Abstract: One distinct climate feature associated with global warming is the widespread decrease of diurnal temperature range (DTR) that has been observed over land since 1950 due to a larger warming in nighttime minimum air temperature (Tmin) than in daytime maximum air temperature (Tmax). Although the warming trend of mean surface air temperature and the decreasing trend of DTR are closely related, the former has been largely attributed to anthropogenic forcing while the latter to increased cloud cover. The question remains as to what is primarily responsible for the observed DTR decrease and whether this decrease is attributable to human activities. Three case studies that address this question will be described in the brownbag session:

1. Analyzing observed spatial patterns of Tmax, Tmin and DTR trends from 1950-2004 and their dependence on climate regions defined in terms of climatological precipitation.
2. Comparing trends and variability in Tmax, Tmin, and DTR over land in observations with multiple model simulations from 12 global coupled atmosphere-ocean general circulation models for the latter half of the 20th century.
3. Quantifying feedbacks of changing land surface properties on DTR in a climate model.

In addition, mechanisms responsible for DTR changes at various spatial and time scales will be discussed and future work will be outlined.