

The New NVAP-M (NASA Water Vapor Project - MEaSUREs) global water vapor dataset

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The NASA Water Vapor Project (NVAP) dataset is an existing earth system data record consisting of global blended total column and layered water vapor from a variety of sensors. This existing dataset provides gridded daily water vapor fields from 1988-2001, and has been used in a diverse assortment of climate, modeling, process, and weather studies. A current project under the NASA Making Earth Science Data Records for Use in Research Environments (MEaSUREs) program has reanalyzed this dataset and extended it from 1987-2010. This reanalyzed and extended dataset is referred to as NVAP-MEaSUREs (NVAP-M). Data inputs to NVAP-M include the High Resolution Infrared Sounder (HIRS), Special Sensor Microwave Imager (SSM/I), Atmospheric Infrared Sounder (AIRS), water vapor from Global Positioning System (GPS) radio occultation (RO), and radiosondes. NVAP-M is a stable, climate quality earth system data record (ESDR) that is free from the time-dependent biases caused by instrument additions/subtractions and algorithm changes found in the heritage NVAP dataset. The dataset is observation-based, has minimal influence from model outputs, and was created in collaboration with a separate MEaSUREs AIRS project at NASA JPL. NVAP-M aims to cater to a variety of user needs by featuring multiple data streams tailored towards studies occurring on both short and interannual timescales. NVAP-Climate stresses a constant mix of data through time at a small cost to spatial and temporal resolution. A similar product was produced covering only the global oceans (NVAP-Ocean). Meanwhile, the weather-oriented component (NVAP-Weather) uses a changing assortment of inputs to provide higher spatial and temporal coverage at the cost of long-term temporal stability. The 24-year NVAP-M water vapor record is being made available to experienced potential users for preliminary investigation, and several examples of available products and preliminary results will be shown. The final dataset will be publicly available in the NASA Langley Atmospheric Science Data Center (ASDC) in the first quarter of 2012.