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Transient hysteresis of storm tracks response to anthropogenic forcing variation

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In this work we consider midlatitude storm tracks of Northern Hemisphere. The storm tracks are the regions of strong baroclinicity with which surface cyclones are associated. The effect of increasing and following decreasing anthropogenic load on storm tracks activity was investigated. The global climate system model of intermediate complexity ("Planet Simulator", Fraedrich K. et al., 2005) was used for this study. Anthropogenic forcing was set according to continued till 4000 AD climatic scenario RCP8.5 with the reduction of anthropogenic load to preindustrial value at different intensities (100 and 1000 years).

The transient hysteresis in dependence of storm tracks activity versus global atmospheric temperature was exhibited. Moreover, poleward shift of storm tracks with the anthropogenic forcing increase and their following backward shift with the anthropogenic forcing decrease was demonstrated.

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