

→ 7th ADVANCED TRAINING COURSE ON LAND REMOTE SENSING

4–9 September 2017 | Szent István University | Gödöllő, Hungary



EARTH OBSERVATION OF WATER RESOURCES (SEBS)

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Exercise 1: Preparing MODIS data for SEBS

Exercise Steps:

- Preparing the software for MODIS products
- Ordering and downloading the MODIS Level_1B data
- Viewing and Getting familiar with the MODIS data products (HDF datasets) used in this exercise

LAADS S&O [1]: MOD021K x

Secure https://ladsweb.modaps.eosdis.nasa.gov/search/order/1/MOD021KM--6,MOD03--6

Apps Save to Mendeley Other bookmarks

NASA LAADS DAAC

About LAADS Find Data Data Discovery Quality Help Profile

1 PRODUCTS 2 TIME LOCATION FILES REVIEW & ORDER

Search by Product

Online Archive

Filename Search

Image Viewer

Load/Save Search

Past Orders

Products (Collection) x No data selected. No location selected. No files selected. reset

MODIS:Terra Select a Collection

Products (Collection) x

Add product

MOD021KM (6) x

MOD03 (6) x

All Collection (6 + MODIS Collection 6 - Level 1, Atmosphere, Land) keyword

Clear Selected Products

All [56]

Level-0 / Level-1 [7]

MODIS Terra, Aqua [7]

Atmosphere [10]

Aerosol [2]

Water Vapor [1]

Cloud Properties [1]

Atmosphere Profiles [1]

Cloud Mask [1]

Joint L2 Atmosphere Product [1]

L3 Atmosphere Product [3]

Land [30]

Radiation Budget Variables [16]

Land Surface Reflectance [7]

Land Surface Temperature & Emissivity [9]

MOD00F MODIS TERRA Level 0 Raw Instrument Packets (5 minutes)

MOD01 Level 1A Scans of raw radiances in counts

✓ MOD021KM Level 1B Calibrated Radiances - 1km

MOD02HKM Level 1B Calibrated Radiances - 500m

MOD02OBC Level 1B Onboard Calibrator/Engineering Data

MOD02QKM Level 1B Calibrated Radiances - 250m

MOD02SSH MODIS/Terra Level 1B Subsampled Calibrated Radiances 5km

✓ MOD03 Geolocation - 1km

MOD04_3K MODIS/Terra Aerosol 5-Min L2 Swath 3km

NASA Goddard Level-1 and Atmosphere Archive & Distribution System Privacy Policy and Important Notices

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Install ILWIS and Sentinel-3 toolbox

Four Main Processing Steps

- **Reprojecting & converting MODIS level-1B data using ModisSwathTool software**
- **Importing MODIS images into ILWIS**
- Pre-processing for SEBS
- Applying SEBS model for estimation of evapotranspiration

Pre-processing for SEBS

- Raw to radiance/reflectance
- Brightness temperature computation
- Water vapor content estimation
- SMAC for atmospheric correction
- Land surface albedo computation
- Land surface emissivity, NDVI, and vegetation proportion difference computation
- Land surface temperature computation

Applying SEBS model for estimation of evapotranspiration

- Input of the satellite observation data
- Input of the meteorological information
- SEBS computation
- Verification the outputs and comment

Main output data

sebs_evap: Evaporative fraction

sebs_daily_evap: daily evaporation

sebs_evap_relative: relative evaporation

sebs_G0: Soil heat flux

sebs_H_dry: Sensible heat flux at the dry limit

sebs_H_i: Sensible heat flux

sebs_H_wet: Sensible heat flux at the wet limit

sebs_Rn: Net radiation

sebs_LE: Latent heat flux