

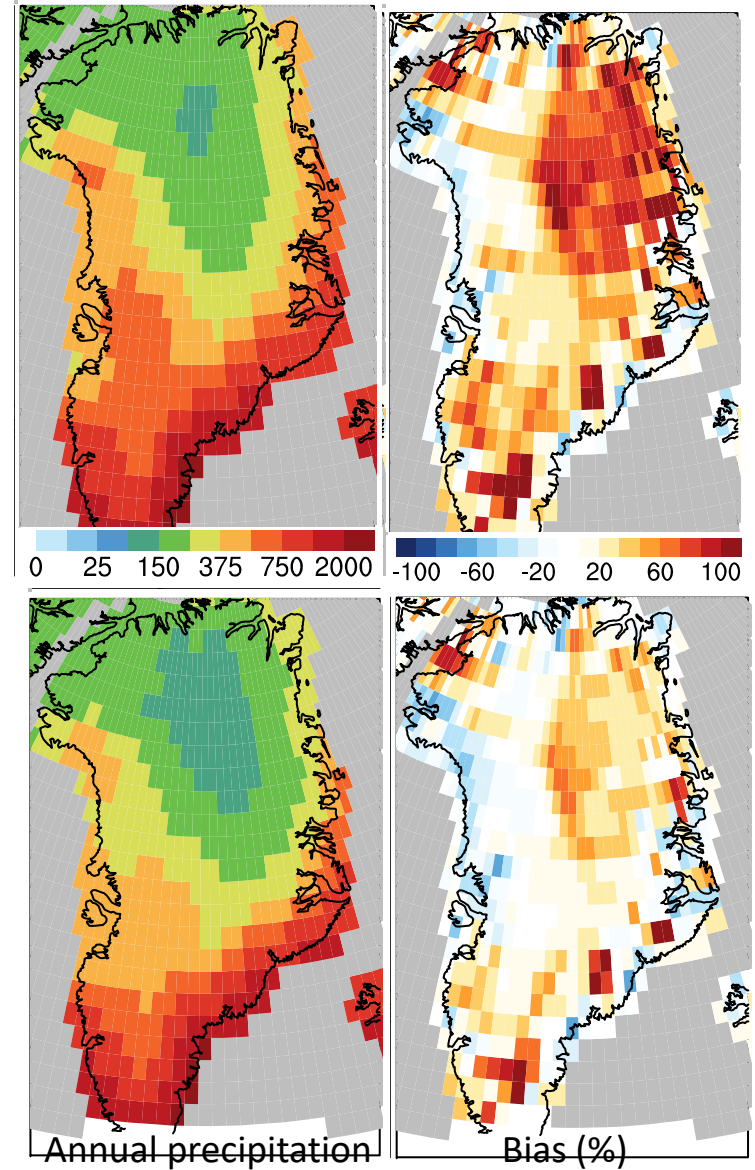
SMB discussion

Conclusions from CESM1.99

- Most ice sheet climate characteristics improved
 - Clouds
 - Winds
 - Snow/firn

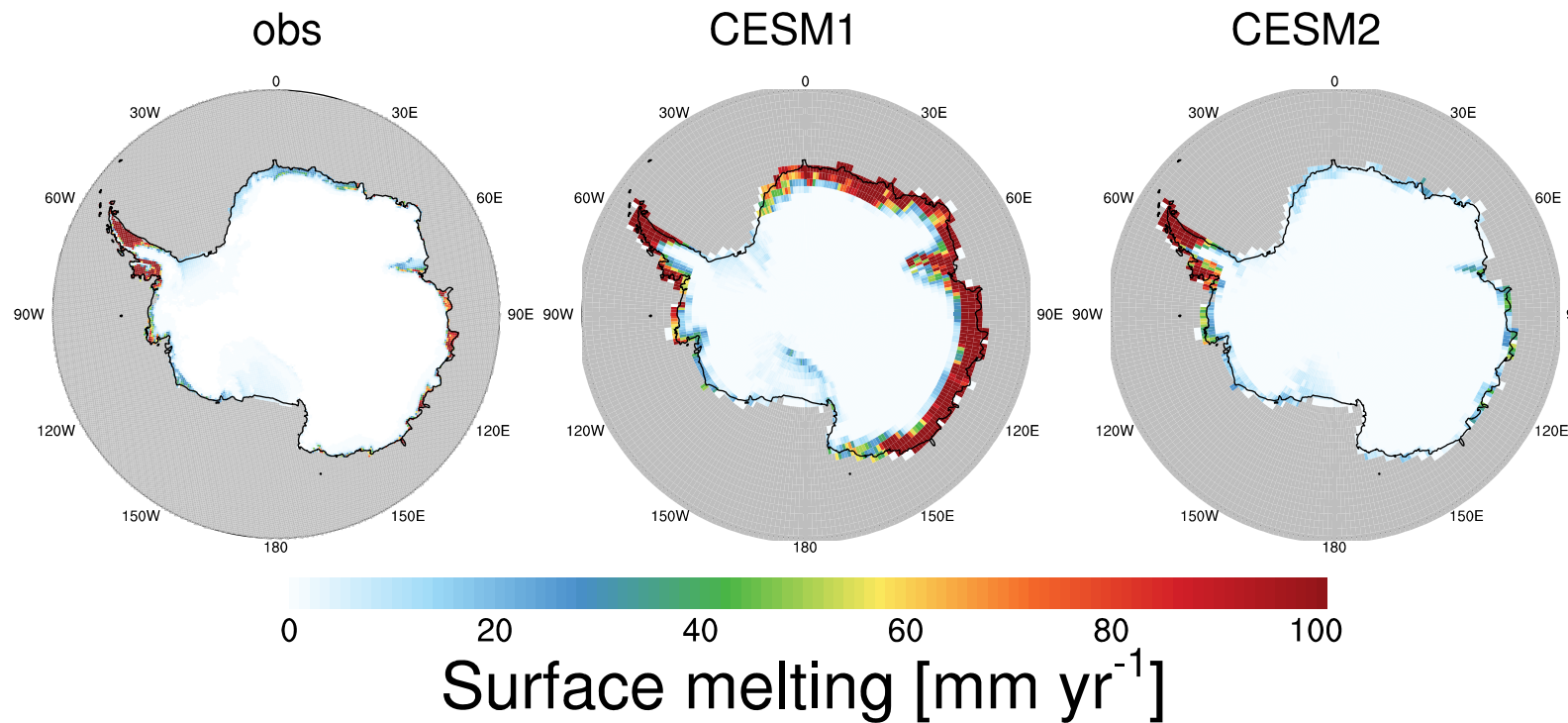
Greenland precipitation

Adapted surface drag parameterization



Antarctic surface melting

Improved snow physics in CLM5



Conclusions from CESM1.99

Some remaining challenges

- Still excessive precipitation

- Northern Greenland climate bias

Most outstanding: Greenland SMB patterns (Miren/Raymond)

Potential ways to go

- Goal: Increase snow melt at the expense of ice melt
- Increase fresh snow grain size
- Black carbon impact on albedo?
- ...
- Caveat: seasonal snow, Antarctica
- All this will be too late for CESM2.0 release

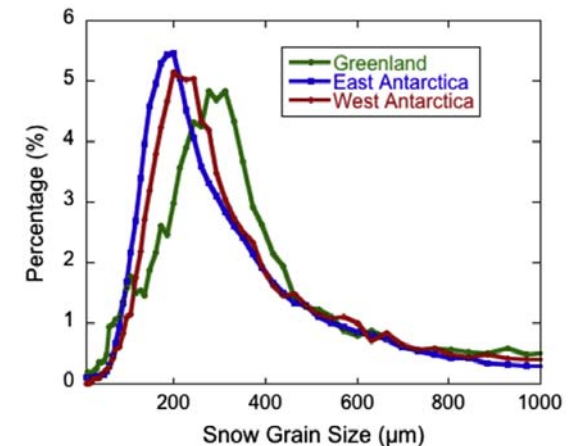


Fig. 5. Histograms of snow grain size distribution over the ice sheets retrieved with GLAS observations during the GLAS L2A campaign. Lines are for Greenland (green), East Antarctica (blue) and West Antarctica (red). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)