

# Some (short) notes on the consistency between CCI Sea Ice and CCI SST

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# Main points

- Consistency is not an end in itself

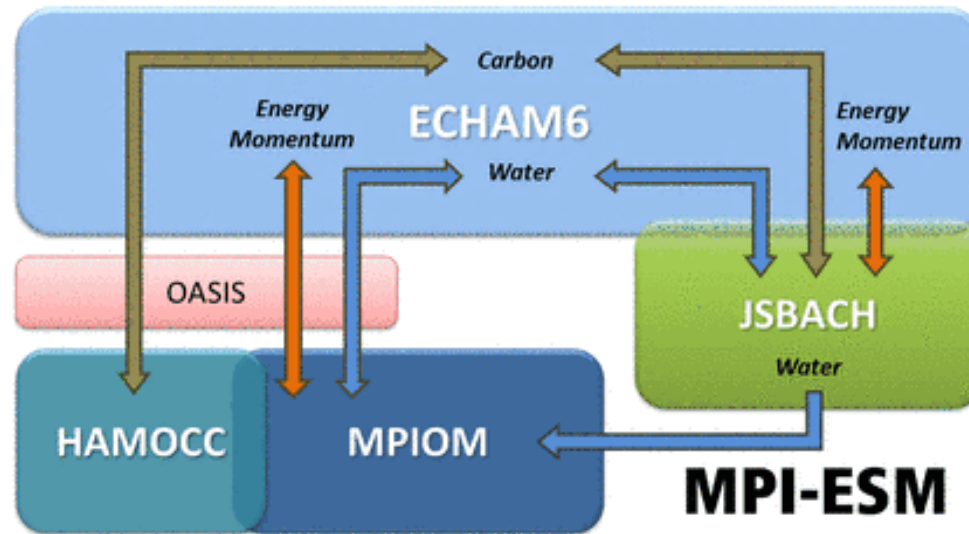


# Main points

- Consistency is not an end in itself
- Striving for consistency can allow us to learn a lot about our data and models, even if we finally don't achieve consistency



# The MPI Earth System Model



ECHAM6: Atmosphere

JSBACH: Terrestrial Biosphere

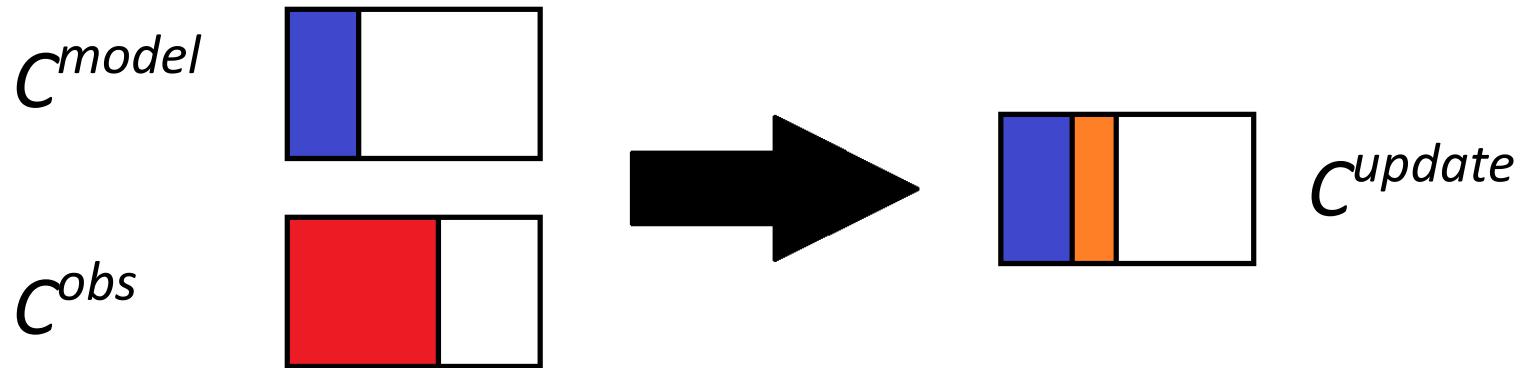
MPIOM: Ocean and Sea Ice

HAMOCC: Ocean Biogeochemistry

OASIS: Coupling Program

# Getting observations into the model: nudging

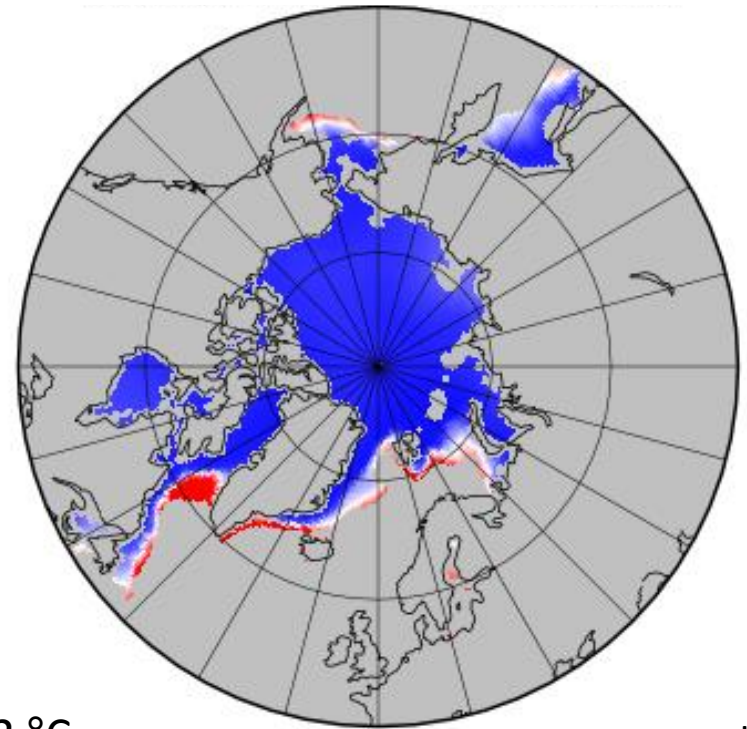
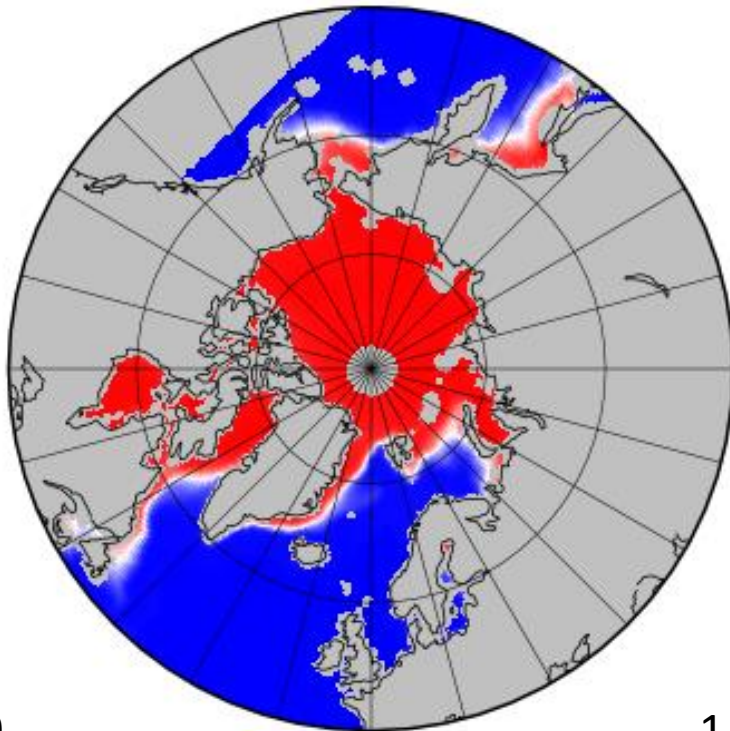
At every time step:



# The issue of inconsistency (here shown for CCI SIC vs. ORA SST)

CCI SIC

ORA SST



0.0

1.0

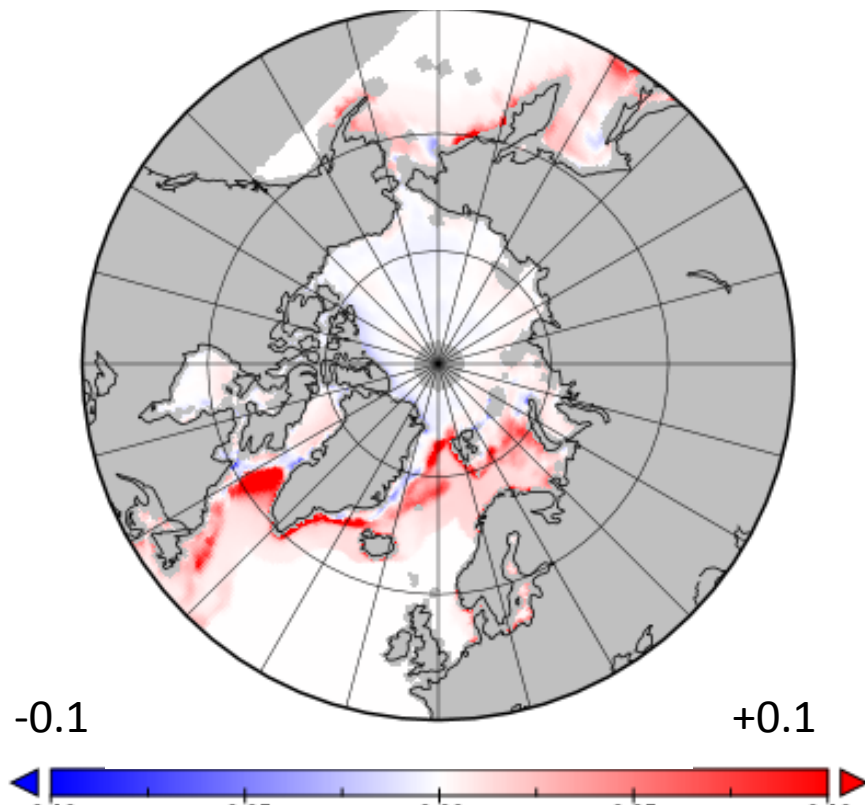
-2 °C

+2 °C



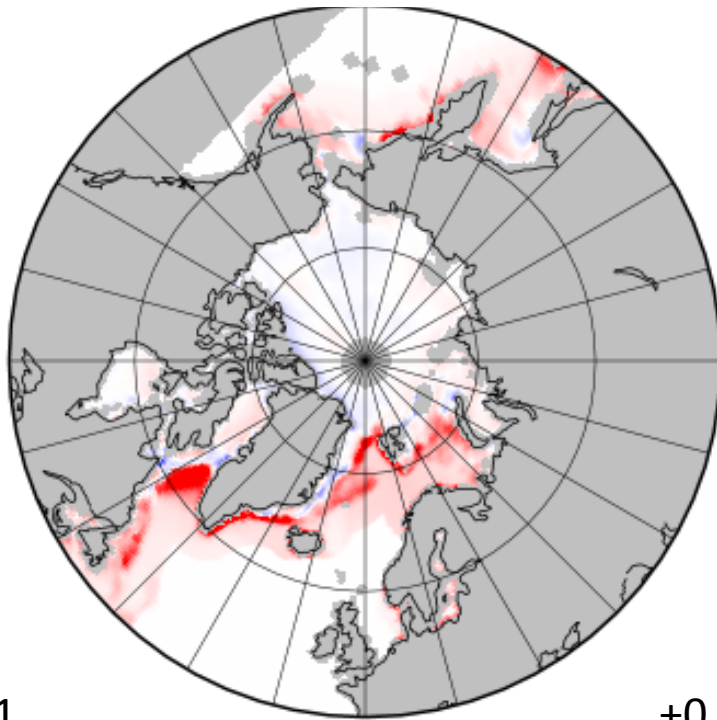
# Inconsistency between satellite retrieved SIC and satellite retrieved SIC in model

CCI SIC – Model Assimilation

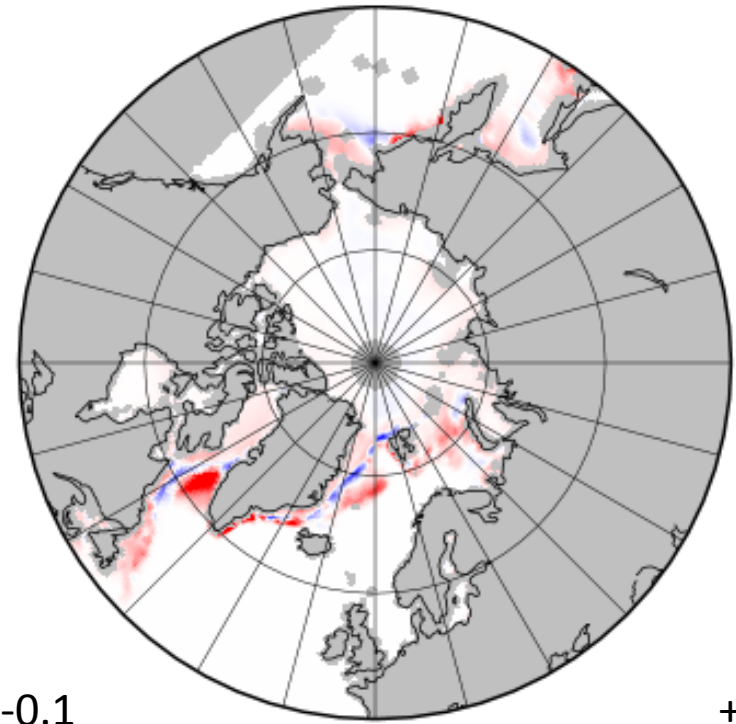


# Inconsistency between satellite retrieved SIC and satellite retrieved SIC in model

CCI SIC – Model Assimilation



Bootstrap SIC – Model Assimilation



-0.1

+0.1

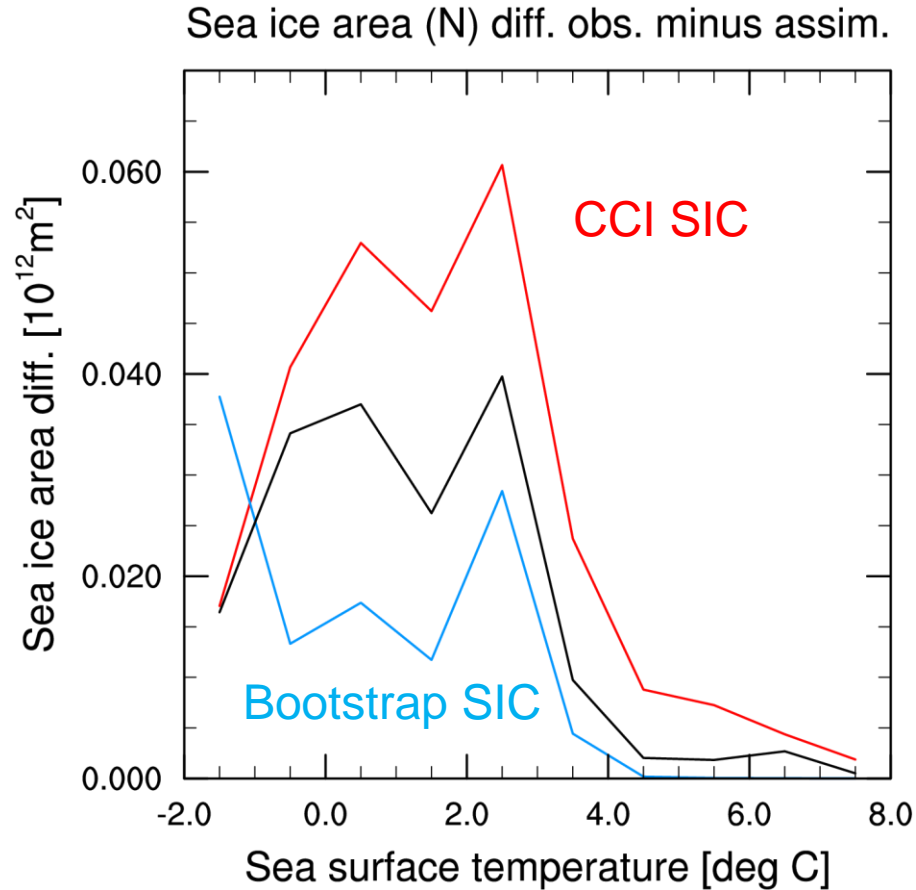
-0.1

+0.1

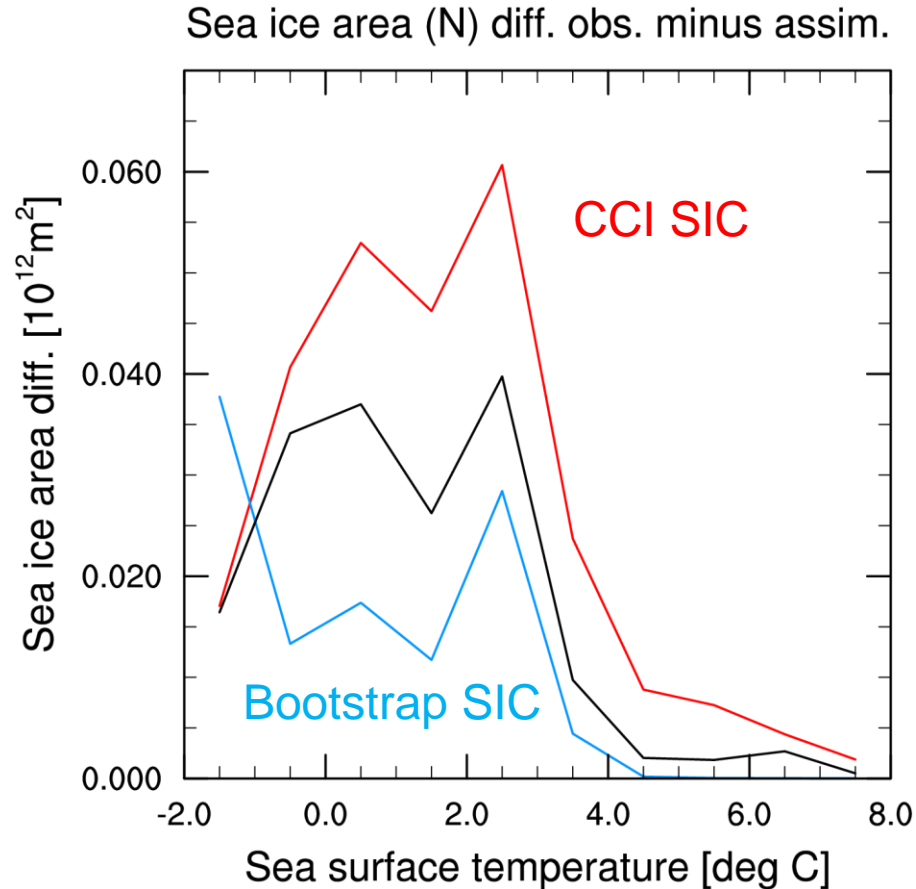




# Sea ice concentration vs. sea surface temperature



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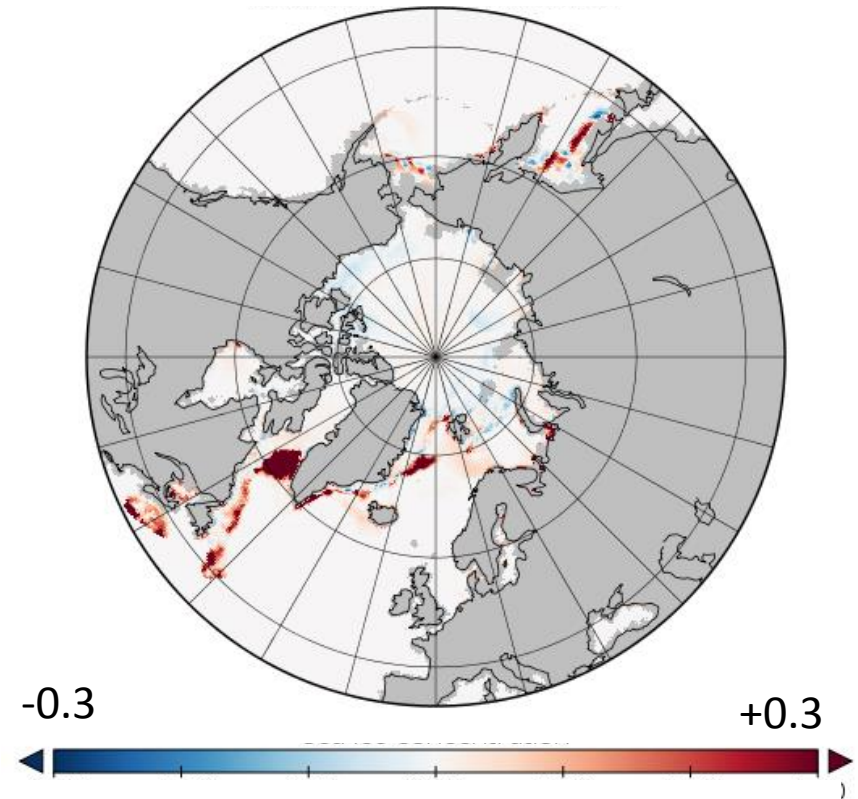


Bootstrap SIC is more consistent with the ORA SST data set than CCI SIC.

Does this imply that Bootstrap is better? Or more useful?

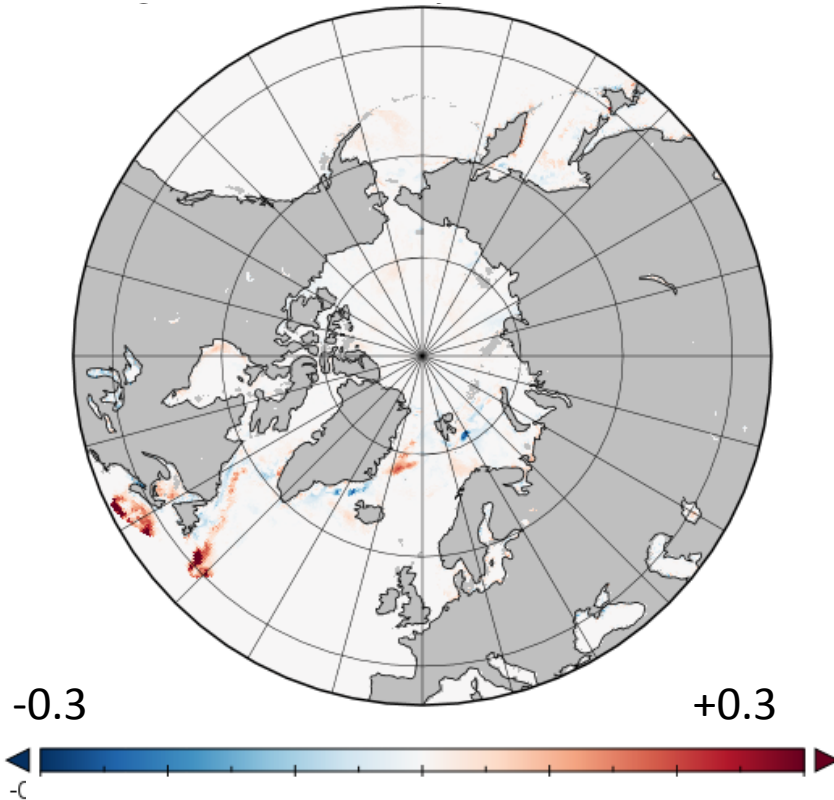
# Inconsistencies between CCI SI and CCI SST?

CCI SIC – Model Assimilation

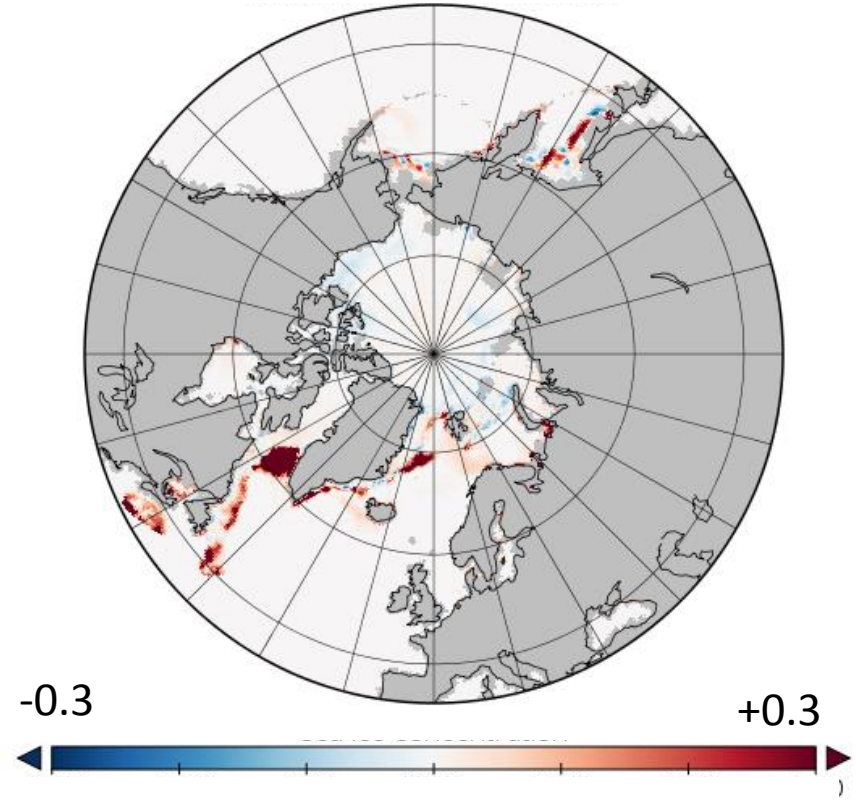


# Inconsistencies between CCI SI and CCI SST?

CCI SIC – Time filtered CCI SIC



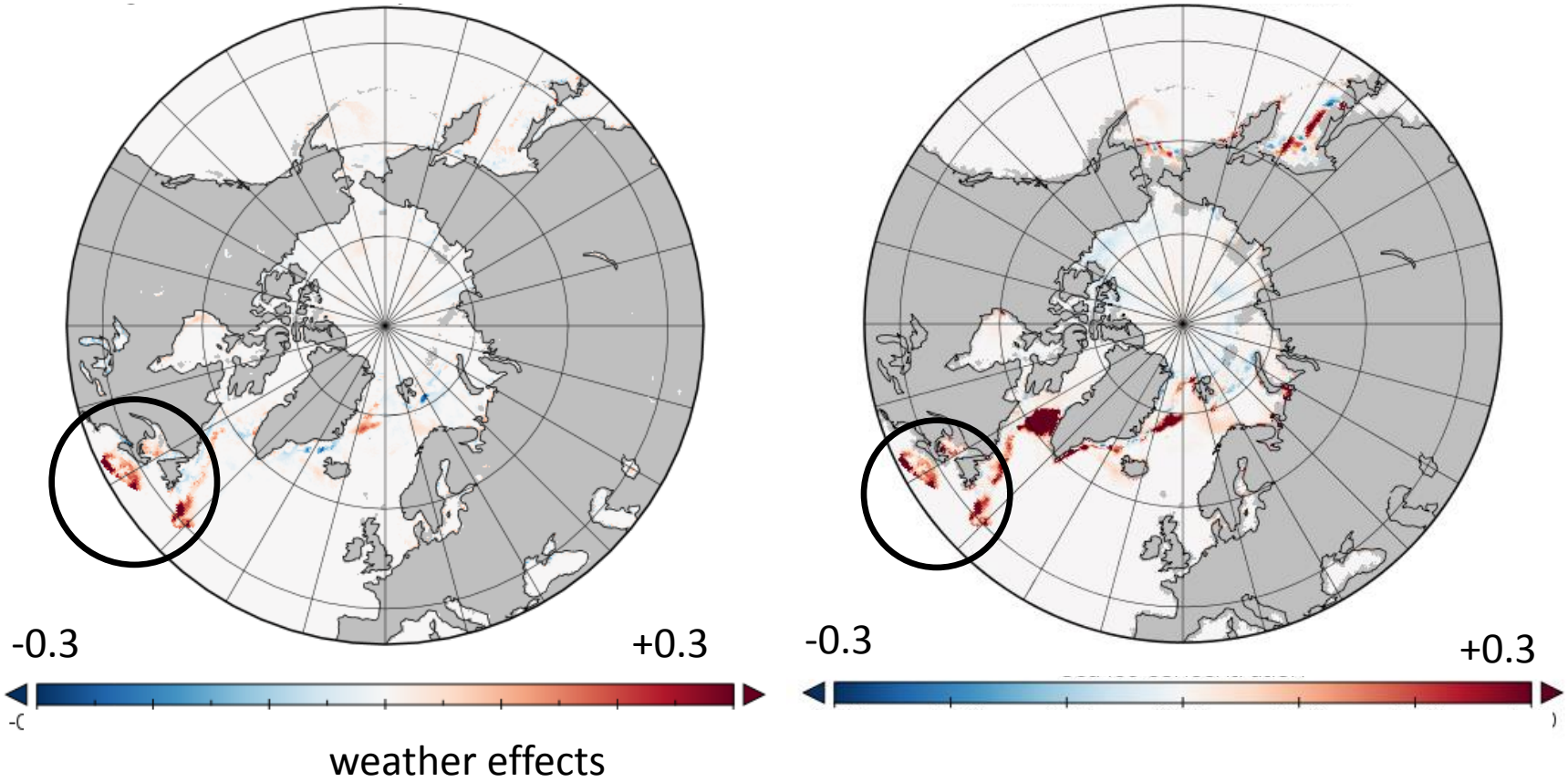
CCI SIC – Model Assimilation



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CCI SIC – Time filtered CCI SIC

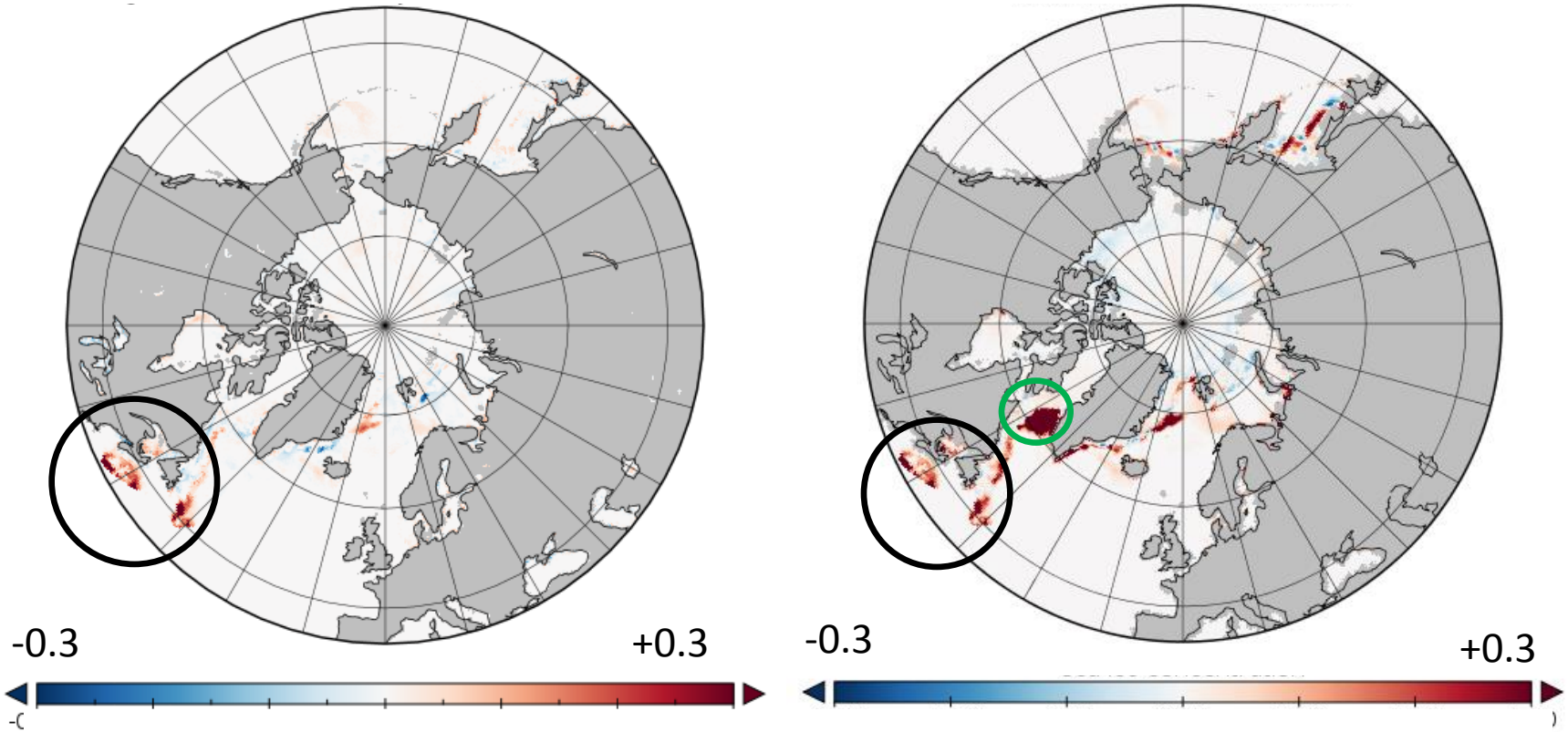
CCI SIC – Model Assimilation



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CCI SIC – Model Assimilation



weather effects

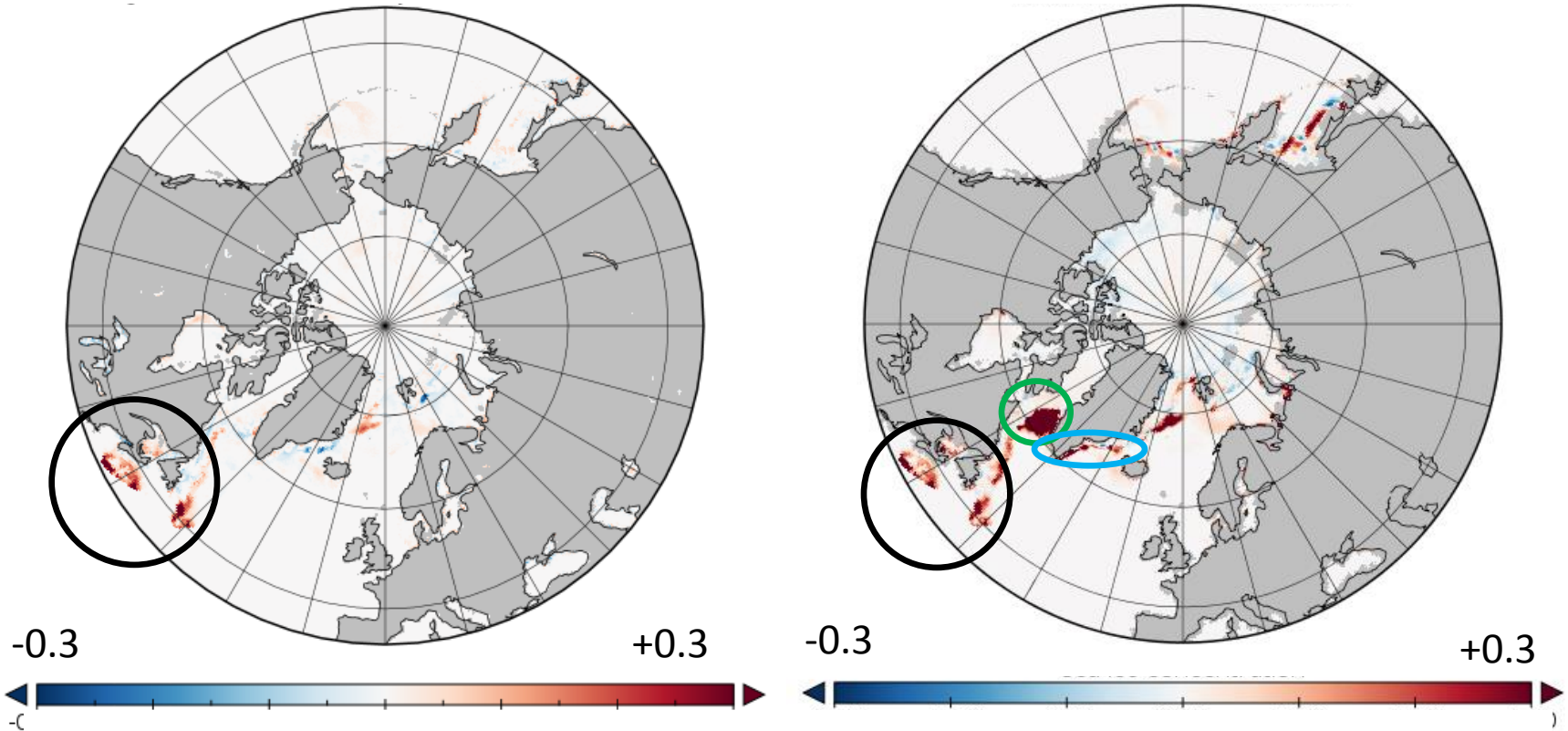
model physics disagree with ice observations



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weather effects

model physics disagree with ice observations

inconsistency between SIC and SST CCI data

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- Consistency across data sets is not necessarily a value in itself. In particular, model physics can often deal well with inconsistencies.
- Need to consider the prize we have to pay for getting rid of inconsistencies. Should we compromise on reliability?
- Uncertainty info might be a good way to deal with inconsistencies

