



Sounding Rocket Working Group HQ Update

June 10, 2010

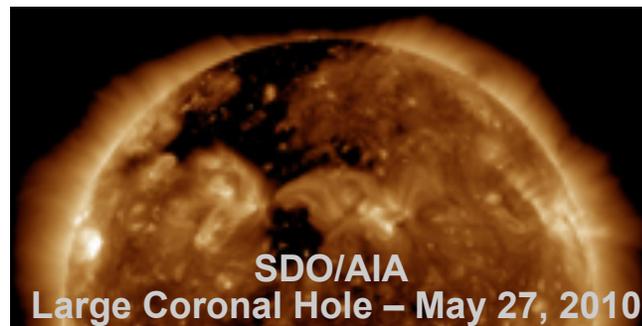


C. Yuhas, M. Mellott, W. Sanders, J. Newmark



Science Mission Directorate Update

- Program Funding
 - Rockets and Range funding (research facilities) is currently stable.
 - FY10 budget in execution: Congressional debate of agency budget has delayed distribution of FY2010 funds. Strong emphasis on uncosted levels is driving re-phasing of funds release schedules, but no substantive content changes expected.
 - FY11 budget in Congressional review, high potential for a long-term continuing resolution.
 - FY12 budget still within Agency.
- SMD Updates
 - Discovery AO released June 7; more info: <http://discovery.larc.nasa.gov/>
 - SOFIA first science flight May 25.
 - Solar Dynamics Observatory commissioned into Helio Great Observatory.
 - Helio & Astro Senior Reviews completed; reports due out this summer.





Science Mission Directorate Update

- SMD Suborbital Program Updates
 - Balloon Program flight operations suspended.
 - Unsuccessful launch attempt of the UC-Berkeley gamma ray telescope payload on April 28 in Alice Springs, Australia.
 - While in the process of aborting the launch, the payload was inadvertently released from the launch vehicle, and was dragged through the airport security fence and impacted a spectator's car. No injuries occurred.
 - High-visibility mishap investigation underway; report expected by end of July.
 - All balloon operations are suspended until investigation is complete and corrective actions implemented.
 - <http://officialmancard.com/blog/nasa-high-altitude-balloon-accident/>
 - Airborne Science Program major component of the new Earth Venture flight mission program:
 - Earth Science Venture Program selected 5 airborne missions for EV-1; http://www.nasa.gov/home/hqnews/2010/may/Hq_10-127_Venture_Program.html



Balloon Program Mishap, 4/28/10

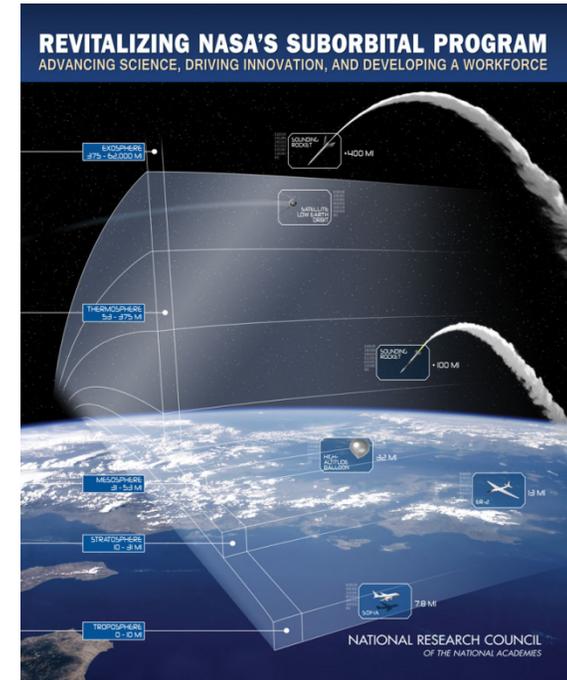


NASA GlobalHawk UAS



NRC Suborbital Study

- Statement of Task:
 - Assess the current state and potential of NASA's suborbital research programs and conduct a review of NASA's capabilities in this area, including:
 - Existing programs that make use of suborbital flights;
 - The status, capability, and availability of suborbital platforms, and the infrastructure and workforce necessary to support them;
 - Existing or planned launch facilities for suborbital missions; and
 - Opportunities for scientific research, training, and educational collaboration.
 - The committee was asked to consider airborne platforms broadly and include SOFIA, although it is not part of the suborbital program per se.
- Findings and recommendations briefed to SMD/Ed Weiler & division directors on Feb 26, 2010.



Steven R. Bohlen, Texas A&M University, *Chair*
Kristin A. Blais, Boeing Corporation
Mark A. Brosmer, The Aerospace Corporation
Estelle Condon, NASA Ames Research Center, Retired
Christine Foreman, Montana State University
Adam P.-H. Huang, University Of Arkansas
Michael J. Kurylo III, Goddard Earth Sciences and Technology Center
Robert P. Lin, University Of California At Berkeley
Franklin D. Martin, Martin Consulting Inc.
R. Bruce Partridge, Haverford College
Robert Pincus, RP Consultants
W. Thomas Vestrand, Los Alamos National Laboratory
Erik Wilkinson, Southwest Research Institute



NRC Suborbital Study Recommendations

1. NASA should undertake the restoration of the suborbital program as a foundation for meeting its mission responsibilities, workforce requirements, instrumentation development needs, and anticipated capability requirements. To do so, NASA should reorder its priorities to increase funding for suborbital programs.
2. NASA should assign a program lead to the staff of the associate administrator for the Science Mission Directorate to coordinate the suborbital program. This lead would be responsible for the development of short- and long-term strategic plans for maintaining, renewing, and extending suborbital facilities and capabilities. Further, the lead would monitor progress toward strategic objectives and advocate for enhanced suborbital activities, workforce development, and integration of suborbital activities within NASA.
3. To increase the number of space scientists, engineers, and system engineers with hands-on training, NASA should use the suborbital program elements as an integral part of on-the-job training and career development for engineers, experimental scientists, systems engineers, and project managers.
4. NASA should make essential investments in stabilizing and advancing the capabilities in each of the suborbital program elements, including the development of ultralong-duration super-pressure balloons with the capability to carry 2 to 3 tons of payload to 130,000 feet, the execution of a thorough conceptual study of a short-duration orbital capability for sounding rockets, and modernization of the core suborbital airborne fleet. (The committee notes that it was not asked to prioritize the different elements of the suborbital program, but such a prioritization should be an integral part of implementing this recommendation.)
5. NASA should continue to monitor commercial suborbital space developments. Given that the commercial developers stated to the committee that they do not need NASA funding to meet their business objectives, this entrepreneurial approach offers the potential for a range of opportunities for low-cost quick access to space that may benefit NASA as well as other federal agencies.



Science Mission Directorate Update

- Organizational Updates
 - SMD Suborbital Program Lead – center detailee search
 - Geospace IPA – David Rusch, U. Colorado, 2-yr appointment
- ROSES
 - ROSES 2010 released Feb 12, 2010
 - Kwajalein offered as a launch site option in Geospace LCAS proposals; Australia to be offered as a launch site option for APRA proposals.
 - Commercial Re-Usable Suborbital Research Platforms (CRuSR) Status
 - *“Prior to the finalization of ROSES-2010 for release, sufficient technical information on commercial reusable suborbital research (CRuSR) vehicles for writing and evaluating proposals was not available to proposers. Once that technical information is available, ROSES-2010 will be amended to solicit proposals for investigations using CRuSR vehicles.”*
- CubeSat Launch Initiative
 - Call released from Launch Services and Education Program Offices Feb 23; proposals were due April 15.
 - Initiative offers a ride for \$30K per U; no funding provided.
 - 16 proposals were received and reviewed; selections expected by the end of June.
- Extended Duration Sounding Rocket concept briefed to HQ; Astrophysics has requested a refinement of the cost estimates, for consideration should the Decadal Survey identify a requirement.



Science Mission Directorate Update

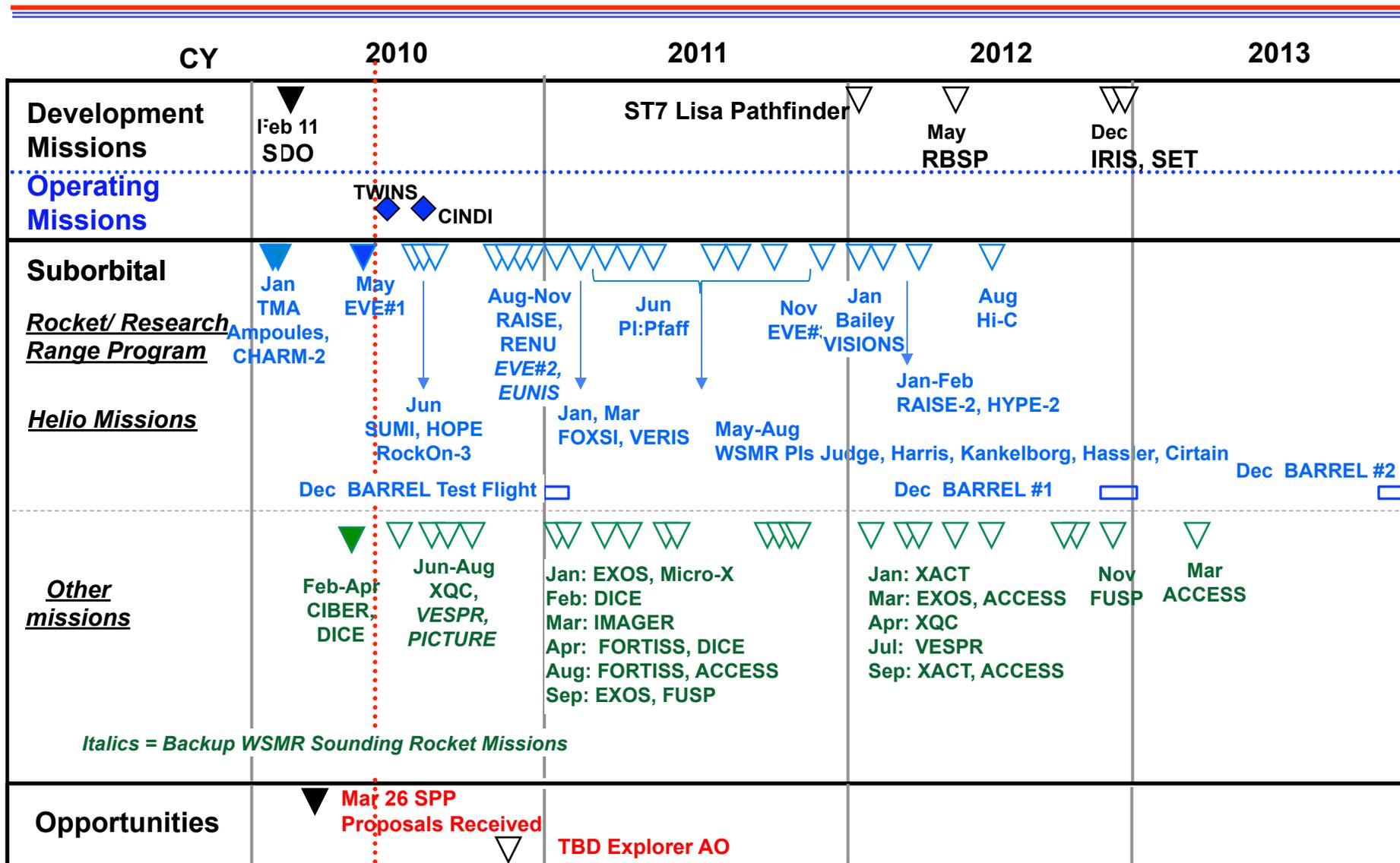
- HQ Sounding Rocket Working Group
 - A forum for the SMD divisions to consult on program priorities.
 - Helio, Astro, and Planetary Divisions represented. Discipline scientists who fund rocket-based investigations are members, along with the SRPO Program Executive, SRPO Program Manager, and Sounding Rockets Project Scientist.
 - Meetings are every 3 months, or as needed.
 - The HQ SRWG was used to establish the manifest priorities at WSMR after the TTS schedule issues arose.
 - Factors included in deliberations: PI readiness, discipline priorities, division priorities, directorate balance.
 - PI readiness was assessed by the Program Scientist, based on interviews with the PI and the SRPO program manager & mission manager.
 - The CY2010 WSMR manifest assigned the remaining 6 available systems to 6 missions according to the above factors and through negotiations among the discipline scientists
 - The SRWG also established a full set of backup missions which would remain in the processing queue. All other missions were deferred to 2011.



Backup



Heliophysics Division Mission Events



◆ End of Prime Mission

▼ Actual Date
▽ Planned Date

Status as of 05/17/10



Astrophysics Division Mission Events

	CY2010	2011	2012	2013	2014																	
Mission Launches etc.		▽ Oct SOFIA Early Sci		▽ Feb NuSTAR																		
Suborbital Rocket Program.	May D I C E 2	Jun C I B E 2	Sep X Q C 4	Sep P I C T U R E 1	Jan E X O S 2	Ja M I C R O X	Feb F I R E	Mar F I M A G E R 1	Apr F O R T I S 1	Apr S L I C E	Aug A C C E S S 1	Sep E X O S 3	Sep F U S P 1	Oct F O R T I S 2	Ja M A C T 1	Mar E X O S 4	Mar A C C E S S 2	Apr X Q C 5	Sep X A C T 2	Sep A C C E S S 3	Nov F U S P 2	Mar A C C E S S 4
Balloon Campaigns																						
Antarctica	N/D/J (CREAM V, SPB Test)		D/J	D/J	D/J																	
Sweden																						
Ft. Sumner (spr)																						
Palestine																						
Ft. Sumner (fall)																						
Australia																						
Opportunities	Apr ▽ Sr Rev	TBD ▽ Explorer AO	<div style="border: 1px solid black; padding: 5px;"> Future AOs will depend upon the results of the Astro2010 Decadal Survey </div>																			

Last Updated: May 26, 2010

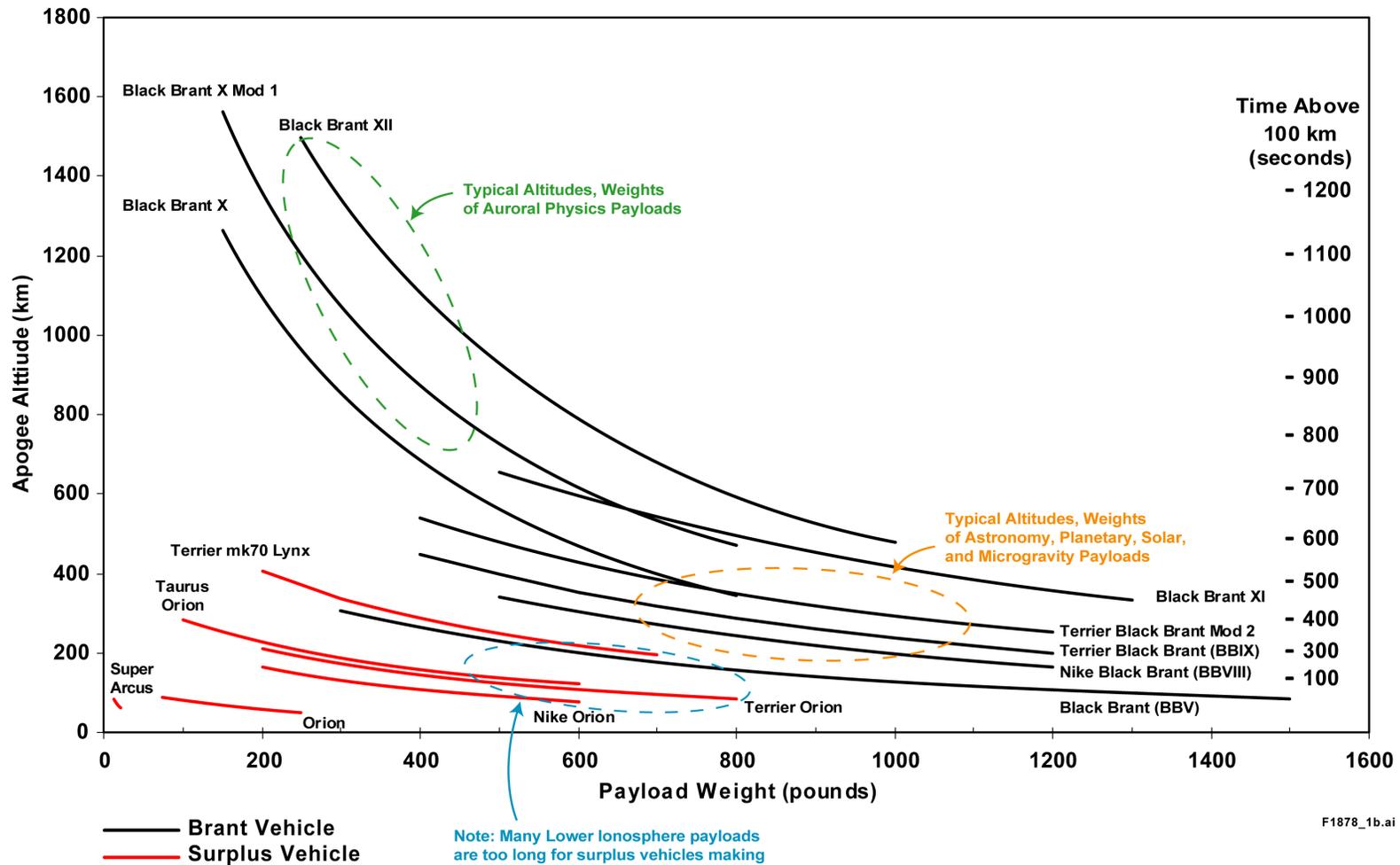
Legend

- * - NCT Balloon flight aborted.
- Grey - Backup 2010 launch
- Green - AOs pending Astro2010 Decadal Survey Report



Suborbital Observing Capabilities: Sounding Rockets

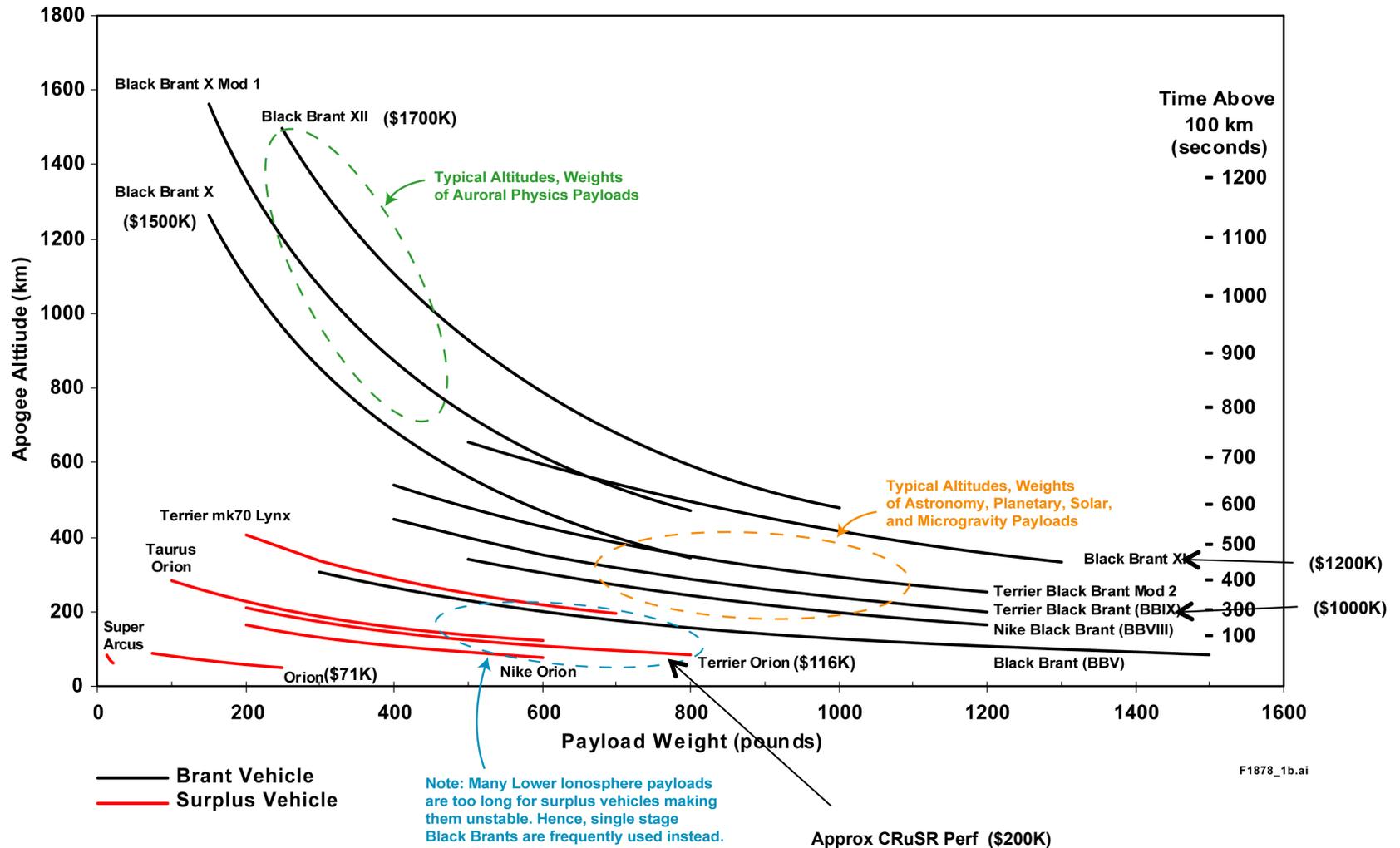
NASA Sounding Rocket Vehicle Performance





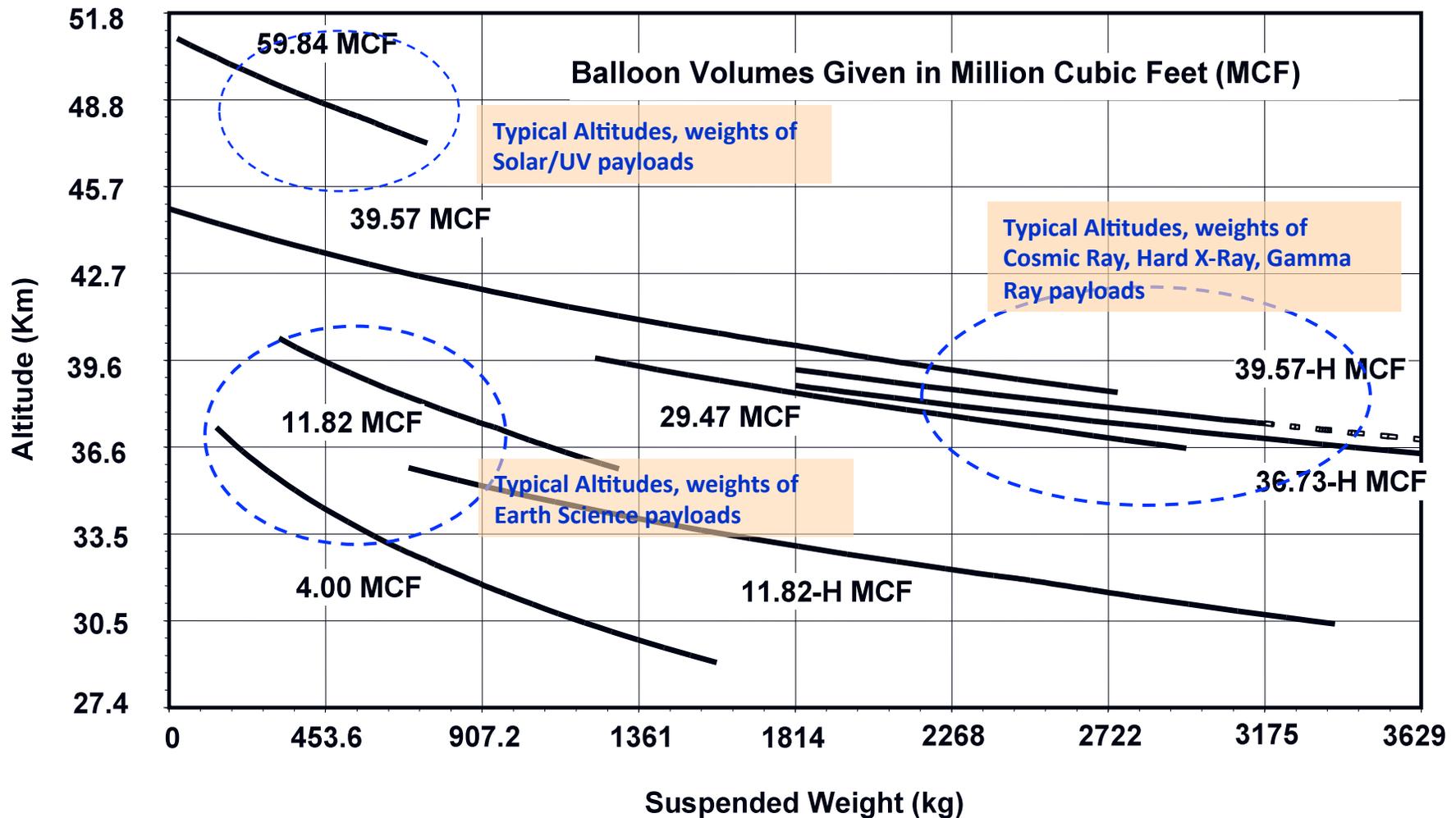
Suborbital Observing Capabilities: Sounding Rockets

NASA Sounding Rocket Vehicle Performance



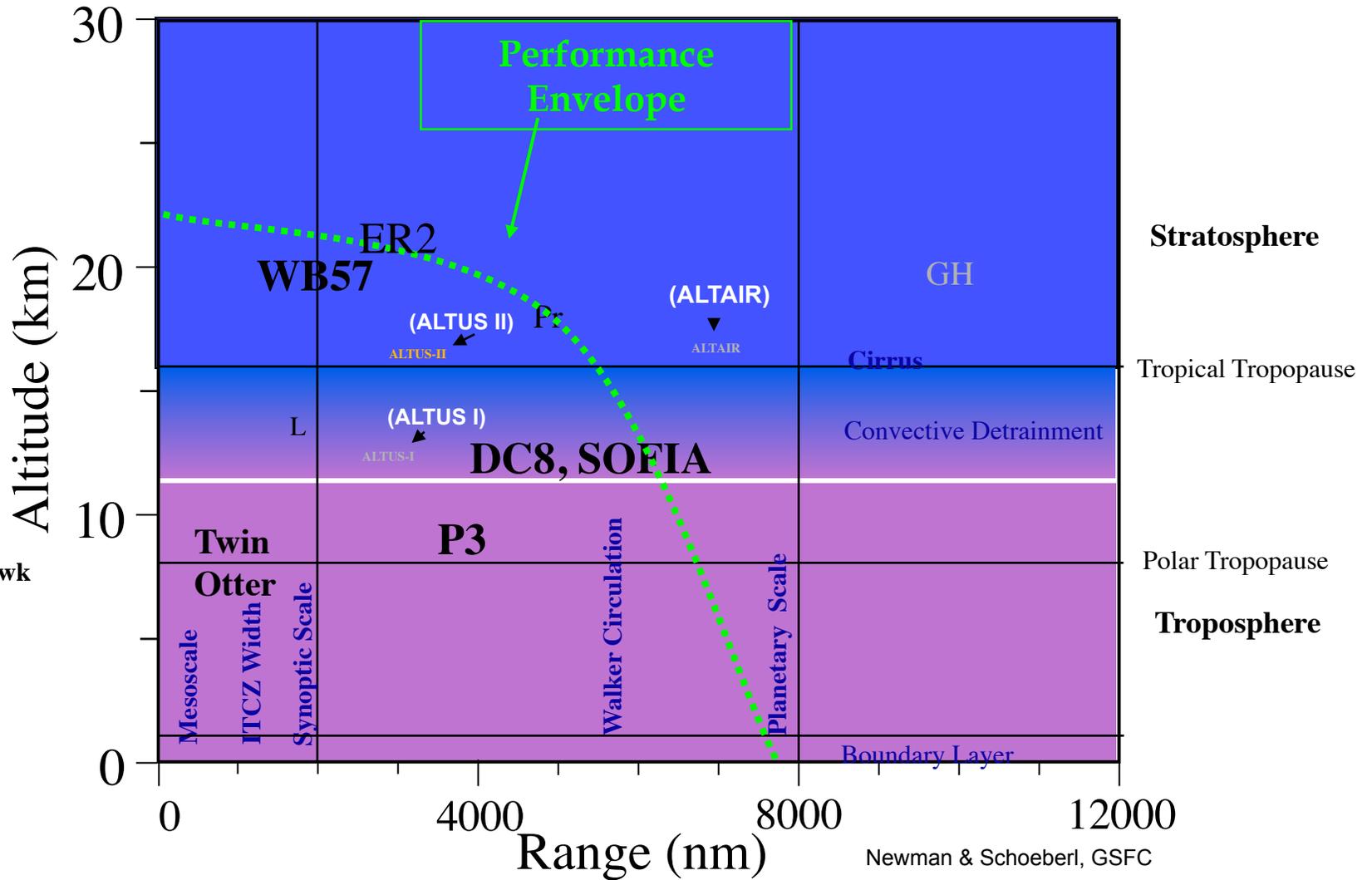


Standard Zero Pressure Balloon Load-Altitude Curves





Suborbital Observing Capabilities: Aircraft/UAS



Payload is proportional to font size (truncated at 2000 lb. and 600 lb.)
 Bold indicates payload greater than 2000 lb.

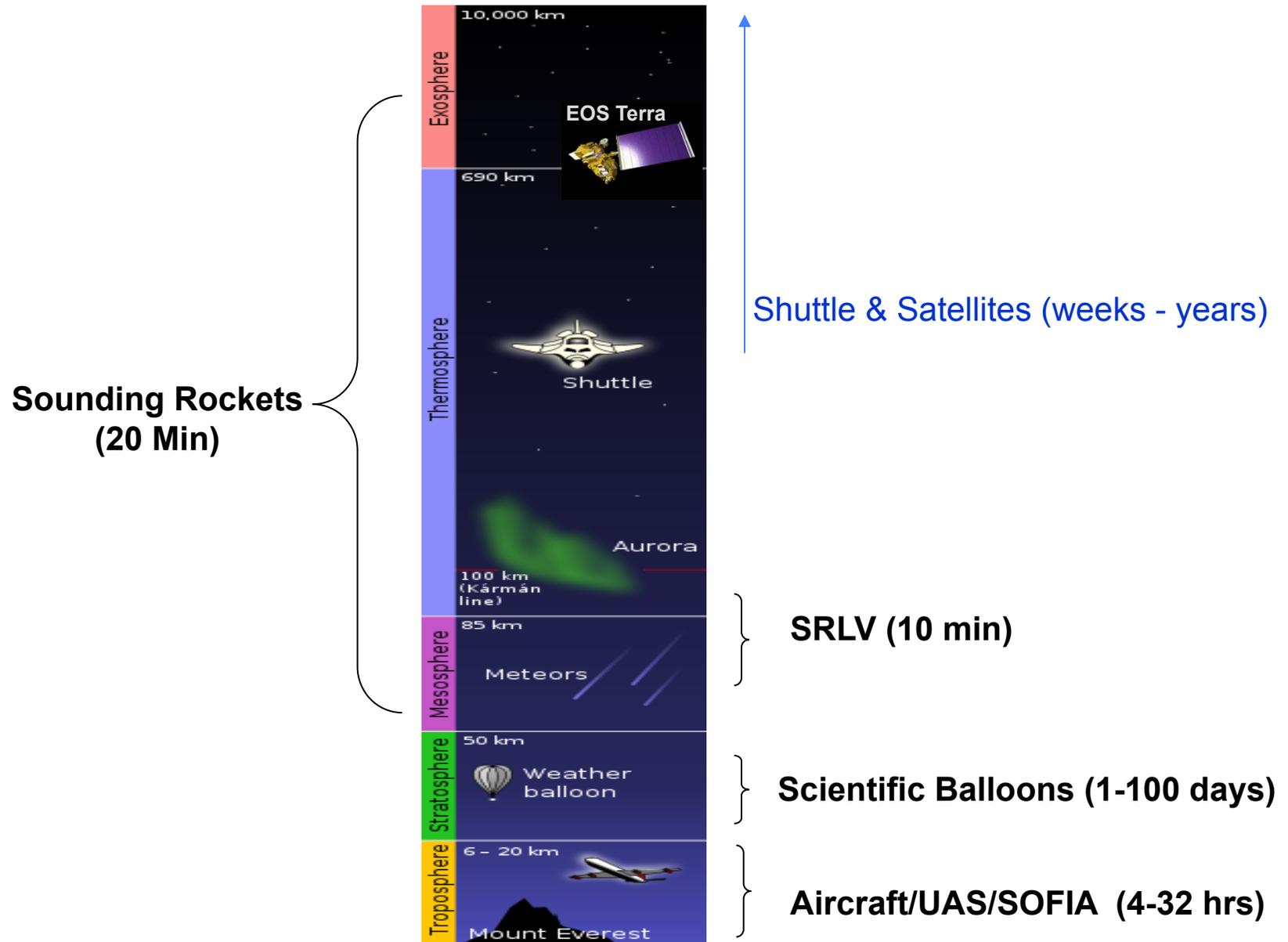


Suborbital Observing Capability: CRuSR

DATA NOT AVAILABLE



Suborbital Observing Regimes





Australia Campaign

Status as of: 05/11/2010

- **NCT – Dr. Steven Boggs, University of California, Berkeley [ABORT 23]**
The Nuclear Compton Telescope (NCT) is a gamma ray telescope designed to study astrophysical sources of nuclear line emission with high spectral and spatial resolution.
- Unsuccessful launch attempt of the NCT payload on April 28.
While in the process of aborting the launch, the payload was inadvertently released from the launch vehicle, and was dragged through the airport security fence and impacted a spectator's car. No injuries occurred.
- A High Visibility Mishap Investigation is being conducted.
- Members of the Mishap Investigation Board (MIB) are onsite in Alice Springs, Australia conducting the investigation, with preliminary findings expected to the GSFC Center Director by May 28.
- **All Balloon Operations have been suspended until the MIB Abort 23 investigation is completed and corrective actions are implemented.**
- <http://officialmancard.com/blog/nasa-high-altitude-balloon-accident/>

