

NOAA Climate Portal - Design Team Requirements

28 November, 2008

PART - I

1.0 INTRODUCTION

NOAA maintains most of the nation's sustained climate observing networks, including operational satellites, integrated atmosphere, ocean, and Arctic observations, and networks for monitoring greenhouse gases, aerosols, and ozone. It depends on partner agencies for other sustained observations, such as ground-based water information from the Department of Interior, and space-based research measurements from NASA's satellite systems. NOAA is authorized to maintain the nation's large active archive of weather, climate, and oceanographic data through its data centers, which also hosts the World Data Centers for Meteorology, the World Data Center for Paleoclimatology, and the World Data Center for Oceanography. The data and information archived by NOAA are available to NOAA and non-NOAA institutions for use in research, modeling, monitoring, forecasting, prediction, and assessment. NOAA ensures the continuity and integrity of the historical climate record through data stewardship. Finally, NOAA provides analyses of the observed records, including the nation's climate statistics, and reanalyses of observations to improve our understanding of the climate of the past century using a self-consistent analysis.

NOAA has a suite of successful, but segregated, climate information capabilities and delivery mechanisms, developed in close coordination with its partners and users. Individual NOAA programs and organizations provide a strong foundation on which to build the kind of integrated climate information service that will support society's efforts to address today's problems while planning for the future. The next step is to integrate these programs into an expanded, more cohesive climate service that is greater than the sum of the existing parts, and is commensurate with society's demand for climate data, services, and information.

Public demand for climate data, services, and information is growing. Decision makers, business leaders, scientists, educators, and concerned citizens are all expressing a need for more timely data and resources to help them make more informed decisions in their lives and livelihoods. Thus, there is an increasing need to manage and distribute climate information in an effective, efficient, customer-focused manner.

Recognizing that there are many sectors within the public with different needs for climate science data, services, and information, a new NOAA Climate Portal will be designed to serve four broad segments of society: (1) sector-specific data users within the general public, 2) scientists and research-oriented data users, 3) educators and students, and 4) decision makers and policy leaders. Each of these societal segments differs in its information-seeking behaviors, in its needs for climate information, and in its current understanding of the complexities of climate science. Thus, NOAA's Climate Portal will

ultimately feature four unique interfaces that are adapted for each of those segments of society. (NOTE: Due to time and funding constraints, Phase 1 will focus only on the first two audiences listed. Interfaces for the third and fourth audiences will be developed in Phase 2, or as time and funding support permit.)

NOAA needs to integrate its numerous existing data archives through a single Climate Portal that links to the entire national observing network. A focused point of entry will improve access to, and use of, existing weather and climate data networks. The products available through NOAA's Climate Portal will be served free of charge.

2.0 GOAL & OBJECTIVES

Our goal is to develop a “one-stop” Web portal for discovery and delivery of NOAA's climate data, services, information and resources.

Our objectives are to:

- enhance the discoverability, accessibility and usability of NOAA climate data, products, and services;
- enhance interoperability and leveraging of software and products;
- implement appropriate metadata standards and requirements for climate data and products; and
- promote a user-focused view of climate data and consistent delivery of Web-based climate services across NOAA.

3.0 NOAA CLIMATE PORTAL PHASE I

Phase 1 of NOAA's Climate Portal development will produce a fully functioning prototype Web site in the Spring of 2009 designed to serve scientists and data users as well as the public. This effort requires collaboration among personnel from across NOAA's distributed, decentralized community of scientists and data managers who support the agency's Climate Goal and Climate Programs. Thus, development of NOAA's Climate Portal will balance our audiences' need for centralized access to NOAA's climate data and information via a well-integrated front end, with the need for decentralized harvesting, processing and publication of content from across the agency on the back end. In short, the Climate Portal will render NOAA's data and information easier to access and understand without overwhelming visitors with NOAA's complex organizational structure.

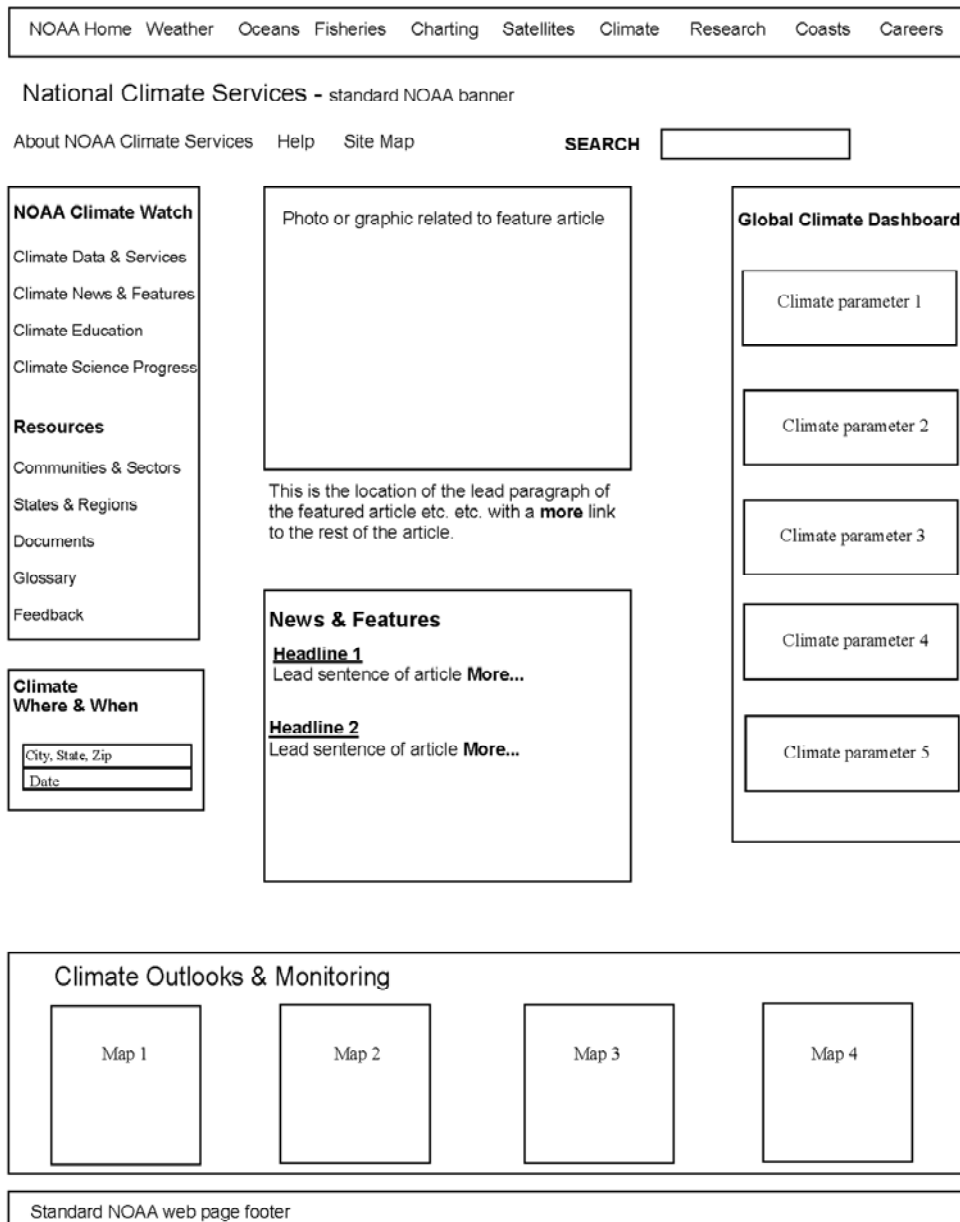
Initial emphasis will be on those data, services, and capabilities that are considered to be “low hanging fruit”—i.e., resources that are mature, stable, and readily integrated. Please note that “integration” does not necessarily mean centralized in one location. We anticipate that while the top-level pages of the Climate Portal will contain “syntheses” of data and information from across the agency—including resources from partnering agencies and institutions—users will eventually follow links to the particular locations

where the data are stored. In so doing we aim to fulfill our objective to make the process of searching for and accessing climate data and information as seamless and “transparent” as possible for the user.

The following subsections describe current plans for the contents of the Climate Portal’s top-level pages.

3.1 Front Page Content and Functionality

3.1.1 Front Page Layout:



3.1.2 Top of the Page

The NOAA Climate Portal's front page banner will be designed consistent with the agency's "corporate" look and feel. Across the very top of the page will appear a gray bar with the following labels and links:

NOAA HOME: www.noaa.gov
WEATHER: <http://www.noaa.gov/wx.html>
OCEANS: <http://www.noaa.gov/ocean.html>
FISHERIES: <http://www.noaa.gov/fisheries.html>
CHARTING: <http://www.noaa.gov/charts.html>
SATELLITES: <http://www.noaa.gov/satellites.html>
CLIMATE: <http://www.noaa.gov/climate.html>
RESEARCH: <http://www.noaa.gov/research.html>
COASTS: <http://www.noaa.gov/coasts.html>
CAREERS: <http://www.careers.noaa.gov/>

For phase I of the portal the team decided to use the NOAA look/feel. Those links, as identified above, point to landing pages on the key topical areas in which NOAA operates. The reasoning behind using these pages instead of specific organizational websites is that most of these areas cross several Organizations. While not necessarily a perfect solution, the pages provide a topical overview and reflect the contributions of all involved offices.

3.1.3 Title & Search

The title of the Portal is temporary until the name "National Climate Service" is officially approved and appointed to NOAA. Placeholder titles under consideration include "NOAA ClimateWatch" and "NOAA Climate Services." Regardless of the name chosen, the site's foremost branding will be "NOAA" and "climate."

Beneath the banner the following links will be found throughout the Climate Portal:

- **About NOAA:** In this section there will be a summary of what NOAA is and does, with particular emphasis on NOAA's roles in climate science and climate services.
- **Help:** This section will contain a list of Frequently Asked Questions (FAQs), and their answers, and a list of personnel who users may contact if they have questions or need help using or navigating the Portal.
- **Site Map:** A clickable wiring diagram of the site will show where users entered the Portal, and highlight the pages and pathways in the Portal they have visited. Users may save this map locally for reference on future visits; or they may share them with a friend or colleague.
- **Search:** Users may enter keywords in the "Search" box, or Boolean search terms. There will also be a button or menu allowing users to perform advanced searches, for example "general search," "search for data."

NOTE: The stock NOAA corporate search does a NOAA-wide search consistent with the corporate look/feel. Deviation from this function would be required to provide the advanced / context-specific search or data-specific search.

3.1.4 Featured Content Area

The top center area on the Portal front page will display featured content that is harvested from the “Climate Magazine” section (listed as “News & Features” in the top left margin). A thumbnail image will always be displayed uppermost in that area with the supporting article just beneath it. The next two most recent articles will be located just beneath the top item.

3.1.5 Global Climate Dashboard

Graphs in this area of the page display the current and historical state of the global climate parameters. The NOAA climate science community will be engaged to determine what parameters should be displayed, and in what priority order. An interactive “slider” widget will be available above the graphs allowing users to determine the temporal span to be displayed, and to pan forward and backward through time. If model data can be made available, then we would also have the option of showing future projections (or ranges of projections, if we want to show an ensemble of model results) for a given parameter. Scrolling arrows located beneath the stack of parameters will allow users to scroll up and down to reveal other climate parameters available through this “dashboard” so that a larger number may be available than will fit comfortably on the page at one time.

3.1.6 Climate Outlooks & Monitoring

Various offices across NOAA are responsible for monitoring some region on Earth (i.e., NOAA’s “Arctic Report Card”) or for providing a forecast about some aspect of the climate system in the future (i.e., “Temperature” or “Precipitation” maps). We anticipate that most of the products in this section will be from NOAA’s Climate Prediction Center (CPC). However, this area will also provide the ability for users to scroll through more items than will fit comfortably at one time on the page so that, ultimately, any number of Climate Outlooks & Monitoring products can be published through the Portal.

Of primary interest for publication in the Portal Prototype are:

- Temperature & Precipitation Outlooks (two products together)
- Hurricane Outlook
- ENSO product suite
- Drought (NIDIS)
- Arctic Report Card

Clicking on any of these links will take the user to a landing page on a server maintained by the particular office that provides that particular information service. The Portal

Design Team will engage with the relevant climate information service providers to discuss a design approach that maintains a consistent “look and feel” even as users depart the Portal and enter another portion of NOAA’s climate-relevant Web domain.

3.1.7 Lefthand Margin and Other Navigation Links

The lefthand margin presents a list of links to the Portal’s main sections. The top grouping of links takes the users to the four main audience-focused sections: (1) Climate Data & Services; (2) Climate News & Features; (3) Climate Education; and (4) Climate Science Progress.

Below that group is another grouping of links that takes users to index pages that may either be assembled by hand, or by metadata that links together common types of content according to various topical vectors. Clicking the first link reveals a menu listing all of the “Communities & Sectors” that NOAA specifically seeks to serve. Selecting a particular sector on the menu takes the user to a landing page that contains a gathering of content deemed to be of particular interest and use to that community.

The “Documents” link would reveal a menu listing the most recent reports and white papers published by NOAA, grouped into various categories. NOAA’s contributions of Synthesis and Assessment Products (SAPs) for the U.S. Climate Change Science Program could be one category of documents listed. Another could be such reports as NCDC’s “Billion Dollar Disasters.” The documents listed here would be updated periodically, as recommended by the climate science community. There would also be an “Archive” in the Documents section providing a listing of all climate-related documents and white papers published by NOAA, sortable by date, topic, author(s), etc.

3.1.8 Weather Where and When

The front page will contain a mini application that provides general weather data for a specific date and location. This application will allow a user to enter a geographical location, either by name or zipcode, along with a date. It will return a basic synopsis of the weather conditions at that time and place along with a link to obtain more detailed information. The purpose of this application is to provide a convenient method of quickly obtaining basic weather information in a simple and understandable format.

3.1.9 The Footer

The Portal page’s footer will be set according to whatever links and format is considered to be “standard” for the agency.

3.2. DATA & SERVICES PAGE FUNCTIONALITY:

Via its Climate Portal, NOAA Seeks to deliver its suite of climate-related data and information products to a broad range of users. Previous work within the agency has

resulted in the identification of a comprehensive inventory of communities and sectors, as well as applicable datasets. This project will leverage off of that existing work, expanding upon it as necessary.

The following communities and sectors have been identified: **Business** sectors include Agriculture/Aquaculture, Consulting (Meteorology/Hazard Monitoring), Contractor/Construction, Energy, Engineering, Forestry, Insurance, Legal, Retail/Manufacturing, Tourism, Transportation, and the Media. Included among the **General Public** sector, Consumer, Public Health, Education K-12, and University/Academia are included. Finally, among **Government**, Department of Defense (DOD), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), National Weather Service (NWS), Regional/State Climate Centers, State/Local Governments, United States Department of Agriculture (USDA), and Water/Resource Management are included.

A comprehensive listing of relevant datasets is available that links communities and sectors with applicable NCDC archived datasets; however, climate-related data are available from across NOAA and include data from other offices such as the Regional Climate Center/s (RCC/s), the Coastal Services Center (CSC) and more broadly, the National Ocean Service (NOS), the National Weather Service (NWS) (includes the Climate Prediction Center-CPC, the Climate Diagnostics Center-CDC, the National Hurricane Center-NHC, the National Centers for Environmental Prediction-NCEP, River Forecast Center/s-RFC/s, the Hydrometeorological Prediction Center-HPC, the Advanced Hydrological Prediction Service-AHPS, and the National Data Buoy Center-NDBC), the National Geodetic Survey (NGS), and NCDC's parent agency, the National Environmental Satellite Data and Information Service (NESDIS), among others.

Specific datasets, with associated links to Federal Geographic Data Committee (FGDC)-compliant metadata have been identified by the data team and will be incorporated into the NCS Portal appropriately. This will be done based on relevance to each community/sector so that ultimately, the users of the NCS Portal will be able to identify a community/sector and will be presented with a list of applicable datasets from which to search. As mentioned earlier however, the initial phase of the Portal will focus on only a couple of communities/sectors and associated datasets: Insurance > Hurricanes (referencing a Hurricane Ike case study) and Agriculture > Drought (leveraging heavily from the NIDIS Portal). Subsequent phases will allow users to search for data and information more effectively and interactively such as via a map interface and/or "smart search" technologies. Once the interactive mapping component of the data and services portion of the NCS Portal matures, geospatially enabled technologies such as Web Feature Services (WFS), Web Catalog Services (WCS), Web Map Services (WMS), etc. will be leveraged where available.

3.2.1 Data Visualization

Where possible, the data and services pages will provide map-based visual representations of a requested dataset. This page element will be available only for

datasets and services that comply with OGC map service standards, specifically Web Map Services (WMS) and/or Web Feature Services (WFS). The visualization element will contain sufficient detail to provide a “quick first look” at the dataset with the ability to adjust the scale and extent of the visualization (i.e. pan, zoom, time selector). Where appropriate and possible, it will also contain custom controls to change the display behavior of the dataset, such as layer transparency, color scale, etc.

Accompanying the map will be a textual description with the ability to adjust the level of technical detail from very basic to more complex. This will include links to appropriate credits, other product descriptions and external systems capable of providing alternate delivery of the displayed data.

In addition to a map element, each data and services page will provide links for download of raw data in a variety of standard formats, suitable for use in external tools. This may include the ability to export the data as an image, an animation, or in a variety of tool-specific formats, such as shapefiles (ArcGIS), Keyhole Markup Language (Google Earth), Microsoft Excel Spreadsheets and other formats.