

NOAA's National Climatic Data Center Sectoral Engagement Fact Sheet NATIONAL SECURITY

OVERVIEW

Climate change and climate variability affect all regions of the world. U.S. vulnerability to the changes and variations are not only dependent on changes within the U.S. but also on the fates of other nations. Extreme weather events, such as disastrous hurricanes, may lead to increased missions for many U.S. agencies, stretching resources. It is expected that changes in temperature and precipitation patterns, such as warmer temperatures, increased droughts, and more intense rainfall events with subsequent flooding, will cause crop failures, water scarcity, the spread of diseases, and large-scale migration around the world. Such conditions may trigger internal conflicts and political instability in developing regions, and threaten U.S. national security. Sea-level rise and storm surges may threaten critical and strategically important defense installations located on the coast and on low-lying islands. Disappearing ice coverage in the Arctic can affect defense strategies. In spite of limited data available in many parts of the world, it is important to assess emerging threats to national security due to climate change far into the future. Having access to relevant weather and climate data is essential for developing appropriate planning, risk management, mitigation, and adaptation strategies.

KEY STAKEHOLDERS

NOAA's National Climatic Data Center (NCDC) works with various groups, both as an information provider and as an applied research partner, to examine the effects of weather and climate on national security. This helps decision makers concerned with national security establish practical responses to climate change and extreme weather events. There are many different governmental and non-governmental organizations, and public and private groups that can benefit from using relevant climate and weather-related information. Some major groups include:

- The U.S. Department of Defense, including the Army, Air Force, Navy, and Marines
- Industry and consultants that help prepare strategy and acquire systems for the military services
- Federal agencies charged with protecting national borders and coasts
- Agencies and non-governmental organizations that are impacted by domestic or international humanitarian crises

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, NCDC is partnering with those who are concerned with national security 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 it can be used most effectively. Climate information can be used in a variety of ways. Some examples include:

- Using information about changes in extreme climate behavior to assess the exposure of U.S. interests and assets to extreme weather and climate events.



- Using sea ice data and projections to assess the timing and extent of open waters in the Arctic.
- Using real-time drought and climate monitoring products to determine which populations may be affected by water shortages, crop failures, and other climate-related stresses.
- Using historical and projected climate data to help less developed nations build agricultural and infrastructural resilience to climate impacts.
- Using global ocean temperature monitoring during exercise planning to assess where ecosystems are under the most stress.

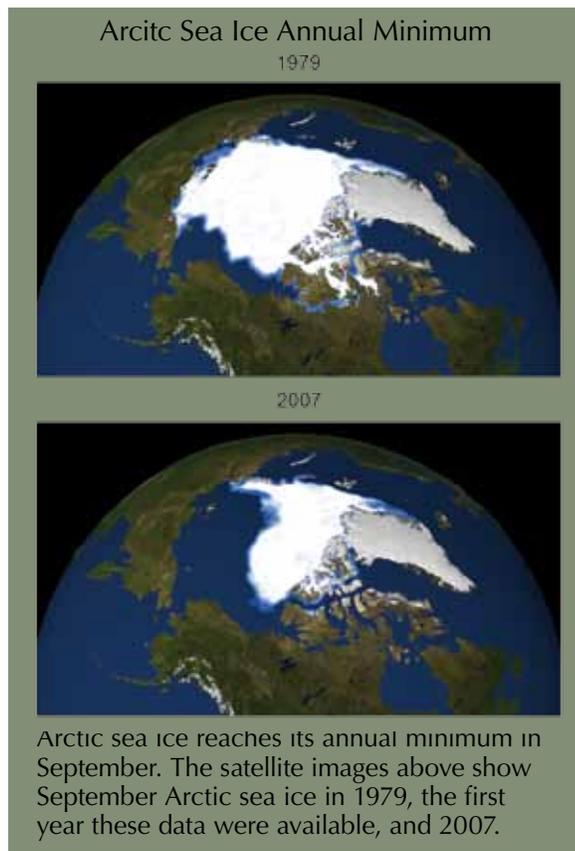
NCDC DATA AND PRODUCTS

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

- Global *State of the Climate* reports, which synthesize recent climate behavior and large-scale impacts around the globe.
- Marine observations made at fixed surface locations, both unmoving and drifting buoys, and on ships.
- Sea ice chart information and database, which provides information on current sea ice extent, as well as historical trends and patterns.
- CD-ROMs/DVDs, such as the *International Station Meteorological Climate Summary*, which contains climatic data summaries from thousands of weather stations around the world, and the *Integrated Surface Data* database, which contains climate information for about 10,000 weather stations, with some information dating back as far as 1901.
- Global tropical cyclone positions and intensities in the *International Best Track Archive for Climate Stewardship (IBTrACS)* tropical cyclone database.

Collaboration between climate scientists and the national security community is essential to help build the necessary bridges that will transform climate data into information that is relevant and credible.

Ongoing communication is important to ensure that the information NCDC provides is appropriate and applicable to national security needs. As climate changes in the years ahead and the effects become more noticeable, new information needs will emerge. NCDC will work closely with this sector, attending trade meetings and sponsoring future workshops and conferences, in order to better understand, address, and anticipate these needs.



Arctic sea ice reaches its annual minimum in September. The satellite images above show September Arctic sea ice in 1979, the first year these data were available, and 2007.



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 national security please contact:

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