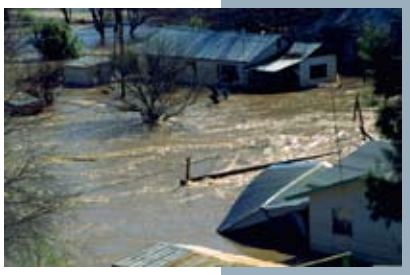
NOAA's National Climatic Data Center
User Engagement Fact Sheet
Sector: TRANSPORTATION

OVERVIEW

Transportation by trains, aircraft, automobiles, trucks, ferries, barges, ships, and pipelines is a fundamental component of the U.S. economy. Adverse and extreme weather events and climate change and variations can affect these systems and have significant impacts on society. Adverse weather conditions such as storms, icing, high winds, and poor visibility have immediate effects on day-to-day operations, often disrupting large portions of a transportation network. Extreme weather events such as floods, droughts, hurricanes, and tornadoes also have immediate effects, disrupting transportation and creating large clean-up and rebuilding costs. Expected climate change and variations, such as increasing temperatures, a growing number of droughts and floods, more intense hurricanes and precipitation events, and rising sea level, have long-term impacts on all aspects of transportation. In order to develop appropriate planning, response, and adaptation strategies, it is important to have information on how weather and climate trends affect the various modes of transportation.



KEY STAKEHOLDERS

NCDC works with various groups, both as an information provider and as a research partner, to examine the effects of weather and climate on transportation. This type of information can help engineers and decision makers within the transportation sector make practical decisions in order to adapt to climate changes and extreme weather conditions and to mitigate possible effects. There are many different governmental and non-governmental organizations, public and private groups and businesses, and individuals, that can benefit from using pertinent climate- and weather-related information. Some major groups include:

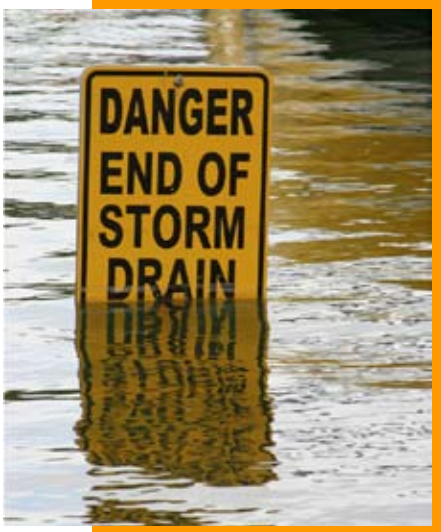
- National and international governmental transportation agencies and authorities
- Federal, regional, state, and local governmental transportation authorities
- Commercial passenger carrier operations, such as air, rail, road, and maritime
- Commercial operations, such as interstate trucking companies, express delivery, and energy companies
- Storage, transfer, and warehousing enterprises
- Transportation planning and research organizations

SECTOR NEEDS

Climate information is often available only as raw observations or in the form of tables, graphs, or written summaries, which may be difficult for users who are not well-versed in climate science to fully interpret. To bridge this gap, the transportation sector is partnering with NCDC to translate climate data into accessible, useful, and accurate products; and to leverage NCDC's climate expertise to better understand what the information means and how to most effectively use it.

Climate information can be used in a variety of ways. Some examples include:

- Using precipitation and visibility data to determine how often traffic-slowing weather conditions occur in different locations.
- Using climate data related to frequency, intensity, and duration of extreme climate events, such as hurricanes or tornadoes, to plan for potential storm impacts and to assess potential adaptation and/or mitigation strategies.
- Using average and extreme temperature and precipitation information to plan for road construction.
- Using precipitation intensity and frequency probabilities to plan for stormwater drainage systems.
- Using tide gauge data to evaluate local sea-level rise and the potential impacts on transportation in low-lying coastal regions and on maritime traffic under bridges.



NCDC Data and Products

There are many different types of useful climate information available. Some examples include:

- Wind Rose tabulations, which provide statistical summaries of wind speed versus wind direction from hourly data, produced in cooperation with the Federal Aviation Administration.
- The Meteorological Assimilation Data Ingest System (MADIS), which provides real-time and archived information for surface and upper-air temperature and wind speed observations; observed snowfall amounts; real-time coastal environmental observations and NOAA forecasts for any region in the coastal United States via NOWCoast; climate data from various state Department of Transportation roadway Mesonets (networks of weather and climate monitoring stations); and many other climate observations.
- The U.S. and North American Drought Monitor, which are synthesis products of multiple indices and impacts that represent a consensus of federal and academic scientists.
- Publications, including Local Climatological Data (provides a monthly summary of daily observations), Climatological Data (provides annual average values), and Comparative Climatic Data (provides average and extreme values).

Collaboration between the climate sciences and the transportation community is essential in helping to build the necessary bridges that will transform climate data into information that is relevant, credible, and trusted. Ongoing communication is important to ensure that the information NCDC provides is appropriate and applicable to transportation sector needs. As climate changes in the years ahead and the effects become more noticeable, new information needs will emerge. NCDC will work closely with those in this community, attending trade meetings and sponsoring future workshops and conferences, in order to better understand, address, and anticipate these needs.

Additional details about available NOAA products and the economic benefits of these products are provided at:
http://www.economics.noaa.gov

For further information on obtaining NCDC climate services and products related to transportation, please contact:

Customer Services Branch
NOAA's National Climatic Data Center, 151 Patton Avenue, Asheville, NC 28801-5001
828-271-4800 • TDD 828-271-4810 • Fax 828-271-4876
E-mail: ncdc.info@noaa.gov • http://www.ncdc.noaa.gov

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