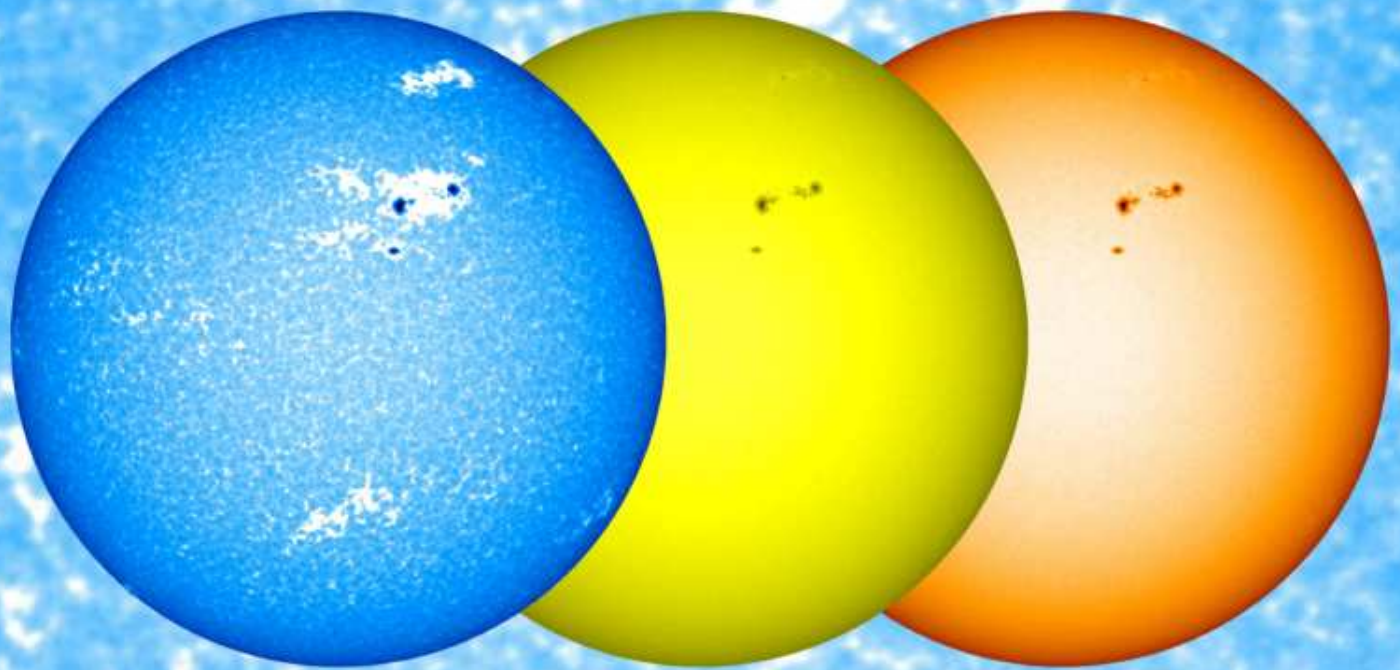
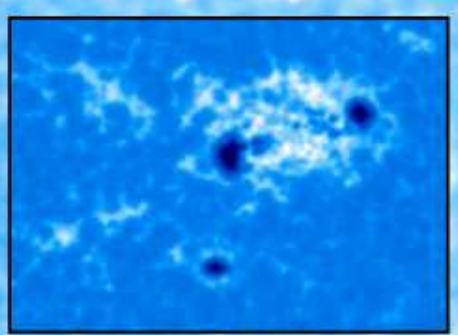
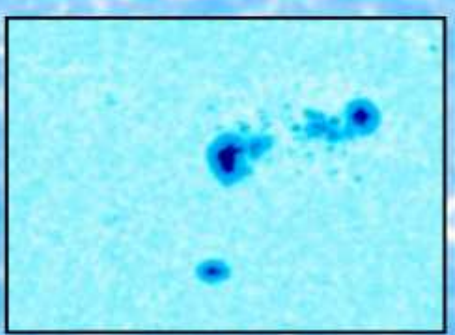
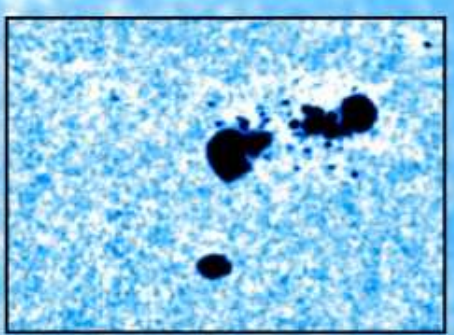
SunRISE PSPT









The precision Solar Photometric Telescope Project (PSPT) is funded by the National Science Fundation Atmospheric Science (ATM) and Astronomy (AST) divisions to provide high-resolution and high photometric precision full-disk solar data for the solar research community. This experiment is designed to help us understand the mechanisms and origins of the 11 year solar irradiance and luminosity variations. The specialized telescope, which uses atmospheric image compensating optics and a new high dynamic range 2048x2048 pixel CCD camera, was developed and constructed by the National Solar Observatory at Sacramento Peak, New Mexico. Three PSPT instruments located at Rome, Italy, Sunspot, New Mexico, and Mauna Loa, Hawaii will provide continuous observation of the Sun.

Lower left insert: Close-up of the PSPT located at the National Solar Observatory, Sacramento Peak, New Mexico. The reflection off the objective lens shows sunset over the San Andres Mountains.

Middle inserts: The left-most image was obtained through a narrow-band filter centered at the wavelength of CaII K (393 nm). The bright and dark features here trace the influence of solar magnetic fields near the solar photosphere. The middle and right-most images show the continuum brightness variations in two narrow passbands at red (607 nm) and blue (409 nm) wavelengths. The continuum brightness changes seen here are fractionally smaller than the CaII K brightness variations, and are used to trace small temperature changes in the solar photosphere. To see effective temperature changes as small as a few degrees Kelvin these images have had the smooth center-to-limb brightness variations subtracted.

Upper inserts: (left-to-right) CaII K, blue, and red continuum full-disk images obtained with the PSPT located at Mauna Loa Solar Observatory (HAO), Hawaii.

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