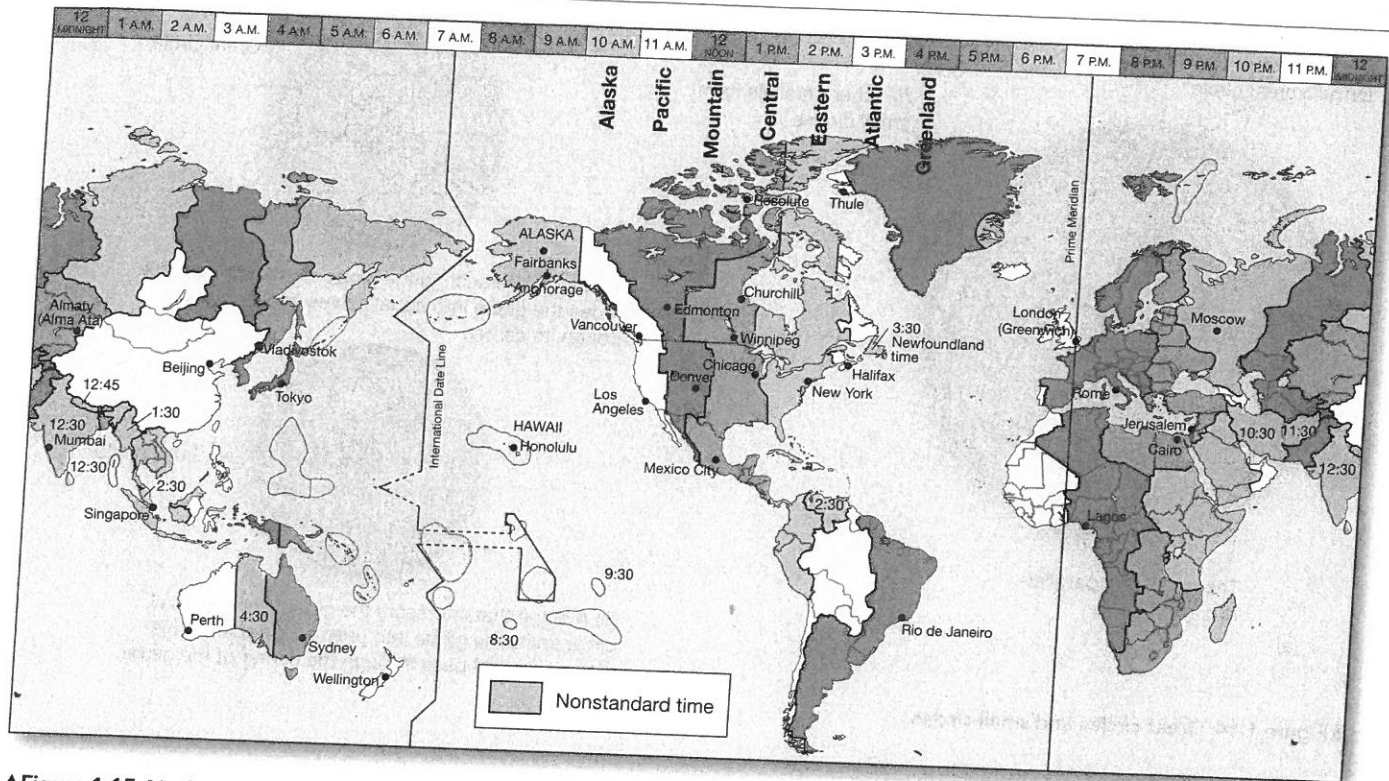




▲Figure 1.15 Modern international standard time zones. If it is 7 P.M. in Greenwich, determine the present time in Moscow, London, Halifax, Chicago, Winnipeg, Denver, Los Angeles, Fairbanks, Honolulu, Tokyo, and Singapore. [Adapted from Defense Mapping Agency; see http://aa.usno.navy.mil/faq/docs/world_tzones.html.]

officially begins (at 12:01 A.M.). From this “line,” the new day sweeps westward. This *westward* movement of time is created by Earth’s turning *eastward* on its axis. Locating the date line in the sparsely populated Pacific Ocean minimizes most local confusion (Figure 1.16).

At the IDL, the west side of the line is always one day ahead of the east side. No matter what time of day it is when the line is crossed, the calendar changes a day. Note in the illustration the departures from the IDL and the 180° meridian; this deviation is due to local administrative and political preferences.

Daylight Saving Time In 70 countries, mainly in the temperate latitudes, time is set ahead 1 hour in the spring and set back 1 hour in the fall—a practice known as **daylight saving time**. The idea to extend daylight for early evening activities at the expense of daylight in the morning, first proposed by Benjamin Franklin, was not adopted until World War I and again in World War II, when Great Britain, Australia, Germany, Canada, and the

United States used the practice to save energy (1 less hour of artificial lighting needed).

In 1986 and again in 2007, the United States and Canada extended the number of weeks of daylight saving time. Currently, time “springs forward” 1 hour on the second Sunday in March and “falls back” 1 hour on the first Sunday in November, except in a few places that do not use daylight saving time (Hawai’i, Arizona, and Saskatchewan). In Europe, the last Sundays in March and October mark the beginning and ending of the “summer-time period.”*

Maps and Cartography

For centuries, geographers have used maps as tools to display spatial information and analyze spatial relationships. A **map** is a generalized view of an area, usually some portion of Earth’s surface, as seen from above and greatly reduced in size. A map usually represents a specific

*see <http://webexhibits.org/daylightsaving>.



GEOREPORT 1.3 The world’s most accurate clock

The National Institute for Standards and Technology (NIST), U.S. Department of Commerce, operates the world’s most accurate clock. The NIST-F1 cesium atomic clock, housed in Boulder, Colorado, will not gain or lose a second in nearly 20 million years. For accurate time in the United States, see <http://www.time.gov>, operated by NIST and the U.S. Naval Observatory. In Canada, the Institute for Measurement Standards, National Research Council Canada, participates in determining UTC; see http://time5.nrc.ca/webclock_e.shtml.