Seminar on:
Connection of Pacific Decadal Oscillations (PDO) to Grassland Plant Production in the Great Plains

Observed plant production (NPP) and remote sensing NPP from 1982-2014 suggest a strong correlation of mean grassland plant production (NPP) and annual variability in the Central Great Plains to the Pacific Decadal Oscillation (PDO). Results show that mean annual NPP during the cool phase PDO (1999-2014) is lower (-5 to -20%) with higher annual variability (+100%) compared to the warm phase PDO (1982-1998). Grassland NPP is strongly correlated to spring actual evapotranspiration rates (AET - April to June). Analysis of spring AET from 1978-2014 show that AET in the Central Great Plains during the cool phase PDO (1999-2014) has a lower mean annual AET with higher variability (+100%) compared to the warm phase PDO (1978-1998). Results for the Northern Great Plains show the opposite pattern with lower variability in spring AET during the cool phase PDO as compared to the warm phase PDO. In the Southern Great Plains, mean annual spring AET is much lower (-50%) during the cool phase PDO as compared to the warm phase PDO. Our results suggest that Grassland NPP and spring AET in the Central Great Plains should be higher and less variable during the next 20 years because of the recent change to the warm phase PDO pattern.