WORLD CLIMATES
After Köppen–Geiger

A HUMID EQUATORIAL CLIMATE
- Af — No dry season
- Am — Short dry season
- Aw — Dry winter

B DRY CLIMATE
- BS — Semiarid
- BW — Arid

h=hot
k=cold

C HUMID TEMPERATE CLIMATE
- Cf — No dry season
- Cw — Dry winter
- Cs — Dry summer

D HUMID COLD CLIMATE
- Df — No dry season
- Dw — Dry winter

a=hot summer
b=cool summer
c=short, cool summer
d=very cold winter

E COLD POLAR CLIMATE
- E — Tundra and ice

H HIGHLAND CLIMATE
- H — Unclassified highlands

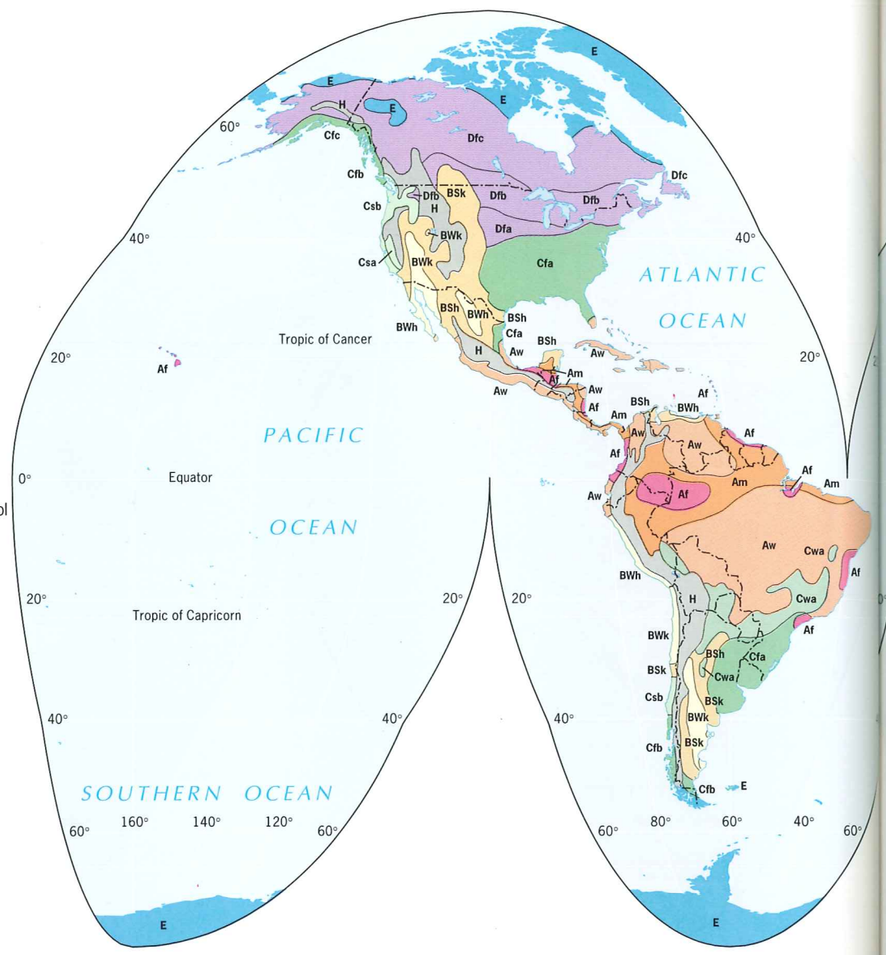

FIGURE I-7

place on Earth is guaranteed to receive, in any given year, precisely its average rainfall. In general, the variability of precipitation increases as the recorded average total decreases. In other words, rainfall is least dependable just where reliability is needed most—in the drier portions of the inhabited world.

Precipitation and Human Habitation

Even heavy year-round precipitation is no guarantee that an area can sustain large, dense populations. In the equatorial latitudes, heavy precipitation combined with high temperatures leads to the faster destruction of fallen leaves and branches by bacteria and fungi. This severely inhibits the formation of humus, the dark-colored upper soil layer consisting of nutrient-rich decaying organic matter, which is vital to soil fertility. The drenched soil is also subjected to the removal of its best nutrients through *leaching*—the dissolving and downward transport of nutrients by percolating water—so that only oxides of iron and aluminum remain at the surface to give the tropical soil its characteristic reddish color. Such tropical soils (called oxisols) nurture the dense rainforest, but they cannot support crops without massive fertilization. The rainforest thrives on its own decaying vegetative matter, but when the land is cleared, the leached soil proves to be quite infertile. Not surprisingly, the Amazon and Congo basins are not among the world's most populous regions.

Climatic Regions

It is not difficult to discern the significance of precipitation distribution on the map of world climates (Fig. I-7). Delimiting climatic regions, however, has always presented problems for geographers. In the first place, climatic records are still scarce, short-term, or otherwise inadequate in many parts of the world. Second, weather and climate tend to change gradually from place to place, but the transitions must be presented as authoritative-looking lines on the map. In addition, there is always room for argument concerning the criteria to be used and how these criteria should be weighed. Vegetation is a response to prevailing climatic conditions. Should boundary lines between climate regions, therefore, be based on vegetative changes observed in the landscape no matter what precipitation and temperature records show? The debate continues. World vegetation is mapped in Figure I-8; compare it to Figure I-7 and draw your own conclusions!

Figure I-7 displays a regionalization system devised by Wladimir Köppen and modified by Rudolf Geiger. This scheme, which has the advantage of comparative simplicity, is represented by a set of letter symbols. The first (capital) letter is the critical one: the *A* climates are humid and tropical; the *B* climates are dominated by dryness; the *C* climates are humid and comparatively mild; the *D* climates reflect increasing coldness; and the *E* climates mark the frigid polar and near-polar areas.