Hindcast models

Nikki Lovenduski
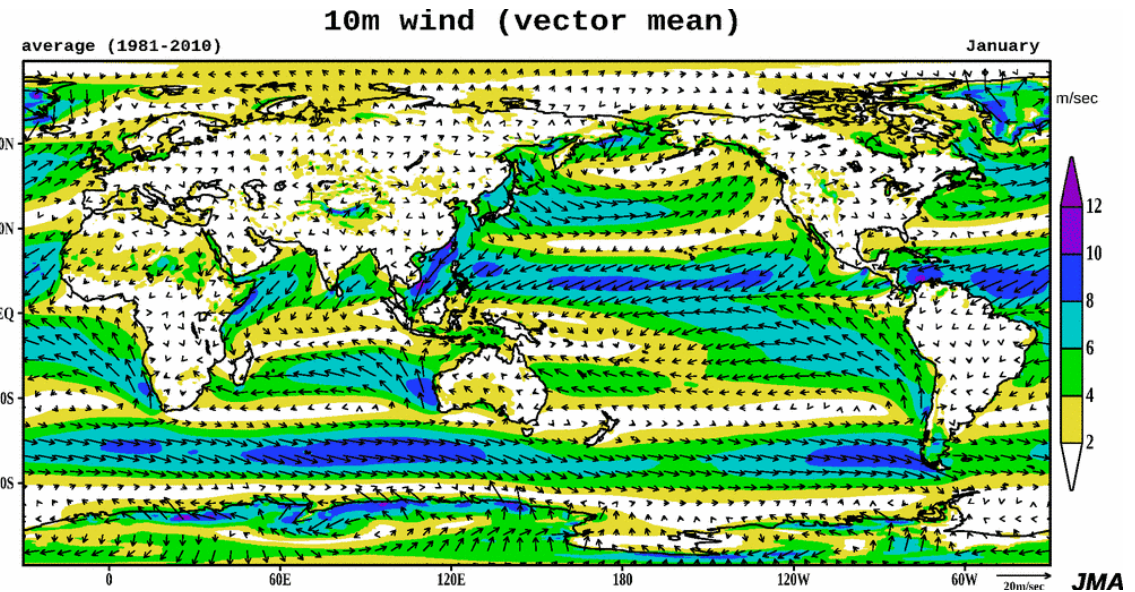### University of Colorado Boulder

What is a "hindcast" simulation?

Reanalysis product

"Realistic" spatiotemporal history of observed:

- Momentum fluxes
- Heat fluxes
- Freshwater fluxes

schematic: Holly Olivarez

3 flavors of hindcasts with OBGC information:

Global Carbon Budget

Friedlingstein et al. 2019

- CESM-ETH
- CSIRO
- MITgcm-REcoM2
- MOM6-COBALT
- MPIOM-HAMOCC
- NEMO-PISCES (CNRM)
- NEMO-PISCES (IPSL)
- NEMO-PLANKTOM5
- NorESM-OC

CMIP6 / OMIP1

Griffies et al. 2016
Orr et al. 2017

- CanESM5
- CanESM5-CANOE
- CESM2
- CNRM-ESM2-1
- GFDL-CM4
- GFDL-OM4p5B
- IPSL-CM6A-LR
- MIROC-ES2L
- MRI-ESM2-0
- NorESM2-LM
- ...

CMIP6 / OMIP2

Griffies et al. 2016
Orr et al. 2017

- CESM2
- MRI-ESM2-0
- NorESM2-LM
- ...

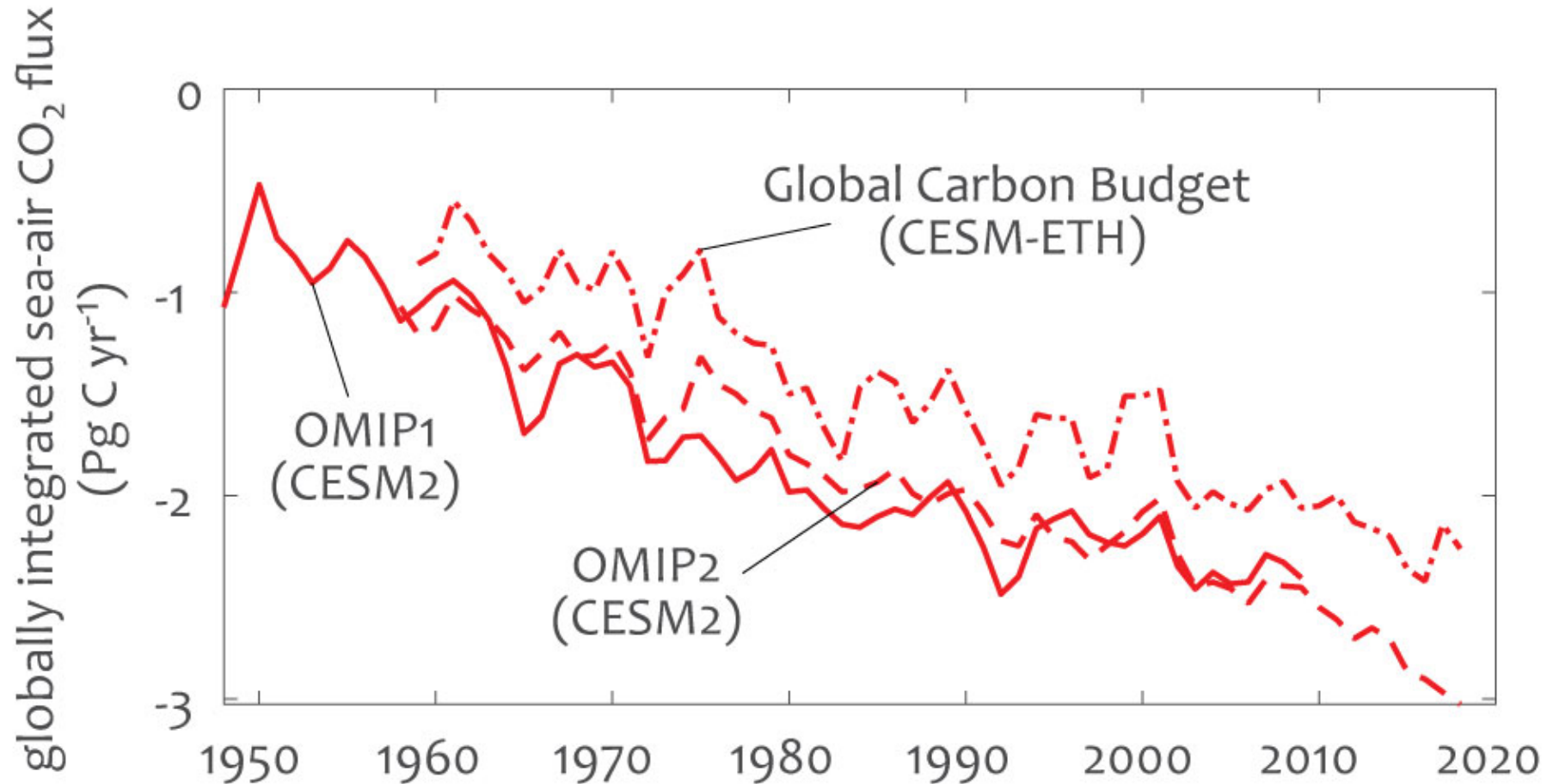# 3 flavors of hindcasts with OBGC information:

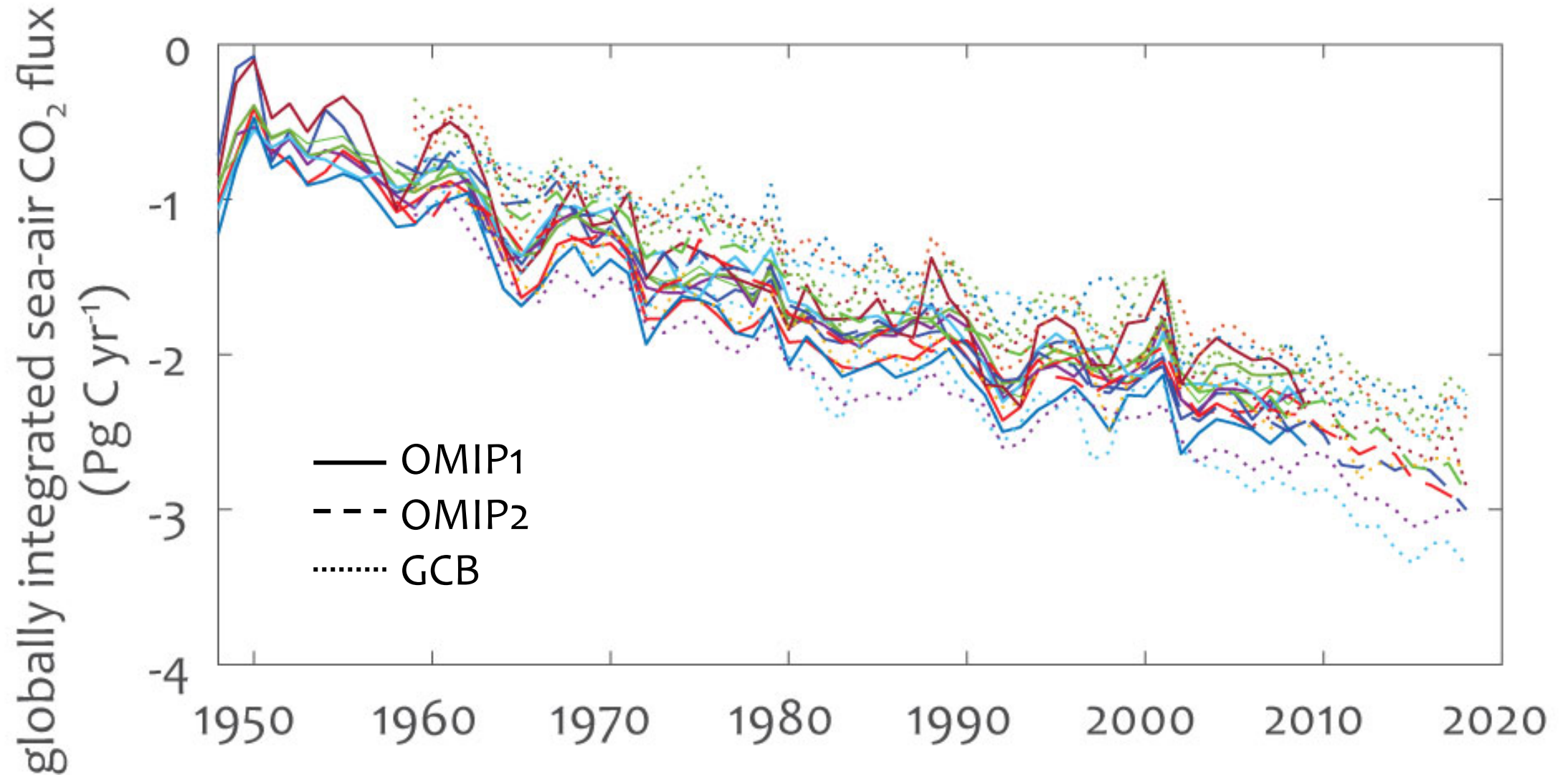| Global Carbon Budget | CMIP6 / OMIP1 | CMIP6 / OMIP2 |

Frie... 2016
...17

- CESM...
- CSIR...
- MITg...
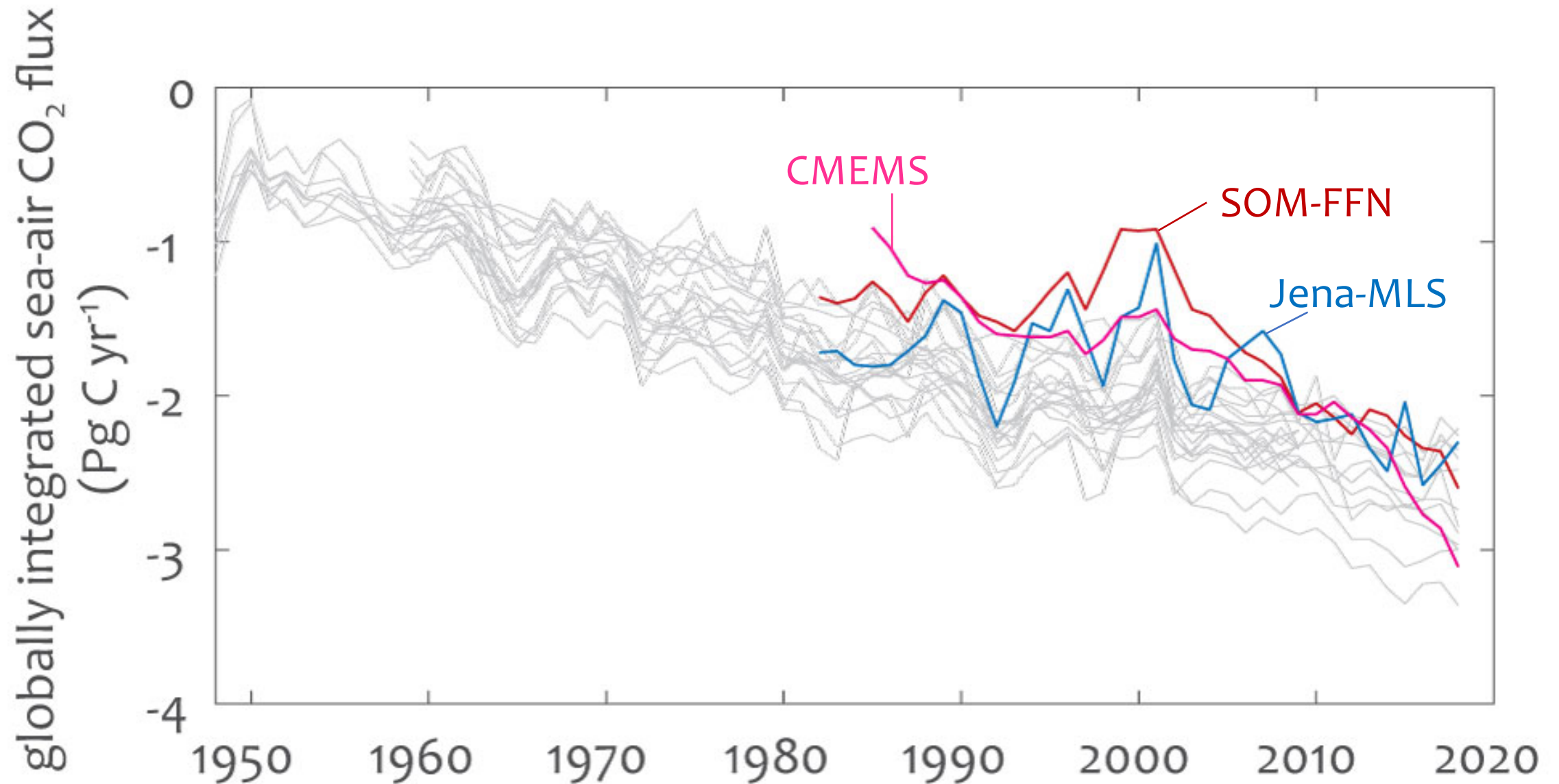- MOM...
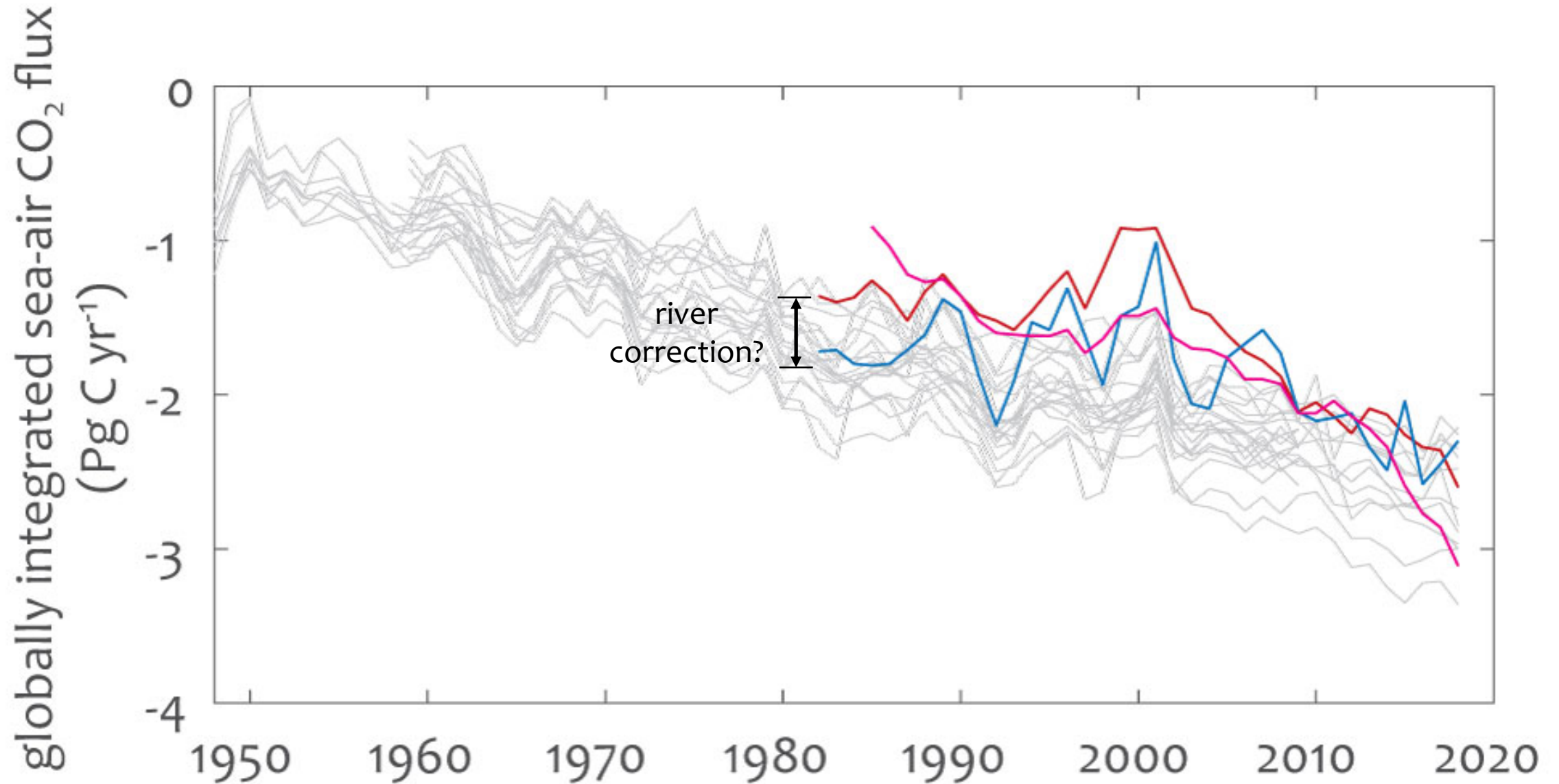- MPI...
- NEM...
- NEM...
- NEM...
- NorB...

Hindcast models

Hindcast models and observational products
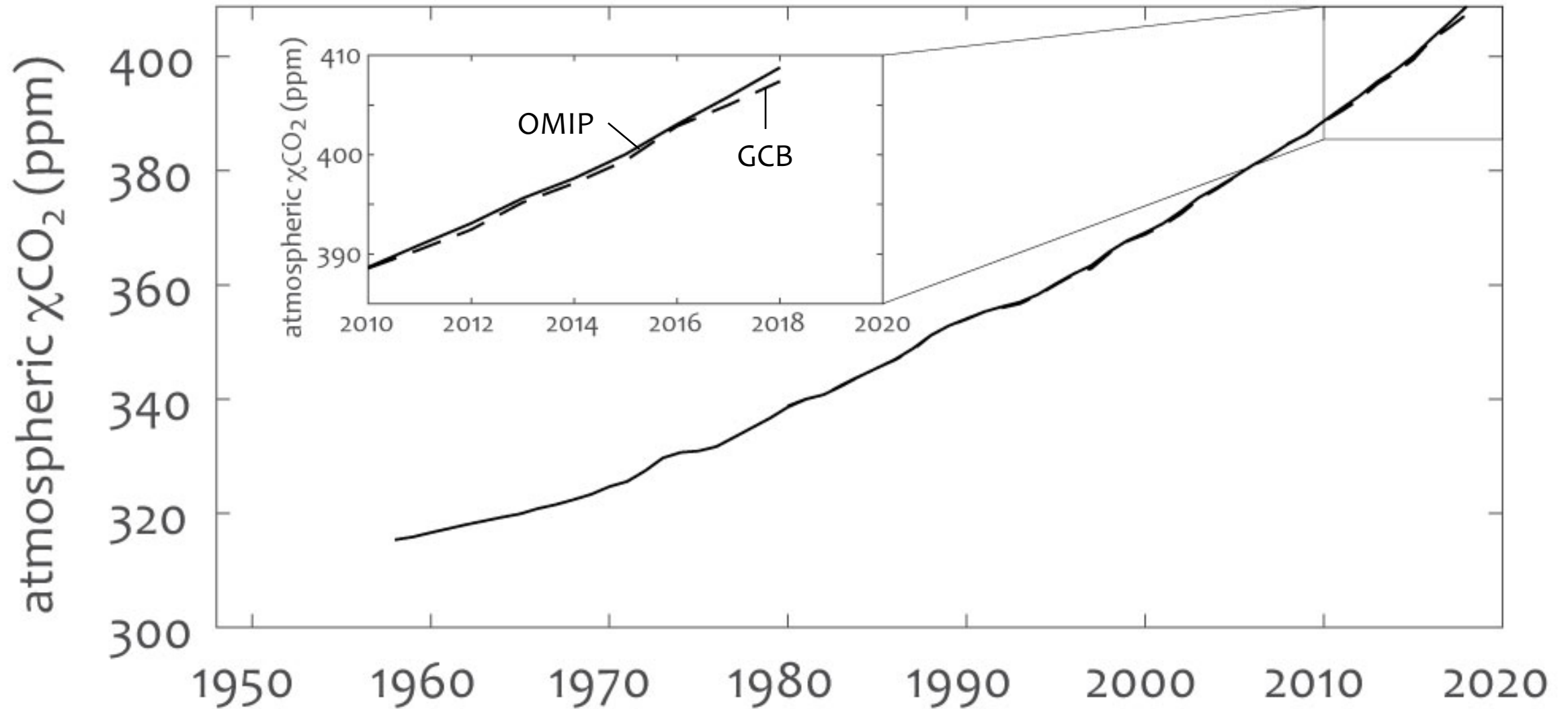
Hindcast models and observational products

The end!

Supporting slides

Atmospheric χCO₂

Does spin-up matter?

MRI-ESM2 / OMIP1