The temporal and spatial distributions of cirrus in the upper troposphere can now be specified in detail on a monthly basis from analysis of HIRDLS, CALIPSO, and CLOUDSAT cloud observations. We use observed geographical distributions of cirrus in radiative transfer calculations to calculate cirrus heating and cooling rates in the tropics. We focus in particular on the 13 to 15 km altitude range, the altitude range by which heating by cirrus is thought to assist in the vertical transport of air at altitudes above that of maximum convective outflow (i.e. the Corti hypothesis). Inputs to the radiative transfer calculations include cloud effective radii and ice water content data. The vertical and latitude-longitude structure of the cirrus and heating rates are presented and discussed. We note that cirrus structure with small vertical depth is located primarily away from the equator. The latitudinal variation of the vertical structure of the cirrus is important, since thinner cirrus leads to heating, while thicker cirrus leads to cooling. Due to differences in the times which tropical convection forms over land and the ocean, and due to the latitudinal structure of the vertical depth of the cirrus, net cooling is observed over the ocean and net warming is observed over land in the 13 to 15 km altitude range.