

Annotated Bibliography

Primary - Interviews

Bhattacharyya, Dolon. Interview. March 16, 2020.

Dr. Bhattacharyya helped answer some of our questions, first-hand, about female astronaut spacesuits. We were inspired after reading her comments in the article published by Boston University "Female Scientists React Before-and After-NASA's All Women Spacewalk was Cancelled". She is currently a Research Scientist at the Dept. of Electrical and Computer Science Engineering at the University of Illinois at Urbana-Champaign and Visiting Research Scientist at the Center for Space Physics at Boston University. On a side note, her work with researching water loss on Mars sounds fascinating!

Chapes, Stephen. Interview. March 3, 2020.

Dr. Stephen Chapes (ret.) was co-Investigator that worked on the TARBIS (Tetnus Antibody Response by B-cells in Space) Project. This project allowed researchers to study the immune system of mice in space by examining their bodies' response to tetanus vaccinations in a microgravity environment. This information should be useful in understanding how to maintain health and well-being of astronauts during long duration spaceflights and possibly uncover new ways to improve vaccines and therapies for humans in space and on Earth. He is currently the Secretary/Treasurer for the American Society for Gravitational and Space Research, Professor Emeritus, Kansas State University. His information and expertise was helpful in giving us a glimpse in to the research side of the ISS.

Katzenstein, Garrett. Interview. May 19, 2020.

Mr. Garrett Katzenstein has had a very interesting career with his early days working with the education program KidSAT (NASA & JPL) sending cameras on the space shuttle missions to map and photograph our planet, to SpaceX and the infancy stage of the newest Starlink satellites and controlled the Dragon module to dock with the ISS on a supply mission, on to New Zealand Aerospace and now LEOlabs tracking low Earth orbit debris and satellites. Due to time differences, our evening phone call interview was even more interesting as the International Space Station flew overhead and we had the opportunity to talk to him while watching this bright "star like" object fly across the night sky. The link he sent us about LEOlabs tracking had us mesmerized, and a little overwhelmed, with the amount of man-made objects in our night sky.

Robinson, Stephen. Interview. March 30, 2020.

Stephen Robinson is a NASA astronaut (Missions Specialist/Flight Engineer: STS-114, STS-95, STS-130, STS-85). Through first-hand narrative, Mr. Robinson answered questions we had about living on the ISS, technology barriers in communication, changes he has seen over the years, biggest challenges to long-term space flights, and what it was like to work with astronauts/cosmonauts from all different countries and languages.

Tyson, William. Interview. Feb. 8, 2020.

Mr. Tyson (ret. Boeing Sub-Contract Technical Manager, Communications & Tracking Systems, Human Space Flight & Exploration, ISS) is Katelynn's grandfather. He worked on building components for the International Space Station. He helped us understand the background of the space station, new vocabulary, and the barriers, through first-hand narrative, and guidance for further research. Concepts we were unfamiliar with (like a lot of what he said about band width), he was able to bring it down to something we could understand.

Primary

Cabbage, M. (1998, December 2). Work on space station ready to start - weather permitting. *The Orlando Sentinel*. Retrieved from www.newspapers.com

This gave us a better idea on what caused delays (mostly weather related) to early space shuttle missions. This launch of space shuttle Endeavor, was important because it once it finally launched on December 4, six astronauts (5 American and 1 Russian) were sent to begin work on the ISS with the American built component of the station (the connecting module named "Unity).

M., S., & Collins. (2019, December 10). Text - S.Res.451 - 116th Congress (2019-2020): A resolution congratulating astronauts Dr. Jessica U. Meir and Christina H. Koch for the historic accomplishment of completing the first all-female spacewalk. Retrieved from Congress.gov <https://www.congress.gov/bill/116th-congress/senateresolution/451/text?q=%7B%22search%22%3A%5B%22International+Space+Station%22%5D%7D>

This Senate resolution was used as a primary document recognizing the first all-female space walk that took place earlier this year (2020).

Paddock, R. C. (1997, May 14). Space Race Now Joint Venture. *The Los Angeles Times*. Retrieved from Newspapers.com

Retrieving this article from newspaper archives gave us insight into Russia cooperating with American aerospace companies like Boeing to work on parts for the space station. This was quite a milestone as the project neared launch date.

President Ronald Reagan National Archives. <https://www.reaganfoundation.org>

This information provided background narrative to propelling the space race forward and creation of the International Space Station as a collaborative work.

Reagan, Ronald. 1982. Retrieved from Ronald Reagan Speech - Address to British Parliament. <https://www.reaganfoundation.org>

The Reagan Foundation provided a lot of information about this past president, and that we were able to use as documentation of President Reagan's speech and higher-resolution picture of him and Margaret Thatcher, than what we could find online. It was interesting to hear recordings of the voices of these people from history.

Space Race May Be Shifting East. (1970, August 24). *The Paris News*, pp. 4–4. Retrieved from <https://kshsonsite.newspapers.com>

This article was showing the need for funding, as well as a need to open-up the space race to other contributing countries.

The People's voice. [volume] (Helena, Mont.) February 07, 1958, Page Six, Image 6. Retrieved May 22, 2020, from <https://chroniclingamerica.loc.gov/lccn/sn86075189/1958-02-07/ed-1/seq-6/>

This newspaper article found in Chronicling America site, allowed us to read opinions from 1958 about Sputnik and how they explained why the Russians beat the US to launch of a satellite. In their perspective, they compared US to Russian education systems and teacher pay. A few reasons that this author felt Russia has a better education systems, noting that teachers are paid a higher wage than in the US and students go to school for free and continues thru university studies.

The Petal paper. [volume] (Petal, Miss.), 31 Oct. 1957. Chronicling America: Historic American Newspapers. Lib. of Congress. Retrieved from <https://chroniclingamerica.loc.gov/lccn/sn85044791/1957-10-31/ed-1/seq-1/>>

This gave us a revealing look at an opinion about Sputnik being in space and concerns people in the town of Petal, Mississippi felt in 1957. It was interesting to note the comment that they were more concerned about their ability to vote versus a satellite in the sky.

The Petal paper. [volume] (Petal, Miss.) June 01, 1961, Chronicling America: Historic American Newspapers. Lib. Of Congress. <https://chroniclingamerica.loc.gov/lccn/sn85044791/1961-06-01/ed-1/seq-3/>

We continued our research for opinions that were prevalent during the Cold War and Sputnik days. The opinion given in the article seems to have been the overwhelming majority as it was repeated often through other readings about the Cold War. We felt it summed up the competition very well. This was quoted from a book called "Man and Space": "The real reason, why the United States is dipping so deeply into its coffers to support space research is that space spectacles have become symbolic of technological supremacy...such is the price tag of space status." (Dr. Ralph E Lapp).

Watson, K., & Neena. (2018, April 18). Female Scientists React Before-and After-NASA's All-Women Spacewalk Was Canceled. Retrieved from <http://www.bu.edu/articles/2019/female-scientists-react-to-nasas-canceled-all-women-spacewalk/>

Reading this article inspired us to contact Dr. Bhattacharyya and ask further questions about her responses and her insight to space science. See interview section of bibliography for that information.

Whitson, P. (2017, July 18). Astropeggy. Retrieved May 13, 2019, from <https://astropeggy.tumblr.com/post/163109820673/storing-blood-samples-in-our-ultra-cold-freezer-to>

This astronaut is very noteworthy. She holds many space records and currently is the astronaut (male or female) that has spent the most days in space. We will continue to watch for her continued adventures in the private sector as she is still making waves. We used a picture of her from her webpage that we felt made our website better too.

Secondary

Airbus. (2020, April 03). Bartolomeo successfully docks with Columbus laboratory. Retrieved May 5, 2020, from <https://www.airbus.com/newsroom/news/en/2020/04/bartolomeo-successfully-docks-with-columbus-laboratory.html>

This provided interesting information on the latest use of ISS for commercial gains and microgravity research. Businesses can “plug-in” their research direct to the space station modules of Bartolomeo.

Apollo 11, 50 Years Later. (2019, July 17). Retrieved from <https://time.com/collection/apollo-11-50>

Helped us gain insight and details about Neil Armstrong’s historic first moon walk. It also had photos from the historic space walk and his spacesuit that he wore (which we included in website). This got us researching about newer and more modern changes to the spacesuits.

Chen, R. (2017, December 1). What's Flying Next. Retrieved from <https://www.nasa.gov/spacebio/whats-flying-next>

This article was used to give us background information about the TARBIS project to prepare us for our interview with Dr. Chapes. We felt this was important also because it had a direct connection to our hometown university of Kansas State.

Cofield, C. (2016, March 24). Record-Breaking Women in Spaceflight History. Retrieved March, 2020, from <https://www.space.com/32355-record-breaking-women-spaceflight-history.html>

This article gave us information about the successes of space pioneering women and the legacy they leave behind. It provided images and timeline that we were able to use to see the progression/timeline of women in space and in aerospace fields.

The Editors of Encyclopaedia Britannica. (2020, January 28). Sputnik. Retrieved from <https://www.britannica.com/technology/Sputnik>

We needed a clear photo of Sputnik to use in our website. As we learned about the Space Race, we felt we needed to include Sputnik as part of our research since that was such a memorable event for so many Americans that feared they were being spied upon by an enemy country.

Feffer, J., Marsh, E., & Iván Farías Pelcastre & Hera Jabeen. (2018, March 08). The New, New Cold War. Retrieved January 19, from https://www.fairobserver.com/region/north_america/new-cold-war-russia-us-politics-donald-trump-vladimir-putin-russiagate-news-13266/

Russia (USSR) and US flag photo used for Background header and recent information in to continued struggle for national identities and world competition.

Harbaugh, J. (2019, October 24). NASA, Industry Partner to Study Potential Alzheimer's Key in Space. Retrieved May 21, 2020, from <https://www.nasa.gov/centers/marshall/news/industry-partner-for-space-based-study-of-alzheimers-key.html>

As we looked deeper into the research being performed on the ISS, we felt this was really amazing to hear and could potentially affect so many people that have Alzheimer's. We couldn't include all the research being done on the ISS, nor even all the inventions from space tech that returned to Earth, but it was really interesting to read at greater depth.

Harland, D. M. (2020, February 5). Space Station. Retrieved February 10, 2020, from <https://www.britannica.com/technology/space-station>

This article helped us understand the timeline of how different parts/components were added to the space station. With so many space shuttle missions, and later Dragon (SpaceX) launches, this helped us keep track of important information.

Johnson, M. (2020, February 20). Improving Shoes, Showers, 3D Printing: Research Launching to Station. Retrieved May 1, 2020, from https://www.nasa.gov/mission_pages/station/research/news/spx-20-research-highlights

We used this to learn more about the inventions NASA makes for the astronauts. Adidas sent foam to be studied so they can improve the soles of athletic shoes. We also learned that they are studying how water forms into droplets to hopefully find new ways shower heads can conserve water.

Kramer, M. (2013, June 19). New Female Astronauts Show Evolution of Women in Space. Retrieved March 20, 2020, from <https://www.nationalgeographic.com/news/2013/6/130618-space-female-astronauts-sally-ride-nasa-science/>

We wanted more information when explaining about the historical barriers broken by the ISS. The biggest one, and the one still changing, is the role of women in space. Not as secretaries or assistants, but because of their work ethic, abilities as a leader or scientist or pilot, and not because of gender. Of the 8 newest (current) astronauts, 4 are women. The tides are continuing to turn.

LEO Labs, Low Earth Orbit Visualization. (n.d.). Retrieved May 17, 2020, from <https://platform.leolabs.space/visualization>

Prior to our interview with Garret Katzenstein, he sent us this link to see a visualization of objects (debris and working satellites) in Earth's orbit. It allows us to see the impact launches have had on our atmosphere, to see the amount of materials from different countries, and track when materials might crash into each other. This is relevant because the ISS is also in low Earth orbit with all these objects. We were reminded to consider the damage done by even the smallest of objects travelling 17,000 mph! The space station has been increasing the number of maneuvers over the years to avoid striking larger objects. We included a link if a reader chose to see current tracking, but also a short video clip of screenshot if the availability of access outside webpages was blocked.

Machemer, T. (2019, December 31). Astronaut Christina Koch Breaks Record for Longest Spaceflight by a Woman. Retrieved May 21, 2020, from <https://www.smithsonianmag.com/smart-news/astronaut-christina-koch-breaks-record-longest-spaceflight-woman-180973889/>

As previously mentioned, with regards to women in space ventures, this was exciting to read—for Christina Koch's gender, but also as a human, this kind of dedication is tough on any human. She is just 11 days shy of Scott Kelly who currently holds the record for longest spaceflight (continuous).

Mohon, L. (2020, May 18). Last of NASA's Vital, Versatile EXPRESS Racks Bound for Space Station. Retrieved May 19, 2020, from <https://www.nasa.gov/centers/marshall/news/releases/2020/last-of-nasa-s-vital-versatile-science-express-racks-heads-to-space-station.html>

Reading some of the recent news about ISS, we felt this was interesting as Dragon (Space X) was sending a capsule full of storage racks to join older model racks that will be used to give more room to science research.

National Aeronautics and Space Administration. (1988). Space station: A Research Laboratory in Space. In *Space Station: a research laboratory in space*. Washington, D.C.

This helped us gain background information on the International Space Station, and as a publication, covered an immense amount of territory. We used this when first beginning our research to create a timeline and familiarize ourselves with the ISS.

NASA Image & Multimedia Gallery. (varies). Retrieved from <https://www.nasa.gov/multimedia/imagegallery/index.html>

This webpage was used to acquire photos of space missions, graphics, images from low Earth orbit, astronauts, and visual support of our research.

Northon, K. (2020, March 07). SpaceX Dragon Heads to Space Station with NASA Science, Cargo. Retrieved April 21, 2020, from <https://www.nasa.gov/press-release/spacex-dragon-heads-to-space-station-with-nasa-science-cargo-1>

We used this to read updated information about the latest NASA projects and how SpaceX is helping to keep the ISS connected to Earth by being the mechanism of transport for supplies.

Northon, K. (2018, September 26). NASA Unveils Sustainable Campaign to Return to Moon, on to Mars. Retrieved December 15, 2019, from <https://www.nasa.gov/feature/nasa-unveils-sustainable-campaign-to-return-to-moon-on-to-mars>

We used this article to read about NASA's upcoming Artemis missions concepts. This project hopes to do a return trip to the Moon and then begin building a space port as a jumping off point for future trip to Mars. (Note: Artemis is the Greek goddess of the Moon.)

Pearlman, R. (2019, December 29). Astronaut Christina Koch Breaks Record for Longest Space Mission by a Woman. Retrieved February 20, 2020, from <https://www.space.com/nasa-astronaut-christina-koch-breaks-female-spaceflight-record.html>

Astronaut Peggy Whitson holds the record (male or female) for the greatest cumulative days spend on the ISS. Astronaut Christina Koch broke the record for the longest spaceflight (single). This is her second record. She also broke a record for the first all-female spacewalk with Astronaut Jessica Meir.

Potter, S. (2020, May 13). NASA TV to Air Launch, Capture of Cargo Ship to Space Station. Retrieved May 15, 2020, from <https://www.nasa.gov/press-release/nasa-tv-to-air-launch-capture-of-cargo-ship-to-international-space-station>

This website provided information to help us better understand NASA's Artemis program that will send astronauts to the moon by 2024 that will help with eventual human exploration to Mars. This was interesting because it seems like the timeline is so short.

Potter, S. (2020, March 27). NASA Awards Artemis Contract for Gateway Logistics Services. Retrieved May 21, 2020, from <https://www.nasa.gov/press-release/nasa-awards-artemis-contract-for-gateway-logistics-services>

As we had read about the Artemis project earlier, it was interesting to read about the updates of plans to go to the moon and eventually Mars.

Redd, N. (2018, June 16). Peggy Whitson: Record-Holding Astronaut. Retrieved May 21, 2020, from <https://www.space.com/38691-peggy-whitson-astronaut-biography.html>

This astronaut is very noteworthy. She holds many space records and currently is the astronaut (male or female) that has spent the most days in space (cumulative).

Smith, M. (2012, September 24). Orlando Sentinel: NASA Considering L2 Spaceport As Beyond-LEO Destination. Retrieved May 1, 2020, from <https://spacepolicyonline.com/news/orlando-sentinel-nasa-considering-l2-spaceport-as-beyond-leo-destination/>

As we looked for more information about the impact of the ISS, we wanted to include more in our website about upcoming space goals with NASA's Artemis project.

Space Station Lecture (n.d.). Drawing of 1960's Space Station. Retrieved from <http://abyss.uoregon.edu/~js/space/lectures/lec25.html>

We used these lecture notes to see the different concept designs of the ISS in its infancy. One picture was very interesting with its multilayers and so we included it on our webpage.

Space Station | What is the Purpose of the Space Station? (1999). Retrieved from Houston Public Television <https://www.pbs.org/spacestation/station/purpose.htm>

This website provided information about the comparable size and scale of the ISS and homepage quote.

Times, A. (2017, April 26). Peggy Whitson Sets Spaceflight Record: A Look at Women's History In NASA. Retrieved January 14, 2019, from <https://www.techtimes.com/articles/205955/20170426/peggy-whitson-sets-spaceflight-record-a-look-at-women-s-history-in-nasa.htm>

This article helped us organize information about women in space and to learn about some of these pioneers in history that broke so many barriers. We tried to focus primarily on their changing role in aerospace with regards to the ISS.

Times, J. (2018, June 16). Legendary NASA Astronaut Peggy Whitson Announces Retirement. Retrieved March 12, 2019, from <https://www.techtimes.com/articles/230425/20180616/celebrated-nasa-astronaut-peggy-whitson-retires-from-the-space-agency.htm>

This astronaut is very noteworthy. She holds many space records and currently is the astronaut (male or female) that spent the most days in space (cumulative). Although she is retired, we will continue to watch for her continued adventures in the private sector as she is still making waves.

Virtual Field Trip: FUTURE U. (November 2019) Retrieved from <https://www.boeingfutureu.com/virtual-field-trip>

This helped us gain background information on the International Space Station. It also provided great activities. Through virtual fieldtrip we were able to do science activities on Mars, build a Mars rover, and learn about the extremes on the planet Mars, without ever leaving our house.

Way, J., Andres, P., Baker, J., Goodson, G., Marshall, W., Maguire, J., . . . Yiu, L. (1999). *KidSat Final Report and Image User's Manual* (JPL 99-8) (United States, NASA). Pasadena, CA: Jet Propulsion Laboratory. Retrieved from <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20000056100.pdf>

While we were gathering background information to prepare for our interview with Garrett Katzenstein, we came across an aged publication by JPL and NASA and learned of an early-day project he worked on called KidSat. This program got kids learning about the space shuttle, orbits, trajectories, and satellite images, all in the hopes of them learning more about the planet we live on. A digital camera was mounted on to the space shuttle and students accessed photos and mapped them. During our interview with Mr. Katzenstein, we also learned that astronaut Sally Ride also worked on this project with him.

Wehner, M. (2017, December 06). The International Space Station is as gross as your own home. Retrieved November, 2019, from <https://nypost.com/2017/12/06/the-international-space-station-is-as-gross-as-your-own-home/>

Illustration used for homepage header and information related to life aboard the ISS.

Wilson, J. (2015, January 14). Space Station Images. Retrieved from https://www.nasa.gov/mission_pages/station/images/index.html

We used this website for information on the ISS and to acquire images.

Zak, A. (2018, September 4). The Salyut Era: First Space Stations. Retrieved May 19, 2020, from http://www.russianspaceweb.com/spacecraft_manned_salyut.html

To learn more about the early days of ISS, we had to better understand the what the Russians had been developing with regards to their space stations. Russian space web helped with timelines, photos, and primary source documents.

Zak, A. (2019, April). Zvezda Service Module. Retrieved Dec 2019, from http://www.russianspaceweb.com/iss_sm.html

A timeline of Russia's involvement in the ISS beginning with the Zvezda which we learned was the first piece to be built but was not sent to space until the 3rd launch due to financial problems and delays in launch. The US even built an emergency piece in case Russia couldn't fulfill their agreement or something happened during launch.