

STEM Education for Learners about surface PWV

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Abstract-The precipitable water vapor (PWV) is the total atmospheric water vapor of a unit cross-sectional area in a vertical column that extends from the surface of the Earth to the highest point of the troposphere. This parameter is crucial for numerical weather prediction, hydrological cycles, and climate changes. The study investigates a possible relationship of PWV with terrestrial climate response from 2017 to 2021 in Thailand. The points that are included in the study belong to 21 places from central Thailand, 10 places from eastern Thailand, 15 places from northern Thailand, 24 places from northeast Thailand, 26 places from southern Thailand, and 8 places from western Thailand. The results showed that each place has a different trend of PWV. The possible relationship suggests that the surface of the Earth becomes warmer during solar-coupled geomagnetic activity. Other climate parameters such as humidity, temperature, precipitation, wind speed, pressure, and sea level pressure are included in the study and their correlation with PWV using Taylor's correlation plots is investigated. The result showed a kind of significant relationship ($0.45 < R^2 < 0.93$) between PWV with climate parameters.

Keywords: Humidity, Precipitable water vapor, STEM Education, Temperature, Wind speed