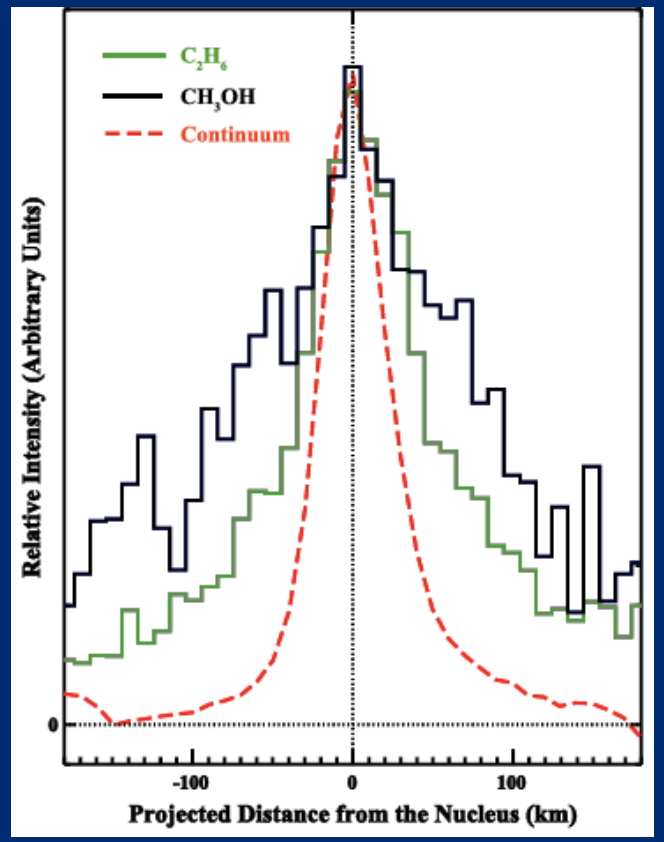
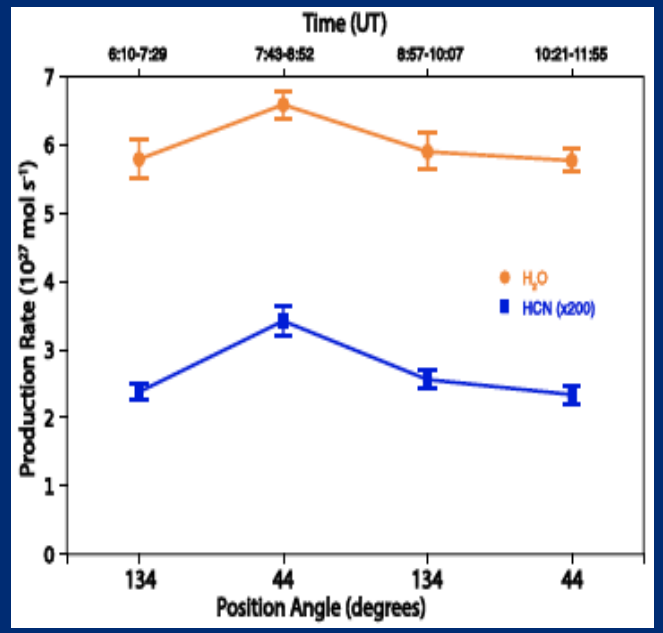
A Campaign to Characterize the Volatile Chemistry of 46P/Wirtanen



Distinct volatile associations for CH_3OH and C_2H_6[3].



Relative chemical abundances are constant over a rotation period and with slit geometry[3].

- Over eleven nights, more than forty-two hours of spectra were obtained on Wirtanen with the two most powerful and recently commissioned infrared spectrometers[1].
- Wirtanen appears sulfur depleted with the lowest OCS/H_2O abundance measured in any comet[2].
- Wirtanen ices have among the highest alcohol-to-aldehyde ratio measured in a comet[3].
- Wirtanen provides further evidence for depletion of hypervolatiles in Jupiter-family comets[4].
- Evidence for a common nucleus association of C_2H_6, C_2H_2, and HCN ices distinct from H_2O and CH_3OH[5,6].
- Chemical abundances show little variability during a rotation period, suggesting a chemically homogeneous active areas[3].

46P/Wirtanen: Unprecedented compositional data from a ground-based infrared study

[1]Dello Russo et al. (2019) Vol. 13, EPSC, EPCS-DPS 2019-742-1
[2]Saki et al. (2021) Ap. J. 160:184. https://doi.org/10.3847/1538-3881/aba522
[3]Khan et al. (2021) PSJ 2: 20 https://doi.org/10.3847/PSJ/abc95c
[4]McKay et al. (2021) PSJ 2: 21 https://doi.org/10.3847/PSJ/abd71d
[5]Bonev et al. (2021) AJ. In press.
[6]Roth et al. (2021) PSJ 2: 22 In press.