**Future Work**

Evident in the agency’s 2015 budget estimate, it is clear that the future of CubeSats within NASA is very promising, at least in the near-term. The 2015 NASA budget indicates a twenty five million dollar allocation to CubeSat projects over the next five years [1]. In light of this, there are currently multiple open or future planned solicitations accepting CubeSat based mission proposals. In particular, a review of the *NSPIRES* website (nspires.nasaprs.com), shows at least three specific solicitations that request CubeSat proposals, listed in Table 1.

In addition to the $25M line-item, NASA Earth Science Technology Office (ESTO) funds missions to validate technology through its In-Space Validation of Earth Science Technologies (InVEST) program. Currently InVEST is planning to spend thirteen million over four years on four 3U CubeSat missions [2]. One mission currently in development is ICECUBE or Earth-1, which is being built at Goddard Space Flight Center.

Table 1: CubeSat Proposal Opportunities

|  |  |
| --- | --- |
| **CubeSat Proposal Opportunities** | |
|
| Name | Description |
| Remote Sensing Theory for  Earth Science | Remote sensing science to establish a theoretical basis for measuring Earth surface properties using reflected, emitted, and scattered electromagnetic radiation and to develop the methodologies and technical approaches to analyze and interpret such measurements lies at the heart of NASA’s mission. |
| Heliophysics Technology and  Instrument Development for Science | The H-TIDeS program solicits proposals for investigations that are relevant to NASA's programs in Heliophysics |
| Astrophysics Research and Analysis  Program | The Astrophysics Research and Analysis Program (APRA) program solicits basic research proposals for investigations that are relevant to NASA's programs in astronomy and astrophysics and includes research over the entire range of photons, gravitational waves, and particle astrophysics. |

Further, NASA’s interest in the future of CubeSats is evidenced in its plans to host a CubeSat based Centennial Challenge competition in order to spur the advancement of propulsion and communication technologies for deep space applications. Primarily, the challenge is designed to develop innovative ways to return error free data from deep space without government assistance, and to demonstrate lunar orbital plane change from equatorial to polar [3]. This Centennial challenge will inevitably lead to technology and knowledge that will advance the field beyond its current state. NASAs investment in this event demonstrates the agency’s commitment to the field.

NASA is showing a great commitment to the use of CubeSats for rigorous scientific endeavors as demonstrated by the availability of funding opportunities and the development of a CubeSat Centennial Challenge.

References:

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[1] <http://www.nasa.gov/sites/default/files/files/NASA_2015_Budget_Estimates.pdf>

[2]<http://mstl.atl.calpoly.edu/~bklofas/Presentations/DevelopersWorkshop2014/Klumpar_Enhanced_Role_for_CubeSats.pdf>

[3]<https://www.fbo.gov/index?s=opportunity&mode=form&id=ec040a31b16194f877d1034ccefdda40&tab=core&_cview=0>

[4] Freeman, A. “JPL Does Cubesats” April 2013 , Cal-Poly Annual Meeting for CubeSat Developers.