



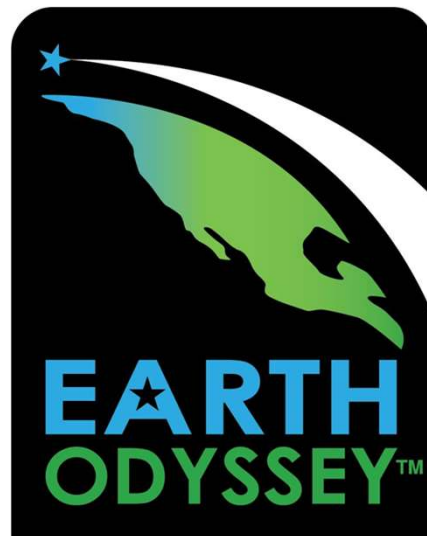
Earth Odyssey

6/20/24

1

Today's Agenda

- Earth Odyssey Overview - Emily
 - Broad Storyline
 - Mission Objectives
- Team & Task Overviews
 - BIO, GEO, COM, LS, MED - Emily
 - BOT, NAV, ROV, WX - Thaddeus
- Online Training - Thaddeus
- EO Rollout - Lauren
- Q & A



2

2

Storyline & Objectives

3



3

Storyline Overview

In Earth Odyssey, students explore Earth Systems while building a remote-sensing satellite that will continue monitoring critical climate data.

4



4

Mission Objectives

1. Ensure the health and safety of both crews
2. Collect and analyze climate data to investigate global processes
3. Successfully launch a remote-sensing satellite

5

5

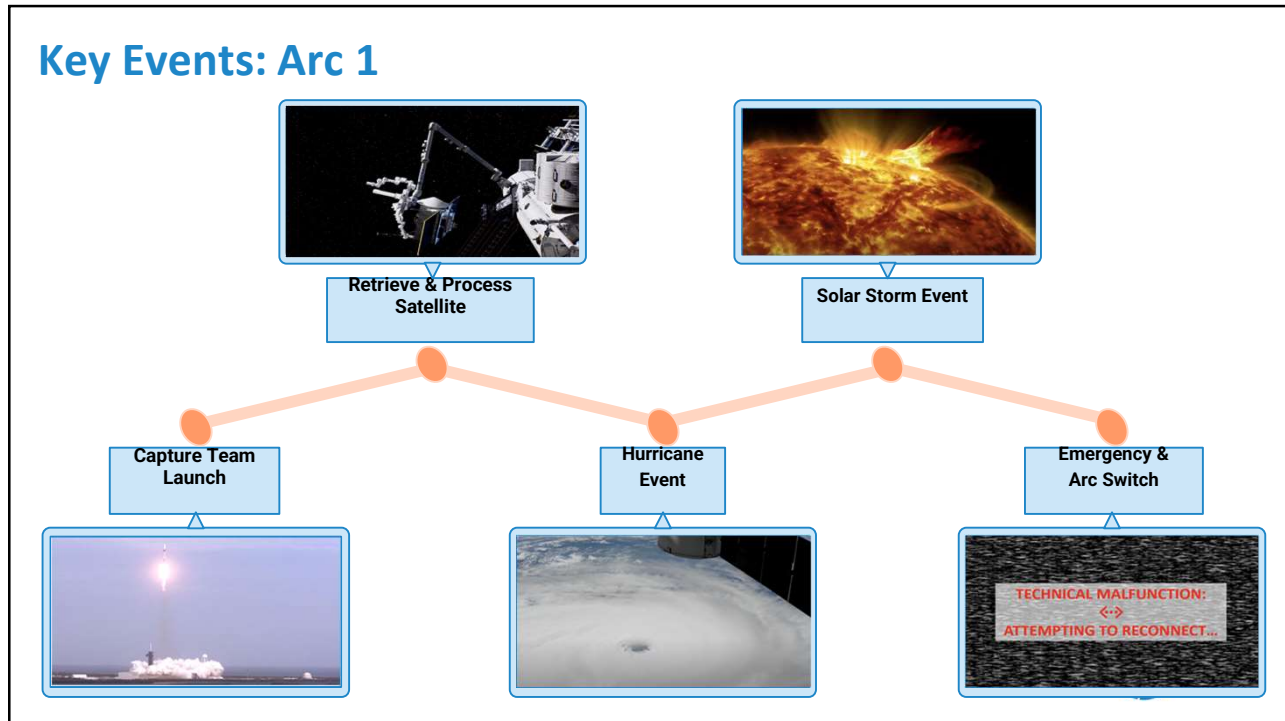
Capture & Redeployment Crew

- **The Satellite Capture Crew** will launch to space first to retrieve a non-functioning satellite and begin processing its data.
- **The Satellite Redeployment Crew** will launch to space second, to build and launch the new remote-sensing satellite.
- Each crew will also act as the **Mission Control team** while their counterparts are in Spacecraft.

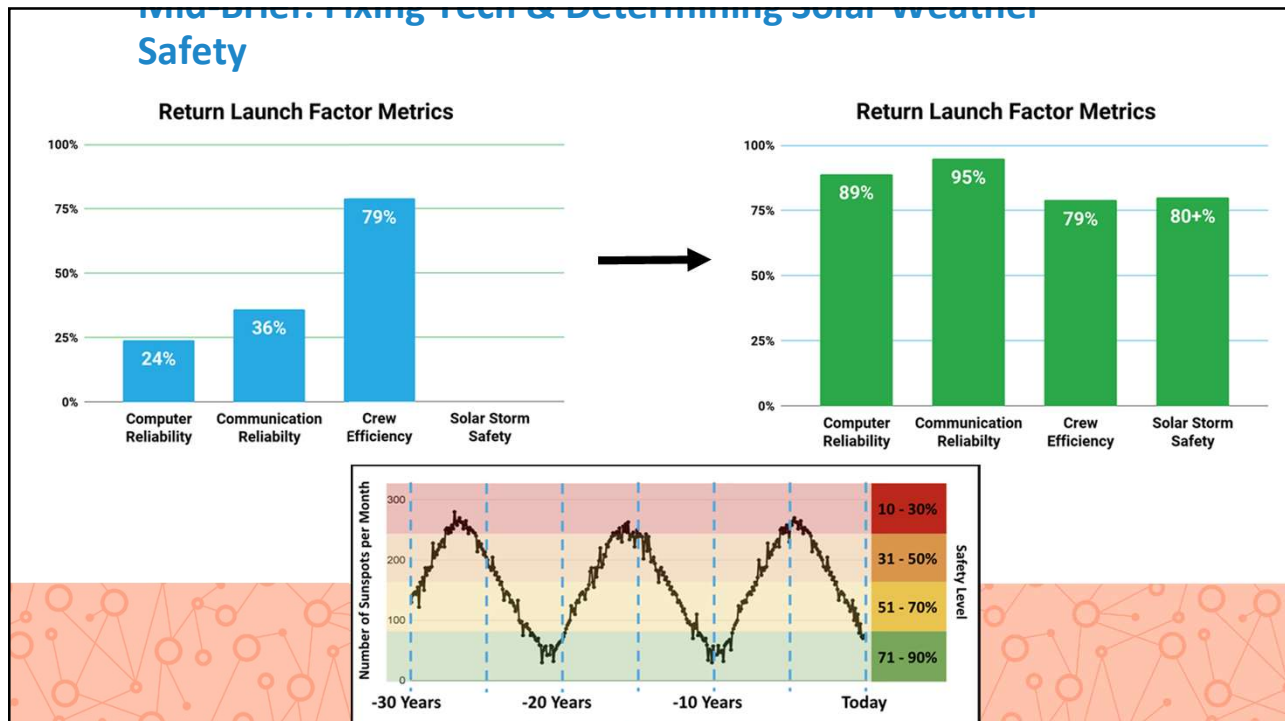


6

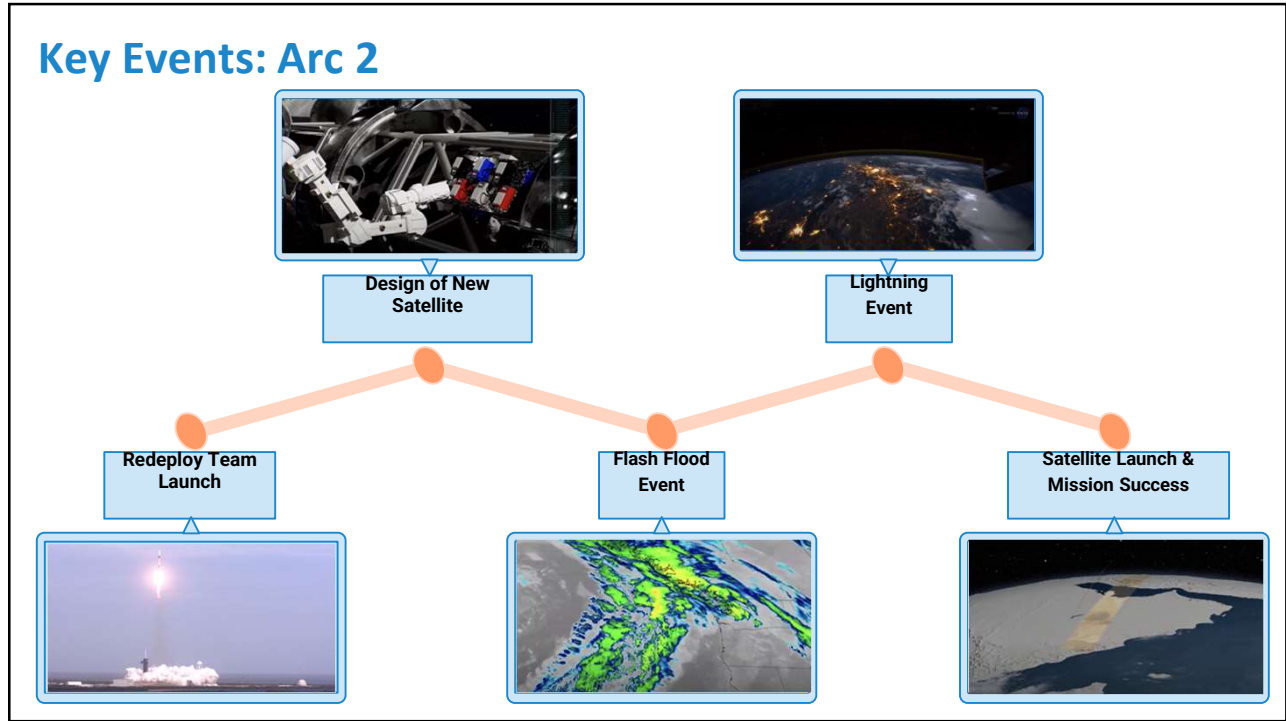
6



7



8



9

Teams & Tasks

The slide has a light blue background with a subtle pattern of horizontal lines. The title 'Teams & Tasks' is centered in a large, bold, blue font. In the bottom right corner, there is a logo for the Challenger Center, which includes a stylized globe and the text 'Challenger CENTER'.

10

10



BIO TEAM

- Perform maintenance and compose health reports on Spacecraft vegetation systems
- Conduct DNA extraction lab and perform DNA sequencing
- Monitor ocean temperatures and ecological impacts



11

11



GEO TEAM

- Determine what data collected by the retrieved satellite is corrupted
- Perform experiments to determine the impact of microgravity on soil health
- Respond to extreme weather events and determine their ecological impacts

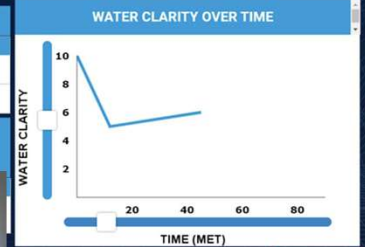
GRAPH WATER CLARITY

The table below shows data collected from the space soil sample experiment when it was first started and again by a previous Spacecraft crew.

After you receive the updated data from the crew in Spacecraft, use the sliders to plot the MET and water clarity values from the **NEW DATA** table, into the graph on the right.

PREVIOUS DATA	
TIME (MET)	WATER CLARITY
00:01	10
00:45	6

NEW DATA
RECORD THIS DATA IN THE GRAPH



Next →



12

12



COM TEAM

- Manage all communications between Spacecraft and Mission Control
- Gather images and information to create and publish social media content
- Manage public reception and response to mission objectives

INCOMING EDIT FEED

1461 likes for Malfunctioning Satellite Captured
156 likes for Space Gardening

RECENT TEAM UPDATES

- Malfunctioning Satellite Captured
The COM Team has successfully captured a malfunctioning satellite that was orbiting the spacecraft.
- Space Gardening
The COM Team is working on a new hydroponic system for the spacecraft.
- Life Support Team Continues Monitoring Mission Critical Systems
The COM Team is working to monitor and maintain all life support systems on the spacecraft.
- Mission Goal: Launch a Satellite to Monitor a Changing Climate
The COM Team is working to launch a satellite to monitor climate change.
- BO Team Welcomes Changing Ocean Temperature Trends
The BO Team continues monitoring rising ocean temperatures due to climate change.

PUBLIC ENGAGEMENT

The COM Officer in Mission Control is publishing social media posts about crew accomplishments and mission objectives. When a member of the public replies to a post with a question, you will need to find the answer.

DIRECTIONS:

1. Review the questions as they appear.
2. Bring your tablet to the appropriate team member.
3. Find the answer to the question by poking the team about it.
4. Type out a short response to the question in the provided box.
5. Click UNLOAD to publish your response to the Challenger Chat social media platform.

Mission Control COMS @MissionControlCOMS
Our BO Team is researching ways to grow food in space! They've successfully set up a hydroponic vegetation system in the Spacecraft!
👍 204 🗨️ 126

Kevlar B. @KevlarB
What plants are growing in the vegetation system?
👍 16

Spacecraft COMS @SpacecraftCOMS
TYPE ANSWER HERE

13

13



MED TEAM

- Monitor crew health and crew radiation levels throughout entire mission
- Conduct investigation on the impact of microgravity on crew spinal decompression

SPINAL RESEARCH

DIRECTIONS:

1. Click the ruler icon in the bottom right corner of the image to open the ruler.
2. Use the ruler to measure the distance between the two marked intervertebral discs.
3. Record your measurements in the appropriate box.
4. Click SAVE DATA when finished.

Measurement 1:
0.35

Measurement 2:
[]

SAVE DATA

0.51

14

14



LS TEAM

- Manage all Spacecraft Life Support Systems
- Monitor Spacecraft air quality, water quality, and oxygen levels
- Respond quickly to potential emergencies



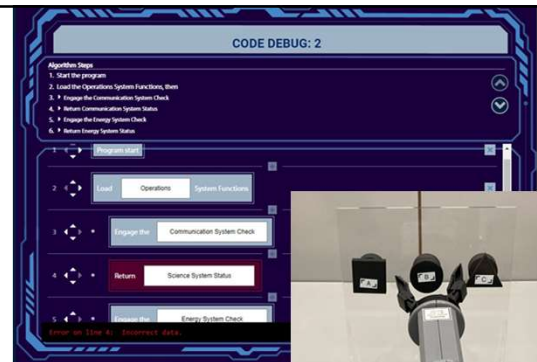
15

15



BOT TEAM

- Debug code from the satellite using and assess new code.
- Test prototypes for three robotic arm tasks.
- Uses 3D pen to recreate lattice structures.



16

16



NAV TEAM

- Capture requested images with required scan
- Investigate orbit options that meet team goals
- Avoid orbiting debris and train for undocking maneuvers



17

17



ROV TEAM

- Dismantle satellite bus while testing part functionality then reassemble
- Plan for systems based on a budget
- Select modules for updated design
- Target code updates to best modules

COMMUNICATION SELECTION

The selected modules do not completely fulfill the mission requirements. Please review the mission requirements and the available modules to ensure that the selected modules meet the mission requirements.

Option	FINANCIAL (\$)	POWER (W)
Initial Budgets	238,665,000	750
Option 1	76,270,000	146
Option 2	222,952,000	146
Option 3	45,762,000	490
Option 4	96,270,000	144

HINT: A table of required modules can be reviewed by clicking DIRECTIONS.

COMPONENT	POWER	MASS	COMPARTMENTS	COUNT
Battery Pack	0	79.7g	1	NO YES
Battery Pack	0	72.2g	1	NO YES
Battery Pack	0	72.5g	1	NO YES
Inverter	0	78.1g	1	NO YES
Inverter	0	76.5g	1	NO YES
Inverter	0	72.4g	1	NO YES

MASS AVAILABLE: 1373.4
COMPARTMENTS AVAILABLE: 12

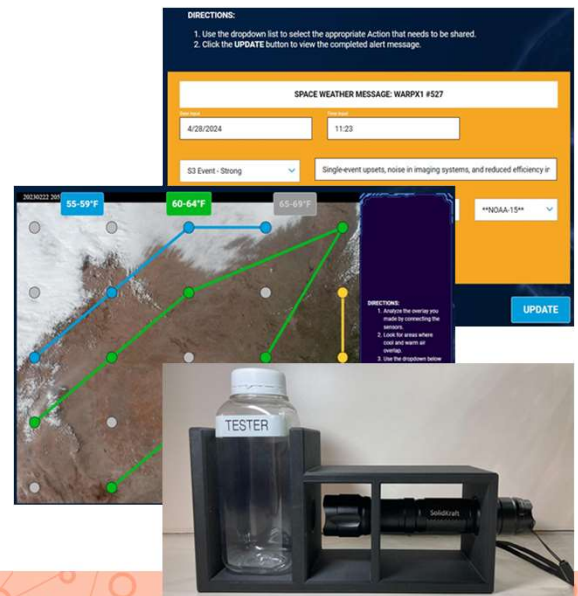
18

18



WX TEAM

- Use laser to observe aerosolized materials in SC lab
- Monitor solar and lightning storms that trigger warning reports
- Analyse atmospheric data for developing storms and air quality



19

19

Online Training

20



20

Training

- Similar format to EM, LQ, and OC
- Four main modules:
 - Introduction
 - Team Overviews
 - Labs
 - Flying the Mission
- Interactives reviews with feedback

21

21

Training

- Introduction
 - Mission Elements
 - Timelines
- Team Overviews
 - Synopsis and Stress points
 - Tools
- Labs
 - Materials, Setup/Arc Reset, Strategies for Success
- Flying the Mission
 - Flight Director and Mission Commander task sections
 - Emergencies, Events, Data Spoofing

22

Module 1 - Introduction

START MODULE

Module 2 - Robotics (BOT) Overview

START MODULE


Module 3 - The Labs

START MODULE

Module 4 - Flying the Mission

START MODULE

22



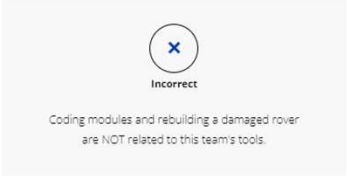
Training

- Interactives reviews with feedback

Question
01/06

Select the area(s) this team explores to contribute to the Mission Goals.


- Ensure satellite has functioning modules
- Rebuild a rover after another is damaged
- Code programs to operate ROV modules
- Assemble satellite by placing modules correctly
- Plan satellite systems that support mission needs within a budget



Incorrect


Coding modules and rebuilding a damaged rover are NOT related to this team's tools.

NEXT



23

Mission Rollout





24



Mission Rollout

- Earth Odyssey mission will begin rollout mid-summer.
- Supply shipments will begin in early July through the remainder of the summer.
- If you are interested in flying Earth Odyssey in the fall, please contact Lauren Goff or Michela Taylor. We want to ensure you get your mission supplies in time!
- In addition to Earth Odyssey, Centers will also receive mission updates to all existing SIM3+ programs.
- Our newest virtual mission, Observation Earth, will also be made available at this time.



25

25

Questions?




@ChallengerCtr


@Challenger-Center


challenger.org

26

26