

 SUPPLEMENT

# EXPLAINING EXTREME EVENTS OF 2016 FROM A CLIMATE PERSPECTIVE

## Editors

Stephanie C. Herring, Nikolaos Christidis, Andrew Hoell, James P. Kossin,  
Carl J. Schreck III, and Peter A. Stott

## Special Electronic Supplement to the

*Bulletin of the American Meteorological Society*

Vol. 99, No. 1, January 2018

### Cover credits:

©The Ocean Agency / XL Catlin Seaview Survey / Chrisophe Bailhache—A panoramic image of coral bleaching at Lizard Island on the Great Barrier Reef, captured by The Ocean Agency / XL Catlin Seaview Survey / Chrisophe Bailhache in March 2016.



AMERICAN METEOROLOGICAL SOCIETY

# ES23. HUMAN INFLUENCE ON THE RECORD-BREAKING COLD EVENT IN JANUARY OF 2016 IN EASTERN CHINA

CHENG QIAN, JUN WANG, SIYAN DONG, HONG YIN, CLAIRE BURKE, ANDREW CIAVARELLA, BUWEN DONG, NICOLAS FREYCHET, FRASER C. LOTT, AND SIMON F. B. TETT

This document is a supplement to “Human Influence on the Record-breaking Cold Event in January of 2016 in Eastern China,” by Cheng Qian, Jun Wang, Siyan Dong, Hong Yin, Claire Burke, Andrew Ciavarella, Buwen Dong, Nicolas Freychet, Fraser C. Lott, and Simon F. B. Tett (*Bull. Amer. Meteor. Soc.*, **99** (1), S118–S122) • ©2018 American Meteorological Society • DOI:10.1175/BAMS-D-17-0095.2

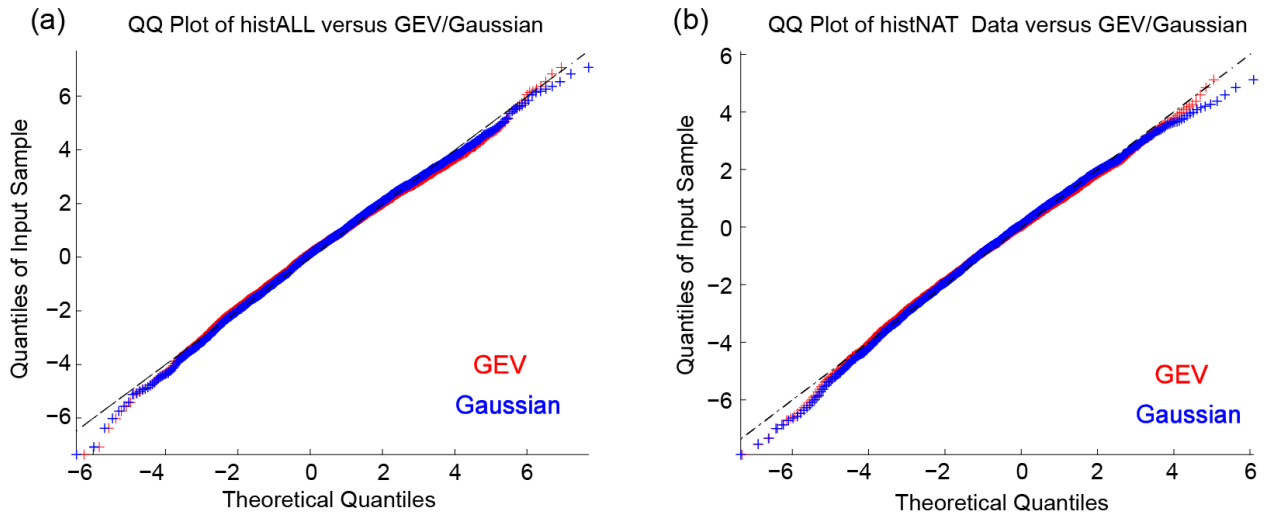
## *Boundary conditions for the histNAT experiments.*

The method to produce the boundary conditions for the histNAT experiments are the same as in Christidis et al. (2013) where has a more detailed description. Briefly, they are produced by removing an estimate of the spatial pattern of sea surface temperature (SST) change and sea ice concentration (SIC) change due to anthropogenic influence from observed SST and SIC taken from the Hadley Centre Sea Ice and Sea Surface Temperature version 1.1 (Had-

ISST1.1) data. The SST change pattern is created on a monthly basis as the difference between a multimodel mean warming response across a small collection of coupled models from Coupled Model Intercomparison Project Phase 5 (CMIP5) with historical forcings and monthly climatologies taken from hundreds of years of control experiments using the same models. The change in SIC patterns is constructed from a historical empirical relationship between SSTs and SIC from HadISST1.1: a linear relationship between polar SST warming and SIC loss.

## *Testing of goodness-of-fit for distribution.*

We test goodness-of-fit by using quantile–quantile (QQ) plotting. The results show that for both histALL and histNAT simulations, GEV fit is closer to the straight line than the Gaussian fit, especially for the tails. Therefore, GEV fit is better for our purpose.



**FIG. ES23.1.** GEV and Gaussian quantile–quantile plots for the  $9 \times 525$  regional average pentad  $T_{\min}$  anomalies during midwinter 2016 in Eastern China from (a) histALL and (b) histNAT simulations.