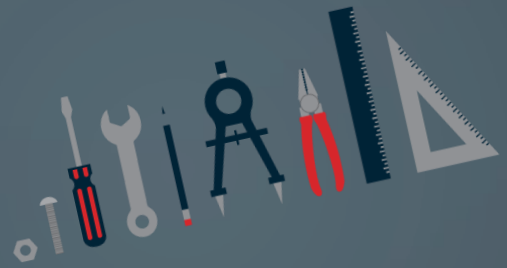


Mission to Mars and NASA Educator Resources

Marissa Saad

North Dakota Space Grant Consortium

Meet the Space Grant Team!

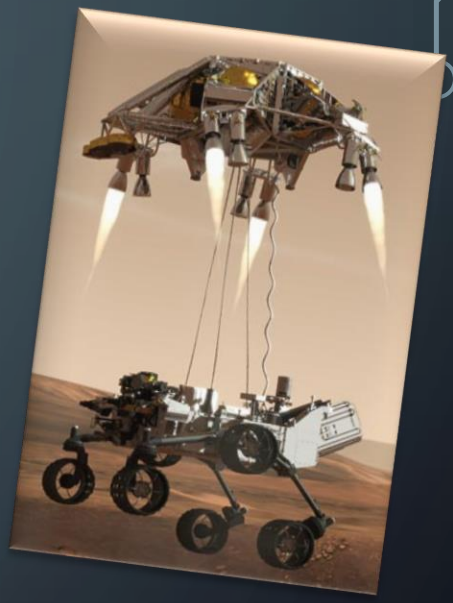
- Director of Space Grant, Jim Casler
- Deputy Director, Caitlin Nolby
- Coordinator, Marissa Saad

NORTH DAKOTA
SPACE GRANT CONSORTIUM

WORKSHOP GOALS

You will be able to:

- Confidently conduct today's activities in the classroom.
- Better understand concepts regarding space sciences.
- Effectively communicate in teams to successfully complete a mission to Mars.
- Save Mark Watney!
- Create a neutrally buoyant object to be used by astronauts in the NBL.
- Understand how YOU can get involved with NASA in ND!



POCKET SOLAR SYSTEM

ROCKETS TO THE RESCUE!


CREW III


ARES III
2

ROCKETS TO THE RESCUE

- Goal: Build and launch a rocket, keep your payload intact, and save Mark Watney!
- Launch your payload to Mars!
- What will be *your* team's strategy?

4-H NATIONAL YOUTH SCIENCE DAY

4-H NATIONAL YOUTH SCIENCE DAY

ROCKETS TO THE RESCUE

ROCKETS TO THE RESCUE - BUDGET

Maximum Budget: $50,000,000

Item Description	Cost Per Unit	Total Units	Total Item Cost
1 mini rubber band	$40,000		
6 inches of duct tape	$3,000,000		
6 inches of masking tape	$2,000,000		
1 regular/large rubber band	$80,000		
1 Pipe Cleaner	$500,000		
1 Cotton Ball	$5,000,000		
1 Straw	$500,000		
1 Puff Ball	$4,000,000		
12 inches of string	$600,000		
1 full sheet of Tissue Paper	$6,000,000		

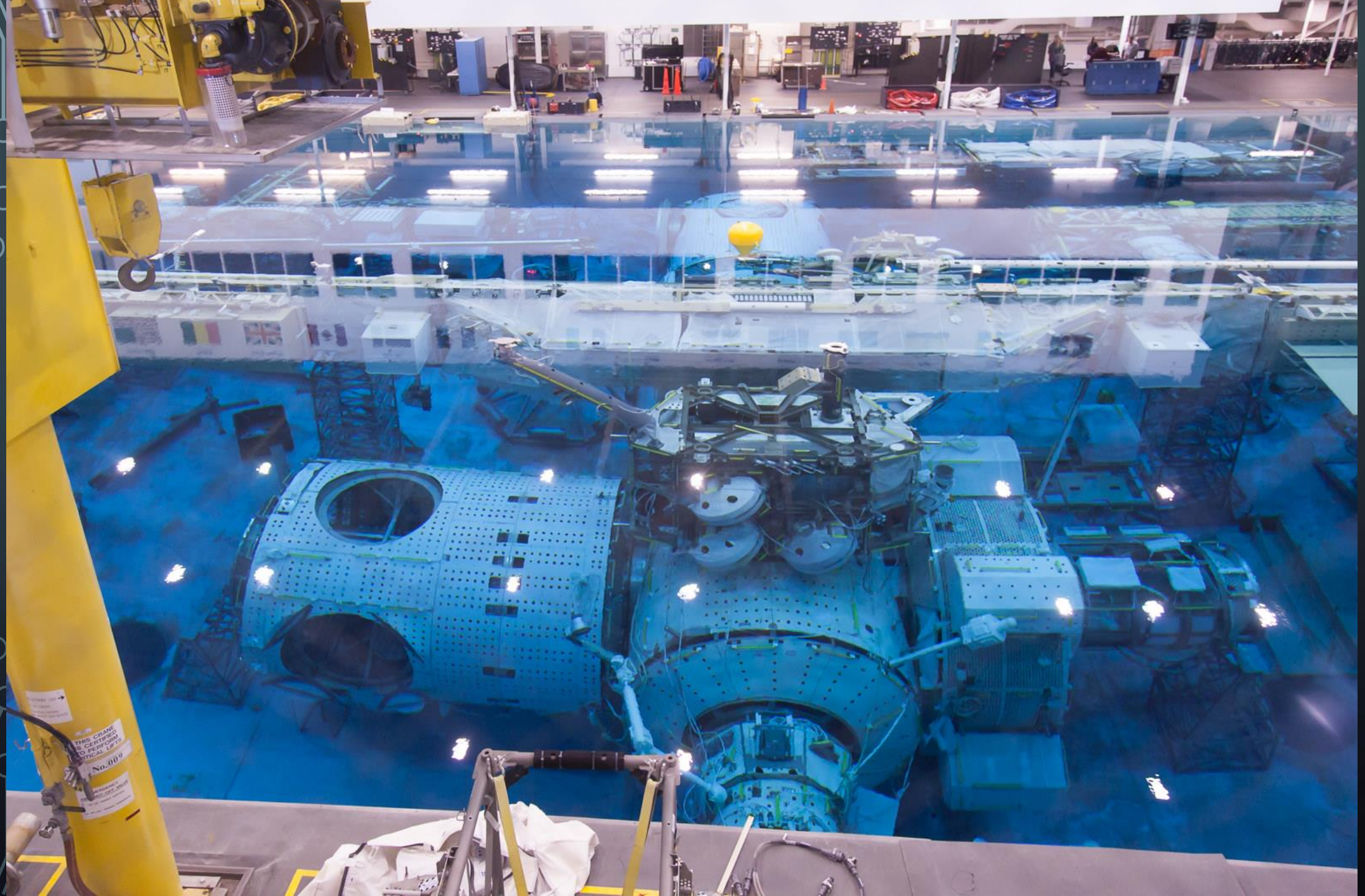
ROCKETS TO THE RESCUE

CRITICAL THINKING QUESTIONS

1. Was your rocket successful?
2. Take a look at other teams' designs. What materials did they use? Did their results differ from yours? Describe the outcomes.
3. How did gravity affect your design?
4. What should scientists consider when selecting materials? (think of sizes, weight, composition of the atmosphere, etc.)
5. Extra consideration: Integrate this activity into the classroom – add budgets, weight restrictions, competition between NASA centers, etc.
6. What shapes were the most aerodynamic? Are these necessarily the best designs?

DEEP SEA DIVER

Eryn Beisner, a UND alumna



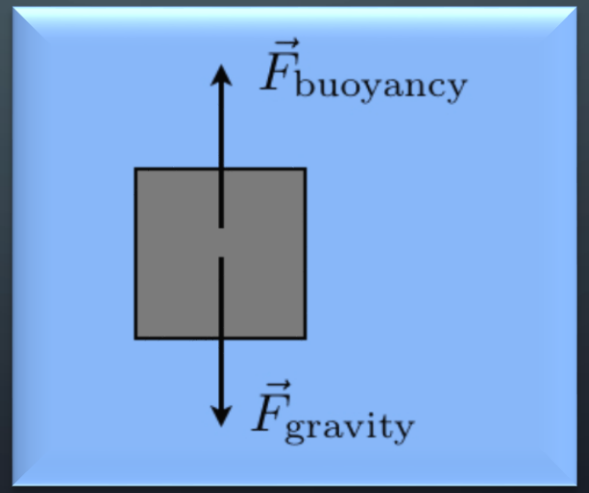
SCIGIRLS DEEP SEA DIVER

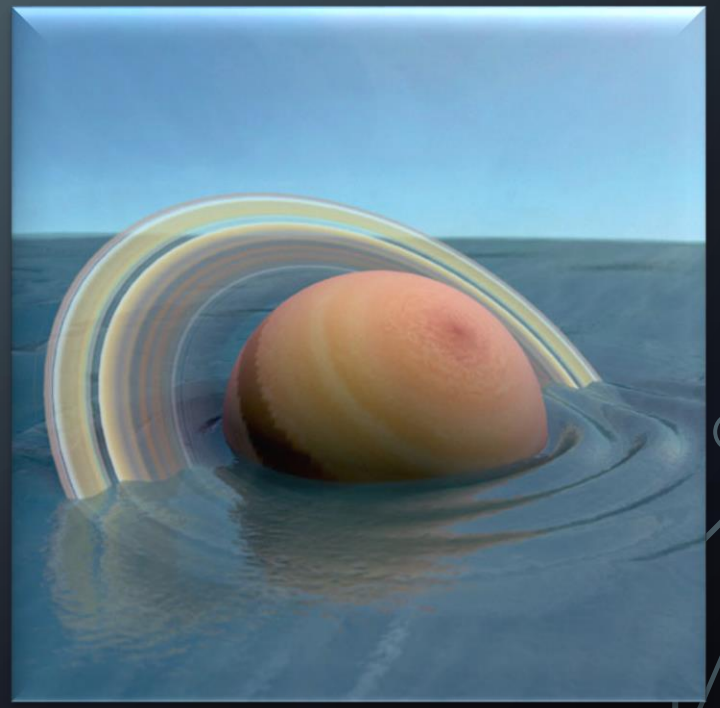
1. Season 2, episode 1: *Aquabots*
2. ***Challenge***: NASA is currently preparing for long-duration spaceflight to Mars and needs to practice procedures in the NBL. They need to select a contractor to design and build neutrally buoyant tools for training.

3. Make predictions on given materials
4. Design your “deep sea diver”
5. Collaborative Design Review

SCIGIRLS DEEP SEA DIVER

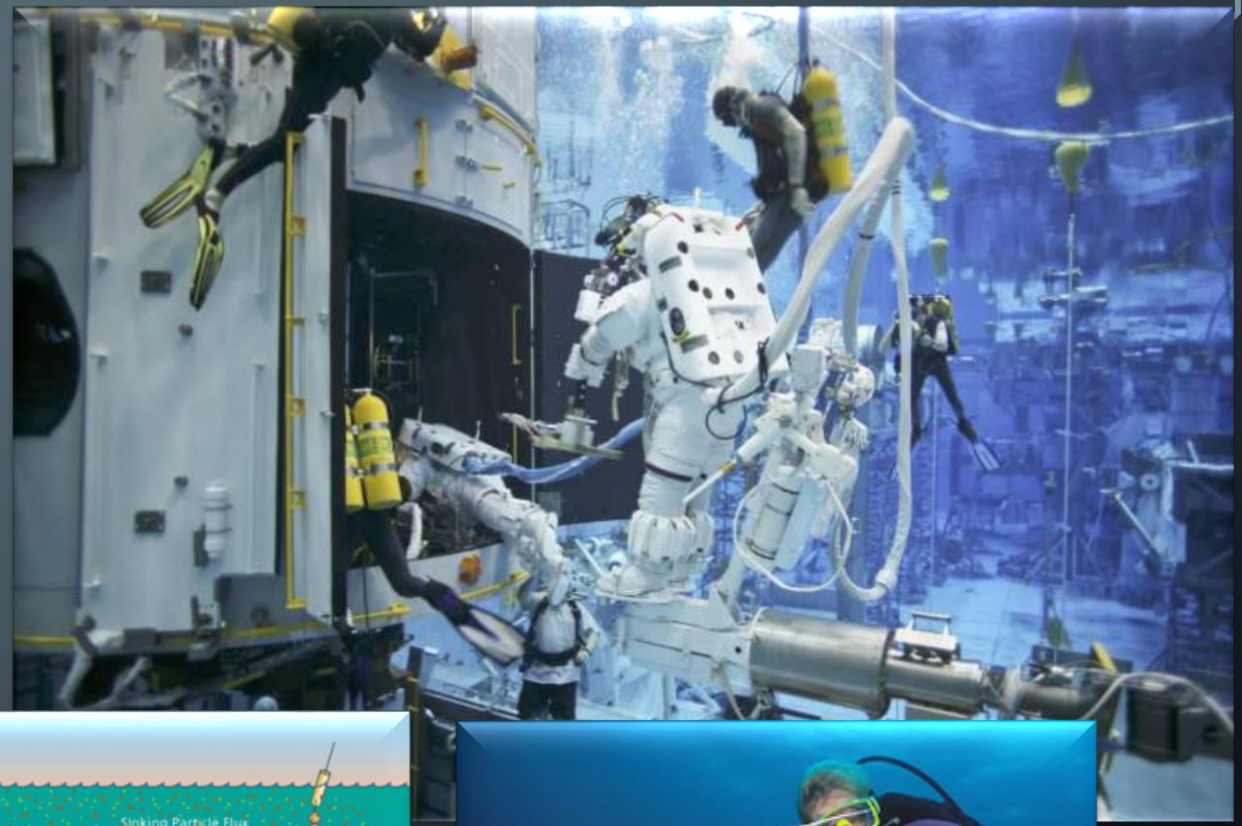
- What does it mean to be neutrally buoyant?
- Balancing act between forces
- Densities are equal
- Which planet would “float” in a giant pool of water?

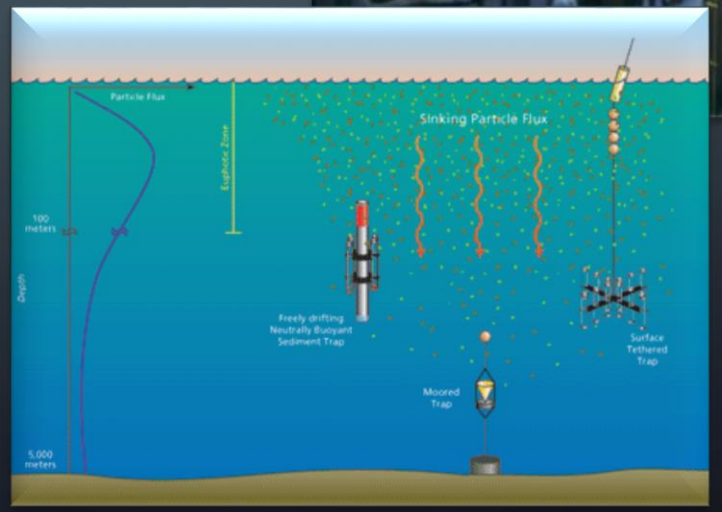




REFLECTION

- What worked? Materials?
- Other applicaitons?
- Scuba divers
- Submarines
- Fish
- Science! –Taking ocean measurements





HOW CAN YOU GET INVOLVED?

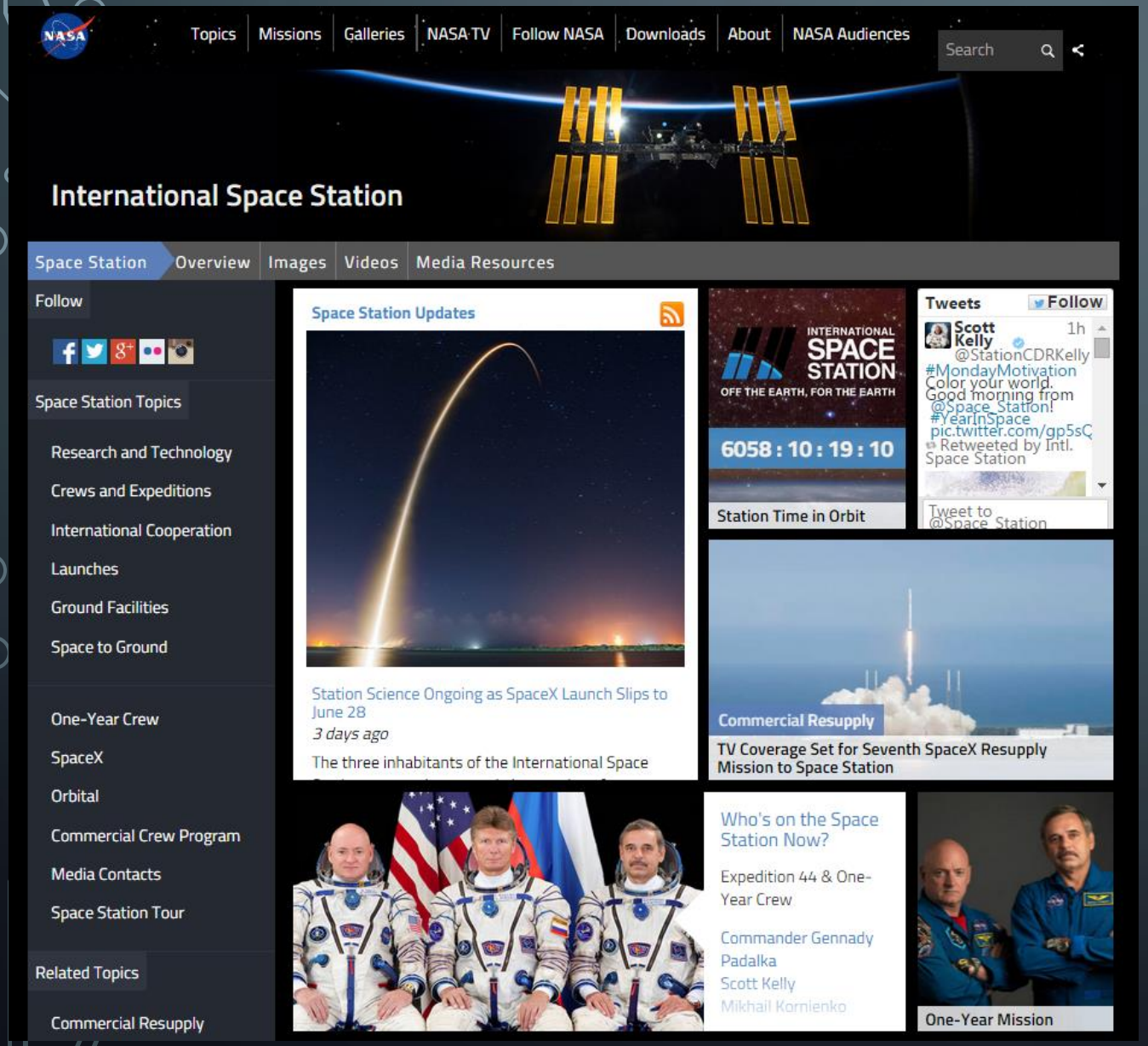
- NASA Resources (K-12)
- North Dakota funding and opportunities
- STEM Ambassador Program
- Future Professional Development as a ND teacher

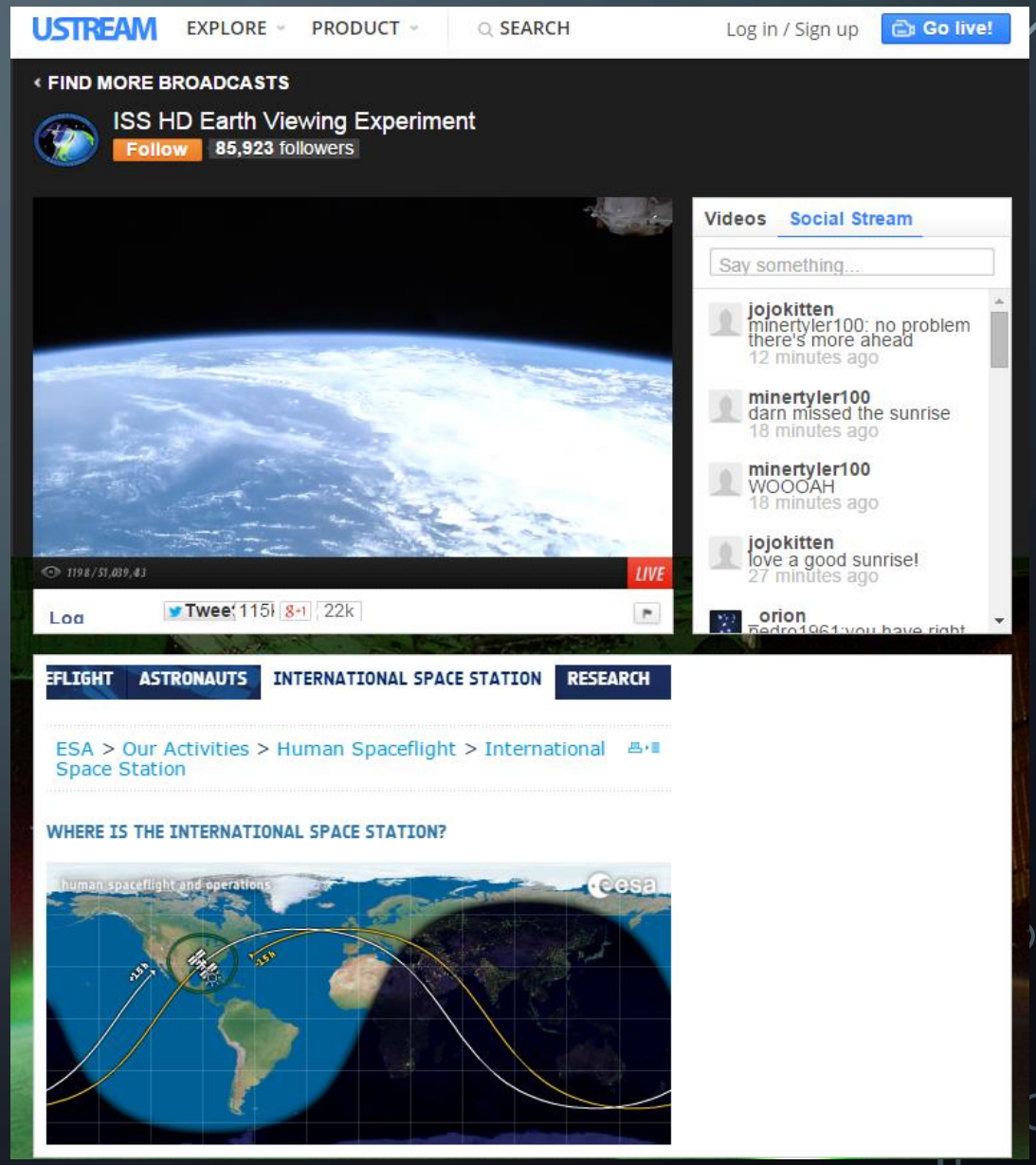
NASA EDUCATION

NASA for Students

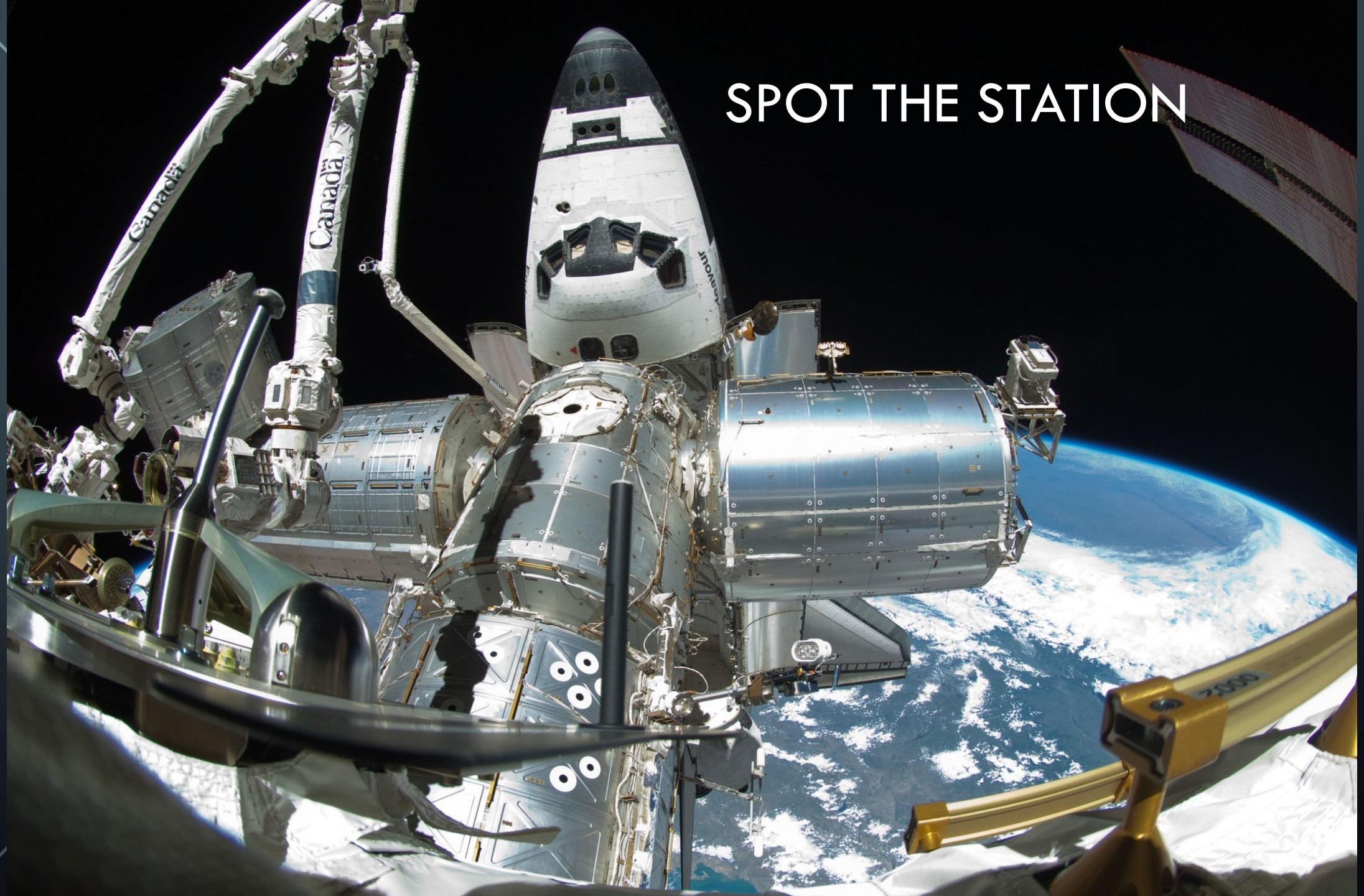
Space Math at NASA

International Space Station - Live!





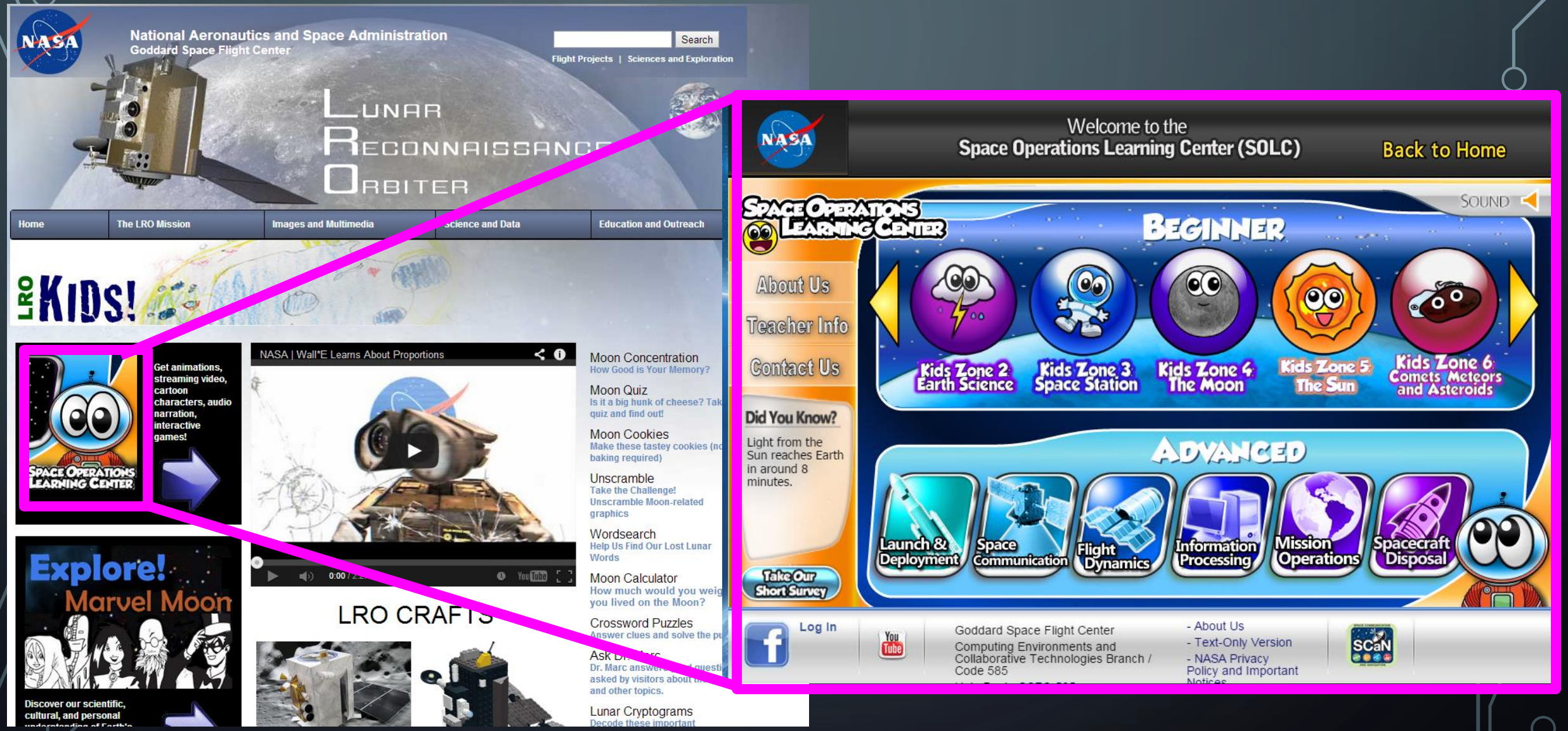
SPOT THE STATION



Mars Curiosity Rover

[and now… the Insight Rover!]

NASA – Lunar Reconnaissance Orbiter

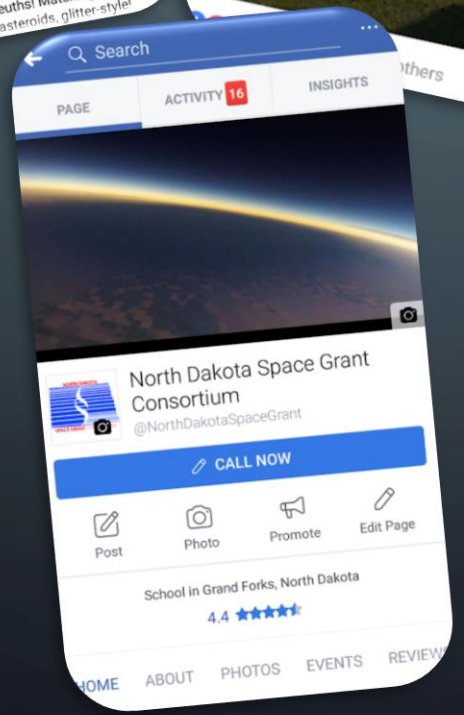


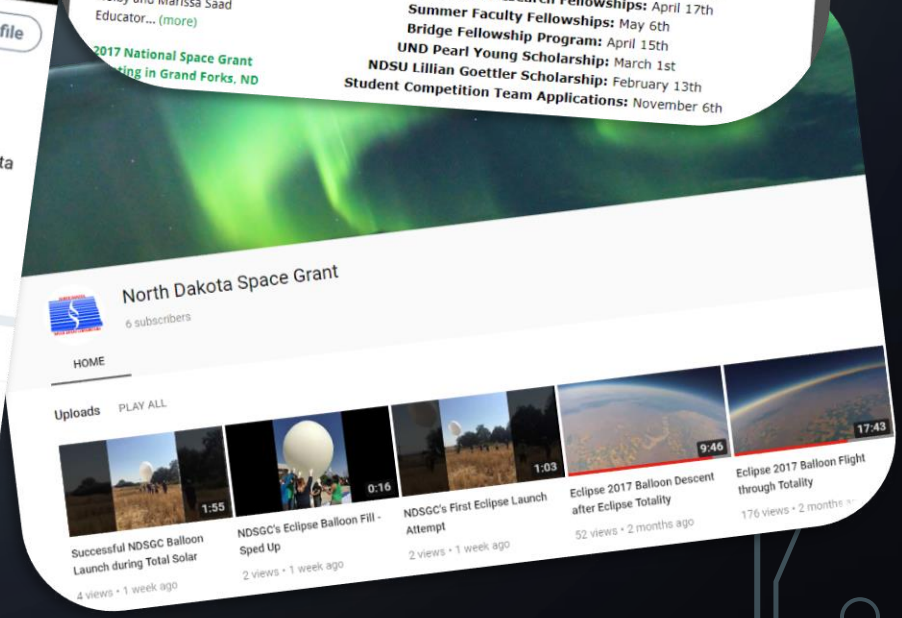
Lunar and Planetary Institute

Explore!

SciGirls Activities

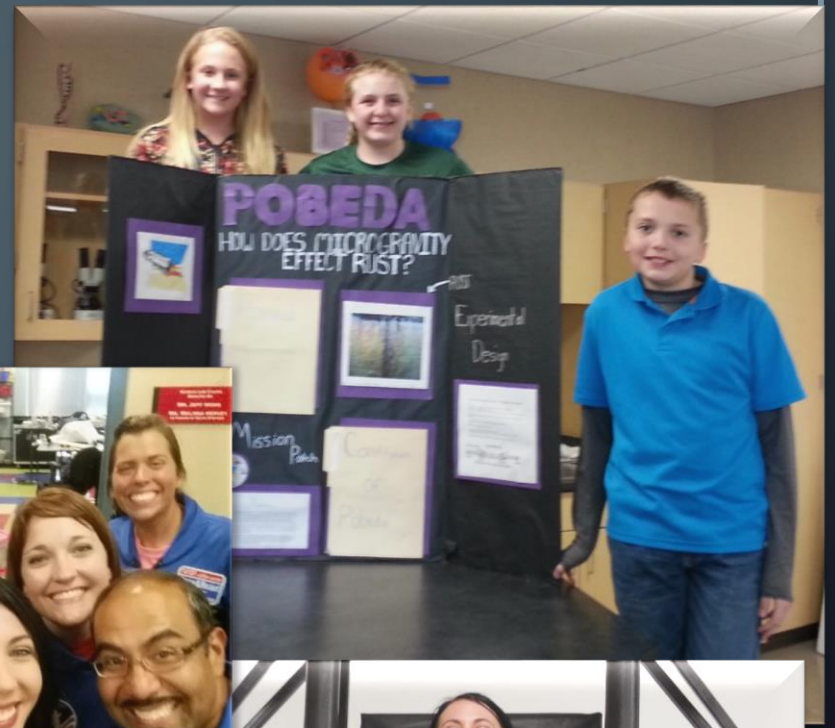
NDspacegrant.und.edu





NDSGC K-12 Educator Email Listserv

- Workshop opportunities
- New STEM education resources for the classroom
- NASA student contests/team competitions
- Professional Development opportunities
- Emails ~once a week



STEM AMBASSADOR PROGRAM

- Are you volunteering for outreach activities, want NASA on your resume?
- **May 31st** application deadline
- **$12/hour** to conduct K-12 visits, informal education sessions, lesson plan prepping, or any other STEM engagement activities.
- School comes first – **flexible schedule!**
- Anywhere in ND, from your own local area!
- **Training session** at UND (lesson plans, hands-on activities, take home materials).
- Some events are scheduled through Space Grant. Most are whatever you find!

- Some events have been:
  - ISS Calls (2016, 2019 TBD)
  - Eclipse trips
  - K-12 visits with the NDSGC Team
  - Near-Space Balloon Competition judging and facilitation
  - Super Science Day (GF)
  - Marketplace for Kids (all over ND)
  - Water Festival (Bottineau)
  - Girl scouts, boy scouts
  - FIRST Lego League, FIRST Robotics

PLEASE FILL OUT A QUICK SURVEY

- https://und.qualtrics.com/jfe/form/SV_1ZylfLa4dVilxDT
- **http://tinyurl.com/y4qxv3cl**
- This helps us for our NASA reporting, so thank you!