Supplemental Material

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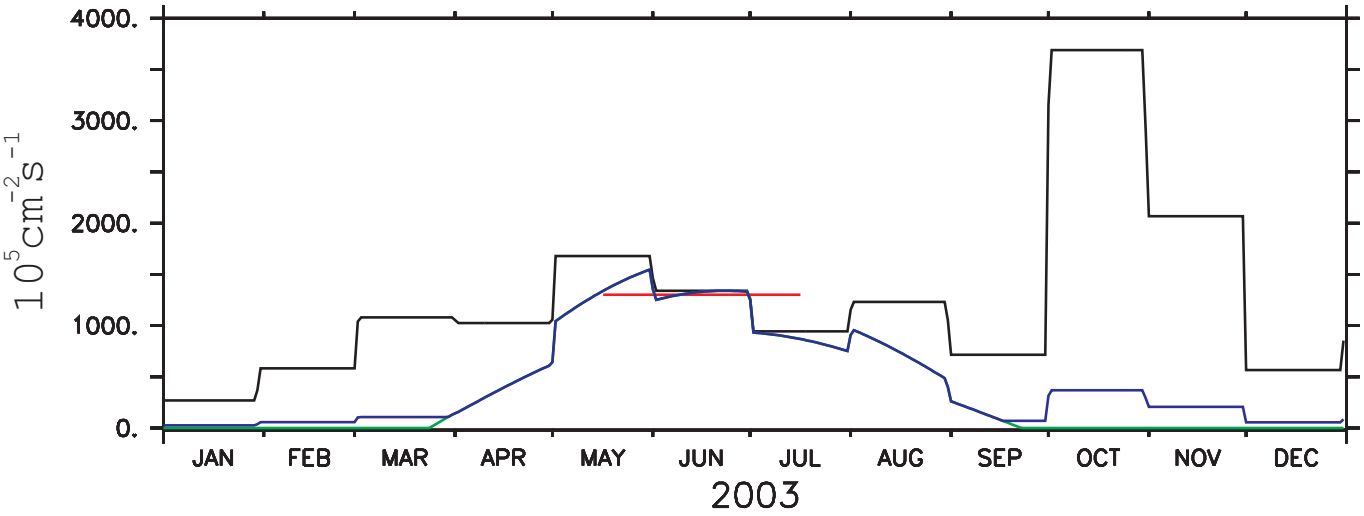

Figure 1: The variation of the flux (see Eq. (4) in the article) for the Southern Hemisphere winter 2003 using different types of time variability based on the A_p index. Black: flux without any additional time dependence, red: May to July average, green: max(0.0, cos(...)), blue: max(0.1, cos(...)).

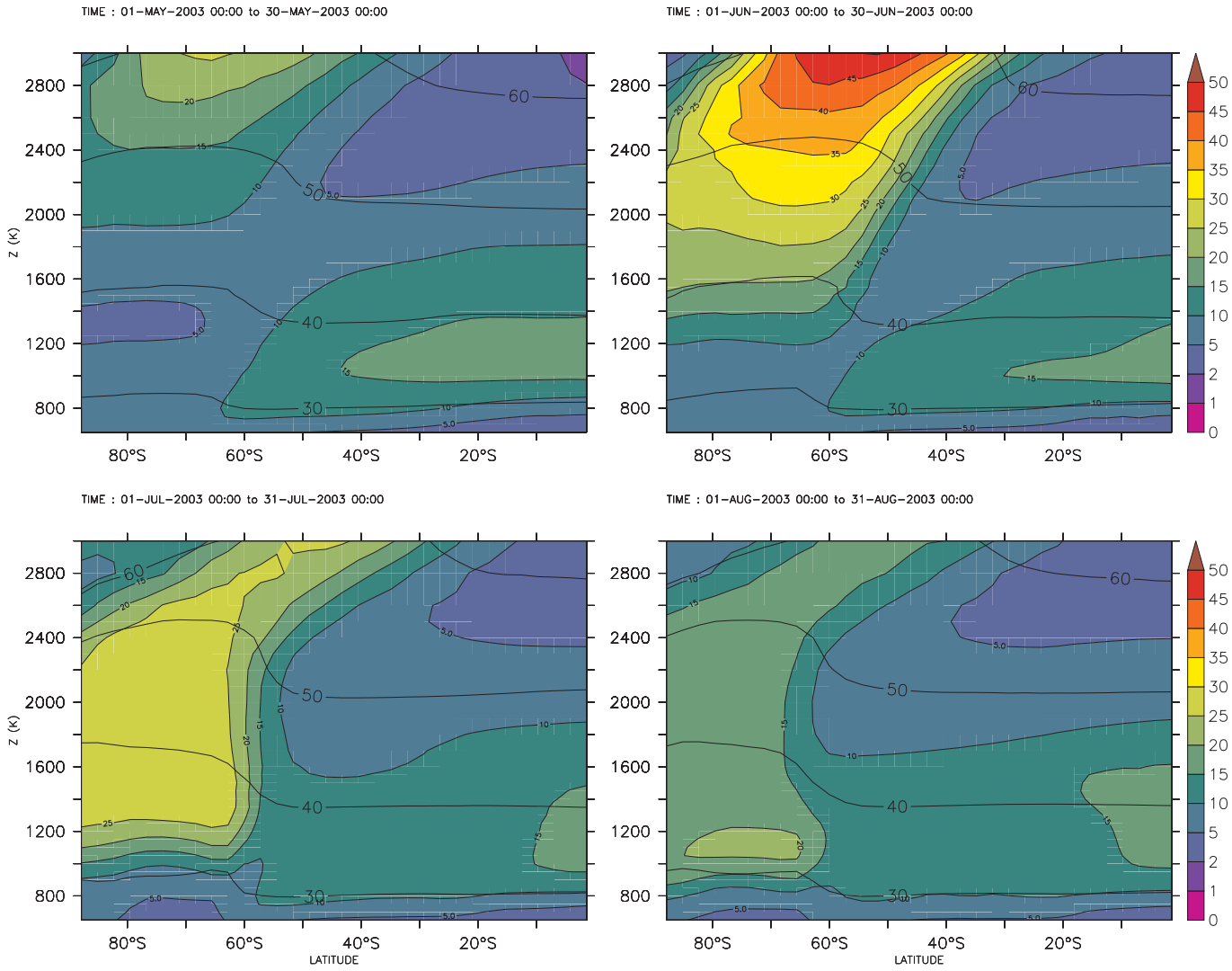

Figure 2: Monthly average NO_X mixing ratios as a function of potential temperature and equivalent latitude for May, June, July, and August 2003 (from top left to bottom right). The region of low NO_X in the upper stratosphere and mesosphere in the vicinity of the pole is an artefact resulting from low PV values inside the polar vortex.