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Assessment of natural forcing effects to global warming

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It is well recognized that the average surface temperature of the Earth has increased since about 1900. According to the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), it is very likely that the warming since the mid-20th century is mainly caused by the increase of anthropogenic greenhouse gas concentration (IPCC, 2007). There is mounting evidence from paleoclimatic studies, however, that the Earth's surface temperature significantly fluctuated without anthropogenic effects over the last few millennia. In the AR4, the IPCC reviewed many researches reconstructing a temperature variation over the last 1300 years and then recognized that a relatively warm condition occurred in the medieval period, although the warmest is apparent in the 20th century. In order to accurately predict a future climate change, it is very important to evaluate the contribution of the natural effects to the global warming. In the present study, we assess the natural forcing effects to the past and recent global warming.