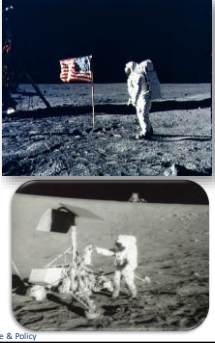


**ASTR 4800 - Space Science: Practice & Policy**  
 Today: **The Apollo Program**

- Next Class: What did we learn from Project *Apollo*?
- Read McDougall, Part VI, Chapters 21 – 22.
- Midterm paper: Interviewee name & brief bio to me by Oct. 19.



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**Space in the News: Uncrewed Blue Origin rocket crashes in setback for space tourism**

Presenter: Caroline Doran

- 22 flights, 6 crewed mission to date
- Carried research/experiments
- Failure 1 minute after launch
- FAA grounded Blue Origin, pending investigation
- Rocket did not land safely but capsule did



**Even though their escape system functioned properly, do you think this will harm or benefit the space tourism industry? How?**

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**Apollo 11 – First Human Landing**  
 Launch: July 16, 1969



Armstrong, Collins, Aldrin

[Landing Video](#)  
[First Steps](#)

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**Mission Control: Then and Now**



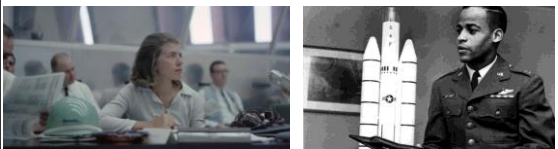
Mission Control: NASA Johnson Space Center in 1969

Employees at Space X today

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**A little diversity in Project Apollo**



28-year-old JoAnn Morgan, who worked as an instrumentation controller for the mission, was the only woman allowed inside the firing room where NASA employees were locked during Apollo 11's launch.


In 1961, Ed Dwight Jr. was hand-picked by President John F. Kennedy's administration to become the first-ever African-American astronaut.

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**Class Exercise**


Describe some of the **new** technologies that needed to be developed for Apollo following Kennedy's goal set in 1961 to have astronauts on the Moon by the end of the decade.



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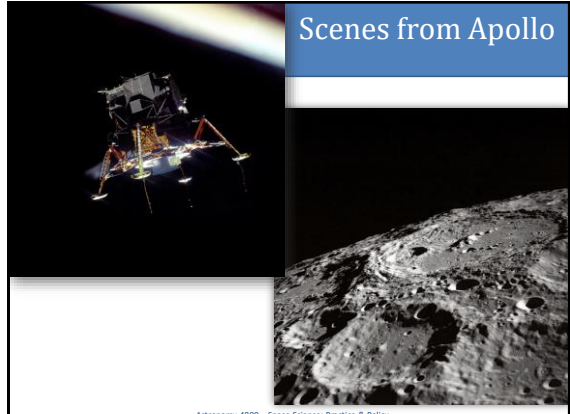
## Getting "Buzz'ed" in Boulder



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## Scenes from Apollo



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## The Meaning of Apollo

- Demonstrated technology & economic virtuosity of U.S. and established technological pre-eminence in the world. **Total cost over \$300 billion in FY22 dollars!**
- Apollo accomplished political goals for which it had been created.
- Triumph of James Webb's management strategy in difficult engineering, technological, and organizational requirements (systems engineering).

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## Scenes from Apollo




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## The Meaning of Apollo

- Apollo forced people of the world to view Earth in a new way (e.g., 1<sup>st</sup> pictures of Earth from afar). Gave birth to modern environmental movement. Archibald MacLeish said *"To see the Earth as it truly is, small and blue and beautiful in that eternal silence where it floats, is to see ourselves as riders on the Earth together"*.
- But, Apollo left a divided legacy for NASA & aerospace industry. Created an unrealistic expectation that NASA had broad support, abundant resources, and license to dispense them. However, Apollo was NOT conducted under normal political circumstances and these circumstances would NOT be repeated.



The Earth seen from the Japanese Kaguya satellite.

Whitey on the Moon

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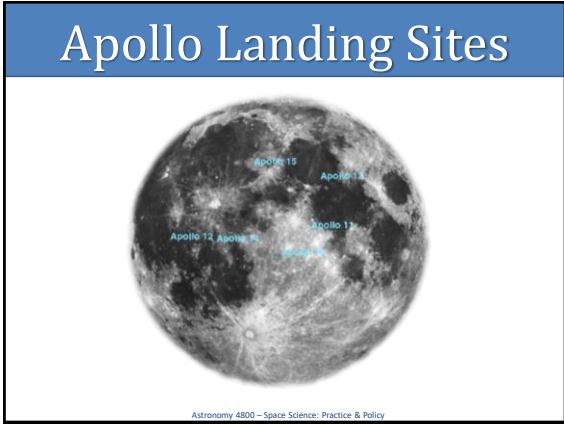
## Apollo 13

- Launched on April 11, 1970. 56 hrs into flight, oxygen tank ruptured.
- World attention focused on NASA and on crew of Apollo 13.




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