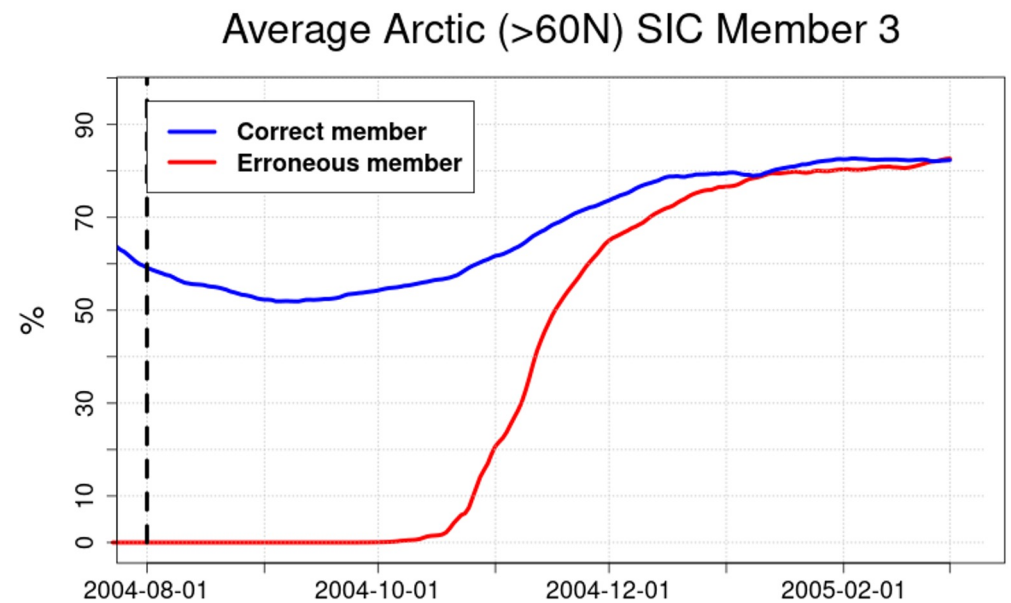
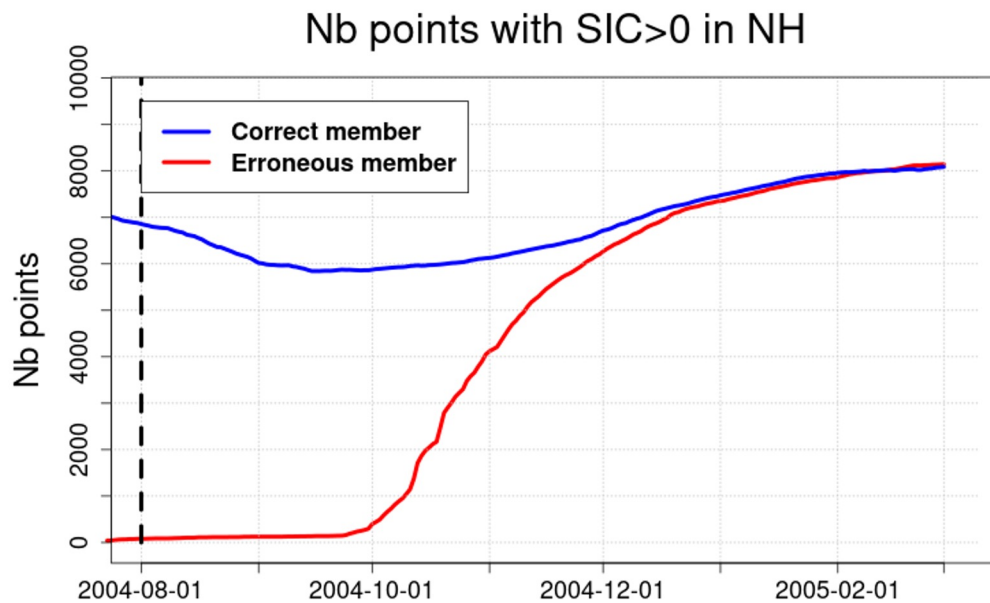


Summary

- Member #3 for August 2004 reforecast initialization of Météo-France System8 was erroneously initialized with zero sea ice in the Arctic
- Cause: non-reproducible error in file copy while launching the run
- Member #3 was re-run, with correct sea ice initialization
- Diagnostics of the impact of the error: Correct - Incorrect
 - 1) Recovery of sea ice in August 2004 Member #3
 - 2) Impact on ensemble mean sea ice in the August 2004 reforecast
 - 3) Impact on sea ice reforecast climatology for the August start date (1993-2018)
 - 4) Impact on surface temperature in August 2004 Member #3
 - 5) Impact on ensemble mean surface temperature in August 2004 reforecast

Description of the issue

- Member #3 for August 2004 reforecast initialization of Météo-France System8 was erroneously initialized with zero sea ice in the Arctic



Recovery of sea ice in August 2004 Member #3

- Instantaneous difference in sea ice concentration :
- (Correct Member #3) – (Incorrect Member #3)



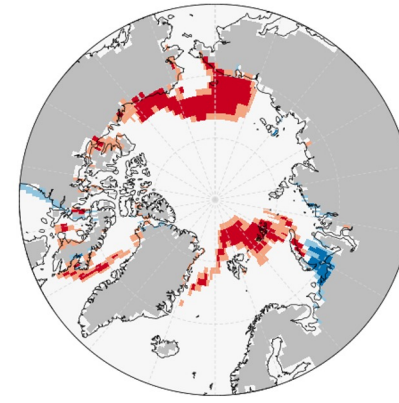
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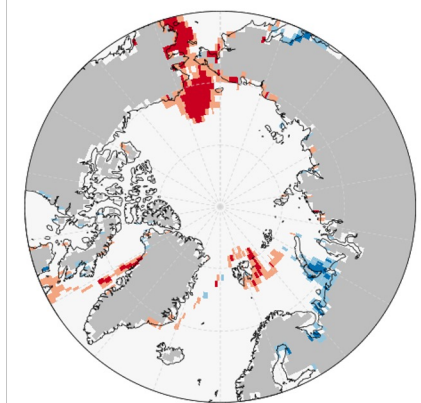
2004-10-01



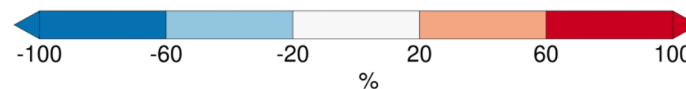
2004-11-01



2004-12-01



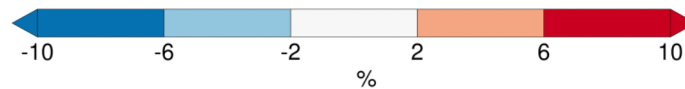
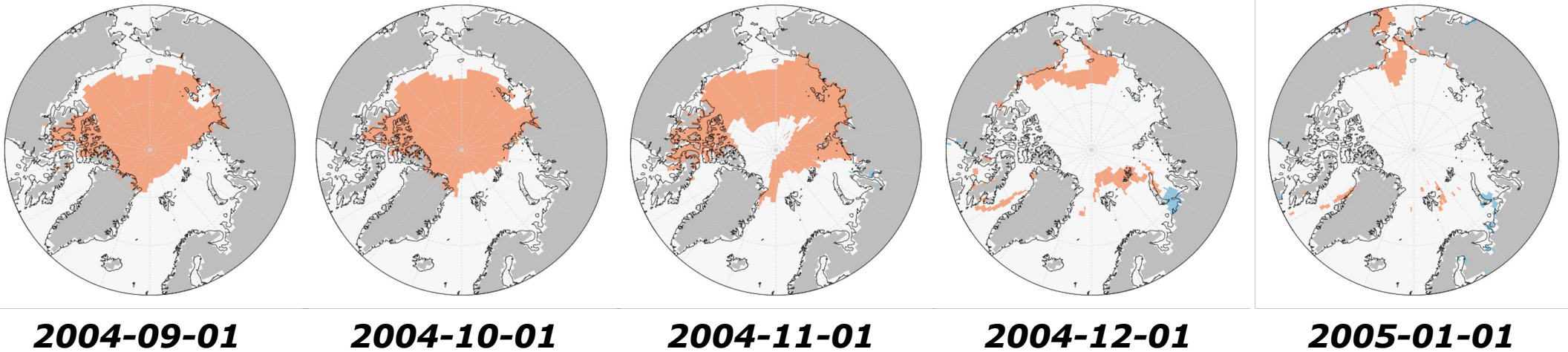
2005-01-01



- Sea ice in Incorrect Member #3 has fully **recovered** after ~ 5 months
- In the main SON season target, there are large differences

Impact on ensemble mean sea ice in August 2004 reforecast

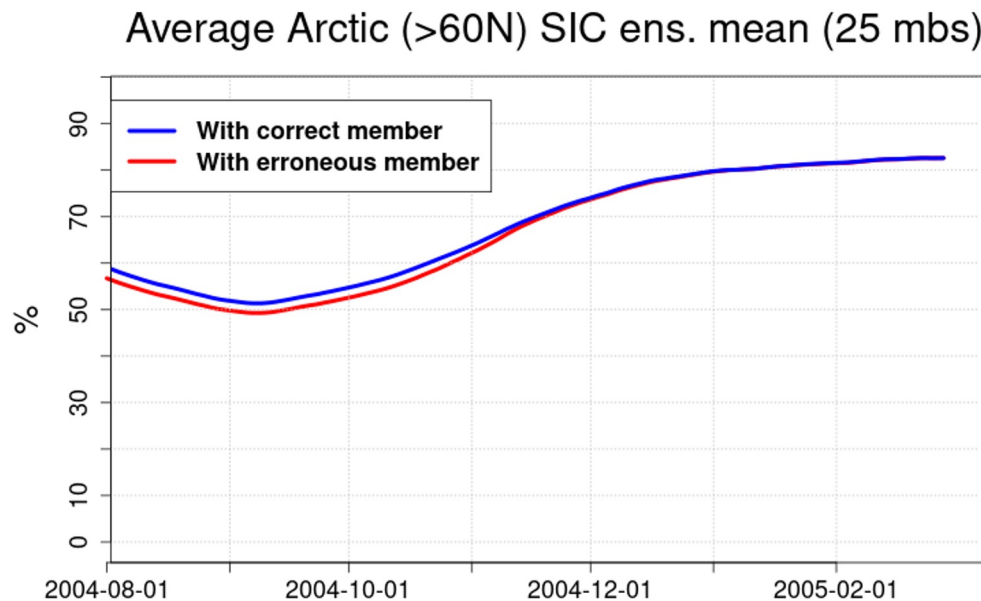
- Instantaneous sea ice concentration difference:
- (Ens. Mean with correct Member #3) – (Ens. Mean with incorrect Member #3)



Note: Change in color scale

Impact on ensemble mean sea ice in August 2004 reforecast

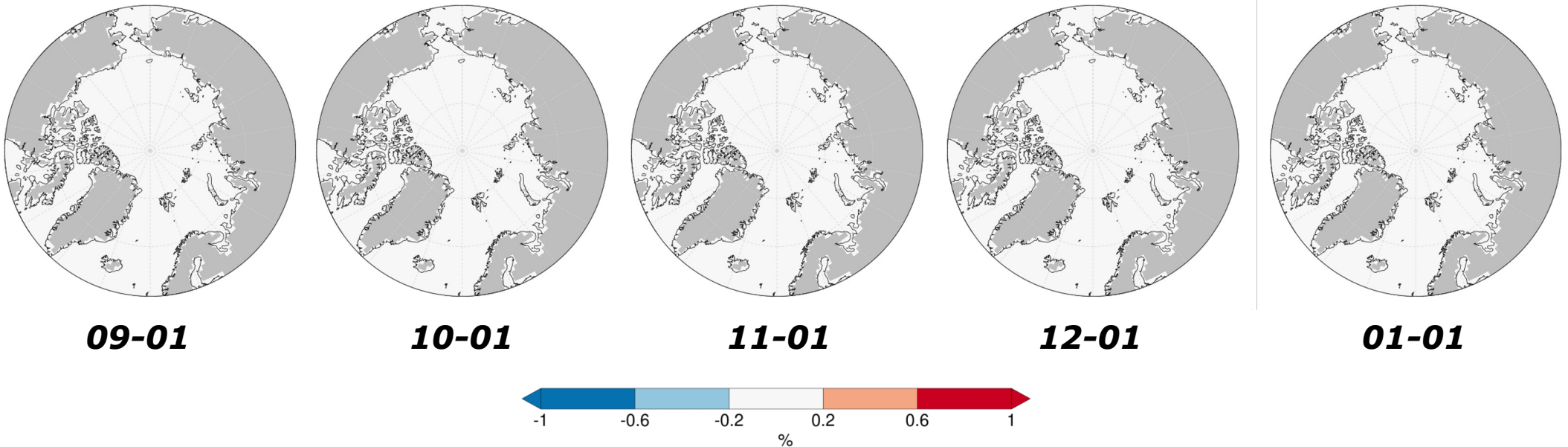
- August 2004 reforecast ensemble mean (25 mbs) of average SIC over the Arctic, with correct and incorrect member



- From this figure + previous slide: **the impact on ensemble mean SIC is ~ 5%**

Impact on sea ice August reforecast climatology (1993-2018)

- Instantaneous sea ice concentration difference:
- (Climatology with correct Member #3) – (Climatology with incorrect Member #3)
- August initialization, 1993-2018

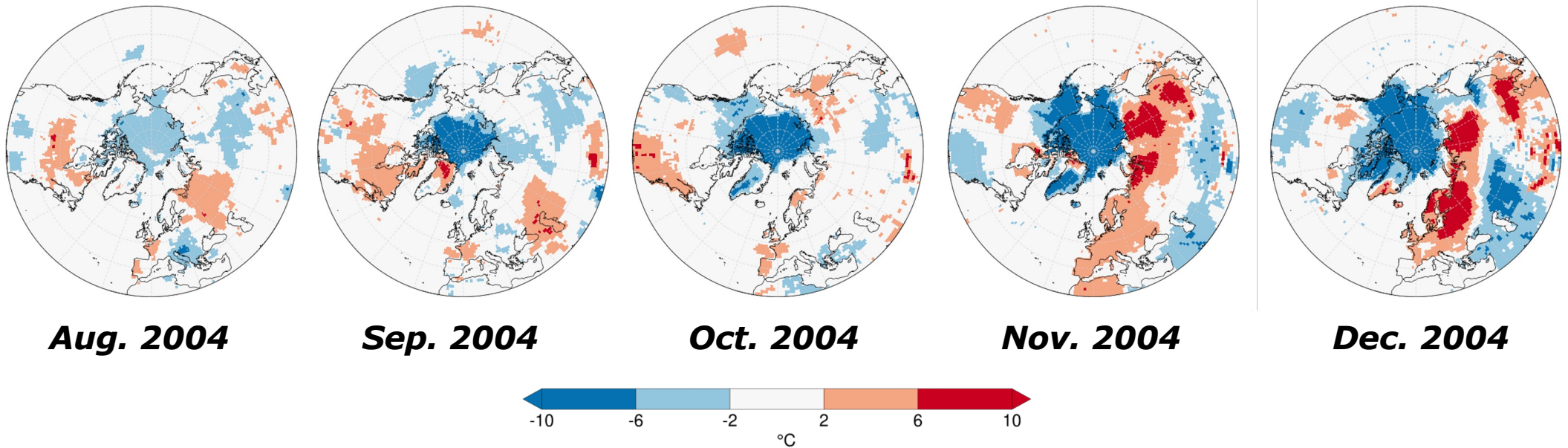


Note: Change in color scale

➤ Unsurprisingly, **no impact on August sea ice reforecast climatology**

Impact on surface temperature in August 2004 Member #3

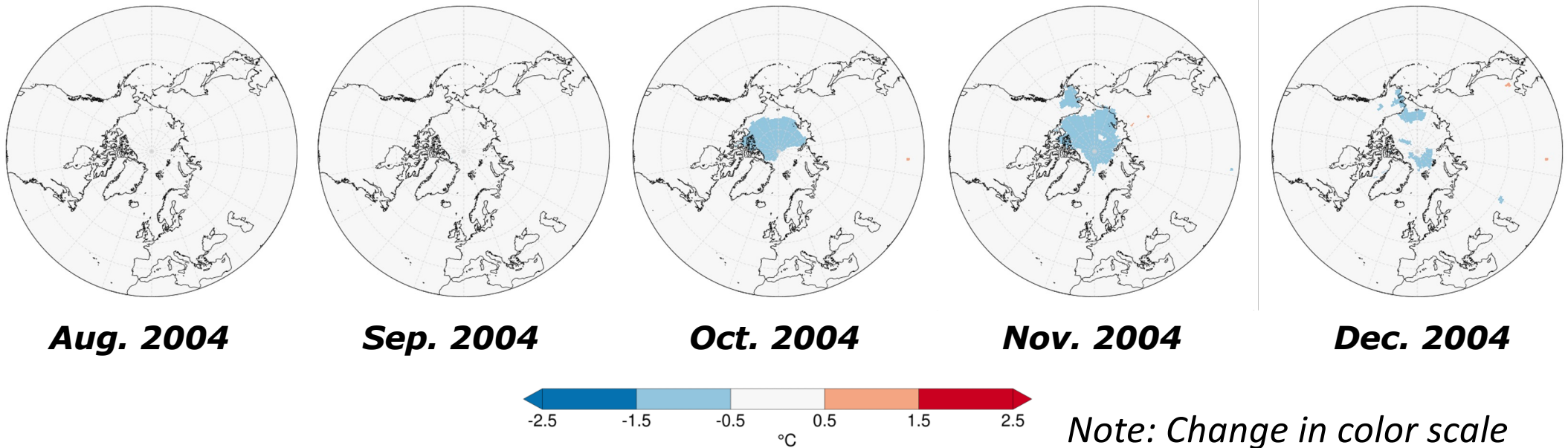
- Differences in monthly averages of surface temperature:
- (Correct Member #3) – (Incorrect Member #3)



- Erroneous initialization of sea ice leads to **large changes in surface temperature** in the corresponding member

Impact on surface temperature in August 2004 ensemble mean

- Differences in monthly averages of surface temperature:
- (Ens. Mean with correct Member #3) – (Ens. Mean with incorrect Member #3)



- The large errors in Member #3 surface temperature have a **small impact on the ensemble mean** of August 2004 reforecast

Conclusion

- The erroneous Member #3 in the August 2004 reforecast has no impact on the overall 1993-2018 reforecast climatology of Météo-France System8
- Users with a specific consideration for the August 2004 reforecast should remove Member #3 from their analysis