ABSTRACT:
We present HST WFC3 transmission spectra for three hot Jupiters using the G141 low-resolution grism. We find evidence for water absorption in the upper atmosphere of HAT-P-1b and WASP-17b, with a significant cloud deck observed in the spectra of WASP-31b. This demonstrates an example of atmospheric diversity in similar worlds.

OBSERVATIONS:
We conducted single transit observations of three hot Jupiter exoplanets using HST/WFC3 in the near-IR from 1.1-1.7μm. HAT-P-1b and WASP-31b were observed in the newly available spatial scan mode as part of program GO 12473 (D.K. Sing, 2012)\(^a\), while WASP-17b was observed in staring mode as part of GO 12181 (D. Deming, 2011)\(^b\).

ANALYSIS:
We use custom routines to extract the spectra from each exposure and conducted white light analysis on each transit to determine a wavelength independent systematic model as well as individual parameter fitting for each wavelength channel. The main systematic is that of HST’s thermal changes along its orbit which we fit with a polynomial to HST phase with the order determined by reducing the BIC in the white light fit.

REFERENCES:
* D.K. Sing, H.R. Wakeford et al. in prep

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IMAGE CREDIT:
HAT-P-1b (NASA/JPL-Caltech); WASP-31b (cf. harvard); WASP-17b (NASA)

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