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Contact: Jana Goldman
(301) 713-2483

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LEWIS AND CLARK: PIONEERS IN METEOROLOGY, TOO

Add meteorology to the list of pioneering achievements associated with the 1804-1806 expedition of Captains Meriwether Lewis and William Clark. The finding is uncovered by Susan Solomon and John Daniel of the National Oceanic and Atmospheric Administration's Aeronomy Laboratory in Boulder, Colo., in a paper published in the September issue of the *Bulletin of the American Meteorological Society*. NOAA is an agency of the U.S. Department of Commerce.

Scientific observations were a prominent, though lesser-known, aspect of the expedition of discovery by Lewis and Clark. They chronicled flora and fauna, weather observations and astonishingly precise measurements of temperature (until the rigors of the journey claimed their last remaining thermometer). Solomon and Daniel sleuthed the historical records and journals of the era, revealing a wealth of information not only in the writings of Lewis and Clark themselves, but also in the writings of President Thomas Jefferson, four of the expedition team members and others.

Solomon and Daniel compare Lewis and Clark's 1804-1805 data with modern measurements gathered by volunteers of NOAA's Cooperative Observer network at a series of sites along the Lewis and Clark westbound trail. Some of those NOAA sites have a data record that extends back for a century or more.

Solomon and Daniel's analysis shows that Lewis and Clark carried out their observations with skill, tenacity and considerable success. They credit much to Lewis' careful attention to the calibration of the thermometers. As lead author Solomon notes, "Comparison of their data to modern measurements reveals that he and Clark clearly nailed this challenge, just as they did so many others on their pioneering journey."

According to the paper, Lewis and Clark's observations 200 years ago as they trekked across the North American High Plains agree very well with the modern record. For example, they experienced average minimum temperatures for June/July in Montana of about 50°F, in agreement within 2°F with expectations from modern data. They also documented typical spring and fall Western snows, flash floods and warm Oregon winters – features of the climate that often surprised and occasionally plagued these men from the eastern seaboard of the then-United States.

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Jefferson, best known as one of the Nation's Founding Fathers, was keenly interested in a variety of subjects, including meteorology. As the paper notes, Jefferson took meteorological observations himself and likely instructed Lewis before the journey.

As a surveyor, Jefferson had a vision for a clear delineation of the United States coastline to reduce shipwrecks while expanding commerce and industry. Jefferson created the Coast and Geodetic Survey (CGS), to focus on the importance of geodesy, the science of measuring the size and shape of the earth, and the nation's coasts. After a federal reorganization in 1970, part of CGS became National Geodetic Survey, falling under the NOAA umbrella.

Susan Solomon is a senior scientist at the Aeronomy Laboratory in Boulder, Colo., where she leads the Chemistry and Climate Processes research program. She is the recipient of many honors for her pioneering work in discovering the cause of the Antarctic ozone hole, including the 1999 U.S. National Medal of Science and the 2004 Blue Planet Prize.

John Daniel is a research physicist at the Aeronomy Laboratory. His work on the science associated with climate and the ozone layer was recognized with the Presidential Early Career Award for Scientists and Engineers in 1996.

NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and providing environmental stewardship of the nation's coastal and marine resources.

The AMS (<http://www.ametsoc.org/ams>) is the nation's leading professional society for those involved in the atmospheric and related sciences.

Editors Note: Another paper about Lewis and Clark and their contributions to the study of climate also will be published in the September issue of the Bulletin of the American Meteorological Society. The other paper, "Window of Opportunity: The climatic conditions of the Lewis and Clark expedition of 1804-1806" is by Paul Knapp from the Dept. of Anthropology and Geography at Georgia State University in Atlanta. Please contact Stephanie Kenitzer at AMS, kenitzer@dc.ametsoc.org for more information.

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