Explaining clear-sky color might seem to be easy: murmur a few words about the blue bias of Rayleigh scattering and pair this with the human visual system's spectral response. But our eyes daily show us that such explanations are incomplete. In fact, a far better question to answer is "Why isn't the clear sky always the *same* color everywhere?" Here I use hyperspectral imaging to analyze two important variants on canonical blue skies: clear-sky colors in haze and during twilight.

Haze's visible effects on clear daytime skies may seem mundane: significant scattering by tropospheric aerosols visibly (1) reduces the luminance contrast of distant objects and (2) desaturates sky blueness. Hyperspectral imaging along sky meridians of clear and hazy skies at several sites shows that they have characteristic colorimetric signatures of scattering and absorption by haze aerosols. In addition, a simple spectral transfer function and a second-order scattering model of skylight reveal the net spectral and colorimetric effects of haze.

Twilight clear-sky colors depend on the combined spectral effects of molecular scattering, extinction by aerosols, and absorption by ozone. Molecular scattering alone cannot produce the most vivid twilight colors near the solar horizon, for which aerosol scattering and absorption are also required. Less well known are haze aerosols' effects on twilight sky colors at larger scattering angles, including near the antisolar horizon. To analyze this range of colors, 3D Monte Carlo simulations of skylight spectra are compared quantitatively with clear twilight spectra measured over a wide range of aerosol optical depths. Collectively these data indicate that: (3) the purest antisolar twilight colors would occur in a solely molecular, multiple-scattering atmosphere, whereas (4) the most vivid solar-sky colors require at least some turbidity.