Questions & Answers Part 3

Please type your questions in the Question Box. We will try our best to get to all your questions. If we don't, feel free to email Amita Mehta (amita.v.mehta@nasa.gov) or Sean McCartney (sean.mccartney@nasa.gov).

Question 1: Could it be possible that the match between observations and the model in Florida is better than in New York could be caused by elevation? The monitoring stations are at a certain elevation, while the 1 km MODIS data is the average over the whole area.
Answer 1: (Tabassum) Right now, we are in the process of looking and comparing our correlation results between NY and FL. This should be coming out soon. I don't have the results to share right now, but stay tuned for upcoming publications from our team. That is something we're keeping in mind. Along with closeness to water bodies. That's when the difference in geography between NY and FL. FL has more coastal areas and a hotter climate, so we're trying to keep all of that into account when we compare.

Question 2: If you lower the Watch/Warning thresholds, do you change the risk? Or, do you increase the time to take action to avoid the heat and therefore the risk? Risk is still a function of Temperature. Policy should provide for better outcomes.
Answer 2: (Tabassum) Yes, you are correct. Our research suggests that when a person is exposed to temp higher than 95 F they are at a significant risk of heat related illness. A changed thresholds allows people to better modify their behavior, be it not going out on a hot day, finding air conditioning, employers are giving warnings so that outdoor workers can, at least, stay hydrated. Since we work with NWS these warnings are given throughout the region and given through TV and radio stations, phone apps, and social media campaigns.

Question 3: Is the link to the "StoryMap" from Tabassum's presentation already public, or will this link later be communicated to the participants of the webinar?
Answer 3: (Tabassum) StoryMap is still under development. We do a review process so it's still being developed. It'll look more polished when it's published. It should be available at our website, and we'll put the link here: (later). Then when it's available, it will be available there. https://www.health.ny.gov/environmental/weather/data.htm

Question 4: Regarding climate change and health in NY, is the tool interactive, and in what environment was the tool built? Also, what program/software did you use? I am interested to apply a similar approach to local municipalities or departments.
Answer 4: (Tabassum) I am assuming this is referring to the StoryMap. That is interactive, it has many interactive features. You can click on different jurisdictions, look at docs related to heat profiles, look at the profile for a county, you can compare different years, and climate trends during different years. There are different features. We're linking out to National Weather Service sites and other programs - there's a bunch of resources within the StoryMap people can use. It is being developed using ArcGIS online - it is a neat tool that has been provided by ArcGIS online. It's fairly easy to pick up. If you're comfortable with doing spatial analysis - and have some maps you want to put up, an ArcGIS online account will allow you to take your shapefiles and put it in a StoryMap. I can put in your email, and if you're interested in developing it for your own jurisdiction, we'd be happy to share our techniques with you.

Question 5: In the example in NY, did you find significant differences according to poverty levels, is population below poverty more vulnerable in NY? How did you decide on the socioeconomic variables...could you please add more information about the dataset that you used?
Answer 5: (Tabassum) The details of the analysis are available through our website, and I can send a link to the vulnerability index. These were id'd from a comprehensive literature review. As expected, areas with large number of individuals below poverty line are at an increased risk.
https://ehjournal.biomedcentral.com/articles/10.1186/s12940-019-0467-5

Question 6: How is the public being alerted about daily heat warnings? (e.g. App, SMS, media, etc.)
Answer 6: (Tabassum) The project is connected through NWS, so via TV and radio broadcasts, apps, send out text alerts for extreme weather alerts. You can see those NWS alerts pop up when there's a thunderstorm. The same mechanism is used for heat warnings. These are transmitted to local TV and radio stations, and each area NWS has their own social media handles, and it goes out through Facebook and Twitter.

Question 7: Would you please ask Tabassum if they are also coordinating with urban planning departments or colleges? Planners often are responsible for long term coordination of seemingly disparate resources, and like visual data. As planners have to incorporate more climate change analysis into local plans, these tools could be very valuable.
Answer 7: (Tabassum) Our collaboration is with the climate smart communities program. As a health department we don't have a direct connection with urban planners, but the climate smart communities program has different local jurisdictions come together, and urban planners are a part of those in most cases. It helps us connect to this audience and make them aware of public health benefits of including climate resilience in urban planning. Tell them about dollar amount saved, which is always helpful when trying to plan. That's our way of connecting with those audiences.

Question 8: What's the source of inundation data, from satellite data analysis or from historical in situ measurements...or both?
Answer 8: (Sam) We simulate flood risk using a cascade of hydrologic models. This framework is called the Global Flood Risk with Image Scenarios (GLOFRIS) (Ward et al. 2013; Winsemius et al. 2013). For riverine flood hazards, GLOFRIS floods applies a global hydrological model called PCR-GLOBWB (Sutanudjaja et al., 2018). For coastal floor hazards, we use the Global Tide and Surge Reanalysis (GTSR) dataset (Muis et al., 2016) as a database of extreme water levels.

Question 9: In which countries is Aqueduct available?
Answer 9: (Sam) Aqueduct should be accessible in all countries and our data is global, so you should be able to find it wherever you're looking.

Question 10: Houston had more infrastructure damage, simply because it had more infrastructure. The question to ask is, given an area of urban development, how much damage occurred? A measure of proportion damage over just the urban areas [polygons or grids], ignoring non-urban areas may be more insightful.
Answer 10: (Amelia) I put that slide up just to give you an idea of the types of relative data we have on Resource Watch. If you are interested in digging deeper into these questions, our API lets you do some basic analysis on it, such as raster statistics. If you have a geography you're interested in, you would be able to upload that geography, and do some basic calculations on the impervious surface data, such as the sum or the average over that area. All of our datasets, once you go to the metadata

page, have either direct download or download from source. So you can download those files for yourself if you want to do more in-depth analyses. If you're interested in that data, I would encourage you to do any analysis you want either by downloading the data or using the API. See API Docs here: http://api.resourcewatch.org/

Question 11: What is the most suitable mapping software that should be used for WRI tools introduced here?
Answer 11: (Amelia) All of our tools are actually available directly online. So you can use them through any browser, get an idea of the data, visualize them there, see specific values. If you want to do more in depth analysis you can download the data, and you typically get a shapefile or raster - occasionally they might be netCDFs - and you can use whatever spatial products you're comfortable with: ESRI, QGIS, Python, etc.

Question 12: Can we use data sets for our research including the screenshots of the data representation for the presentations by mentioning the source/website?
Answer 12: (Amelia) For Resource Watch, you are welcome to use any screenshots. We're also going to be adding an export PDF feature soon. I showed you in the presentation how to export for embeds. If you are going to use any visualizations from Resource Watch, we ask that you cite the original source and say that it was "Accessed through Resource Watch." You can find our suggested citation for each dataset on its metadata page.
(Sam) Aqueduct has released all data with a technical note, and that technical note is what you can cite (https://www.wri.org/publication/aqueduct-30)
(Tabassum) Yes, you are welcome to use our slides with proper citations. The data is not available yet. But when it is, if you'd like to see it before it's publicly available, if you'd like to get the datasets, please contact me. We're also developing an executable to get these datasets directly from NASA and use the downscaling algorithm to downscale for your jurisdiction across the contiguous U.S. Feel free to contact me and I can connect you with these resources. My email is tabassum.insaf@health.ny.gov

Question 13: What is the correct form to cite the outputs from Aqueduct and Resource Watch?
Answer 13: (Amelia) For Resource Watch: cite original data source followed by "accessed through Resource Watch" and those are on our metadata page. Just go to the full Metadata page and you can copy/paste that.

Question 14: What type of data is available for cities with reference to fire risk?
Answer 14: (Amelia) On Resource Watch we have tons of data related to fire. A few we showed you - Fire Weather dataset in demo, data showing current fires and large fires. You might want to look at the Standardized Precipitation Index (SPI). We have a dataset on vulnerability to floods and droughts. Some of the Aqueduct data related to droughts. I would encourage you to go into our catalog and type in “fire risk” and see what pops up.

Question 15: Are the data in Aqueduct in raster format? How can we extract the data from the tool?
Answer 15: (Sam) For the Water Risk Atlas tool, look for the “Data” tab on the top toolbar (https://www.wri.org/resources/data-sets/aqueduct-global-maps-30-data). We provide all indicators in a master database that is available in few different formats (CSVs, geodatabase, QGZ). The master database contains results for sub-catchments, states, and aquifers. Data for floods will be released this fall.

Question 16: I would like to ask about Tabassum Insaf's presentation, specifically on slide 17. Is there any correlation between Heat Stress and Acute Kidney Failure? How much does one correlate them?
Answer 16: (Tabassum) We did look at a couple of different health outcomes and thank you for the question. I skipped over the results for acute kidney failure in the interest of time. We do find there are significant effects - the most prominent effect occurs one day after an extreme heat event. The results of our analysis have been published, and I can put in a link to our research paper. Specifically, we did find that the risk of kidney failure increases even up to 7 days after a heat event.
https://ehjournal.biomedcentral.com/articles/10.1186/s12940-019-0467-5

Question 17: There's plenty of global datasets available on the website. What's the adoption rate from national government agencies in using such great datasets and tools? Is capacity building a felt need for these national agencies to adopt these technologies?
Answer 17: (Amelia) Governments are one of our target audiences, so we highly encourage any members of the gov’t to use our data. We’re trying to reach out to people using Resource Watch and find out how they’re using it. If you know of any members of government interested in using this type of data, tell them to reach out to

us. We're happy to work with them, to help them through any problems they may have. Feel free to contact us!

Question 18: If I need to publish my work in a research paper, how can we use the data from the given tools?
Answer 18: (Amelia) If you would like to download data from Resource Watch, as I've mentioned we have the direct download link. If I'm understanding correctly, you're asking how to access the data - we have download links, so you can download the data to do whatever analysis related to your research you'd want.
(Tabassum) Feel free to contact me, and we can talk about how you can access the data since it isn't available yet, but it should be publically available soon. My email is tabassum.insaf@health.ny.gov

Question 19: I'm interested in the computational infrastructure required to store these tools and databases. What are the hardware requirements for WRI's Resource Watch tools?
Answer 19: (Amelia) In order to use Resource Watch, all you need is an internet connection and a browser. You can go to the website and interact with our data there. If you want to download the data and do a more in-depth analysis, you need a computer that can run whatever spatial software you have (ArcGIS, QGIS, Python).
(Emily) If you're more interested in back-end infrastructure, we have all the datasets stored on an API. The API uses a microservice infrastructure and is built on Google Kubernetes Engine (GKE). The API stores layer configurations for rendering the data on the map, metadata, specifications for graphs and charts. If you have any questions on how that API infrastructure works, just email us on the Resource Watch team and we can tell you more! (Or refer to the API Docs: http://api.resourcewatch.org/)

Question 20: if the Indian government wants to collaborate with Research Watch, what is the proper way to officially approach your organization?
Answer 20: (Amelia) With Resource Watch, we're a pretty small team, so you can reach out to anyone on the slides (amelia.snyder@wri.org, Elizabeth.Saccoccia@wri.org, Corey.Filiault@wri.org) and let us know you want to work with us and let us know what sort of work you're interested in doing. Whoever you send your email, we'll make sure it gets sent to the most relevant person. Feel free to email any of us.

Question 21: I'm interested in the processing of downscaling coarser resolution data from climate models using higher resolution local climatological variables. This is similar to the extreme heat in NY example. Can you give a summary of the process? The steps in data collection, manipulation, processing, verification, and what the recommended software is to use?
Answer 21: (Tabassum) This is a little outside my expertise - I will connect you to our team at University Space Research Association (USRA) who is responsible for the downscaling. Our paper for downscaling methodology is in the second round of review and should be published soon. I'll put that in the documentation when it's available. I can - if you can email me - put you in touch with our scientists at USRA who led the downscaling. My email is tabassum.insaf@health.ny.gov My colleague at USRA who is involved with downscaling is Mohammad AlHamdan: mohammad.alhamdan@nasa.gov

Question 22: May I use WRI resources and data sets to develop teaching materials and laboratory exercises at my institution? If so, what sort of acknowledgement is needed?
Answer 22: (Amelia) At least for Resource Watch, we encourage you to use our materials in your teaching and laboratory exercises. Just mention you're using Resource Watch, and maybe include a link or citation in any handouts. If you're interested in developing more education materials, I would connect you with Corey (Corey.Filiault@wri.org) who has been working with teachers to incorporate Resource Watch into their lesson plans.
(Sam) Aqueduct is thrilled to have materials in lesson plans, and you can visit our FAQ for details on how to do that: https://www.wri.org/aqueduct/faq

Question 23: For determining socioeconomic risk, which indicators have been considered?
Answer 23: (Tabassum) The socioeconomic risk is part of our vulnerability analysis, and I put the link above of all the variables we used for the analysis. And socioeconomic data included educational layers, unemployment rate, and number of people below the poverty level. Again, I'll put in the link to the paper, as well, so you can look at all the details. https://ehjournal.biomedcentral.com/articles/10.1186/s12940-019-0467-5

Question 24: Does Resource Watch monitor in any way algae bloom or for instance sargassum tracks and movement in the ocean?
Answer 24: (Amelia) The chlorophyll concentration dataset covers the entire ocean - I'm not much of an algae expert, but search and see if there's any relevant ones.

(Sam) In Aqueduct Water Risk Atlas, we have an indicator called Coastal Eutrophication Potential that measures the potential for riverine loadings of nitrogen, phosphorus and silica to stimulate harmful algal blooms in coastal waters. (https://www.wri.org/applications/aqueduct/water-risk-atlas)

Question 25: In short, what is the best tool between Aqueduct and Resource Watch data covers?
Answer 25: (Amelia) The tools have different intended purposes. For Research Watch, our primary focus is being able to bring together data from different areas and looking for contextual info, like what populations are affected, what's the GDP in that area. Whereas Aqueduct is much more specific if you want to do more water related topics. (Sam) It's all about what you're trying to do, and I think that's how you select tools. Aqueduct is really useful for screening water-related risks.

Question 26: Can we use Resource Watch for monitoring the state of the coastal forests in the Baltic Sea area?
Answer 26: (Amelia) All the datasets on Resource Watch are global or near-global. We have a number of datasets related to deforestation or forest gain. So yes, you should be able to monitor some factors around the Baltic Sea area. You can login, pull up relevant datasets, and zoom into your area of interest.

Question 27: Are datasets hosted by WRI available to download?
Answer 27: (Amelia) Yes - almost all the datasets are available for download. On Resource Watch all data has a metadata page with a direct download link or a link to the source to download data from them. Aqueduct has all their data available for download on their platform as well.

Question 28: Question to WRI team: whom should I contact if I need very specific data, something which is not yet covered and where a specific hazard needs to draw information from very different data sources (some of which only in the process of being collected as we speak)?
Answer 28: (Amelia) You can see the URL here where you can suggest datasets for us to add to Resource Watch (https://resourcewatch.org/get-involved/contribute-data). If it's currently being collected, that might be difficult. We make sure all our datasets are trustworthy and peer-reviewed, so we would need verification the data has been

reviewed by experts. But if you have data for us to review, go to that site and we'll let you know if it meets our standards

Question 29: On the Heat-Related Illness vs. Distribution of Cooling Benefits slide, there was "No Data" reported for New York City. Is there a separate analysis for NYC?
Answer 29: (Tabassum) The NYC Dept of Health and mental hygiene has their own program and energy assistance program. We worked with our state program, and there is a difference between the two. I'm not aware of a second cost distribution for NYC, but I'd be happy to put you in touch with our collaborators in the NYC dept of health to see if data exists for that. Please contact sjohnso5@health.nyc.gov for more information about NYC.

Question 30: Have the data and indicators on Resource Watch been evaluated/validated? If yes, is that literature also available through the website? If so, where?
Answer 30: (Amelia) All the data on Resource Watch is evaluated to make sure it's trustworthy. We try to make sure the data is open so you can download and use it, and that it's the most relevant data. We also try to make sure it's peer-reviewed and the most up-to-date. We do review everything. We do have a "Learn More" button where you can go to the methodology and learn more about that specific dataset and how they created it.
https://resourcewatch.org/get-involved/data-policy