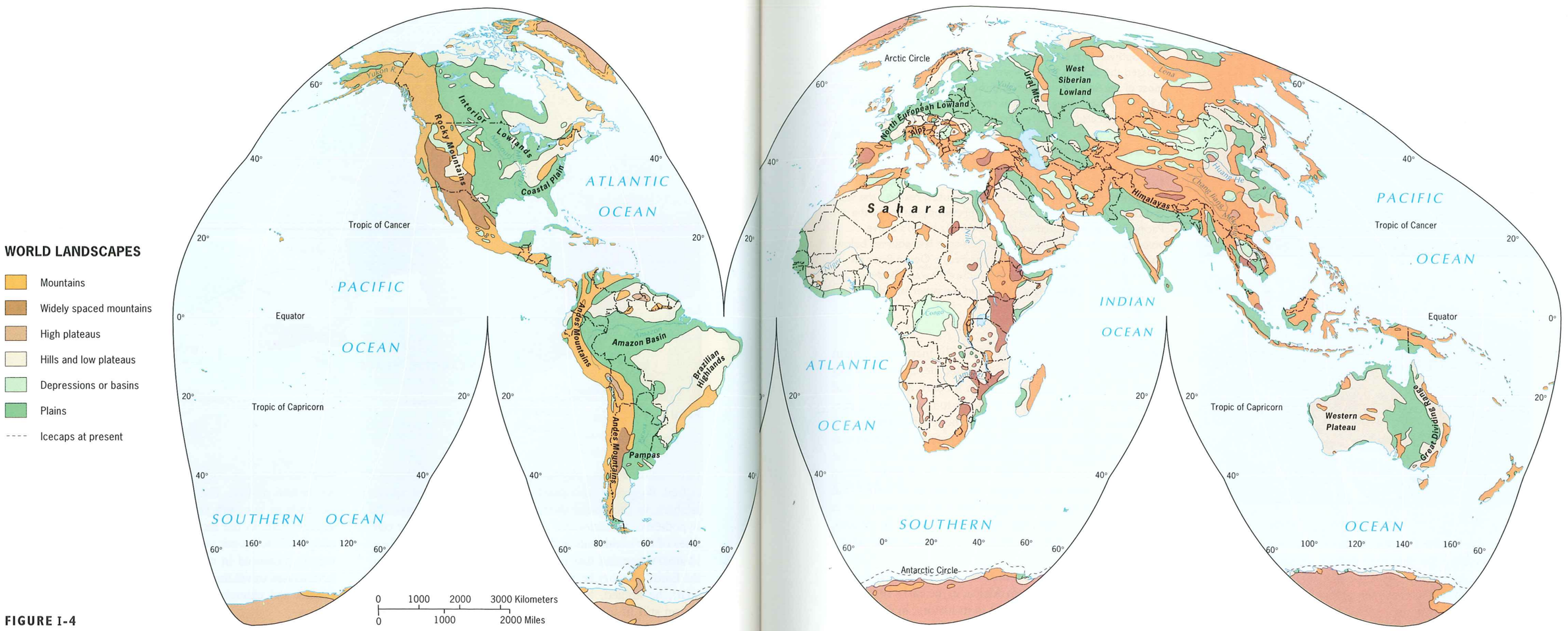

FIGURE I-4

mountain range is forming where the Indian Plate is pushing into the heart of Asia; the Himalayas, capped by Mount Everest (presently the highest mountain on the planet), are the manifestations of this collision. But note that the Himalayas are only one link in a mountainous plate-collision chain that extends southeastward from the Mediterranean to mainland Southeast Asia and beyond (Fig. I-4). Life in and near such zones is always affected by risk.

As research continues, the map of the Earth's tectonic plates is still being drawn, so Figure I-3 will not be the last word. But it does help to explain why Africa, once the center of Wegener's postulated supercontinent (which he named *Pangaea*, meaning ''all-earth'') does not have the lengthy, linear mountains all other continents possess. Africa, as we shall see in Chapter 7, is often—and appropriately—called the ''plateau continent.'' It is one of the Earth's oldest pieces of real estate, geologically speaking.

As we investigate each geographic realm, we will take note of the landscapes that form its physical base (Fig. I-4). All the continents contain old geologic cores known as *shields* that often create vast expanses of plains (low-lying flatlands) or plateaus (higher-elevation flatlands). Between these low-relief expanses and the high mountain ranges (Andes, Rockies, Alps, etc.) lie hills of many different sizes. There is no generalizing about the Earth's landscapes, and we will have to examine them one realm and region at a time.

Glaciations

To complicate matters, even as the continental landmasses move, the Earth periodically undergoes *glaciation*, a time during which global temperatures drop and environments change. A glaciation actually is not just one cooling phase but many. Over millions of years, the temperature swings back and forth, from warmer to colder and back to warmer again; and each time it gets colder, drastic changes occur. Continental-scale, glacial icesheets expand. Sea levels drop. Climates change. Plant life shifts equatorward. Species of animals and plants die out, but others, better adapted, survive and succeed.

Over the past 20 million years, the Earth has been cooling, and during the most recent 5 to 6 million years we have been in the grip of a glaciation—the Late Cenozoic glaciation, as geologists have named it. (They used to call it the *Pleistocene* glaciation until they recently discovered that it started well before the Pleistocene epoch, our epoch of emergence, began.) We humans are the products of that glaciation. Our distant ancestors were among species that managed to adapt when, in their East African homeland, the climate cooled, trees died out, drought prevailed, and animals long hunted disappeared. In the several million years that followed, the climate warmed and cooled again many times—as many as two dozen times, perhaps more. We seem repeatedly to have survived by adaptation during cold glacial times, then thrived and expanded during the next *interglaciation* (the global warm-up that occurs between two glaciations).

About 15,000 years ago, the icesheets were back for the last (or rather, most recent) time, and the map of the Northern Hemisphere looked as in Figure I-5. Since then, the glaciers have again withdrawn, but this has been no ordinary interglaciation. In the geologic eye-blink of the present interglaciation, the entire modern history of human civilization is playing itself out—from rock shelters to megacities, from stone tools to space shuttles, from human millions to billions. Geologists call ours the Holocene ep-