Team MIROC: Possible influence of volcanic activity on the decadal potential predictability of the natural variability in near-term climate predictions

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Initialization based on data assimilations using historical observations possibly improves neartermclimate predictions. Significant volcanic activity in the future is unpredictable and not assumed in future climate predictions. To examine the possible influence of unpredictable future volcanic activity on the decadal potential predictability of the natural variability, we performed a 2006-2035 climate prediction experiment with the assumption that the 1991 Mt. Pinatubo eruption would take place again in 2010. The Pinatubo forcing induced not only significant cooling responses but also considerable noises in the natural variability. The errors due to the Pinatubo forcing grew faster than that arising from imperfect knowledge of the observed state, leading to a rapid reduction of the decadal potential predictability of the natural variability.