

Abstract. A novel dynamically-based approach is introduced to describe, identify and diagnose atmospheric blocking events. The approach is based upon the potential vorticity perspective and takes into account the three-dimensional structure of the phenomenon. It is argued that the essence of a blocking anomaly is located in the upper troposphere, just below the tropopause. The associated novel blocking indicators are derived from two-dimensional fields at 6-hourly temporal resolution, and provide information on the spatial scale, shape, amplitude and movement of blocks. A northern hemisphere winter (DJF) climatology for the ERA15 period (1979-1993) is presented and comments are made on the relationship between the indicators and previous blocking indices.