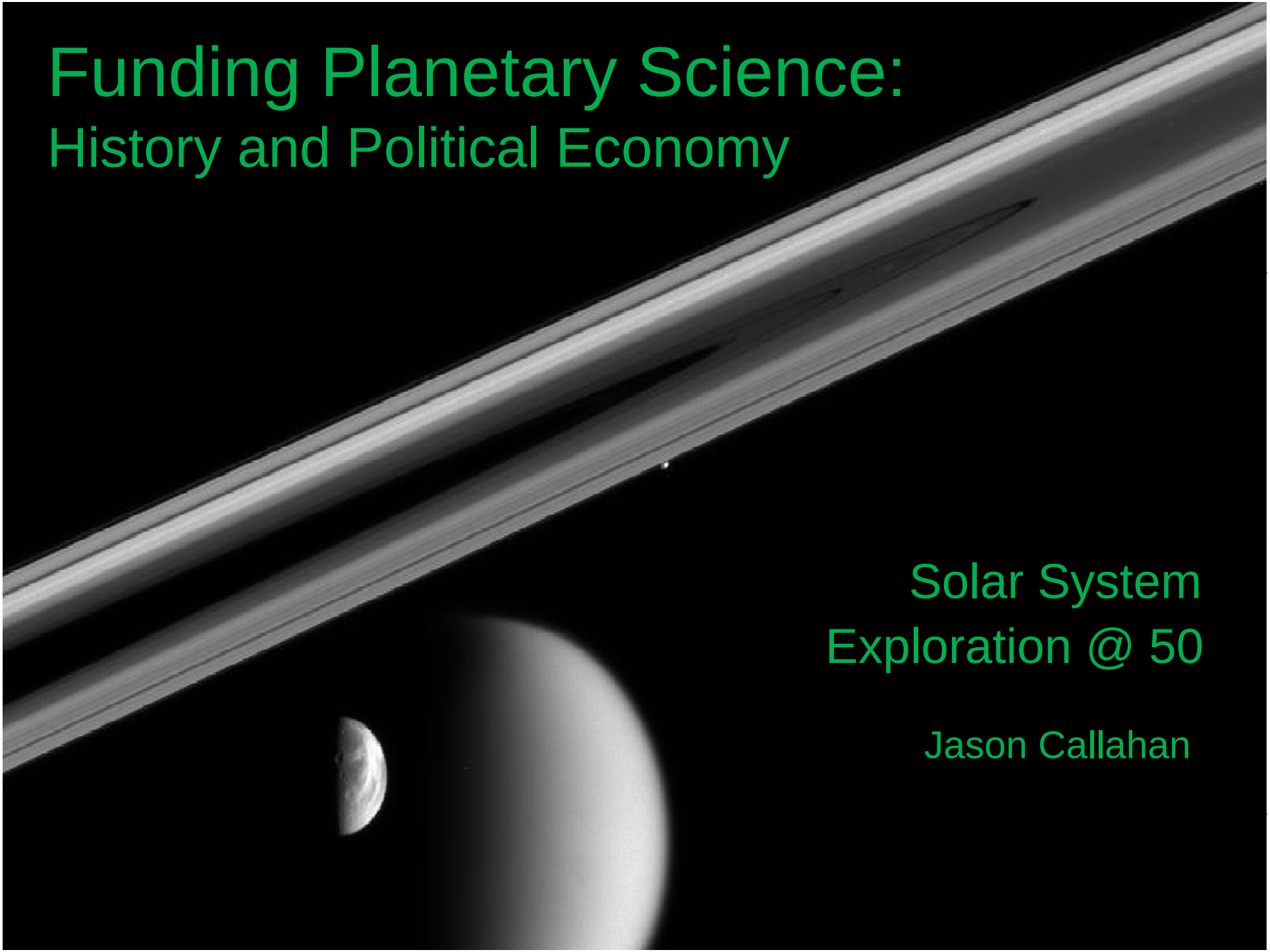
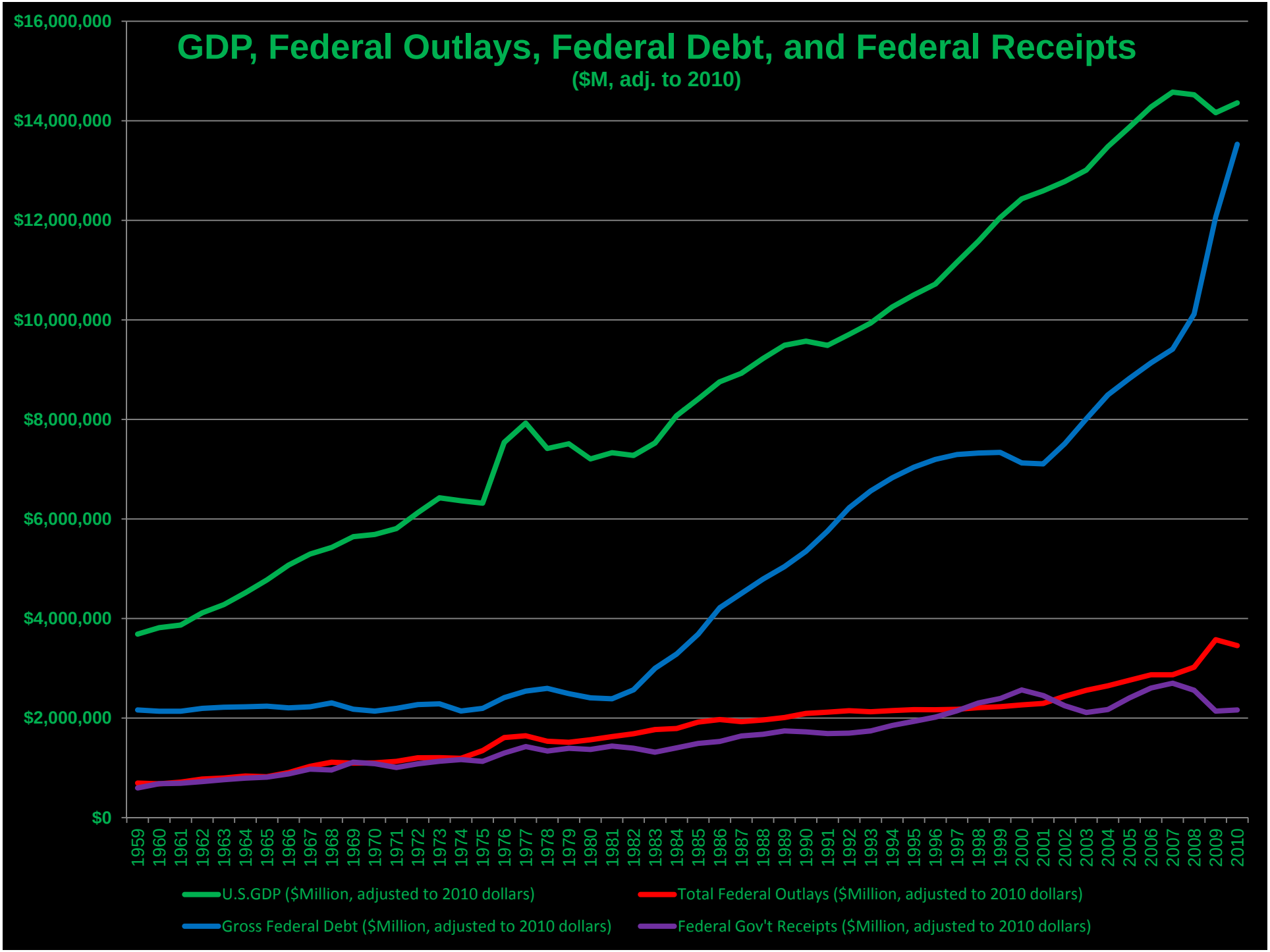
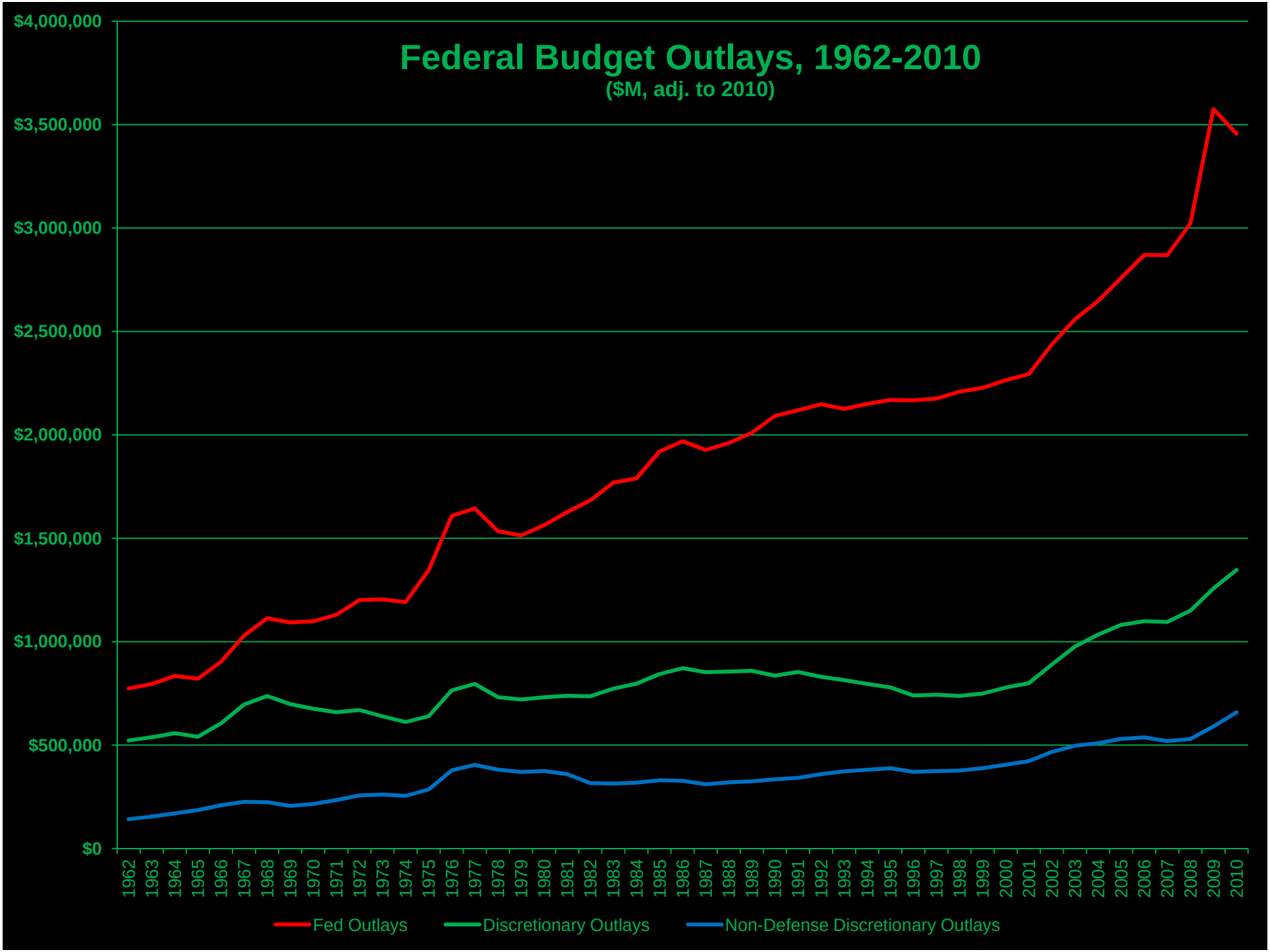
Funding Planetary Science:
History and Political Economy

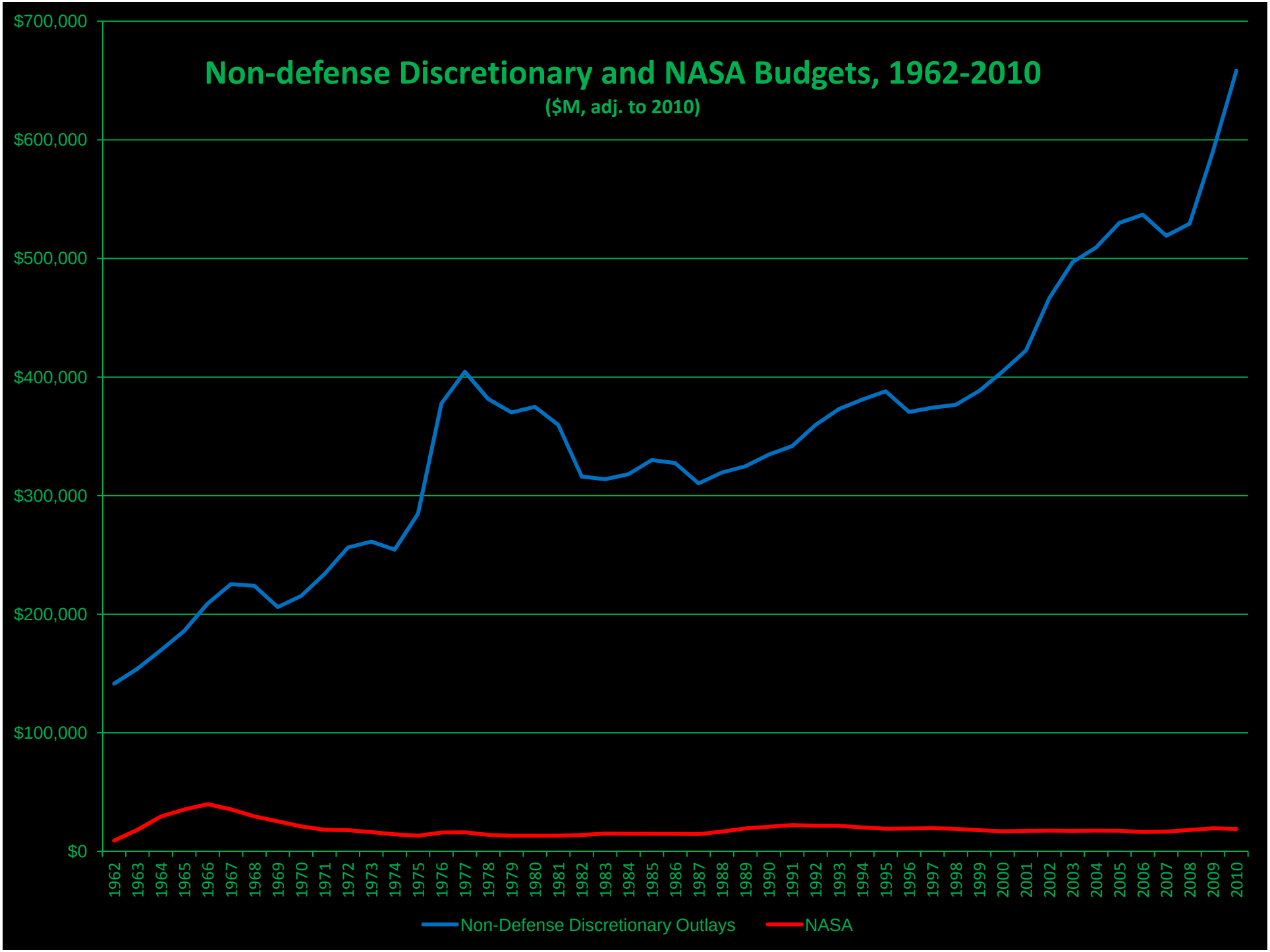


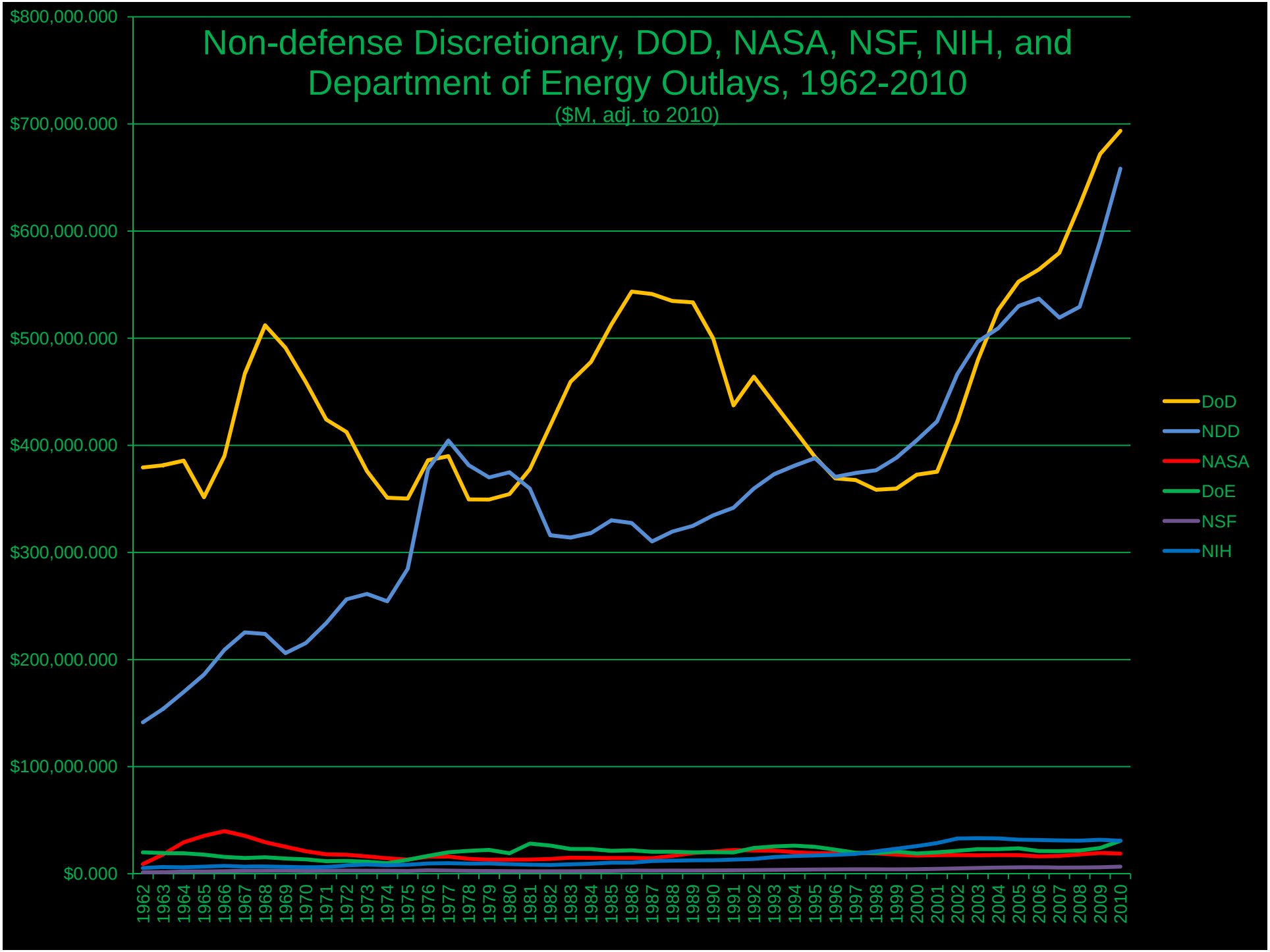
Solar System Exploration @ 50

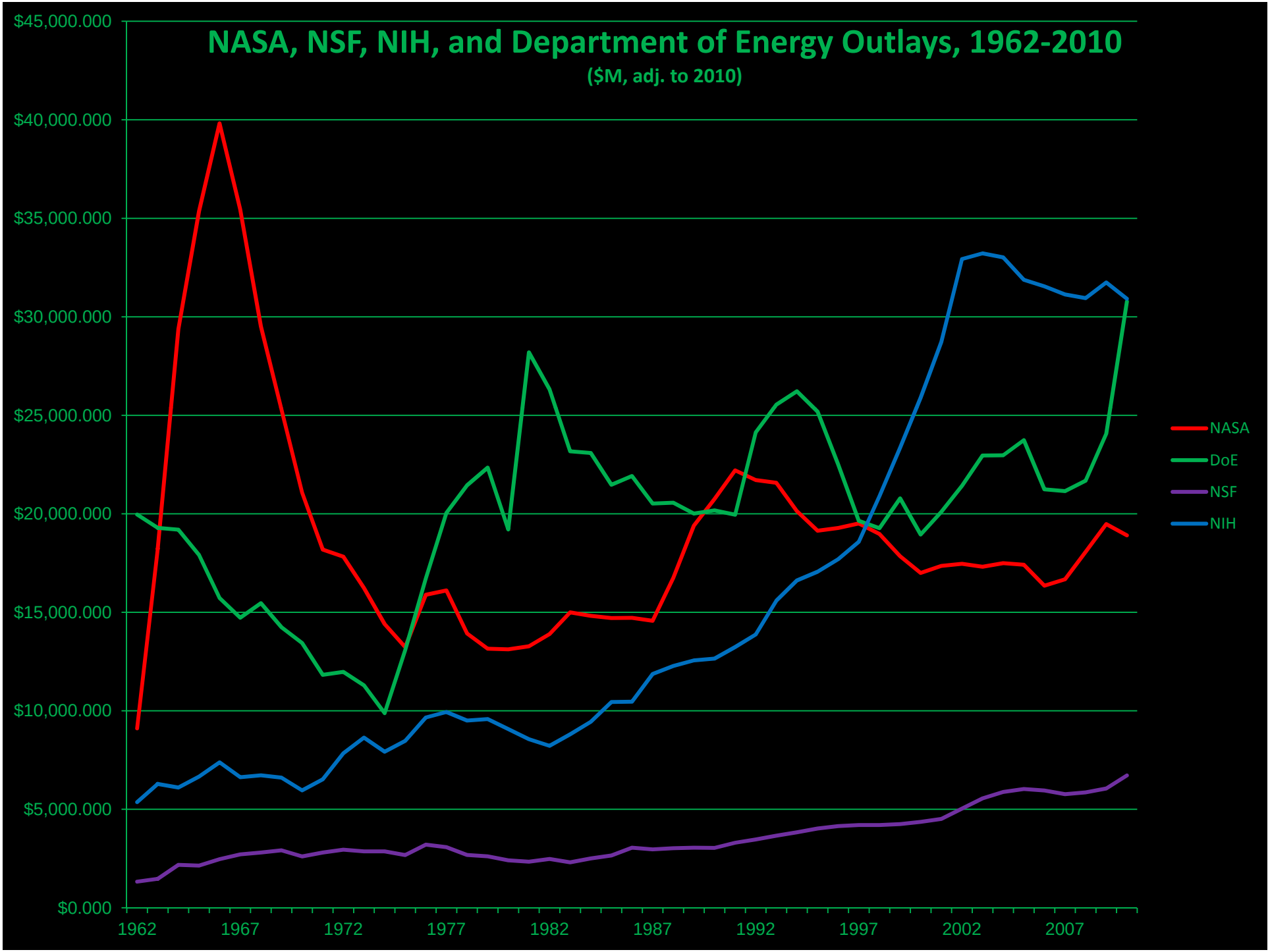
Jason Callahan

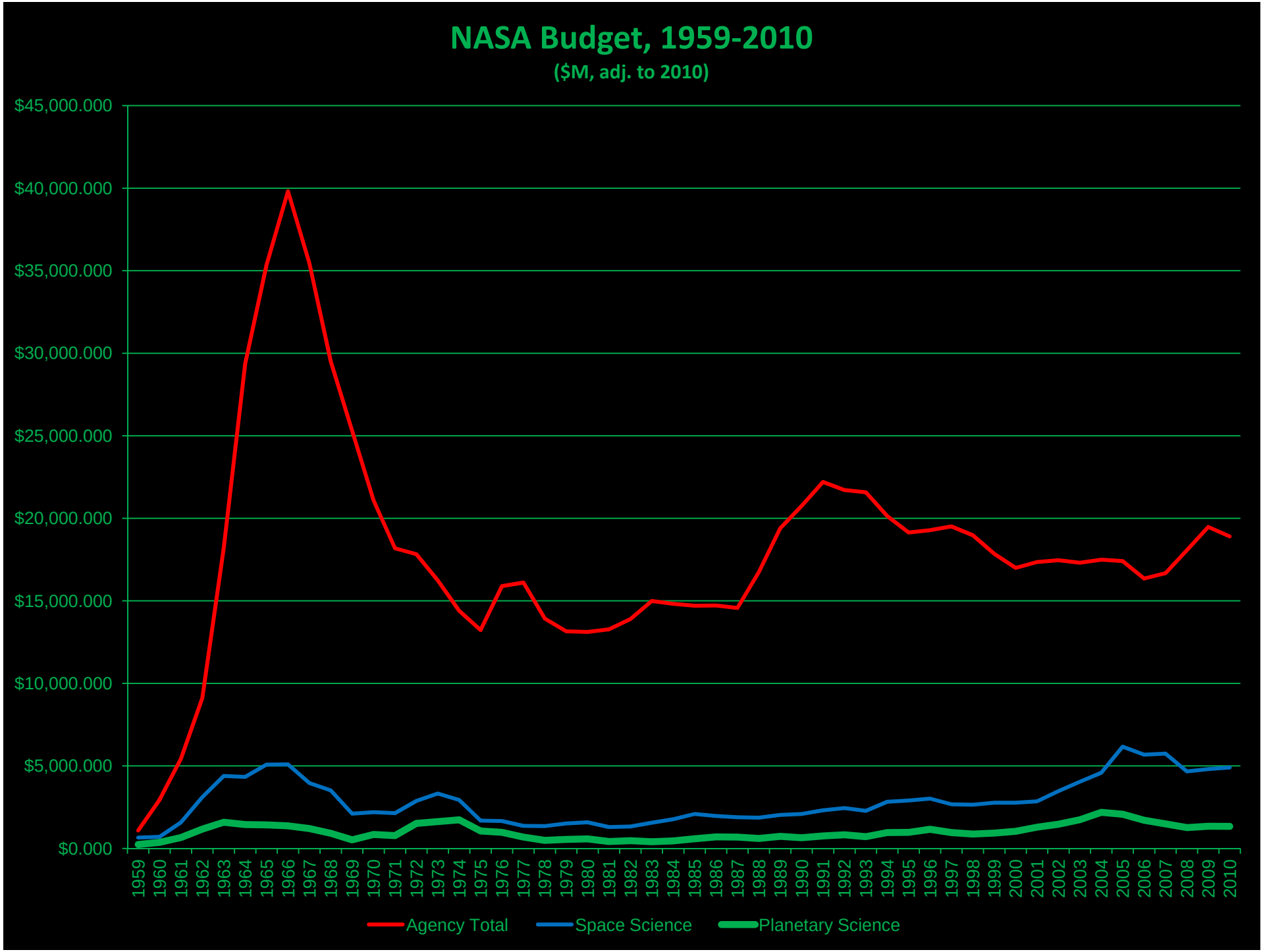

GDP, Federal Outlays, Federal Debt, and Federal Receipts
($M, adj. to 2010)
$16,000,000
$14,000,000
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$0
1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
U.S.GDP ($Million, adjusted to 2010 dollars)
Total Federal Outlays ($Million, adjusted to 2010 dollars)
Gross Federal Debt ($Million, adjusted to 2010 dollars)
Federal Gov't Receipts ($Million, adjusted to 2010 dollars)

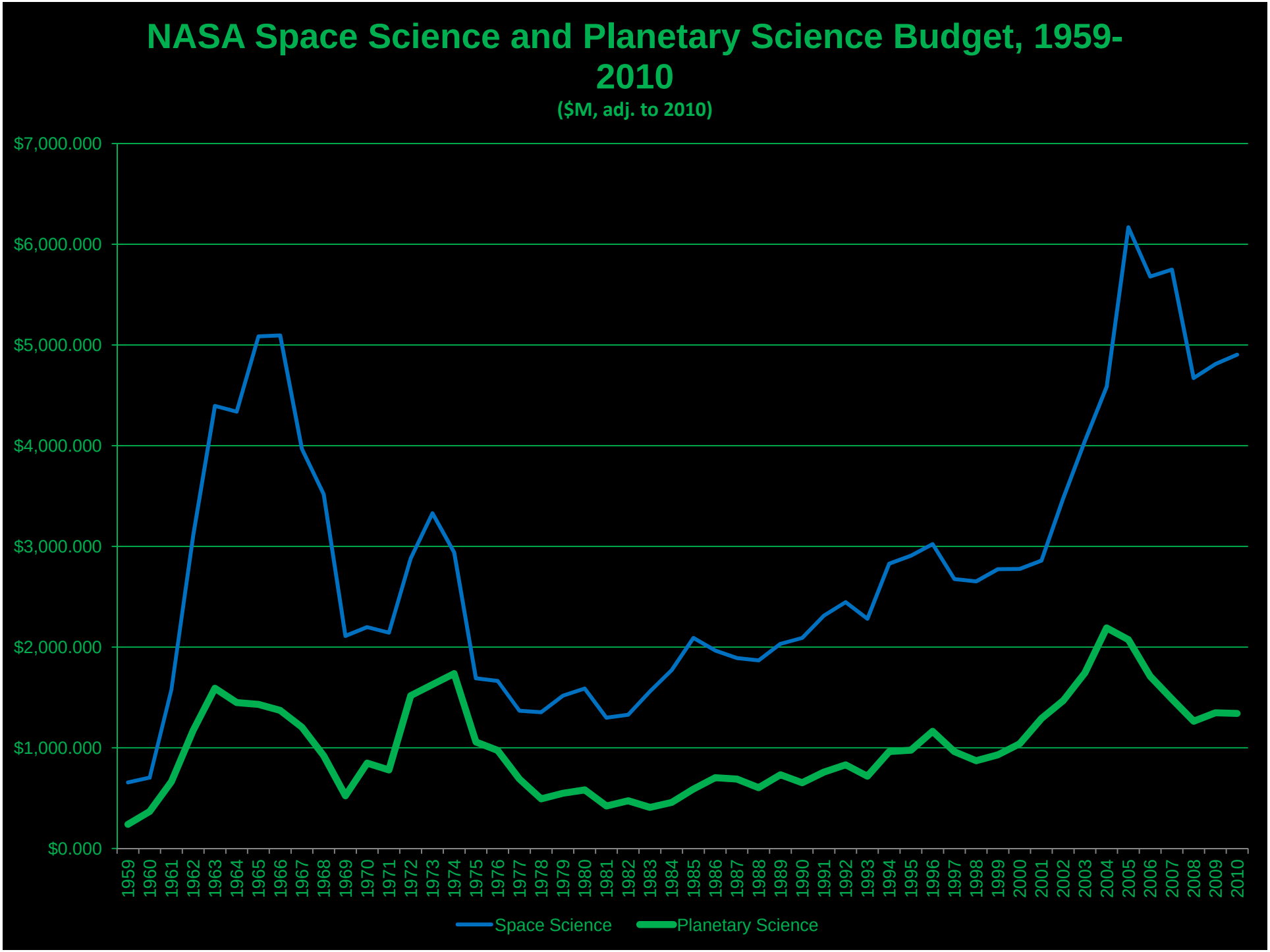

Federal Budget Outlays, 1962-2010
($M, adj. to 2010)
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Fed Outlays
Discretionary Outlays
Non-Defense Discretionary Outlays

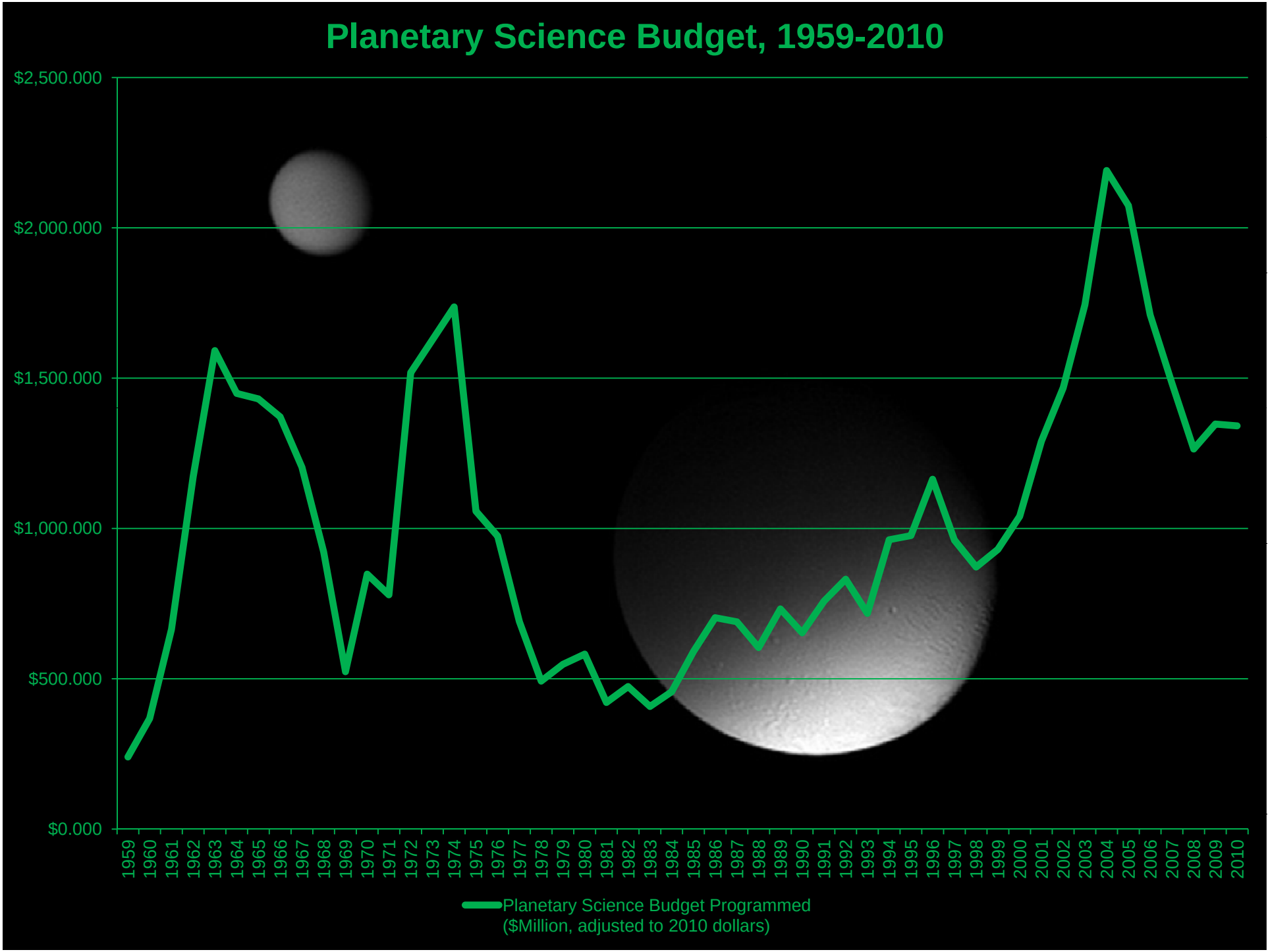

Non-defense Discretionary and NASA Budgets, 1962-2010
($M, adj. to 2010)
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Non-Defense Discretionary Outlays
NASA


Non-defense Discretionary, DOD, NASA, NSF, NIH, and Department of Energy Outlays, 1962-2010
($M, adj. to 2010)
$800,000.000
$700,000.000
$600,000.000
$500,000.000
$400,000.000
$300,000.000
$200,000.000
$100,000.000
$0.000
1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
DoD
NDD
NASA
DoE
NSF
NIH

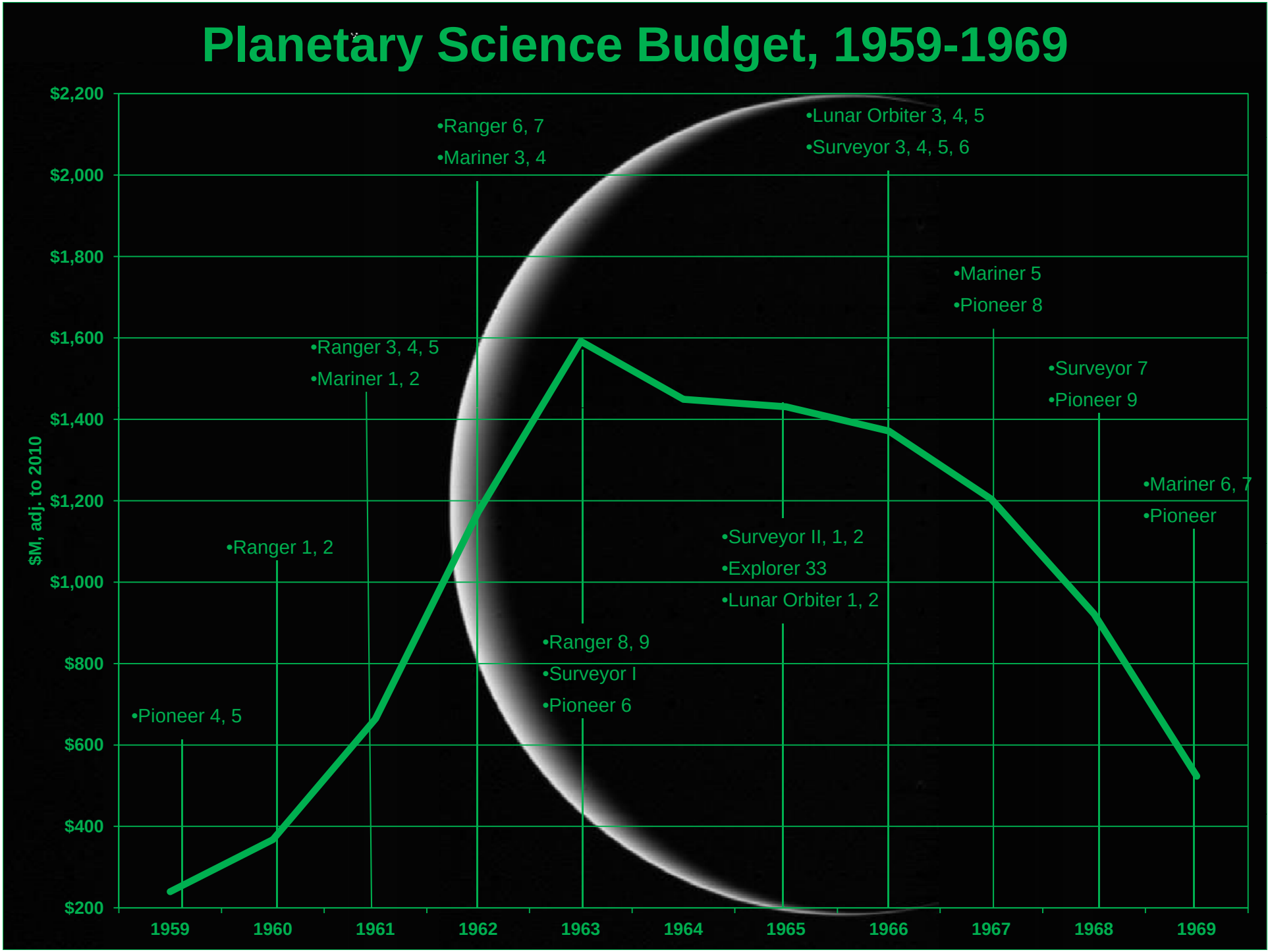

NASA, NSF, NIH, and Department of Energy Outlays, 1962-2010
($M, adj. to 2010)
$45,000.000
$40,000.000
$35,000.000
$30,000.000
$25,000.000
$20,000.000
$15,000.000
$10,000.000
$5,000.000
$0.000
1962
1967
1972
1977
1982
1987
1992
1997
2002
2007
NASA
DoE
NSF
NIH

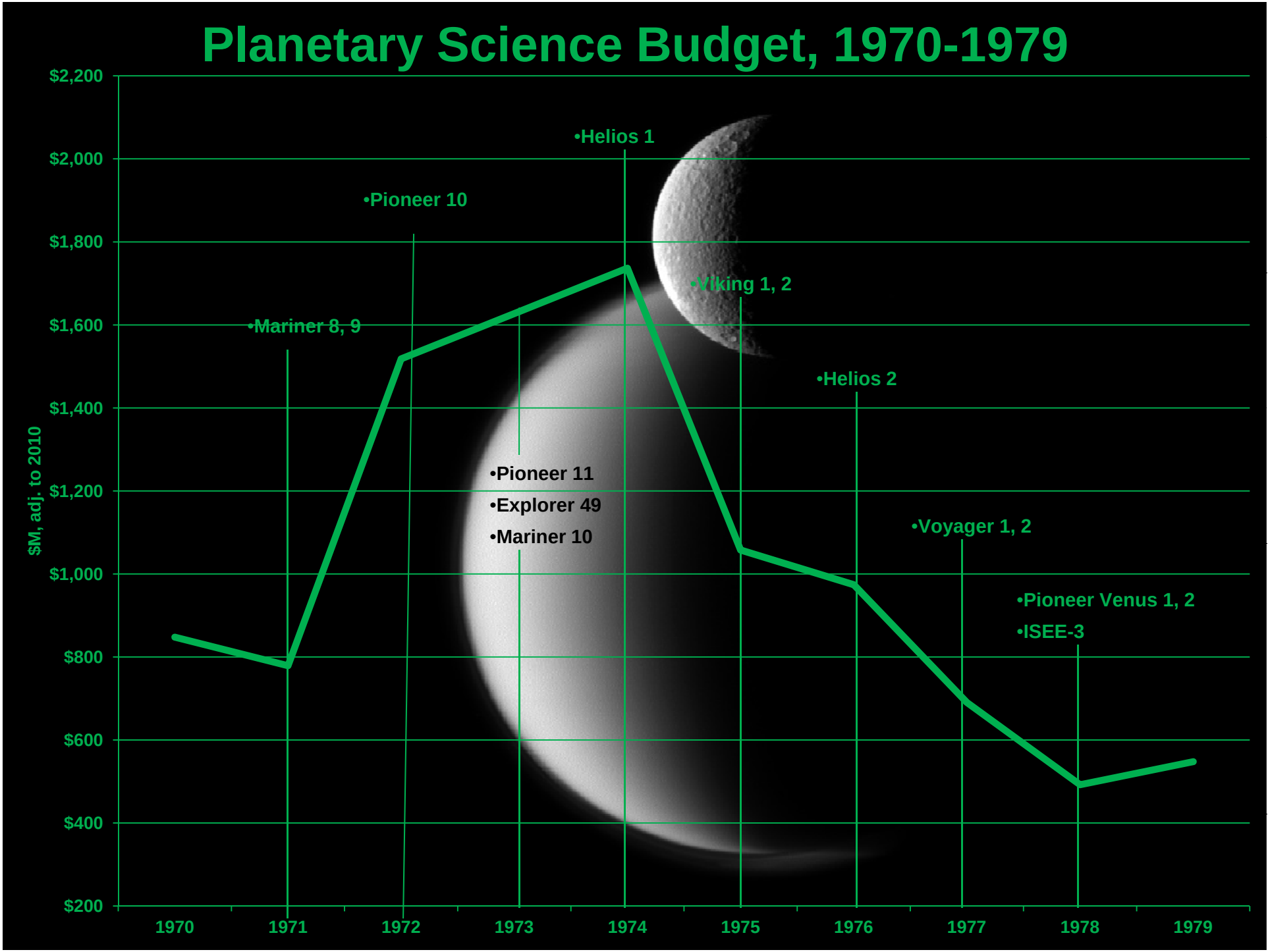

NASA Budget, 1959-2010
($M, adj. to 2010)
$45,000.000
$40,000.000
$35,000.000
$30,000.000
$25,000.000
$20,000.000
$15,000.000
$10,000.000
$5,000.000
$0.000
1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Agency Total
Space Science
Planetary Science


NASA Space Science and Planetary Science Budget, 1959-2010
($M, adj. to 2010)
$7,000.000
$6,000.000
$5,000.000
$4,000.000
$3,000.000
$2,000.000
$1,000.000
$0.000
1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Space Science
Planetary Science

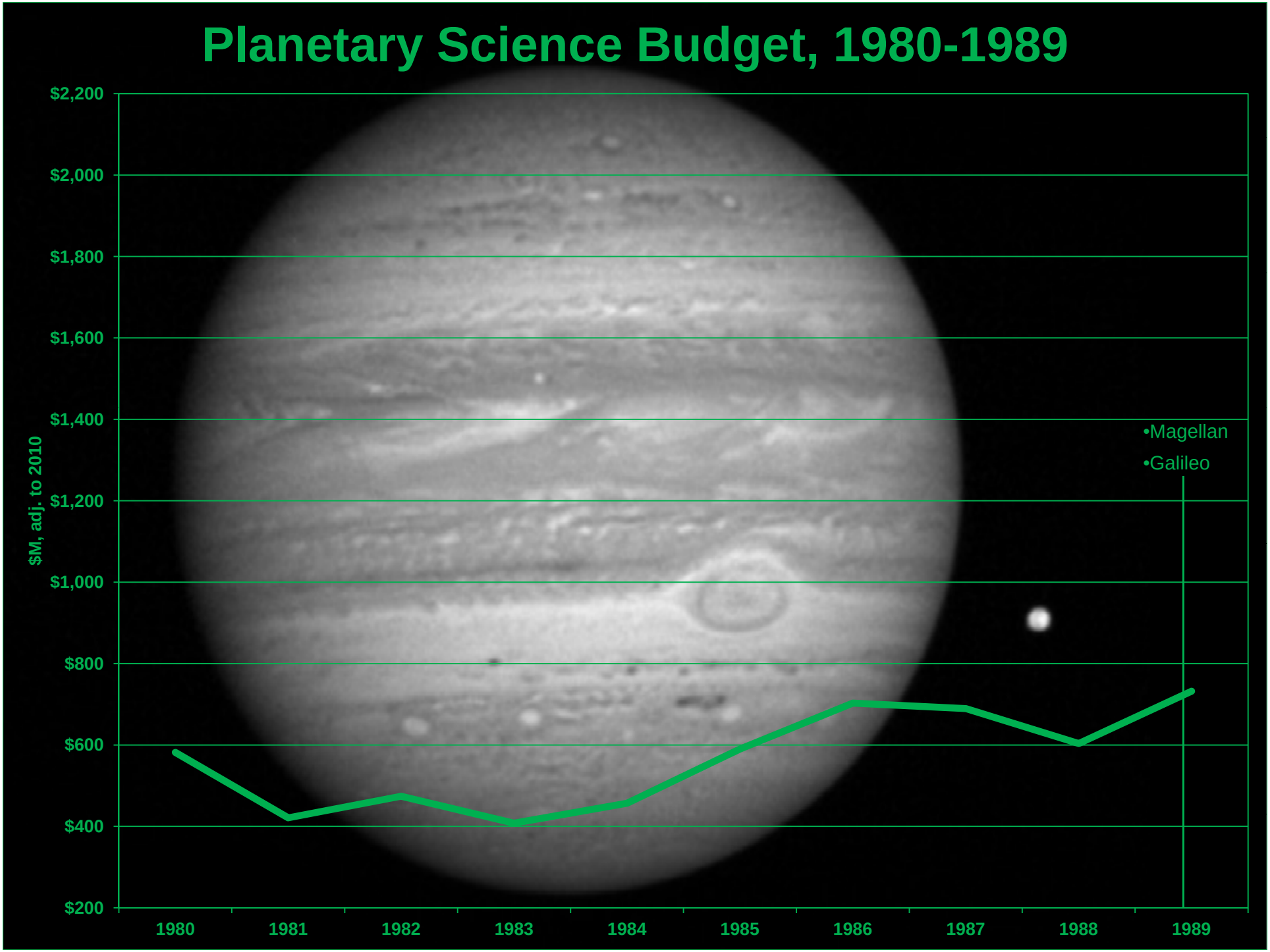

Planetary Science Budget, 1959-2010
$2,500.000
$2,000.000
$1,500.000
$1,000.000
$500.000
$0.000
1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Planetary Science Budget Programmed
($Million, adjusted to 2010 dollars)

Planetary Science Budget, 1959-1969

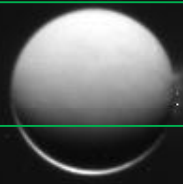



Planetary Science Budget, 1970-1979
$M, adj. to 2010
$2,200
$2,000
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
•Mariner 8, 9
•Pioneer 10
•Helios 1
•Viking 1, 2
•Helios 2
•Pioneer 11
•Explorer 49
•Mariner 10
•Voyager 1, 2
•Pioneer Venus 1, 2
•ISEE-3

Planetary Science Budget, 1980-1989



Planetary Science Budget, 1990-1999



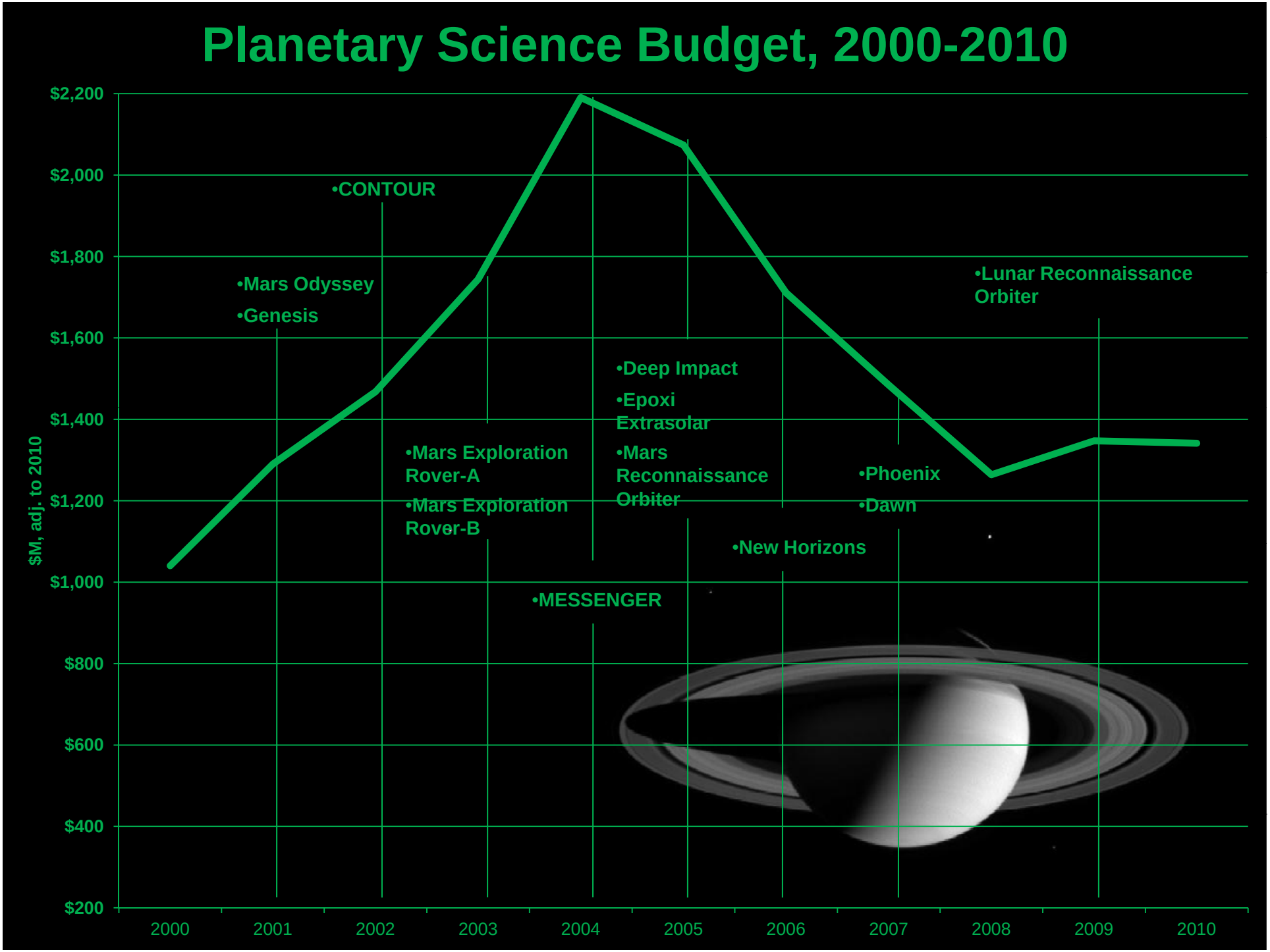
$M, adj. to 2010

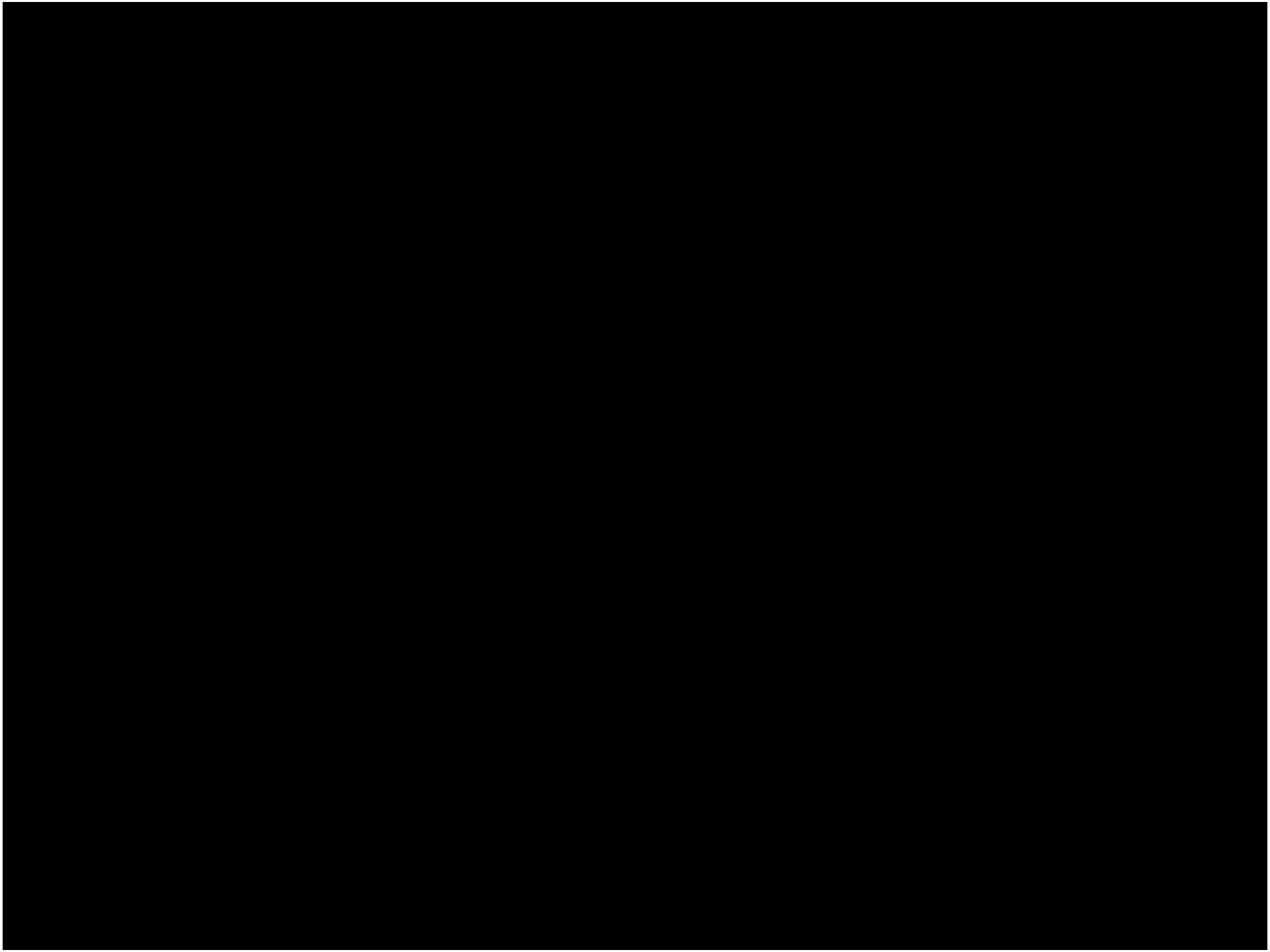
$2,200
$2,000
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999

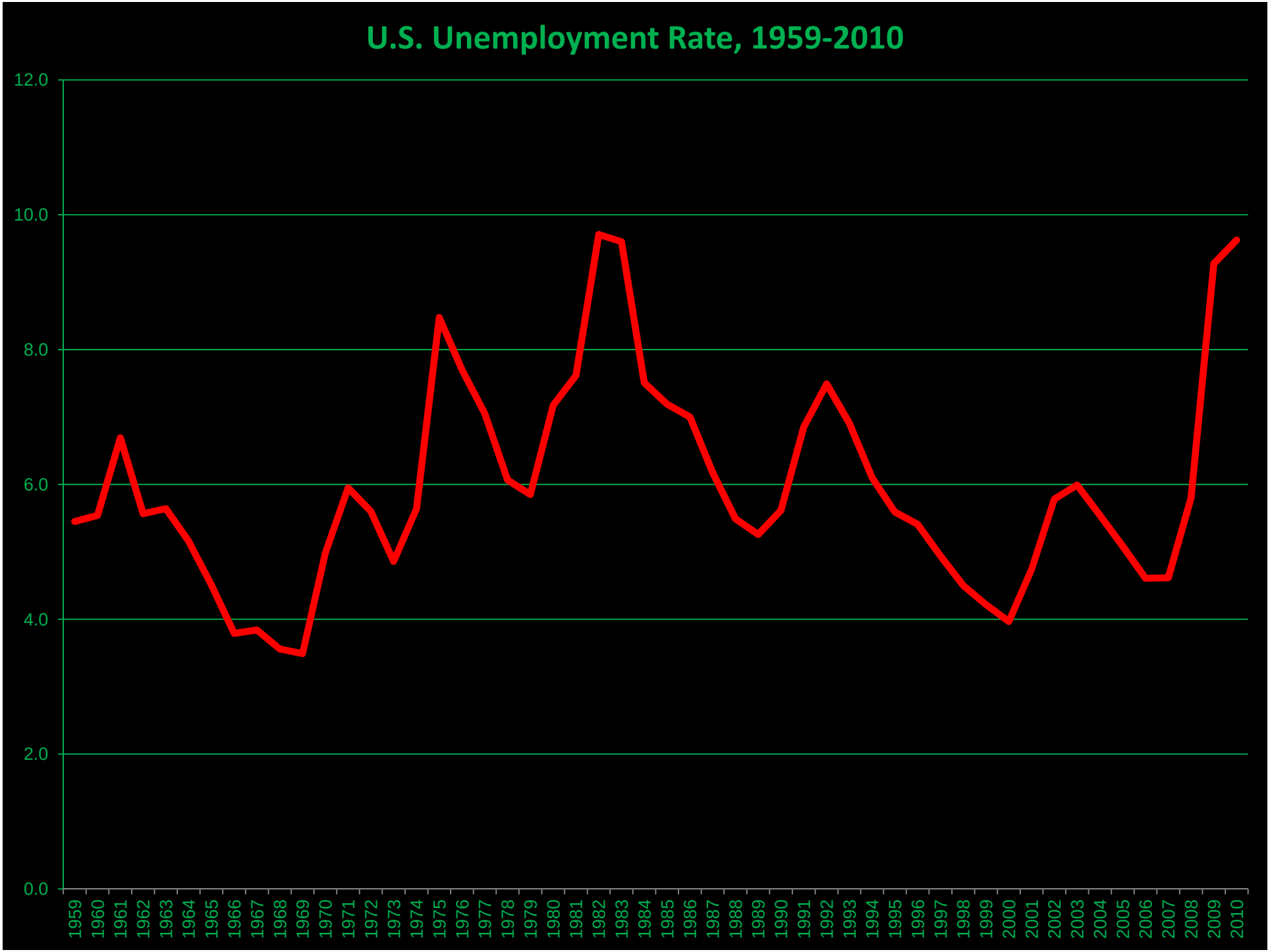
•Ulysses
•Mars Observer
•Wind
•NEAR
•Mars Global Surveyor
•Mars Pathfinder
•ACE
•Cassini/ Huygens
•Lunar Prospector
•~~Deep Space 1~~
•Mars Climate Orbiter
•Mars Polar Lander
•Stardust

Planetary Science Budget, 2000-2010





Backup Slides


U.S. Unemployment Rate, 1959-2010
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
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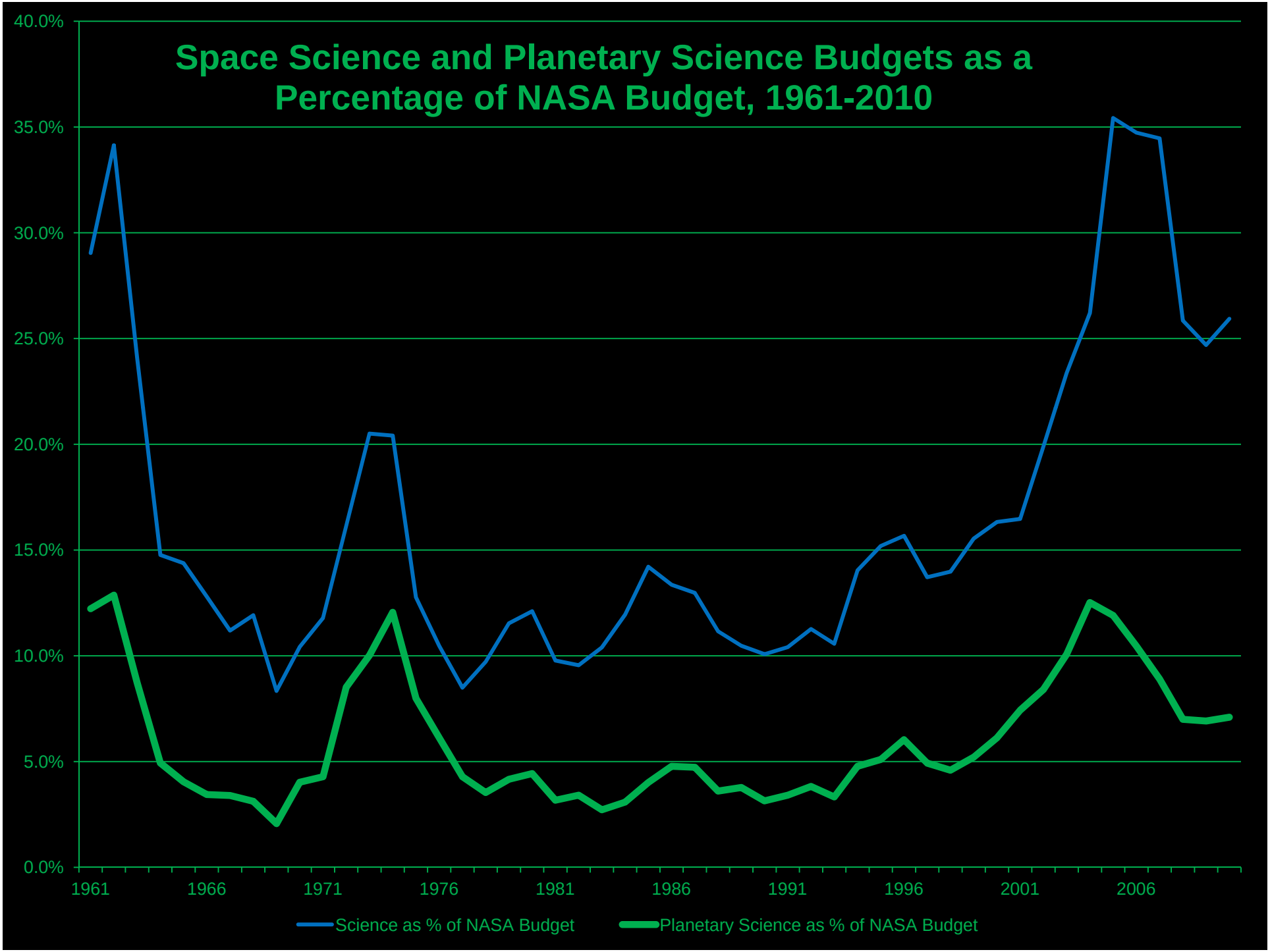
2007
2008
2009
2010


Space Science and Planetary Science Budgets as a Percentage of NASA Budget, 1961-2010
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
1961
1966
1971
1976
1981
1986
1991
1996
2001
2006
Science as % of NASA Budget
Planetary Science as % of NASA Budget