



The GRUAN GNSS PWV Task Team

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Water vapour is the most important greenhouse gas as it is responsible for about 60% of the natural greenhouse effect. There are vigorous discussions within the research community regarding whether stratospheric humidity has changed and whether any further change is expected to influence the Earth's energy budget. At the same time, water vapour measurements, particularly around the tropopause, are afflicted with high measurement uncertainties. Even key mechanisms controlling humidity in this region are not fully understood, leading in turn to significant deficiencies in the predictive skill of global climate models. Currently, satellites and research-quality instruments on aircraft and balloon platforms are the main sources of humidity measurements around the tropopause. Differences between these measurement systems have been difficult to reconcile.

Established in 2006, the Global Climate Observing System (GCOS) Reference Upper-Air Network (GRUAN), is an international reference observing network of sites measuring essential climate variables above the Earth's surface, designed to fill an important gap in the current global observing system. GRUAN measurements are providing long-term, high-quality climate data records from the surface, through the troposphere, and into the stratosphere. These are being used to determine trends, constrain and calibrate data from more spatially-comprehensive observing systems (such as satellites and radiosonde networks), and provide appropriate data for studying atmospheric processes. GRUAN is envisaged as a global network of eventually 30-40 sites that, to the extent possible, builds on existing observational networks and capabilities.

The GRUAN Global Navigation Satellite Systems (GNSS) Precipitable Water (GNSS-PW) Task Team (TT) was established in summer 2010 as one of then six GRUAN TTs. TTs are charged with addressing critical GRUAN requirements. Ground-based GNSS-PW was identified as a Priority 1 measurement for GRUAN, and the GNSS-PW TT's goal is to develop, update and assist implementing explicit guidance on hardware, software and data management practices to obtain GNSS-PW measurements of consistent quality at all GRUAN sites. This presentation gives an overview of GRUAN, specifically work of the GNSS-PW TT, and will highlight areas of common interest to atmospheric, climate and geodetic communities.