



SPARC Workshop SHARP2016

## **Variability of stratospheric water vapour in observations and simulations**

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Water vapour is one of the most important trace constituents of the Earth's atmosphere. This attribution is in particular due to its role for the radiative budget but is also due to its significance for the ozone budget. Hence, understanding the variability of water vapour on different time scales is of major importance.

Here observations from various satellite instruments have been combined to study in detail the variability of stratospheric water vapour on a global scale since the early 1990s. The focus is both on short- and long-term variations, ranging from the size of annual and QBO variations to long-term linear changes and the influence of the solar cycle. All these results have been compared with a number of model simulations, that are either free-running or use specified dynamics. Agreements and differences are discussed.

Besides these studies the quality of the satellite observations has been assessed using a comprehensive set of comparisons ranging from classical profile-to-profile comparisons to comparisons of secondary parameters as amplitudes of various variability patterns.