MUDAT User Manual

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1. Overview

MUlti **DAT**e Registration [MUDAT] is a software package developed at AIPD/DPSG/SIPA, Space Applications Center, Indian Space Research Organization for registration of RISAT-1 multi date data. The utility performs registration of RISAT-1 Level-2 Geo-Referenced multi-date products to the reference product and hence generates other dates registered products by resampling. The registered products are generated in the same format [CEOS/GeoTIFF] as the original product.

2. Getting Started

How to install and invoke software in Linux

    1) Open terminal.

    2) Navigate to software directory.

    3) Use command " ./linux-install.sh " without quotes.

    4) Application icon will be created on Desktop.

    5) Double Click on application desktop icon to launch the application.

How to invoke the software in Windows

    1) Navigate to software directory.

    2) Double Click on "Launch_MUDAT.jar" to invoke the application.

3. Package Utilities

The software package includes the following utilities:

1) Display of up to 10 unregistered and multi-date registered RISAT-1 Level-2 Geo-Referenced data products.
2) RGB Image Display Mode to assign different date images to R, G and B planes.
3) Full Resolution Display of Product Images with Zoom In and Zoom Out feature.
4) Histogram Adjustment of Product Images in both Gray Scale and RGB display Mode.
5) Numeric Dump Display of Product Images.
6) Display of binary image headers.

3.1 Input Window

In the product Band Meta file path specify the path for RISAT-1 Product Band Meta file (eg. ~path/WO_ID/BAND_META.txt). The output directory is to be specified for generation of registered products.

3.2 Control Window

The control window displays a decimated image along with region visible in Full Resolution Window. The window also contains the selection for Display Mode and links to open other utilities.

3.3 Full Resolution Window

Full Resolution window displays the image in full resolution based on product selection in Control Window. It allows you to set zoom level between 50%, 100%, and 200%. The option to configure Window Size allows the window size options from 500*500, 750*750 and 1000*1000. To achieve precise locations and pixel by pixel observation the keyboard arrow keys may be used to move the cursor in this window. The window also displays the scan and pixel location in image corresponding to cursor in this window and also the value of Red, Green and Blue components of the pixel at current cursor location.

3.4 Histogram

It displays the histogram of the image in Grayscale or RGB mode based on selection in control window. It also allows you to adjust the minimum and maximum of lookup values of the image. To adjust the lookup

value click and hold on the desired lookup marker and drag to desired position and release the mouse, the images in Control Window and Full resolution Window will be adjusted accordingly.

3.5 Numeric Dump Display

The Numeric Dump displays the value of pixel around the cursor location in Control Window in Grayscale or RGB display mode as selected in Control Window.

4. Directory Structure

The directory structure for the generated RISAT-1 registered product in the user selected "Output Directory" is as follows:

1. **Product Directory** [WOID_Registered]

      1.1 BAND_META.txt [Band Meta file : Input to software]

      1.2 Grid_file_Pol.txt [Grid file for each polarization]

      1.3 Product.xml [XML file for GeoTIFF product]

      1.4 **scene_Pol** [Folder containing product data files.]

            1.4.1. dat_01.001 [CEOS data file]

            1.4.2. lea_01.001 [CEOS leader file]

            1.4.3. nul_vdf.001 [CEOS null volume directory file]

            1.4.4. vdf_dat.001 [CEOS volume directory file]

            1.4.5. imagery_Pol.tif [GeoTIFF image file]

      1.5 **WOID_Registered_scene_Pol** [Folder containing extracted product files]

            1.5.1. DATA_FILE_PROCESSED.img [binary SAR image]

            1.5.2. auxillary_files.txt [Various auxiliary files extracted from CEOS product]

where WOID : WorkOrderID/ProductID as mentioned in BAND_META.txt
Pol : Polarization

5. Frequently Asked Questions

Problem: The utility does not open.
Solution: Ensure you have Java Runtime Environment installed for your current user.
        If JRE is installed read Getting Started section on instructions for first time users.

Problem: I get an error message saying "Application requires Java Runtime Environment v1.6 or higher".

Solution: Update your Java Runtime Environment to version 1.6 or higher.

You can check the current version installed on your system by typing "java --version " in command line.

You may obtain the recent version at http://www.oracle.com/technetwork/java/javase/ .

Problem: I get an error message saying "Data extractor initiation failed".

Solution: The above error may be caused due to following causes.

1. The data extractor [i.e. risat1_[ceos/geotiff]_extract_[linux/windows].exe] are not kept in "exe" folder. To resolve this please check the directory and check the extractor filename. If the extractor does not exist, re-download the software package.

2. The data extractor does not have executable permissions. To resolve this change the permissions of all files within software directory

i. To change permissions in Windows, Right click on software directory and select "Properties". In "Security" tab change permission of directory and similarly for all files within the directory to "Full Control".

ii. To change permissions in Linux, navigate to software directory in terminal and run command " chmod -R 777 * " without quotes.

Problem: The control window appears but image displayed is very dark or very bright.

Solution: Open the histogram utility and adjust the histogram for different polarizations.

Problem: All the products are not selectable in Control Window.

Solution: The software performs registration in background after data extraction and the product would be selectable after registration.

Problem: I get error message saying to correct or deselect product.

Solution: The mentioned product cannot be registered to the selected reference product due to mentioned error. To execute registration process either reload the correct products (taking care of the mentioned product parameter, if possible) else uncheck the box next to the reported product and press "Load".

For further help or feedback you may contact designers at

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