

**Construction and validation of the new NASA Water Vapor Project-MEaSUREs (NVAP-M) global water vapor dataset**

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The NASA Water Vapor Project (NVAP) is an existing dataset that provides gridded global total column and layered water vapor blended from a variety of satellite and radiosonde observations covering 1988-2001. This dataset was produced in several phases and provided to the science community, but was never reanalyzed. A reanalysis, as well as further extension of this dataset is currently being performed under the NASA Making Earth Science Data Records for Use in Research Environments (MEaSUREs) program and will be known as NVAP-MEaSUREs (NVAP-M). This effort will result in a stable, 24-year earth system data record (ESDR) covering 1987-2010. The existing NVAP dataset contains several time-dependent biases due to changes in data processing and retrieval algorithms over time. In order to remove these biases, NVAP-M processing focuses on the use of instruments that are available continuously over the extent of the NVAP-M period of record and that have recently undergone intercalibration efforts. In particular, we focus on the High Resolution Infrared Sounder (HIRS, on the NOAA polar orbiting satellites) and the Special Sensor Microwave/Imager (SSM/I, on the DMSP satellites) radiance datasets, as well as quality controlled radiosondes. Such efforts result in a consistent, stable brightness temperature record that, when combined with careful, time-independent algorithm selection, can be used to create a climate-quality record of global total column and layered water vapor. In contrast to the "one size fits all" product of the 1988-2001 heritage NVAP dataset, the NVAP-M product includes multiple production lines to facilitate use by a wide range of users for a variety of climate, weather, and hydrological applications. A daily, 1° climate-oriented product (NVAP-M-Climate) stresses a constant mix of data through time at a small cost to spatial and temporal resolution, while a weather-oriented component (NVAP-M-Weather) will seek to maximize use of all available data, at a time resolution of 2 - 4 times per day and a spatial resolution of approximately  $\Omega$  degree. An ocean-only (NVAP-M-Ocean) dataset is also available at the same spatial and temporal resolution as NVAP-M-Climate. The entire NVAP-M dataset will be available in the NASA Langley atmospheric science data center (ASDC) in early 2012; however preliminary results are currently being made available to science investigators for examination. This poster will highlight the input datasets and algorithms used to create NVAP-M, our collaboration with colleagues at NASA JPL, as well as some early validation and science results demonstrating the applicability of the data to a variety of research areas.