Using carbon monoxide (CO) as an atmospheric tracer, a team funded by the PMDAP studied the dynamics of Venus' deep atmosphere layer, known as the troposphere. CO was not correlated to cloud thickness, but may be linked to surface topography and local time.

**In-situ measurements of the deep atmosphere of Venus are rare as they often require descending in the hot and high pressure environment.**

**Remote sensing at certain wavelengths allows us to study the troposphere and indeed the surface of Venus from Earth and from orbit.** Night side thermal emissions in the near-infrared from 1.0 to 2.6 µm are used to study the surface and the troposphere to the base of the clouds.

**Using thermal imaging data from the VIRTIS instrument on Venus Express, a long-term study using all available data spanning 2.5 years was conducted.**

**This study retrieved tropospheric carbon monoxide (CO) at 35-40 km altitude using the 2.35-µm band to create views of global, time averaged CO. This study helps to better understand the dynamics of Venus' deep atmosphere.**

**Concentrations in CO peaked near local midnight. CO showed no correlations with the thickness of the overlying clouds, which was thought to bring CO depleted air from high up to the troposphere.**

**There is a region where CO might be correlated a topographic high near the equator, perhaps due to vertically propagating gravity waves. This adds more evidence that topography affects the entire atmosphere.**

Citation: Tsang and McGouldrick 2017, Icarus 289, 173-180