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Antarctic Peninsula Simulations

Group 21

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Motivation

- The Czech Johann Gregor Mendel Polar Station (63.804533 S, 57.885783 W)

- RegCM test in polar region with sea-ice option

Simulations

austral winter

No CLM	18 h LW	3 h LW
sea ice yes	√	√
sea ice no		√

austral summer

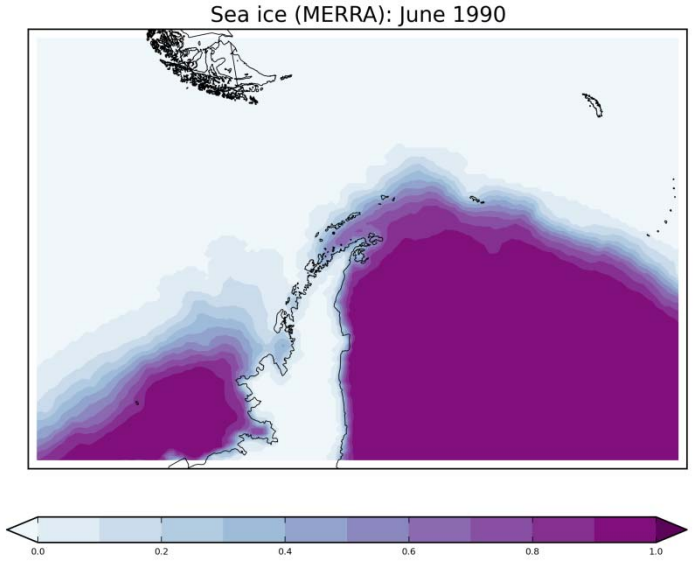
No CLM	18 h LW	3 h LW
sea ice yes	√	√
sea ice no	√	

With CLM	18 h LW	3 h LW
sea ice yes		√
sea ice no		√

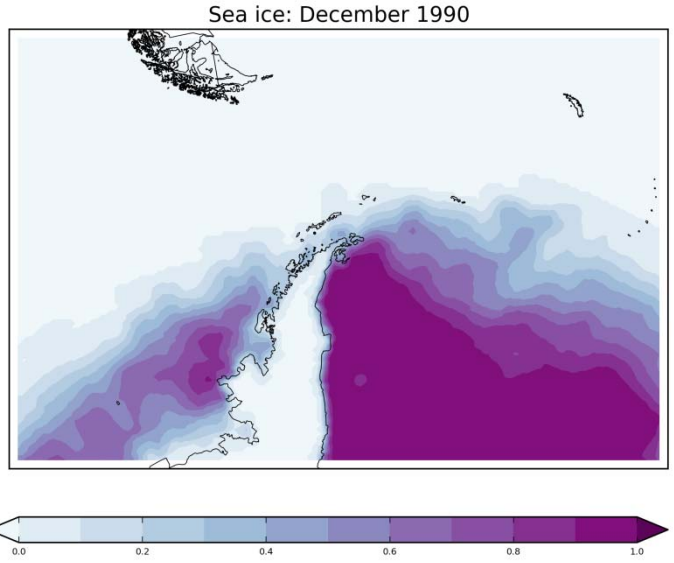
BATS ocean	18 h LW	3 h LW
sea ice yes		√
sea ice no		

Sea-ice

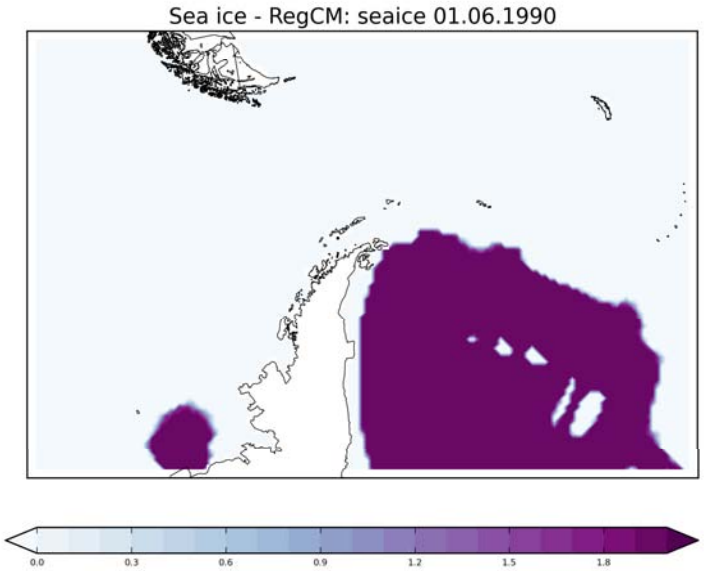
austral winter

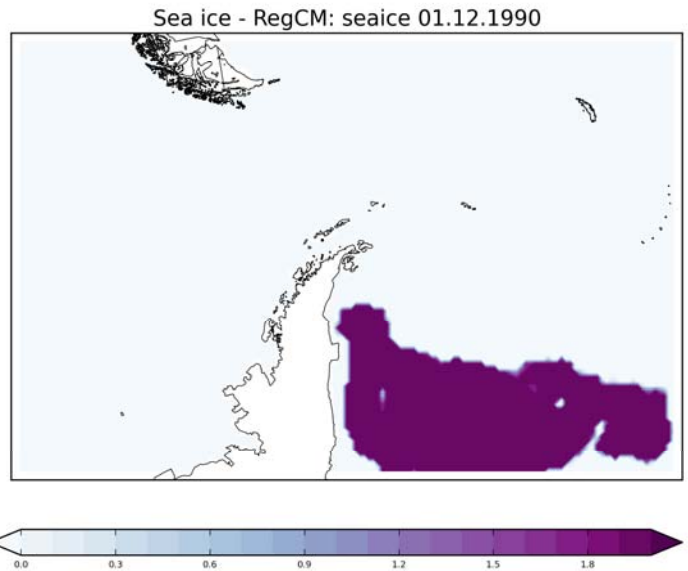


austral summer



MERRA



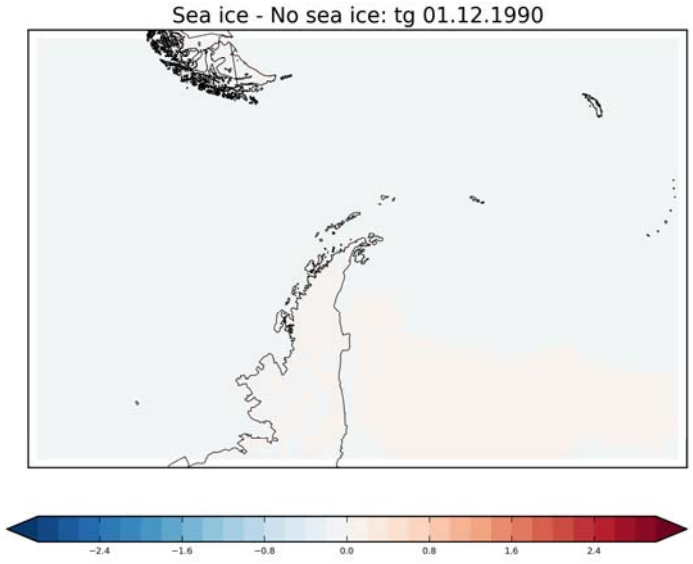


RegCM

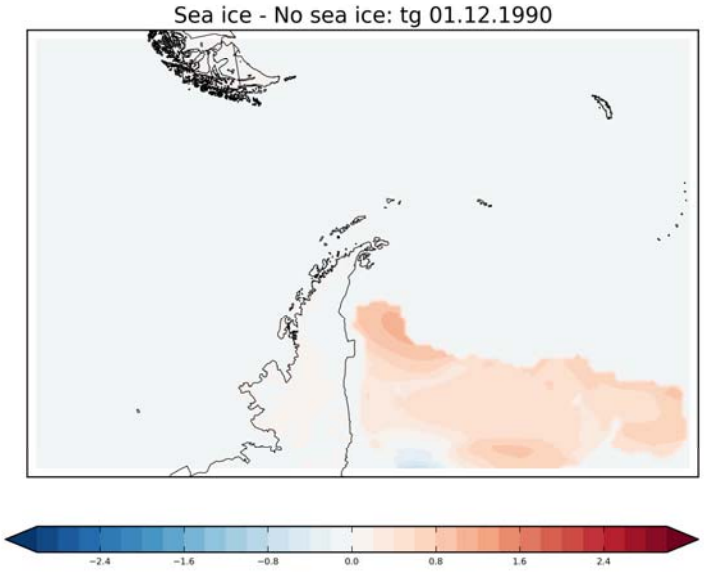
Ground temperature

summer

CLM



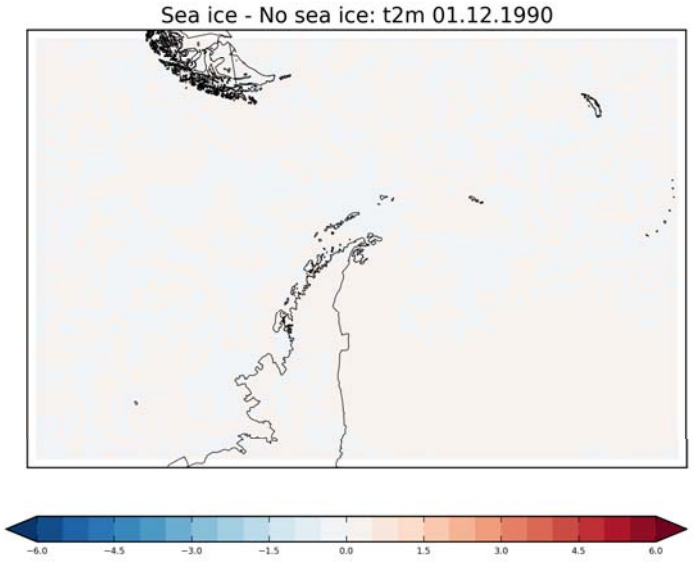
BATS



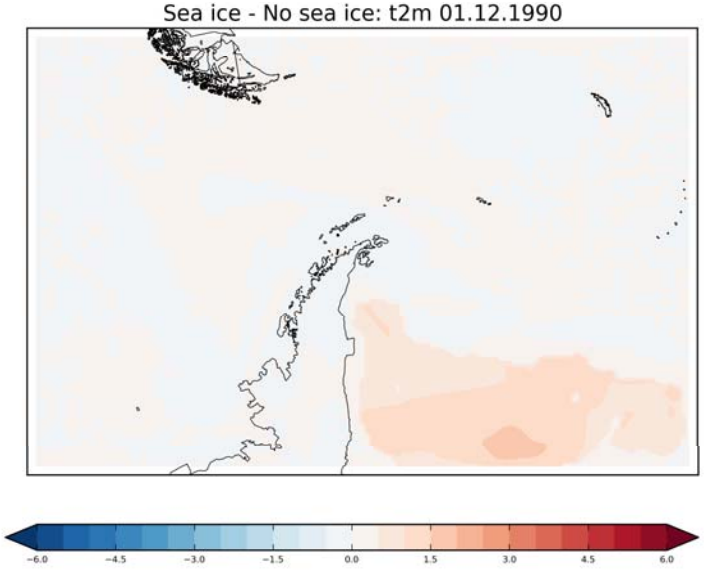
Mean Temperature – T2ave

summer

CLM



BATS

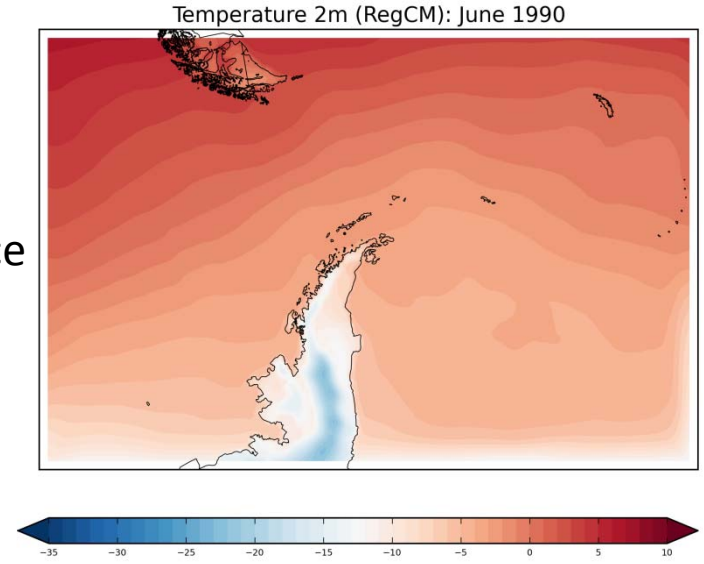


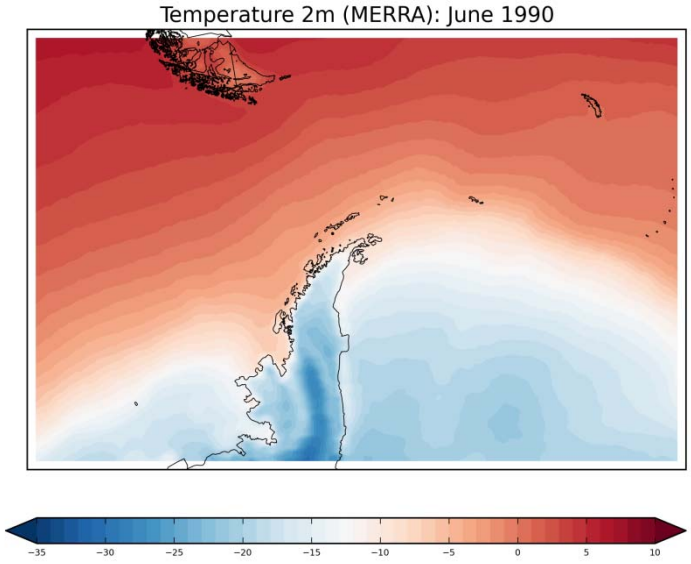
Validation T2m – austral winter

RegCM

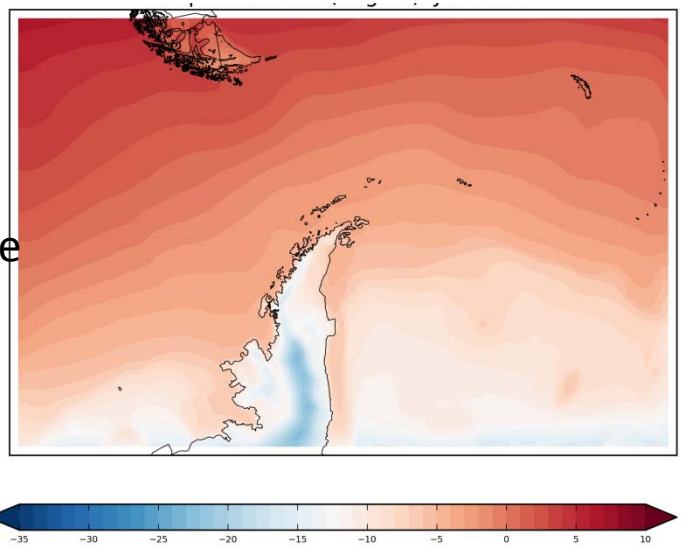
MERRA

No ice





With ice

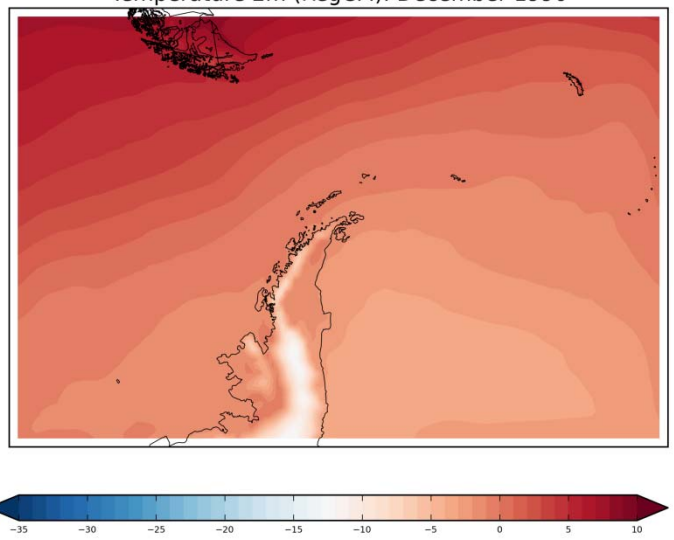


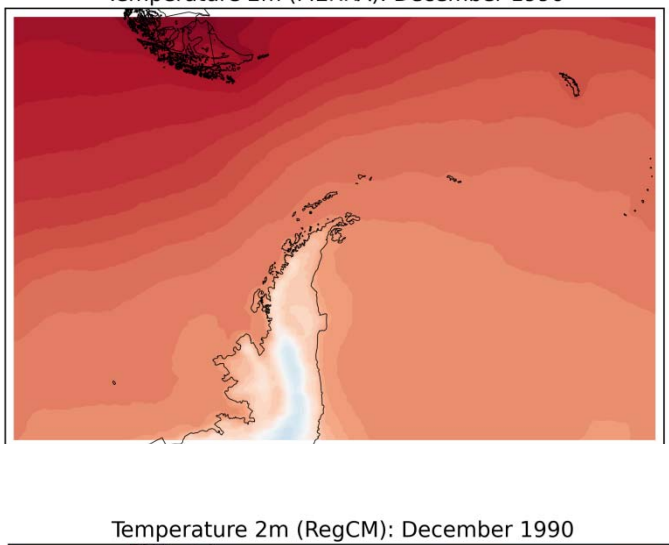
Validation T2m – austral summer

RegCM

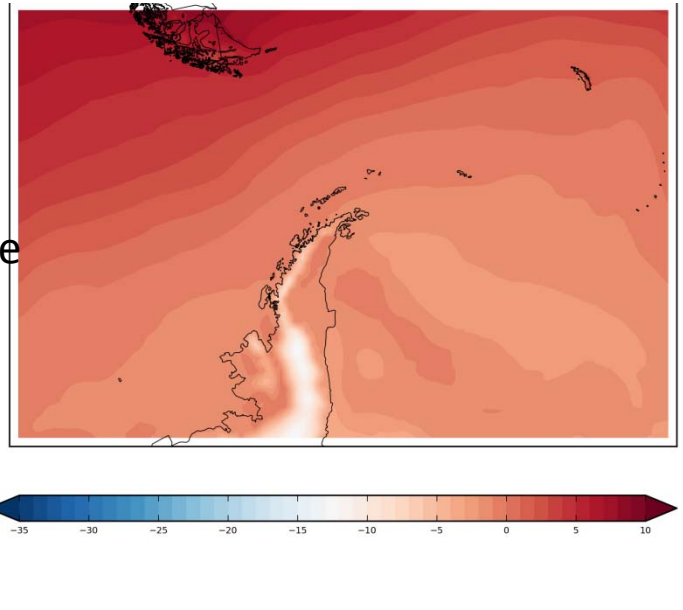
MERRA

No ice

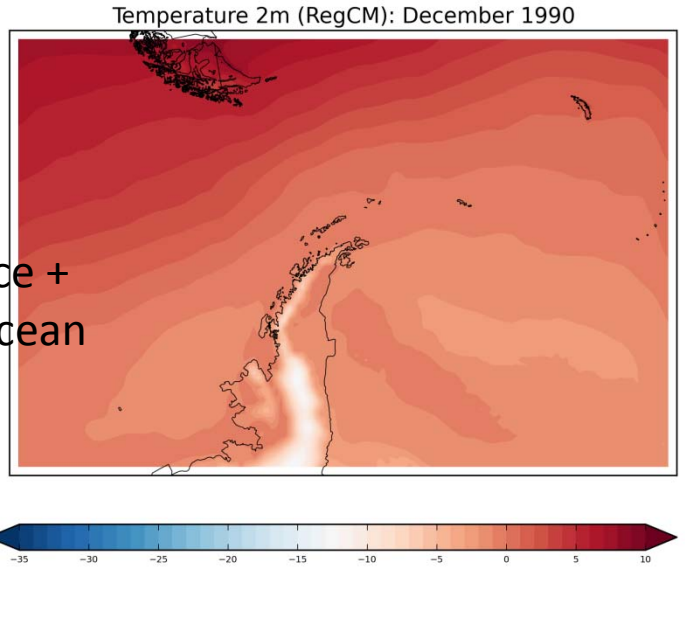




With ice



With ice + BATSocean

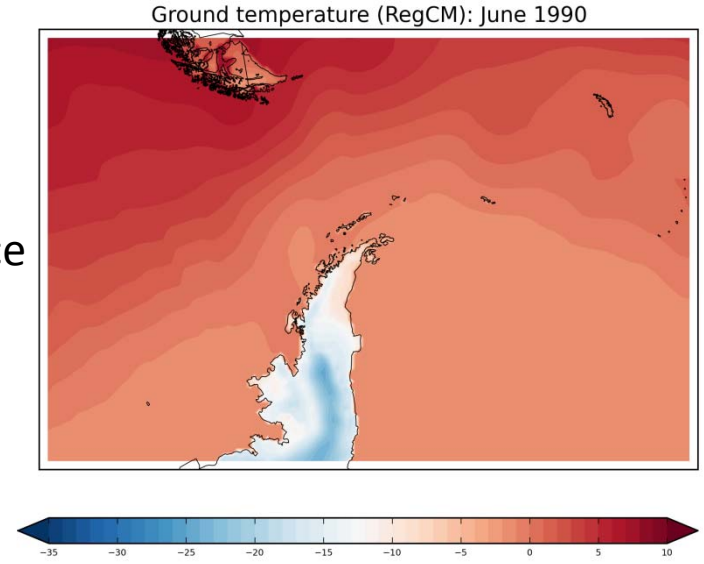


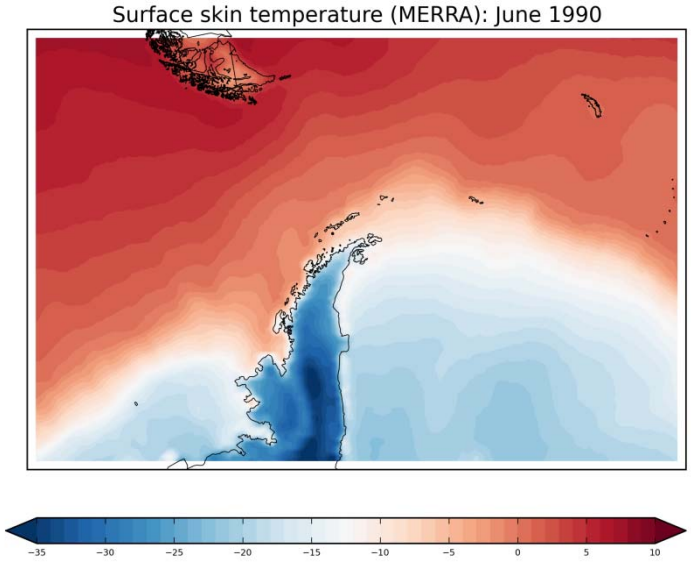
Validation Tground – austral winter

RegCM

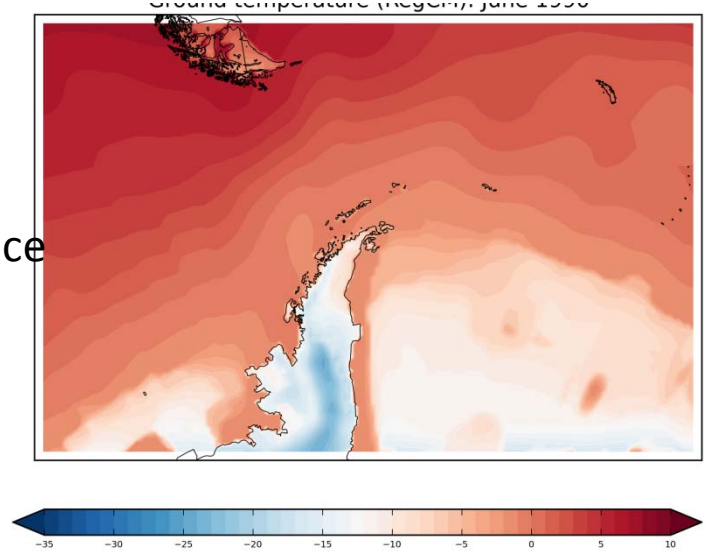
MERRA

No ice





With ice

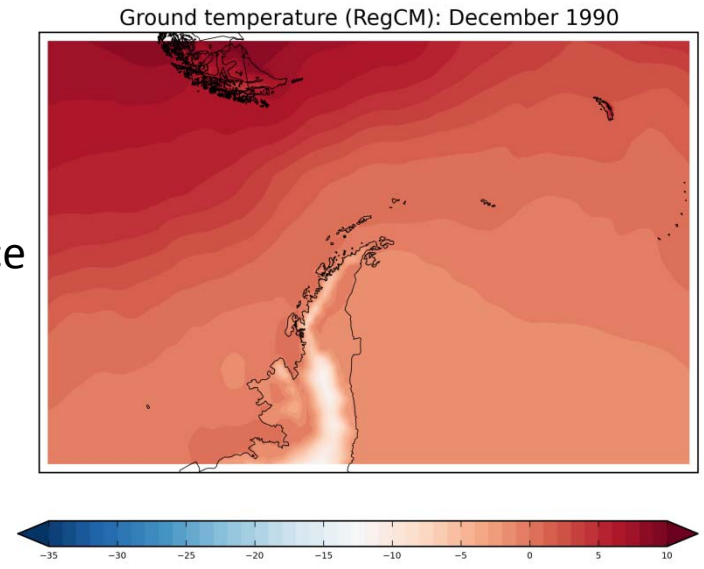


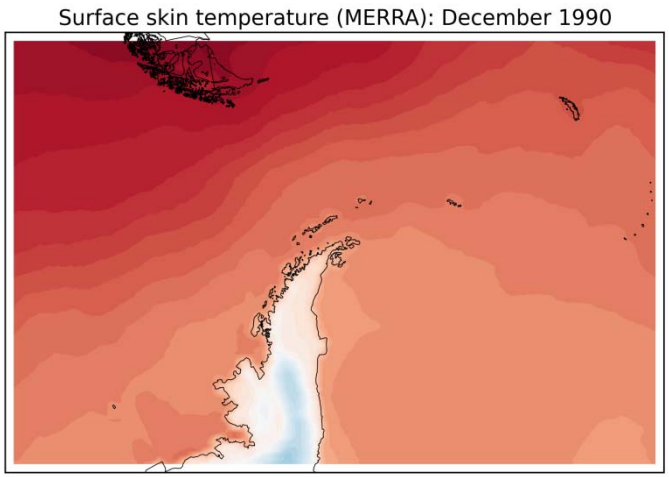
Validation Tground – austral summer

RegCM

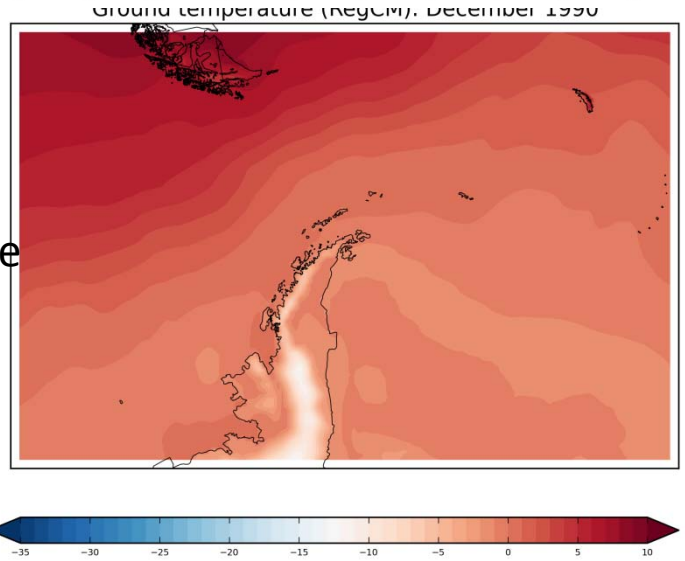
MERRA

No ice

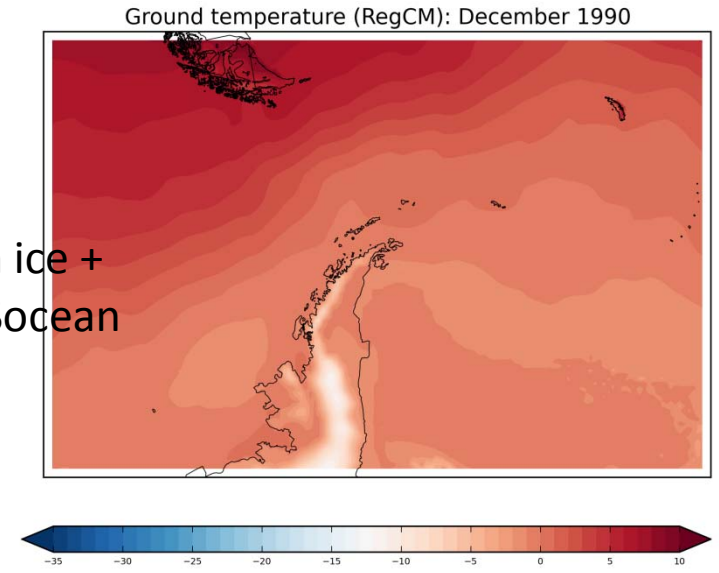




With ice



With ice + BATSocean



Summary

- Standard settings provide reasonable results for sea ice
- Warm bias from the higher latitudes at land surface
- CLM differs from BATS above the ocean
- To complete domain name transfer to naming of CLM output files, accidental owerwriting !!!

Questions

- Why the different values in SRF and CLM outputs
- How the ocean parameterization works above the sea ice?
- Shouldn’t CLM (BATS can as an option?) work above the sea ice in addition to the land surface
- Why with CLM in STS output T2avg is about 15 K
- Why sea-ice above land equal one, what does it mean at all? In code not binary mask!! And in output as well time to time.