

# Climate.gov Usability Study

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## I. Summary

The Climate.gov prototype website underwent usability testing with 17 participants that incorporated tasks related to each of the four main content areas: ClimateWatch Magazine, Data & Services, Understanding Climate, and Education. Participants were identified as being interested in climate, routinely accessing the Internet via laptop and mobile devices, and all but three participants had not visited Climate.gov previously.

Tasks given to participants encompassed a variety of user actions on the site such as: locating articles and images, downloading reports, locating third-party events, viewing multimedia, and accessing educational tools. Participants were instructed not to use the Climate.gov search box while completing tasks since evaluating labeling and navigation was one of the main points of this usability test.

During each testing session, video and audio of participants using the site were recorded and onscreen activity was captured for the purpose of post-session analysis. All participants were tested individually. The majority of participants were able to complete the tasks, while exceptions are noted below.

Technical information regarding testing set-up and software:

- Operating system: Mac OS X 10.5-10.6
- Browsers: Firefox, Safari
- Video/audio/screen recording software: Silverback

## II. Findings

**Task #1:** From the homepage, using the Global Climate Dashboard, find the incoming sunlight and average temperature for the time period 1940-2009.

*Baseline Time Spent on Task:* 0:00:12

*Tested User Time Spent on Task:* 0:02:50

*Findings:*

- Participants expected to interact with the charts as objects and were disappointed when they clicked on charts and were sent to static article page.
- The Global Climate Dashboard slider, as the only interactive feature in charts, was too separate from the charts to be likely used.
- Language used on the site was NOAA-centric, not user-centric.
- Task induced aimless wandering.
- Participants unintentionally left the site while wandering without realizing they had left climate.gov.
- Smaller screens created an illusion of completeness and contributed to users reluctance to scroll below the fold.
- One participant clicked on the graph itself instead of the slider (task not completed as designed).

**Task #2:** From the homepage, using the Past Weather widget, find the maximum temperature on February 20, 2005 in St. Louis, Missouri.

*Baseline Time Spent on Task:* 0:00:26

*Tested User Time Spent on Task:* 0:01:20

*Findings:*

- Found task easy to complete.
- Liked Weather Widget interface.
- Some participants (20%) tried to click on the widget title expecting pop-up/other action. This indicates that they expected to interact with the actual object.

**Task #3:** From the homepage, in the Climate & You section, find out more information about learning to map coastal inundation.

*Baseline Time Spent on Task:* 0:00:32

*Tested User Time Spent on Task:* 0:01:22

*Findings:*

- 80% of participants started using footer navigation instead of four main content tabs (ClimateWatch Magazine, Data & Services, Understanding Climate, Education).
- While working on this task, participants discovered footer navigation bar and from this task on began using footer navigation when in doubt about where to locate information on the site.

- Participants had difficulty locating Climate & You section of Data Services; many thought it would be in Understanding Climate or Education.
- Deeper dive into content caused participants to follow non-linear pathways and they experienced difficulty navigating to homepage.
- Duplicitous labeling of content created multiple and, therefore, parallel pathways to access content. For example, there is more than one pathway to obtain an article or image and these multiple access points to content confused participants and caused them to feel “lost” on the site.
- Inconsistent organizational structure created many wrong-turns for users.

**Task #4:** From the homepage, find the presentation from November 2009 called Global Climate Change: Gathering Data by Dahlman and Herring.

*Baseline Time Spent on Task:* 0:00:24

*Tested User Time Spent on Task:* 0:02:39

*Findings:*

- Participants had difficulty locating scroll bar to access content.
- Participants tended to look for this presentation first under Data & Services in the Data Library and then tried to access via the Presentation Library.
- Participants did not realize Data Library and Presentation Library were separate and located under different tabs.
- Participants equated "presentation" with video.
- Participants wanted sorting tools for rearranging lists of content.
- One participant could not complete task because he expected the presentation would be a video, accidentally left the site through the top-most NOAA navigation bar, and gave up.

**Task #5:** From the homepage, find and download the Annual State of the Climate Report: 2008.

*Baseline Time Spent on Task:* 0:00:26

*Tested User Time Spent on Task:* 0:02:08

*Findings:*

- Participants consistently had to rely on footer navigation to access content.
- Inconsistent language on site confused participants and did not meet user expectations. This is another example of the labeling issue.
- Language used on the site was NOAA-centric, not user-centric and continued to confuse participants.
- Report is available via link with graphic on the right side of the page and also in the middle of the page. This created a redundancy of content on the page but did not pose a problem for participants.
- Two participants did not complete task because they expected report location to be Data Library section of the Data & Services tab and gave up.

**Task #6:** From the homepage, find and open the fact sheet titled Carbon Monitoring.

*Baseline Time Spent on Task:* 0:00:14

*Tested User Time Spent on Task:* 0:00:57

*Findings:*

- Several participants were happy that this was a quick, easy task to complete.
- Terminology leads participants down wrong navigation path – users went to Data & Services rather than Understanding Climate. If they had not already seen a reference to a Fact Sheet (located in the footer navigation), they assumed it would be categorized as data. Participants were not associating content with category label.
- Participants feel "lost" when PDF resolved to a different URL. This revealed an inconsistency between internal and external navigation.
- One participant could not complete task because he expected fact sheet location to be Data Library section of the Data & Services tab. Participant commented afterward that it was not clear that this information belongs in Understanding Climate.

**Task #7:** From the homepage, find and watch the video in the ClimateWatch Magazine section entitled Perspectives on Climate Change in Maine. What is the central message of the video?

*Baseline Time Spent on Task:* 0:00:43

*Tested User Time Spent on Task:* 0:02:28

*Findings:*

- Duplicitous labeling from homepage to ClimateWatch Magazine video section caused confusion with participants. There are two pathways to access videos from ClimateWatch Magazine:
  1. video link: takes users direct to video library with scroll option
  2. browse link: takes users to limited display of videos available for view
- Neither option allowed participants easy access to video archives or option to browse all videos as an archive.
- Too many pathway options caused participants to become confused and feel "lost."
- All participants understood central message of video.
- After failing to find the video in the browse videos section, participants used tag cloud or lower left RSS link to locate Maine video.
- One participant could not complete task because of inability to browse videos in a way that made sense to him. Another looked at the subject tag cloud and wasn't able to notice "Maine" in the cloud.

**Task #8:** From the homepage, find the article entitled An Upwelling Crisis: Ocean Acidification written by Caitlyn Kennedy. Please open the article.

*Baseline Time Spent on Task:* 0:00:56

*Tested User Time Spent on Task:* 0:00:58

*Findings:*

- Participants easily executed task.
- Labeling (articles, browse articles) creates multiple and therefore parallel access to content depending on participant's preferred pathway, e.g.:
  - articles > browse > Kennedy article
  - articles > ocean > Kennedy article

**Task #9:** From the homepage, find the image by Stacy Hargrove and its accompanying description of sea turtles nesting. Is this where you would expect to find it?

*Experienced User Time Spent on Task:* 0:01:08

*Tested User Time Spent on Task:* 0:00:49

*Findings:*

- Participants easily executed task
- Labeling issue (images vs. browse images) can create too many clickthroughs.
- Images section of ClimateWatch Magazine has more images available than the page that "Browse ClimateWatch Magazine Images" retrieved; "browse" link is too selective and not representative of full image archives.
- One participant could not complete task because the image did not appear in any of the ClimateWatch Magazine Images pages and she missed the author's name in the author's name list. She checked the "By Subject" tag cloud but didn't find any clues there. Another gave up and wanted to use the search box.

**Task #10:** From the homepage, you are an educator seeking materials to teach your students about climate science. Find the Climate Change toolkit and locate the information on the Great Lakes eco region.

*Baseline Time Spent on Task:* 0:00:49

*Tested User Time Spent on Task:* 0:02:18

*Findings:*

- Labeling issue (graphic link v. text toolkit link) creates multiple and therefore parallel access to content depending on participant's preferred pathway.
- Participants did not expect to go off climate.gov site to retrieve information.
- Download link is mislabeled; link redirects to a page where you can view this information.
- Image links on toolkit map graphic are inconsistent (one live link, one dead link).
- Two participants could not complete task because they expected "Tool Kit" section upon browsing the Education tab and gave up.

**Task #11:** From the homepage, find the date of the next symposium on forest ecosystems.

*Baseline Time Spent on Task:* 0:00:49

*Tested User Time Spent on Task:* 0:02:57

*Findings:*

- Two distinct event calendars led to confusion (one is located in Understanding Climate, the other in Upcoming Opportunities within Professional Development of Education section). Only one is labeled "calendar" so participants would stop after they couldn't find it in the Calendar of Climate-Related Events. Participants felt that there should only be one calendar that lists all events, regardless of type of event.
- Inconsistent application of similar terms leads to confusion of synonymous content descriptors (e.g., upcoming opportunities, events, symposium).
- Too many clickthroughs to get to calendar caused unnecessarily increased participant time to complete task.
- Seven (40%) participants could not complete task. Three participants gave up on task after accessing incorrect calendar. Another participant who could not complete the task commented afterward that it was not clear that this information belongs in the Education section.

**Task #12:** From the homepage, you are an educator looking for the Climate Literacy 2009 Report. Locate and download the report.

*Baseline Time Spent on Task:* 0:00:11

*Tested User Time Spent on Task:* 0:02:46

*Findings:*

- Participants' expectation for the location of this object was not consistent with its actual location.
- A labeling issue became apparent as participants looked under wrong content tabs.
- At least one participant related literacy to education.
- Two participants could not complete task because they expected report location to be Data Library of the Data & Services tab. One participant who could not complete the task commented afterward that a text-only version of the website should be created.

### **III. Participant Feedback**

After participants finished the tasks, they were asked to complete a post-test questionnaire to provide feedback based on their experience. Answers to questions 1 through 7 were given based on a five point scale, ranging from (1) strongly agree to (5) strongly disagree. The cumulative average, as well as the complete range, from all participants' responses are shown below in brackets after each question. Following these are responses to question 8, which are open ended in nature.

<b>Observation</b>	<b>Average Response</b>	<b>Range</b>
1. Overall, the information I was looking for was easy to find.	3	2 - 5
2. It was easy to find information using maps and charts on the site.	3	1 - 5
3. I liked the look and feel of the site.	2	1 - 4
4. The labels for the four main tabs accurately describe the content available within each tab.	3	1 - 5
5. The site was easy to navigate.	3	2 - 5
6. I would return to this website for climate information.	3	1 - 5
7. Overall, I was able to complete the tasks with ease.	2	2 - 4

*Note:* The post-test questionnaire reveals these numbers to be surprising as qualitative reviews of recorded sessions showed more frustration on participants' part than what they indicated here.

8. Based on your experience, if there were two things you would change on this site, what would they be?

(Listed below is a representative sampling of responses to this question. A complete list of responses is available upon request.)

## **IV. Priorities and Fixes**

### **Homepage**

- Lack of a dedicated homepage; ClimateWatch Magazine tab is confusing as a "homepage" and yet the site seems to be titled "NOAA Climate Services".

### *Fixes:*

- A branded homepage needs to be created that should reflect a clear name and purpose for the site.

## Navigation

- Returning to the homepage from deeper levels within the site needs to be clearer and easier for users.
- Incorporation of secondary navigation more consistently from the homepage and is needed throughout the site.
- Top-most NOAA navigation bar needs to be relocated because it is interpreted by user as a navigation option within climate.gov or as a return link to the homepage of climate.gov.
- Establish standards for opening new links that lead to external sites.

### *Fixes:*

- When mousing over each main tab, show the secondary navigation listing underneath.
- New tabs should only open when going to sites external to climate.gov (frequency with which links lead to external sites is confusing).

## Organization and labeling

- Organizational structure is not coherent and leads to multiple wrong turns for users.
- Disconnect between category label and names of content inside causes user confusion when navigating site.
- Categories aren't disambiguated (e.g., events).
- "Understanding Climate" is too broad as a section label. Isn't this what the entire site is about?
- "Library" label redundancy creates user confusion between Data Library and Presentation Library.
- By Task #4, participants begin to state preferences for retrieving data via search function. This indicates that there is low "guessability" for users of the site, meaning that there are not enough intuitive "clues" for them to easily locate the content they are seeking.
- Humanistic language vis-a-vis scientific language (e.g., "Fact Sheets" found in "Understanding Climate" and "Climate & You" is found in "Data & Services").

### *Fixes:*

- Implement a detailed, complete site map to provide a top-level overview of the site's structure.
- Image, Article, and Video content needs to be entirely integrated into the Flash page instead of opening up <http://www.climatewatch.noaa.gov/>

- Pull "Events" out as its own top-level category. The Events section should be comprehensive and should include all events, such as those currently listed under "Education".
- To avoid multiple and therefore parallel access to content, browsing functionality should consistently contain all content that is browsable, e.g., images, articles, video.

**Other Concerns:**

- Flash will not work with iPhone, iPad.
- Text and images cannot be resized within the site, must use browser-based scaling.
- Create a text-only version of the site.
- Create a singular and consistent editorial voice.
- More visual browsing of all archived images and videos.