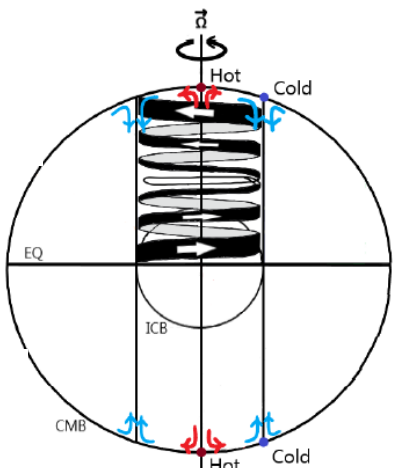
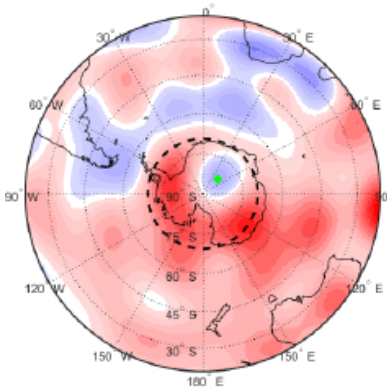


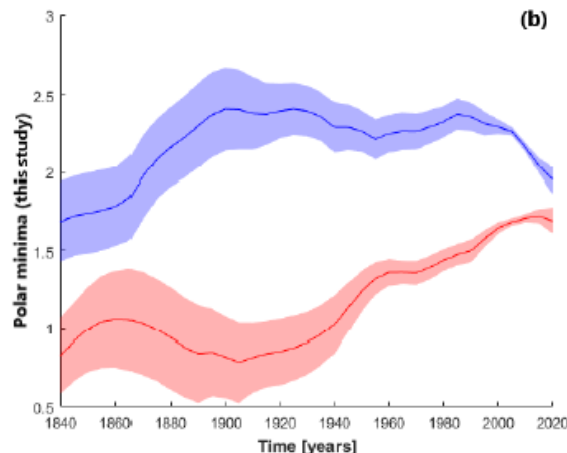
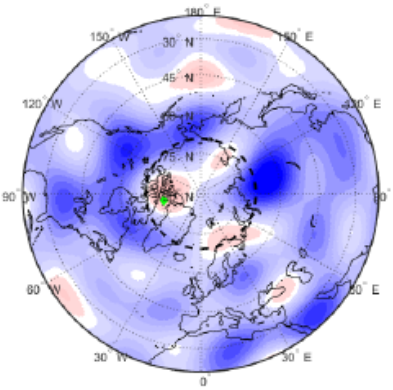
Mantle-driven north–south dichotomy in geomagnetic polar minima



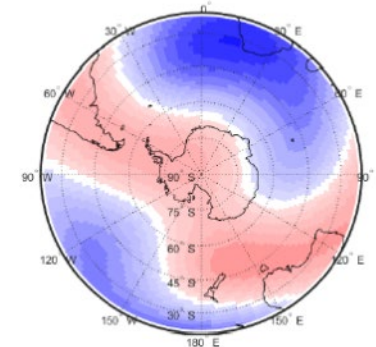
(a) Southern hemisphere [2010]



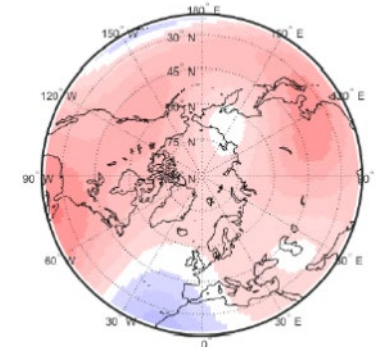
(b) Northern hemisphere [2010]



(a) Southern hemisphere



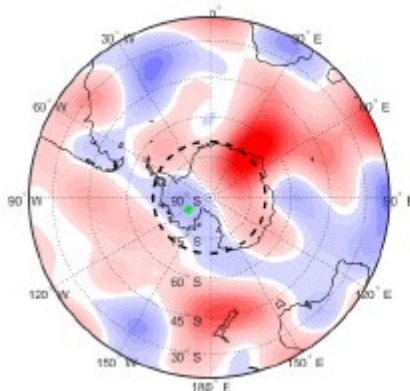
(b) Northern hemisphere



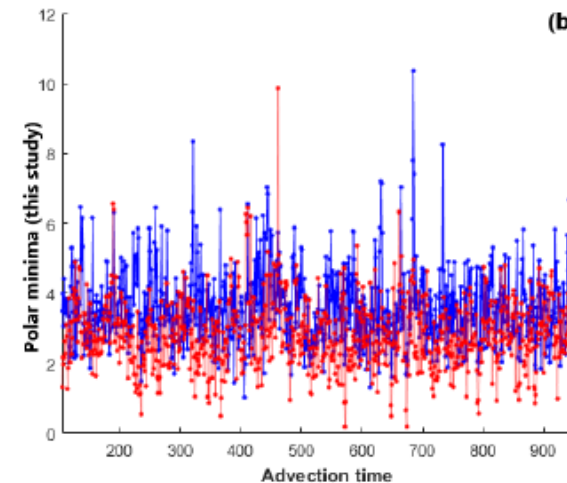
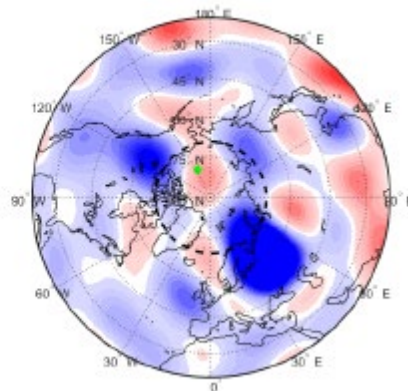
Geomagnetic field models exhibit polar minima

But the northern is always stronger!

(a) Southern hemisphere



(b) Northern hemisphere



(b)

Southern centers of LLSVPs controls stronger northern geomagnetic polar minima

TC theory predicts weak magnetic field at polar regions

Numerical dynamos with tomographic CMB heat flux also exhibit stronger northern polar minima