

Assessment of natural forcing effects to global warming using regression analysis method

akira saito^{1*}, Kazutaka Yasukawa¹, Kentaro Nakamura², Yasuhiro Kato¹

¹Sys. Innovation, Univ. of Tokyo, ²JAMSTEC

It is well recognized that the average surface temperature of Earth has increased during the 20th century. According to the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), most of the warming since the mid-20th century is very likely due to the increase in anthropogenic greenhouse gas (GHG) concentrations (IPCC,2007). There is increasing evidence from paleoclimatic studies, however, that the Earth's surface temperature significantly fluctuated without anthropogenic effect over the last few millennia. In the AR4, the IPCC reviewed a number of studies reconstructing temperature variation over the last 1,300 years and referred to relatively warm conditions occurred in the medieval period, although the warmest is apparent in the 20th century.

If the contribution of natural forcing effects to the current global warming is comparable to that of greenhouse effects of anthropogenic GHGs, evaluating the contribution of the natural effects is very important to predicting future climate change. In this study, we assess the natural forcing effects to the past and recent global warming by regression analysis method, and estimate their impact on the future temperature change.