The world’s permafrost regions occupy ~24% (~23x10^6 km^2) of the land area in the Northern Hemisphere. The Qinghai-Tibetan Plateau is a unique geophysical feature due to its size and elevation, averaging over 4 km, and one of the most tectonically active regions in the world with competing climatic and geodynamic processes, including continental collision, rapidly melting glaciers, glacial isostatic adjustment, and thawing permafrost. The Plateau and its surroundings have the most mountain glaciers in the world and are called the Third Pole. The surface temperature over the Plateau is rising at a rate of ~0.30°C/decade or more than twice the global rate. During the past half-century, 82% of the glaciers have retreated and the rate of the Active-Layer Depth (ALD) thickening, based on sparse in situ data as a result of the permafrost degradation is estimated at ~1.4 cm/yr contributing to sea-level rise at a discernible level which has not been considered before. At present, the quantification of Tibetan permafrost ALD thickening rate is elusive. We hypothesize that the secular subsidence of the Tibetan discontinuous permafrost surface is due to the thawing of ground ice near the permafrost table, thus the direct measurements of surface deformation using Synthetic Aperture Radar Interferometry (InSAR) allow for directly inferring ALD thickening and its rate. Here we use the PALSAR polarimetric interferometry data collected by JAXA’s Advanced Landing Observing Satellite (ALOS) and process them into a time series and with the associate in situ data, to observe and interpret the present-day degradation rate of the Tibetan permafrost surface deformation.