Focus Group Follow-up Survey

Thank you for participating in an earlier focus group for our project testing the understandability and usefulness of National Weather Service (NWS) hydrology products. We have taken your suggestions into consideration and made revisions to the Probability of River Levels product. We modified colors, added percentiles, and clarified wording. Now, we ask you to once again provide us your feedback by answering the questions below. It will help us determine how helpful the revisions are for improving understanding and usability.

As a reminder, this project focused on probabilistic forecast products. The forecasts are assembled from a variety of meteorological models that show a range of possible scenarios of differing location, timing and amounts of precipitation. The ensemble river forecasts show what the river would be for different precipitation scenarios. The NWS would like to understand how these tools can be helpful to individuals who need to be aware of the possibility of flooding where they live.

Please note we are asking demographic and flood experience information again because we need to identify whether there are differing needs for information and opinions about the products, as that will inform our recommendations to the NWS.

* Required

1. What is your age? *

Check all that apply.

- [ ] <20
- [ ] 20-29
- [ ] 30-39
- [ ] 40-49
- [ ] 50-59
- [ ] 60-69
- [ ] 70+

2. What is your gender? *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Prefer not to say
- ◯ Prefer to self describe

3. What is the highest level of education completed? *

Mark only one oval.

- ◯ High school/GED
- ◯ Associate's/2-year Degree
- ◯ Bachelor's/4-year Degree
- ◯ Post graduate work
- ◯ Other: _____

4. We are interested in your experience with extreme weather/flood events. How many times have you been directly affected by flooding (property affected)? Please put a number. *

_____

5. About how many times were you inconvenienced by flooding (had to change plans/travel)? Please put a number. *

_____

6. How many times have family or friends experienced flooding? Please put a number. *

_____

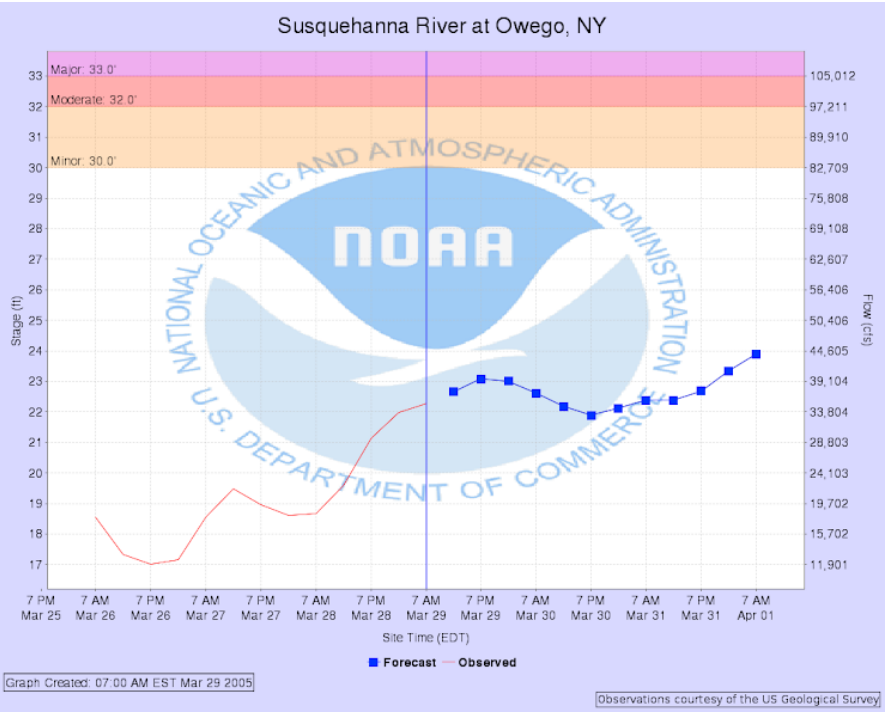
Interest in flood related products

7. Are you interested in forecasts of river levels? *

Mark only one oval.

- ◯ Yes, definitely
- ◯ Somewhat
- ◯ Not really
- ◯ Definitely not
- ◯ Other: _____

Example of Hydrograph (APHS)

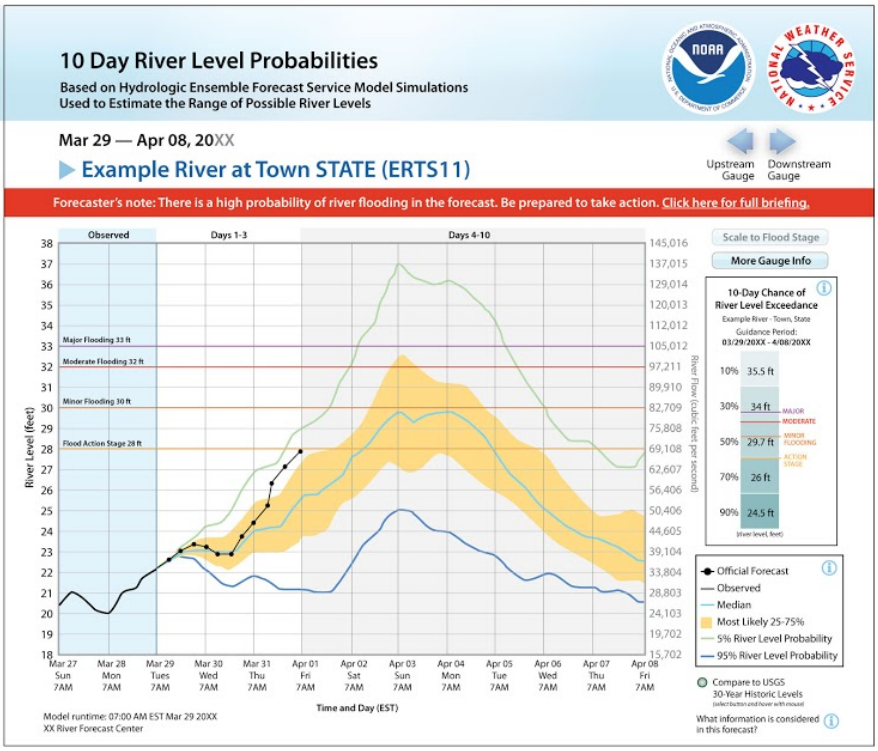


8. Is the Hydrograph (APHS) useful to you? *

Mark only one oval.

	1	2	3	4	5	
Not at all useful	◯	◯	◯	◯	◯	Very useful

Example of Probability of River Level Forecast

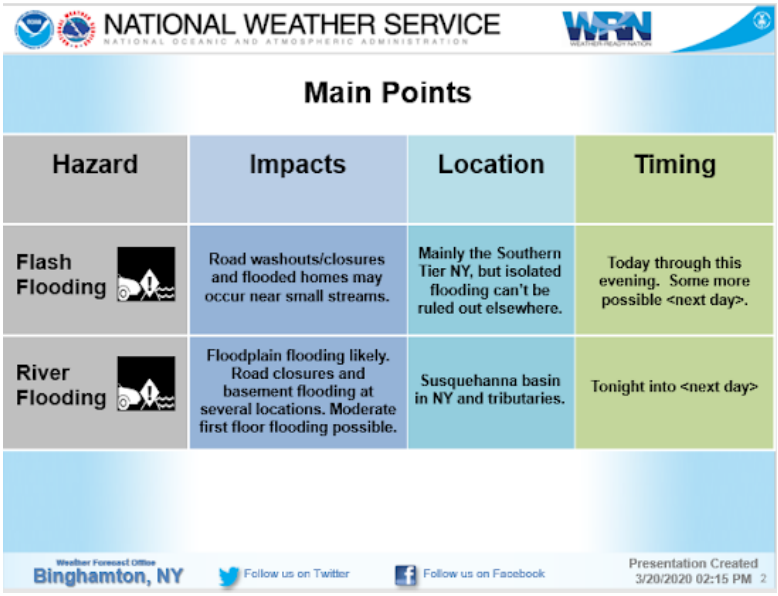


9. Is the Probability of River Level Forecast product useful to you? *

Mark only one oval.

	1	2	3	4	5	
Not at all useful	◯	◯	◯	◯	◯	Very useful

Example of part of a Briefing package.



10. Is the briefing package (multiple products packaged together with text/information from local Weather Forecast Office) useful to you? *

Mark only one oval.

	1	2	3	4	5	
Not at all useful	◯	◯	◯	◯	◯	Very useful

Focus Group participation

11. When did you participate in a focus group *

Mark only one oval.

- ◯ Spring 2019
- ◯ Fall 2019
- ◯ Other: _____

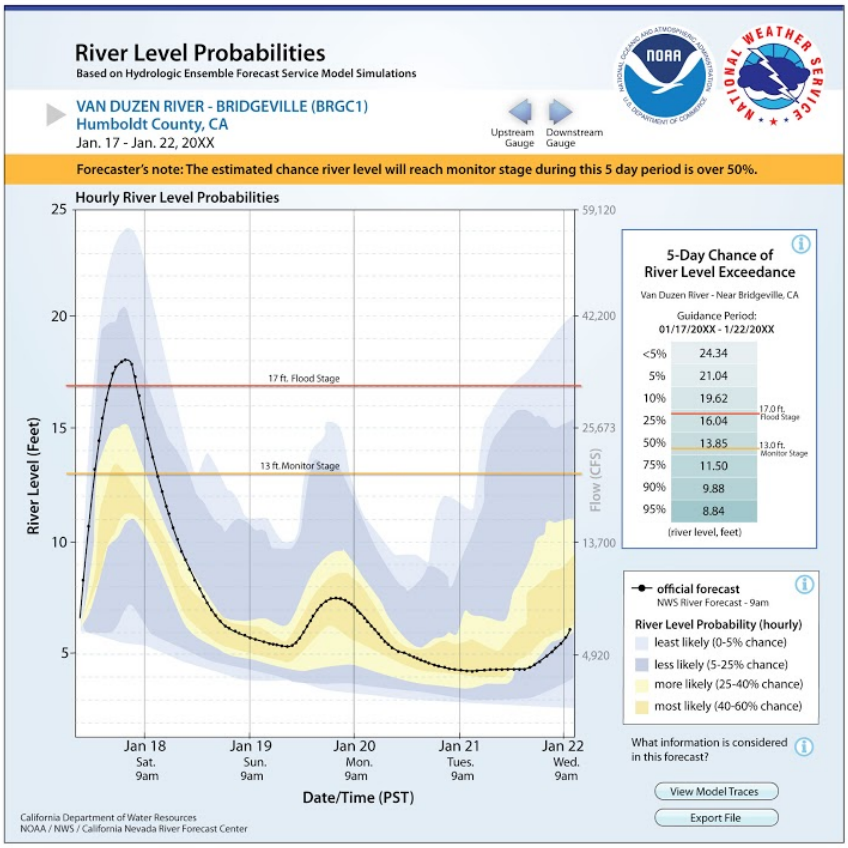
12. What focus group location did you participate in? *

Mark only one oval.

- ◯ Eureka, CA *Skip to question 13*
- ◯ Owego, NY *Skip to question 24*
- ◯ Gunnison, CO *Skip to question 38*
- ◯ Durango, CO *Skip to question 49*

Eureka, CA

Use the product below to answer the following questions.



13. What is this product telling you (check all that apply)? *

Check all that apply.

- [ ] It is most likely (40-60% chance) that river levels will stay below flood stage from Jan 17 to 22
- [ ] There is a small possibility that flood stage could be reached on Jan 22
- [ ] Flooding will occur Jan 17
- [ ] No flooding will happen Jan 17 to Jan 22
- [ ] Other: _____

14. After viewing this product how do you view the risk of flooding from Jan 17-22? *

Mark only one oval.

- ◯ Very high
- ◯ Somewhat high
- ◯ Neither high nor low
- ◯ Somewhat low
- ◯ Very low
- ◯ Other: _____

15. Would you take any actions as a result of this product? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

16. If yes, what actions would you take as a result of this product (check all that apply).

Check all that apply.

- ☐ Seek out more information
- ☐ Talk to family, friends, and neighbors.
- ☐ Take action to secure outdoor property and reduce property loss from flooding
- ☐ Make sure to have an emergency preparedness kit/stock up on food, water, and batteries
- ☐ Keep an eye on the river

Other: ☐ _____

17. If no, why (check all that apply)?

Check all that apply.

- ☐ I'm not concerned about flooding risk
- ☐ The information in this product doesn't tell me enough
- ☐ I don't believe the forecast
- ☐ I don't know what actions to take

Other: ☐ _____

18. How useful is this product (select one)? *

Mark only one oval.

- ◯ Very useful
- ◯ Somewhat useful
- ◯ Neutral (neither useful nor not useful)
- ◯ Somewhat not useful
- ◯ Not useful

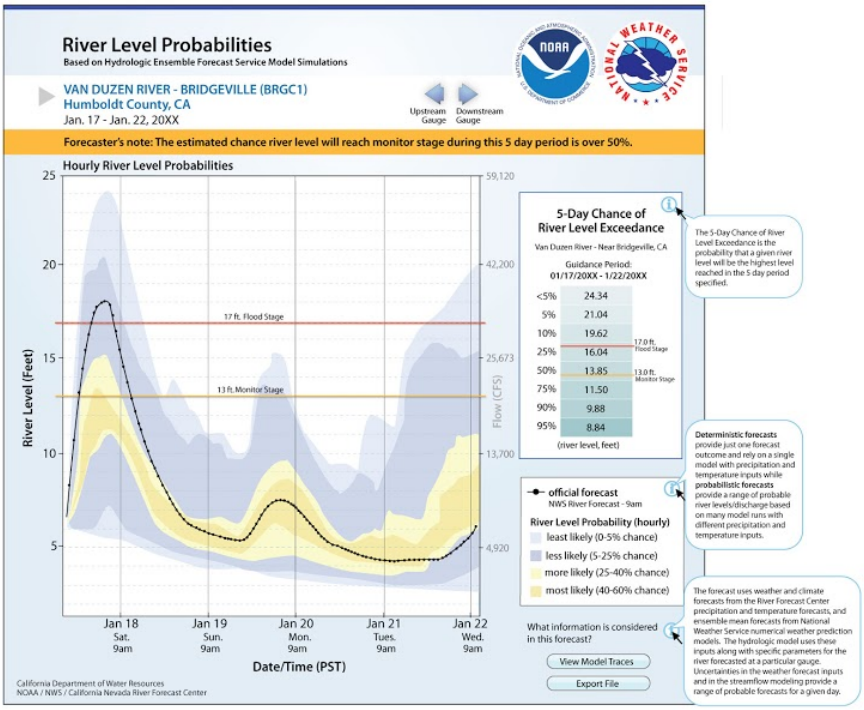
19. How likely are you to use this product in the future? *

Mark only one oval.

- ◯ Very likely
- ◯ Somewhat likely
- ◯ Neutral (neither likely nor unlikely)
- ◯ Somewhat unlikely
- ◯ Very unlikely

River Level Probabilities

Use the product below to answer the following questions.



20. What elements of this product are most useful in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages (0-5%, 5-25%, 25-40%, 40-60%)
- [ ] Likely categories (least, less, more, most)
- [ ] Time period
- [ ] Flood levels (monitor and flood stage)
- [ ] River level (left axis)
- [ ] Flow (right axis)
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] 5-Day chance of exceedence (box on right side)
- [ ] Option to click upstream and downstream gauge (top arrows)
- [ ] Information pop-ups (i)
- [ ] Option to view model traces
- [ ] Option to export file
- [ ] None

Other: [ ] _____

21. What elements of this product are not useful or confusing to you in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages (0-5%, 5-25%, 25-40%, 40-60%)
- [ ] Likely categories (least, less, more, most)
- [ ] Time period
- [ ] Flood levels (monitor and flood stge)
- [ ] River level (left axis)
- [ ] Flow (right axis)
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] 5-Day chance of exceedence (box on right side)
- [ ] Option to click upstream and downstream gauge (top arrows)
- [ ] Information pop-ups (i)
- [ ] Option to view model traces
- [ ] Option to export file
- [ ] None

Other: ☐ _____

22. What additional information or elements would make this product more useful or understandable to you (if any)? *

_____

_____

_____

_____

_____

23. The official/deterministic forecast is higher than the probabilistic forecast on Jan 17, how does that affect your perception of the forecast given? (check all that apply) *

Check all that apply.

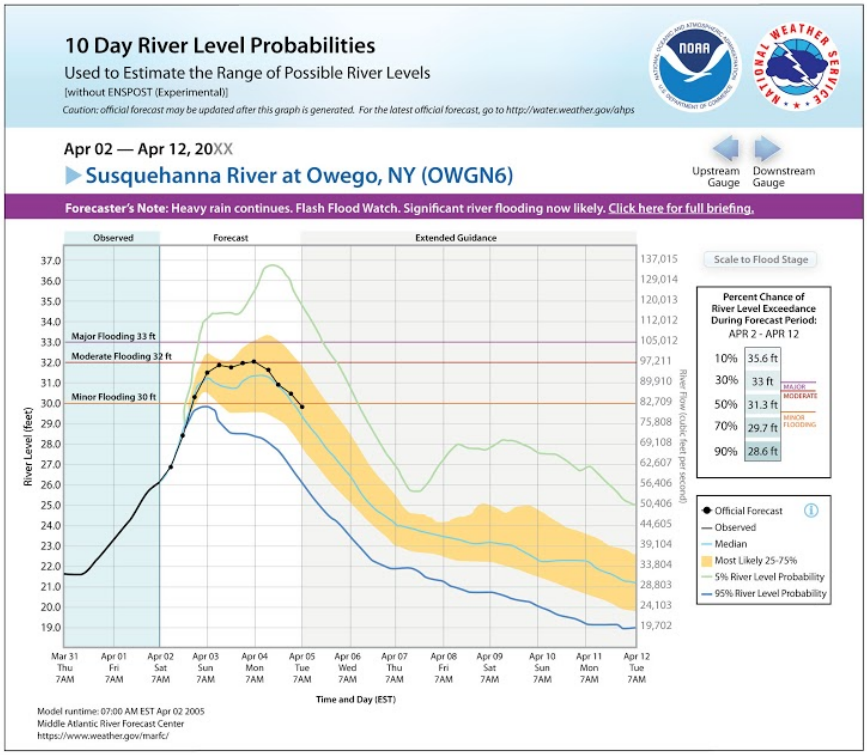
- [ ] I would have less confidence in both forecasts
- [ ] I would have less confidence in the deterministic forecast
- [ ] I would have less confidence in the probabilistic forecast
- [ ] I would not trust future forecasts from this source
- [ ] I would seek out more information to understand why they differed
- [ ] I would ask a forecaster/expert for their opinion
- [ ] I would ignore the forecast

Other: ☐ _____

Skip to question 60

Owego, NY

Use the product below to answer the following questions.



24. What is this product telling you (check all that apply)? *

Check all that apply.

- [ ] Minor flooding is likely on April 3rd.
- [ ] Major flooding is not at all likely from April 2nd to April 12th
- [ ] There is a chance of minor flooding on April 6th
- [ ] Moderate flooding is likely to occur on April 5th

Other: [ ] _____

25. After viewing this product how do you view the risk of flooding from April 2nd to 12th? *

Mark only one oval.

- ◯ Very high
- ◯ Somewhat high
- ◯ Neither high nor low
- ◯ Somewhat low
- ◯ Very low
- ◯ Other: _____

26. Would you take any actions as a result of this product? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

27. If yes, what actions would you take as a result of this product (check all that apply).

Check all that apply.

- ☐ Seek out more information
- ☐ Talk to family, friends, and neighbors.
- ☐ Take action to secure outdoor property and reduce property loss from flooding
- ☐ Make sure to have an emergency preparedness kit/stock up on food, water, and batteries
- ☐ Keep an eye on the river

Other: ☐ _____

28. If no, why (check all that apply)?

Check all that apply.

- ☐ I'm not concerned about flooding risk
- ☐ The information in this product doesn't tell me enough
- ☐ I don't believe the forecast
- ☐ I don't know what actions to take

Other: ☐ _____

29. How useful is this product (select one)? *

Mark only one oval.

- ◯ Very useful
- ◯ Somewhat useful
- ◯ Neutral (neither useful nor not useful)
- ◯ Somewhat not useful
- ◯ Not useful

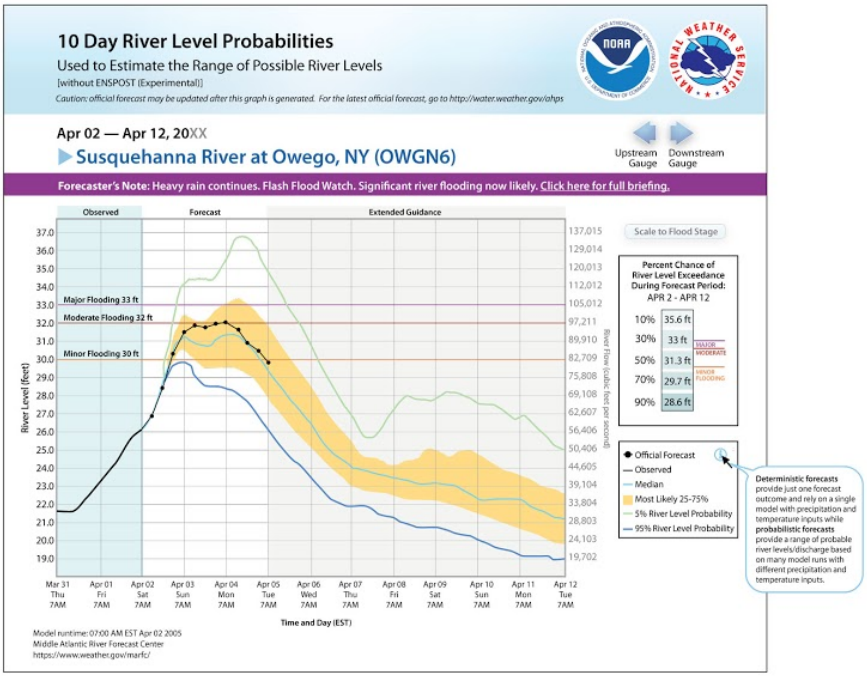
30. How likely are you to use this product in the future? *

Mark only one oval.

- ◯ Very likely
- ◯ Somewhat likely
- ◯ Neutral (neither likely nor unlikely)
- ◯ Somewhat unlikely
- ◯ Very unlikely

River Level Probabilities

Use the product below to answer the following questions.



31. What elements of this product are most useful in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages(25-75%)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] River flow (right axis)
- [ ] Median line
- [ ] 5% and 95% River Level Probability lines
- [ ] Forecaster's note
- [ ] Percent chance of exceedence (box on right side)
- [ ] Option to move upstream or downstream (arrows at the top)
- [ ] Information pop-up box
- [ ] Scale to Flood Stage option (button at the top right)
- [ ] None

Other: [ ] _____

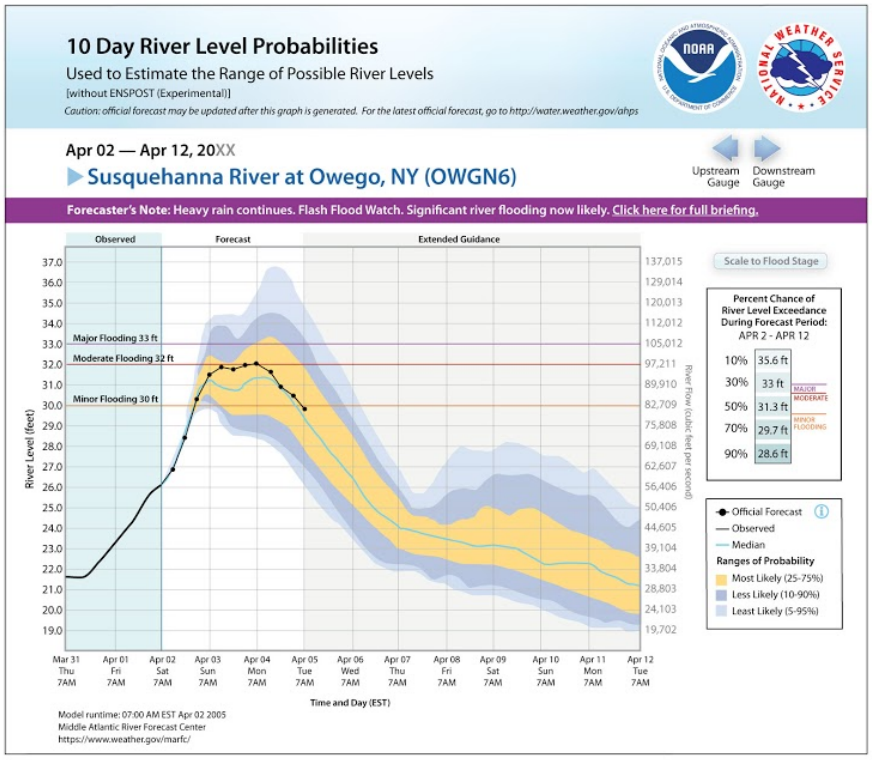
32. What elements of this product are not useful or confusing to you in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages (25-75%)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] River flow (right axis)
- [ ] Median line
- [ ] 5% and 95% River Level Probability lines
- [ ] Forecaster's note
- [ ] Percent chance of exceedence (box on right side)
- [ ] Option to move upstream or downstream (arrows at the top)
- [ ] Information pop-up box
- [ ] Scale to flood stage option (button at the top right)
- [ ] None

Other: [ ] _____

Below is another way to represent probabilities - using shaded probabilities. Please respond to the following questions with this graphic in mind.



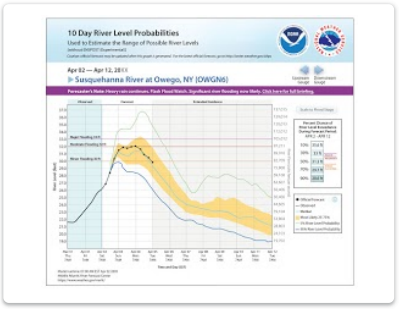
33. Do the shaded ranges of probabilities make the product easier for you to understand? *

Mark only one oval.

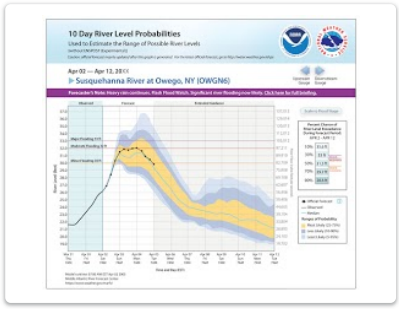
- ◯ Yes
- ◯ No
- ◯ Maybe

34. Which of these products do you prefer? *

Check all that apply.



☐ Option 1



☐ Option 2

35. Why do you prefer this product? *

_____

_____

_____

_____

_____

36. What additional information or elements would make these products more useful or understandable to you? *

_____

_____

_____

_____

_____

37. If a probabilistic forecast is different from a deterministic/official forecast, how does that affect your perception of the forecast given? (check all that apply) *

Check all that apply.

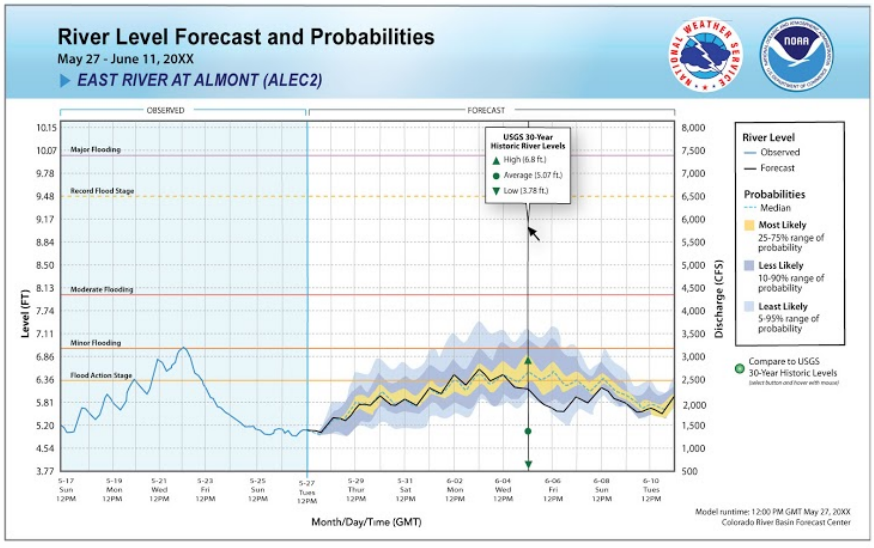
- [ ] I would have less confidence in both forecasts
- [ ] I would have less confidence in the deterministic forecast
- [ ] I would have less confidence in the probabilistic forecast
- [ ] I would not trust future forecasts from this source
- [ ] I would seek out more information to understand why they differed
- [ ] I would ask a forecaster/expert for their opinion
- [ ] I would ignore the forecast

Other: [ ] _____

Skip to question 60

Gunnison, CO

Use the product below to answer the following questions.



38. What is this product telling you (check all that apply)? *

Check all that apply.

- [ ] Minor flooding is likely to occur on June 2nd
- [ ] River levels will be above action stage on June 8th
- [ ] River levels will be above average on June 5th
- [ ] No flooding is likely to occur on June 6th

Other: [ ] _____

39. After viewing this product how do you view the risk of flooding in the time period May 27 to June 11? *

Mark only one oval.

- ◯ Very high
- ◯ Somewhat high
- ◯ Neither high nor low
- ◯ Somewhat low
- ◯ Very low
- ◯ Other: _____

40. Would you take any actions as a result of this product? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

41. If yes, what actions would you take as a result of this product (check all that apply).

Check all that apply.

- ☐ Seek out more information
- ☐ Talk to family, friends, and neighbors.
- ☐ Take action to secure outdoor property and reduce property loss from flooding
- ☐ Make sure to have an emergency preparedness kit/stock up on food, water, and batteries
- ☐ Keep an eye on the river
- Other: ☐ _____

42. If no, why (check all that apply)?

Check all that apply.

- ☐ I'm not concerned about flooding risk
- ☐ The information in this product doesn't tell me enough
- ☐ I don't believe the forecast
- ☐ I don't know what actions to take
- Other: ☐ _____

43. How useful is this product (select one)? *

Mark only one oval.

- ◯ Very useful
- ◯ Somewhat useful
- ◯ Neutral (neither useful nor not useful)
- ◯ Somewhat not useful
- ◯ Not useful

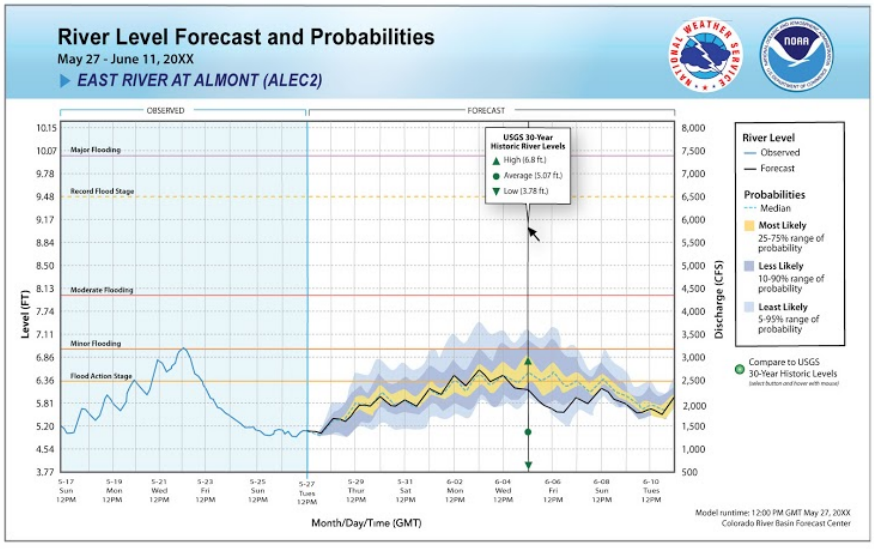
44. How likely are you to use this product in the future? *

Mark only one oval.

- ◯ Very likely
- ◯ Somewhat likely
- ◯ Neutral (neither likely nor unlikely)
- ◯ Somewhat unlikely
- ◯ Very unlikely

River Level Probabilities

Use the product below to answer the following questions.



45. What elements of this product are most useful in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legend
- [ ] Colors
- [ ] Percentages (5-95%, 10-90%, 25-75%)
- [ ] Likely categories (most, less, least)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] Discharge (right axis)
- [ ] Median line
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] USGS Historic River Levels Comparison
- [ ] None
- [ ] Other: _____

46. What elements of this product are not useful or confusing to you in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legend
- [ ] Colors
- [ ] Percentages (5-95%, 10-90%, 25-75%)
- [ ] Likely categories (most, less, least)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] Discharge (right axis)
- [ ] Median line
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] USGS Historic River Levels Comparison
- [ ] None
- [ ] Other: _____

47. What additional information or elements would make this product more useful or understandable to you? *

_____

_____

_____

_____

_____

48. On June 6th the deterministic forecast (black line) is different from the probabilistic forecast, how does that affect your perception of the forecast given? (check all that apply) *

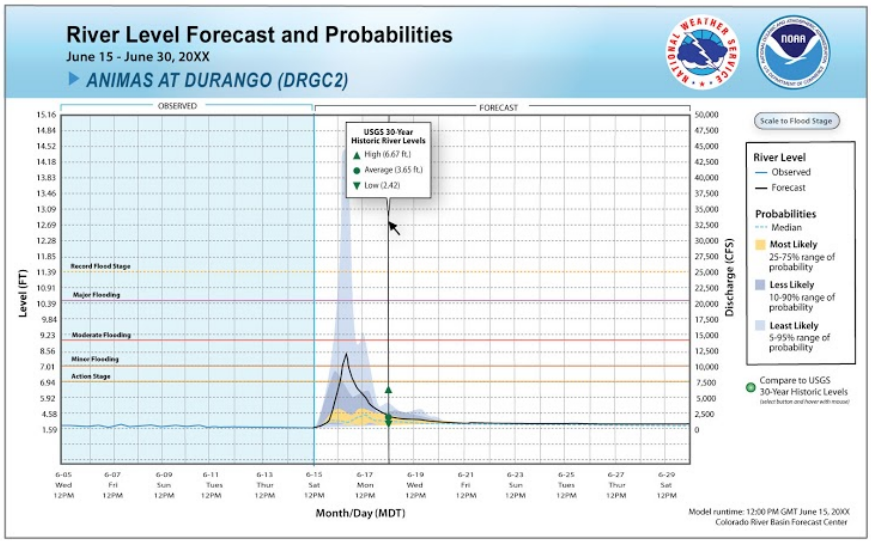
Check all that apply.

- [ ] I would have less confidence in both forecasts
- [ ] I would have less confidence in the deterministic forecast
- [ ] I would have less confidence in the probabilistic forecast
- [ ] I would not trust future forecasts from this source
- [ ] I would seek out more information to understand why they differed
- [ ] I would ask a forecaster/expert for their opinion
- [ ] I would ignore the forecast
- [ ] Other: _____

Skip to question 60

Durango, CO

Use the product below to answer the following questions.



49. What is this product telling you (check all that apply)? *

Check all that apply.

- [ ] No moderate or major flooding is likely to occur June 15-30th
- [ ] Minor flooding is likely on June 16th.
- [ ] Action stage and minor flooding will not be reached June 15-30th
- [ ] River levels will be at average on June 18th
- [ ] Other: _____

50. After viewing this product how do you view the risk of flooding in the time period June 15th-30th? *

Mark only one oval.

- ◯ Very high
- ◯ Somewhat high
- ◯ Neither high nor low
- ◯ Somewhat low
- ◯ Very low
- ◯ Other: _____

51. Would you take any actions as a result of this product? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

52. If yes, what actions would you take as a result of this product (check all that apply).

Check all that apply.

- ☐ Seek out more information
- ☐ Talk to family, friends, and neighbors.
- ☐ Take action to secure outdoor property and reduce property loss from flooding
- ☐ Make sure to have an emergency preparedness kit/stock up on food, water, and batteries
- ☐ Keep an eye on the river

Other: ☐ _____

53. If no, why (check all that apply)?

Check all that apply.

- ☐ I'm not concerned about flooding risk
- ☐ The information in this product doesn't tell me enough
- ☐ I don't believe the forecast
- ☐ I don't know what actions to take

Other: ☐ _____

54. How useful is this product (select one)? *

Mark only one oval.

- ◯ Very useful
- ◯ Somewhat useful
- ◯ Neutral (neither useful nor not useful)
- ◯ Somewhat not useful
- ◯ Not useful

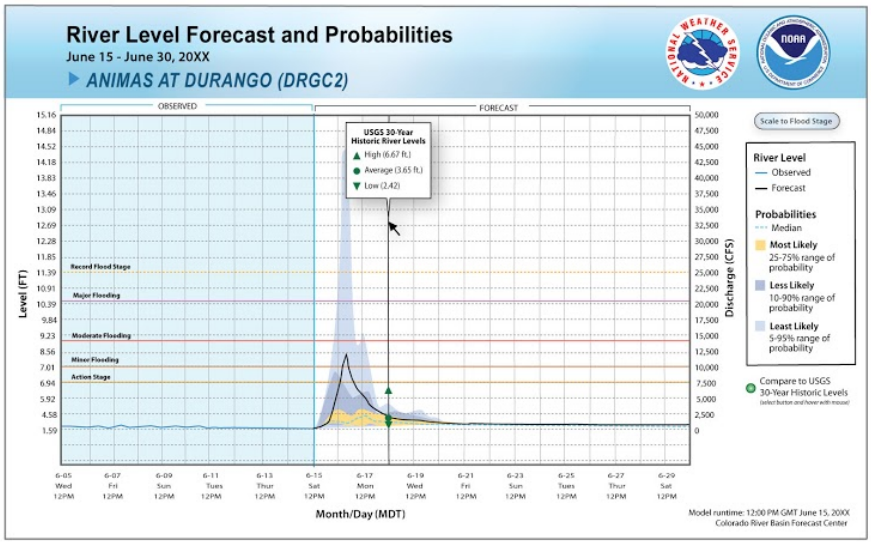
55. How likely are you to use this product in the future? *

Mark only one oval.

- ◯ Very likely
- ◯ Somewhat likely
- ◯ Neutral (neither likely nor unlikely)
- ◯ Somewhat unlikely
- ◯ Very unlikely

River Level Probabilities

Use the product below to answer the following questions.



56. What elements of this product are most useful in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages (5-95%, 10-90%, 25-75%)
- [ ] Likely categories (most, less, least)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] Discharge (right axis)
- [ ] Median line
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] USGS Historic River Levels Comparison
- [ ] Scale to flood stage option (button at top right)
- [ ] None

Other: [ ] _____

57. What elements of this product are not useful or confusing to you in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legends
- [ ] Colors
- [ ] Percentages (5-95%, 10-90%, 25-75%)
- [ ] Likely categories (most, less, least)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] Discharge (right axis)
- [ ] Median line
- [ ] Range of probable levels (different shades/colors)
- [ ] Forecaster's note
- [ ] USGS Historic River Levels Comparison
- [ ] Scale to flood stage option (button at top right)
- [ ] None

Other: [ ] _____

58. What additional information or elements would make this product more useful or understandable to you? *

_____

_____

_____

_____

_____

59. On June 16th the deterministic forecast (black line) is different from the probabilistic forecast, how does that affect your perception of the forecast given? (check all that apply) *

Check all that apply.

- [ ] I would have less confidence in both forecasts
- [ ] I would have less confidence in the deterministic forecast
- [ ] I would have less confidence in the probabilistic forecast
- [ ] I would not trust future forecasts from this source
- [ ] I would seek out more information to understand why they differed
- [ ] I would ask a forecaster/expert for their opinion
- [ ] I would ignore the forecast

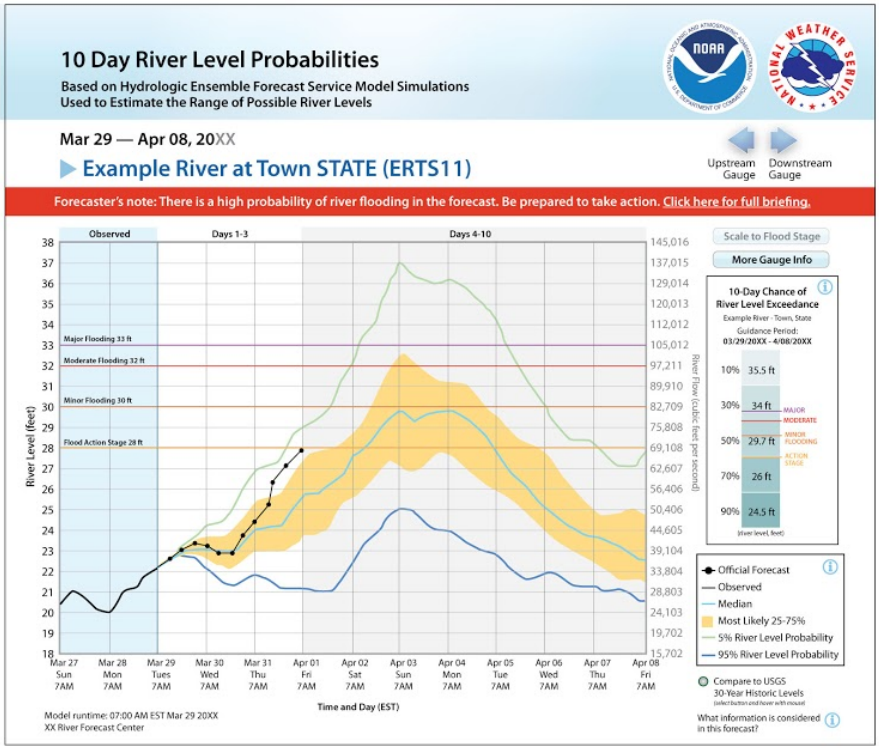
Other: [ ] _____

Skip to question 60

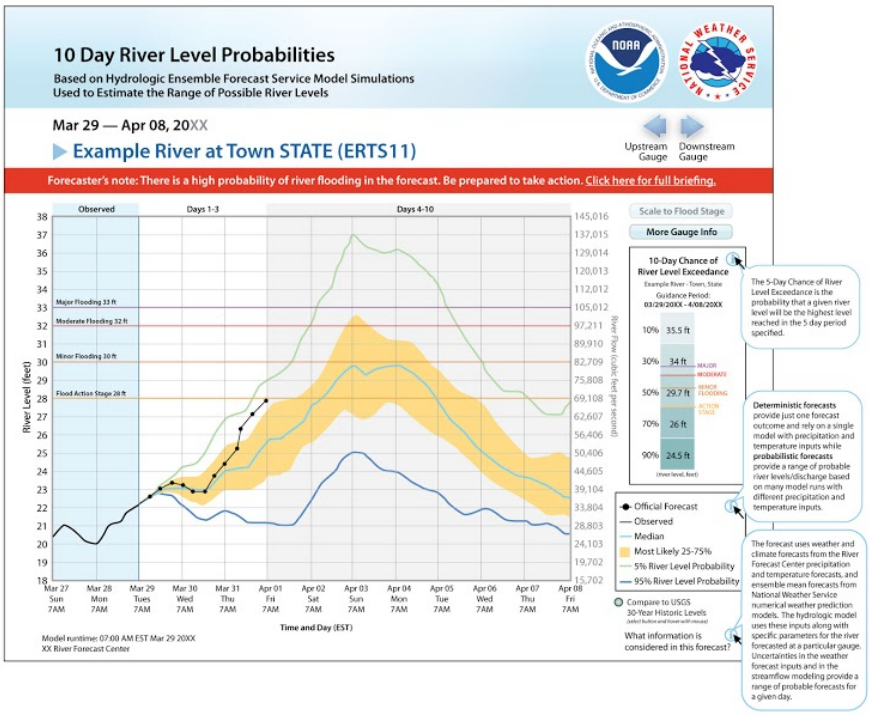
National Product

NOAA is considering developing a national flood level probability product that would have the same features across all forecasting areas. Your input on this possible graphic will help inform that development. Please note that this is an example gauge site of a hypothetical flood situation. The product is shown multiple times with different elements added to reflect the options that would be available on an interactive graph.

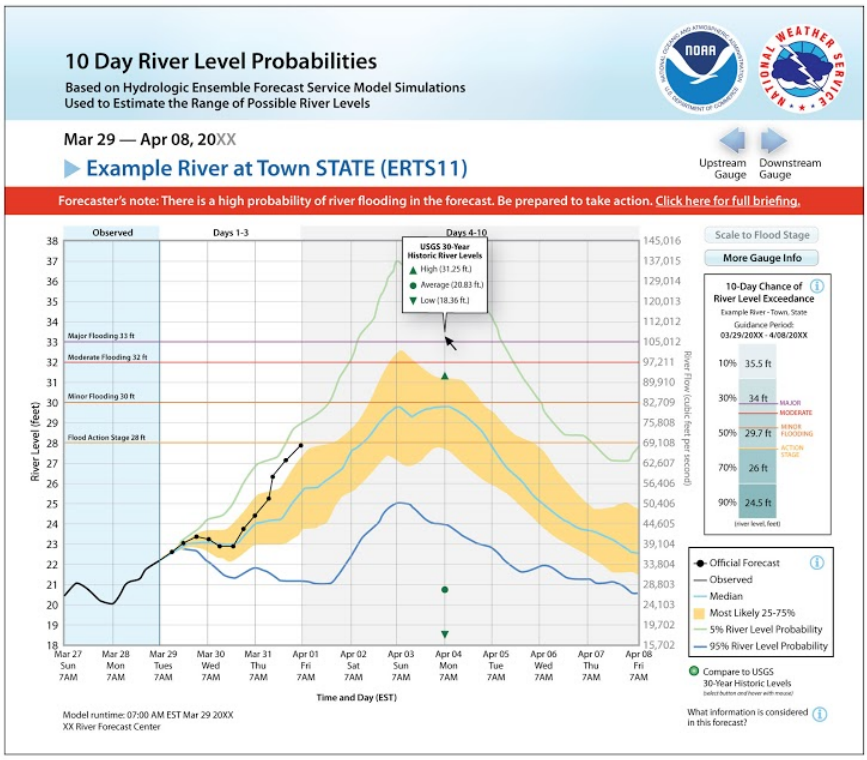
National Product prototype example



National Product example with information (i) boxes expanded



National Product example with USGS Historic River Level Comparison shown



60. What elements of this product are most useful in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legend
- [ ] Colors
- [ ] Percentages (25-75%)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] River Flow (right axis)
- [ ] Median line
- [ ] 5% and 95% River Level Probability Lines
- [ ] Forecaster's note
- [ ] 10 Day Chance of River Level Exceedance (box on the right side)
- [ ] Option to move to upstream and downstream gauges (arrows at the top)
- [ ] USGS Historic River Level Comparison
- [ ] Information boxes (i)
- [ ] Scale to flood stage option (button at top right)
- [ ] None

Other: [ ] _____

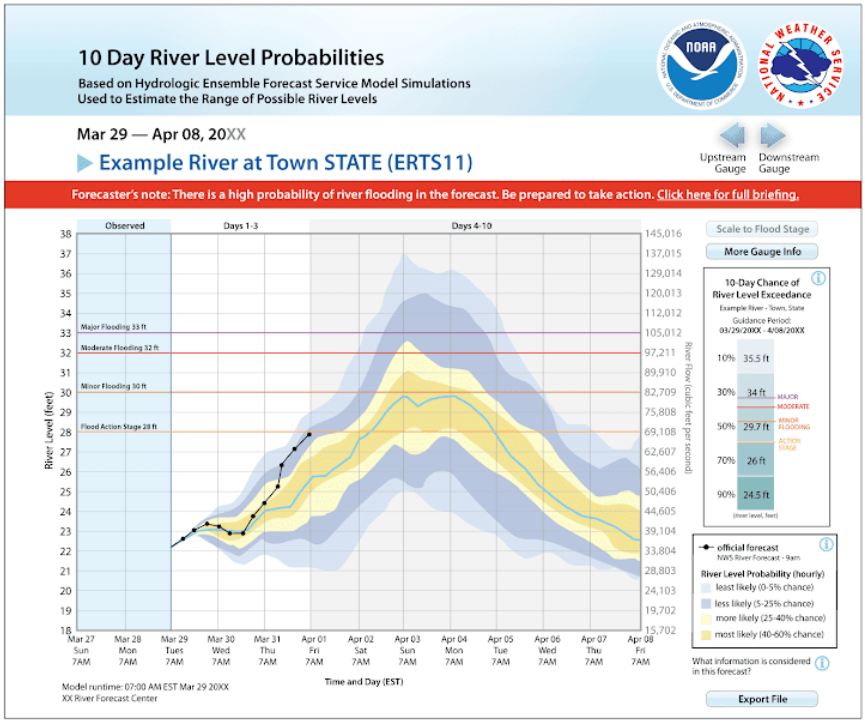
61. What elements of this product are not useful or confusing to you in understanding the situation (check all that apply). *

Check all that apply.

- [ ] Title
- [ ] Legend
- [ ] Colors
- [ ] Percentages (25-75%)
- [ ] Time period
- [ ] Flood levels (minor, moderate, and major)
- [ ] River level (left axis)
- [ ] River Flow (right axis)
- [ ] Median line
- [ ] 5% and 95% River Level Probability Lines
- [ ] Forecaster's note
- [ ] 10 Day Chance of River Level Exceedance (box on the right side)
- [ ] Option to move to upstream and downstream gauges (arrows at the top)
- [ ] USGS Historic River Level Comparison
- [ ] Information boxes (i)
- [ ] Scale to flood stage option (button at top right)
- [ ] None

Other: [ ] _____

Alternate National Product example with Shaded Probabilities



62. Are the likely categories (least, less, more, most)... *

Mark only one oval.

	1	2	3	4	5	
Confusing (I don't understand what they are telling me)	◯	◯	◯	◯	◯	Easy to understand (they help me assess the situation)

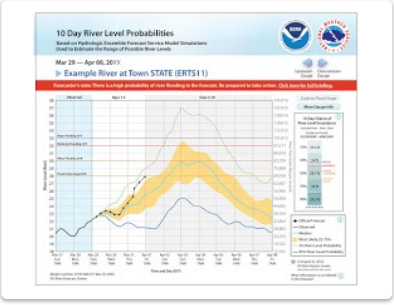
63. Are the percentages (0-5%, 5-10%, 25-40%, 40-60%)... *

Mark only one oval.

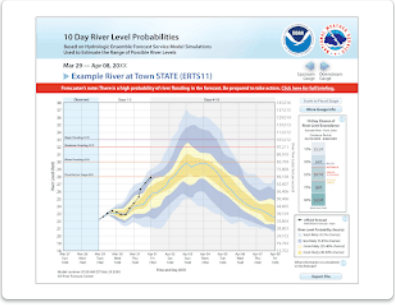
	1	2	3	4	5	
Confusing (I don't understand what they are telling me)	◯	◯	◯	◯	◯	Easy to understand (they help me assess the situation)

64. Which product do you prefer? *

Mark only one oval.



Option 1



Option 2

65. Why did you select that option? *

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