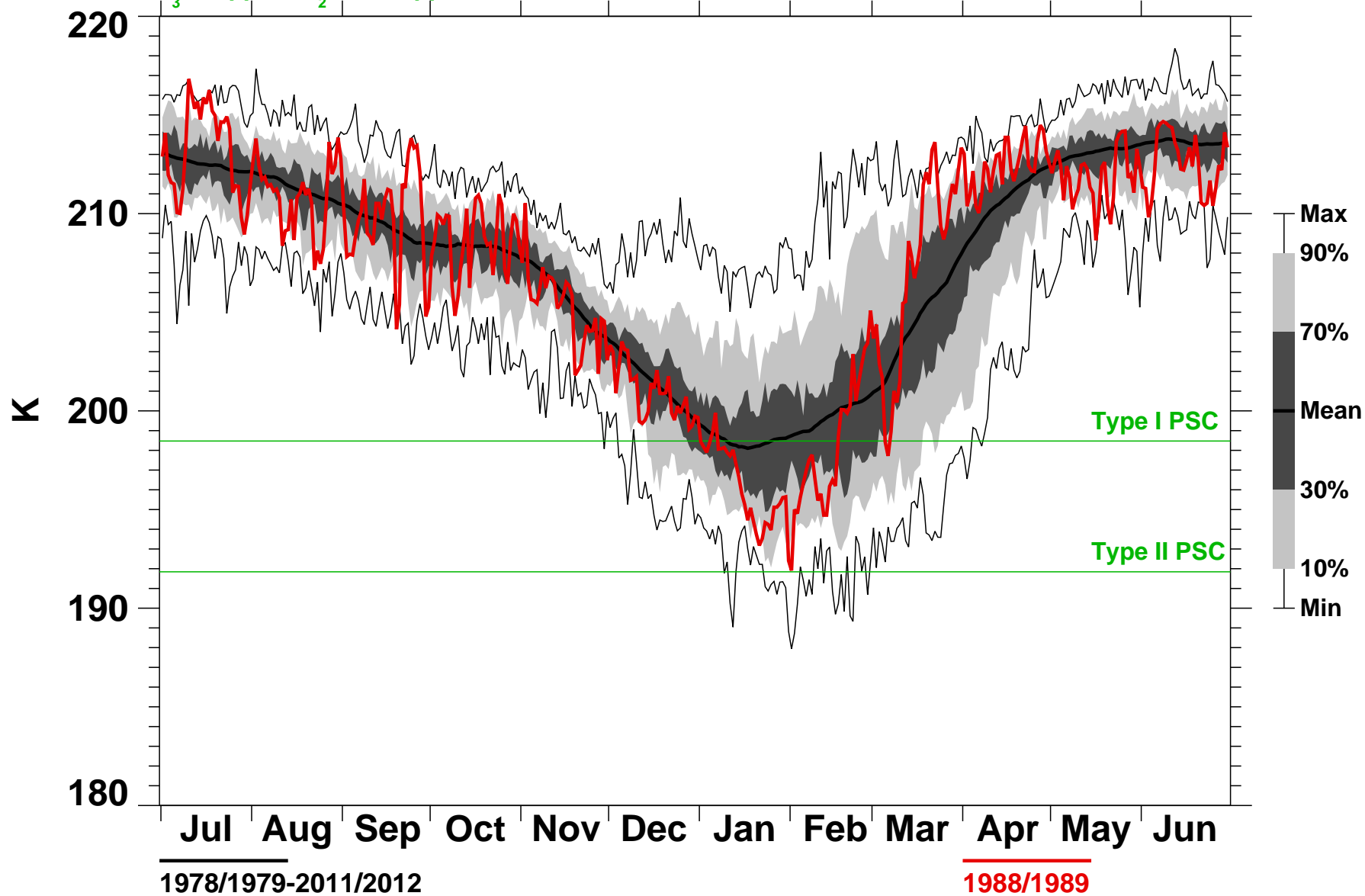


50-90°N Minimum Temperature

100 hPa MERRA

$\text{HNO}_3 = 6 \text{ ppbv}$, $\text{H}_2\text{O} = 4.5 \text{ ppmv}$



1978/1979-2011/2012

1988/1989

P. Newman (NASA), E. Nash (SSAI), S. Pawson (NASA)