obtain agency views on ways to retain the capabilities of sensors removed from the baseline NPOESS configuration. Based on the discussions in this meeting and our sense that more work was needed on these topics, we asked NASA and NOAA to provide OSTP with a joint technical assessment of the expected science implications of the NPOESS restructuring decision, and options for addressing those impacts in terms of climate research (implications for space weather research and activities will be addressed separately). In response to our request, a joint NASA/NOAA assessment was provided to OSTP in early January 2007, in the form of a "white paper."

The initial NASA/NOAA response to OSTP includes an analysis of the potential climate science impacts of the 2006 NPOESS restructuring decision. It also addresses the projected impacts of eliminating each sensor and provides prioritized rankings of the de-manifested sensors in terms of the importance of their measurements. In addition, the white paper presents options for retaining the capabilities of the eliminated sensors that focus largely on re-manifesting them back onto NPOESS.

The NASA/NOAA white paper is useful for understanding the dimensions of the problems created by restructuring, and is a helpful and important contribution to the process of resolving them. At the same time, it does not include the full range of options for retaining the climate and ocean research capabilities, and does not include cost estimates that are essential for policy-

making. Consequently, OSTP asked the agencies for further analysis of a broader range of options, including potential solutions such as free-flyers, adding instruments to other U.S. Government spacecraft, or international cooperative opportunities. We also requested that NASA and NOAA provide cost estimates for the full range of options being explored. NASA and NOAA are in the process of developing information for OSTP and the Office of Management and Budget regarding various options and preliminary cost estimates for those options.

Interagency discussions and follow-up questions and analyses regarding these and other potential mitigation strategies will continue throughout the summer and fall. Our goal is to complete this phase of the analysis in time to inform the FY 2009 budget process, where this information could be considered along with other elements of department and agency requests. One decision has already been made—the Ozone Mapping and Profiler Suite (OMPS) Limb has been restored to fly on the NPOESS Preparatory Project (NPP) satellite, which is scheduled to launch in 2009. NASA and NOAA will split the cost to re-manifest the OMPS Limb instrument.

Regarding instruments other than OMPS-Limb, there have been no decisions yet on options, program schedules, or identification of funds. Those issues will need to be addressed as the process unfolds in coming months. My priorities during this review are to promote continuity of key climate data needs while ensuring that current planned missions are not negatively impacted by payload modifications. While much remains to be completed, I must emphasize that NASA, NOAA and members of my staff are investing much time and effort on this difficult problem. Other portions of the scientific community are providing useful input as well. For example, we are looking forward to the results of an NRC workshop later this month regarding these and related Earth observation issues. The necessary work is getting done, and OSTP will continue to monitor the process closely as it moves forward.

In addition to the NPOESS climate-related sensors that are the focus of the ongoing assessment, a suite of space weather sensors was also de-manifested from the baseline NPOESS effort during the 2006 restructuring of the program, as noted earlier. These sensors were an important element of the nation's planned capabilities for observing and predicting space weather phenomena such as solar flares, sunspots, auroras and the solar wind. The loss of such measurements could have a serious impact on a wide range of U.S. operations and research. Accordingly, and as with the de-manifested climate sensors, we have requested that agencies with space weather interests, including DOD, DOC, and NASA, provide a joint assessment of the impacts of the NPOESS restructuring decision on national space weather-related capabilities and goals, followed by an assessment of potential options for addressing such impacts. This effort is in its early stages and likely will require several months to complete. Our goal in this effort is to obtain the necessary information in time to inform the FY2010 budget process – a suitable schedule for this analysis according to the agencies involved.

I would like to mention some other climate-related issues today that are not directly linked to NPOESS but are part of the broader context for OSTP's ongoing work on Earth observations. The fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC) shows that great progress has been made in characterizing and understanding Earth's climate system and how that system is changing, and U.S. government-funded Earth observations have been

critical in achieving this progress. Earth observations are important for characterizing the impacts of climate change to natural and human systems, and for many other applications such as improved weather forecasts, predicting and responding to natural disasters, water resource management, characterizing air quality and assessing ecosystem health. While current challenges to maintaining and improving U.S. Earth observing systems exist, as noted in the recently released National Research Council (NRC) Decadal Survey on Earth science, I want to emphasize that this Administration is committed to supporting these capabilities.

The NRC report points out that no single mechanism currently exists for coordinating all national earth observing needs across agencies. Although the Climate Change Science Program has an Observations Working Group to facilitate interagency understanding and information exchanges, it has not yet developed a national strategy for climate observations -- nor has any other group. Climate observation plans have been part of individual agency program plans and budgets, or have been assembled through mission-specific collaborative processes like the one that produced NPOESS. This situation exists for most other observation types as well, not just those for climate. For example, there is an Interagency Working Group on Ocean Observations that is looking at a range of ocean-related observations, including but not limited to, those focusing on climate. Similarly, there is a NASA-NOAA Joint Working Group on Research-Operations Transition intended to address issues associated with the transition of observations initiated as research into operational ones

Several organizations including the NRC have noted the need for a plan to achieve and sustain global Earth observations, and this issue has been taken up by the National Science and Technology Council subcommittee on Earth observations (known as the U.S. Group on Earth Observations, or USGEO). USGEO, which is co-chaired by OSTP, NASA, and NOAA, recently reorganized to focus on a national strategy for Earth observations that would address topics such as organizational roles and responsibilities, data collection and sharing protocols, and sector-specific priorities for investment. This process is ongoing, and I anticipate that at least a year will be required to produce a strategic plan for this complex issue.

OSTP is also engaged in an emerging national coordination requirement for medium-resolution land imaging data. I have directed an interagency working group to address the long-term continuity of Landsat-type data through an effort known as the Future of Land Imaging (FLI) Plan. As you know, the Landsat Data Continuity Mission (LDCM) is currently in procurement in NASA and is scheduled for launch in 2011. The Landsat interagency working group is developing the FLI plan for extending these important systems beyond LDCM and into the future. The group's report is currently in clearance and will be published within the next two months

Thank you for your interest in and support for these issues, including not only the NPOESS-related sensor studies but also the other Earth observing topics that I have mentioned. There certainly are further challenges ahead in addressing these topics, but we are making progress and are working closely with interested agencies in devising the way forward. I would be pleased to respond to questions.