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## **AOGCM predictions: better past performance no guarantee of enhanced future skill**

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The principle of selecting climate models based on their agreement with observations has been tested using 17 of the IPCC AR4 models. Those models simulating global mean, Siberian and European 20th Century surface temperature with a lower error than the total ensemble for one period on average do not do so for a subsequent period. There is no evidence that any ensemble size delivers significant improvement in prediction accuracy compared to the total ensemble. Error decreases systematically with ensemble size,  $N$ , and for a random selection as approximately  $1/N^\alpha$ , where  $\alpha$  lies between 0.6 and 1. This is larger than the exponent of a random sample ( $\alpha=0.5$ ) and appears to be an indicator of systematic bias in the model simulations. It is concluded that averaging all models provides the most reliable prediction of surface temperature.