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Supplement of

Assessing the impact of a future volcanic eruption on decadal predictions

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Figures S1 to S7

Introduction

This supporting information provides additional figures.

References:

Sato M., J. Hansen, M. McCormick, and J. Pollack, Stratospheric aerosol optical depths, *J. Geophys. Res.*, 98, 22,987–22,994, doi:10.1029/93JD02553, 1993

Stenchikov, G. L., I. Kirchner, A. Robock, H.-F. Graf, J. C. Antuña, R. G. Grainger, A. Lambert, and L. Thomason, Radiative forcing from the 1991 Mount Pinatubo volcanic eruption, *J. Geophys. Res.*, 103, 13,837–13,858, doi:10.1029/98JD00693, 1998

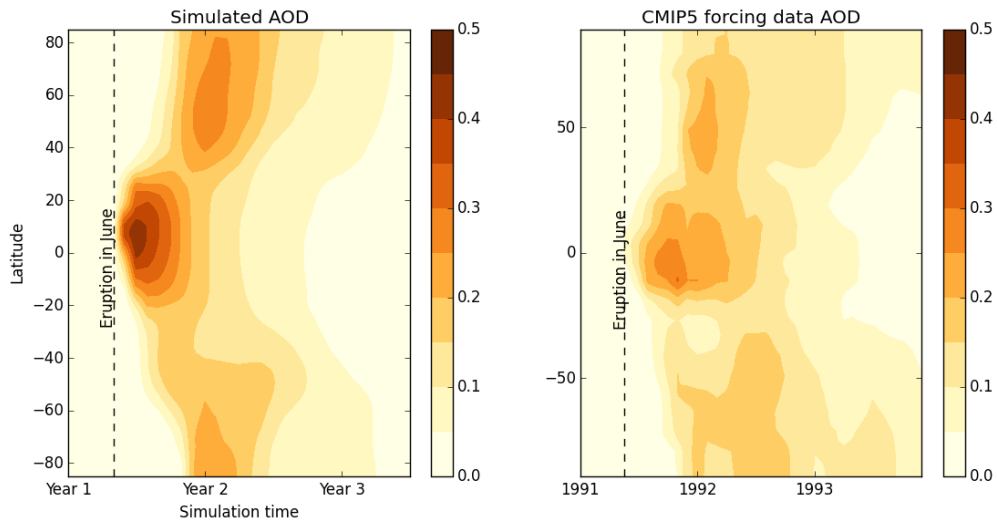


Figure S1: Left: Simulated AOD as in Fig. 1a), Right: AOD forcing data used in the MPI-ESM simulations contributing to CMIP5 and is based on Sato et al. (1993) and Stenchikov et al. (1998).

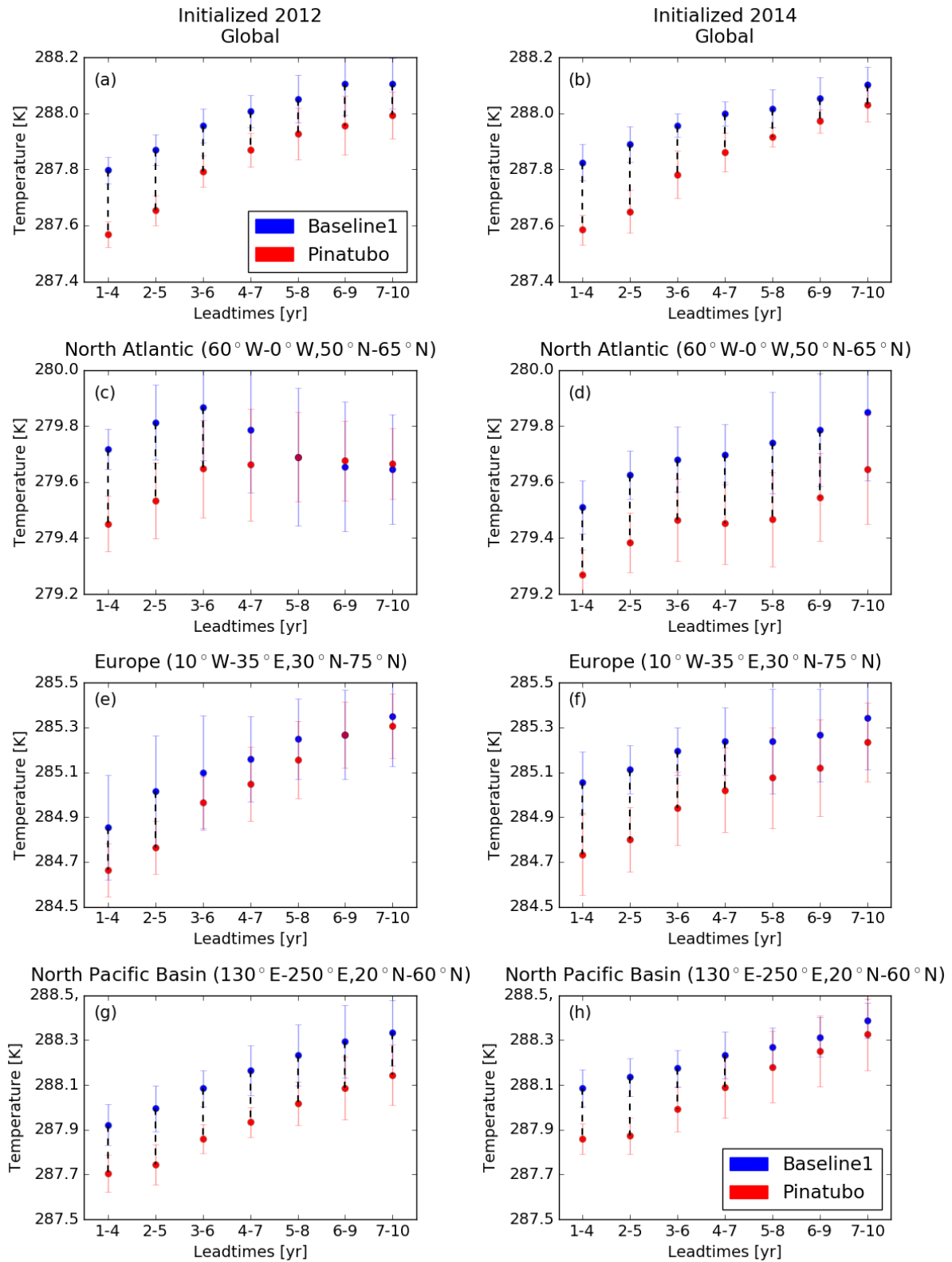


Figure S2: Like Fig. 2 in the publication, but with additional error bars to indicate the ensemble spread. Time-series of four year running mean ensemble mean forecast of near surface air temperature anomalies (TAS). The blue shows values without volcanic eruption, and red with a Pinatubo-like eruption. Left panel shows experiments initialized in 2012, and the right panel those initialized in 2014. Top row: global mean, second row: North Atlantic (60°W-0°E, 50°N-65°N), third row: Europe (10°W-35°E, 30°N-75°N), and bottom row: North Pacific Basin (130°E-250°E-20°N, 60°N). Error bars indicate the spread of the ensemble simulation. Dashed lines indicate significant differences between the values at the 5% level.

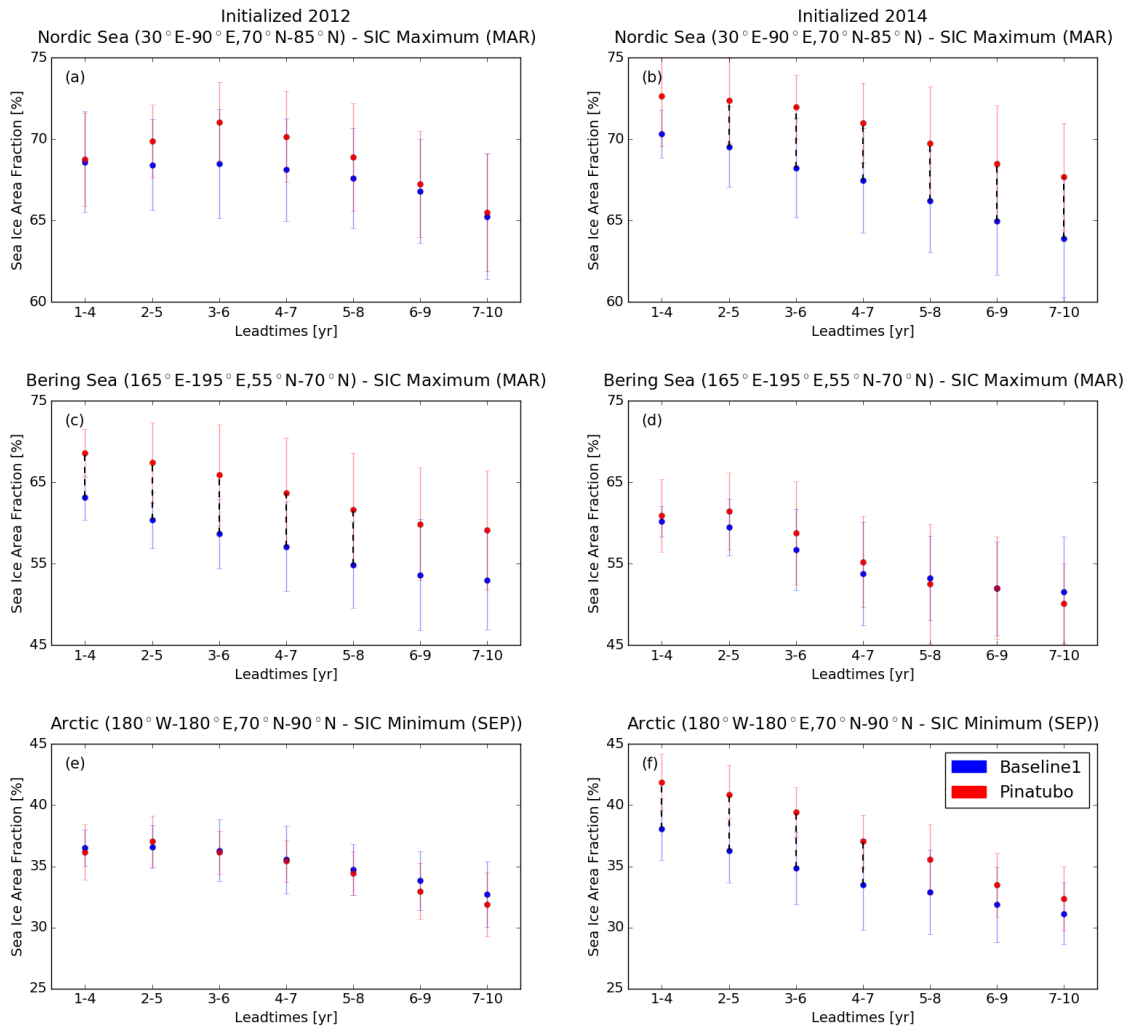


Figure S3: Like Fig. 6 in the publication, but with additional error bars to indicate the ensemble spread. Same as Fig. 2, but for sea ice area fraction (SIC) maximum and minimum and different regions. Top row: Nordic Sea (30°E-90°E, 70°N-85°N), middle row: Bering Sea (165°E-195°E, 55°N-70°N), bottom row: Arctic (180°W-180°E, 70°N-90°N). Error bars indicate the spread of the ensemble simulation. Dashed lines indicate significant differences between the values at the 5% level.

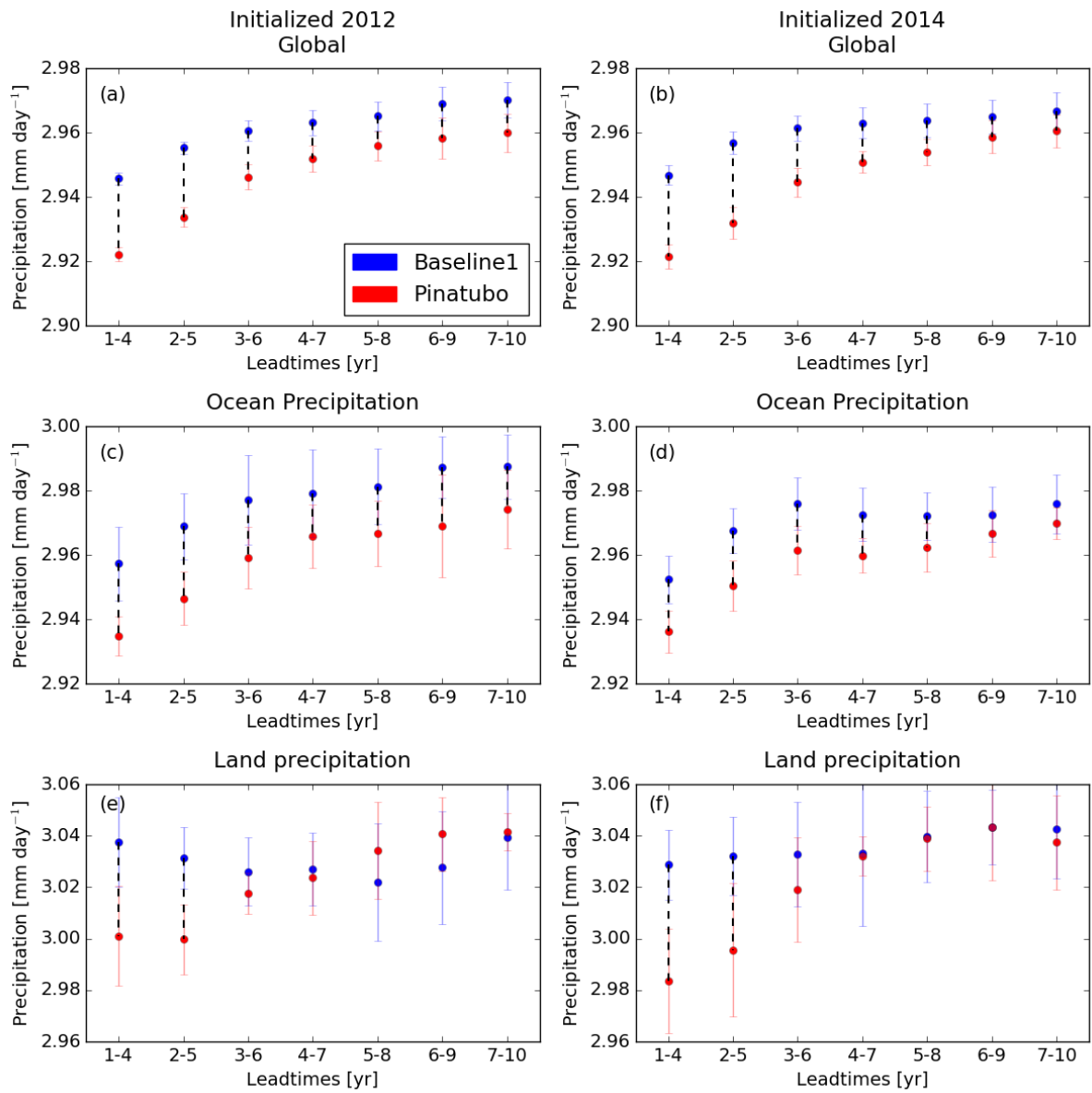


Figure S4: Like Fig. 8 in the publication, but with additional error bars to indicate the ensemble spread. Same as Fig. S2, but for precipitation (PR) and different regions. Top row: Global mean, middle row: ocean only, bottom row: land only. Error bars indicate the spread of the ensemble simulation. Dashed lines indicate significant differences between the values at the 5% level.

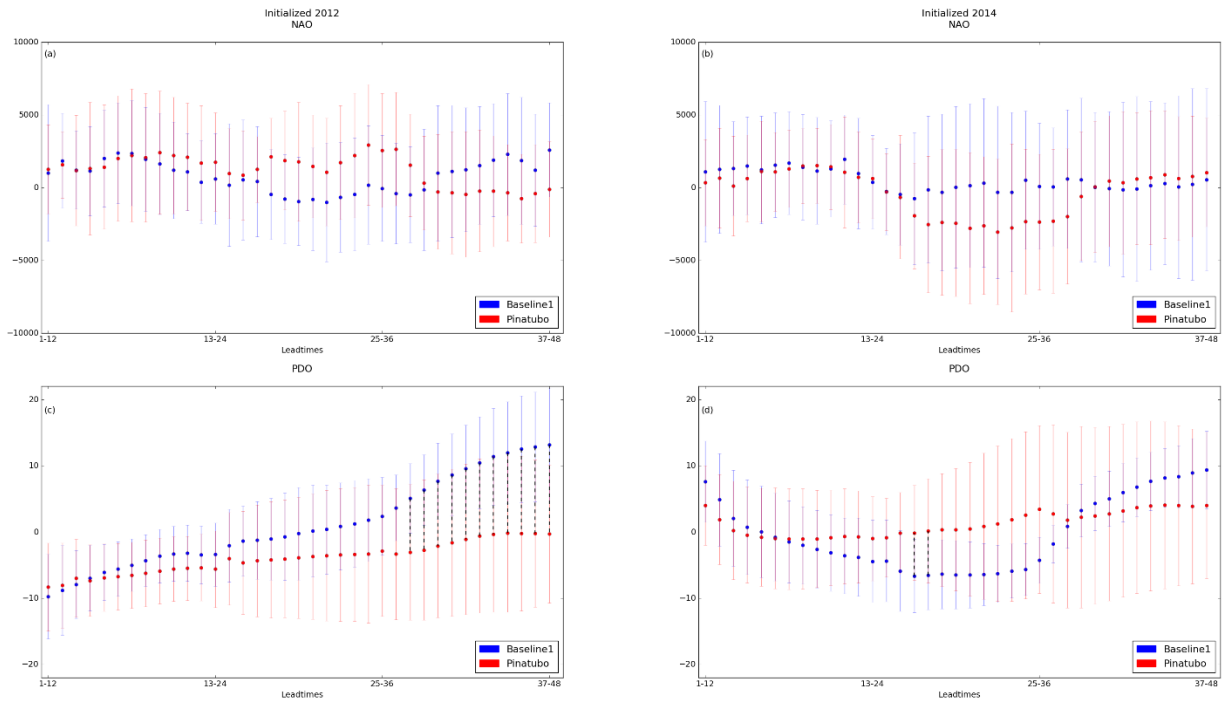


Figure S5: Top row shows the NAO index and bottom row shows the PDO index for the first four prediction years calculated as a 12 month running mean to reduce variance. Left (right) column shows the 2012 (2014) initialized experiments. Error bars show the standard deviation of the ensemble and vertical black lines indicate a significant difference.

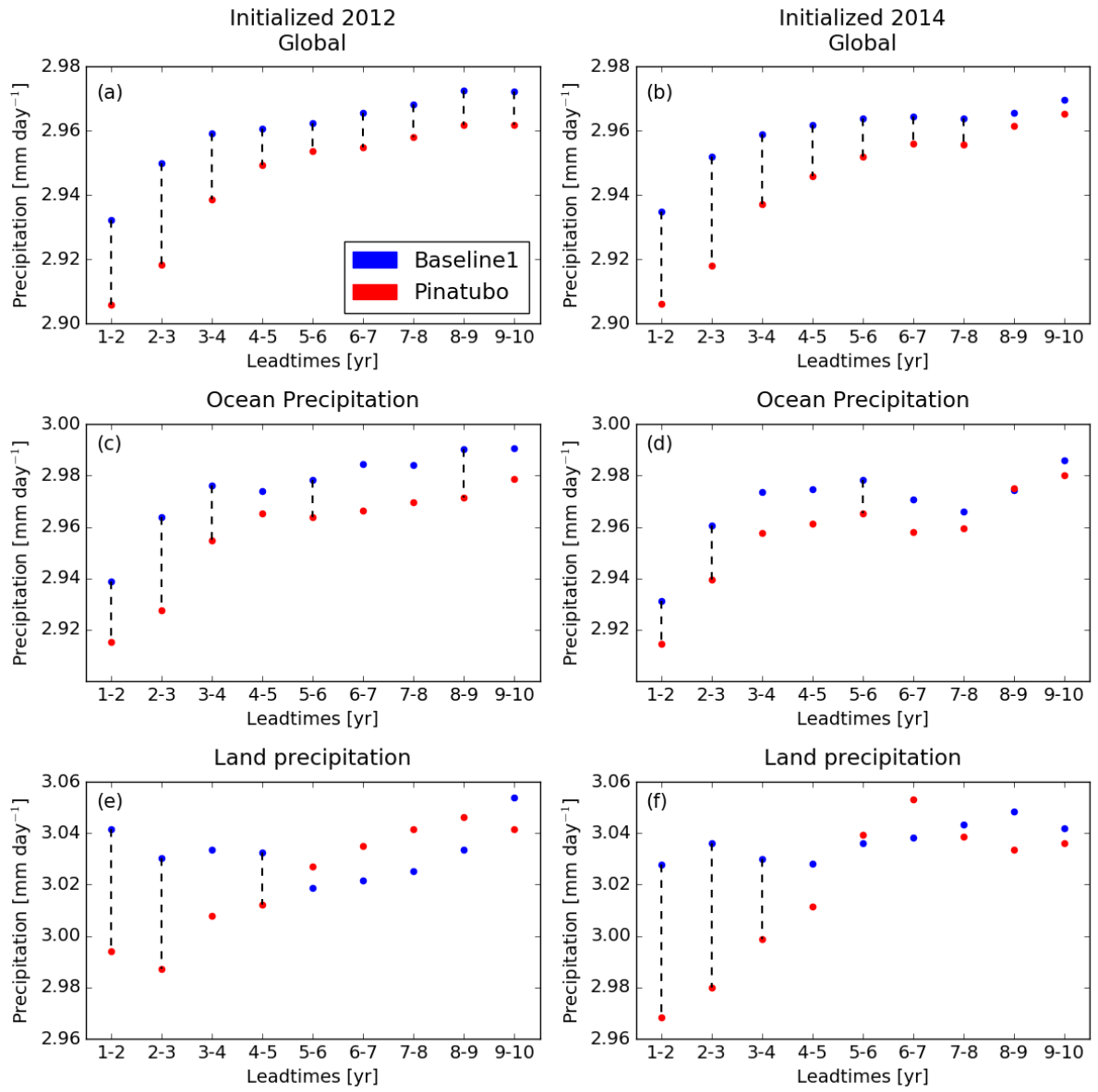


Figure S6: Like Fig. 8 in the publication, but for 2-year running means instead of 4-year running means.

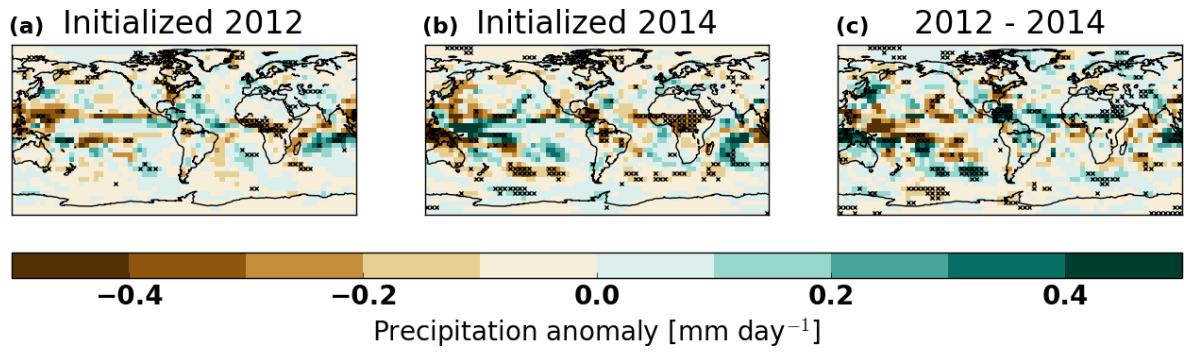


Figure S7: Like Fig. 9 in the publication, but for prediction year 1-2 instead of 1-4