

1086-86-1377

Guojun Gu*, Guojun.Gu-1@nasa.gov, and **Robert F. Adler**. *Diagnosing Variabilities/Changes in Global Precipitation Patterns during 1979-2010 Using Satellite-Based Measurements.*

This study summarizes our recent results of exploring how global precipitation and associated spatial patterns may vary on the interdecadal/long-term time scale during past three decades, specifically to what extent the spatial structures of precipitation changes could be related to surface temperature change. Satellite-/station- based measurements including the monthly precipitation product from the Global Precipitation Climatology Project (GPCP) and the SSM/I&SSMIS oceanic columnar water vapor are applied. Global mean surface temperature have been increasing during the time period. However, the water vapor and precipitation patterns of change do not reflect the pattern of surface warming, in particular in the tropical Pacific basin. Hence in addition to global surface warming likely due to anthropogenic forcing, other natural variabilities have also played a role. EOF analyses of longer-record (1949-2010) SST anomalies within the Pacific basin (60NS) and over the global oceans confirm the existence of a strong climate regime shift around 1998/1999, which might be associated with the Pacific Decadal Variability (PDV). Therefore, the observed linear changes/trends in precipitation and tropospheric water vapor result from a combined impact of global mean surface warming and PDV. (Received September 21, 2012)