In this paper, the variability and trends of summer monsoon rainfall of near-future (2046-2065) and far-future (2080-2099) compared with a baseline period (1986-2005) over Vietnam are projected by the PRECIS model under RCP4.5 and RCP8.5 scenarios. In this study, the PRECIS model was driven by the CNRM-CM5 (PRECIS/CNRM-CM5) and GFDL-CM3 (PRECIS/GFDL-CM3) for the baseline simulation (1986-2005) and future projections (2046-2065 and 2080-2099). The variability of summer monsoon rainfall was defined by the standard deviation (SD). The trend analysis shows that the trend of the 21st century average monsoon rainfall is increasing under PRECIS/GFDL-CM3 projections in both RCP4.5 and RCP8.5 scenarios. However, the PRECIS/CNRM-CM5 shows the 21st century average monsoon rainfall is increasing in the RCP8.5 scenarios; and decreasing in the RCP4.5 scenario. The PRECIS/GFDL-CM3 and PRECIS/CNRM-CM5 show the increasing of variability of summer monsoon rainfall during near-future under both RCP4.5 and RCP8.5, with the increasing rate of SD is about 0 to 80% compared with baseline simulation. However, both PRECIS models show the little change and decreasing in SD during far-future compared with baseline simulation.