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Australian Government
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A cautionary tale about ameliorating parameterizations offline: Improved water fluxes degrades near surface temperature

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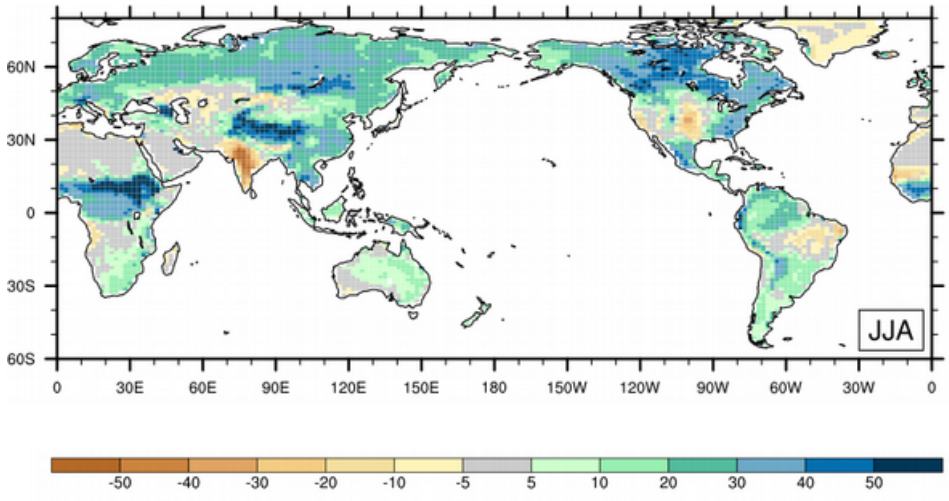
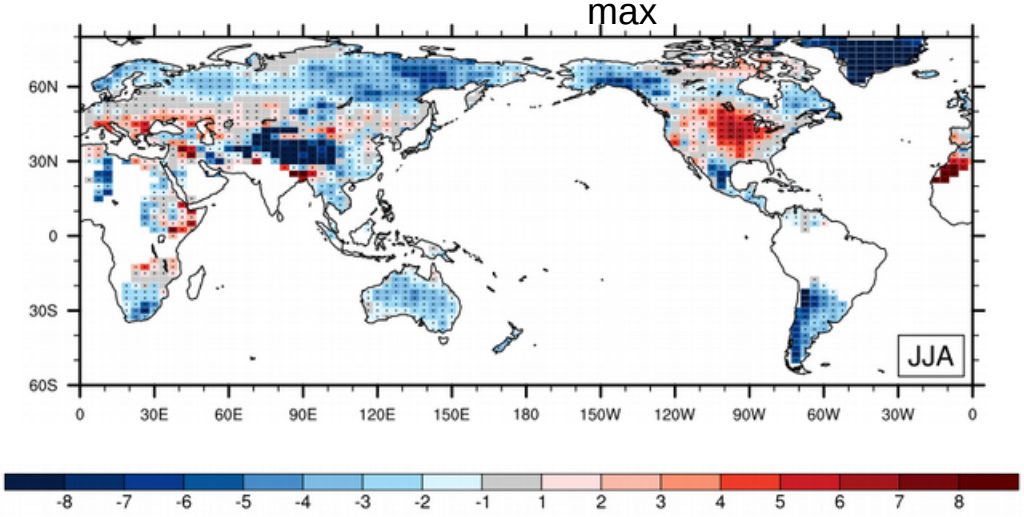
Ruth Lorenz found:

Mean ET



Mean T_{max}



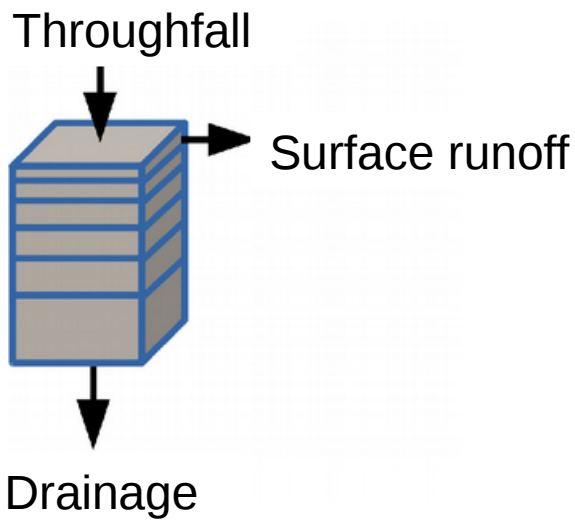
T_{max} too cold

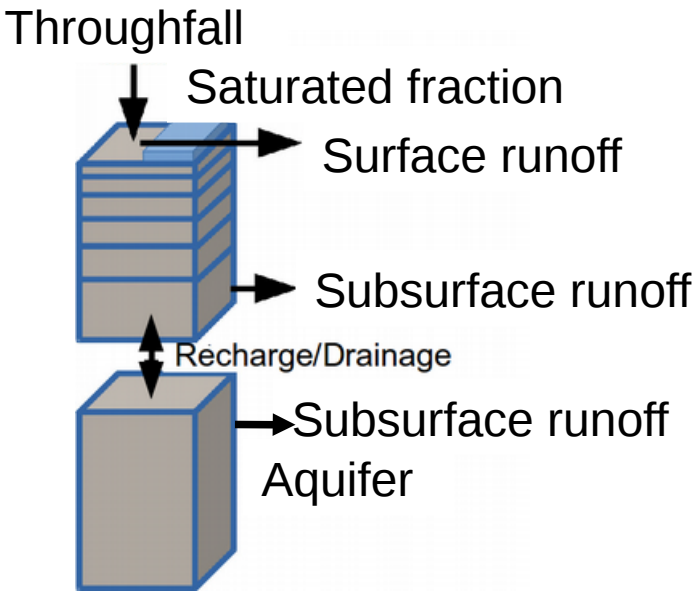
ET too high

DTR much too small

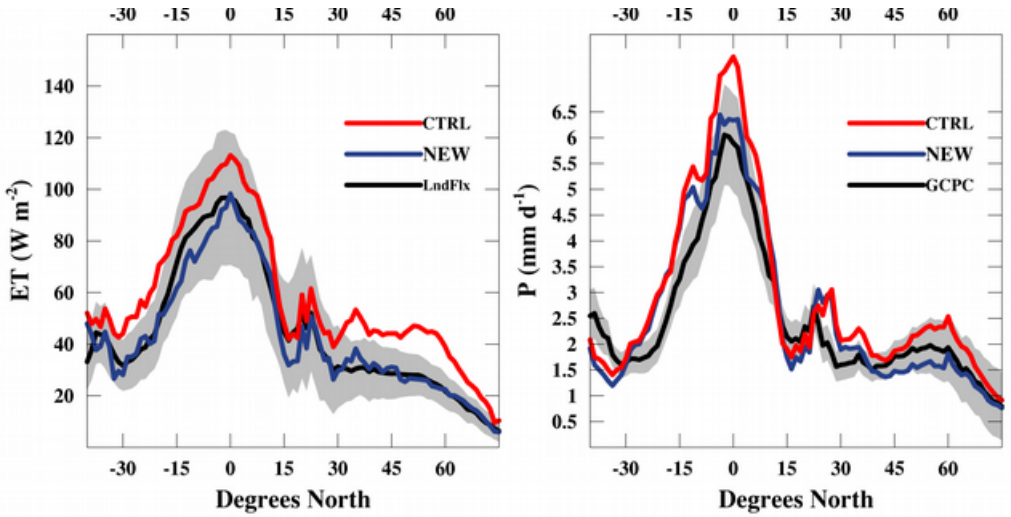
Model improvements:

Incorporate subgrid scale parameterizations physics into the soil evaporation parameterization

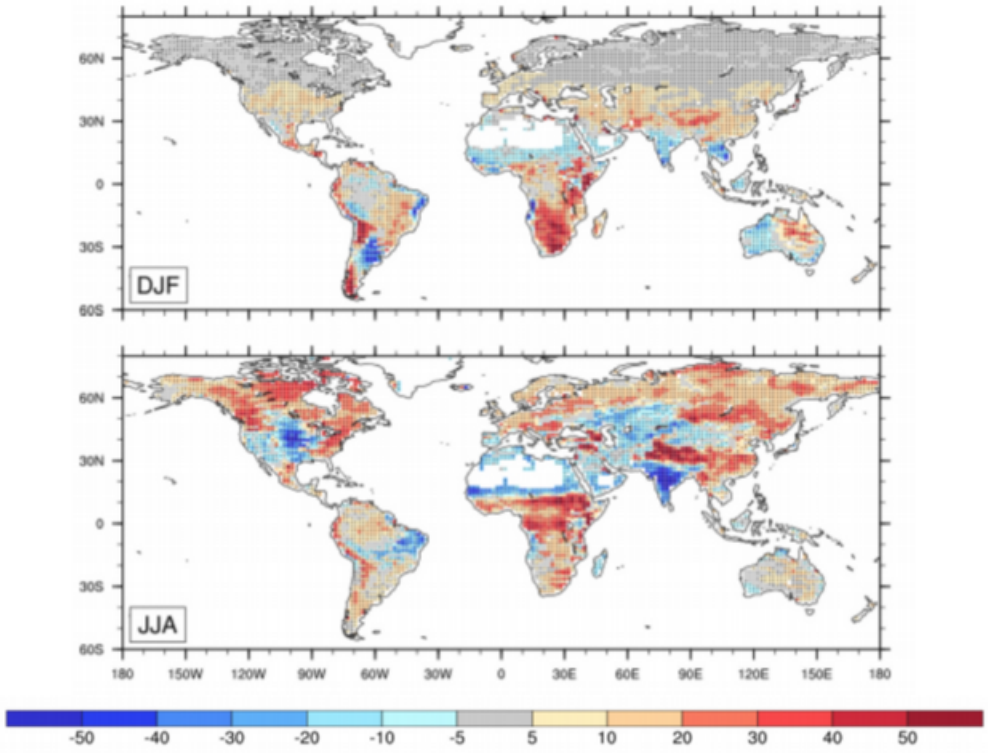




Zonal P and ET

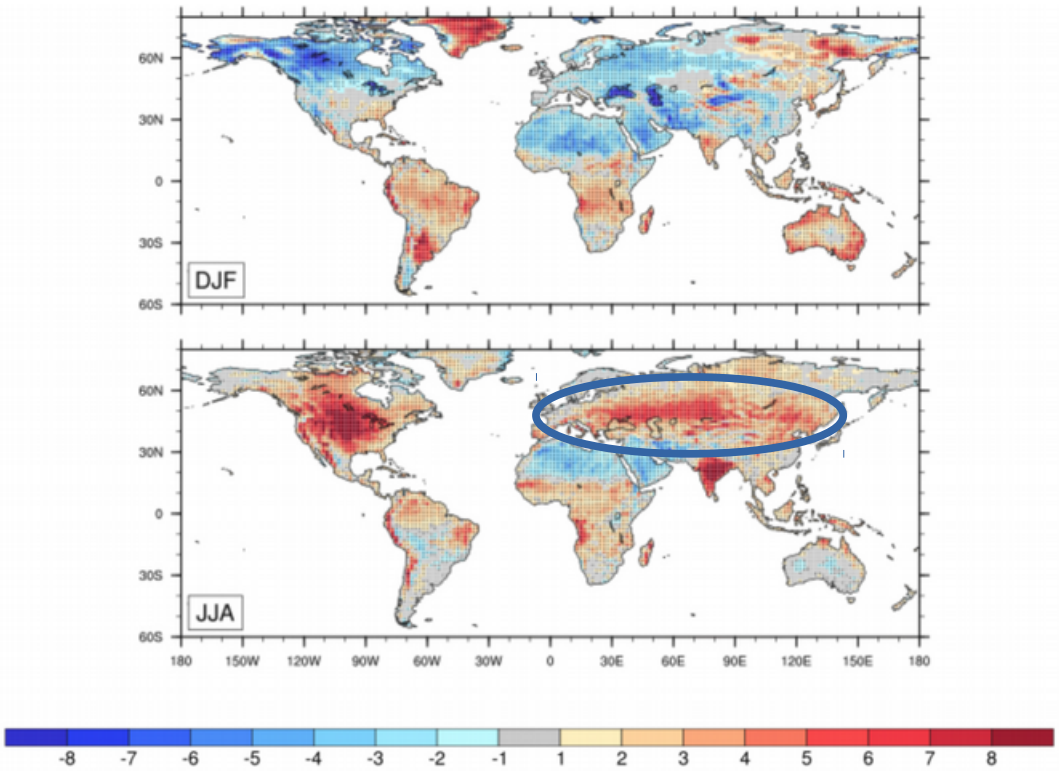


Mean ET



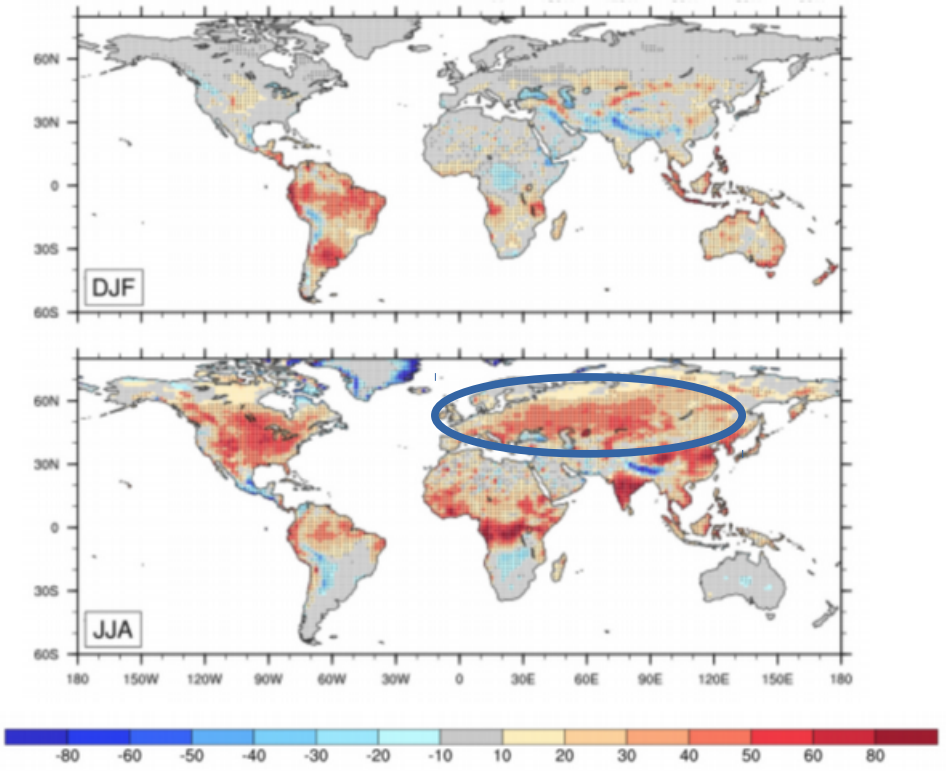
Mean P and ET within observational uncertainty. Great!

Mean T_{2m} bias (ERA-Int)



5K!

Mean SW_{down} bias (CERES)



40 Wm^{-2} !

Conclusion

CABLE exhibits large positive ET bias:
- **Offline point scale simulations**
- **Offline global simulations**
- **Online simulations**

Readily fixable by addressing the soil evaporation and hydrological parameterizations

Positive ET bias needed in JJA for better temperature simulations

Ongoing:
- **Test with um10.6**
- **What about JULES?**
- **What does this mean for addressing changes in hydrological cycle with ACCESS?**