

# **Climate classification of Asian university forests under current and future climate**

## **Abstract**

Species diversity and the distribution of forests are closely related to climate, and climate classifications have been used to characterize vegetation distribution for over a century at the global scale. In contrast, climate type and dominant forest species may not be accurately classified at the forestry stand scale due to limited observational data and the influence of terrain. The collaboration of Asian university forests traverses 37.4° of latitude, from Hokkaido in Japan to Sabah in Malaysia. This study used both long-term observations and Worldclim 1-km resolution gridded datasets to classify well-managed Asian university forests according to the Trewartha climate classification method. Outputs from circulation models of the Coupled Model Inter-comparison Project Phase 5 (CMIP5) were then used to assess projected changes in future climate. Results showed that the current climate subtypes of the Asian university forests were consistent between the observations and Worldclim database. Ensemble projections of future climate suggested two likely drastic forest changes under a moderate emissions scenario during 2041–2060; parts of the Seoul National University Forests are likely to shift from a temperate to a subtropical climate, while sections of forests in Thailand are likely to shift from a subtropical to a tropical climate.