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The GEWEX water vapour assessment (G-VAP) – first results from inter-comparisons and stability analysis.

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In a Joint Letter from the Global Climate Observing System (GCOS) and the World Climate Research Programme (WCRP) the general need for coordinated international assessments of climate products was formulated. Such assessments are important mechanisms for improvements and to enhance and promote utilisation. The GEWEX Radiation Panel (GRP, renamed to GEWEX Data and Assessment Panel - GDAP) has initiated a Water Vapor Assessment in 2011, further on referred to as G-VAP. The major purpose of G-VAP is to:
• Quantify the state of the art in water vapour products being constructed for climate applications, and by this;
• Support the selection process of suitable water vapour products by GDAP for its production of globally consistent water and energy cycle products.
The usage of products within GDAP activities essentially implies to study long-term data records.
Since the start of G-VAP in 2011 two workshops have been conducted. The results of these workshops together with feedback from the first GDAP meeting were used for setting up the G-VAP assessment plan. This plan (available at www.gewex-vap.org) summarizes scope and goals of the assessement, introduces science questions and provides details on the planned technical and scientific activities.
Major elements of G-VAP are:
• All three parts of the GCOS Essential Climate Variables (ECV) on water vapour and their consistency are considered: Total Column Water Vapour, Upper Tropospheric Humidity as well as water vapour profiles and their related temperature profiles;
• The assessment focuses on overall characteristics of participating satellite data records and reanalyses as determined from inter-comparison and comparisons against in situ observations as well as against ground-based products;
• In this characterisation process the data records are not ranked according to their quality. Rather, the application areas and requirements of the individual data records as well as the GEWEX requirements are documented;
• G-VAP will provide a database that includes collocated products and validation data of sufficient quality and long-term stability to be the main repository for the current assessment.

At the last G-VAP workshop in fall 2013 it was decided to assign highest priority to finalise the work on the data inventory as well as the inter-comparison, comparison to ground-based and in-situ data, stability analysis and the analysis of differences in trends using gridded data. Inconsistencies that have been observed during such analyses will be explained to the maximum extend possible.

A general overview of G-VAP will be given. The focus of the presentation will be on observed inconsistencies among the long-term satellite data records as observed by the (inter-)comparisons and the stability analysis. First explanations for observed inconsistencies will be given.