40.03 On the Reality of a Boundary in the H-R Diagram between Late-Type Stars and the Without High Temperature Outer Atmospheres. T. Simon, J-L. Linsky, and R.K. Ulrich, UVSA, JILA, and NASA. We test the hypothesis of Linsky and Haisch that a boundary exists in the H-R Diagram separating yellow giant stars (V < 0.82), which typically show evidence of $10^5$ K plasma, from red giant stars and supergiants (V > 0.80), which typically show little or no evidence of any plasma hotter than $10^4$ K. We discuss the H-R 1150-2000 A resolution spectra of 39 late-type stars of luminosity class IV. One test involves deeply exposed spectra of 14 stars chosen to constitute a "reverse bias" sample; that is, stars to the left (larger Teff) of the proposed boundary were chosen to likely have the smallest amounts of $10^5$ K plasma, whereas stars to the right were selected to likely have the largest amounts of $10^5$ K plasma. Despite this reverse bias, we observe C IV emission in four of the six stars to the left, and except for 56 Peg, which is a spectroscopic binary, we detect no C IV emission in the stars to the right. Using the entire sample, we find that they all show the yellow continuum and supergiants show C IV emission, but there is a range of nearly two orders of magnitude in $\log{10}$ $\frac{C_IV}{H_\alpha}$. Except for two spectroscopic binaries and one hybrid star, none of the 18 red giants show prominent C IV emission and upper limits on $\log{10}$ $\frac{C_IV}{H_\alpha}$ are in many cases an order of magnitude smaller than the weakest detection among the 21 stars to the left. We therefore conclude that the Linsky-Haisch transition region boundary is a real phenomenon in the sense that single stars to the right of the boundary, with the exception of hybrid stars, contain significantly less $10^5$ K plasma than typical single stars to the left of the boundary.

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40.05 Observations of a Low Velocity Stellar Wind in the Be star $\eta$ Cen. R.S. Pollard, Princeton U. Observatories, and H.W. Copernicus Far ultraviolet (1300-1420) observations of the Be star $\eta$ Cen from 1975 through 1980 are discussed. Low resolution (0.2A) observations reveal a spectrum very similar to the normal B1 IV star but for the lines of SiIII and FeIII. These lines are significantly stronger in $\eta$ Cen. High resolution (0.05A) observations of the SiIII and FeIII lines show them to be asymmetrical. Analysis of these lines shows that they are not complex shell lines but rather are lines formed in a strong, low terminal velocity stellar wind. Reasonable fits to the observed line profiles (except at line center) can be obtained using the theoretical profiles of Castor and Lamers (Ap. J. Suppl. 1979, 39, 481). This analysis yields a mass loss rate of $\frac{\dot{M}}{\rho} \approx 10^{-7} M_{\odot} yr^{-1}$ and a velocity of $\approx 150$ km s$^{-1}$. No emission component is seen. Variations observed in the wind strength and/or structure during the observing period are seen. No significant variation in the terminal velocity was observed. Models for the mass outflow in $\eta$ Cen are discussed and the occurrence of similar winds in other Be stars is explored. This work is supported by NASA Contract NAS5-23576.

40.06 IUE Echelle Mode Observations Contrasting Coronal and Non-Coronal Late Type Giant and Supergiant Stars. M.R. Dowling, Queen Mary College, London, U.K. Linsky, J. L. JILA, and NASA. G. Jordan, O. Eol, and O. Eol, O. Eol, O. Eol, O. Eol, O. Eol, O. Eol. We report on a series of high resolution, far ultraviolet observations of late type stars observed during 1981 with the IUE satellite. Two stars, Beta Dra (G2 II) and Beta Cet (K1 III), both exhibit soft X-rays and high temperature far UV emission lines indicative of solar-like corona and transition regions, and a total ion 193 minutes (193 minutes of the IUE record) and 795 minutes, respectively. These stars represent the most luminous and the coolest stars, respectively, for which there is evidence for both corona and transition regions. In contrast, Alpha Ori (M2 Iab) which lacks any evidence for material hotter than about 20,000 K, shows bright emission lines of S II and Si II in its 930 minute exposure. The faint 'continuum' also was detected, possibly due to numerous faint atomic or molecular emissions. Lines of Fe II and Fe III were also found, indicating the presence of moderately high energy electrons (10 eV) for such a cool atmosphere. Finally, an 1040 minute exposure of the Na II binary 56 Peg was obtained. The breadth of the emission lines is comparable to that found in $\beta$ Dra, raising the interesting question about the influence of the white dwarf on the red giant. These data will be discussed in terms of the emission measures, line profiles and energy balance which can be deduced therewith.

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40.07 A Metallicity Calibration of Absorption-Line Strengths in K Giant Stars. S.M. Faber, B.D. Piet, IUE Obs., NASA. We have compared absorption-line strengths in 10 K giant stars with published values of $\text{Fe/H}$. Spectral features were measured on moderate-dispersion IUE spectra, including two iron-peak blends and TiO in addition to the usual strong features CN, CH, Mg II, Na I, and NaII. Trends with effective temperature have been allowed for and removed.

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