Topological flow data analysis for identification of atmospheric blockings[1] TAKASHI SAKAJO, Kyoto Univ, TOMOKI UDA, Tohoku Univ, MASARU INATSU, Hokkaido Univ, KAZUKI KOGA, Kyoto Univ — In this talk, we propose a new objective algorithm to detect atmospheric blocking by extracting topological features of geo-potential height data at 500 hPa. It provides a unique symbolic representation, named COT representation, and a discrete graph structure, called a Reeb graph, to each data based on the mathematical classification theory of streamline topology for structurally stable Hamiltonian vector fields. By comparing the results with those detected by the conventional algorithms, we show that the proposed algorithm finds atmospheric blocking events more simply and effectively with fewer meteorological parameters. Moreover, it can determine the morphological types of blocking events, which has been considered to be a difficult task so far. A long-term statistical investigations with using the algorithm not only reveals the locality and seasonality of atmospheric blocking, but it is also informative for the climate predictions.

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