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Plain Language Summary: Two sets of decadal prediction experiments were performed with BCC-CSM1.1 with the ocean temperature relaxed toward SODA reanalysis data (SODAINit) and the ocean temperature data generated with EnOI method (EnOI_HadInit), respectively. EnOI_HadInit is shown to be more skillful than SODAINit in predicting SST over the North Pacific, the southern Indian Ocean, and the North Atlantic. Improved prediction skill of surface air temperature is found over South Europe, North Africa, and Greenland associated with the skillful prediction of the Atlantic multi-decadal oscillation (AMO) in EnOI_HadInit.

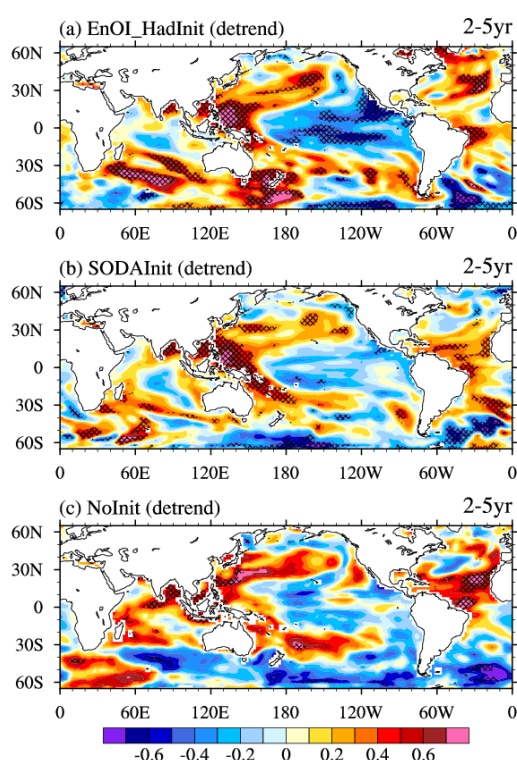


Figure 1. ACC skills of SST hindcast by EnOI_HadInit (a), SODAINit (b), and NoInit (c) for the forecast years 2-5 with respect to the observation. Hatched area identifies the region where the ACC is above the 90% confidence level.

- Decadal prediction using the EnOI method in the initialization is shown to have higher skill in predicting SST over the North Pacific, the southern Indian Ocean, and the North Atlantic.
- Improved prediction skill of surface air temperature (SAT) is found over South Europe, North Africa, and Greenland associated with the higher skill of AMO in the EnOI_HadInit.
- EnOI_HadInit and SODAINit are both skillful in predicting East Asian SAT, which is related to their skillful predictions of the tropical western Pacific SST.