Initialized Earth system predictions with E3SMv2 and CESM2

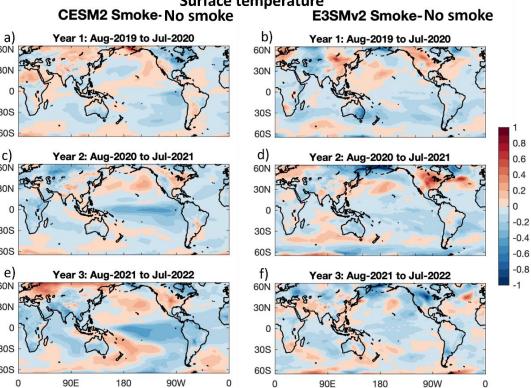
Gerald Meehl

3-year hindcast case study to determine the effects of the 2019-2020 Australian wildfire smoke on multi-year La Niña

Fasullo et al., 2023, *Science Advances*Meehl et al., 2024, *Nature Communications*, pending

Surface temperature

CESM2 Smoke-No smoke

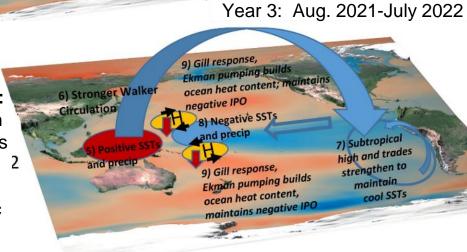


ting

4) Bjerknes feedbacks spread
cool SSTs across Pacific
brighten
3) SSTs
cool and
propagate northward
propagate northward
solution

5) Stronger Walker
Circulation
Circulation

--intensified Walker Circulation
drives stronger trades/Bjerknes
feedbacks/cooler SSTs
--negative convective heating
anomaly in western eq. Pacific
drives Gill-type response,
Ekman pumping, and
increased off-equatorial ocean
heat content



Year 1: August 2019 - July 2020

