October 28, 2021

# **JPL**

**Jet Propulsion Laboratory**

California Institute of Technology

AUTHORS: Gregory Halverson

SUBJECT: ECOSTRESS Collection 2 Level 2-3-4 Tiled and Gridded Products **v1.0.18** Delivery Memo – Rev 1

1. **Introduction**

This is a delivery of **preliminary prototypes** for the Level 2-3-4 Tiled and Gridded Products subsystem for ECOSTRESS Collection 2 Cloud-Enabled PCS operation, named **version 1.0.18** for Integration and Testing in ECOSTRESS SDS **Build** **0700**. This Python software package includes PGEs that generate tiled and gridded forms of ECOSTRESS radiance and surface temperature, runs the STARS data fusion system, and processes the PT-JPL-SM and disALEXI-JPL evapotranspiration models.

1. **Capabilities and Features**

* Exit code 13 is returned when DisALEXI tile falls outside of NLCD

1. **Build/Run Requirements**

The tiled and gridded products subsystem is designed to run in a python 3 conda environment using Miniconda:

<https://docs.conda.io/en/latest/miniconda.html>

For cloud-enabled operations, this subsystem also runs within a Docker container:

<https://www.docker.com/products/docker-desktop>

1. **Build Instructions**

**GitHub**

To install this software, first clone the ECOSTRESS-Collection-2 repository from the ECOSTRESS GitHub team page.

$ git clone git@github.jpl.nasa.gov:halverso/ECOSTRESS-Collection-2.git

Navigate to the directory this created:

$ cd ECOSTRESS-Collection-2

**Docker**

These are instructions for running this system using Docker containers.

The Docker image for this system is kept in an Artifactory repository:

cae-artifactory.jpl.nasa.gov:16001/gov/nasa/jpl/ecostress/sds/pge/pge-eco-level-2-3-4

The 16001 port is for local testing. Use port 16002 for Integration & Testing procedures, and 16003 for deployment.

To login to Artifactory:

docker login cae-artifactory.jpl.nasa.gov:16001/gov/nasa/jpl/ecostress/sds/pge/pge-eco-level-2-3-4

To pull the image from Artifactory:

docker pull cae-artifactory.jpl.nasa.gov:16001/gov/nasa/jpl/ecostress/sds/pge/pge-eco-level-2-3-4

To tag the image:

docker tag cae-artifactory.jpl.nasa.gov:16001/gov/nasa/jpl/ecostress/sds/pge/pge-eco-level-2-3-4 pge-eco-level-2-3-4

**Conda**

These are instructions for running this system natively using conda.

Use the  make install script to produce the ECOSTRESS  environment:

(base) $ make install

This should produce a conda environment called ECOSTRESS in your Anaconda installation. An environment is a separate python installation with a particular set of packages installed.

To update your installation of the evapotranspiration environment, first update your copy of the distribution repository:

$ git pull

Then update the ECOSTRESS environment using the make reinstall-hard script:

(base) $ make reinstall-hard

1. **Testing**

Unit tests are included to ensure that the system is operational. To run the unit tests, use nosetests inside the ecostress-l3-download-preprocess directory cloned from github:

$ nosetests -v

1. **Usage of Libraries and Executables Created in this Build**

**Docker**

The entry-points to execute the PGEs in the Docker image are BASH shell scripts named after each PGE with a .sh extension under a directory called PGE. To run a PGE with Docker:

docker run --rm -it -e PYTHONUNBUFFERED=1 -v /project/sandbox/halverso/ECOSTRESS\_15801\_013\_docker:/working\_directory -v /project/sandbox/halverso/ECOSTRESS\_15801\_013\_docker/L2G\_L2T\_RAD\_LSTE\_output:/L2G\_L2T\_RAD\_LSTE\_output pge-eco-level-2-3-4 /bin/bash /pge/L2G\_L2T\_RAD\_LSTE.sh /working\_directory/ECOv002\_L2G\_L2T\_RAD\_LSTE\_15801\_013\_20210419T215859\_0700\_01\_docker.xml

**Conda**

The ECOSTRESS conda environment needs to be activated to run the PGEs.

(ECOSTRESS) $ conda activate ECOSTRESS

The conda environment includes a command-line entry-point named after each PGE that accepts the filename of the XML run-config as its argument.

(ECOSTRESS) $ L2G\_L2T\_RAD\_LSTE run-config.xml

1. **Change Requests and Problem Reports**

There are no change requests or problem reports at this time.

1. **Liens and Waivers**

There are no leans or waivers at this time.

1. **Miscellaneous Instructions or Information**

There is no miscellaneous information at this time.