

Brewer-Dobson circulation inter-comparison based on reanalyses and models

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The strength and structure of the Brewer-Dobson circulation is often quantified in terms of residual circulation velocities at particular levels, the residual streamfunction, and/or age of air. Here, residual circulation transit times (RCTTs) are used as a measure of the strength and structure of the Brewer-Dobson circulation to compare different reanalysis products. The RCTT quantifies the advective part of the circulation and represents the contribution to age of air corresponding to transport along the residual circulation only. It serves well to distinguish the shallow and deep branches of the circulation. The difference between the mean age of air and the RCTT can be used as a measure for aging by mixing and will be compared as well where age of air estimates are available. Results based on reanalyses will also be contrasted with those based on models from the Chemistry Climate Model Initiative (CCMI).

Key words: Reanalysis Data Sets, Brewer-Dobson Circulation, Stratospheric Transport