Supplemental Material

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Investigating the fidelity of explainable artificial intelligence methods for applications of convolutional neural networks in geoscience

by Mamalakis et al.
Supplementary Figure 1. Data example (file name: data-2013-09-04-01-1_0.nc) from the ClimateNet dataset. Details about the dataset can be found in Section 2.2 of the current study, in Prabhat et al. (2021) and online at https://portal.nersc.gov/project/ClimateNet/. a) Daily zonal wind velocity at 850mb pressure level as simulated in the Community Atmospheric Model (CAM5.1). Results are shown for Sep 4th, 2013. b) Same as in (a), but for the meridional wind. c) Same as in (a), but for the vertically integrated precipitable water. d) Expert detection of atmospheric rivers for the snapshots in (a-c). The labels of tropical cyclones (that are also included in the ClimateNet) have been eliminated in this panel since tropical cyclones are not the focus of this study. In all panels, one example out of the total six segments that each snapshot is cut into is highlighted with a red box.
Supplementary Figure 2. Same as in Figure 6 in the main text, but here we explain the prediction of a completely newly trained CNN with the shifted synthetic dataset.
Supplementary Figure 3. Same as in Figure 7 in the main text, but for the V850 channel.
Supplementary Figure 4. Same as in Figure 7 in the main text, but for the channel of the integrated precipitable water.