

START

+ Warm Water Transport

+ Oceanic Heat Content

A

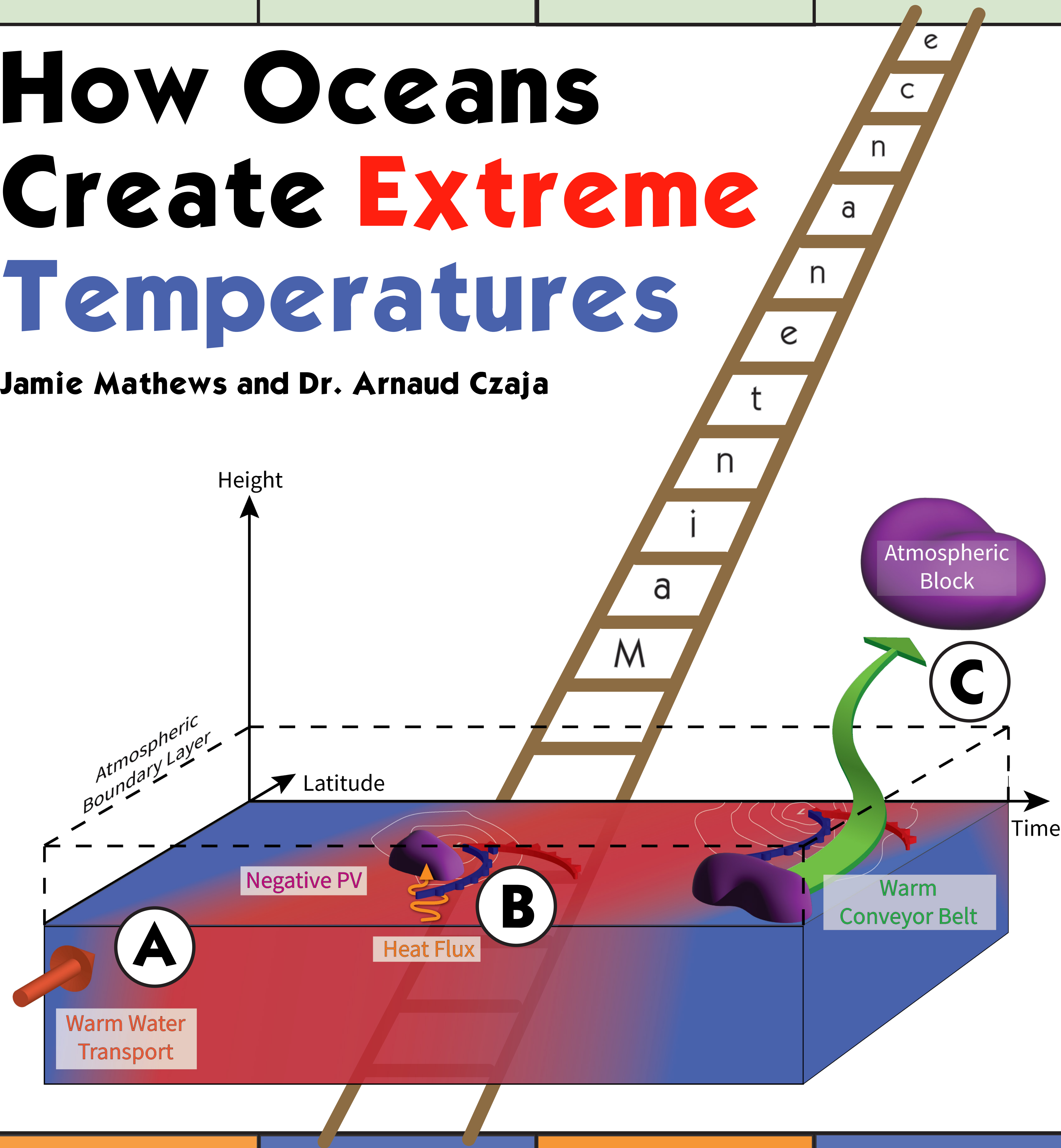
+ Surface Latent Heat Flux

Negative Potential Vorticity



How Oceans Create Extreme Temperatures

Jamie Mathews and Dr. Arnaud Czaja



B

Warm Conveyor Belt Transport

Atmospheric Block

C

END

~~Atmospheric Block~~

~~Warm Conveyor Belt Transport~~

~~Negative Potential Vorticity~~

~~Surface Latent Heat Flux~~

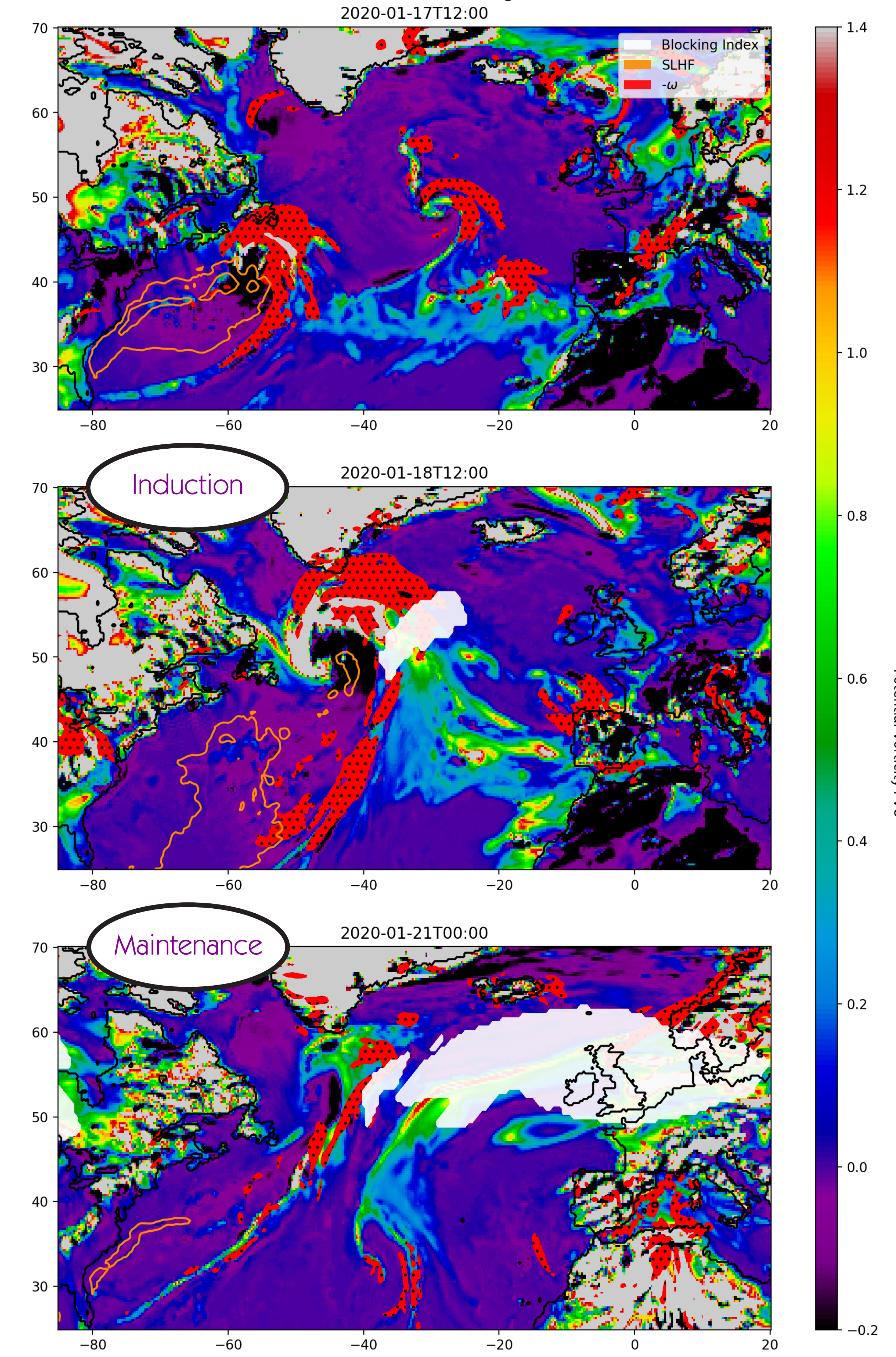
- Oceanic Heat Content

+Surface Latent Heat Flux

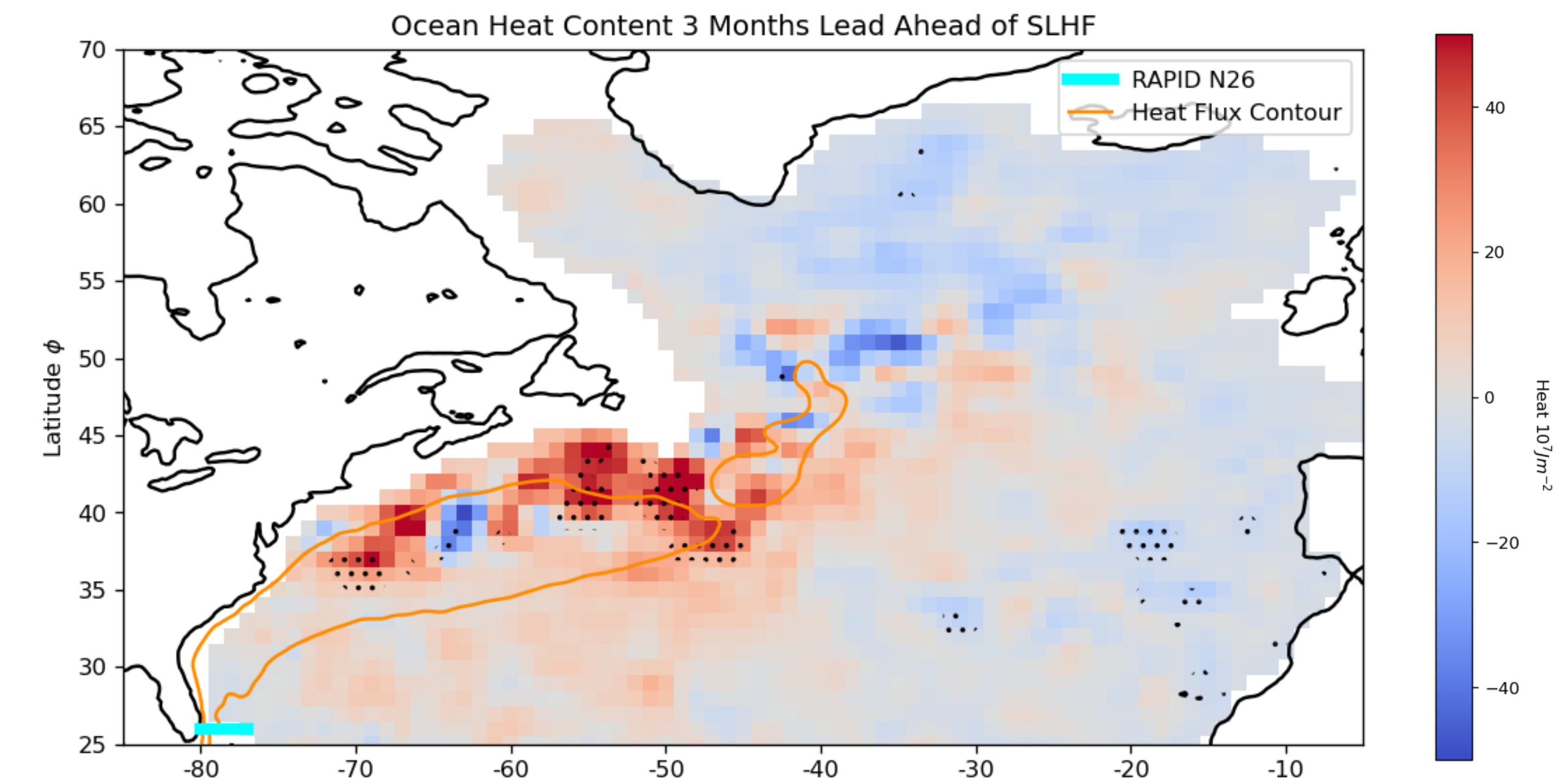
Cold Air Outbreak

EXTREME TEMPERATURES

Case Study



Oceanic Maintenance



Orders of Magnitude

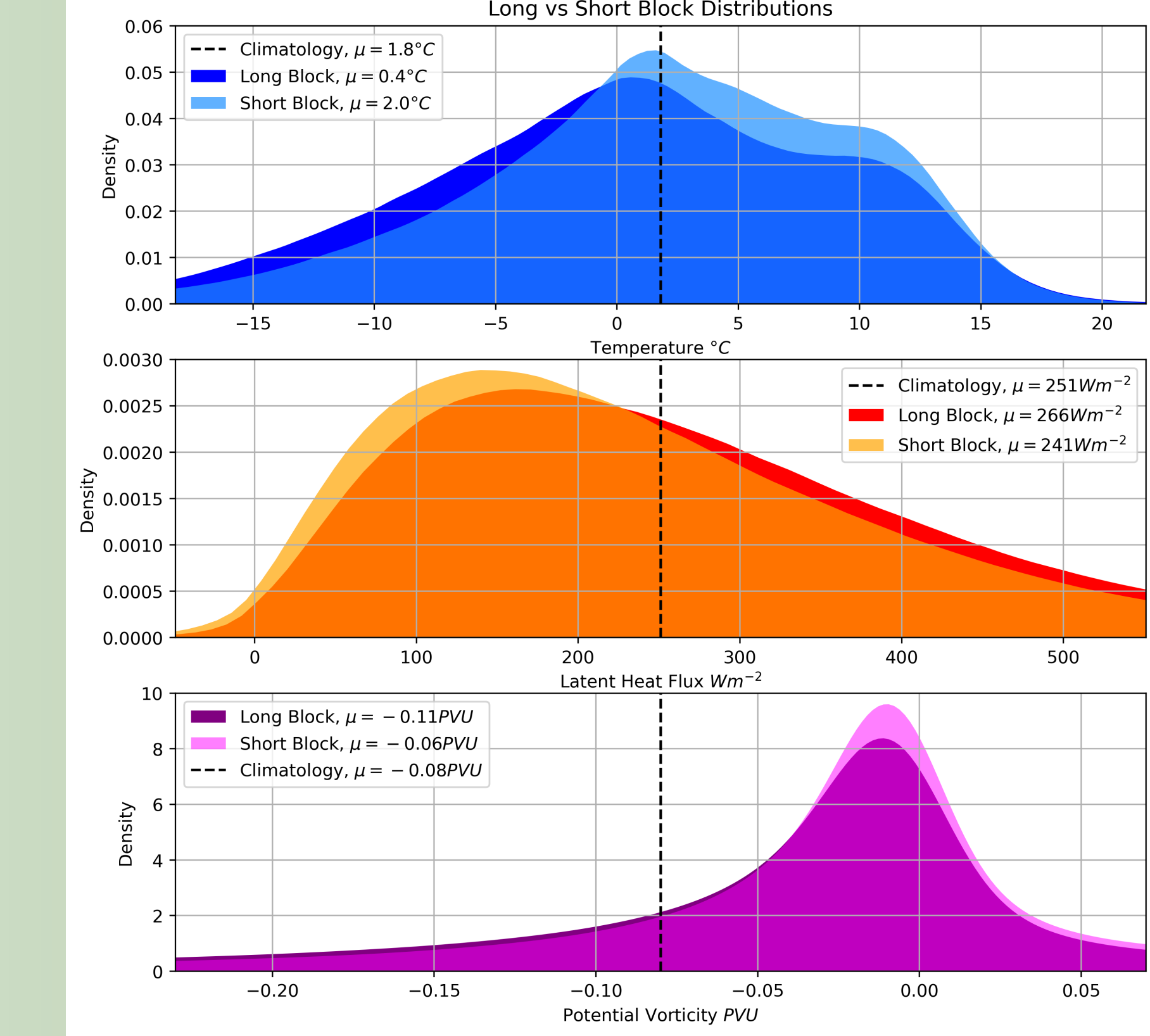
- O(1PVU) generated in the atmospheric boundary layer
- O(1PVU) transported to block

This presentation participates in OSPP

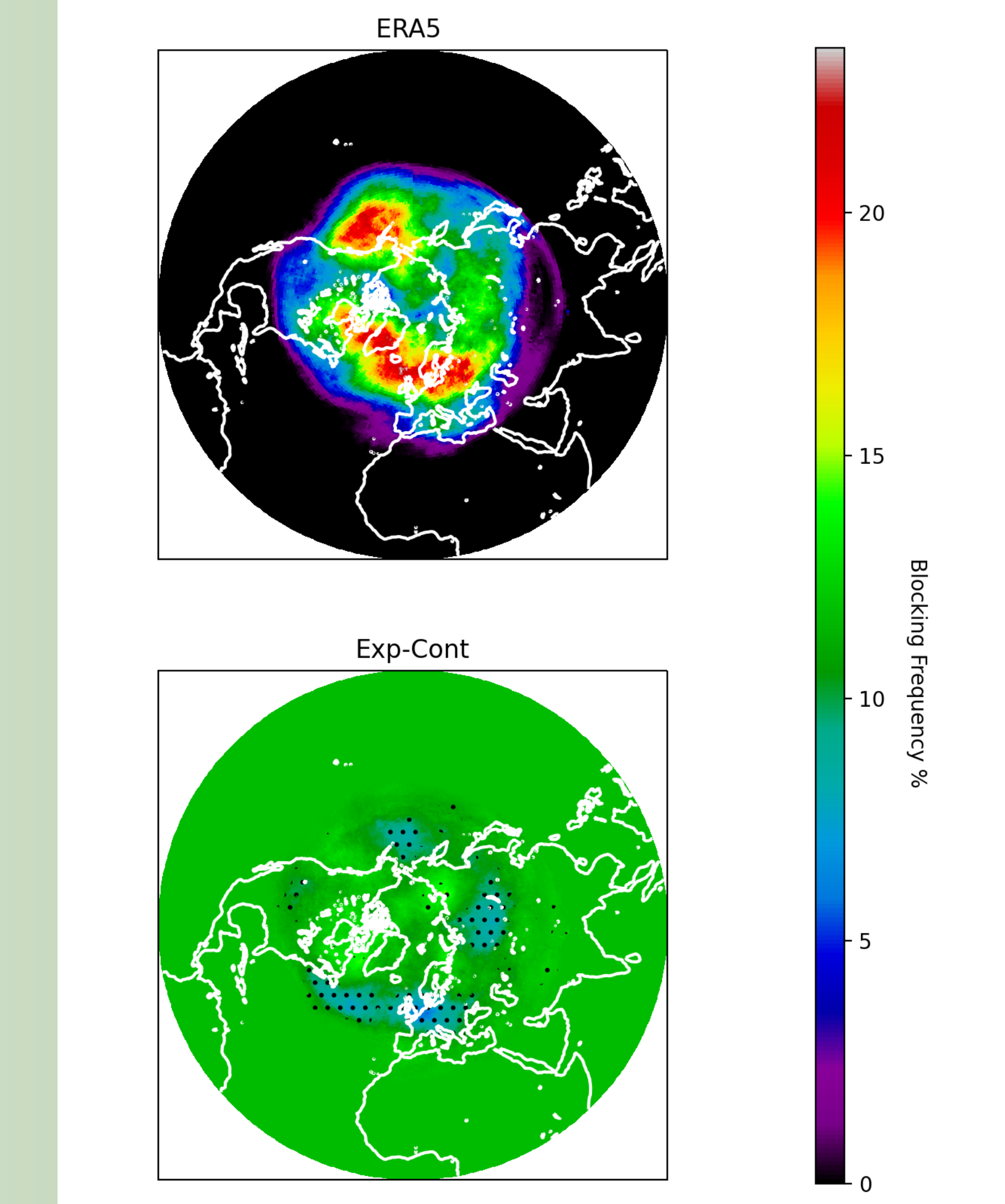
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Outstanding Student & PhD candidate Presentation contest

Air-sea Interaction



ECMWF Experiment



$$\Delta Q_{BL} = -2f \frac{\Delta T_A}{\Delta T_O} \frac{\Delta HC}{C_A (\rho_{BL} h_{BL})^2}$$

$$\Delta Q_{Block} = \frac{2fg \Delta \theta_O \Delta T_A C_O \rho_O h_{ML}}{\Delta P_{Block} \Delta T_O C_A \rho_{BL} h_{BL}}$$