

## **Data Delivery Needs Survey**

OMB Control Number: xxxx

Expiration Date: xxxx

This survey is being conducted by the National Water Census team at the U. S. Geological Survey (USGS) [LINK TO EMAIL ADDRESS: [gs-w\\_nwc@usgs.gov](mailto:gs-w_nwc@usgs.gov)].

The National Water Census (NWC) is a new USGS data delivery system, currently under development, that will serve modeled water supply, demand, and availability information across the US. It will greatly extend the existing set of USGS water data outputs by providing three new types of information: 1.) Modeled water availability and hydrologic subcomponents with complete spatial coverage across the nation; 2.) Quantitative trends in water availability and quality calculated at measured sites; and 3.) The status of streamflow conditions relative to their ability to support healthy aquatic ecosystems.

The purpose of this survey is to give the NWC team a better understanding of how we can best serve future users' needs. The results from this survey will be used to guide further development of the NWC and help determine how NWC outputs should be integrated with existing USGS water data.

This survey should take 10-15 minutes to complete. Your responses will not be shared with anyone outside of the USGS NWC team, but may be anonymized, aggregated, and published in a future report or journal article. We will share the survey results with you and will be sure to get permission if we would like to include direct quotes in any way. We thank you for your time!

**Privacy Act Statement:** You are not required to provide your contact information in order to submit your survey response. However, if you do not provide contact information, we may not be able to contact you for additional information to verify your responses. If you do provide contact information, this information will not be shared with any other organization and will only be used to initiate follow-up communication about this project if needed. The records for this collection will be maintained in the appropriate Privacy Act System of Records identified as [DOI Social Networks (Interior/USGS-8) published at 76 FR 44033, 7/22/2011]. Paperwork Reduction Act statements: [16 U.S.C. 1a7] authorized collection of this information. This information will be used by the U.S. Geological Survey to better serve the public. Response to this request is voluntary. We estimate that it will take 15 minutes to prepare and respond to this collection. We will not distribute responses associated with you as an individual. We ask you for some basic contact information to help us interpret the results and, if needed, to contact you for clarification.

**The Paperwork Reduction Act of 1995** (44 U.S.C. 3501), states that an agency may not conduct or sponsor, and you are not required to respond to a collection of information unless it displays a currently valid OMB control number and expiration date. You may submit comments on any aspect of this collection. Please note that comments submitted in response to this collection are public record. Comments on this collection should be sent to the Clearance Office at [gs-info\\_collections@usgs.gov](mailto:gs-info_collections@usgs.gov).

### **Section 1: Basic demographic information**

Objective: Responses to the questions in section 1 will allow us to coordinate logistics for an interview or for contact info. \* denotes required questions

1. \*First name: \_\_\_\_\_
2. \*Last name: \_\_\_\_\_
3. \*Email address: \_\_\_\_\_
4. Phone number: \_\_\_\_\_
5. (Dropdown menu) \*State in which you live, work, and/or are most interested in water issues
6. \*Would you intend to use the National Water Census in a professional or personal capacity?
  - Personal capacity (Go to Section 2)
  - Professional capacity (Go to Section 1a)
  - Both personal and professional capacities (Go to Section 1a)

#### Section 1a: Professional affiliation details

7. Organization name: \_\_\_\_\_
8. Position: \_\_\_\_\_
9. Select the type of organization you are professionally affiliated with.
  - Congress
  - Federal agency
  - State agency
  - City, town, or township agency
  - County agency
  - Tribe
  - University
  - NGO
  - Private / industry
  - Other (Includes political subdivisions not otherwise categorized, including water authorities; irrigation, flood control, drainage, and other districts; etc.):  
\_\_\_\_\_
10. Select the type of professional role that mostly closely match yours.
  - Scientist/researcher
  - Natural resource manager
  - Policy maker/advisor
  - Regulator
  - Advocate
  - Consultant
  - Lobbyist
  - Landowner
  - Business owner
  - Press/reporter
  - Other: \_\_\_\_\_

11. Select the sector that you are professionally associated with.

- Water resources
- Water utility
- Manufacturing
- Energy/minerals
- Agriculture
- Forestry
- Fishing
- Disaster/emergency management
- Land development/construction
- Environment/conservation
- Climate change adaptation
- Transportation
- Health
- Tourism/recreation
- Other: \_\_\_\_\_

12. Are you employed by USGS?

- Yes
  - Select the area(s) you are part of.
    - Internal – Mission Area
      - [TYPE THE Mission Area]: \_\_\_\_\_
    - Internal – Science Center
      - [TYPE THE SCIENCE CENTER]: \_\_\_\_\_
    - Internal – Region
      - [TYPE THE REGION]: \_\_\_\_\_
- No

## ***Section 2: Current USGS water data usage***

***Objective Q1: Responses to the questions in this section will allow us to better understand data and information delivery mechanisms that have worked well for users in the past and to catalog favorite and least favorite examples of data delivery mechanisms.***

1. (Multiple answer) Select all the way(s) in which you have accessed or viewed USGS water data in the past year.

- [National Water Dashboard](#)
- Monitoring Location Pages ([example](#))
- [NWIS mapper](#)
- [Water Quality Watch](#)
- [Water Watch](#)
- [Groundwater Watch](#)
- [Water Quality Portal](#)
- [National Groundwater Monitoring Network](#)
- [WaterAlert](#)

- [USGS Water Services](#)
- [ulmo](#) (using Python)
- [dataRetrieval](#) (using R)
- Email a specific USGS team for data extraction
- Other (type out separated by commas): \_\_\_\_\_
- I did not access or view USGS water data in this past year but have before. (*Skip to #3*)
- I have never accessed or viewed USGS water data but would like to in the future. (*Skip #3*)

Objective Q2: To better understand user workflows and the necessary characteristics of useful datasets.

2. Approximately how often have you accessed or viewed USGS water data in the past year?
- Everyday
  - A few times a week
  - About once a week
  - A few times a month
  - About once a month
  - A few times a year
  - About once a year

Objective Q3: To better understand how users would use NWC model output to make decisions and whether these model outputs would improve their ability to do their job.

3. (*Multiple answer*) Select the typical purpose(s) you have for using or wanting to use USGS water data.
- Policymaking
  - Managing environmental resources
  - Environmental advocacy
  - Emergency management
  - Long-term planning
  - Real-time decision-making
  - Exploratory science
  - Research (any organizational category – e.g., academic, government, private consulting, non-profit, etc.)
  - Teaching – K-12
  - Teaching – Higher Education
  - Communicating science to the general public
  - For personal or family safety
  - For recreational activities / sports (boating, fishing, swimming, etc.)
  - To understand local water issues (drinking water, flooding, pollution, etc.)
  - For local environmental resource use (lake associations, hunt clubs, home-owners' associations, etc.)

- For fun / out of personal curiosity
- Other: \_\_\_\_\_

### **Section 3: How you would use NWC**

Objective Q1: To better understand user workflows and the necessary characteristics of useful datasets.

1. \*Select the ways in which you would anticipate interacting with modeled water supply, demand, and availability outputs that are part of the National Water Census.
  - Obtaining and analyzing raw model output data (Go to Section 3a)
  - Viewing web-based summary or status visualizations, fact sheets, and/or reports based on model outputs (Go to Section 3b)
  - Both of the above (Go to Section 3a)

### **Section 3a: Which NWC outputs are of interest to operationalized pull users, if any**

Objective Q1: To better understand user workflows and the necessary characteristics of useful datasets.

1. \*(Multiple answer) The National Water Census is slated to serve the following new modeled (as opposed to measured) variables and computed trends. Select all that would be useful to you in either your work or for personal use.

Variables related to **water quantity and flow**:

- Modeled evapotranspiration, or ET (canopy evaporation, surface evaporation, and transpiration combined)
- Modeled runoff
- Modeled streamflow
- Modeled canopy water storage (liquid and frozen)
- Modeled groundwater recharge
- Modeled groundwater storage depth (from bedrock up)
- Modeled long-term average baseflow
- Modeled long-term average depth to water table
- Modeled snow depth, snow-water-equivalent, snow-pack, albedo, and temperature
- Modeled snowmelt
- Modeled soil frozen water content
- Modeled soil moisture
- Modeled soil temperature
- Calculated historical trends in measured streamflow (from USGS stream gages)

Variables related to **water quality**:

- Modeled groundwater quality concentration
  - Nitrogen
  - Phosphorus
  - Salinity

- Other: \_\_\_\_\_
- Modeled surface water quality concentration or loads
  - Nitrogen
  - Phosphorus
  - Salinity
  - Wastewater percentage
  - Concentration of emerging contaminants of concern (consumer products, pharmaceuticals)
  - Sediment
  - Temperature
  - Other: \_\_\_\_\_
- Calculated surface water quality concentration, loads, and/or historical trends (based on monitoring locations)
  - Nitrogen
  - Phosphorus
  - Salinity
  - Wastewater percentage
  - Concentration of emerging contaminants of concern (consumer products, pharmaceuticals)
  - Sediment
  - Temperature
  - Other: \_\_\_\_\_

Variables related to **water use, supply, and demand:**

- Modeled water withdrawal (irrigation)
- Modeled water withdrawal (thermoelectric)
- Modeled water withdrawal (public supply)
- Modeled water consumption (irrigation)
- Modeled water consumption (thermoelectric)
- Predicted modeled reservoir storage
- Calculated historical trends in measured water storage
- Modeled total water demand
- Modeled total water supply
- Modeled water availability (calculated as supply minus demand)

Variables related to **aquatic ecosystems:**

- Modeled likelihood of hydrologic modification exceeding ecological threshold for fish (ecoflows)
- Ecoflows statistics (selected statistics relevant to the ecological threshold analysis)

None of the above:

- None of the above

*If respondent selects “None of the above,” go to Section 4b. If respondent selects anything other*

than “None of the above,” go to Section 4a.

**Section 3b: Which NWC outputs are of interest to check status users, if any**

Objective Q1: To better understand user workflows and the necessary characteristics of useful datasets.

1. *\*(Multiple answer)* The National Water Census is slated to serve the following new modeled (as opposed to measured) variables and computed trends. Select all that would be useful to you in either your work or for personal use.
  - Modeled variables and computed trends related to **water quantity and flow**. (Examples include modeled streamflow, evapotranspiration, precipitation, soil moisture, snow-water-equivalent, and groundwater recharge, as well as historical trends in measured streamflow.)
  - Modeled variables and computed trends related to **water quality**. (Examples include modeled groundwater quality and stream temperature, as well as historical trends in surface water quality load.)
  - Modeled variables and computed trends related to **water use, supply, and demand**. (Examples include modeled water consumption for irrigation / thermoelectric purposes, withdrawal for public supply / irrigation / thermoelectric purposes, and total supply / demand, as well as historical trends in measured water storage.)
  - Modeled variables and computed trends related to **aquatic ecosystems**. (Examples include modeled likelihood of hydrologic modification exceeding ecological thresholds for fish and the statistics relevant to this analysis.)
  - None of the above

*If respondent selects “None of the above,” go to Section 4b. If respondent selects anything other than “None of the above,” go to Section 4a.*

**Section 4a: Details on how respondent would use NWC**

*There are 4 possible chosen outputs: Water quantity and flow, Water quality, Water use / supply / demand, Aquatic ecosystems. Thus, the respondent will go through this section a max of 4 times.*

Objective Q1: To better understand how users would use NWC model output to make decisions and whether these model outputs would improve their ability to do their job.

1. *(Multiple answer)* For model output related to [EACH CHOSEN OUTPUT], select all the ways in which you would use this information.
  - Policy making
  - Managing environmental resources
  - Environmental advocacy
  - Emergency management
  - Long-term planning

- Real-time decision-making (using data from the last weeks, days, or hours)
- Exploratory science
- Research (any organizational category – e.g., academic, government, private consulting, non-profit, etc.)
- Teaching – K-12
- Teaching – Higher Education
- Communicating science to the general public
- For personal or family safety
- For recreational activities / sports (boating, fishing, swimming, etc.)
- To understand local water issues (drinking water, flooding, pollution, etc.)
- For local environmental resource use (lake associations, hunt clubs, home-owners' associations, etc.)
- For fun / out of personal curiosity
- Other: \_\_\_\_\_

Objective Q2-Q7: To better understand user workflows and the necessary characteristics of useful datasets.

2. (Multiple answer) For model output related to [EACH CHOSEN OUTPUT], what model scenarios are you interested in? Select all that apply.
  - Historical (previous ~40 years)
  - Recent time period (last month, last week, or yesterday)
  - Real-time or current conditions
  - Short-term forecasts (next few hours to ~2 days out)
  - Medium-term forecasts (~2-10 days out)
  - Subseasonal forecasts (~10 days to 1 month out)
  - Seasonal forecasts (~1-3 months out)
  - Long-term climate change-driven projections (50-100 years out)
  - Testing what would happen if something changed or some action were applied
3. For model output related to [EACH OUTPUT CHOSEN], what would be the ideal update frequency?
  - Sub-daily
  - Daily
  - Weekly
  - Monthly
  - Annually
  - Other: \_\_\_\_\_
4. For model output related to [EACH OUTPUT CHOSEN], with what regularity would you visit the delivery system or use code / web services to obtain these data?
  - Daily
  - Weekly
  - Monthly



- Annually
  - As needed when there's an emergency
  - Other: \_\_\_\_\_
5. (*Multiple answer*) For model output related to [EACH OUTPUT CHOSEN], what spatial scale(s) or resolution(s) would be most appropriate for your analyses and workflows?
- CONUS-wide / national
  - HUC6
  - HUC8
  - HUC12
  - NHD+ medium resolution catchments
  - NHD+ medium resolution river reaches
  - Utility service areas
  - Water districts
  - Major aquifer extents
  - Ecoregions
  - Physiographic provinces
  - County
  - City
  - State
  - Other: \_\_\_\_\_
6. (*Multiple answer*) For model output related to [EACH CHOSEN OUTPUT], how would you prefer to access, visualize, and/or download the data? Select all that apply.
- Plotted on a static map
  - Plotted on an interactive (clickable and zoomable) map
  - Important features of the data interpreted and summarized in a factsheet
  - Important features of the data interpreted and summarized in a StoryMap
  - Important features of the data interpreted and summarized in a longer report
  - Download via dataRetrieval in R
  - Download via ulmo in Python
  - Download via USGS Water Services
  - Download via standalone NWC-specific API (not USGS Water Services)
  - Download by clicking through an interactive map
  - Download by clicking through a standalone NWC data portal
  - Download by clicking through another existing USGS data portal (e.g., Model Catalog, ScienceBase)
  - Other: \_\_\_\_\_
7. If the output were available on the appropriate spatial and temporal resolutions, over the needed spatial and temporal extents, and downloadable or viewable via your preferred method, how likely would it be for you to incorporate model output related to [EACH CHOSEN OUTPUT] into your current workflows?
- Highly unlikely (no chance)
  - Unlikely
  - Neither likely nor unlikely

- Likely
- Highly likely

***Section 4b: Understanding why the respondent would not use any listed NWC outputs and what they would want instead***

*Objective Q1-Q3: To better understand user workflows and the necessary characteristics of useful datasets.*

1. Are you interested in modeled outputs other than those listed above as part of the National Water Census?
  - Yes
  - No
2. If yes: List the modeled outputs and / or variables you are interested in (separated by commas).
3. If no: What would make you more interested in modeled outputs?
- 4.

***Section 5: Conclusion***

*Objective: To coordinate logistics for an interview or for contact info.*

1. Would you be willing to participate in a virtual interview to share more information and ideas? The interview will last ~1 hour and help us learn more about your thoughts on the NWC and potential needs of yours that the NWC could fulfill. If yes, we will follow up with you via email to schedule.
  - Yes
  - No
2. Is there anything else you would like us to know?

Thank you so much for your participation! If you have any questions for us, please email us at [gs-w\\_nwc@usgs.gov](mailto:gs-w_nwc@usgs.gov). We will be following up with you via email shortly if you signed up for a virtual workshop. Otherwise, we will let you know when the results of this survey are being published or presented.