

Why We Need Humans to Explore Space?

What is NASA?

How does NASA help humans go to space?

What is my involvement?

Douglas Wong

Douglas.t.wong@nasa.gov

Picture: STS-133 Roll Out on September 20, 2010

Who Am I?

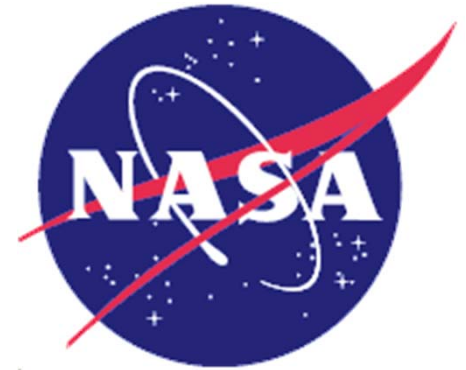
- High School: **St. Francis Xavier's School, Hong Kong (1983)**



About NASA...



History of NASA



US President Dwight D. Eisenhower established the National Aeronautics and Space Administration (NASA) in 1958, partially in response to the Soviet Union's launch of the first artificial satellite (Sputnik) the previous year. NASA grew out of the National Advisory Committee on Aeronautics (NACA), which had been researching flight technology for more than 40 years.



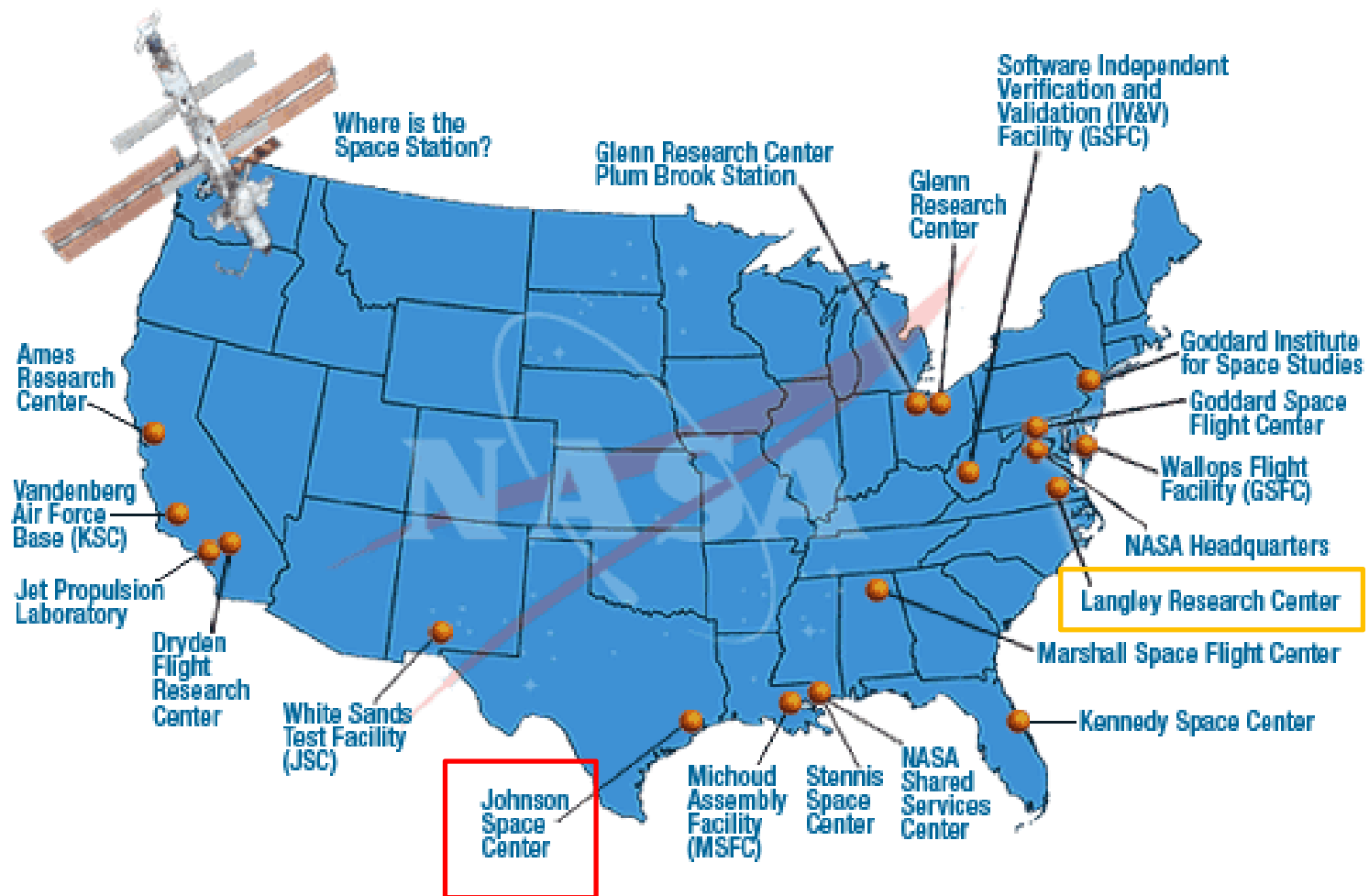
NASA's Four Principal Organizations

NASA conducts its work in four principal organizations, called mission directorates:

- [Aeronautics](#): pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth.
- [Exploration Systems](#): creates capabilities for sustainable human and robotic exploration.
- [Science](#): explores the Earth, solar system and universe beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society.
- [Space Operations](#): provides critical enabling technologies for much of the rest of NASA through the space shuttle, the International Space Station and flight support.



NASA Centers



I work @ NASA Johnson Space Center



Main Campus: Lyndon Johnson Space Center,
Houston, Texas (Where I work)



Ellington Airfield, Houston, Texas



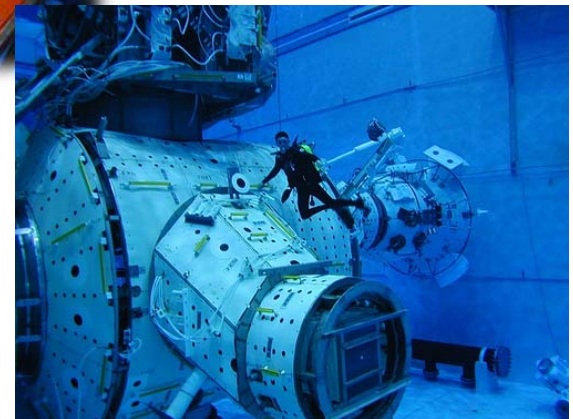
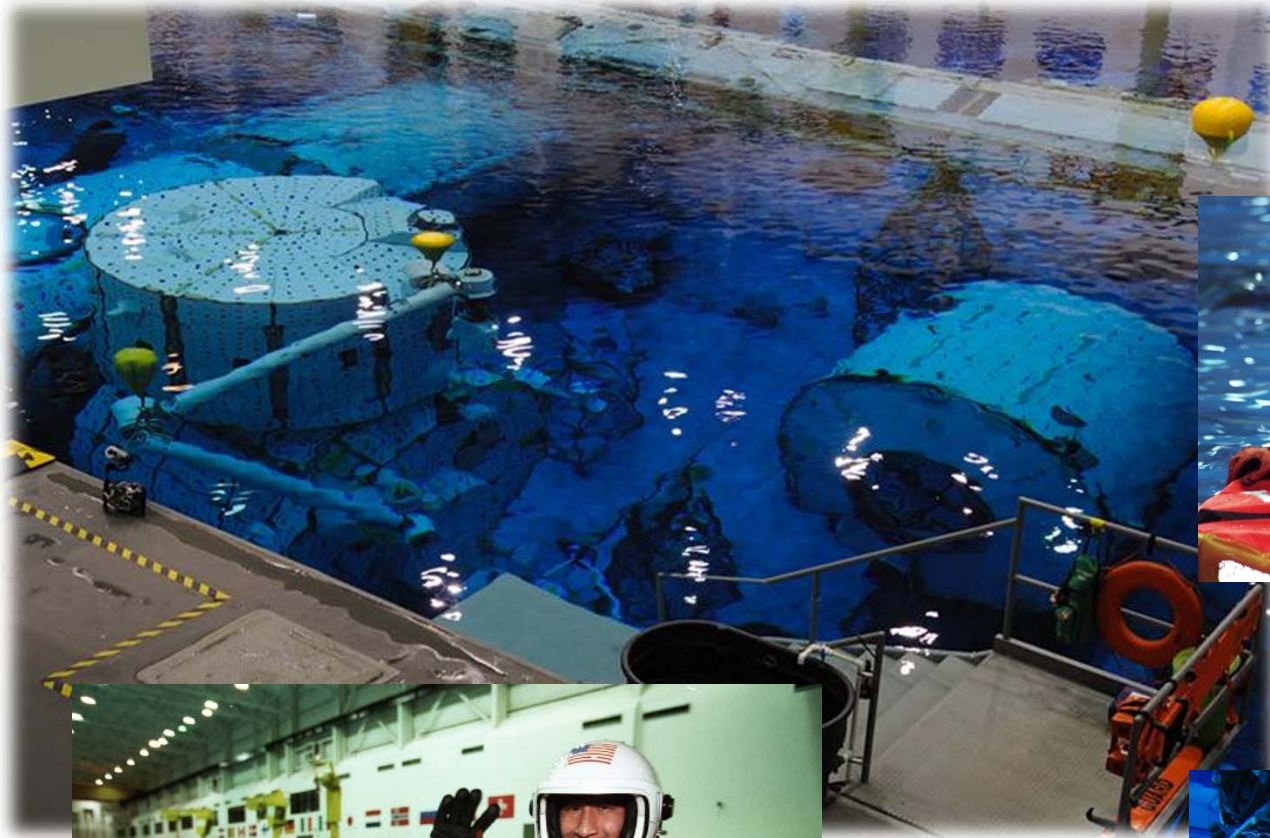
White Sands Test Facility,
White Sands, New Mexico

NASA Johnson Space Center Major Facilities ...

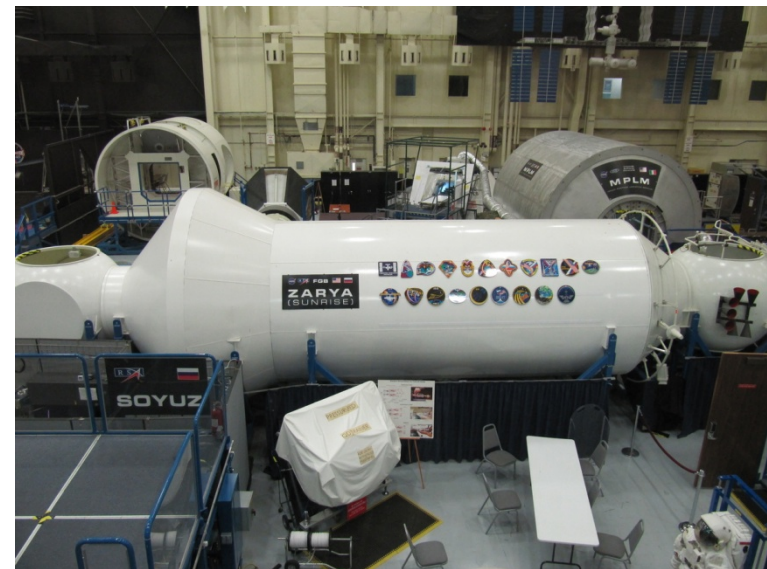
Mission Control Center



Sonny Carter Neutral Buoyancy Laboratory

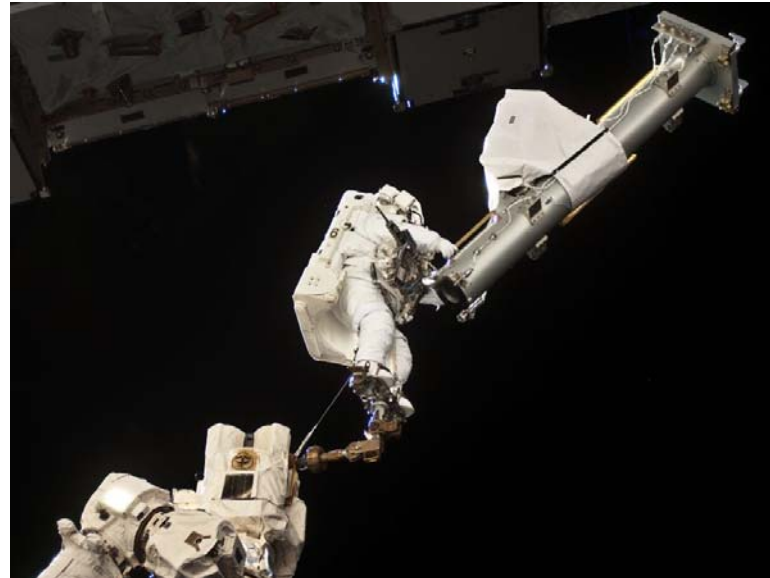


Vehicle Mockup Facility – International Space Station Mockups

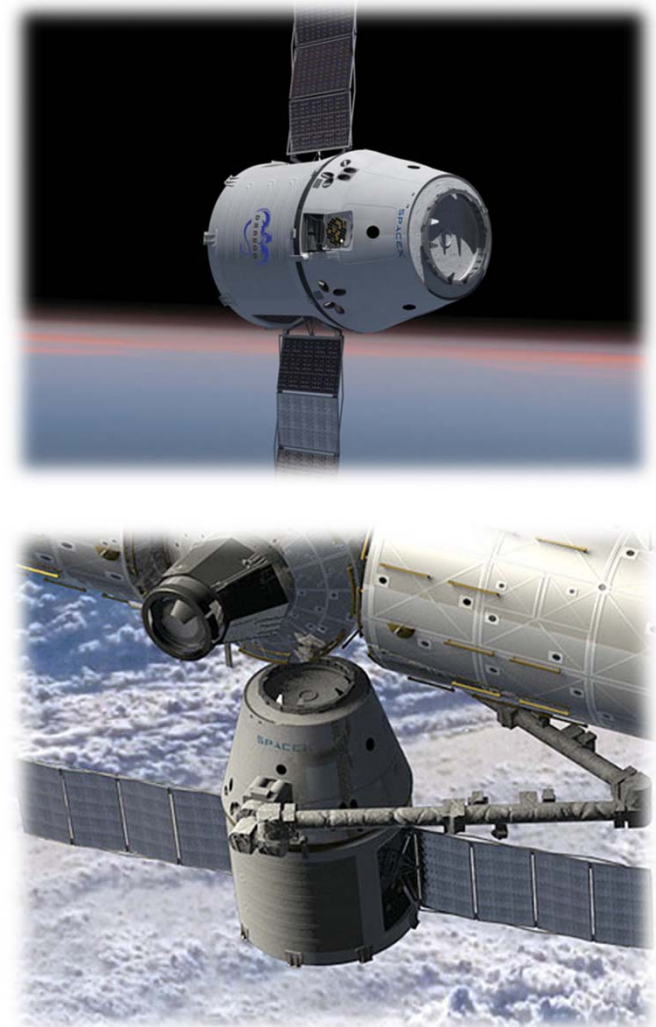
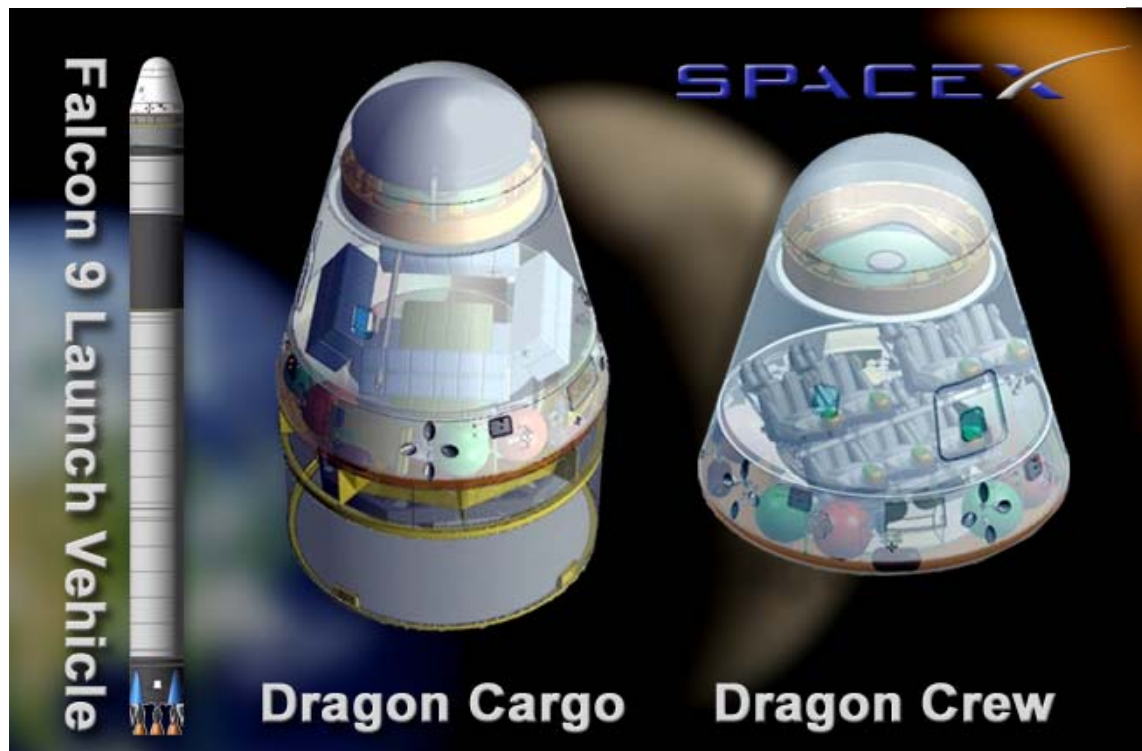


NASA Johnson Space Center Major Projects ...

International Space Station Operations

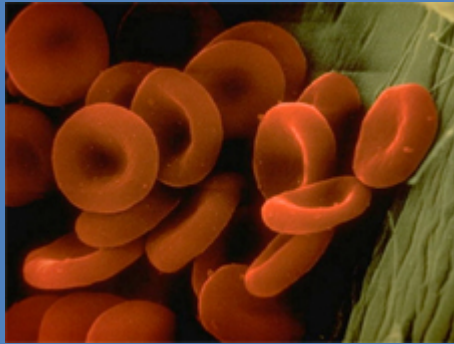


Commercial Space Vehicles Development



Human Research Program

Conduct research to understand the challenges humans face in space explorations.



Physiology

Understand and mitigate the physical challenges humans encounter during space explorations.

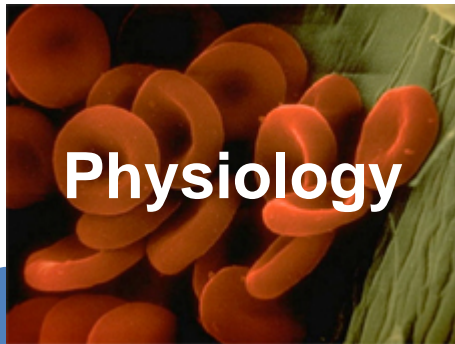
Environment

Conducts research to understand the space environmental issues humans encounter



Technology

Develop technologies that facilitate human exploration of space



Physiology

Human Research Program



Cardiovascular Response



Bone Health



Muscle Function



Behavioral Health & Performance



Sensorimotor

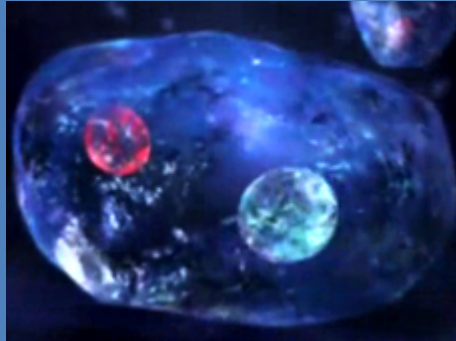


Immunology

Human Research Program



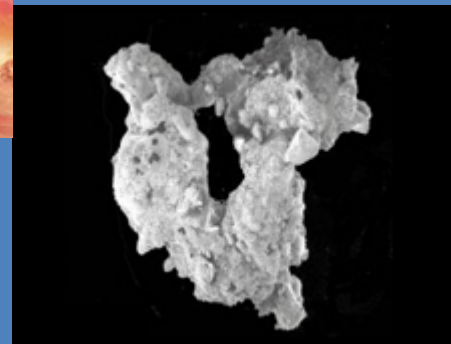
Environment



Microbiology



Lunar Dust



**Human Factors &
Habitability**



Radiation



Human Research Program



**Exploration Medical
Capability**



Food and Nutrition



Exercise

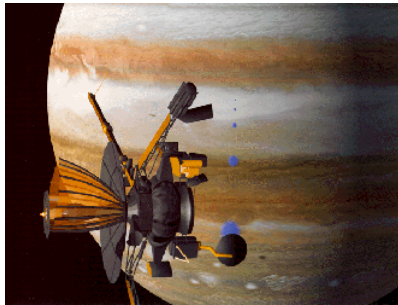
**Do you see any thing in common
among all those NASA projects?**

All Methods of Exploration Require Humans



Robotic Systems

- Robots can't do it all, at least not yet
- Humans are needed to make the final decisions
- Humans can assimilate and process information using both emotions and logics but robots can't



Planetary Systems Exploration

- Mostly done by automated and remote control spacecraft
- Humans are controlling these robots
- Humans are needed to make sense out of the data



Space Exploration

- Robots help us pave the way
- We like to explore in PERSON
- What can be better than actually being there!



Questions?