



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

SANTA CRUZ, CALIFORNIA 95064

May 22, 2008

Dr. Ed Weiler, Associate Administrator
Science Mission Directorate, NASA

Dr. Tony Chan, Assistant Director
Mathematical and Physical Sciences, NSF

Re: AAAC Transmittal of the ExoPlanet Task Force Report

Dear Dr. Weiler and Dr. Chan:

Early in 2007, following the request from your agencies, the Astronomy and Astrophysics Advisory Committee (AAAC) established an Exoplanet Task Force (ExoPTF) as a subcommittee to advise NSF and NASA on the future, over a 15-year period, of ground-based and space-based searches and characterization of exoplanets, planetary systems, Earth-like planets and habitable environments around other stars.

The agencies assembled an expert committee of very experienced scientists with background in the many areas represented in the exoplanet research community. The AAAC was very impressed with the breadth of the expertise represented on the committee, the depth of their insight into the field, and the leadership of their Chair, Jonathan Lunine. The ExoPTF deliberations over the last year have resulted in a substantial report that provides an impressive framework for advancing an important area of scientific research.

The AAAC expects that the ExoPTF report will be widely discussed within the agencies and the exoplanet community. The AAAC recommends that the agencies use the report to provide guidance for their deliberations on exoplanet issues and opportunities, for both the near-term and long-term, and as part of their input to the 2010 Astronomy and Astrophysics Decadal Survey. We encourage the exoplanet community also to use this report as part of their input to the 2010 Decadal Survey committees as they look to defining a mission and project suite for the coming decade.

The AAAC discussed a draft version of the ExoPTF report at its February 2008 meeting with the ExoPTF Chair, Jonathan Lunine, and other members of the Task Force. Following clarification to a number of areas in the report in response to that discussion, the AAAC voted at its May 2008 meeting to accept the ExoPTF report and transmit it to the agencies for their consideration. The ExoPTF final report is too large for an attachment and can be found at <http://www.nsf.gov/mps/ast/exoptf.jsp>.

The AAAC is very impressed with the quality and depth of the report. It clearly reflects a very substantial and thoughtful effort by the ExoPTF. We are particularly impressed by the large number (85) of “white papers” that the ExoPTF received from the community in response to the committee’s solicitation for input. Drawing upon this input, the ExoPTF’s response to its charge was to develop, within the context of three fundamental science questions, a very pragmatic two-pronged planet search strategy. Their consideration of the value and challenges of different scientific approaches for tackling planet detection and characterization led to a realistic, integrated ground-based and space-based program, and produced a coordinated program whose implementation involves progressively more challenging programs in three 5-year periods, over the requested 15-year time span. While the ultimate focus of the ExoPTF strategy is on detecting and characterizing one Earth-mass planets like our own, as outlined in the charge, the breadth of the ExoPTF report discussion and their recommendations reflects the diversity of this very dynamic field. The AAAC would like to commend the ExoPTF for developing a strategy with a clear scientific framework, but one that is cognizant of the funding and technical challenges.

The ExoPTF report encompasses a wide range of ground- and space-based projects of scales from small to large. The AAAC expects that particular attention and extensive discussion will likely be given to the major space missions highlighted in the report because of the challenges of implementing such large missions in the coming decade and beyond. The ExoPTF recommendation for an astrometric mission that can detect one-Earth-mass planets is expected to be part of the broader discussion that considers the relationship of this astrometric mission to the current Space Interferometry Mission (SIM) and SIM-Lite. The recommendation for a direct-detection capability in the third 5-year period of the ExoPTF strategy will need consideration of the technologies to be developed during the coming decade. Consideration of the required technologies by the community and NASA, building on the ExoPTF recommendations, will provide for informed discussion within the upcoming Decadal Survey.

Of particular interest to the AAAC in their subsequent meetings and discussions with the agencies will be implementation plans, schedules, likely levels of support and the approach used to coordinate the near-term program activities. In addition, the AAAC specifically notes the value of utilizing the report recommendations as guidance for establishing a framework for funding opportunities, and as guidance for peer-review committees when evaluating proposals for studying exoplanets.

We have sent a letter to the ExoPTF Chair and the Task Force members that thanks the Task Force for their report and for their considerable investment of time and intellectual effort on its content. We would also like to thank NSF staff scientist Dana Lehr for her excellent support of the Task Force as its Executive Secretary, and NASA Astrophysics scientist Steve Ridgway for his excellent support as the NASA POC.

As noted in the AAAC 2008 Annual Report, the ExoPTF has, along with the other AAAC Task Forces (Dark Matter Scientific Assessment Group – DMSAG, Dark Energy Task Force – DETF, Task Force on CMB Research – TFCR), demonstrated the great value that accrues from having interagency task forces chartered under the auspices of the AAAC with your support.

The AAAC appreciates the substantial investment of effort by the agencies in these studies and welcomes their interest in responding in a coordinated way to the reports. We look forward to further discussion of planning for exoplanet detection and characterization.

Sincerely yours, on behalf of the Committee,



Garth D. Illingworth,
Chair, Astronomy and Astrophysics Advisory Committee

Cc:

NSF: Craig Foltz, Wayne Van Citters, Eileen Friel, Dana Lehr, Michael Briley

NASA: Jon Morse, Michael Salamon, Paul Hertz, Rick Howard, Eric Smith, Stephen Ridgway, Zlatan Tsvetanov

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