



Supplement of

Space-time clustering of climate extremes amplify global climate impacts, leading to fat-tailed risk

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Supplementary Material

Figures



2014 producing copper and gold mine locations

Figure S1: 2014 copper and gold producing mine locations (top) and 2014 copper and gold

producing mine locations with size proportional to production (bottom)



Figure S2: Location of the 100 largest cities in the world in 2006



Maize production geographical distribution

Figure S3: 2011 Maize production distribution



Figure S4: 2011 Rice production distribution



Soybean production geographical distribution

Figure S5: 2011 Soybean production distribution



Wheat production geographical distribution

Figure S6: 2011 Wheat production distribution



Time series of the proportion of the land area between 30°N and 15°N affected by a 12-month event with a 10-year return level

Figure S7: Northern sub-tropical area proportion affected by a 10-year, 12-month, wet or dry (top left), wet and dry (top right), wet (bottom left), and dry (bottom right)



Wavelet spectrum of the time series of the world area hit by a wet 10-year event



Wavelet spectrum of the time series of the world area hit by a dry 10-year event



5 Figure S8: 2011 Wavelet spectra of the yearly time series of world areas hit by a 10-year wet or dry (top), wet (middle) or dry (bottom) event



Figure S9: Wavelet spectra of Nino 3.4 DJF (top left), PDO MAM (top right), NAO JFM (bottom right), AMO JFM (bottom right) indexes



Wavelet spectrum coherence between the Nino 3.4 DJF index and the world area hit by a wet or a dry 10-year event

Wavelet spectrum coherence between the Nino 3.4 DJF index and the world area hit by a wet 10-year event



Wavelet spectrum coherence between the Nino 3.4 DJF index and the world area hit by a dry 10-year event



Figure S10: Wavelet coherence between time series of the Nino3.4 DJF index and world areas hit by a 10-year wet or dry (top), wet (middle) or dry (bottom) event

Wavelet spectrum coherence between the PDO MAM index and the world area hit by a wet or a dry 10-year event



Wavelet spectrum coherence between the PDO MAM index and the world area hit by a wet 10-year event



Wavelet spectrum coherence between the PDO MAM index and the world area hit by a dry 10-year event



Figure S11: Wavelet coherence between time series of the PDO MAM index and world areas hit by a 10-year wet or dry (top), wet (middle) or dry (bottom) event



Wavelet spectrum coherence between the NAO JFM index and the world area hit by a wet or a dry 10-year event

Wavelet spectrum coherence between the NAO JFM index and the world area hit by a wet 10-year event



Wavelet spectrum coherence between the NAO JFM index and the world area hit by a dry 10-year event



Figure S12: Wavelet coherence between time series of the NAO JFM index and world areas hit by a 10-year wet or dry (top), wet (middle) or dry (bottom) event



Wavelet spectrum coherence between the AMO JFM index and the world area hit by a wet or a dry 10-year event

Wavelet spectrum coherence between the AMO JFM index and the world area hit by a wet 10-year event



Wavelet spectrum coherence between the AMO JFM index and the world area hit by a dry 10-year event



Figure S13: Wavelet coherence between time series of the AMO JFM index and world areas hit by a 10-year wet or dry (top), wet (middle) or dry (bottom) event



Figure S14: MTM spectrum coherence between the time series of world area hit by a wet or dry ten-year event and the Nino 3.4 DJF index (top), the NAO DJFM index (middle) and the PDO MAM index (bottom)



Time series of the proportion of 2014 copper production affected by a 12-month event with a 10-year return level

Figure S15: Time series of the proportion of the 2014 copper production affected by a dry or wet event



Wavelet analysis of the copper mine exposure time series

Figure S16: Wavelet analysis of the copper mining exposure time series



World time series

Figure S17: Fraction of land area hit by a 10-year event according to CRU and 20CR SPEI

data.



Time series of the proportion of the World land area affected by a 12-month event with a 10-year return level

Figure S18: Fraction of land area hit by a 10-year event according to CRU and 20CR data. 85-

year smoothing trend of the fraction of land area hit by a 10-year event based on SPEI,

precipitation (PRE), potential evapotranspiration (PET), according to CRU and 20CR data, and to evapotranspiration (E) and a version of the SPEI using evapotranspration instead of potential evapotranspiration (SPEI E) according to 20CR.