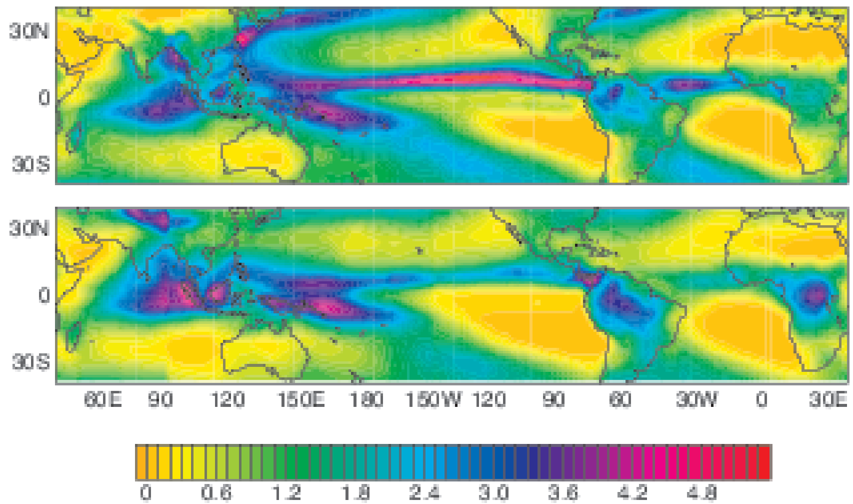

Figure 1. Annual mean precipitation over the tropics, as inferred from different data sources. The upper panel is based on the microwave sounding unit over the ocean and a land climatology compiled from station data. The lower panel shows the Geostationary Operational Environmental Satellite precipitation index (GPI) inferred from high-resolution imagery of outgoing longwave radiation. The bands of heavy precipitation over the tropical Pacific and Atlantic are the oceanic ITCZs. Quantitative estimates of precipitation in meters per year can be inferred from the color bar at the bottom.

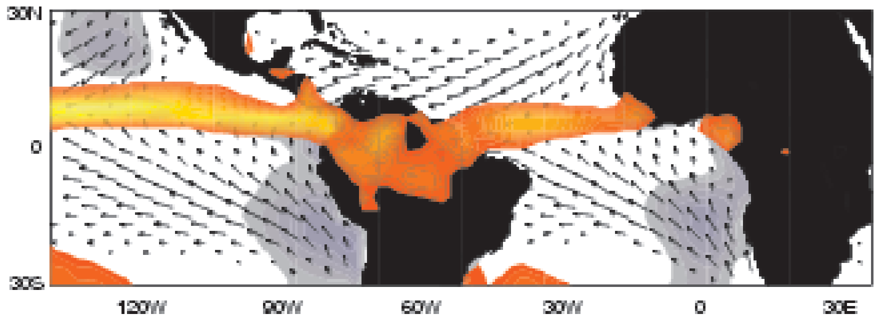

Figure 2. Climatological annual mean conditions over the Pan American region. Vectors denote surface winds, orange-yellow shading denotes precipitation, and gray-blue shading denotes stratus cloud decks. Over both the Atlantic and Pacific, the ITCZ is located well to the north of the equator, and southeasterly trades extend across the equator. The stratus cloud decks are more extensive in the Southern Hemisphere.

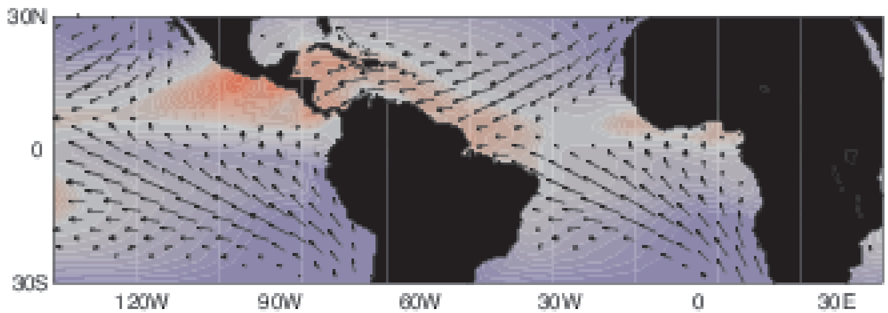

Figure 3. As in Fig. 2, but shading denotes annual mean sea surface temperature. The warmest (reddest) waters are observed, not on the equator, but in the Northern Hemisphere near the latitude of the ITCZ.

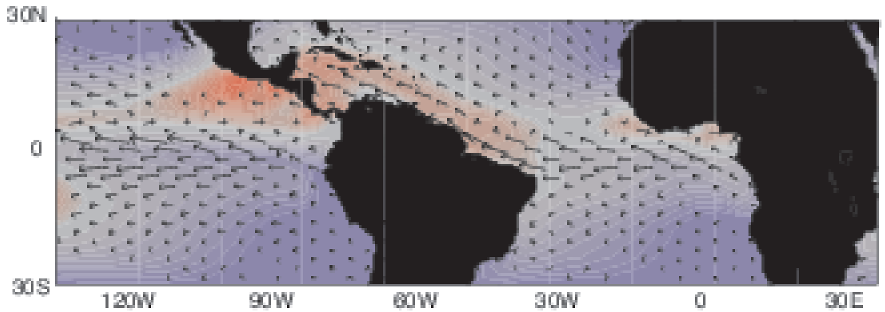

Figure 4. As in Fig. 3, but arrows denote surface currents. The eastward arrows at the latitude of the ITCZ correspond to the North Equatorial Countercurrent and the longer westward arrows along and just to the south of the equator correspond to the South Equatorial Current.

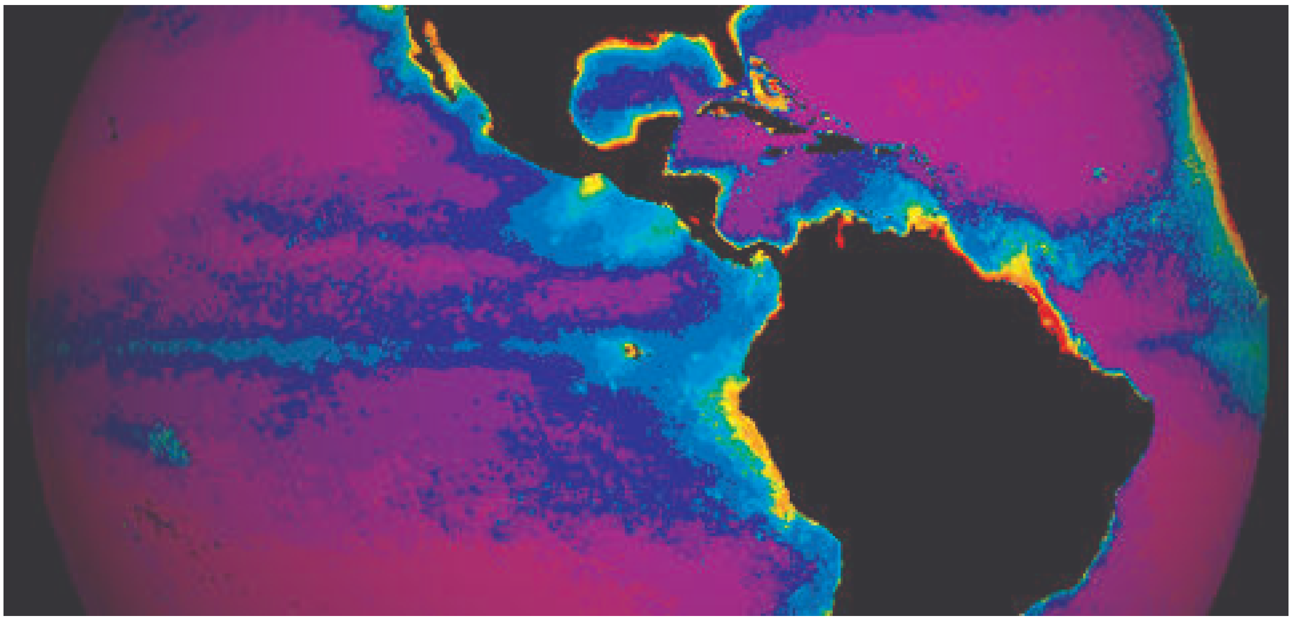

Figure 5. Annual mean chlorophyll concentrations based on Coastal Zone Color Scanner imagery. The color scale has been adjusted to enhance the weak gradients in the vicinity of the equator. The enhanced concentrations along the equator in both oceans are signatures of upwelling. Concentrations are also enhanced beneath the ITCZ, in the region of coastal upwelling along the Peruvian coast and downstream (on the Pacific side) of the gaps in the mountain ranges of Central America.

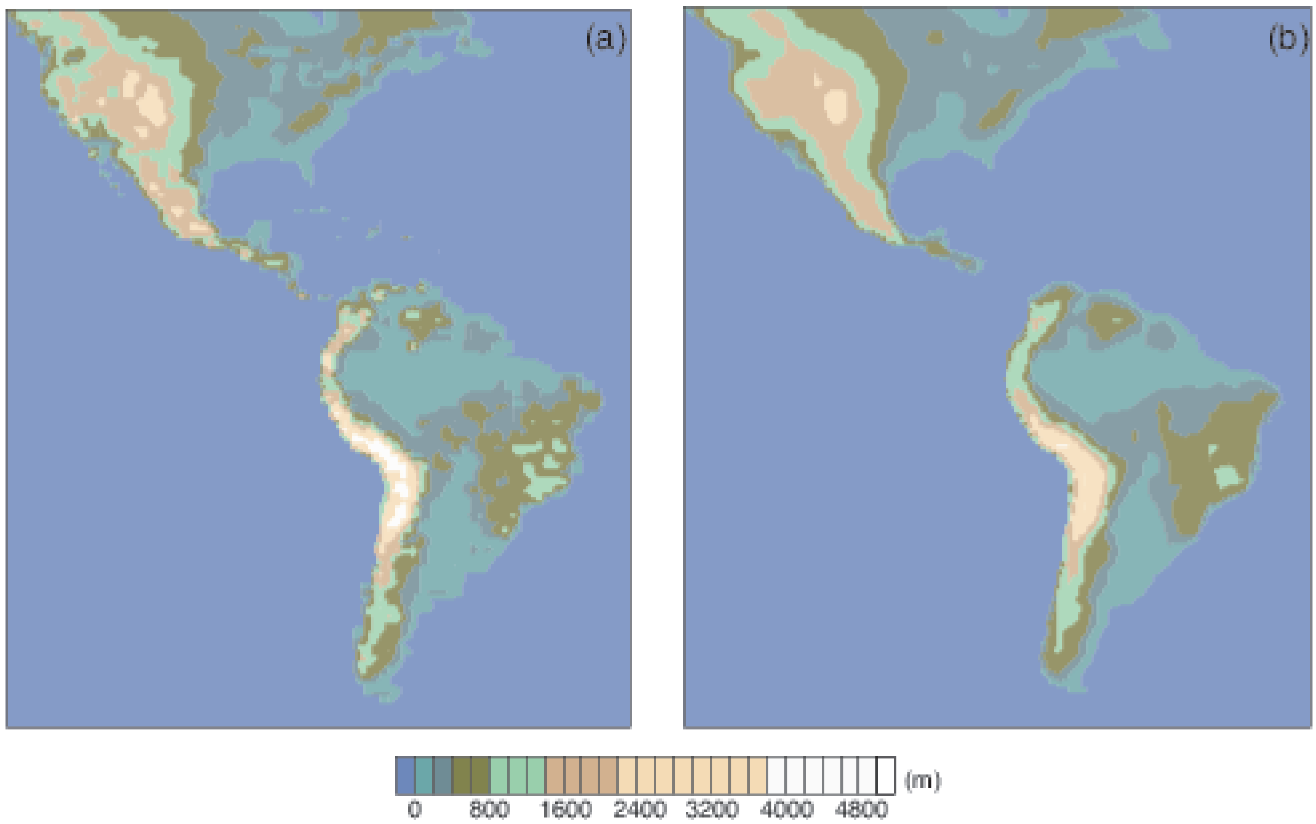

Figure 6. Topography of North and South America, (a) at approximately 5' resolution and (b) at the typical 2° latitude-longitude resolution of an atmospheric general circulation model that is used in climate simulations. Shading interval is 200 m.

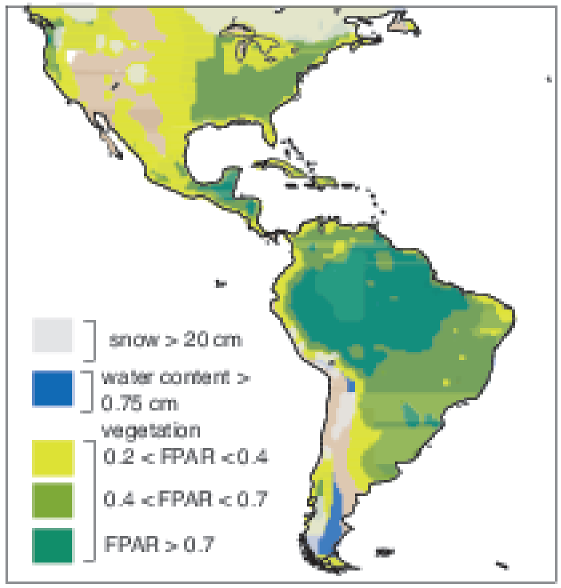

Figure 7. Annual mean distribution of snow, soil moisture, and vegetation over North and South America. The soil moisture is characterized by model water content in the topmost 7 cm of soil. Vegetation is documented by the satellite-derived fraction of photosynthetically active radiation absorbed by the green vegetation canopy (FPAR). Snow depth derived from surface observations.

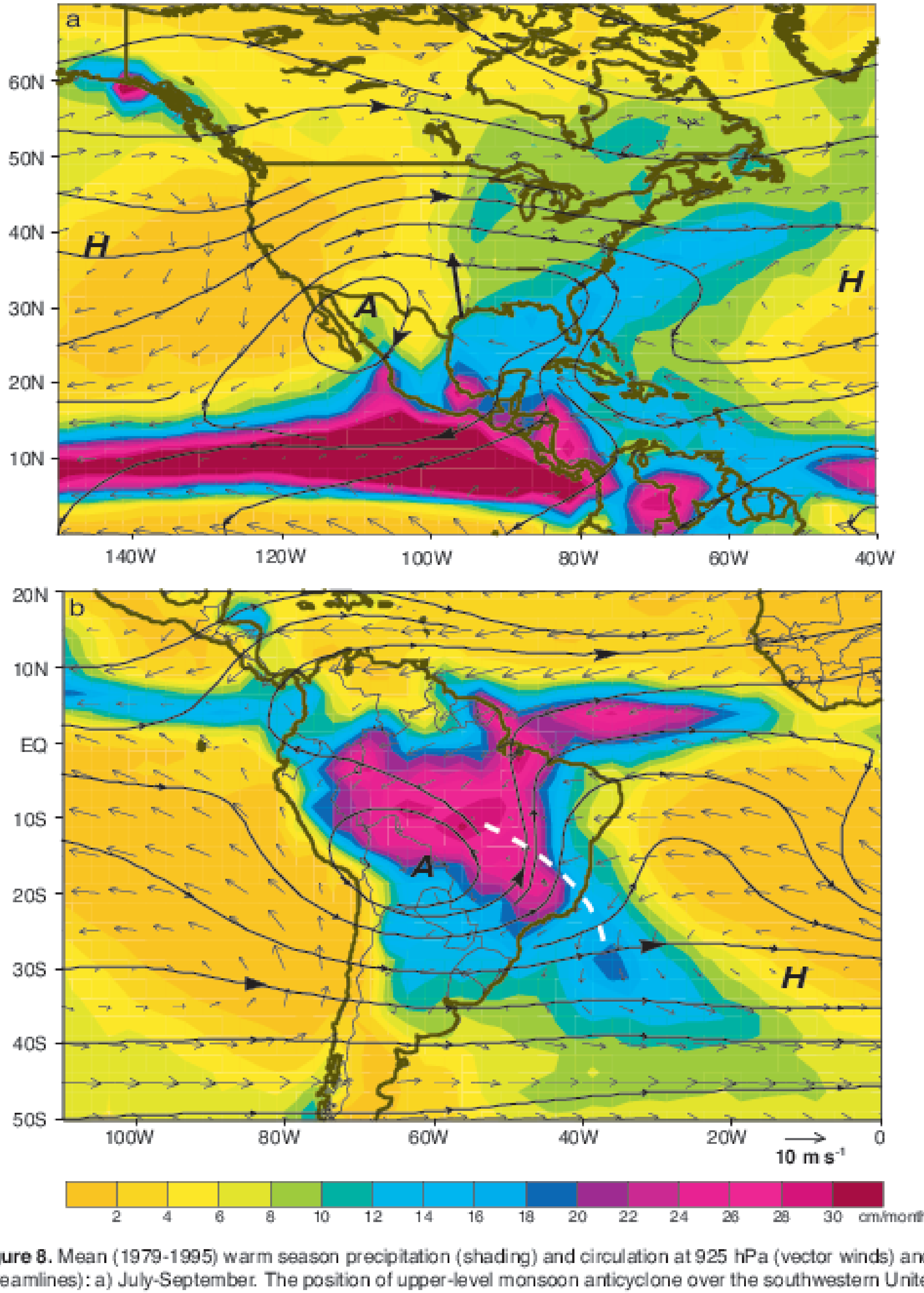

Figure 8. Mean (1979-1995) warm season precipitation (shading) and circulation at 925 hPa (vector winds) and 200 hPa (streamlines): a) July-September. The position of upper-level monsoon anticyclone over the southwestern United States and northwestern Mexico is indicated by an "A". The subtropical surface high pressure centers over Bermuda and the North Pacific are indicated by "H". The approximate location of the Great Plains low-level jet is indicated by a heavy solid arrow. b) December-February. The position of the upper-level monsoon high over Bolivia is indicated by an "A". The South Atlantic subtropical surface high pressure center is indicated by an "H". The approximate axis of the South Atlantic Convergence Zone (SACZ) is indicated by the heavy white dashed line.

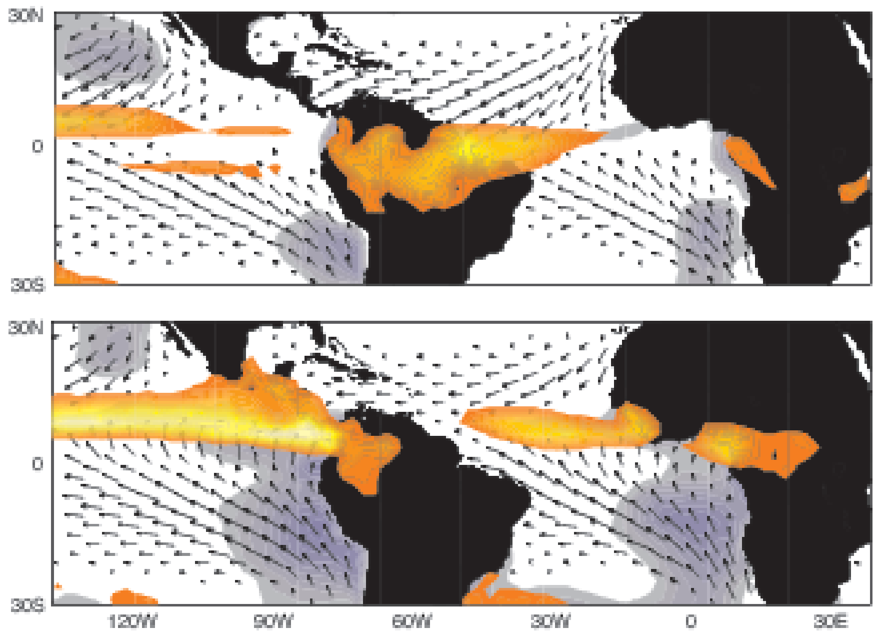

Figure 9. As in Fig. 2, but for the March-April mean (upper panel and September-October mean conditions (lower panel). Note the double ITCZ configuration in the Pacific, symmetric about the equator in March-April, in contrast to the prominent single ITCZ near 10°N in September. A strongly contrasting structure is also observed in the Atlantic sector, with the ITCZ displaced farther north in September-October. Rainfall rates in excess of 20 cm per month are colored orange-yellow.