

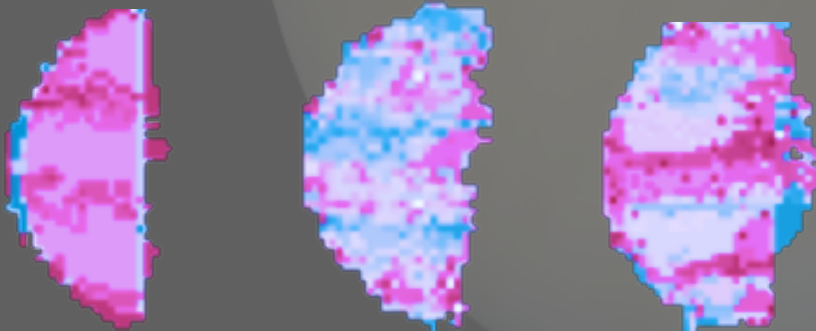
Maps of the Dynamic Venus Sub-Cloud Atmosphere

Simultaneous CO and OCS maps show a strong anticorrelation



These maps reveal dynamical processes and chemical conversion of CO to OCS in the lower atmosphere.

Water vapor displays surprising variability and banding patterns



The banding patterns change on daily timescales and may be due to rainout events into the sub-cloud atmosphere

Qualitative color key (applies to all maps)

Less Average More

The first ground-based maps of Venus' sub-cloud atmosphere measured simultaneously over 1-2.5 μm reveal the interrelationship of multiple chemical species – and a lower atmosphere as dynamic as that above the clouds

- Strong banding patterns in water vapor are seen near the bottom of the cloud deck (~45 km) that may be indicative of cloud rainout
- Inexplicably, CO, OCS, H₂O, H₂SO₄, and SO₂ are more abundant in one hemisphere than the other, and some of these dichotomies shift hemispheres over a year
- Many species display correlation or anticorrelation with each other indicative of linked chemical and physical processes: e.g. CO and OCS, and H₂O, H₂SO₄, and cloud opacity
- Venus is a likely end state for terrestrial planet evolution, and hazy exo-Venuses may be common. **Understanding our sister planet can help us understand similar planets elsewhere.**