

## Annotated Bibliography

### Primary Sources

#### Books

Danenhower, John Wilson. *Lieutenant Danenhower's Narrative of the "Jeannette."* Boston: J. R. Osgood and company, 1882. *Archive*. Web. 9 Jan. 2016. <<https://archive.org/details/lieutenantdanen00danegoog>>.

Master John Danenhower was the navigation officer of the USS Jeannette. In this primary account, he tells the story of his experience on the boat and how he came to be saved. The book was meant for his family, recounting the "cruise" of the USS Jeannette and the true story of what happened. What struck me most about this work is the professional tone in almost all of Danenhower's entries. Even as he describes the ship sinking and the men being out of food, there is no apparent emotion connected to these events, and each incident is related factually and with short, concise statements. The one area where a hint of emotion gets through is where Danenhower describes the crew sharing their insufficient rations with their favorite dogs and having to kill some of the dogs that led their sleds. Without enough food to feed themselves, they couldn't bare to see their dogs die of starvation in front of them. What also stuck out to me is the formal way that Danenhower kept track of all the resources that the local people and Russian government afforded them so that the U.S. government could repay this debt. I took away from this work a greater appreciation for the preparedness of the crew to face the unknown and their own potential death. I was also impressed with how, on the brink of death, the crew still followed military protocols (e.g., never resorted to cannibalism or deserted an injured/sick crew member). This helped underscore the heroism of the crew.

De Long, George Washington. *Our Lost Explorers: The Narrative of the Jeannette Arctic Expedition.* Ed. Raymond Lee Newcomb. Hartford: American Publishing Company, 1882. Print.

This source includes actual journal entries, data, telegrams, letters, and personal accounts from the commander of the USS Jeannette and other crew members. This work was very

important to my paper because it provides a firsthand account of what the crew faced and provides a porthole through which to see the crew's determination to make their sacrifices have an impact on the people they left back home. One note that particularly stood out was learning that the crew, after losing their ship, were able to advance at a pace of only 1/4 mile per hour over the snow and slush. And after being stuck in the ice for nearly two years, the ship becomes free of the ice only to get stuck again the next day and actually begin to sink. When reading this work, one cannot help but think it is a script for a major motion picture. It is hard to believe that men actually endured, and some survived, this incredible voyage.

De Long, George Washington. *The Voyage of the Jeannette. The Ship and Ice Journals of George W. De Long, Lieutenant-Commander U.S.N. and Commander of the Polar Expedition of 1878-1881*. Ed. Emma Wotton De Long. Boston: Houghton Mifflin, 1884. *Archive*. Web. 11 January 2016. <<https://archive.org/details/voyageofjeannett01delo>>.

Commander George Washington De Long was in charge of the USS Jeannette, but he did not survive. This work was edited by De Long's wife, who wanted her husband's sacrifices and accomplishments to be recognized. The book goes into great detail about De Long's upbringing and how he developed a passion for the Arctic. This book helped me understand the passion that drove the crew of the USS Jeannette to risk their lives to discover the North Pole and also the personal sacrifices they made to attempt to be the first to reach the pole.

Gilder, William H. *Ice-Pack and Tundra; an Account of the Search for the Jeannette and a Sledge Journey Through Siberia*. London: Sampson Law, Searle, & Rivington, 1883. *Archive*. Web. 26 Dec. 2015. <<https://archive.org/details/icepacktundraacc00gild>>.

This book is a firsthand account of efforts to find the Jeannette and its crew. The author sailed on the USS Rodgers, which was mostly composed of volunteers from the U.S. Navy. This work helped me understand how important it was to the American people to find the USS Jeannette or at least learn about its fate. This work underscores how the USS Jeannette was a national undertaking.

Melville, George W. *In the Lena Delta*. Boston: Houghton, Miffling and Company, 1885. *Archive*. Web. 28 Dec. 2015. <[https://archive.org/stream/inthelenadelta002487mbp/inthelenadelta002487mbp\\_djvu.txt](https://archive.org/stream/inthelenadelta002487mbp/inthelenadelta002487mbp_djvu.txt)>.

This is a primary source because it contains the original journal entries about the surviving crew members' search for Commander George Washington De Long and his group. The men who were part of the rescue teams had to look for subtle clues as to where the crew and the ship's belongings were located while dealing with the harsh Arctic conditions. This compilation demonstrated to me the loyalty the crew of the USS Jeannette had for one another and the extreme efforts they went to in order to try and save their fellow crew members. It also underscored the great lengths that Commander De Long went to to ensure the ship's logs were kept dry and safe so they could be returned to the States even though he knew he and his men were beyond saving.

Muir, John. Unalaska and the Aleuts. Chapter I. *The Cruise of the Corwin*. Boston: Houghton Mifflin, 1917. N. pag. Digital file. <<https://archive.org/details/cruisecorwin00unkngoog>>.

John Muir, one of America's most famous naturalists (e.g., Muir Woods in CA), was on the USS Corwin when it sailed in 1881 in search of the USS Jeannette or news of the ship. Being one of the first to discuss aboriginal rights, Muir appears to be the only individual associated with Arctic exploration to openly criticize the impact of outsiders (e.g., American and European whalers and explorers) on the indigenous people of the Arctic. For example, Muir accused the Western introduction of alcohol and guns as leading to the demise of the native Yupiks. This work helped me understand another side of Arctic exploration. The press at the time, and Western historians today, tend to focus on the courage and heroism of the crews who sailed into the polar unknown, but this account, based on Muir's journals, reveals the contamination that can also result from such exchange.

## Newspaper Articles

"American Arctic Expedition." *The New York Herald* [New York] 11 July 1879: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016. <<http://chroniclingamerica.loc.gov/lccn/sn83030313/1879-07-11/ed-1/seq-5/>>.

This is an actual newspaper story that was printed in James Gordon Bennett, Jr.'s newspaper just days after the USS Jeannette set sail from San Francisco. The article describes how the expedition is likely to succeed because of the great preparations taken by the crew. This article helped me feel the excitement and national pride that the American people reportedly experienced when the USS Jeannette actually set sail. The article opens with the line, "by telegraph to the Herald." This is actually why Mr. Bennett financed the expedition. He hoped tales of the voyage could be telegraphed back to the Herald and make popular headlines for his newspaper. In addition, the article details how the whole world was in support of the expedition and how the USS Jeannette would finally provide an answer to the polar problem.

"The American Polar Expedition." *The New York Herald* [New York] 12 July 1879: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016. <<http://chroniclingamerica.loc.gov/lccn/sn83030313/1879-07-12/ed-1/seq-8/>>.

This article details how the USS Jeannette was the first expedition to attempt to reach the North Pole via the Bering Strait. This work was important for me because it helped point out additional ways the USS Jeannette was unique and how the crew had no firm understanding of what they were sailing into. In addition, this article describes the send-off for the USS Jeannette and makes the reader feel like they are part of the excitement. When the USS Jeannette left its port, it was a national sensation. The dock was so filled that people took to the hills above, until even those were crowded. The men who chose to undertake the voyage, De long and his crew, had courage, love for their country, and respect for science.

"Arctic Exploration." *The New York Herald* [New York] 15 July 1878: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016. <<http://chroniclingamerica.loc.gov/lccn/sn83030313/1878-07-15/ed-1/seq-4/>>.

This primary article was published in Mr. Bennett's Herald newspaper. The article was published one year before the USS Jeannette set sail from San Francisco. This article was informative because it conveys the enthusiasm that the nation had for what was then only a "proposed" USS Jeannette voyage. It describes Dr. Petermann's theories regarding how to

reach the North Pole and what he assumed would be found once at the top of the world. It was fascinating for me to read this article because all of Dr. Petermann's theories that are exalted in the article would later be disproved by the crew of the USS Jeannette. As a result, the article is evidence of how little was actually known about the Arctic and the passage to reach the North Pole, which made the voyage of the USS Jeannette all the more dangerous.

"Bound for the Pole." *St. Louis Globe-Democrat* [St. Louis] 16 July 1879, morning ed.: n. pag. Print.

This newspaper article was printed a week after the USS Jeannette sailed from San Francisco. It provides an overview of the voyage, including the names and roles of the crew, how the ship changed names and became commissioned by the U.S. Navy, the expected route of the USS Jeannette, and the hopes of the nation that the expedition would be successful. What I took away from this article was how important the voyage was to the American public across the country. The USS Jeannette was financed by a New Yorker and set sail from San Francisco, yet here was a 3/4-page article in a St. Louis newspaper. This article highlights for me the national pride that the USS Jeannette evoked.

"Hints to Explorers." *The New York Times* [New York] 25 Mar. 1877: n. pag. Print.

This is a primary newspaper about the possibility of an open polar sea, saying scientists and theorists believe that there is a great expanse of water at the top of the world formed by warm water currents. This open polar sea, part of the Kuro Siwo, a warm Japanese current, was thought to be accessible through the Bering Strait. This theory, further commented on in the article, led many explorers and their crews to die in the Arctic. This article was helpful because it showed how strongly not only the public but the scientific community believed the route taken by the USS Jeannette would eventually reach open, calm waters on the way to the North Pole.

"In Capt. De Long's Boat." *The New York Times* [New York] 2 Dec. 1882: n. pag. Print.

This is a primary newspaper article with quotes from crew members who sailed on Arctic ships. The USS Jeannette set sail after the Polaris, which headed northward toward the North Pole in 1871. By 1872, the Polaris was adrift, and in 1873, the Tigress rescued the crew. The Tigress returned to America five months later. This article helped me understand the grave decisions that U.S. Navy captains make and the heavy responsibilities that they carry. Captains have to balance the success of their missions with the safety of their crew. This work made me think long and hard about the loyalty that the crew of the USS Jeannette displayed toward their commander and how he never abandoned a sick or injured crew member. The way the crew of the USS Jeannette conducted themselves even in the face of starvation and frostbite made them heroes.

"The Jeannette." *The New York Herald* [New York] 5 May 1882: 3. Print.

This newspaper article describes Lieutenant Danenhower's firsthand account of his experiences with the natives once his party reached land and how his party was reunited with Nindemann and Noros. This article also has a map showing where Melville's (including Danenhower) boat went ashore. I learned about the generosity of the natives who fed and clothed the crew of the USS Jeannette even though they themselves had few belongings and very little food. This article reinforces how the crew were at the mercy of the Arctic weather and how they likely never would have been rescued if it hadn't been for the cooperation of the local inhabitants and Russian government.

"The Jeannette Expedition." *Sacramento Daily Union* [Sacramento] 10 July 1879: n. pag. *Maritime Heritage*. Web. 13 Mar. 2016. <<http://www.maritimeheritage.org/ports/Russia-Moscow.html>>.

I learned that the USS Jeannette, originally named the Pandora, was built in 1862 in England. The USS Jeannette was improved in many ways, for Arctic expeditions were known for failing because of their ships' broken parts. So, when the USS Jeannette left its port, it was ready, especially with forty trained dogs and two native Alaskans on board.

"The Jeannette. Lieutenant Danenhower's Account of the Adventures and Suffering of the Crew." *Easton Express* [Easton] 9 Feb. 1882: n. pag. Print.

This source includes a first-hand account of what the expedition was like. During the twenty-one months drifting, no scurvy appeared, and the crew were in fair health. They used distilled water and ate bear and seal every week. They rounded up 30 bears, 250 seals, and 6 walruses. No fish or whales were seen. There was no rum, and the men did plenty of exercise. "All possible observations were made" during the drift. The crew cared about writing down everything possible. The ship was heavily pressed by the ice every day. Some of the men on board felt the mental strain more than others. This account of life on the USS Jeannette helped me understand the more common day-to-day aspects of the voyage before the ship sank. The crew keeping records of how many animals they killed for food is indicative of the detailed record keeping they maintained regarding all aspects of the Arctic.

"The Jeannette's Long Cruise." *The New York Times* [New York] 21 Dec. 1881: n. pag. Print.

This is a primary newspaper article published after the USS Jeannette sank. For two years, America did not know where the USS Jeannette was or how the ship was faring. The USS Jeannette was constructed out of strong oak. She could go 8 knots/hour. Many parts of the ship were replaced before sailing to give the ship the best chances of survival while battling the ice. The commander of the ship, Lieutenant De Long was born in New York in 1844. He was the first to volunteer for the dangerous Arctic expedition. This article let me know that the American people never gave up hope of finding the USS Jeannette and the ship's crew. This was truly an expedition that had the support of the nation.

"The Jeannette's Mission." *New York Herald* [New York] 10 July 1879: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016.  
<<http://chroniclingamerica.loc.gov/lccn/sn83030313/1879-07-10/ed-1/seq-3/6>>.

This is a primary source, published two days after the ship left the San Francisco Port. It shares that it was an eventful day in San Francisco and that this was essentially meant to be a voyage dedicated to "science" and the "diffusion" of concerns regarding the North Pole, a new terrain for the world. The ship was reinforced more than any other ship taking a similar mission. The article admits that it was a hazardous journey but that everyone was rooting for the crew to return home safely, with the "fruits of glorious discoveries." This work reinforced for me that while America wanted to be the first to reach the North Pole, the main objective of the expedition centered around discovery.

"New York Herald's Report." *The Cleveland Herald* [Cleveland] 22 Dec. 1881: n. pag. Print.

From this article, the American people learned that the USS Jeannette was crushed by Arctic sea ice. It explains how a telegram was received at 2:30 a.m. that morning at the London office of the New York Herald. Clearly, this was a world-wide affair. It explains the events from when the ship started to sink to the rescue of some of the men in Siberia. Everyone was willing to come together to help the mission succeed, and it took an international effort to save the remaining crew and retrieve the fallen crew. This article reminded me that the whole country was in support of the USS Jeannette and awaiting word on her progress. When the ship sank, instead of letting their national dream sink as well, the country rallied in support of the survivors and treated the entire crew like military heroes.

"Off to the Pole." *New York Herald* [New York] 9 July 1879: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016.  
<<http://chroniclingamerica.loc.gov/lccn/sn83030313/1879-07-09/ed-1/seq-3/>>.

This is a primary newspaper article published the day after the U.S. Jeannette started its mission to the North Pole. It describes a telegraph sent to the newspaper from De Long and his crew. There were terrible clouds of dust when they left the bay from a coming storm; however, there were gleams of sunlight, and they were prepared to deal with the conditions. The article captures the national excitement over the start of the voyage of the USS Jeannette. The description in this article made me feel the joy and excitement that

the entire country felt when they set the USS Jeannette off to sea to claim the North Pole for America.

"The Open Polar Sea." *The New York Times* [New York] 2 Nov. 1871: n. pag. *The New York Times Archive*. Web. 4 Mar. 2016. <<http://query.nytimes.com/mem/archive-free/pdf?res=950CE4DE1639EF34BC4A53DFB767838A669FDE>>.

This is a primary newspaper article that claims an open polar sea was found from 42 degrees to 60 degrees off of Greenwich, leading to it possibly being connected to Siberia. The men who passed on this information were sailing on a diminutive ship, and all of the officers died, leaving many wondering what was above them at the North Pole. This article helped me understand what people thought about the Arctic in the late 1800s and why the Arctic became an area of national interest.

"The Polar Paradise." *The New York Times* [New York] 9 May 1879: n. pag. *The New York Times Archive*. Web. 5 Mar. 2016. <<http://query.nytimes.com/mem/archive-free/pdf?res=9E07EEDE133EE63BBC4153DFB3668382669FDE>>.

This is a primary newspaper article published about two months before the USS Jeannette set sail. The summer seasons are the best time for Arctic exploration, when people no longer envision bitter winds but beautiful snow-covered landscapes. It was our nation's desire to discover new landscapes that drove the USS Jeannette on its mission. This article discusses how the Arctic had not been touched by man, which made it irresistible. This article helped me understand the nation's need to keep exploring and to prove its place on the world stage.

"The Reported German Discovery of an Open Polar Sea." *The New York Times* [New York] 28 Oct. 1871: n. pag. *The New York Times Archive*. Web. 4 Jan. 2016. <<http://query.nytimes.com/mem/archive-free/pdf?3res=9F0CEEDE1439E43BBC4051DFB667838A669FDE>>.

This is a primary newspaper. A German ship supposedly discovered the open polar sea, not from the Pacific, but from the Atlantic. However, even noted in the telegram that was copied into the newspaper's article, this discovery was tentative at best. Though this discovery, if proved true, would be a giant step forward for science, the world still

yearned for definite proof on whether there really was an open polar sea at the top of the world. This article helped me understand the competing and unproven theories that swarmed around the concept of the Arctic. There were even maps drawn up based on these theories even though they were unproven.

"The Unknown Arctic World." *New York Herald* [New York] 15 July 1878: n. pag. *Chronicling America: Historic American Newspapers*. Web. 5 Mar. 2016.  
<<http://chroniclingamerica.loc.gov/lccn/sn83030313/1878-07-15/ed-1/seq-2/>>.

This is a primary newspaper describing how happy people were that Bennett decided to fund this polar expedition. After Bennett's financial success with Stanley and Livingstone in Africa, the Arctic was the next place to focus his newspaper. There were so many questions about the Arctic, and people all around the world wanted the answers. Places such as New Guinea were mysterious, but Bennett believed the world deserved to learn what was above them. However, starting this expedition was not easy, as there were many controversies regarding which route would lead the men to the the North Pole quickly and safely and bring them all back home. Still, less than a year later, the USS Jeannette would leave the Bay of San Francisco because the most important thing was to "find new coasts and new lands, to find the Pole." This article helped me understand why Bennett focused on the Arctic and how the American public was as interested in the Arctic back then as we are with space today.

### **Historical Manuscripts in an Archive**

Ambler, James M. M. "Atmospheric Observations on Board U.S. Arctic Steamer Jeanette 1879-81." 1881. US Navy Bureau of Medicine and Surgery Office of Medical History Collection, Washington, DC. *The National Archives*. Web. 8 May 2016.  
<<https://archive.org/details/JeanetteAtmosphericObservationsLogsinglePages>>.

This is an actual logbook that was completed by Dr. Ambler, the surgeon on board the USS Jeannette. It was located in 1883 by Lieutenants Giles B. Harber and William H. Scheutze, who were sailing along Siberia's Lena Delta looking to retrieve the belongings and bodies of the crew of the USS Jeannette. It was emotional to see the actual handwriting of one of the crew of the USS Jeannette, who lost his life serving his

country. Seeing an actual logbook helped me understand why such historical records cannot be readily scanned or read by computers. From this logbook, it was apparent how meticulous the crew of the USS Jeannette were in taking and recording their observations (e.g., relative humidity and barometer readings). Dr. Ambler's descriptions of the decks being wet or dry also highlighted the danger they were in and how they were at the mercy of Mother Nature.

"The Private Journal of James Markham Ambler Together with Other Papers." June 1914. *Archive*. Web. 3 Oct. 2015. <<https://archive.org/details/AmblerPrivateJournal>>.

This is a primary source, because it is the full, private journal of James Markham Ambler. Ambler served in the U.S. Navy and was a surgeon and medical officer on the USS Jeannette. He kept a detailed journal of the crew's health during the entire voyage. The logs were discovered when the bodies of De Long and his men were found. This is a fascinating account of life on the USS Jeannette. As the medical doctor on-board, Dr. Ambler not only describes the crew's symptoms and afflictions and how he treated them (often with brandy), but he also frequently notes elements of the weather and makes reference to discoveries made on the ship (e.g., how no fresh water was found and all water had to be distilled). I learned from this journal how the entire crew were involved in the scientific aspects of the voyage, which may help explain why they took such pains to secure the ship's logbooks.

### **Committee Hearing and Testimony**

United States. Cong. House. Committee on Naval Affairs. *Hearings on the Jeannette Inquiry. Before the Committee on Naval Affairs of the United States House of Representatives*. 48th Cong. Washington: GPO, 1884. *Archive*. Web. 9 Jan. 2016. <<https://archive.org/stream/jeannetteinquiry00unit#page/n9/mode/2up/search/+jeannette>>.

This was written by the Committee on Naval Affairs from the House of Representatives and includes testimony from survivors of the USS Jeannette and family members of Jeannette crew who died during the ship's voyage to the North Pole. Arguments are made that the ship itself was not prepared or

properly stocked for the nature of the expedition. Mr. Collins's brother testified that Mr. Collins's scientific work on the USS Jeannette was interfered with by Commander De Long. Most troubling was the accusation that Melville delayed his efforts to search for the lost crew and could have saved additional lives if he had acted sooner. Since the crew were treated like heroes who had served their country, this transcript helped me see the controversy that also surrounded the USS Jeannette.

## Websites

Brooks, Charles Wolcott. "The Object of Arctic Explorations." Meeting of the California Academy of Sciences. San Francisco. 6 June 1881. *Global Gateway*. Global Gateway, n.d. Web. 27 Dec. 2015. <[http://frontiers.loc.gov/cgi-bin/query/r?intl/mtftext:@field\(DOCID+@lit\(mtfgc39416\\_15\)\)>](http://frontiers.loc.gov/cgi-bin/query/r?intl/mtftext:@field(DOCID+@lit(mtfgc39416_15))>).

This transcript of a speech given at a meeting of the California Academy of Sciences was presented in 1881 at a time when the American public was unsure of the fate of the USS Jeannette. Not having heard news from the ship, Congress approved three search and rescue missions. The commanding officers of one of these ships, the USS Rodgers, were present for this speech. This speech helped me understand how important Arctic exploration was considered even back in the 1800s and that the voyage of the USS Jeannette wasn't only about being the first nation to the North Pole but also about better understanding our world and improving our quality of life.

Hirzel, David. "Rough Weather All Day: A Firsthand Account of the Jeannette Search Expedition, 1881–1882." *Sea History*. N.p., Spring 2015. Web. 6 Mar. 2016. <<http://www.seahistory.org/assets/SH150-Feature-Article-Rough-Weather-All-Day.pdf>>.

The USS Jeannette sailed to the Mare Island Shipyard before it took off in July 1879 from San Francisco. In 1880, the U.S. Navy put together a rescue mission to find the supposedly-lost USS Jeannette. The Jeannette had been stuck in the sea ice since September 1879. This is a primary source with quotes from the men on-board the USS Rodgers. They searched around Wrangel Island, hoping to find traces of the crew of the USS Jeannette. However, they found no trace. This account made me aware of the

support behind the rescue missions to locate the USS Jeannette and the efforts the rescue ships went to (e.g., where they traveled, who they spoke with).

"A Lengthy Deployment the Jeannette Expedition in Arctic Waters as Described in Annual Reports of the Secretary of the Navy, 1880-1884." *Naval History and Heritage Command*. N.p., 8 Apr. 2015. Web. 15 Nov. 2015. <<http://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/l/uss-jeannette-expedition.html>>.

The USS Jeannette was Bennett's private property. However, the ship's journey represented the dreams of the nation and so the U.S. Navy commissioned the ship before it set sail for the North Pole. It is hard to imagine a time when the entire country was so uniformly in support of an issue. That support must have helped fuel the crew to carry on in the face of extreme hardship and to want to protect the ship's logbooks even when they themselves were past saving.

## **Interview**

Compo, Gilbert. E-mail interview by Flora Ranis. 9 May 2016.

Gilbert Compo is Senior Research Scientist at University of Colorado's Cooperative Institute for Research in Environmental Sciences and NOAA's Earth System Research Laboratory Physical Sciences Division. He is working with the 20th Century Reanalysis Project (20CR) out of the University of Colorado. He answered my questions about the role of historical data in present-day weather and climate models and why these models are important. The actual data collected by the crew of the USS Jeannette were used by 20CR! By including historical data from ships' logbooks, weather and climate models are more accurately able to reconstruct past weather events and predict future extreme weather and climate changes based on atmospheric fluctuations. This interview with someone who is actually analyzing and interpreting the data from the USS Jeannette was thrilling to be part of. This interview helped me understand how key it was for scientists to even recognize there was value in the logbooks, records, and journals of historical ships. These documents had been (and many still are) wasting away unseen in archives.

By inputting the data from these historical documents into today's supercomputers and algorithms, we honor the legacy of the crews who created these measurements and observations. I listed this source as primary because 20CR is currently using the data from the USS Jeannette.

## Photographs and Images

"Next-to-Last Page of De Long's Journal." *Ibiblio*. Center for the Public Domain, n.d. Web. 9 May 2016.

<<http://www.ibiblio.org/hyperwar/OnlineLibrary/photos/images/h92000/h92144.jpg>>.

This is a photograph of one of the last entries in De Long's journal. The content of this page is included in De Long's wife's account of her husband's expedition, but there it appears in typed font. Here, it appears in De Long's original handwriting, which is all the more powerful. It was clear to me by looking at the handwriting and reading the words, that De Long knew there was no hope of him surviving, yet he continued to document his experiences and to protect these records. The crew's journal entries tell the true story of how horribly they suffered and, at the same time, reveal the humanity that the crew displayed through the very end.

"NH 92145 Jeannette Arctic Exploring Expedition, 1879-1881." *Naval History and Heritage Command*. N.p., n.d. Web. 17 Jan. 2016. <<http://www.history.navy.mil/our-collections/photography/us-people/i/iverson-nelse/nh-92145.html>>.

This photograph is of the last page in Commander De Long's journal. It is dated from October 25th to the 30th. De Long was at the head of the Lena River Delta, Siberia with his crew. In their final days, De Long had to witness the death of his crew, sometimes more than one a day. This final journal entry impacted me greatly and reminded me of the ultimate sacrifice these men made in the name of our country and discovery.

*Plan of the Last Camp, Showing the Position in Which the Bodies Were Found*. 1884. Illustration. Naval History and Heritage Command. NH 92152.

This sketch shows where the bodies of De Long and nine of his men were located about four months after they died in the snow of Siberia. In addition to the sacrifices these men made, what is remarkable is the effort the crew went to to protect the ship's logbooks and leave a marker so these records could be retrieved. This chilling image helped me realize how much these men sacrificed and how they were determined to protect the ship's data until their last day.

"USS Jeannette." *Naval-history*. N.p., n.d. Web. 18 Jan. 2016. <[http://www.naval-history.net/OW-US/Jeannette/USS\\_Jeannette.htm](http://www.naval-history.net/OW-US/Jeannette/USS_Jeannette.htm)>.

This is a primary photograph taken before the USS Jeannette set sail from France in 1878. Seeing an original photograph of the ship helped me understand what the crew were working with when they entered the Arctic and the sense of loss and hopelessness they must have felt when the ship finally sank.

## Secondary Sources

### **Books**

Cox, Lynne. *South with the Sun*. New York: Alfred A. Knopf, 2011. PDF file.

This book discusses the world's fascination with the North and South Poles. In detailing the life of Ronald Amundsen, who reached the South Pole in 1900 and later attempted to reach the North Pole, the work brings to life the hardships and repeated failures faced by the few who dared to reach the poles. It was easy for me to think that the North Pole being so distant and devoid of human comforts would be insignificant in human history, but this text changed my thinking and helped me realize why discovery of the poles was important and the next logical step for the American people.

Henderson, Bruce. *Fatal North*. Menlo Park: Bruce Henderson, 2014. Print.

This book details the U.S.'s first attempt to reach the North Pole on the *Polaris*. The *Polaris* was commanded by Charles Francis Hall, who died before reaching the North Pole. The voyage was meant to be a morale booster for the nation. It was commissioned by President Ulysses S. Grant. Included are diaries, family papers, and forensic records on the first mission. This work helped me understand not only why previous attempts to reach the North Pole failed but why the nation was so interested in this exploration.

Sides, Hampton. *In the Kingdom of Ice*. New York: Double Day, 2014. Print.

This book tells the story of the USS *Jeannette* and of its captain, George Washington De Long. James Bennett asked De Long to go on this Arctic mission, for De Long had been obsessed with the Arctic ever since he had been sent there on a rescue mission. I learned what De Long brought onto the ship with him, how the crew lived, what happened when ice destroyed the ship, and what followed when the crew were forced to abandon ship.

This book was a major contributor to my paper because it detailed the journey of the USS Jeannette from start to finish and led me to other sources when I had questions about the expedition.

Wright, Helen S. "The Jeannette Expedition 1879-1881." *The Great White North The Story of Polar Exploration*. New York: Macmillan Company, 1910. 345-68. Print.

This chapter provides a summary of the USS Jeannette's voyage and fate. It particularly helped me understand the previous and later attempts to reach the North Pole by American and international interests. Also interesting, is the author's contention that of all the attempts to reach the North Pole, the crew of the USS Jeannette suffered the most and received the most praise for their efforts.

## Encyclopedia

World Heritage Encyclopedia. "USS Jeannette (1788)." *Project Gutenberg Self-Publishing Press*. N.p., n.d. Web. 26 Dec. 2015.  
<[http://self.gutenberg.org/articles/uss\\_jeannette\\_\(1878\)](http://self.gutenberg.org/articles/uss_jeannette_(1878))>.

The USS Jeannette's crew sent their last communication to Washington, DC before starting toward the north from St. Lawrence Bay, Siberia. On June 12th, the ice's pressure began to crush the ship. In addition to this summary of the USS Jeannette's voyage to the Arctic, this site describes the ship when it was under the UK flag as the HMS Pandora. This site helped me understand why De Long picked the Pandora for his voyage to the North Pole and what it took to change the owner and name of the vessel.

## Newspaper Articles

Gertyk, Olga. "Jeannette Crew Members Survived After an Epic Escape From the Arctic." *The Siberian times* 23 Feb. 2015: n. pag. *Siberian Times*. Web. 13 Mar. 2016.  
<<http://siberiantimes.com/other/others/features/f0064-russian-plan-to-locate-and-raise-the-wreck-of-schooner-uss-jeannette-in-arctic-waters/>>.

This article includes a photograph of seven of the thirteen survivors of the USS Jeannette's deadly voyage. The men are huddled together in Siberia. This picture made me realize that the survivors were well cared for by the local people and that it was international support that allowed not only the survivors to get back home, but the bodies of the crew who died and the logbooks from the ship to also be returned to the US.

Gertyk, Olga. "Russian Plan to Locate and Raise the Wreck Schooner USS Jeannette in Arctic Waters." *The Siberian Times* 23 Feb. 2015: n. pag. *The Siberian times*. Web. 26 Dec. 2015. <<http://siberiantimes.com/other/others/features/f0064-russian-plan-to-locate-and-raise-the-wreck-of-schooner-uss-jeannette-in-arctic-waters/>>.

This recent article describes how a Siberian, Andrey Khoroshev, wants to locate and raise the sunken USS Jeannette. What is amazing about this story is that he believes raising the ship will bring the US and Russia closer together, which is exactly what the sinking of the USS Jeannette did. This article helped me understand how necessary it was for the US to work with other governments in order to rescue and return the crew (living and deceased) and the ship's logbooks.

Gillis, Justin. "Naomi Oreskes, a Lightning Rod in a Changing Climate." *The New York Times* [New York] 15 June 2015: n. pag. *The New York Times*. Web. 3 Oct. 2015. <[http://mobile.nytimes.com/2015/06/16/science/naomi-oreskes-a-lightning-rod-in-a-changing-climate.html?%20r=0&\\_r=1](http://mobile.nytimes.com/2015/06/16/science/naomi-oreskes-a-lightning-rod-in-a-changing-climate.html?%20r=0&_r=1)>.

Naomi Oreskes works at Harvard University's Science Center and fights for climate change action. People who do not believe in climate change call her a communist, but she is firing back with a documentary on how people are being kept from the truth. She compiled 928 scientific findings showing that humans are the reason the polar ice caps are melting. This work was important for my paper because it helped me understand the role the ship's data pertaining to Arctic meteorological and geographical conditions play in present-day weather and climate prediction models.

Harris, Robert R. "Abandon Ship!" *The New York Times* [New York] 14 Aug. 2014: n. pag. *The New York Times*. Web. 4 Oct. 2015. <[http://www.nytimes.com/2014/08/17/books/review/in-the-kingdom-of-ice-by-hampton-sides.html?\\_r=2](http://www.nytimes.com/2014/08/17/books/review/in-the-kingdom-of-ice-by-hampton-sides.html?_r=2)>.

James Gordon Bennett, Jr., the editor of *The New York Herald*, was interested in writing a story about men determined to put an American flag on the North Pole. It was the last unexplored region of the planet. Nobody had ever been there before, and a story about how America was the first nation to reach the pole would make Bennett's sales figures soar. Most stories about the USS *Jeannette* focus on the crew, and this article was helpful because it provided background on the motivation behind Bennett financing the USS *Jeannette*.

Hickey, Hannah. "Volunteers Use Historic US Ship Logbooks." *University of Washington*. N.p., 28 Mar. 2013. Web. 18 Jan. 2016.  
<<http://www.washington.edu/news/2013/03/28/volunteers-use-historic-u-s-ship-logbooks-to-uncover-arctic-climate-data/>>.

This is the website for the University of Washington. This article explains how citizen-scientists are now going through 19th century ships' logs to gain more information about the Arctic and the then-new Alaskan territories. A changing Arctic climate is what sparked Kevin Wood's interest, the climatologist heading the volunteer project. Volunteers, or citizen-scientists, finished the logs of the USS *Jeannette*, a ship whose crew spent 2 years drifting in the Arctic ice, where they took hourly measurements logging every piece of information. This work, specifically highlighting the logbooks from the USS *Jeannette*, helped me realize how valuable the data saved from the USS *Jeannette* are and how they are being used today to inform weather and climate models in order to save lives tomorrow.

"How Long-Dead Arctic Explorers are Helping to Improve Climate Change." *Outside* 25 Oct. 2012: n. pag. *Outside Online*. Web. 17 Jan. 2016.  
<<http://www.outsideonline.com/1905311/how-long-dead-arctic-explorers-are-helping-improve-climate-science>>.

This article highlights how the logbooks from the USS *Jeannette* miraculously survived and are being digitized so their data can be analyzed today. The National Oceanic and Atmospheric Administration and the National Archives and Records Administration are jointly working through the Arctic Rediscovery Project to give scientists access to archives dating back more than 150 years. This article highlighting the ways the data

from the USS Jeannette's logbooks can be used today to improve weather and climate predictions helped me see the legacy that the USS Jeannette left and how that expedition over a hundred years ago is still impacting us today.

Lebowitz, Larry. "'In the Kingdom of Ice' Creates a Disastrous Arctic Voyage." *Miami Herald* [Miami]: n. pag. *Miami Herald*. Web. 9 Jan. 2016. <<http://www.miamiherald.com/entertainment/books/article1980233.html>>.

The true story of the USS Jeannette was not well known until Hampton Sides came out with his latest novel. The exploration of the USS Jeannette was paid for by James Gordon Bennett, owner of the New York Herald, who also financed Lord Henry Stanley's expedition in search of David Livingstone, a missionary and explorer. The number of newspapers and websites that reviewed Hampton Sides's book (and reviewed it enthusiastically) tells me that the story is one that everyone can relate to and is one more people should know about.

Price, Matthew. "'In the Kingdom of Ice' by Hampton Sides." *The Boston Globe* [Boston] 2 Aug. 2014: n. pag. *The Boston Globe*. Web. 15 Nov. 2015. <<https://www.bostonglobe.com/arts/books/2014/08/02/book-review-kingdom-ice-the-grand-and-terrible-polar-voyage-uss-jeannette-hampton-sides/ttq6hsxdrDow5l5CVxD4EP/story.html>>.

This is a review of Hampton Sides's book, "In the Kingdom of Ice." People ventured into the Arctic and just as many never returned. One would find storm-tossed seas, treacherous tundra, rocky seacoasts, and volcanic islands. Still, there was beauty in the Arctic that many people wanted to discover. Aside from the deadly ice packs, there was abundant bird and animal life. Bennett and De Long were on a quest "now fanciful but then plausible" to prove the idea of an Open Polar Sea. This review focused on the beauty and wonder of the Arctic and made me realize we still have a certain natural fascination with the unknown generally and the Arctic specifically.

Sides, Hampton. "Why an 1879 Voyage is a Time Machine for Climate Change." *The Wall Street Journal* [New York] 1 Aug. 2014: n. pag. *Wall Street Journal*. Web. 3 Oct. 2015. <<http://www.wsj.com/articles/why-an-1879-voyage-is-a-time-machine-for-climate-change-1406937914>>.

This article describes how climate scientists need to be able to compare current measurements with past readings in order to measure and predict change. From this article, I learned that scientists today are comparing past recordings of polar ice to recent data. Past records are coming mainly from historical ships like the USS Jeannette.

## Magazine Articles

Dugard, Martin. "Stanley Meets Livingstone." *Smithsonian Magazine* Oct. 2003: n. pag. *Smithsonian Magazine*. Web. 17 Jan. 2016. <<http://www.smithsonianmag.com/history/stanley-meets-livingstone-91118102/?no-ist=&page=1>>.

Dr. David Livingstone, a British explorer, once agreed to go in search of the root of the Nile because he needed the money and adventure the expedition afforded. However, five years later he was declared missing. James Gordon Bennett, Jr., the then editor of The New York Herald, decided to do what the British could not-locate Dr. Livingstone and make a name for his country and his newspaper. Bennett sent Henry Morton Stanley in search of Livingstone. Stanley was twenty-eight when he left and is credited with saying this famous line upon finding Dr. Livingstone, "Dr. Livingstone, I presume." This article helped me understand the mindset of Mr. Bennett, who financed the USS Jeannette. Clearly, Bennett had a history of arranging elaborate scenarios in order to boost his newspaper's ratings.

Herman, Jan Kenneth. "Tragedy at Lena Delta." *All Hands Magazine of the U.S. Navy* July 1985: 24-29. *United States Navy*. Web. 5 Jan. 2016. <[http://www.navy.mil/ah\\_online/archpdf/ah198507.pdf](http://www.navy.mil/ah_online/archpdf/ah198507.pdf)>.

This article provides a synopsis of the tragedies that befell the USS Jeannette. In addition, this article includes a detailed map that showed me where the ship traveled while it was stuck in the ice, how close it was to reaching the North Pole, and where the three smaller ships got separated from each other and two made landfall.

"How Long-Dead Arctic Explorers are Helping to Improve Climate Change." *Outside* 25 Oct. 2012: n. pag. *Outside Online*. Web. 17 Jan. 2016. <<http://www.outsideonline.com/1905311/how-long-dead-arctic-explorers-are-helping-improve-climate-science>>.

This article highlights how the logbooks from the USS Jeannette miraculously survived and are being digitized so their data can be analyzed today. The National Oceanic and Atmospheric Administration and the National Archives and Records Administration are jointly working through the Arctic Rediscovery Project to give scientists access to archives dating back more than 150 years. This article highlighting the ways the data from the USS Jeannette's logbooks can be used today to improve weather and climate predictions helped me see the legacy that the USS Jeannette left and how that expedition over a hundred years ago is still impacting us today.

Isaacson, Andy. "Into Thin Ice." *National Geographic* Jan. 2016: n. pag. Print.

Current data of the Arctic is now only taken during the summer. If vessels went out during the winter months, they would become stuck in the ice, risking their lives, as did the men on board the USS Jeannette. Because they could not have known their fate, the USS Jeannette's crew drifted in the sea ice for almost two years; however, they compiled information that is much needed today. This work made me realize how rare the year-round data from the USS Jeannette really are since most Arctic data are still collected only in the summer months.

Mayer, Frank W. "Frozen Landscape." *The Virginia Magazine of History and Biography* 1 July 1997: n. pag. *High Beam Research*. Web. 09 Dec. 2015. <<https://www.highbeam.com/doc/1P3-23232842.html>>.

This work is unique because it describes what is left today of the De Long Islands (i.e., Bennett, Henrietta, and Jeannette). This is important because the tale of the USS Jeannette is so fantastic that it is easy to forget that it is true. In addition, understanding the terrain of the land helps me understand what the crew had to endure and overcome. I also learned that it took took George W. De Long and his men two and a half years to attempt to reach the North Pole. It was a treacherous journey, but the men avoided

cannibalism and scurvy, and they never forgot their mission, even when it seemed that all would fail.

Tobar, Hector. "'Kingdom of Ice' Uncovers a Polar Adventure Frozen in Time." *The Los Angeles Times* [Los Angeles] 1 Aug. 2014: n. pag. *The Los Angeles Times*. Web. 15 Nov. 2015. <<http://www.latimes.com/books/jacketcopy/la-ca-jc-hampton-sides-20140803-story.html>>.

George Washington De Long had no trouble finding men for his expedition. The young men who volunteered wanted to be known as heroes as their fathers were, during the Civil War. Once sailing, the men searched for legendary Wrangle Land. They thought it might be an island, for people had only ever seen a glimpse of it. De Long naturally went toward it, and found himself stuck in the ice. This work helped me realize how popular the story of the USS Jeannette is for those who learn about it, but too few are aware of the men and mission behind the USS Jeannette.

Worral, Simon. "The Hair-Raising Tale of the U.S.S. Jeannette's Ill-Fated 1879 Polar Voyage." *National Geographic* 25 Sept. 2014: n. pag. *National Geographic*. Web. 3 Oct. 2015. <<http://news.nationalgeographic.com/news/2014/09/140924-jeannette-hampton-sides-north-pole-gilded-age-ngbooktalk/#>>.

I learned that this Arctic expedition started on July 8th, 1879. Eventually, twenty men died and thirteen survived. It also talks about Hampton Sides and his book, "In the Kingdom of Ice." De Long loved the Arctic and wanted to go on the expedition and explore for the glory of his country and for himself. It took him five years to prepare. As the boat left, swarms of people waved and cheered. You would have thought they were going to the moon.

### **Film and Audio/Video Recordings**

"In 1879, Explorers Set Sail to Solve Arctic Mystery, Once and for All." *National Public Radio*. N.p., 25 Aug. 2014. Web. 6 Mar. 2016. <<http://www.npr.org/2014/08/02/337149427/in-1879-explorers-set-sail-to-solve-arctic-mystery-once-and-for-all>>.

When the ship set sail for the Arctic, there were more than thirty-three men on-board, who all hoped to find a magnificent paradise at the top of the world, which they could claim in the name of American Exploration. George Washington De Long had missed the Civil War by a few months and decided to make his mark by commanding the USS Jeannette. This description of the USS Jeannette's crew helped me understand why these men volunteered for this dangerous and uncertain mission.

"Arctic Exploration." *The Race to the Poles*. Dir. SueAnn Fincke. Learning Channel, 2000. *Exploration Museum*. Web. 8 May 2016. <<http://www.explorationmuseum.com/2013/12/documentary-the-race-for-the-poles/>>.

This documentary highlights the rivalry between Mr. Peary and Dr. Cook in their quest to be the first to reach the North Pole. The re-enactments and interviews with Peary's descendants helped me not only understand the timeline of Arctic exploration but also the hardships the men endured and determination they exhibited. Mr. Peary lost his toes to frostbite and failed to reach the North Pole on four different attempts but never gave up. Peary telegraphed The New York Herald in August of 1909 only to learn that Dr. Cook claimed to have reached the North Pole five days earlier. Dr. Cook's declaration of reaching the North Pole, while celebrated by the international community and American people, was called into question by Mr. Peary. Dr. Cook's paperwork was found to lack evidence of having reached the North Pole, and Mr. Peary's accounts were found by the National Geographic Society and House Naval Affairs Committee to be valid.

*Book TV: Hampton Sides, "In the Kingdom of Ice."* Book TV. C-Span, n.d. Web. 20 Aug. 2014. <<http://www.c-span.org/video/?320996-1/book-discussion-kingdom-ice>>.

In this C-Span segment, author Hampton Sides discusses his book, *In the Kingdom of Ice*, which was coming out that summer. He describes how he discovered the topic while writing an article for National Geographic. He found it interesting because it was so overlooked. "If you ask 100 people, one will know the story." This interview helped me think about additional primary sources concerning the USS Jeannette and gave me a greater appreciation for the topic and how the crew are American heroes.

Sides, Hampton. *Book Discussion on "In The Kingdom of Ice."* Politics and Prose Bookstore. Washington, DC. C-SPAN. N.p., 20 Aug. 2014. Web. 9 Jan. 2016. <<http://www.c-span.org/video/?320996-1/book-discussion-kingdom-ice>>.

At the time, the Arctic was one of the last uncharted regions of the world, as it was one of the hardest places to reach. Most of the photographs of the USS Jeannette were lost with the sinking of the ship. However, it is a story of survival. At the Naval Academy in Annapolis, De Long is viewed as one of the great exploration heroes in our history. This talk showed me how the crew of the USS Jeannette are still celebrated and honored in the military but have been mostly forgotten by the public. Their sacrifices, honor in the face of adversity, and contributions to modern climatology demand that their story be told to all for generations to come.

Sides, Hampton. *Hampton Sides Interview. Drake in the Morning.* N.p., 11 Aug. 2014. Web. 9 Jan. 2016. <<https://www.youtube.com/watch?v=SUUrKuohp-c>>.

This interview was conducted on a morning radio talk show. Here, Sides explained that his interest in the Jeannette was sparked when he was on a mission for National Geographic in Norway. Although the USS Jeannette disproved the Open Polar Sea theory, there might soon be an open polar sea in response to climate change. This interview helped me cement the connection between historical data (like the logbooks from the USS Jeannette) and predicting future weather patterns.

Sides, Hampton. "In 1879, Explorers Set Sail to Solve the Arctic Mystery." Interview by Scott Simon. *ESL-Bits*. National Public Radio, 2014. Web. 13 Mar. 2016. <<http://esl-bits.net/listening/Media/2014-09-05/Arctic.Mystery/default.html>>.

In this interview, Hampton Sides explains how hard it is to imagine today how people felt about the Arctic at the time of the USS Jeannette. No one definitively knew what was above them and yearned for answers. There could have been ice, land, or sea, or even civilization. The biggest question of all was how to reach the Arctic. People wondered whether there were warm water currents that broke the ice and let ships pass through to the pole. This interview helped me answer some questions I had after reading Mr. Sides

book on the USS Jeannette and helped me realize how the whole country was fixated on the North Pole.

Sides, Hampton. *NWS Hampton Sides HD*. Interview by Doug Stanton. *YouTube*. N.p., n.d. Web. 9 Jan. 2016. <<https://www.youtube.com/watch?v=GF000RDVIGk>>.

James Gordon Bennett was a very wealthy man and he was "sick," as was the rest of the world, with Arctic fever. In this interview, Hampton Sides details how the crew of the USS Jeannette did not succumb to mutiny, scurvy, or murder as was characteristic of the previous attempts to reach the North Pole. Despite the tragedy that befell the USS Jeannette, I learned from this interview that the crew were special in many ways, and this contributed to them being treated like war heroes even though they did not reach the North Pole.

Sides, Hampton. *Visiting Writers Series: Hampton Sides*. Colorado College. Colorado Springs, Colorado. *YouTube*. N.p., 30 Sept. 2014. Web. 9 Jan. 2016. <<https://www.youtube.com/watch?v=5cfUs5SdFEk>>.

In 1880, many believed that people lived at the center of the Earth, that holes at the poles led to them, and that there was an open polar sea. There were many theories about what was at the North Pole. America was only starting to learn about the power of the Gulf Stream and the Kuro Siwo, and many philosophers and scientists believed the current went under the ice and met at the Arctic. This lecture by Hampton Sides taught me what the prevailing theories were at the time the USS Jeannette was being fortified for Arctic travel. These theories influenced how the crew outfitted the ship and what they expected to see and experience during the expedition. The USS Jeannette proved every theory about the Arctic was wrong.

Wood, Kevin. *Arctic: Large-Scale Environmental Data Rescue Through Crowdsurfing*. The Seattle Forum on Science Ethics and Policy. University of Washington Seattle. 25 Mar. 2013. *YouTube*. N.p., n.d. Web. 18 Jan. 2016.

Dr. Kevin Wood discussed the Joint Institute for the Study for the Atmosphere and Ocean and how it is collaborating with other agencies to retrieve old ships' logs so the data can

be analyzed in new ways today. He discussed the role of crowd surfing and how important it is to find volunteers to transcribe what the computers cannot. This lecture pointed out to me how data from historical ships is being used to fill in the gaps in our present-day climate and weather models.

## Websites

"1879-1881: USS Jeannette Sails for the North Pole." *Climate 4 You*. N.p., n.d. Web. 13 Mar. 2016. <<http://www.climate4you.com/ClimateAndHistory%201850-1899.htm#1878:%20USS%20Jeanette%20sails%20for%20the%20North%20Pole>>.

This source has an original photograph of the USS Jeannette. I learned that the HMS Pandora, the original name of the USS Jeannette, was 43 meters in length and originally a gunboat for the British Navy. The USS Jeannette carried the latest technology available when it left because this expedition was meant to be scientific in nature. The crew consisted of thirty officers and crew and three civilians. It was fascinating to see an actual picture of the USS Jeannette, and this work helped me understand the impact of the Arctic conditions on specific parts of the ship. I was surprised by how small the ship looked given how it was fortified for Arctic travel and the harsh conditions it would face.

"20th Century Reanalysis." *Earth System Research Laboratory*. U.S. Department of Commerce and National Oceanic & Atmospheric Administration, 16 Nov. 2015. Web. 9 Feb. 2016. <[http://www.esrl.noaa.gov/psd/data/20thC\\_Rean/](http://www.esrl.noaa.gov/psd/data/20thC_Rean/)>.

This website is dedicated to reanalyzing historical data in order to develop a 4D global data set that covers the 1800s through to the present. Sample maps, cross-sections, and time series projections are presented. From this, I learned there are many different ways to use historical data to inform research and weather/climate predictions. A list of recently published research that used reanalyzed historical data also shows its many applications.

Allan, Rob. "Building Better Models." Interview by Philip Brohan. *Oldweather*. N.p., n.d. Web. 18 Jan. 2016. <<http://blog.oldweather.org/?s=Jeannette>>.

Dr. Rob Allan is the project manager of Atmospheric Circulation Reconstruction Over the Earth (ACRE), which is a consortium of international partners dedicated to recovering historical weather observations. For example, Dr. Allan and his team are recovering, inputting, and reanalyzing the data obtained from ship logs dating back 250 years. This interview provided an in-depth account of how the original handwritten data from hundreds of years ago are being used today to more accurately predict environmental events, such as floods and droughts, that can impact large numbers of people.

Allan, Rob, and Rick Crouthamel. "Data to the Rescue." *International Environmental Data Rescue Organization*. N.p., n.d. Web. 9 May 2016. <<http://iedro.org/wordpress/wp-content/uploads/2014/01/ACRE-IEDRO-InternationalInnovation.pdf>>.

This website with Dr. Allan and Dr. Crouthamel went into great detail about the role of historical data in our world today. They both highlighted how most historical data remains handwritten on paper. They estimate that we lose 500,000 pieces of historical data a day (e.g., due to fire, flood, insects, wear and tear, and being misplaced). I learned that short-term data are more likely to be error prone while long-term data are more indicative of broader climatic trends. This piece reinforced how important it is uncover and input historical data, like that contained in the logbooks of the USS Jeannette, in order to more accurately predict future weather and climate changes and patterns. "No other single endeavor will save more human lives and prevent more suffering than locating, imaging, digitizing and archiving the world's historic environmental records."

"The Arctic: Exploration Timeline." *Woods Hole Oceanographic Institution*. N.p., 2006. Web. 1 Apr. 2016. <<http://polardiscovery.whoi.edu/arctic/1879.html>>.

This interactive timeline of polar exploration shows the different expeditions that have attempted (and some succeeded) to reach the North Pole. This website helped me understand how few true attempts there were to reach the North Pole, and how around the 1900s there was a race to the pole with different explorers from different countries competing to be the first to the pole. This also explains why the American people would

have been in such support of the USS Jeannette since attempting to reach the pole was such a massive and rare undertaking.

Brohan, Philip. "Weather and the Jeannette." *Vimeo*. Vimeo, 2015. Web. 10 May 2016. <<https://vimeo.com/122082156>>.

Dr. Philip Brohan works out of the UK and is the scientific lead of the Old Weather project. At this website, he displays the sea-level pressure and near-surface air temperature as observed by the USS Jeannette compared to reconstructed models both with and without the USS Jeannette data added. Seeing a modern-day graph of the data collected by the crew of the USS Jeannette really made me see how valuable these data are and recognize how amazing it was that they were able to measure, record, and keep safe these data nearly 140 years ago. This work certainly helped me develop my paper by explaining exactly how the handwritten notes in the USS Jeannette's logbooks are actually being used today to predict tomorrow's weather.

Capone, Vince, ed. "Shipwrecks: USS Jeannette." *black Laser Learning*. N.p., 27 Sept. 2013. Web. 9 Jan. 2016. <<http://www.blacklaserlearning.com/adventure/shipwrecks-uss-jeannette/>>.

The USS Jeannette was a 142-foot gunboat. Although it was deemed fit for Arctic travel, its hull was still strengthened, showing that people still knew, at the time, of the conditions De Long and his men would soon face. On July 8th, 1879, the USS Jeannette left San Francisco, traveling north. When The USS Jeannette became stuck drifting in the ice, it was around Wrangel Island between the Chukchi Sea and East Siberian Sea. This summary of the sinking of the USS Jeannette, along with an original photograph of the ship, reminded me how quickly and unexpectedly events changed for the crew while they were out at sea. The crew believed they were ready for the Arctic, but humankind is clearly no match for Mother Nature.

"Climate Change: How Do We Know?" *National Aeronautics and Space Administration*. N.p., n.d. Web. 18 Jan. 2016. <<http://climate.nasa.gov/evidence/>>.

This NASA website discusses what climate change is and how it has been measured. This website demonstrates the potential impact of major environmental changes, such as floods and droughts, and underscores the importance of being able to reliably predict weather and climate changes and compare these to past meteorological events. This website helped me understand how important the data contained in the USS Jeannette's logbooks are to researchers and scientists working on weather and climate issues today.

Danner, Jeff. "Woolly Mammoths and the Voyage of the USS Jeannette: Part 1." *Chapelboro*. N.p., 8 Feb. 2015. Web. 9 Jan. 2016. <<http://chapelboro.com/columns/common-science/woolly-mammoths-voyage-u-s-s-jeannette-part/>>.

This article really showed me the impact that the story of the USS Jeannette has on people once they are introduced to the topic. This website on local news in the Carolinas praised Hampton Sides's book on the saga of the USS Jeannette, and the author was as impressed and awestruck by the story as I was. This work supports my contention that the tale of the USS Jeannette is a universal story of danger, discovery, death, and determination that everyone should be aware of.

"Exclusive: Russian Bid to Raise Wreck of US Navy Ship That Tried to be First to Conquer the North Pole and Whose Crew Trekged 500 Miles Across Arctic Ice in Desperate Survival Battle." *Daily Mail*. N.p., n.d. Web. 9 Jan. 2016. <<http://www.dailymail.co.uk/news/article-2967672/Russian-bid-raise-wreck-American-vessel-tried-conquer-North-Pole-crew-trekged-500-frozen-miles-survive.html>>.

In addition to some background information about the USS Jeannette that corroborates other sources I read, this work details how a Russian explorer plans to locate the sunken USS Jeannette, which he estimates is only 54 feet below the surface of the water. Two things are noteworthy about this article. First, it includes an original photograph taken in Siberia of seven surviving USS Jeannette crew members. Second, the article stresses how raising the USS Jeannette could help improve relations between the US and Russia. This helped me understand what a feat it was for so many different countries to come together and search for the USS Jeannette and help the ship's survivors get back to the US.

"Farthest Norths." *Tripod*. N.p., n.d. Web. 17 Jan. 2016. <<http://norpolar.tripod.com/chron.html>>.

This work helped me understand the timeline associated with the various attempts to reach the North Pole. According to this work, the first major attempt at Arctic exploration was conducted by the American ship, the *Polaris*, in 1871. The second attempt is attributed to the HMS *Alert* and was continued by dogsled by British Lieutenant Albert H. Markham. I learned from this work that only a handful of people tried to reach the North Pole and that they all tried multiple times after their earlier attempts failed. This work underscores the difficulty inherent in reaching the North Pole and how passionate a few explorers were in succeeding.

Guterman, Benjamin. "Tracking Arctic Climate Changes." *Society for History in the Federal Government*. N.p., Summer 2014. Web. 4 Jan. 2016. <<http://shfg.org/shfg/federal-history-work/medicine-science/>>.

The U.S. National Climatic Data Center is the central organization in the US that manages global data sets that include data from historical ship logbooks. Thousands of volunteers have already digitized 350,000 pages of data from historical ships. This allows super computers to use this archived data for the first time in an effort to reconstruct weather-related events and predict future weather and its impact on humankind. This website explains the specific organizations benefiting from the addition of historical data and gives examples of how the data are and will be used. This showed me the far-reaching effects historical data, like that from the USS *Jeannette's* logbooks, can have on our world today and tomorrow.

Hickey, Hannah. "Volunteers Use Historic US Ship Logbooks." *University of Washington*. N.p., 28 Mar. 2013. Web. 18 Jan. 2016. <<http://www.washington.edu/news/2013/03/28/volunteers-use-historic-u-s-ship-logbooks-to-uncover-arctic-climate-data/>>.

This is the website for the University of Washington. This article explains how citizen-scientists are now going through 19th century ships' logs to gain more information about the Arctic and the then-new Alaskan territories. A changing Arctic climate is what sparked Kevin Wood's

interest, the climatologist heading the volunteer project. Volunteers, or citizen-scientists, finished the logs of the USS Jeannette, a ship whose crew spent 2 years drifting in the Arctic ice, where they took hourly measurements logging every piece of information. This work, specifically highlighting the logbooks from the USS Jeannette, helped me realize how valuable the data saved from the USS Jeannette are and how they are being used today to inform weather and climate models in order to save lives tomorrow.

"In 1879, Explorers Set Sail to Solve Arctic Mystery, Once and For All." *National Public Radio*. N.p., 25 Aug. 2014. Web. 6 Mar. 2016. <<http://www.npr.org/2014/08/02/337149427/in-1879-explorers-set-sail-to-solve-arctic-mystery-once-and-for-all>>.

When the ship set sail for the Arctic, there were more than thirty-three men on-board, who all hoped to find a magnificent paradise at the top of the world, which they could claim in the name of American exploration. George Washington De Long had missed the Civil War by a few months and decided to make his mark by commanding the USS Jeannette. This description of the USS Jeannette's crew helped me understand why these men volunteered for this dangerous and uncertain mission.

"Jeannette Arctic Expedition, 1879-1881--Overview and Selected Images." *Ibiblio*. Department of the Navy-Naval Historical Center, n.d. Web. 26 Dec. 2015. <<http://www.ibiblio.org/hyperwar/OnlineLibrary/photos/events/ev-1880s/jeannett.htm>>.

According to this webpage, the journey of the USS Jeannette not only tested the crew's will but also their endurance. The USS Jeannette entered the Arctic to the east of Wrangel Island. As the ship drifted for the rest of 1879, 1880, and the first half of 1881, the men occupied themselves by making scientific observations, recording their findings in logs, and hunting seals and polar bears in order to survive. This description of the crew's experiences on the ice and stuck in the ice helped me comprehend the extent of the hardship they endured and what most ships succumbed to.

"Jeannette: 1879." *University of Alaska Fairbanks*. University of Alaska Fairbanks, n.d. Web. 26 Dec. 2015. <<http://www.uaf.edu/files/olli/2015NPfebtalkscoundrelsc.pdf>>.

This is the University of Alaska Fairbanks website. It contains a presentation about the USS Jeannette and its course. In the spring of 1881, the crew had high hopes, and the USS Jeannette broke free from the surrounding ice and floated onward. George Melville, the ship's engineer took a picture of the ship and processed it in the darkroom on board. However, the ship sank the next day, and the picture was lost. This website contains a map showing the route the USS Jeannette took while stuck in the ice. This helped me understand the distance the ship traveled and how close they came to making it to the North Pole and inhabited areas along the Lena Delta after the ship sank.

"Jeannette Arctic Expedition Memorial at the U.S. Naval Academy in Annapolis, Maryland." *DC Memorials*. N.p., 20 Apr. 2013. Web. 9 Feb. 2016. <[http://www.dcmemorials.com/index\\_indiv0003254.htm](http://www.dcmemorials.com/index_indiv0003254.htm)>.

This website has photographs of the memorial for the crew of the USS Jeannette, which was erected at the U.S. Naval Academy in Annapolis, Maryland. I found the photographs moving because the stone is carved so as to appear to be covered in snow, which is how the men died (hungry and cold in the Arctic snow). Also, the inscription at the base of the monument refers to the officers and crew as "heroic" members of the U.S. Navy. The contents of this website helped me with my paper because they taught me that the crew were treated like military heroes when they returned home, but that today, few know of their sacrifices, even though the data they collected are helping not only the United States but other countries across the globe prepare for a more prosperous tomorrow.

Moore, Brian. "Get Serious About the Arctic." *US Naval Insitute*. N.p., 5 Aug. 2012. Web. 26 Dec. 2015. <<http://news.usni.org/2012/08/05/get-serious-about-arctic>>.

This website is published by the U.S. Naval Academy. It sheds light on the central role the Arctic plays in our security and economic interests and commercial maritime operations. Oil production may soon start in Arctic wells. If platforms are built, aircraft will be able to drop supplies to those in distress. This website taught me about the role the

Arctic still plays in our lives as Americans and how there is still so much we don't know about the Arctic. Just as we wanted to be the first nation to reach the North Pole, not much has changed over the last 140 years as we still squabble with other countries about who has which rights over parts of the Arctic.

Moraes, Frank. "Anniversary Post: Arctic Voyage of USS Jeannette." *Frankly Curious*. N.p., 8 July 2015. Web. 9 Jan. 2016. <<http://franklycurious.com/wp/2015/07/08/anniversary-post-arctic-voyage-of-uss-jeannette/>>.

This website was marking the anniversary of the USS Jeannette setting sail from San Francisco. This website is characteristic of the information available about the USS Jeannette. That is, most of the secondary information is from small, obscure sources. This helped me understand that the story of the USS Jeannette has not been told to the mainstream. This article also stressed the scientific nature of the expedition, which helped me formalize my thinking that the legacy of the USS Jeannette is connected to the ship's data and how it is being used today.

"NH 92141 Jeannette Arctic Exploring Expedition, 1879-1881." *Naval History and Heritage Command*. N.p., n.d. Web. 26 Dec. 2015. <<http://www.history.navy.mil/our-collections/photography/us-people/c/chipp-charles-w/nh-92141.html>>.

This website explains the context for a drawing of the USS Jeannette, where the crew of the USS Jeannette are separated and two groups of men, on different boats, are paddling through vicious waters. This is near the end of the USS Jeannette's journey. The USS Jeannette ended its journey at the northern end of the Lena Delta. The ship commanded by the engineer, George W. Melville, landed on the eastern side of the Delta. The other ship was not found. With so few photographs available of the USS Jeannette, drawings helped me gain a clearer picture of the men and their experiences in the Arctic.

"NOAA Launches Research on Next Generation of High Performance Weather, Climate Models." *National Oceanic and Atmospheric Administration*. N.p., 31 Jan. 2014. Web. 4 Jan. 2016. <<http://research.noaa.gov/News/NewsArchive/LatestNews/TabId/684/ArtMID/1768/ArticleID/10430/NOAA-launches-research-on-next-generation-of-high-performance-weather-climate-models.aspx>>.

This website describes the collaboration between the NOAA and the U.S. Navy to develop faster and less expensive supercomputer models in order to better predict changes in Earth's environment "from the depths of the ocean to the surface of the sun." The U.S. Navy is providing \$4.5 million in funding for the project. This website was important to read because it lends legitimacy to the need for accurate weather/climate models. The involvement of the U.S. Navy extends the reach of weather/climate models beyond private environmental groups. According to the U.S. Navy, the development of effective weather/climate models is pertinent to maintaining national security. This website helped me understand the extent of the need for complete and effective models when it comes to predicting weather and climate.

"NOAA, National Archives Team Up With Citizen-Scientists to Reconstruct Historical Climate of the Arctic." *National Oceanic and Atmospheric Administration*. United States Department of Commerce, 24 Oct. 2012. Web. 3 Oct. 2015. <[http://www.noaanews.noaa.gov/stories2012/20121022\\_oldweatherprojectlaunch.html](http://www.noaanews.noaa.gov/stories2012/20121022_oldweatherprojectlaunch.html)>.

Before there were satellites and weather transmitters, there were men and logs. De Long and his men took precise records of the temperature and other weather and water observations. They did this at regular intervals, and so by going from America to the Arctic, they gathered a great deal of information. This website taught me how climate scientists are using data like that from the USS Jeannette to construct climate models that more accurately predict future weather and climate changes.

"'Old Navy' Ship Photo Archive Jeannette." *NavSource Naval History*. N.p., n.d. Web. 6 Mar. 2016. <<http://www.navsource.org/archives/09/86/86103.htm>>.

The USS Jeannette was first commissioned as the HMS Pandora in 1861. James Gordon Bennett, Jr. bought it in 1878, a year before the USS Jeannette left its port for the Arctic. After September fourth, near Herald Island, the Jeannette started drifting northward. When the crew abandoned ship on June 12th 1881, they started trekking toward the Siberian coast, hopeful for land so they could regain their strength and find people to help rescue them and their incredibly valuable journals. In addition to descriptions about the USS Jeannette, this site offers photographs and sketches of the exterior of the USS

Jeannette, the interior hull, and the crew. This site helped me put faces to the names and make the stories of the crew come to life. In addition, it was important for me to understand the dimensions of the USS Jeannette and the limited supplies and watercraft they had at their disposal, and this site definitely helped me do this.

"Old Ship Logs Reveal Adventure, Tragedy and Hints About Climate." Narr. Brian Naylor. *Morning Edition*. National Public Radio. 23 Sept. 2014. Transcript. *National Public Radio*. Web. 17 Jan. 2016. <<http://www.npr.org/2014/09/03/341697516/old-ship-logs-reveal-adventure-tragedy-and-hints-about-climate>>.

This segment discusses the Old Weather project, which is gathering volunteers (citizen-scientists) to look at old ships' logs and transcribe the information so it can be accessed digitally and uniformly by researchers across the globe. All of this data is helping show scientists how the climate is changing. The ships' logbooks, along with other saved information, contain amazing stories of survival. Kevin Wood, a climatologist, said that the amount of Arctic ice that trapped the USS Jeannette does not even exist today. This broadcast further helped me see the value in the logbooks of the USS Jeannette. In addition, it is amazing to think that if the USS Jeannette were to leave on the same route today, it would likely not get stuck in Arctic ice at all. This demonstrates to me the great meteorological change we are experiencing and need to better understand.

Pidcock, Roz. "Explainer: How Do Scientists Measure Global Temperature." *Carbon Brief*. Climate Brief Limited, n.d. Web. 18 Jan. 2016. <<http://www.carbonbrief.org/explainer-how-do-scientists-measure-global-temperature>>.

Scientists take measurements from ships and buoys, combine them, and have a representation of how the Earth's temperature has changed. Many records are needed to compile a credible set of data. Using this data, scientists can see how weather has changed from one season to another, from one year to another, and across multiple years. This site explained to me how data from historical ships could be used today to inform weather prediction models.

Setzer, Christopher, and Amy Trost. "Arctic Data Explorer." *National Oceanic and Atmospheric Administration*. national Oceanic and Atmospheric Administration, n.d. Web. 9 Jan. 2016. <<http://www.pmel.noaa.gov/rediscover/sites/default/files/atoms/files/>>

setzertrostposter.pdf>.

This source describes the course of the USS Jeannette and demonstrates exactly how the ship's logbooks are being used today to inform meteorological models. Each entry is digitally transcribed. Scientists access the data in order to apply and discover new information. Pictures and locations of the ship are paired with the data for a complete image. The information gained not only helps with climate science, but biogeography and history. This source helped me understand the process from start to finish for converting the handwritten notes in a ship's logs into usable entries in computer models that can be accessed by scientists all over the globe.

Sherwood, John R., III. "The Jeannette Expedition." *U.S. Naval Institute News*. N.p., 5 Feb. 2013. Web. 26 Dec. 2015. <<http://news.usni.org/2012/06/15/jeannette-expedition#more-149>>.

This site summarizes how the USS Jeannette came to be commissioned by the U.S. Navy. It describes the ship as well as its commander, De Long, and where he and the other crew members were buried. There is now "The Jeannette Memorial" at the U.S. Naval Academy's cemetery in Annapolis, MD. From this source I learned how the crew (living and deceased) of the USS Jeannette were treated like military heroes upon their return to the States.

"Stanley and Livingstone." *Quite Interesting*. N.p., n.d. Web. 17 Jan. 2016. <<http://qi.com/infocloud/stanley-and-livingstone>>.

Dr. David Livingstone originally went to Africa as a missionary in search of the Nile River. He then went missing for five years, and Henry Morton Stanley went after him. Stanley found him, but Livingstone was so sick that he died from internal bleeding before ever returning to Scotland. Stanley was born in 1841 and died in 1904. This summary of the relationship between Stanley and Livingstone helped me understand why Bennett sent Stanley to Africa in search of Livingstone and how this paralleled his financing the USS Jeannette in order to make headlines with his newspaper.

"The Story of the USS Jeannette in the New York Herald." *Frontiers*. N.p., n.d. Web. 27 Dec. 2015. <<http://frontiers.loc.gov/intldl/mtfhtml/mfpercep/igpnyherald.html>>.

This website is sponsored by the Library of Congress. I learned that the New York Herald was the largest daily newspaper in America in the 19th century at the time of the USS Jeannette's expedition. Bennett sent someone to Siberia for full coverage of the journey. There were more than 32 stories about the USS Jeannette just in the New York Herald. The articles often included maps outlining the expedition. One story of the ship included headlines like "Lost in the Arctic," "The Rescue of Crew," and "Crushed in Ice." The ship was abandoned 500 miles from the Lena Delta's mouth. This website's timeline helped me put events in context and see the nation's building interest in reaching the Arctic.

Tripp, Emily. "UPDATE-The Value of Citizen Science." *Marine Science Today*. N.p., 12 Apr. 2013. Web. 17 Jan. 2016. <<http://marinesciencetoday.com/2013/04/12/update-the-value-of-citizen-science/>>.

Scientists from the University of Washington are uncovering new Arctic climate data. Citizen scientists, as they call them, are transcribing the data from logbooks because computers cannot recognize the cursive handwriting. This information will then be combined to show past weather and climate patterns. This work stresses the importance of uncovering old ships' logs in order to add their data to international data sets to form more complete models for predicting changes to the weather and climate.

"USS Jeannette." *Naval History*. N.p., 16 June 2014. Web. 26 Dec. 2015. <[http://www.naval-history.net/OW-US/Jeannette/USS\\_Jeannette.htm](http://www.naval-history.net/OW-US/Jeannette/USS_Jeannette.htm)>.

This website has drawings of the ship and a timeline and summary of the expedition. De Long not only guided the USS Jeannette out of the harbor to the Bering Strait, but he also acknowledged his orders to find the Vega polar expedition. On August 27th, 1879, De Long and his crew reached St. Lawrence Bay, Siberia and headed north. The crew found Herald Island and drifted in the direction of the North Pole, floating with the ice, for 21 months. Before abandoning the ship, they discovered 2 islands, named the Henrietta and the Jeannette. Different sources list slightly different dates for key events surrounding the USS Jeannette, so this source was helpful in firming up an accurate timeline.

"USS Jeannette (1878)." *World Library*. World Public Library, n.d. Web. 13 Mar. 2016. <[http://www.worldlibrary.org/articles/uss\\_jeannette\\_%281878%29](http://www.worldlibrary.org/articles/uss_jeannette_%281878%29)>.

The Pandora, soon to be named the USS Jeannette, was bought by Sir Allen Young in 1875 for his Arctic voyages. It was then purchased by James Gordon Bennett, wealthy owner of the New York Herald. It was brought to San Francisco, where it took off for the Arctic. This work explained how the country's support for the Arctic voyage of the Jeannette led to this privately funded ship being commissioned a US Navy ship.

"USS Jeannette Captained by George W De Long on Arctic Expedition." *Find a Grave*. N.p., n.d. Web. 1 Nov. 2015. <<http://www.findagrave.com/cgi-bin/fg.cgi?page=vcsr&GSvcid=504836>>.

This site shows the tombstones for 26 of the USS Jeannette's crew members. In addition, descriptions of their roles on the USS Jeannette are provided along with information about how they died and where they are buried. It was important for me to see the grave sites and tombstones for the crew of the USS Jeannette. The men who died in the Arctic were brought back to the US for burial out of respect and honor. From this source, it is clear that the entire crew of the USS Jeannette were considered Navy heroes to the American people.

Vaillant, John. "The American Scholar." *Frozen Hell*. N.p., 8 Sept. 2014. Web. 9 Jan. 2016. <<https://theamericanscholar.org/frozen-hell/#.VpGWcXs1Lrc>>.

The Arctic was as unknown as the moon and as dangerous as Everest in the 1870s. Warm, southern currents were the basis to the Open Polar Sea theory, offering there were open waters beyond a circle of Arctic ice. After the USS Jeannette disproved this theory and drifted in the ice, De Long's leadership was a key factor in the survival of the crew. This work made me realize how extraordinary the crew of the USS Jeannette were. Unlike previous expeditions to the Arctic that ended in mutiny and cannibalism, the crew of the USS Jeannette remained loyal to their commander and each other despite the hardships that they faced, including sure death.

Von Kaenel, Camille. "Climatologists Find Ice Clues in Old Whaling Ship Logbooks." *Climate Wire*. E & E Publishing, 14 Jan. 2016. Web. 9 Apr. 2016. <<http://www.eenews.net/stories/1060030595/>>.

The recreation of historic weather is called reanalysis. Not only does historic data from ships' logbooks provide missing data from the past, but ships that sailed to the Arctic (like the USS Jeannette) provide even rarer data. In many ways, the Arctic is still an unknown region. I learned that the incorporation of historical data, like that of the USS Jeannette, into modern climate models can tell researchers if storms are getting stronger and whether our climate models accurately account for environmental changes such as increased greenhouse gas emissions.

"Welcome on Board the USS Jeannette." *Old Weather*. N.p., 16 Oct. 2012. Web. 18 Jan. 2016. <<http://forum.oldweather.org/index.php?topic=3322.0>>.

De Long is a Navy hero whose recordings from the USS Jeannette are first now being transcribed. Areas recorded were "bar height," "clear sky," "force," and "wind dir." This site includes a computerized picture of what was entered by a volunteer citizen scientist based on the raw handwritten data from a log page on the USS Jeannette. This site taught me exactly what scientists are doing with the data from the logbooks of the USS Jeannette and how they are making the data accessible to scientists across the globe.

Yabroff, Jennie. "Baptism by Ice: Hampton Sides on the Noble Fate of the USS Jeanette." *Signature-reads.com*. N.p., 7 Aug. 2014. Web. 9 Jan. 2016. <<http://www.signature-reads.com/2014/08/baptism-by-ice-hampton-sides-on-the-noble-fate-of-the-uss-jeanette/>>.

The American people were compelled by the Arctic and cheered as De Long and his men left the port on the USS Jeannette. When researching, Hampton Sides admitted to how surprised he was at how many countries came together to return the survivors to the United States. This article served as further evidence that once one heard the story of the USS Jeanette, one was hooked and that the story was one that needed to be told. I was surprised by how many lay reviews took on the story of the USS Jeannette and were completely enthralled by the details. This underscores the universality of the story.

## Interviews

Meier, Walter N. Telephone interview by Flora Ranis. 30 Nov. 2015.

I conducted this interview with Walter Meier, a climatologist. I learned that today, NASA and other research institutions are using satellites to obtain information about Arctic ice sheets and water conditions. Global warming is a clear problem, for we have already lost 40% of the Arctic's summer ice cover. In the 1970s, in the winter, Arctic ice reached about fifteen million square kilometers, twice the size of the lower forty-eight. In the summer, it went down to seven and a half million. Now, these numbers are declining. Another impact of the USS Jeannette was accidental. A piece of the ship was found in the Atlantic, and this led many expeditions to prove that if a strong enough ship got through the Arctic ice, it could sail to the Atlantic. This interview was important in developing my paper because it explained how climate change is affecting us today and how we need accurate climate models in order to prevent loss of crops, livestock, and human life in the future.

Sides, Hampton. "Q & A with Hampton Sides in Traverse City." Interview by My North News Service. *My North*. N.p., 10 Sept. 2015. Web. 11 Mar. 2016. <<http://mynorth.com/2015/09/qa-with-hampton-sides-in-traverse-city/>>.

I learned that Hampton Sides attempted to retrace the steps of the USS Jeannette when writing his book, "In the Kingdom of Ice." He went to the central coast of Siberia, describing it as some of the most beautiful and dangerous terrain in the world. When he looked beyond, he felt completely isolated, honoring De Long even more for spending almost two years like that, stuck in the ice.

Sides, Hampton. Telephone interview by Flora Ranis. 14 Oct. 2015.

Mr. Hampton Sides is the author of, "In the Kingdom of Ice: The Grand and Terrible Polar Voyage of the USS Jeannette." I learned that when he went to Siberia, he

understood how challenging the voyage must have been. These men were out there in the Arctic with no means of communication. One reason so few people know about the expedition is because there are so few photographs, and we are a visual world now with a "visual culture," Sides said. Plus, although Britain often talks about its failures, America does not. The USS Jeannette did not reach the North Pole and did not succeed in meeting its objective. This interview with Mr. Sides was a main source of information for my paper and helped me understand why the mission was important, how the Jeannette was different from previous endeavors to reach the pole, and the impact the ship had back in the late 1800s and is having on us today.

### **Photographs and Images**

"De Long's Data Page." *Oldweather*. N.p., n.d. Web. 18 Jan. 2016.  
<<http://forum.oldweather.org/index.php?topic=3322.0>>.

This is a photograph of a page from the USS Jeannette's logbook. It shows the commander's handwritten documentation of the Arctic weather, including whether it was overcast, the cloud type, and temperature. The inclusion of this specific data from the USS Jeannette in the Old Weather website underscores the importance of the USS Jeannette. This helped me learn how the data from the USS Jeannette are specifically being used today to improve climate projection models. The specific inclusion of the USS Jeannette's data also indicates that even though the ship never reached the North Pole, it did succeed in having an impact and leaving a legacy-even if we are just beginning to discover that legacy.

"Jeannette Photo NH 52006." *Department of the Navy-Naval Historical Center*. N.p., 27 Nov. 2003. Web. 4 Jan. 2016.  
<<http://www.ibiblio.org/hyperwar/OnlineLibrary/photos/images/h52000/h52006.jpg>>.

This is a sketch of the 13 surviving crew of the USS Jeannette. The picture this sketch is based upon was taken in Siberia in 1882. After studying the harrowing events of the USS Jeannette, it was uplifting to see a picture of survivors. Also noteworthy about this picture was the good condition the men appeared to be in and the warm clothing they were

wearing. These details helped me understand what an international undertaking the rescue of the USS Jeannette was. Even after reaching habitable land, the survivors would not have made it without the great assistance of the local people and the Russian government. This helped explain why even though the USS Jeannette was a U.S. expedition, countries around the globe assisted in the rescue missions and treated the survivors as heroes. There is something universally appealing about the story of the USS Jeannette.

"Jeannette's Legendary Captain George Washington De Long, in 1879, Just Before Leaving for the Arctic." *Siberian Times*. N.p., n.d. Web. 13 Mar. 2016.  
<<http://siberiantimes.com/other/others/features/f0064-russian-plan-to-locate-and-raise-the-wreck-of-schooner-uss-jeannette-in-arctic-waters/>>.

This is a photograph of the commander of the USS Jeannette, George Washington De Long. He always had long-standing passion for the Arctic, explaining why he decided to lead the voyage of the USS Jeannette. Here he sits before taking off on the dangerous expedition. There aren't many original photographs remaining related to the USS Jeannette because the ship sank. So being able to see an original photograph of Commander De Long was powerful and helped me attach a face and full life to the name in the stories I was reading.

"Portraits of the Officers of the Jeannette Expedition Top Left Going Clockwise: Melville, Chipp, Dandenhower, Ambler, Dunbar, Collins, Newcomb and in the center is De Long." *University of Columbia*. University of Columbia, n.d. Web. 13 Mar. 2016.  
<[http://ccnmtl.columbia.edu/projects/poles/slideshows/prior\\_expeditions.html](http://ccnmtl.columbia.edu/projects/poles/slideshows/prior_expeditions.html)>.

The men in the pictures include George Washington De Long, the commander of the USS Jeannette, in the middle. The other men, as listed in the description, were all crew members aboard the USS Jeannette. In addition to this photograph, this site offers sketches of events related to the USS Jeannette. Since there are so few pictures available pertaining to the USS Jeannette, this site helped me imagine the major events in the ship's history and offered a scale against which to measure elements of these events.

"The Sinking of the Jeannette." *Department of the Navy*. Navy Historical Center, n.d. Web. 4 Jan. 2016. <<http://www.ibiblio.org/hyperwar/OnlineLibrary/photos/events/ev-1880s/jeannett.htm>>.

The drawing shows the USS Jeannette sinking as it gives in to the crushing ice floes surrounding it. This drawing helped me understand what the crew of the USS Jeannette were facing in the Arctic and gave me a sense of proportion in terms of the ice floes and the ship.