Spatially distributed ET rates can be estimated with the help of a new, calibration-free ET mapping (CREMAP) approach. The method requires MODIS daytime surface temperature (T_s) data and employs the Priestley-Taylor (1972) equation as well as the WREVAP model (Morton et al. 1985) with air temperature, humidity and global radiation inputs for estimating the regional ET rate which is subsequently disaggregated by the T_s values. Due to its simplifying assumptions it is expected to perform best over a flat-to-rolling terrain with fairly good and varied vegetation cover where the complementary relationship of evaporation (Bouchet 1963) is valid. Under these conditions it is currently expected to regionally outperform most global ET estimation techniques, as it indeed significantly outperformed a recently improved and updated such ET estimation algorithm over the Republican River basin in the US. Since the model does not have any parameters to calibrate and requires minimal data input, it is very easy to use and readily transportable between geographic regions where the above pre-requisites are met.