Hydrologic process response to climate change is drastic. One evaluation model is established to investigate the variation tendency of runoff under 3 emission scenarios of SRES. By one-way coupling the Noah LSM with PRECIS (Providing Regional Climate for Impacts Studies) regional climate model, the impacts of climate change on the runoff in the Liaohe River basin can be quantificationally calculated. The results show that in the Liaohe River Basin, compared with those in the baseline years, mean annual temperature increases in both 2020s and 2050s under 3 climate change scenarios. Mean annual precipitation and mean annual runoff marginally decrease only in 2050s under the A1B scenarios with the MPI-ECHAM5. Similar to the annual situation, mean monthly temperature increases while mean monthly precipitation fluctuates in the future. As a simulated result, mean monthly runoff is predicted to show an increasing trend mainly, especially in July to October. According to the change of runoff caused by climate change, some perverse temperature-precipitation-runoff relationships show the possibility of extreme hydrologic events. Statistical methods are used to indicate that the higher possibility of drought and flooding would happen in the future. These results represent in the Liaohe River future climate change would cause more intense hydrologic cycle and uneven intra-annual distribution of water resources.