

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

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7                    **Key Points:**

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## Abstract

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## Plain Language Summary

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## 1 Introduction

## 2 Methods

### 2.1 Grids

### 2.2 Dynamical cores

#### 2.2.1 *Finite-volume model*

#### 2.2.2 *Spectral-element model*

### 2.3 Physical parameterizations

### 2.4 Observational datasets

#### 2.4.1 *ERA5*

#### 2.4.2 *LIVVkit 2.1*

### 2.5 TempestExtremes

### 2.6 StormCompositer

## 3 Results

### 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

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The data presented in this manuscript is available at <https://github.com/adamrher/2020-arcticgrids>.