

Please stand by for realtime captions. We are getting started in two minutes at 2:00. Good afternoon. Corey, are you recording?

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Yes.

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Okay. Thank you. Good afternoon everyone. Welcome to the FDLP Academy. We have got another terrific webinar for you today. Glad to have back our friends, Emily wild. Many great webinars for us in the past. I know this will be good also. Excellent, I am sure. The title is library research for atmospheric and oceanic sciences, including climate change. Again, Emily wild is the presenter. Emily, joined Princeton University as a chemistry geoscientist and environmental studies librarian in September 2018. Emily has a bachelor of arts and geology from Hartwood College and a master for library information science from University of Rhode Island. From 2008 through 2018 Emily was a librarian of physical sciences at the US geological survey Denver library where she helped users find and use science and legislative materials, provided science and government outreach information, but below graphic instruction and map instruction as well as develop and present online and in person training sessions on topics such as chemical and physical properties of the atmosphere, rock, sediment and water, created geochemistry and geophysics, organic and inorganic chemistry and trends in the use and availability of mineral, energy and water resources. From January 1996 through 2008 she was the U.S. geological survey hydrologist in new England states where she would enjoy fieldwork, modeling, report writing and stem outreach. While also moonlighting as an academic reference librarian. For scholarly interest include library instruction, reference, citation and data management, geospatial data sets and physical and laboratory sampling. Before we get started, I have to go through the usual housekeeping reminders. If you have any questions you would like to ask Emily, or if you have any technical issues, feel free to chat them in the chat box. People on desktop or laptop computers it is located in the bottom right-hand corner of your screen. I will keep track of all the questions that come in, and at the end of the presentation, I will read them back to Emily, and she will respond to each. We are also recording today's session and will email a link to the recording and slides to everyone who registered for this webinar. We will also be sending you a certificate of participation using the email you used to register for today's webinar. If anyone needs additional certificates because multiple people watched with you, please email FDLP outreach on GPO.gov and include the title of today's webinar along with the names and email addresses of those needing certificates. Desktop or laptop users may zoom in on the slides being presented, click on the full-screen button in the bottom left side of your screen to exit the full-screen mode mouse over the blue bar at the top of your screen so that it expands. Then click on the blue return button to get back to the default view. Finally, at the end of the session, we will share a webinar satisfaction survey with you. We will let you know when the survey is available and the URL will appear in the chat box. We would very much appreciate your feedback after the session is through today, including comments on presentation style and value of the webinar. I don't think Emily will do this, but if she did screen chair and go to a website, that means if she did that, once she starts talking you won't be able to see the chat box. In that case, if you wanted to ask a question, one screen chair begins, mouse over the blue bar at the top, when the menu drops, click on chat to enable the chat box. I don't think she will do that, but just in case. With that, I hand the virtual microphone over to Emily, who will take it from here.

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Thank you Joe. I put in the chat box, if anybody is interested in the history of the ocean basins, this is the report for publication from 1962. I included the link and a little history about him. He was faculty here at Princeton and is considered one of the pioneers of plate tectonics. The history of the ocean basins became better known as the seafloor spreading theory, which is what a lot of students and researchers are looking for in a subfield within geosciences and oceanography. I would like to show you the Jersey

shore to begin with. I was just there about a week ago, and it really is this empty. But it is a beautiful place to be and another photo here of the ocean waves, and then another photo of when I was in Saint Augustine several months ago, pre-pandemic. Just to get us into the spirit of the atmospheric and oceanic sciences. Continuing on, just to give you another heads up, on August 27 I will do another webinar on library research or energy, mineral and uranium resources. And anything related to ocean lining and floor mining I will cover that presentation. If you're interested in the previous presentations I have done for water resources when I was at the U.S. geological survey, I have all the links here as well. I am happy to set up an appointment with anybody if they want more information, or if they want the PDF. They should all be online here, but if you're looking for something specific, please let me know. This is me in my new corner of my apartment where I have been working since March 13. I will be here for several more months, I believe. We are working from home at Princeton. It is definitely easier to set up appointments. We also have all of our subject specialists made these meet our specialist videos. If you're looking for an outreach opportunity within your library or institution, it is something we didn't realize how popular it would be in the students public and also faculty. Just to talk about my background, as Joe mentioned, I have been here since 2018. Previously I was at the U.S. geological survey from 96 through 2018. And so, within that I had two different roles, one I was a hydrologists and the other I was a librarian physical scientist. A lot of what I am affiliated with and researching when I help people are water and ocean and other aspects, but one here at Princeton, the questions I received the Mostar, the Mostar world land and ocean temperatures. There is a link there as well. Also, the salt water intrusion project I was involved in. Every semester so far when students are sitting in the room with me and we are doing drop in clinic sessions, or if I am teaching a class, there is always someone interested in salt water intrusion. They will search within the library catalog or the other library databases, and they find my name because I was involved in that project back in the late 90s and early 2000. And so, if it comes up, I might be able to help with additional sources. One of the students I was helping with one time said to me, hydrologists know about the ocean and atmosphere? yes, we do. As a hydrologists, a lot of what I did was the water cycle. Included atmosphere, evaporation, rivers, streams, groundwater, this whole cycle. It also included the carbon cycle integrated with that and sulfur cycle. For sample, there other aspects as well within the atmosphere and ocean that we were looking at. Most of the work I did was freshwater, but I did outreach with a lot about the Marine and ocean science. That was at USGS and also at the institutions nearby. For example, while I was working at the USGS I was working in New Hampshire, Vermont, Massachusetts, what island, Colorado and New Jersey. So I used these information sources. When I was in New Hampshire, a lot of what I was using was the office of coastal management. In Vermont there is a climate change website that has more information specific to Vermont. In Massachusetts, I helped a lot with the dissemination of information about the USGS Woods Hole Marina science Center and also the Woods Hole oceanographic institution. When I was attending the University of Rhode Island, I lived near the graduate school of oceanography, and so a lot of my neighbors, it was right adjustment adjacent. There is a NOAA and also EPA lab. So those are some resources that may be of interest as well. When I was out Colorado, the NOAA Boulder labs were only a few miles down the road. So I worked collaboratively with my counterparts in information, dissemination at [ Indiscernible ] University of Colorado Boulder and other parts of NOAA groups. I also worked with and helped the Santa Cruz and St. Petersburg Florida Marine groups. Those might be of interest. And then, here in New Jersey, this is the type of information I look at quite often. This is my local national weather area, Mount Holly. When you click on the climate resources for any of the -- you're getting the weather from any group, searching by ZIP Code, you can click on climate resources and receive all this information. What I'm going to do in the chat is just copy and paste how you can do that from here for your own -- if you want to follow along. And then, I'm going to put this example and hear. In here. There are so many webinars that have already addressed a lot of the sources. You will be receiving the PDF of this as well, the presentation. But if you want to look at some of them, it should

come out. This is basically the list you will see for any ZIP Code. Want to get to the climate resources, all of these sources are there. just to go over the session today. I wanted to go over the climate in the news and explain the difference between weather and climate. I receive that a lot as a librarian. And then, when aware was the first climate model created. What is climate change? who is an atmospheric scientist? oceanographer, climate scientist? some research examples at Princeton University and professional societies, organizations and companies. And also, some federal agency information. Just to give a quick overview about some recent news related to climate and flooding. I don't know that many people seen, but it is this new highlight from the first national flood risk assessment. It came out about a month ago. I highly recommend that everybody take a look at it. It is flood factor.com. I put that in the chat as well. Basically, if you're familiar with the old maps that FEMA makes, this updates them based on a better assessment of what could be happening with the moving water at different rates. So one aspect of the firm maps was that from a hydrologists dam., I always thought they represented more of when where the water will go, but not necessarily if it is moving. So this is a little bit of a better representation. You can see it really affects the coast. So if you have a chance, try to check that out by ZIP Code. It even zooms in by your neighborhood. Or you can look bistate. Another point of news I wanted to mention is that New Jersey is the first state to have the climate change across education for K-12. It will start in 2021. They were implemented throughout these two years. If anybody is looking for curriculum information about how to integrate that into their K-12 program, just let me know and I will give you the resources we have for New Jersey. Another aspect in recent news is the topic of climate change and climate science and whether or not climate scientists are able to freely discuss their research within the federal government now. So this is just something to be aware of, especially as a librarian. This is a lot of what the questions I received from students are, especially policy students. They want to know exactly what is going on and if this is real but it is true that the federal government that they federal government doesn't want client assignments science climate science to be published. These are a couple of samples. Another story is from the union of concerned scientists were the climate change research was downplayed at the US geological survey, which is my former employer. So that is interesting also be aware of greenwashing. I think every semester in the last three semesters, most students are also looking to research this particular topic. There are some examples from the union of concerned scientists and research examples about greenwashing. And so, within the campus of Princeton University itself there is a climate change debate where there is one faculty member that actually took a senior science technology advisor position at the White House and is speaking the opposite of what a lot of the scientists were talking about when it comes to climate change. So these are just some examples about how the climate change discussion happened here at Princeton within the alumni and also just different news stories, if that is of interest. So what is the difference between climate and weather? weather is defined as what the atmosphere is today or a time and place. So the weather today, tomorrow, yesterday. And so, this is the weather for my neighborhood in Princeton. If you search Princeton local forecast office, there is a local conditions is [ Indiscernible ]. It has the humidity, windspeed, barometer, do., visibility, heat index and other information as well. One of the aspects is that when you look at this for all of New Jersey, there is no warning about the air quality alert, and so for today, I clicked this last night. This is yesterday's forecast and then today's forecast. This is an interactive map of air quality. You can see it is pretty -- there are alerts. It is Aronow.gov. Air now.gov. Climate is defined as expected frequency of specific states of the atmosphere, ocean and land including variables such as temperature, land, ocean and atmosphere, salinity, oceans, soil moisture, wind speed and direction, atmosphere and the current strength and direction of oceans. So this is an easy schematic. This is something that, especially if your searching databases, it is best to have this up or printed out so you can see the different processes happening for your search terms because this is the key T searching to searching the literature. Another key is the atmosphere layers. These are all the different layers and examples of where a commercial jet is, and then the miles up and the approximate

temperature. Over here, the difference here is that the exosphere is in here. There are satellites up above. But these websites or educational websites. They will have more information as well. To understand the layers within the atmosphere. Clouds, this is what I have always used for an educational tool for most of my presentations or when I am helping people. It is from a basic schematic of the different types of clouds. One of the things when I lived in Colorado, it was kind of casual conversation, but people would always ask, what is your favorite cloud type? mine was always cumulus. That is here. This is just out of side of Denver in the plains. One of the images I like to show has the earths water, what I did when I was at the U.S. geological survey for the education pages. If you look at the way that Earth is at the marble, there is a thin layer that is actually the ocean. If you look at the math of earth in the amount of water on it, which is actually quite thin compared to the rock mass and other parts of earth, so if you were to take that volume, the entire volume on earth actually is this one marble here. It is over the western part of the United States. It is hard to see it, but all the freshwater on earth is actually over Georgia right here, where the red dot is. The reason why I like to show this is to show just how much -- there is definitely a lot of rock on earth, but there is actually quite a limited amount of water. Both saltwater and freshwater. And then ice. Any of the changes within that will be noticed on earth. Here are some examples of different changes in the ocean. This is the Cretaceous Western Seaway . It is why there is so much oil and gas in Colorado, Wyoming and Montana. It is from the deposition of the materials here. On the East Coast, this is an example of how the coastline has changed. It is geologically in the record that the sea level has changed, however, with humans it is changing in a different way than naturally. So where is the earths water? if you look here, the ocean is about 96%, the water on earth is 96% from ocean. That -- there is very little freshwater actually. So that is why there are concerned often about contaminated water, both fresh -- and that is actually why some communities are now doing desalinization and have desalinization plants to supply the water to their communities. Just another background information. This is an example of one reason why the beach was kind of empty last weekend was because we just had this tropical storm move through. And so, this is the eye hitting New Jersey at this moment on July 10. I bring this up because a lot of people have heard that this hurricane season is going to be pretty much above normal, and a lot of it has to do with the climate factors. Another aspect of climate in the atmosphere and oceans and how it all works together is, for those of you that remember the eruption in 1991, there are a lot of different models that have been done because so much of the particulates went into the upper atmosphere and then kind of hovered over earth for a little bit of time. So we changed the dynamic. There are different research tools in this USGS publication about the atmospheric impact of the 1991 Mount Pinatubo eruption. You probably already knew the answer, but when and where was the first climate model created? it was here in Princeton New Jersey at the NOAA geophysical fluid dynamics laboratory in collaboration with Princeton University. Was back in the 1960s. These are some of the websites for the GFDL. There is also a bibliography website, and then this is the link to the atmospheric and oceanic sciences program that is part of the geosciences department at Princeton University. This is the link to the geosciences department. This is the actual building of GFDL. For those of you familiar with recap, is actually across the street from recap. Recap is the off-site storage that is a partnership between New York public library, Harvard University, Columbia University and Princeton University. So that original model that was done, and there is more information on this website, but that paper is this paper. I included the link just in case anybody was interested in reading it. It is 1967. Other aspects of climate change, it is described as the average change in the average condition such as temperature and rainfall. So this is actually from climate kids from NASA. It is an educational page that discusses different aspects and explained to anyway that is addressable if you are a nine scientist. This is an example of the greenhouse gases affect. If you remember, especially on a day like today where the sun is out and there is a heat wave, you have the sunrays going into the glass of the car, but they can't escape, so the car gets a lot hotter than it is outside. That is pretty much the same. This is a clip -- I know it is hard to see, but the link

is here if you're interested. You can see that over time the annual global temperature is going up. Evidence of this is, this is actually from the NASA website, but it is from USGS. USGS, when I was working there, there were a lot of before and after photos. This is an example up in Alaska where there is a glacier, and then there is just a lake. There are a series of these studies that were done all over the western part of the United States and then up in Alaska. So this is another example of the temperature and precipitation global maps. This is land only. This is the departure from average from June 2020 with respect to the 19 anyone, 220 10 -- 1981 to 2010 base period. Temperature and precipitation. On the right. A lot of times people ask what is an atmospheric scientist or oceanographer or climate scientist. Whatever faculty members is George who writes a lot about climate change and El Nino and El Nino and global warming. This is an example of him. They did these biography history makers. If you're interested in that, he also writes a lot about why global warming is controversial. I believe he is still writing op-ed in the New York Times. He has a few books from the Princeton press. Our affair with El Nino, how we transformed an enchanting Peruvian current into a global climate hazard. That is this one. There's also is the temperature rising? the uncertain science of global warming. I usually use publish or perish and then Google scholar this way. That way I can work easily export the citations. A note where other faculty and students are using. That is a little trick I do. This other link is the to this one, El Nino, La Nina book hear. It is cited 3222 times. So it might be of interest. If you are interested in becoming an atmospheric scientist, oceanographer or climate scientist or you know somebody that is, the other aspect, because I was in the government for almost 23 years, I knew how to apply for government jobs, student jobs, permanent jobs, everything within the white-collar series. So this is the main page of the top and the position classification standards for white-collar work is this link. The 1300 is the physical sciences group. These are all the different types that are in the physical sciences group. But the trick is, they don't necessarily hire anymore specifically by each one of these. Often they just hire, if they're looking for a climate scientist or a geologist or hydrologist, often they just advertise it as a physical scientist. So if you feel discouraged there are no jobs for hydrology or chemistry or geophysics, geology or oceanography, try searching physical scientist because there are positions available listed under that. Because NOAA is one of the atmospheric and oceanic agencies, I did a quick search on that as well. If you know anyone that is a student or is recently graduated, there is a pathways program for them. If they need help, make sure they search within the OPM webpages of how to apply for a job and also how to write a federal resume. Those are the two questions I received very often during the spring semester when students are starting to look for internships or positions in government. Here are some examples of some research at Princeton recently. This one I believe is still about to be [ Indiscernible ] . It is the role of climate in the COVID-19 pandemic. Likewise, other publications about local climate. This one is local climate unlikely to driver Lynn COVID-19 pandemic. Other topics that come up a lot are why storms are bringing in so much rain. This is an example of, we have within Princeton University, Princeton environmental Institute. There is a faculty seminar series. This one is worth watching, especially since it is hurricane season. Climatic influences on tropical cyclones and their severity. This is the website for the geosciences department and the link to climate scientists, and there is also affiliated with Princeton and the GFDL at NOAA is as cooperative Institute for modeling the earth system. Within the Princeton University environmental studies program the climate futures initiative, climate change and infectious diseases, and also last fall we had the Princeton environmental forum and the full conferences online. Another aspect that Princeton is involved in is the world whether attribution. That one is rapid attribution of the extreme rainfall in Texas from tropical storm a meld up. But there are others about climate change related to the brushfire in Australia and also the heat wave in Western Europe in 2019. Also, the recent Siberian heat wave of 2020. This is the Siberian information here. You can see the departure change in temperature. Another aspect is how I help people when people are asking questions, the professional studies organizations and companies. I am actually the incoming president of the geoscience information society, and will also I am a moderator for the listserv. Feel free

to join our listserv and check out our information. If you have trouble with the list, you can email me to join that. The geoscience information society is an AGI member society. A full list of societies are here. It is also a GSA geological side of America associated society and a full list of all societies are here as well. The other group of librarians that we collaborate often with and a lot of librarians are cited to boast listserv are the atmospheric science librarians international. This is their website and also there listserv. They recently had a meeting. They meet with the American meteorological survey society, sorry. That full meeting is online. Another aspect that comes up a lot is people asking about the collaboration of government and private industry. This is an example of the CSA Ocean sciences. If you go to that webpage you can see that they do a lot of research for the OEM -- B OEM. And other federal agencies. Also oil and gas companies or other types of people. I will put that in the chat. Sometimes when people are looking for the symmetry mapping they do a lot of that. Another aspect -- I'm sorry. Another aspect is the professional societies, the American geosciences Institute. One of the things they did recently, they do the work for surveys. Recently they did the geoscience COVID-19 survey. So they have a series of these that I would encourage everyone to check out just to see what is happening with the recent geoscience graduates and employment and also the impact of geoscience business operations. And the ocean science activities in the research activities. So that gives a snapshot about where we stand now because of the pandemic. And then, within that one, COVID-19 and employment, I was surprised at how many students spring semester were interested in pursuing jobs outside of what they just received a degree in or what they are interested in. That is one of the aspects the pandemic has brought in. Typical times the students were thinking of more of a linear track as the next step after they graduate or between semesters, and now they are thinking more broadly about changing their -- not necessarily concentration, but getting a job and something that they would not have had the chance to before. Because of what has been happening now. Some examples are working for different departments on campus that they did not know they were interested in, but now because they have the time to research different parts of the campus, they are interested in all the other aspects of opportunities. So this is from a video of the look at current trends in the geoscience workforce. This is an interesting video just because this is one of the questions that came up about what the trend is of students that are enrolling and also if they are going on to graduate school after receiving a geoscience degree. This just has, this is from 1956 to 2018. I was in school in the mid-90s. It was this peak here kind of. And then just to look at the different trends. The reason why a bring this up is because when I worked at the US geological survey, most of the people I helped looking for the hard-to-find reports that were not the typical science journals and not the books that were readily available online. Was the hard-to-find government reports where other institution reports, oil and gas reports and nonprofit information. So this is an example of bachelor students from 2013 through 2017. And what they and up going into. So the federal government from 2016 to 2017, you can see it going down. I think that was just because there were less opportunities because the government was just downsizing. Other aspects were going up like research institutes. And then of course, academics. Likewise, when you look at it from the Masters degree students. And then, again for PhD. You can kind of get a snapshot about where they are getting employment. The other aspect of this is from a literature stand point where they are publishing. So go into, for example here, most of this is oil and gas. The green. They would be publishing company reports, not necessarily E journals or e-books. But it varies depending on the place of business. This is another aspect that came up. It turned into something that I do now and all of my classes for sustainable futures. It used to be called something else, but a lot of times when students are searching, they search climate change, but they can't find what they are looking for. If it is something they're looking for from 30 or 40 years ago. So what I have them do is, go through an example with the EPA of when it used to be called global warming. In 2005, this is the snapshot using the Internet archives of what the EPA website used to look like. There is global warming here listed, and then in February of 2006 the changes to climate change. And that it is climate change here in 2017, January 19, 2017, and then it disappears as a topic

from the EPA website. So that is why because when I started at Princeton because they knew I worked for the government and specifically the geological survey. There were some reports they could not find where they were wondering if they were missing. Just walking them through how things change politically is pretty helpful because sometimes they think it is their searching, but it is actually just a change in policy or the way the federal agency is presenting the information. This is an example. What I have them do, especially in one of the classes a help with, I have them search for these three different ways. That way you can see that capturing more of the research for climate change. So having it spanned for a certain amount of decades as well. That is easier. I use Google scholar because Google scholar is able to retrieve more of the gray literature from the federal government or the company -type reports. So the other reports I help a lot with is the students find is the intergovernmental panel on climate change. These are some of the links. These are the examples of the ones the students are interested in. And so, the global warming of 1.5 degrees is pretty popular. They like to look at the older ones. That is how climate change was written about back in the 1990s. Also, this global change.gov website, if this is something of interest, this draft, the comments are closing on August 10 if you're interested in reviewing it. all of the older reports are here as well. I also help people find the national academies information, especially for the students writing their papers because a lot of this, using the national Academy search is easier than our library catalog only because they don't necessarily capture all of the online materials that are from the national academies. So this is an example, these are all recent climate change and ecosystems climate change evidence and causes, and this is the incorporating the cost and benefits adaptation measures and preparation for extreme weather events and climate change guidebook. There are additional ones as well. You can just click on this link when you get the presentation. And then, also from the national academies research oceans, the stewardship of oceans and coasts, understanding connections between coastal waters and ecosystems. A draft from 2018 of the carbon cycle report, and this is the role of research and technology and the changing ocean economy. That is a newer one. 2020. And so, if you don't have -- this is actually what I help people with the transition that they are retiring or if they are taking a year off between school and, or a year off between undergrad and grad or a year off within undergrad and grad, I show them how to use the different types of databases that are available for free. So geoscience world is one of them where you can search, you don't have to login. You have to pay for the content that is not open access, at the search and retrieval of the citations, that part of it is actually free. Likewise with the mapping and the figures and tables are in there as well. So this is a search for climate change, and then I clicked on this in Matthew. This is usually how researchers like to see it. They can zoom in and click on the area of interest. And then, Princeton University library. These are the databases we have for geosciences. You can check them out. You will have to, your institution, not all of them are free. If your institution has access to them, then it will just open, but other than that, the reason why I wanted to show this is because during the pandemic a lot of the database providers opened up a lot of access, and it is possible that they may again at some point. So I just like to provide that tip. Within our library catalog, this is a search for climate change. So when our search has everything together, it is catalog to databases, everything. And then continuing on with the search. For climate change it has what is in the library, what is online, and then climate change for every library on campus. I know it is hard to see right now, but recap has the most and that is that off-site storage facility that is near the NOAA facility. It is on the other campus of Princeton, across the lake. This is an example of online only publications. And what they actually are, audio, book or other, movies, etc. And so, if you have questions, let me know. I use the NOAA library lot, especially the repository and also the photo library or the collections, they need images for instruction or other materials. And then, this is an example of the depository search for the GFDL, the facility here in Princeton. I was so excited when I saw this because this is a dream when I see and then there library and made a bibliography because that is what I end up showing the students or faculty members. When librarians make bibliographies of anything, especially in the government, it is so

incredibly helpful because it is a one stop shopping topic. I always bring this up because it is one of my favorite USGS websites. There is art, but there is a lot of ocean, atmosphere and water imagery in here. It is useful, especially if you're preparing presentations. I am still working on this draft, but one of the things that came up recently is, I am looking to create the same type of online fibula graphic sources and hydrology, but then also for climate change and also for uranium resources, which will be my next presentation, and then a couple other topics. This is me in my mask. Thank you all for coming. I know that people don't notice us anymore because we're all wearing masks. Is the role now in New Jersey. It has been for quite some time. But these are all the links also for Princeton University sources if you want more information. I do a lot of zoom meetings. So please feel free to contact if you're looking for something specific.

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Thank you Emily. Another fantastic webinar. Really appreciate it. any questions from the audience? here we go. Let's see. Could you post the image library link again please? do you have that one there Emily?

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I think 70 posted it already.

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Okay. Sorry. Librarians making bibliographies! there is the photo. Thank you. Also, Joan, -- okay. Can we get a copy of the slides? yes. In a day or so we will put that in. You will be getting those. Keep those questions coming. I just had kind of a side question Emily. The way a lot of people are getting knowledge about this is Greta Thunberg, the Swedish teenager. I don't know what you think about her and her movement and how it is increasing awareness of all these topics.

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I think it has given the students that I work with more courage because they see someone younger than them speaking out. So they are more likely to speak out now when they see something. I am convinced that the students that are undergrads now are going to save the world.

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Great.

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Positive things of the day. They are really focused, and they are very aware of everything.

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A lot of shout outs. Any questions for Emily? I mentioned this before on one of your other webinars, I was fascinated by the lake in Russia which I learned about. I looked on the web, it was like 23% of all the fresh water in the world is in that lake. It is like the deepest lake in the world. Pretty wild.

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Yeah, in the United States the interesting part too is that there is more groundwater than surface water. A lot of times people think that we are using or surface water, but we are using more groundwater and we have the capacity of groundwater. Also the numbers of communities using the ocean water and have desalination plants.

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Is there a lot of that going on? I know I have read about it as like a side thing. We didn't know how big it was.

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Yeah, that is actually what I was doing in the late 90s and early 2000, and one of my studies, the series I did in Rhode Island, I went through the whole legislative process and presented the information and what was available from freshwater for the entire state of Rhode Island during drought conditions. They said that is great. I think we're going to go with desalination. So that is why they built that. I was -- I worked myself out of a job. It was fascinating. I spent years analyzing how much water people were

using in the entire state of Rhode Island. I basically came up -- they did not have enough water for drought conditions.

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Wow.

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They went in to have desalinization plants now.

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And then all the various plumbing like the toilets, they flush with a limited amount. I don't know how much overall impact that would have.

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I think we calculated it would not. It was more of, it depends on where you were in that particular state because you're looking at the total usage during drought conditions in the summer when people are using more water.

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That is one element that comes across my radar. Deidre asks a question, geoscience world, I'm not familiar, who does it? what is the background on it?

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Does that ring a bell Emily?

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I was a beta tester when they need that. I will give you that link now. There is a history to it, but it is indirectly linked to the GAO [ Indiscernible ]. If you don't have access to that, you actually will get the GAO the records. There is the pubs geoscience world. It is basically an NGO. It is also one of the things I wanted to point out, if you go to that website and scroll, it is the space now where places like the geological society or the geological Society of America, they don't have -- they used to have their own publications group and publish on their own website, but now they house everything on the geoscience world. Geological Society of London has their own platform as well, but then they mirror everything on here. They are basically doing their database but also do a lot of indexing. So I have a lot of government reports that are indexed more in geoscience world than in scope best or other databases.

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Wow. You know, in the medical world in the Covid world especially, the preprints world where scientist put not peer-reviewed things for quick access, other similar things in your field?

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What was that again?

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In other words, in the medical, I have been reading about this, there are of these preprints were scientist want to get information out quick. They eliminate the peer review of that stuff out quickly. I don't know if you have anything similar in your field.

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Yes. Are you talking about the archives?

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The name escapes me right now. Somebody in chat would know about that. You really hear about it with the Covid research right now.

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Here is a link. There is an archive for everybody. This is earth archives, but there are can archives, med, bio. There is an archive family.

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So people just put research up there?

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yeah. Before it is actually published. I am sorry I left that out. Earth archives is the space where this happens quickly. So that is another tool.

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It is a double-edged sword I imagine. Is it reliable or not?

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It is not necessarily bad because you can figure out based on the authors and also where it is to be published, but especially with earth information. Earth people and earth scientists, geoscientists, have been sharing information, especially during hazards like the case, floods, volcanic eruptions. They are more likely -- that is something that is been happening in the field for decades. It is something that has bubbled up more now with the pandemic. If you take any -- like archives for example -- chemical archives for example, this is the chemistry archives. It is the whole archives family.

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Okay.

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If you're looking for the chemical aspects of atmospheric chemistry, ocean chemistry, that can be in both the earth archive and the chemistry archives. So the chemistry archive is American chemical Society, Chinese chemical Society, chemical Society of Japan and a German one and Royal Society of chemistry. The earth one is similar. I know within the earth one that Princeton participates. So a lot of the University information is posted in the archive family. There is a whole series of them.

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Maybe if you pop it in the chat box.

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I put it in there.

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Okay. Thank you. Here's a question from Cordova, there is more groundwater than on the surface of the world? did I hear that right? I know you said United States. Was that worldwide also?

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if you go back to that chart.

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I heard you say the United States.

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People can't see the groundwater. That is why they don't realize. Somebody mentioned the Ogalla Aquifer. That one -- so this is freshwater. About 69% is glaciers and ice caps. 30% is groundwater. In only 1% is surface water. When you look at the water use, I was a water use specialist for Massachusetts and Rhode Island. Part of that was we all combined together to do the assessments every five years for each state. So I did Massachusetts and Rhode Island for two rotations of that. One of the things that we were surprised to see was how much water, groundwater people were using. And how it shifts from surface water to groundwater. Then the other addition that happened between the different series were the shift into saline, desalinization plants. Up-and-down the East Coast there is a lot of desalinization plants. People don't realize that is actually how they are getting their water.

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I didn't know that. I thought it was a small thing.

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No. It is actually growing more more. This is the program I used to be a part of. Water use in the United States. You can look at it by type. The groundwater use is actually higher than people realize. That is why with the Ogalla Aquifer it is significantly decreasing over time because it can't recharge enough to go back up to its level.

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Wow.

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So it loses -- when I was living out of Colorado, they did a story on Colorado Public radio about it. It was pretty fascinating to hear.

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Kathy has a question, has the amount of freshwater changed over time? anybody measure that? or is it replenished?

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It is pretty much stays the same. As far as within earth. I mean, groundwater and surface water are connected. Within that system, it is the same. We are having, one of the aspects is that glaciers are melting. So if they are fresh, like in Colorado, you can see in Colorado and Montana, those glaciers are definitely not as thick as they used to be even within 10 years. That is now either in the atmosphere are down in the rivers. A lot of it was sublimation. It probably went up into the atmosphere. But yes, you have the Arctic ice and the Antarctica melting. It is going into seawater. Within our earth, there is only a certain amount of water. That is why this is important.

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I love that graphic.

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When you look at volume metrically, there actually isn't that much water on earth. That is why a lot of hydrologists and oceanographers and atmospheric and climate scientists are so vocal that we need to make sure that we take care of what we have just because they know volume metrically but we have available. On the planet. There is only so much water. It is very interesting.

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Kim says thanks for a great webinar. Stay safe. Ruth says thank you. Emily -- Corey, can you put the satisfaction survey in the chat box please?

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I don't actually have it.

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I'm sorry. That I not send that? hold on one second. Sorry about that. Let me put that in the chat box. Please fill this out if you would. There you go. Please fill that out. It is going to give you more information about the webinars. There is a bunch of information for you. Emily put that in her slide deck. We have quick links. Hopefully all that goes through. Emily has done 10 webinars for us previously. They are all great. Did they come through Corey? you have to do piece by piece?

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Do you want me to do it?

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It doesn't always come through.

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Hold on a second audience. I will put the rest in there. it will take a second.

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If anybody needs a presentation today, I can email it to you.

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This is a terrific webinar. Hold on. Hopefully this will come through. Sorry for the slow process audience. Apologize for that. Not as nimble as I hoped it would be. I put a little bit more information there. there is a nice article by my colleague Scott Pauley. It is about the FDLP Academy. Please give that a look when you get a chance. FDLP Academy training repository is coming up next. We sent this webinar for an hour and a half because we usually have great long webinars. We have a little bit of time. Do we have any

other questions? Elizabeth had a question. When you talk about groundwater, do you mean the Ogalla Aquifer?

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yes. I put a link in for the Ogalla Aquifer.

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Okay. Memo was impressed as I was with that slide on groundwater ratio. That is a fascinating slide.

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Yeah, as a former hydrologist at heart, it is analyzing the amount of water in any region or system, it is so important to capture where the water is going and see how much there is during different scenarios. Because when you look at it from the earth scale, there isn't actually that much freshwater.

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Somebody said some of those links don't work. I am sorry about that.

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Do you want me to paste them from the presentation?

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Andrea, they should work, but why don't you email me, and I will send you any link that doesn't work. We will get that fixed for you. Let's see if we have got any --

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There is another.

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Car has a question, have you ever presented to public librarians or teachers?

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Yes. I have a lot. When I lived in Colorado, I presented once or twice a month to public librarians as well and teachers I would say almost every day I worked with them. Not just in Colorado, but around the country. I would be happy to help in any way.

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Great. Okay. Let me go into a wrap-up comment. We still have time for questions if you have them for Emily. Please keep them coming. First I would like to thank Emily for a really fantastic webinar. Really appreciate it. we are in discussions for future webinars. Keep checking your calendar. Also, I would like to thank my colleague Corey for keeping everything running smoothly today as he always does with tech support. Don't forget the upcoming webinars. One of the few benefits, if any, of Covid is that we are doing more webinars with higher registration and higher attendance. We have five more scheduled for July. The next one is Thursday July 23 titled podcasting using government documents. That should be a good one. I have this dream of having a podcast from GPO FDLP. If you have any suggestions, let me know. You can that she will get a notice of all of our upcoming webinars if you sign up for the news and events email on FDLP.gov. From the FDLP Academy webpage, which is linked to in the index at the bottom of the FDLP.gov homepage, you can view a calendar of upcoming webinars and other events, access past webinars from our archive and volunteered to present a webinar. I'm sure there people in the audience who could do a great webinar on any topic on government information, FDLP, FDLP management, anything FDLP would be a great candidate. Any last questions? Carl says he is going to be in touch. Thank you. Great job. Okay. Last chance for questions for Emily. We still have a little bit of time if you wanted to ask a question. A bunch of shout out. Great webinar. I agree with that. I will give it another minute and see what we get. Any last question for Emily? a little bit early. We want to cover everything. So much information on the slide deck. SLI.

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Atmospheric librarians group. It is a parallel group for the geoscience librarians. They are a great group as well.

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Joyce had the shadow. Thanks for the shout out a SLI. I will give it a little bit longer, and then we will close it out. This is terrific. I always learn so much from your webinars. I think the audience would agree with that.

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One of my colleagues recently asked me how I keep it all in my head. I just have a lot of information off the tip of my tongue.

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I have no idea how.

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So much information.

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It is a mystery. It is one of the reasons why my colleagues at the USGS encouraged me to become a librarian because I remembered publications and facts quickly.

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That is a fantastic quality. It looks like besides shout outs of the questions have stopped. I will reluctantly close things out. Thank you one more time Emily. Fantastic webinar. Hopefully we can arrange future ones with you. Thank you Corey. Thank you audience. Come on back to the FDLP Academy. If you have a suggestion for a podcast, please email me. Check out the Thursday webinar on podcasting. Documents library and runs a podcast with a lot of information. It is terrific. I encourage you to listen to it and check it out. Thank you and have a great rest of the day everyone.

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Thank you.

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Bye-bye. [Event Concluded]