“Came a Dredfulle hard Storme from the South which Lasted for about one ouer and half which Cosed us to Jump out and hold hir the wind fare Sailed”

—Sergeant Charles Floyd

July 14, 1804

North of St. Joseph, Missouri

“At day break it began to rain and continued until seven when it abated, and we set forward; but in a short time a gust of wind and rain came on so violent, that all hands had to leap into the water to save the boat. Fortunately this storm did not last long, and we went on to a convenient place and landed.”

—Sergeant Patrick Gass

July 14, 1804

North of St. Joseph, Missouri

Recording of Weather and Climate in the Early 1800s

While several scientific books have been written describing the expedition’s study of flora and fauna, its advances in the fields of geology, geography, and cartography, and its members’ medical needs, the expedition’s systematic daily observations of climate, water, and weather elements have largely been ignored. However, the daily observations en route represent the dawn of modern meteorology, when only a handful of scientists were noting the changing weather patterns. In general, regular daily observations, although noted back to the Greeks as early as the fifth century B.C.E., were not recorded until the late 1600s as instruments such as the thermometer, barometer, and hygrometer were developed (Frisinger 1983).

Weather diaries based on meteorological instruments were very uncommon in the United States in the late eighteenth century. Thomas Jefferson and James Madison in Virginia, John Winthrop in Massachusetts, and Dr. John Lining along with a few others in South Carolina were noted for taking and documenting daily observations (Druckenbrod 2003, 62). In recent writings, scientists have used this small record of historical diaries to reconstruct climate patterns.§

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No national approach to daily scientific observations was in place during this time. However, using the expedition’s journals, we now have an opportunity to study three years of weather, water, and climate data from Pittsburgh, Pennsylvania, to the Pacific Ocean and back to St. Louis, Missouri. More than 60 years would pass before systematic scientific observations would be conducted on a daily basis in this region. Therefore, we have a true historical snapshot to compare today’s weather, water, and climate records to those recorded by the Lewis and Clark Corps of Discovery Expedition.

Few selected writings can be found that describe limited aspects of the weather, water, or climate of the Lewis and Clark Expedition. Those that do include descriptions of snow conditions along the Lolo Trail (Ambrose 1978); the inclement weather at the mouth of the Columbia River (Large 1979); general weather observations (Large 1986); scientific instruments used on the Expedition (Plamondon II 1991); a master thesis on the weather conditions at Fort Mandan, North Dakota, and Fort Clatsop, Oregon (Burnette 2002); a discussion on temperature variations along the trail (Solomon and Daniel 2004); a discussion on climatic conditions during the Expedition (Knapp 2004); and 1805/06 winter conditions at Fort Clatsop (Miller 2004). No documentation of the Lewis and Clark Expedition has collected all weather-, water-, and climate-related records into one volume for use by the meteorological or hydrologic scientific communities.

Overview of the Journals

The journals of the Lewis and Clark Expedition are many and varied. Donald Jackson (1978, vii) noted that Lewis and Clark were “the writingest explorers of their time. They wrote constantly and abundantly, afloat and ashore, legibly and illegibly, and always with an urgent sense of purpose.” The principal writers of the journals were Meriwether Lewis and William Clark. They recorded data into daily narrative diaries made from rough “Field Notes” that were translated at the end of the day by Clark. They maintained several other documents and booklets containing astronomy, botany, ethnology, geography, military orders, mineralogy, thermometrical and weather observations, and zoology. Clark produced numerous sketches and maps. Both wrote numerous letters before, during, and after the expedition. Much has been written discussing the methods used and history behind the journals (Biddle 1814; Coues 1893, 1: cvi–cxxxii; Thwaites 1904, 1: xvi–xxiii; Bakeless 1964; Cutright 1976; Jackson 1978; Moulton 1986, 2: 8–48, 530–567; Bergon 1989; Beckham 2003; Saindon 2003). The reader is encouraged to view these source documents for further revelation on the journals.

President Thomas Jefferson did not order the keeping of separate journals by anyone other than the captains. His final instructions to Lewis did suggest that “several copies of these as well as of your other notes should be made at leisure times, & put into the care of the most trust-worthy of your attendants, to guard, by multiplying them, against the accidental losses to which they will be exposed” (Jackson 1978, 1: 62; Moulton 1996, 10: xi). In addition to those by the captains, three sergeants and a private are known to have written journals. Some of these journals have come to light only during the last 50 to 100 years. There may be up to three additional journals that have not been found. Lewis gives credence to this in his last communication to Jefferson from Fort Mandan in April 1805: “We have encouraged our men to keep journals, and seven of them do so, to whom in this respect we give every assistance in our power” (Jackson 1978, 2: 232).

The Journals of Lewis and Clark have been reproduced only a few times in the past 200 years. The first issuance was under the guidance of Clark, who after the untimely death of Lewis, took control of the known journals. Nicholas Biddle produced the first edition (1814),