Overview of the SPARC Reanalysis Intercomparison Project (S-RIP) during 2013-2021

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Abstract

The Stratosphere-troposphere Processes And their Role in Climate (SPARC) project is one of the four core projects of the World Climate Research Programme (WCRP). Researchers interested in SPARC use global atmospheric reanalysis products to understand a wide range of processes and variability in the atmosphere, to validate chemistry climate models, and to investigate and identify climate change. The SPARC Reanalysis Intercomparison Project (S-RIP) was initiated in 2011 and officially started in 2013 to conduct a coordinated intercomparison of all major global atmospheric reanalysis data sets. The S-RIP has been aiming at writing up an assessment report in the SPARC report series (to be published by September 2021) (1) on overall quality of temperature, winds, ozone, and water vapor data, (2) on more process- and region-oriented evaluation of the Brewer–Dobson circulation, extratropical stratosphere-troposphere coupling, extratropical upper troposphere and lower stratosphere, the tropical tropopause layer, the quasi-biennial oscillation, polar processes, and the upper stratosphere and lower mesosphere, and (3) with a coordinated description of the reanalysis systems. We also have an inter-journal special issue on ”The SPARC Reanalysis Intercomparison Project (S-RIP)” in Atmospheric Chemistry and Physics (ACP) and Earth System Science Data (ESSD). In the presentation, we will discuss key findings and recommendations as well as the evaluation of this first phase of the S-RIP activity.

Keywords: reanalysis intercomparison, stratosphere, troposphere, mesosphere