Impact of grids and dycores in CESM2.2 on the meteorology and climate of the Arctic

Adam R. Herrington ¹, Marcus Lofverstrom ², Peter H. Lauritzen ¹and Andrew Gettelman ¹

 $^1\rm National$ Center for Atmospheric Research, 1850 Table Mesa Drive, Boulder, Colorado, USA $^2\rm Department$ of Geosciences, University of Arizona, 1040 E. 4th Street, Tucson, AZ USA

Key Points:

- enter point 1 here
- enter point 2 here
- enter point 3 here

Corresponding author: =name=, =email address=

Abstract 11 [enter your Abstract here] 12 Plain Language Summary 13 [enter your Plain Language Summary here or delete this section] 14 1 Introduction 15 2 Methods 2.1 Grids 17 2.2 Dynamical cores 2.2.1 Finite-volume model 19 2.2.2 Spectral-element model 2.3 Physical parameterizations 21 2.4 Observational datasets 22 2.4.1 ERA5 23 2.4.2 LIVVkit 2.1 24 2.5 TempestExtremes 25 3 Results 26 3.1 Tropospheric temperatures 3.2 Synoptic-scale storm characteristics 3.3 Orographic gravity waves emanating from Greenland

- 3.4 Katabatic winds emanating from Greenland
 - 3.5 Greenland surface mass balance

4 Conclusions

30

31

32

33 Acknowledgments

- This material is based upon work supported by the National Center for Atmospheric Re-
- search (NCAR), which is a major facility sponsored by the NSF under Cooperative Agree-
- ment 1852977. Computing and data storage resources, including the Cheyenne super-
- ₃₇ computer (doi:10.5065/D6RX99HX), were provided by the Computational and Informa-
- tion Systems Laboratory (CISL) at NCAR.
- The data presented in this manuscript is available at https://github.com/adamrher/
 2020-arcticgrids.