

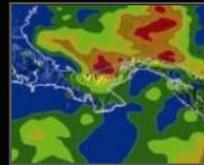
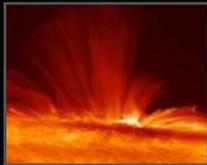


Marshall Space Flight Center Director's Breakfast 2012

People ▶ Progress ▶ Partnerships



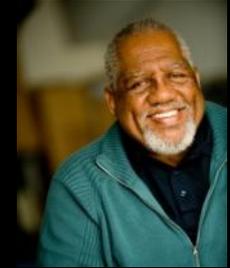
marshall



Thank you, US Space & Rocket Center



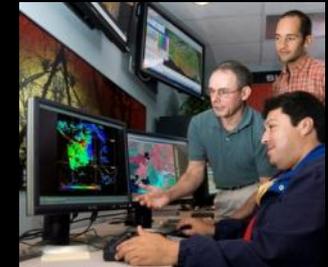
People



Progress



Partnerships



Marshall's Economic Impact in Alabama

Research Grants:
\$30,000,000



Jobs:
8,500



2,600
civil service

5,900
indirect

Marshall's
Economic Impact
in Alabama (FY2009)
\$2,880,000,000

Earnings:
\$526,000,000

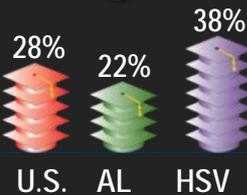


\$261m
civil service

\$259m
indirect



Huntsville: one of
the Top 10 Smartest
Cities in the World
- Forbes (12/09)

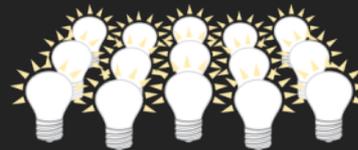


Statewide Contracts:
\$817,000,000



26% small
business

Small Business
Innovative Research:
\$37,000,000



Giving Back:
\$730,000
(CFC)



Building 4220 Under Construction



NASA Budgets



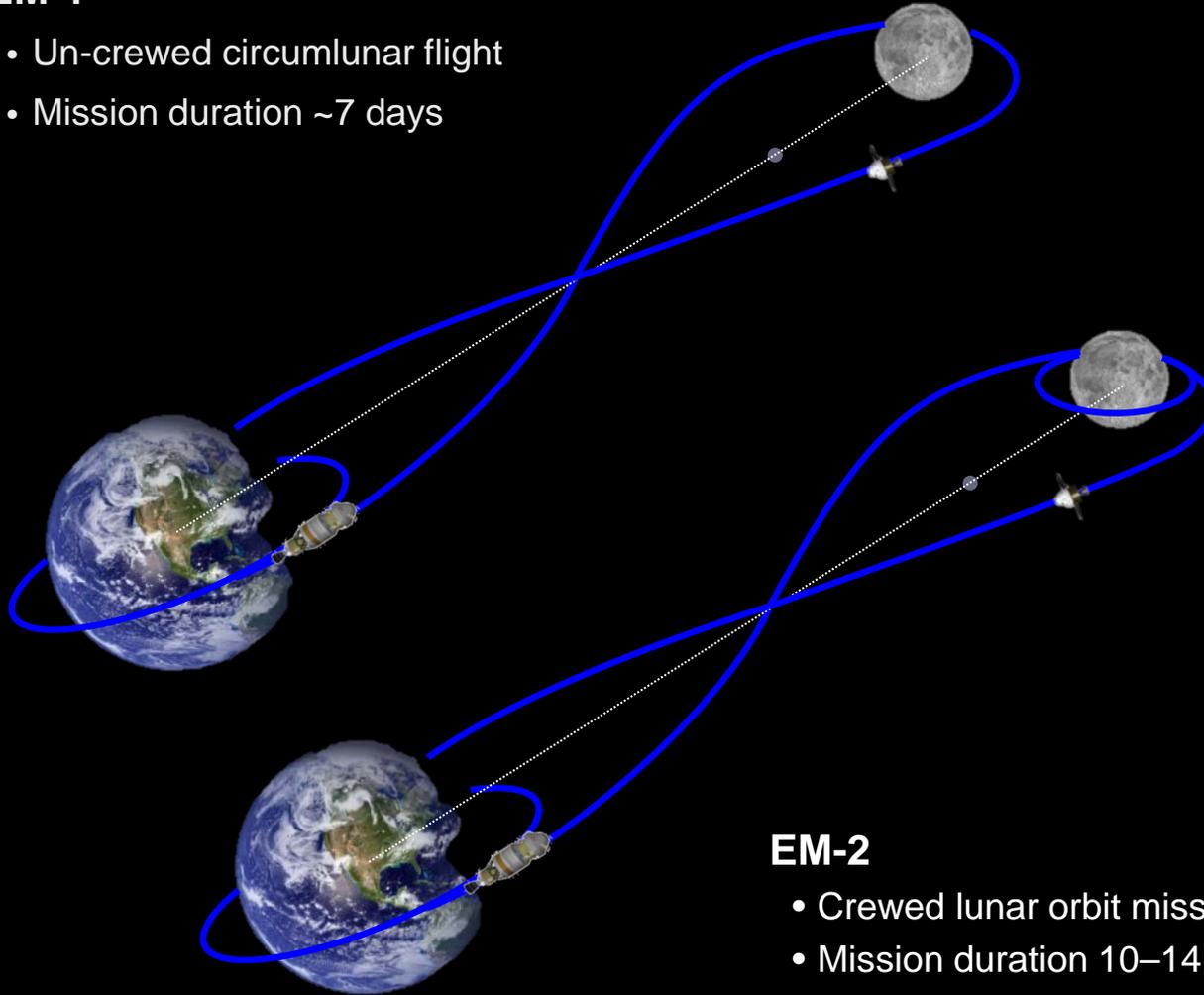
Space Launch System



Initial Exploration Missions (EM)

EM-1

- Un-crewed circumlunar flight
- Mission duration ~7 days



EM-2

- Crewed lunar orbit mission
- Mission duration 10–14 days



Space Launch System



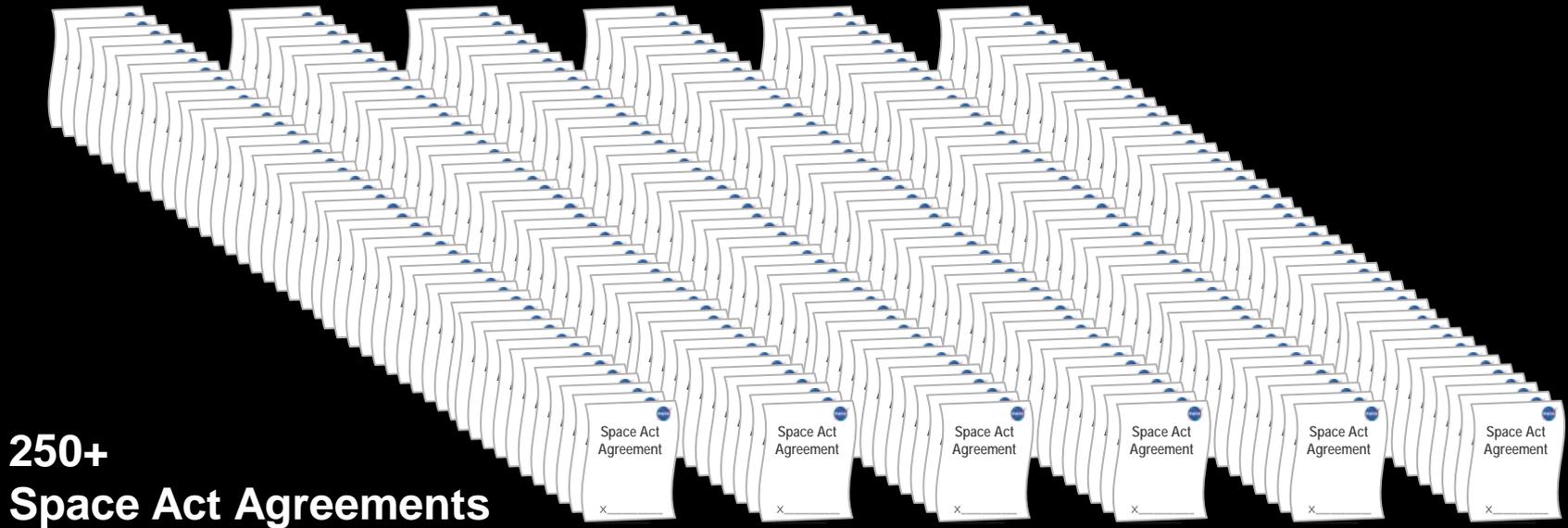
The International Space Station



The International Space Station



Partnership Agreements



Before – 285 Days



Now – 30 Days



Support to Commercial Space

- Access to Shuttle Hardware
- Access to Ares Software
- Loan of Ground Support Equipment (GSE)
- Facility Lease/Use
- Wind Tunnel Testing
- Structural Test Article & Testing
- Manufacturing
- Propulsion Technology Development
- Engine Testing
- Combustion and Test Bed Technology
- SIL/Hardware-in-the-Loop Testing
- Nitrous Compatibility Testing
- Multi-Layer Insulation (MLI) Testing
- Expertise in:
 - Composites
 - Propellants & Propulsion Technologies
 - Engine design and test
 - Hybrid Motors
 - RCS Thruster

Supporting Commercial Cargo and Crew

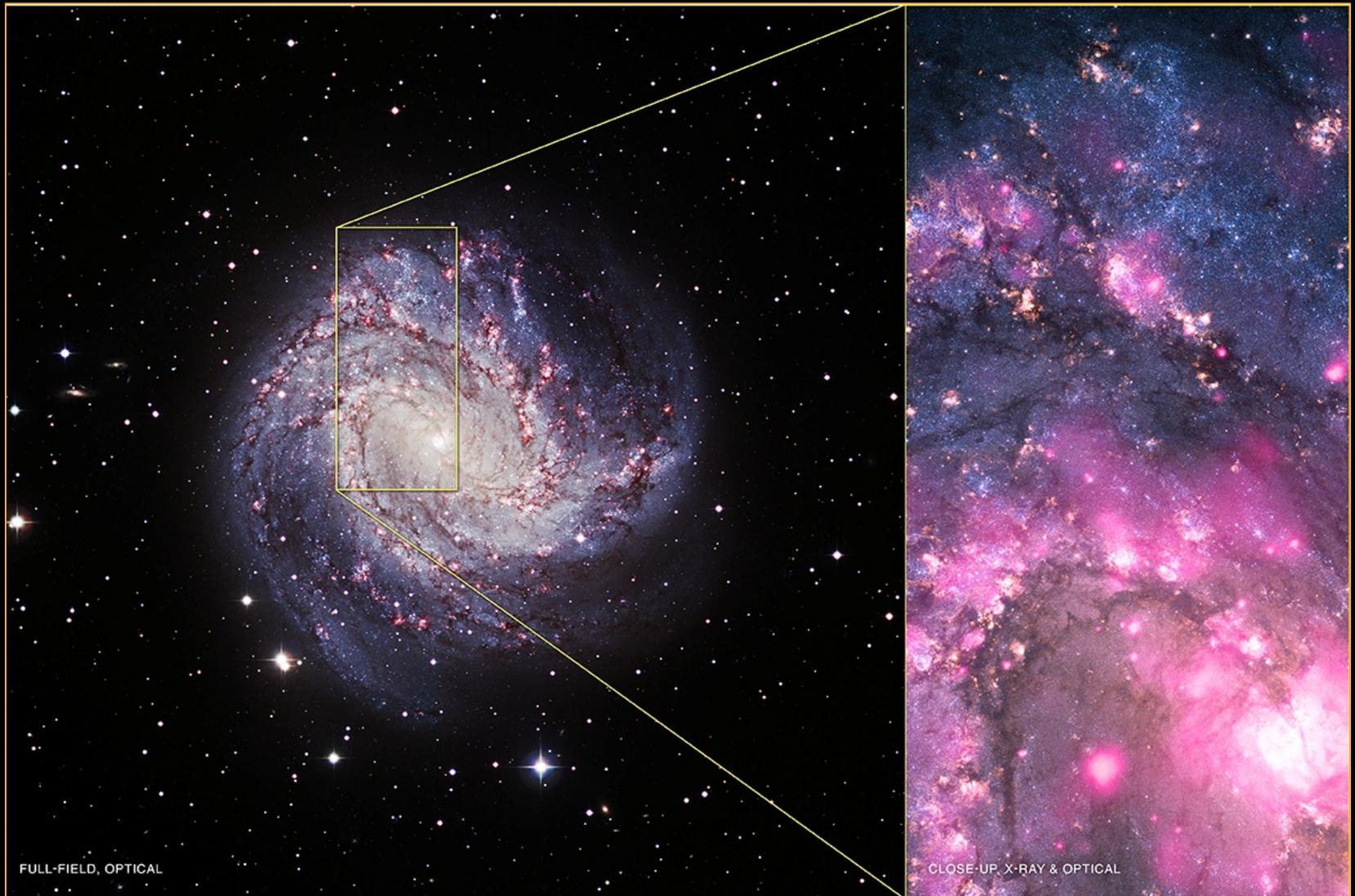
COTS Partners



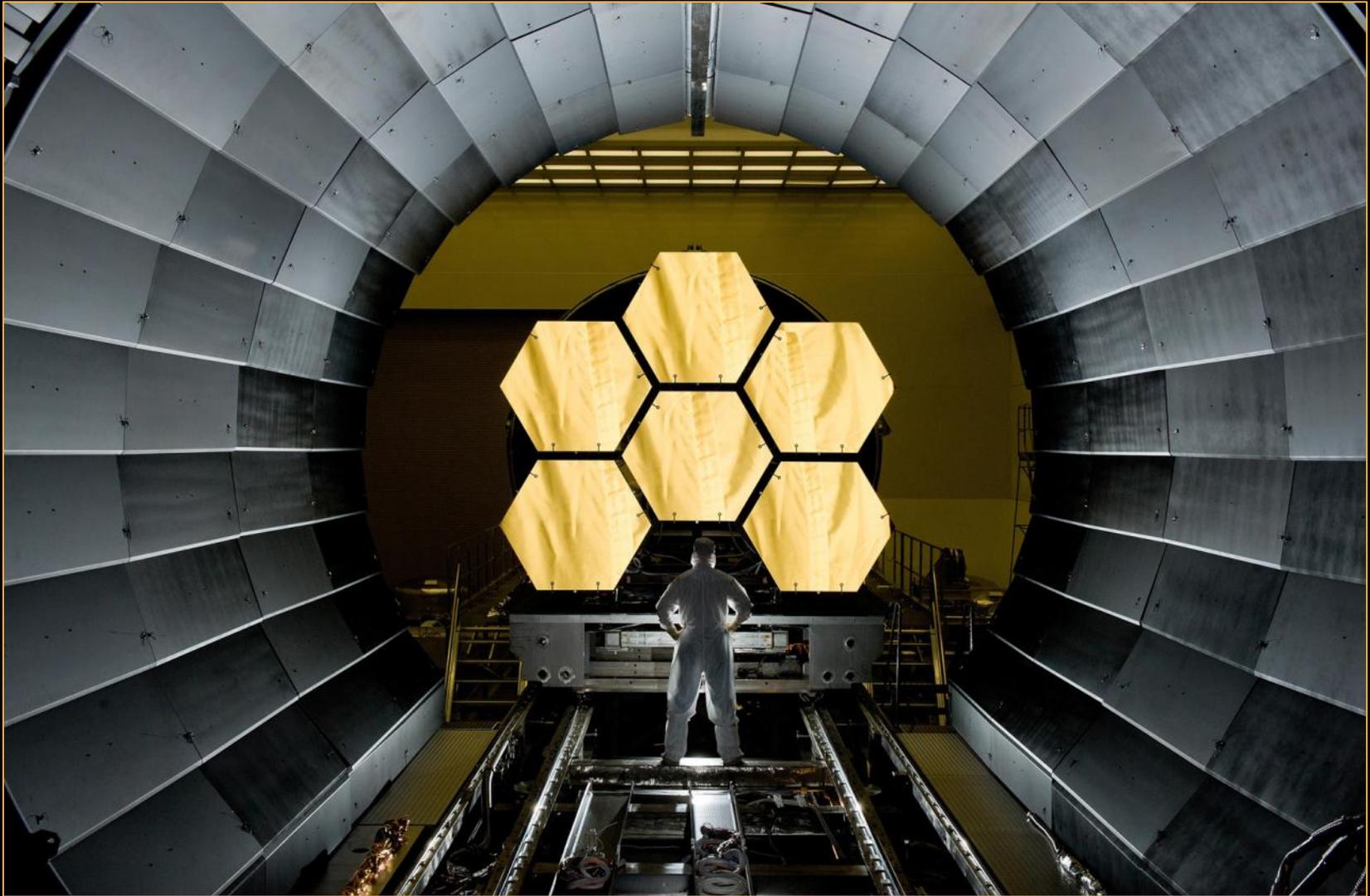
CCDEV Partners



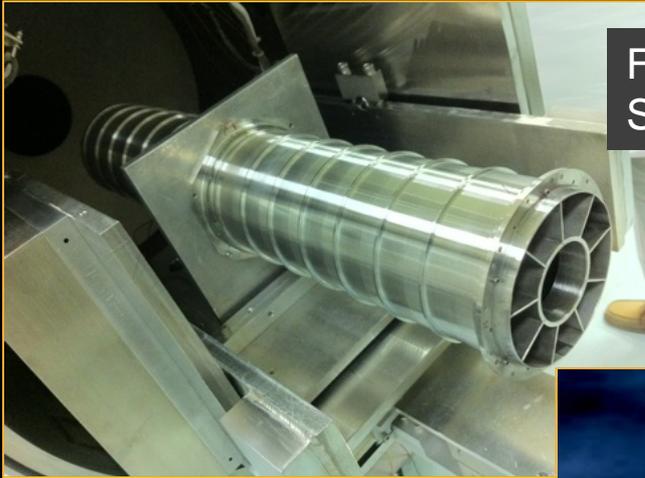
Chandra continues to explore the universe



James Webb Space Telescope



Gamma Ray Astronomy



Focusing Optics X-ray
Solar Imager (FOXSI)

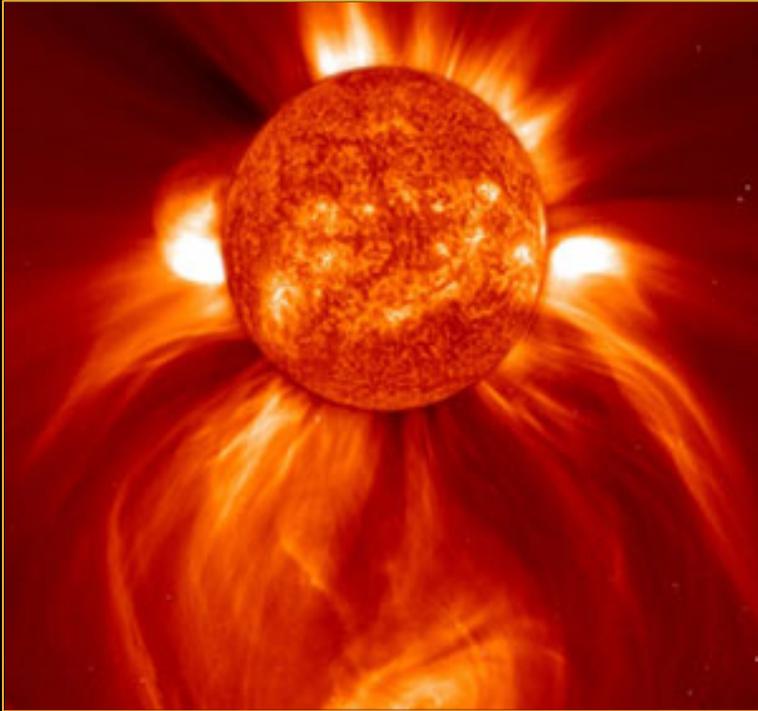


Cylindrical mirrors for the
Russian Academy of Sciences

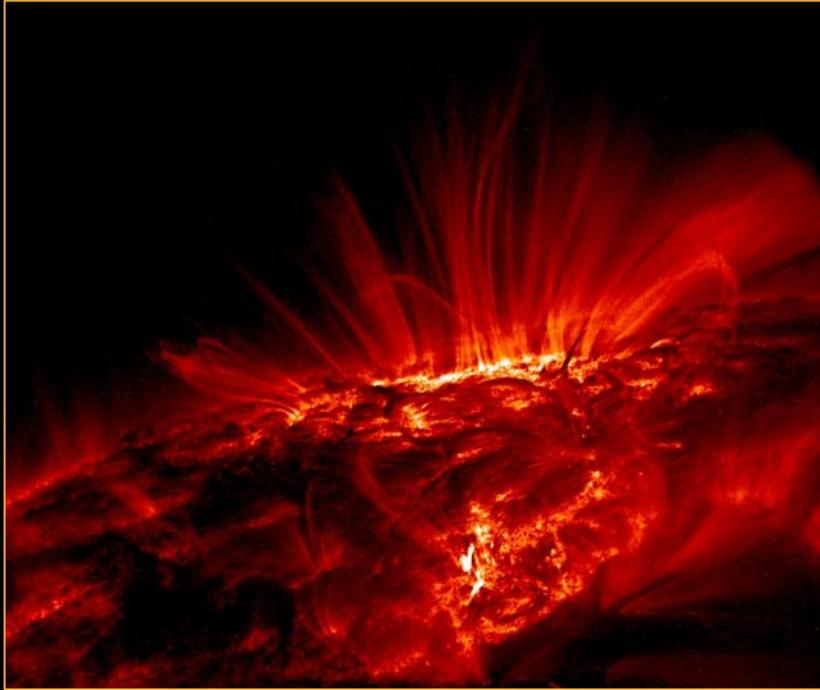


Photo Courtesy The Huntsville Times / Eric Schultz

Solar Physics



Solar Ultraviolet Magnetograph Investigation (SUMI)



Technology Development Missions

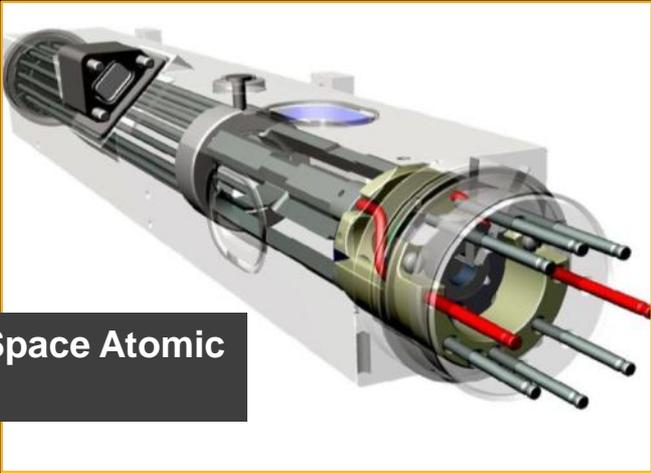
Cryogenic propellant and storage transfer system



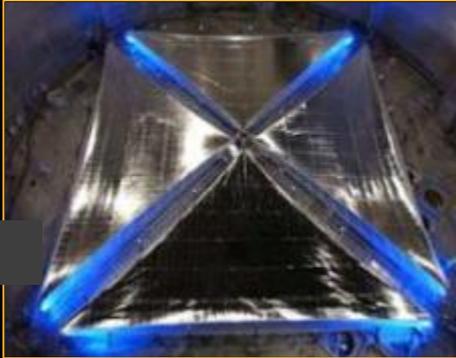
FASTSAT



Deep Space Atomic Clock



Solar Sail



Propulsion Stewardship for the Nation



National Institute for
Rocket Propulsion Systems

<http://nirps.msfc.nasa.gov>

Rockets: closer to our lives than we realize



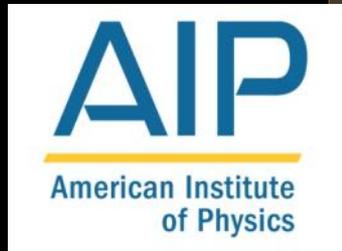
Educational Outreach



Dr. Jonathan W. Cirtain



Dr. Chryssa Kouveliotou



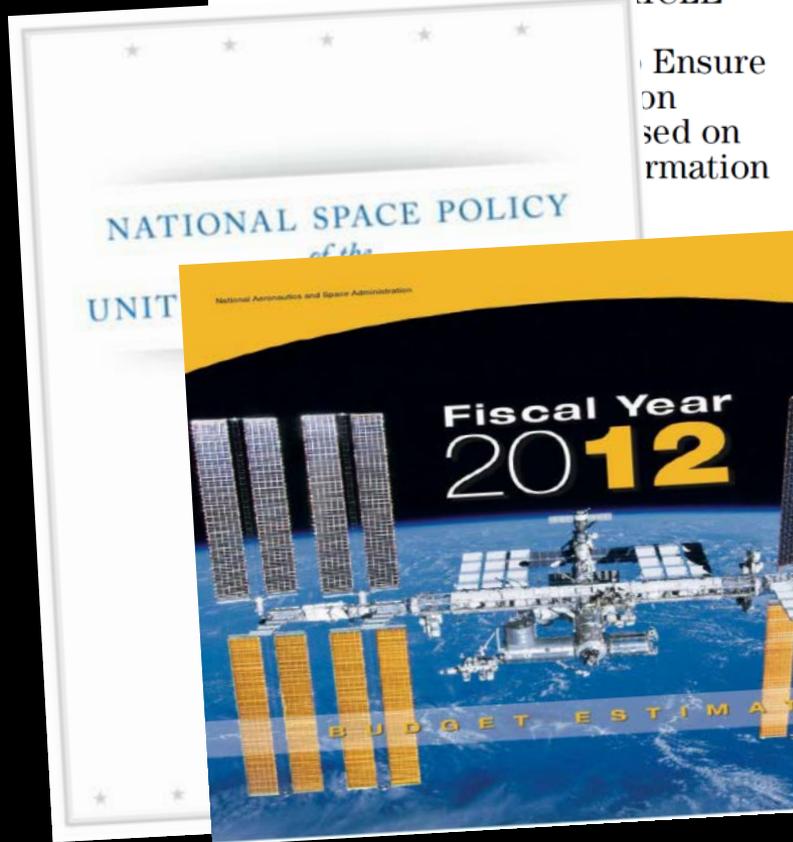
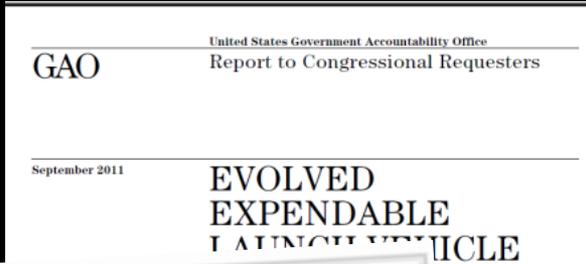
Garry Lyles



Jody Singer



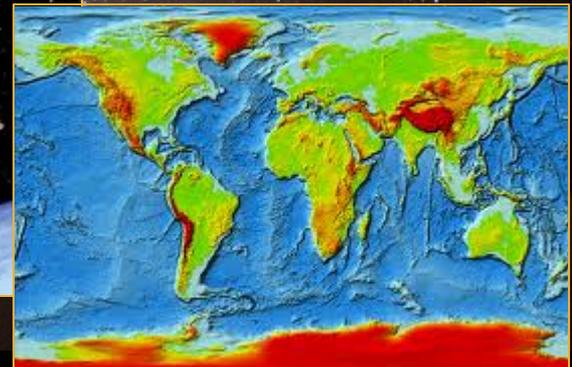
Where's the inspiration?



Space Exploration



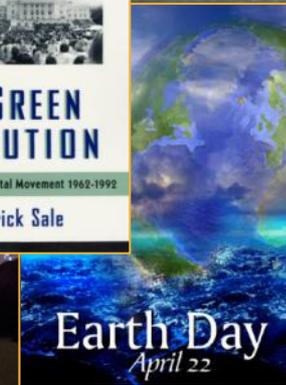
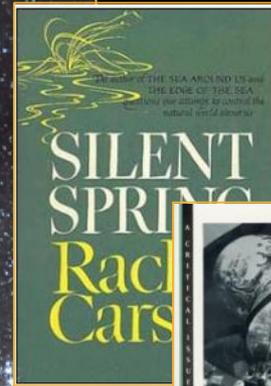
Neil deGrasse Tyson



Space Exploration: part of our culture, part of us



Neil deGrasse Tyson



Space Exploration: part of our culture, part of us



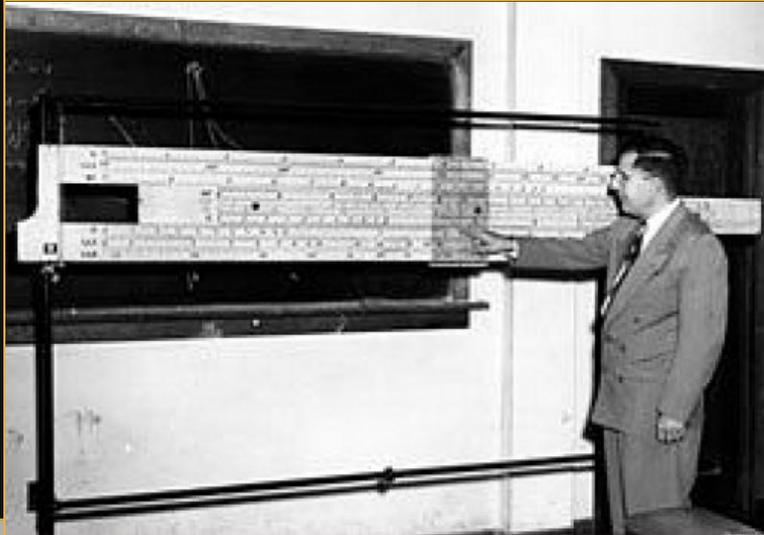
NASA's Part of the Federal Budget



Suite of vehicles



Not because it's easy...



Change is in the air



A Community of Capabilities and Opportunities



A Community of Capabilities and Opportunities



Addressing the Montgomery Legislature



The Marshall Team



