http://fromgistors.blogspot.jp/2014/01/estimation-of-land-surface-temperature.html

There are several studies about the calculation of the Land Surface Temperature. For instance, Landsat 8 provides two thermal bands (bands 10 and 11) that could be used with split-window methods. However, *"given the larger uncertainty in the Band 11 values, users should work with TIRS Band 10 data as a single spectral band (like Landsat 7 Enhanced Thematic Mapper Plus (ETM+)) and should not attempt a split-window correction using both TIRS Bands 10 and 11"*(from <http://landsat.usgs.gov/calibration_notices.php>).

Alternatively, there are methods that use the NDVI for the estimation of land surface emissivity, or using a land cover classification for the definition of the **land surface emissivity** of each class (see the yellow frame at the end of this post).

In this tutorial we are going to use a land cover classification for the definition of surface emissivity, which is required for the calculation of the **Land Surface Temperature**. The following phases are required:

1. Conversion of raster bands from DN to reflectance and At Surface Temperature
2. Land cover classification of study area
3. Reclassification of the land cover classification to emissivity values
4. Conversion from At Surface Temperature to Land Surface Temperature

http://www.ecoris.co.jp/contents/rastertool.html

http://www.scopus.com/results/results.url?sort=plf-f&src=s&imp=t&sid=B32678A18238BD152ABFD6D475D5D0BB.fM4vPBipdL1BpirDq5Cw%3a10&sot=inw&sdt=a&sl=18&s=AU-ID%2824449249600%29&origin=inward&txGid=B32678A18238BD152ABFD6D475D5D0BB.fM4vPBipdL1BpirDq5Cw%3a1

emissivity http://www.coleparmer.com/TechLibraryArticle/254

we use land use data form website

LUCC code

http://nlftp.mlit.go.jp/ksj/gml/datalist/KsjTmplt-L03-b.html **国土数値情報　土地利用細分メッシュデータ**　です。

http://nlftp.mlit.go.jp/ksj-e/index.html

. The numerical data-base of the National Land Agency provides land-use

information for each 100 m x 100 m mesh [16]. S

National Land Numerical Information

Ministry of Land, Infrastructure, Transport and Tourism: *National Land Numerical Information*<<http://nlftp.mlit.go.jp/ksj-e/index.html>> (2014).

Tab National Land Numerical Information Land use data and emissivity assigned

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Land use | Emissivity |  |
| 0100 | Rice paddy | 0.95 |  |
| 0200 | Farming land | 0.96 | Crop farming |
| 0500 | Forest | 0.97 |  |
| 0600 | Vacant land | 0.93 |  |
| 0700 | Buildings | 0.94 | Urban area |
| 0901 | Road | 0.92 |  |
| 0902 | Railway | 0.93 |  |
| 1000 | Other lands | 0.92 | Ground land |
| 1100 | Inland water | 0.99 | Rivers, Lakes |
| 1400 | Seashore | 0.96 |  |
| 1500 | Ocean water | 0.99 |  |
| 1600 | Golf Courses | 0.97 | Golf Courses, parks |

Year Sensor Date

(yyyy–mm–dd)

Path/row Location Spatial resolution

(m)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Path/row | Date | Path/row | Date | Path/row |
| 2014-03-19 | 108/29 | 2014-04-13 | 107/29 | 2013-07-08 | 106/29 |
| 2014-04-20 | 108/30 | 2014-04-29 | 107/30 | 2013-07-08 | 106/30 |
| 2014-04-20 | 108/31 | 2014-04-29 | 107/31 | 2013-07-08 | 106/31 |