

NASA R&D Up 7.6 Percent in Final FY 2003 Appropriations; \$50 Million Allocated for Columbia Investigation

(This analysis is part of a series of AAAS R&D Funding Updates on the FY 2003 congressional appropriations process. This analysis includes information on R&D for the National Aeronautics and Space Administration (NASA) in the FY 2003 omnibus (final) appropriations bill. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D by agency in FY 2003 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the “FY 2003 R&D” or the “What’s New” sections.)

As part of the \$397.4 billion omnibus appropriations bill (H.J. Res. 2) that brought an end to the FY 2003 appropriations process, the **National Aeronautics and Space Administration (NASA) received \$15.3 billion in FY 2003 funding, up \$443 million or 3.0 percent from FY 2002.** President Bush signed the bill into law on February 20. Included in the total is \$50 million specifically allocated for expenses related to the investigation of the loss of the space shuttle *Columbia* on February 1. Two-thirds of the NASA budget, which excludes the Space Shuttle program and its associated costs, is classified as R&D. **NASA R&D rises 7.6 percent under the bill to \$11.0 billion, an increase of \$775 million above the FY 2002 level;** this exceeds the Bush Administration’s request by \$283 million (see Table). A large portion of this above-request increase is due to the insertion of congressionally designated projects in the **Science, Aeronautics, and Technology** account. These totals incorporate an across-the-board cut of 0.65 percent affecting nearly all domestic programs funded in the omnibus bill, except for the Space Shuttle.

Within the **Human Space Flight (HSF)** account, funding for the troubled **International Space Station** is reduced by \$238 million (13.8 percent) in comparison to FY 2002, some \$10 million beyond the Administration’s proposed cut. When action on the (then stand-alone) VA-HUD appropriations bill that funds NASA was taken in the Senate last summer, report language accompanying the bill re-iterated lingering congressional concern over NASA’s management of Station costs. With this reduction, and cutbacks in other HSF R&D activities, overall HSF R&D is down \$307 million from the FY 2002 level to \$1.9 billion, a 14.0 percent decrease (see Table).

These cuts stand in contrast to notable increases in the **Science, Aeronautics, and Technology (SAT)** account. **Space Science** enjoys the largest absolute and percentage increase from the FY 2002 level, climbing \$599 million to \$3.5 billion, a 20.7 increase. The single largest increase above the budget request in the SAT portfolio is **\$95 million for the Pluto-Kuiper Belt** mission, to be used to develop a spacecraft for a scheduled launch date of 2006 to Pluto, a program NASA proposed to cancel. Other notable increases include \$20 million for the Jupiter Icy Moons Orbiter program and \$19 million for the Mars program. The **Aero-Space Technology (AST)** program sees a 12.7 percent or \$307 million increase to \$2.9 billion for FY 2003. The single largest AST increase is for the Space Launch Initiative, which climbs from \$467 million to \$719 million in an effort to develop the next generation of space launch systems including possible replacements for the Space Shuttle. **Earth Science** and **Biological and Physical Research** grow by 7.3 percent and 4.7 percent respectively.

And, though **Academic Programs** sees a 10.9 percent decrease as compared to the FY 2002 level, its \$203 million appropriation for FY 2003 is a 41 percent increase from the budget request. This rather sizable difference is due to 38 congressionally designated projects totaling \$54.4 million, many of them funded in FY 2002 but deleted in the FY 2003 request. Although all programs in this account are classified as R&D, the congressionally designated projects include funds for a rooftop observatory, an aquarium laboratory, science museums, and education centers. Projects such as these have received particular scrutiny from the Bush Administration, which has argued that they are both fiscally burdensome and scientifically questionable, given that they bypass the conventional peer-review process. Yet, despite this pique, President Bush continues to sign appropriations bills laden with such projects and the cycle of presidential

inquisition and congressional subvention rolls on. There are also congressional earmarks in the other SAT accounts, and they are responsible for most of the increases above the budget request for these programs.

Clearly the most scrutinized NASA activity at the moment, however, is the Space Shuttle program, officially classified as a non-R&D activity. With the loss of the *Columbia* and her seven-member crew, old questions have re-surfaced concerning the cost-effectiveness and safety of the Shuttle program specifically, and the wisdom of manned space flight more generally. And, while it is too early to tell whether these debates will lead to any meaningful changes in direction, the emergence of significant modifications or alternatives to the Space Shuttle program could mean larger R&D budgets as future directions are investigated. The budgetary impacts of the Columbia disaster will be felt in the FY 2004 budget, which was released on February 3 two days after the loss. The FY 2004 total request of \$15.5 billion will almost certainly be rewritten as the shuttle investigation and NASA reactions commence. (For details of the NASA R&D request, please refer to the forthcoming analysis of NASA R&D in the FY 2004 budget, available shortly.)

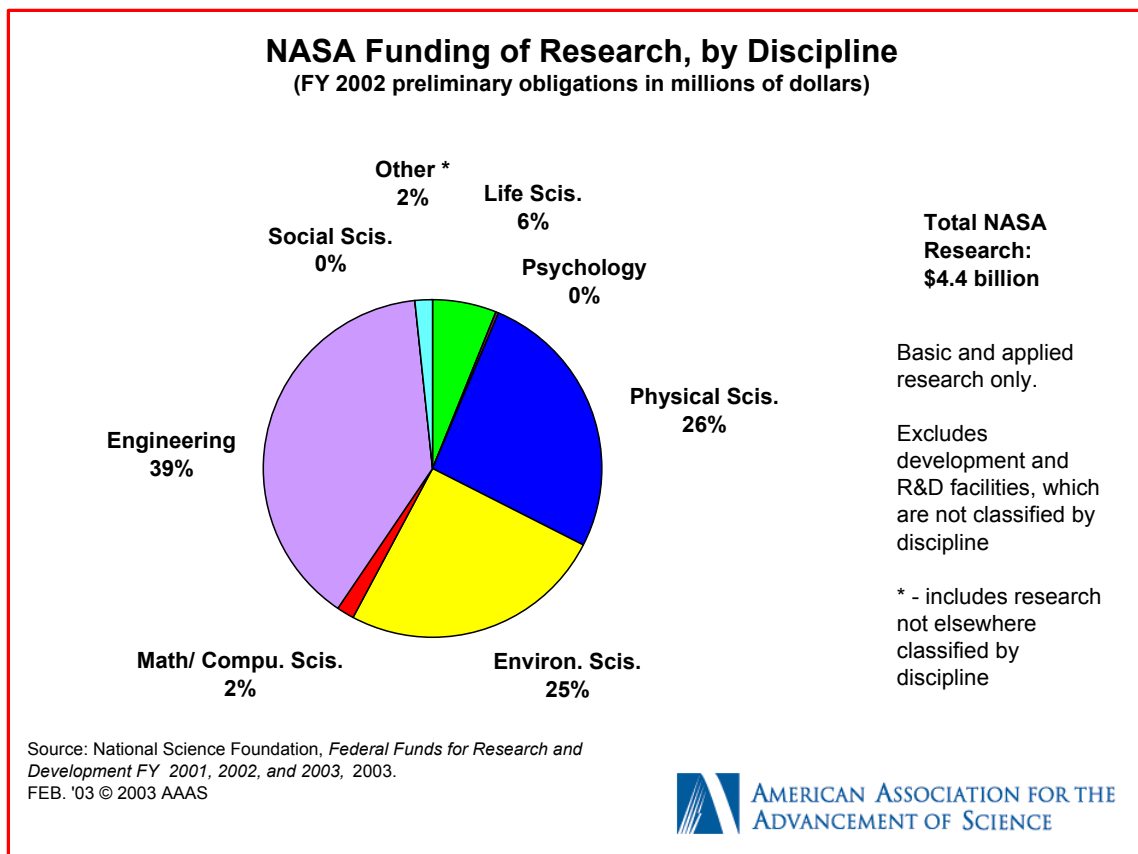


Figure 1. (click on the image to view or download a color, full-page PDF version of the chart)

Although much of NASA's R&D funds development and facilities projects such as the Space Station, **NASA is also an important source of federal support for basic and applied research.** Figure 1 shows the division of NASA's research portfolio (slightly less than half of NASA's R&D budget) by science and engineering discipline, while Figure 2 shows NASA's importance as a funding source for several key disciplines.

Engineering research makes up the largest part of the NASA portfolio. NASA funds approximately a quarter of total federal support for engineering research, and is the second largest agency sponsor after DOD. As Figure 3 shows, NASA support is especially important in some engineering sub-fields such as astronautical engineering and aeronautical engineering; NASA supplies nearly all of the federal funds for

these sub-fields. NASA is the leading federal sponsor of the environmental sciences (oceanography, atmospheric sciences, geological sciences). The environmental sciences are a quarter of NASA's portfolio, but NASA accounts for a third of total federal support for environmental sciences research. In particular, NASA funds more than half of all federal support for atmospheric sciences, mostly through the Earth Science program, while NASA is also responsible for nearly a third of total federal support for geology (other major sponsors include the Department of the Interior and NSF). NASA also invests heavily in the physical sciences (astronomy, chemistry, and physics). NASA is the second largest federal sponsor of physical sciences behind the Department of Energy, and is by far the leading sponsor of astronomy research.

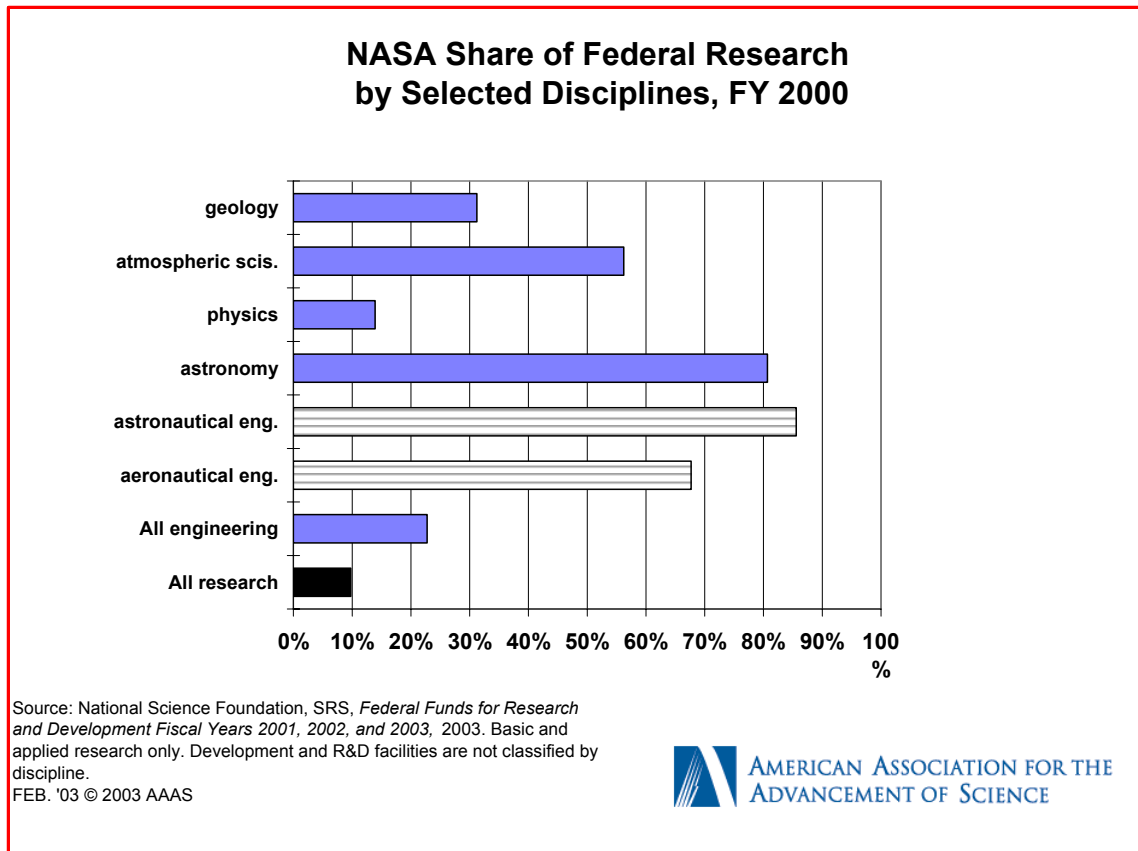


Figure 2. (click on the image to view or download a color, full-page PDF version of the chart)

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**Table. National Aeronautics and Space Administration
Congressional Action on R&D in the FY 2003 Budget
(budget authority in millions of dollars)**

	FY 2002 Actual	FY 2003 Request	Action by Congress				
			FY 2003 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2002 Amount	Chg. from FY 2002 Percent
Summary of R&D by Appropriation:							
1. Human Space Flight (HSF)							
Space Station	1,721	1,492	1,482	-10	-0.6%	-238	-13.8%
Other	478	412	409	-3	-0.7%	-69	-14.4%
Total R&D HSF	2,199	1,904	1,892	-12	-0.6%	-307	-14.0%
2. Science, Aeronautics and Technology (SAT)							
Space Science	2,902	3,414	3,501	87	2.5%	599	20.7%
Biological & Physical Research	824	842	863	21	2.5%	39	4.7%
Earth Science	1,592	1,628	1,708	80	4.9%	116	7.3%
Aero-Space Technology	2,549	2,816	2,873	57	2.0%	323	12.7%
Academic Programs	227	144	203	59	41.0%	-25	-10.9%
Total SAT	8,095	8,845	9,148	303	3.4%	1053	13.0%
Less Non-R&D in SAT	-69	-32	-40	-8	25.8%	29	-42.4%
Total NASA R&D	10,224	10,717	10,999	283	2.6%	775	7.6%
NASA Non-R&D Activities:							
Space Shuttle (in HSF)	3,270	3,208	3,258	50	1.6%	-12	-0.4%
Other Non-R&D in HSF	1,304	1,019	1,012	-7	-0.7%	-292	-22.4%
Non-R&D in SAT	69	32	40	8	25.8%	-29	-42.4%
Inspector General	24	25	25	1	3.4%	2	7.3%
Total NASA Non-R&D Activities	4,667	4,283	4,336	52	1.2%	-332	-7.1%
TOTAL NASA Budget	14,892	15,000	15,335	335	2.2%	443	3.0%

AAAS estimates based on FY 2003 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2002 and FY 2003 request figures based on OMB R&D data and supplemental agency budget data.

FY 2003 Approved figures include 0.65% across-the-board cut mandated in legislative language.

Figures are rounded to the nearest million. Changes calculated from unrounded figures.

This table is presented in the current NASA account structure.

The FY 2004 budget proposes a new account structure.

February 20, 2003 - House-Senate Conference-approved funding levels.

These funding levels are final unless the conference report is vetoed.