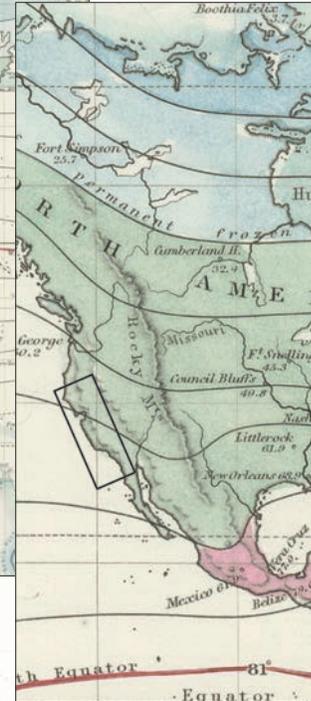
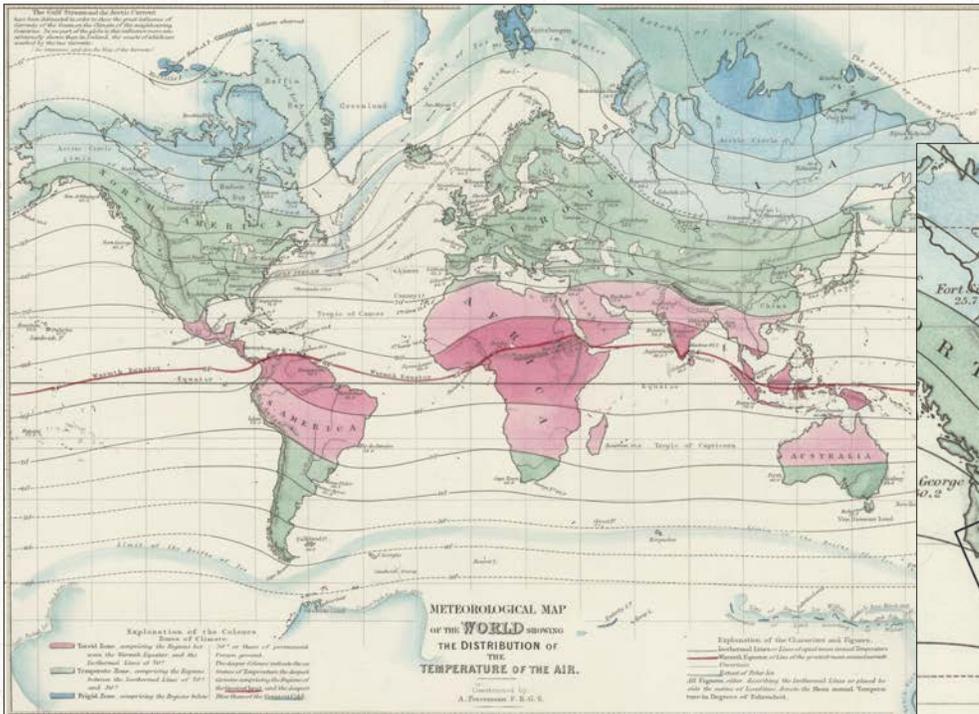


MAPPING TEMPERATURE



Mapping became a key tool for the field sciences in the nineteenth century. Some areas of eighteenth-century natural philosophy had already developed a strongly empirical nature: scholars examined the world around them closely, seeking information that could be combined to reveal rules or even natural laws. Maps became devices for reducing and comparing observations and evolved into the first thematic maps. After 1800 Alexander von Humboldt had great success correlating the distribution of plants in South America to altitude and temperature through a series of maps and diagrams. This led field scientists to adopt a newly inductive and spatial approach to their studies. Scientists began to collect and map vast quantities of data about the global environment.

Temperature maps from the 1800s indicate how the relative lack of data initially made mapping environmental phenomena difficult. It was possible to collect precise facts from established stations and use the information to describe detailed changes related to time, but the observation sites were too scattered to support anything other than highly generalized, global mapping. The map above includes isotherms (lines of equal temperature) in broad ten-degree bands, and it shifts to dotted lines where data is uncertain. Eventually, however, observation stations became sufficiently dense for meteorologists to produce more complete and accurate maps showing temperature variation (as shown on the front) and then, after 1900, to conceptualize broader climatic zones.

Above, with detail: August Petermann, *Meteorological Map of the World Showing the Distribution of the Temperature of the Air* (1850), from his *Atlas of Physical Geography* (1850). Front: E. McD. Johnstone, *Climatic Map of California* (1888). Background: Heinrich Berghaus, *Die Isothermkurven der Nördlichen Halbkugel* (1838), from his *Physikalischer Atlas* (1848). All images courtesy of the David Rumsey Map Collection.

Environmental maps became increasingly complex during the nineteenth century. Compare the 1888 California map on the front to the 1850 world map above (California is outlined in the detail).

Advances in the twenty-first century made it possible to create animated visualizations of global environmental conditions. View online: www.nnvl.noaa.gov/weatherview/earth.nullschool.net/about.html

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