



June 25, 2004

TO: Distribution

FROM: Earth Science Enterprise Suborbital Science Manager

SUBJECT: FY 2005 Suborbital Science Flight Program Development

The Suborbital Science Office of the Earth Science Enterprise (ESE) announces the annual call for requests to use the NASA/ESE suborbital observing capabilities in FY 2005.

In pursuit of the NASA mission “To understand and protect the home planet,” the Suborbital Science Program collects *in-situ* and remotely-sensed data from suborbital platforms for research and analysis of NASA’s scientific objectives and for accurate interpretation of space-based datasets from NASA satellites. The program continues to move toward a catalog approach for proven airborne capabilities, combined with technology infusion of innovative suborbital platforms. The new program structure and elements, as well as the process by which the content of the program elements is established, are described in the Suborbital Science Program website: <http://www.earth.nasa.gov/science/suborbital/>.

FY 2005 continues on-going program transition activities. However, I plan to continue to use the traditional Call Letter to allocate flight hours from a standard aircraft catalog, managed by Wallops Flight Facility, as well as using a developmental catalog of advanced technology or prototype platforms, managed by the Dryden Flight Research Center. The standard catalog comprises approved aircraft which have undergone recent flight safety reviews with various aircraft service procedures, commercial product verification and validation program tasks, or have established interagency agreements.

Accessible Assets

Accessible suborbital capabilities, including platforms, sensors and commercial products, are catalogued below (Attachments A-C) and on the ESE Suborbital Science web page. Procurements are still in progress for some of these capabilities, so please check the website for current assets and user fees before submitting a Flight Request. Platforms currently available under the flight request system in FY2005 are listed in Attachment A.

As in prior years, Principal Investigators are expected and encouraged to install their own research instruments on the appropriate platform, and NASA will support the installation according to agency-approved airworthiness procedures. There are no NASA facility sensors approved for general use by non-NASA investigators; however, some ESE

Research and Analysis programs do support sensors for use by funded investigators. These include the AVIRIS instrument for Carbon Cycle/Terrestrial Ecology investigators, and the MAS, MASTER, AirMISR, and AES instruments for the EOS Terra, Aqua and Aura investigators. While these sensors may be available to other NASA program investigators, users may be subject to additional fees to cover the sensor's operation, cost and data processing. The AirSAR sensor may not be supported by the Research Program, so all users should plan for additional fees.

In FY05, the Suborbital Science Program has also identified several commercial sensors which may provide data applicable to ESE's research objectives (Attachment C), and PI's are encouraged to request these sensors when the data product meets the investigation's scientific requirements. The fees for commercial sensors will be paid by the ESE Research and Analysis program, as they are for government sensors and platforms. Investigators are reminded to include all sensor/platform fees when submitting proposals.

User Fees

All suborbital assets are subject to user fees which are assessed by the organization operating the asset. This is true for both NASA or non-NASA sensors or platforms. Investigators performing non-NASA research or using NASA sensors sponsored by another research program may be subject to additional fees. The total cost for each flight request will be estimated by the Suborbital Science Office, based on information provided in the Flight Request, and forwarded to the investigator's sponsor for review and approval in October 2004.

All Flight Requests must include the name and contact information of a funding sponsor who can review and approve the user fee expense. For ESE investigators, the sponsor is the program manager who has issued your grant or contract. Pre-coordination with your sponsor is strongly recommended.

Once a Flight Request is approved and scheduled, the user fees must be forwarded to the performing organization before the flight actually occurs. For ESE funded researchers using NASA assets, the fees will normally be withheld from the investigator's budget and sent by his/her sponsor directly to the NASA aircraft or sensor organization. For researchers using non-NASA assets, payment of the fees will vary and the Suborbital Science business managers are prepared to assist the investigator through the financial procedures.

Submitting a Request

The Flight Request Form is available on-line from the Suborbital Science Program home page: <http://www.earth.nasa.gov/science/suborbital>. No data collections or flights will be scheduled without a Flight Request.

The Suborbital Science Program will accept Flight Requests from:

- NASA researchers and program managers;

- Investigators with a current or pending grant, contract or cooperative agreement for NASA research;
- Research program managers of the other federal agencies of the Interagency Coordinating Committee for Airborne Geoscience Research and Applications;
- Investigators who require NASA's unique assets (Explicit and defensible rationale for use of the NASA assets must be provided with the request or the request will be declined.)

If you experience problems with the form, have questions about submitting the Flight Request, or need additional information about the available assets or preliminary cost estimates, please contact Mr. Michael Gaunce at (650) 604-1266 or by e-mail at mgaunce@arc.nasa.gov.

Questions regarding the Suborbital Science Program can be addressed to the undersigned at (202) 358-0758 or at Cheryl.L.Yuhas@nasa.gov.

Completed flight requests are due COB August 16, 2004.

Cheryl Yuhas

Attachments

Distribution:

YS/Dr. J. Kaye

ARC/Mr. S. Hipkind

DFRC/Dr. T. Mace

GSFC/WFF/Mr. G. Postell

JSC/Mr. A. Roberts

GRC/Mr. W. Rieke

ATTACHMENT A – Platforms

Facility	Contact Name	Contact Phone	User Fee * (NASA-sponsored investigator)
NASA Platforms			
ER-2	George Postell	757-824-1031	\$2500**
DC-8	George Postell	757-824-1031	\$4000**
P3-B	George Postell	757-824-1031	\$3000
WB-57F	Andrew Roberts	281-244-9543	\$2500
Learjet 23	Bill Rieke	216-433-2036	\$2500
Learjet 25	Bill Rieke	216-433-2036	\$2500
Twin Otter	Bill Rieke	216-433-2036	\$1500
S-3	Bill Rieke	216-433-2036	\$3600
Non-NASA Platforms with Previously- negotiated Rates			
DOE King Air	Jeffery Myers	650-604-3598	\$2000
Twin Otter	George Postell	757-824-1031	\$600/hr + \$1200 per day
Sky Research Caravan	Jeffery Myers	650-604-3598	\$1015
Proteus	Robert Curry	661-276-3715	\$3100
Aerosonde	Chuck Williams	757-824-1435	\$200
Sky Research J-31	Jeffery Myers	650-604-3598	\$1750
Experimental Platforms			
Altair UAV	Glenn Hamilton	661-276-3748	Call
GlobalHawk UAV	Chris Jennison	661-276-2520	Call

*User fees are per flight hour. Mission Peculiar Costs, to include actual travel and shipping to deployment sites, labor, overtime, daily use fees, and engineering installation costs, etc. are additional. Fees for non-NASA users will be provided upon request.

** The user fees and availability for the ER-2 and DC-8 are both under review due to changes in the baseline funding for these aircraft in FY05. The FY05 user fees will be posted on the Suborbital Science website after program budget decisions are made in the summer of 2004.

ATTACHMENT B – Other Non-NASA Aircraft Platform Services

This table of platforms is provided for information only as a service to investigators. NASA is not responsible for maintaining or verifying the accuracy of data on non-NASA web sites. The list represents those platforms for which agreements for access by ESE investigators are in place, in work, or have recently been approved by NASA Aviation Management as airworthy and safe to operate. The list should not be considered all-inclusive, but any platform selected by investigators must comply with NASA aviation safety policies, including the Non-NASA Aircraft Safety Policy.

Each of these providers schedule their own platforms, and many include a formal request and allocation system, similar to the NASA/ESE Flight Request system. Investigators may conclude their own arrangements with a provider of their choice, to be paid from existing grant/contract funds, or may use the ESE Flight Request for assistance in scheduling and pricing from the Suborbital Science Office.

Owner/Operator	Platform	Location	Information
Federal (non-NASA)			
NOAA-AOC	Gulfstream IV	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	Citation II-CE550	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	Gulfstream AC-690	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	P-3D	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	Lake Seawolf	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	Aero Commander	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NOAA-AOC	Twin Otter DHC-6	AOC, MacDill AFB FL	http://www.aoc.noaa.gov
NSF	C-130	NCAR/Boulder, CO	http://raf.atd.ucar.edu/Aircraft
NRL	P-3	NAS Patuxent River, MD	http://planes-www.nrl.navy.mil
ONR/NPS/CIRPAS	Altus 1 (UAV)	CIRPAS/Marina, CA	http://web.nps.navy.mil/~cirpas
ONR/NPS/CIRPAS	Pelican	CIRPAS/Marina, CA	http://web.nps.navy.mil/~cirpas
ONR/NPS/CIRPAS	Twin Otter	CIRPAS/Marina, CA	http://web.nps.navy.mil/~cirpas
ONR/NPS/CIRPAS	Predator (UAV)	CIRPAS/Marina, CA	http://web.nps.navy.mil/~cirpas
DOE/PNNL	Gulfstream-1	Battelle, PNNL, Richland, WA	http://www.pnl.gov/atmos_sciences/as_g1_2.html
USDA Forest Service	Navajo	Carlsbad, CA	Bob Lockwood (909) 315-0181
Industry			
Aero-Metric	Cessna Conquest	Sheboygan, Wisconsin	http://www.aerometric.com
Airpower Inc	Canberra B-6	Lakeport, CA	http://www.airplatforms.com
Dynamic Aviation	King Air	Bridgewater, VA	http://www.dynamicaviation.com
Horizons, Inc.	Cessna Conquest	Montana	http://www.horizonsinc.com
KennBorek	Twin Otter	Calgary, Alberta, Canada	http://www.borekair.com
Keystone Aerial Surveys, Inc.	Cessna Conquest	Philadelphia, PA	http://www.keystoneaerialsurveys.com
University			
U North Dakota	Citation	UND, Grand Forks, ND	http://www.aero.und.edu/facilities/fleet
U Wyoming	King Air	UW, Laramie, WY	http://flights.uwyo.edu
So Dak School of Mines	T-28	SDSM, Rapid City, SD	http://www.ias.sdsmt.edu/institute/t28

ATTACHMENT C – Commercial Sensors/Products

Web links to remote sensing industry organizations are provided for information only as a service to investigators. NASA does not endorse any commercial product or organization. NASA is not responsible for maintaining or verifying the accuracy of data on non-NASA web sites. Investigators are responsible for contacting vendors to determine if the product meets the requirements of the proposed scientific investigation. Before any actual data collection flights, all vendors are subject to airworthiness/flight safety reviews in accordance with NASA Aviation Safety Policy for Non-NASA Aircraft.

Information on commercially available remote sensing services can be found at:

- <http://www.mapps.org/membercapabilities.asp>
- <https://eserv.asprs.org/wasprs/ScriptContent/index2sust.cfm>

Additional information is also available at:

Instrument Type	Instrument	Organization	Website
<i>Hyperspectral Imagers</i>	HYMAP	Hyvista	http://www.hymap.com
	PROBE-1	I-Cubed/Earth Search Sciences, Inc.	http://www.earthsearch.com/Earth_Search's_Probe_1_Sensor.htm
	CASI-550	ITRES	http://www.itres.com
	CASI-1500	Hyperspectral Imagers	
	SASI-640	Northrop Grumman	http://www.northropgrumman.com
	TRWIS-III		
	LWHIS		
<i>LIDAR Systems</i>	Airborne Laser Terrain Mapper	Optech	http://www.optec.on.ca
	HOALS LIDAR Bathymeter Laser Terrain Mapper (Optec ALTM 2050)	Sanborn	http://www.sanborn.com
<i>RADAR Systems</i>	X-Band IFSAR	INTERMAP	http://intermaptechnologies.com

ATTACHMENT D

SPECIAL ADDENDUM FOR EOS INVESTIGATORS PLANNING FOR NASA'S FY 2005 EARTH SCIENCE ENTERPRISE SUBORBITAL SCIENCE PROGRAM

March 5, 2004

The investigator/science team has responsibility for sensor support and maintenance, and each investigator should plan on paying the cost of aircraft operations. It must be recognized that there are many demands for aircraft support of other NASA satellite missions, the NASA Research and Analysis Programs, and other users. Hence, because of significant cutbacks in the overall funding of the NASA aircraft program, it is not likely that all of the proposed aircraft missions can be accomplished, and it is incumbent upon all investigators to plan carefully and combine missions with other investigators whenever possible. This need is made especially critical because of the scheduled launch of Aura in June 2004 and other satellites in early 2005, in addition to the continuing operation of a number of satellites already in orbit. Further, the need to reduce costs has led to a major initiative to create new heavy-lift business models as ESE transitions away from NASA-owned aircraft in the next few years and moves toward new contractual arrangements and partnerships and emphasizes the use of smaller aircraft and UAVs whenever possible.

EOS Facility Team Members and Instrument Investigators should enter the following in the "Funding Agency Sponsor" box of the Flight Request form:

Dr. Michael D. King
EOS Senior Project Scientist, Code 900
NASA/Goddard Space Flight Center
Greenbelt, MD 20771
Phone: 301-614-5636
FAX: 301-614-5620
Internet: Michael.D.King@nasa.gov

Similarly, Interdisciplinary Investigators should enter the following in the box:

Dr. ?
Research Division, Code YS
NASA Headquarters
Washington, DC 20546
Phone: 202-358-0763
FAX: 202-358-2770
Internet: ?

The EOS review of flight requests and setting of priorities will be accomplished by the EOS Program and Senior Project Scientists. To enable the most equitable allocation of available resources, you are asked to send a copy of your flight request to the Team Leader or Principal Investigator of your science team who will be called upon to help prioritize multiple requests

from a single investigation team.

In FY 2005, as in previous years, user fees for aircraft hours (“flight fees”) have been instituted by the Earth Science Enterprise. Flight fees will be withheld automatically from each EOS investigator’s budget and transferred directly to the appropriate flight account at Dryden, Wallops, or appropriate contract for the other cooperative aircraft. However, the EOS Program and Project Science Offices will consider supporting up to 50% of EOS flight fees from a Special Aircraft Support Fund, subject to scientific priorities, programmatic balance, and availability of funds in FY 2005, with the remaining 50% or more coming from the individual investigator budgets. Depending upon the number and scope of the Flight Re-quests, the Special Aircraft Support Fund will also be used to pay mission peculiar costs (MPC) in their entirety. The total amount available for both flight fees and MPC will be up to \$300K in FY 2005.

In addition to flight fees, certain sensor operation and data production costs (“data fees”) have been instituted by the Earth Science Enterprise. Data fees, if any, are the responsibility of each individual investigator and will not be subsidized by the Special Aircraft Support Fund in FY 2005. In some cases investigators may be able to avoid overhead charges by their home institutions by having the government transfer data fees directly from their accounts to the appropriate data account at a NASA Field Center. An investigator should contact the appropriate Resource Analyst or Contracting Officer to make such arrangements. Data from many ancillary sensors, e.g., photography on most aircraft, are available at no cost or only nominal cost for approved flights.

The EOS Program supports 4 PI instruments for EOS investigators, listed below with points-of-contact for more information:

MAS:	Dr. Michael King	NASA/Goddard Space Flight Center	301-614-5636
AirMISR:	Dr. David Diner	NASA/Jet Propulsion Laboratory	818-354-6319
MASTER:	Dr. Simon Hook	NASA/Jet Propulsion Laboratory	818-354-0974
AES:	Dr. Reinhard Beer	NASA/Jet Propulsion Laboratory	818-354-4748

Scheduling and final flight approvals are the responsibility of:

Cheryl L. Yuhas
Suborbital Science Office
Earth Science Enterprise
NASA HQ, Code YS
Phone: 202-358-0758
Internet: Cheryl.L.Yuhas@nasa.gov