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Introducing a framework to improve estimation of actual evapotranspiration using MODIS images with SEBAL algorithm

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To have an accurate estimation of actual evapotranspiration, it is a good idea to use every-day images of MODIS. But under clouded condition, it is difficult to have appropriate images and also it is time-consuming to interpret all those images. Therefore, in this paper, we tried to choose the appropriate images to improve estimation of actual evapotranspiration. For this purpose, we introduced a framework to choose appropriate dates to produce best estimation of actual evapotranspiration.
On the other hand, finding the location of dry (hot pixel) and wet (cold pixel) endpoints of evapotranspiration spectrum is so important. We dealt with this problem by employing the statistical procedure for automated selection of cold and hot pixels. We also visually reviewed the location of hot and cold pixels using land cover image to ensure that the most appropriate pixels had been selected.
To integrate evapotranspiration over time, the linear and spline interpolation techniques were applied. Also, based on the precipitation rates during 5 days before the date of image and the mean seasonal amount of evapotranspiration, we found a logarithmic equation to produce the best estimation of evapotranspiration during the given time. Results showed that the logarithmic equation could produce more accurate estimation of evapotranspiration rather than linear interpolation.