



UNIVERSITY OF CALIFORNIA OBSERVATORIES/LICK OBSERVATORY  
DEPARTMENT OF ASTRONOMY AND ASTROPHYSICS

SANTA CRUZ, CALIFORNIA 95064

January 21, 2011

Dr. John P. Holdren  
Director, Office of Science and Technology Policy  
Executive Office of the President of the United States

Re: Statement of support for the James Webb Space Telescope, JWST

Dear Dr. Holdren:

The James Webb Space Telescope is a project of astonishing scientific capability that is the natural successor to the iconic Hubble Space Telescope. With 100X the power of Hubble, yet a comparable cost to launch, it reflects the huge technological steps that the US, and our international partners (Europe and Canada), have made in the last two-three decades since Hubble was designed and built. JWST will maintain US leadership in space science and technology.

The partnership for JWST with the European Space Agency (ESA), its member states and the Canadian Space Agency (CSA) reflects the success of such past partnerships (e.g., Hubble) between NASA and these international agencies. JWST was the top-ranked project of all projects, ground and space, in the 2000 US Decadal Survey, and is extensively acknowledged as a cornerstone of the next decade's astronomical research in the 2010 US Decadal Survey (where it was understood for the report that JWST would become operational this decade). Furthermore, JWST is now the single largest investment by Canada in astronomy and a major investment by Europe, consistent with its very high scientific importance to each of their scientific and political communities. It is crucial for our international partners that JWST progresses expeditiously.

Hubble, and the other ongoing Great Observatories (Chandra and Spitzer) have demonstrated the value and cost-effectiveness of broadly-capable space observatories through their wide-ranging and continuing scientific discoveries. Such Great Observatories have been shown to return discoveries very cost-effectively. The Great Observatories have also made a disproportionately large contribution to advancing public science interest and literacy (Hubble again is the pre-eminent example). Furthermore, the breadth of the science programs that such flagship missions can undertake, along with their ability to respond quickly to discoveries from other missions and observatories, makes them a truly unique scientific resource that benefits large numbers of scientists, their students and their postdoctoral researchers. Hubble's role in the discovery of planets beyond our solar system, of dark energy, and of young galaxies looking back through 96% of time to just 500 Myr after the Big Bang are some of the many examples of forefront science areas that have touched the popular imagination.

JWST will play a similar role to Hubble, except that its dramatically higher performance will lead to an even broader range of studies and discoveries even closer to the cutting-edge of astrophysical frontiers.

The James Webb Space Telescope Advisory Committee (JSTAC) is an international committee of senior members of the scientific community who are experienced with large space projects and their optimal operation. Given the importance and cost of JWST, the Space Telescope Science Institute (STScI) Director set up JSTAC with the support and concurrence of NASA, ESA and CSA. The core focus of the JSTAC is to offer advice on maximizing the scientific return from JWST within its 5-year required life (10-yr goal). The JSTAC's recommendations to the STScI Director are made available to the space agencies and are also made public to the science community (and all interested parties) through the STScI website. The space agencies are also cognizant of the JSTAC's deliberations and recommendations through their ex-officio agency members. The JSTAC fully endorses the completion of the construction and the launch of JWST not only because it will dramatically increase humanity's understanding of the cosmos, but also because it will continue Hubble's legacy of inspiring the next generation of scientists. JWST will also demonstrate technologies crucial for future NASA science missions of all sizes.

The JSTAC is very concerned that recent funding and management issues during the development process for JWST may place the future of the mission at risk. The JWST Independent Comprehensive Review Panel (ICRP) report provided a critical assessment of the recent management problems and budget issues in response to a letter from Senator Mikulski to the NASA Administrator. As the ICRP report noted, technical progress on the mission had been excellent but a number of issues have arisen that require additional funding to resolve. The JSTAC recognizes the fiscal challenges facing the US as well as the international partners, but asks for your support and that of OSTP to work with OMB and NASA, and ultimately Congress, to find a cost-effective approach to bring this remarkable mission to fruition.

The impact of not moving forward expeditiously towards launching JWST as soon as practical would reverberate far beyond the astronomical science community. The cancellation of the Superconducting Super Collider (SSC) had ramifications for US leadership in the physical sciences that is still being felt. The center of gravity of high-energy physics moved to Europe. As a project of comparable scale and scientific importance, JWST is crucial to US scientific leadership both in science and through the visibility of its space program. US leadership in space has arisen through NASA's human spaceflight program and through its stunningly successful and popular science missions. To abandon JWST at this time would not only have a dramatic impact on NASA's science programs, but would also have a dramatic impact on US leadership in space. JWST, like Hubble, is a flagship program that has public visibility and scientific capabilities far beyond smaller missions. The cost and the risks of flagships are more than compensated for by the scientific and public interest returns.

Our international partners are making very substantial investments in JWST, and are key partners for the US effort. The contributions of the European Space Agency (ESA), its member states and the Canadian Space Agency (CSA) are central to the success of

the project. Europe is providing two scientific instruments, the launch vehicle and operations staff for the project at the STScI. In value, this contribution is equivalent to the total cost of a medium-sized space mission within ESA. The Canadian contribution of the critical fine guidance sensor and a further science instrument is the largest space science project supported to date by the Canadian Space Agency. The CSA also provides operations staff at the STScI. The international contributions have been essential for the development and implementation of the project and their contributions represent a major commitment of their resources towards a project that will do much to raise the visibility of the US and its technological capabilities.

JWST is challenging but doable. No other nation could currently undertake a mission of the scale of JWST. JWST distinguishes the US technologically and scientifically, and is a striking example of US leadership in the field of space science. The JSTAC asks for your support in moving JWST forward expeditiously to launch. I would be happy to provide further information or a briefing on the importance of the JWST science mission from the perspective of the JSTAC.

Sincerely yours, on behalf of the Committee,



Garth D. Illingworth,  
Chair, JSTAC

cc:

OSTP: Jim Kohlenberger, Carl Wieman

OMB: Paul Shawcross, Celinda Marsh

NASA: Charles Bolden, Lori Garver, Chris Scolese

STScI: Matt Mountain, John Grunsfeld

JSTAC Committee Members: Roberto Abraham, Neta Bahcall, Stefi Baum, Roger Brissenden, Tim Heckman, Malcolm Longair, Christopher McKee, Bradley Peterson, Joe Rothenberg, Sara Seager, Lisa Storrie-Lombardi, Monica Tosi

JSTAC Ex-officio representatives of the space agencies (the ex-officio representatives did not participate in the writing of this letter; the letter reflects the views of the scientific community members): Luc Brule (CSA), John Mather (GSFC), Mark McCaughrean (ESA), Eric Smith (NASA HQ)