

# EARS Satellite Rainfall Image

## Overview

The EARS Satellite Rainfall Image is a special version of a standard binary BIL format; the file does not include any header information. The identifier for this reader is "EARS\_Satellite\_Rainfall\_Estimate" and the extension of the files is normally \*.prc. For each file to be imported no other header information file is required. The information on the grids that are imported need to be specified in the Delft-FEWS Grid.xml file.

The import module is developed to import daily rainfall files for the area of interest. More information on the EARS satellite rainfall format can be obtained from EARS (<https://www.ears.nl/>).

The import of EARS satellite data is implemented in FEWS 2018.02 version

## File format

For specification of the file format, check the BIL file format. The filename is used to retrieve the date information of the files. There is always one file per daily timestep; a standard filename pattern used is 'NI\_'yyyyMMdd'.prc' for importing files with a name NI\_20180101.prc

The \*.prc files uses a raw binary format without any headers.

The files represent a rectangular (in equal lat lon) area/grid of the area of interest. The example file has the following characteristics.

- `<npix>1002</npix>` -> nr of columns
- `<nscan>702</nscan>` -> nr of rows
- `<UL_lat>25</UL_lat>` -> latitude of upper left pixel
- `<UL_Long>-13</UL_Long>` -> longitude of upper left pixel
- `<Xangstep>0.03</Xangstep>`
- `<Yangstep>0.03</Yangstep>` -> pixel resolution: 0.03 x 0.03 degrees
- The 2 bytes integer pixel values represent precipitation in [mm \* 10].

## Configuration

The following configuration example shows what is required to import EARS satellite data into FEWS. The following files need to be adjusted:

- Locations.xml: to add the satellite location ID
- Grids.xml: for the grid characteristics
- Import\_SAT.xml: module instance that imports the data
- IDMapping file if a special parameter ID needs to be specified
- ModuleInstanceDescriptors.xml: For reference of the import module instance
- ImportUnitConversions.xml: If the units need to be converted on importing

For some of these files examples are provided below. Locations, ModuleInstanceDescriptors and ImportUnitConversions are standard FEWS configuration files.

Example of the locations.xml file element:

### Locations.xml

```
<location id="SATH_AFRICA" name="SATH_AFRICA">
  <shortName>SATH_AFRICA</shortName>
  <x>0</x>
  <y>0</y>
</location>
```

Example of the Grids.xml file element:

## Grids.xml

```
<regular locationId="SATH_AFRICA">
  <description>SATH Rainfall files</description>
  <rows>702</rows>
  <columns>1002</columns>
  <geoDatum>WGS 1984</geoDatum>
  <firstCellCenter>
    <x>-13</x>
    <y>25</y>
    <z>0</z>
  </firstCellCenter>
  <xCellSize>.03</xCellSize>
  <yCellSize>.03</yCellSize>
</regular>
```

An example import Module instance configuration file:

## Import\_SAT.xml

```
<timeSeriesImportRun xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/timeSeriesImportRun.
xsd">
  <import>
    <general>
      <importType>EARS_Satellite_Rainfall_Estimate</importType>
      <folder>${IMPORT_FOLDER}\SATH</folder>
      <fileNameObservationDateTimePattern>'NI_'yyyyMMdd'.prc'<
/fileNameObservationDateTimePattern>
      <idMapId>IdImportSAT</idMapId>
      <unitConversionsId>ImportUnitConversions</unitConversionsId>
      <importTimeZone>
        <timeZoneOffset>+00:00</timeZoneOffset>
      </importTimeZone>
      <geoDatum>WGS 1984</geoDatum>
      <dataFeedId>SATH_AFRICA</dataFeedId>
    </general>
    <timeSeriesSet>
      <moduleInstanceId>ImportSATH</moduleInstanceId>
      <valueType>grid</valueType>
      <parameterId>P</parameterId>
      <locationId>SATH_AFRICA</locationId>
      <timeSeriesType>external historical</timeSeriesType>
      <timeStep unit="day"/>
      <readWriteMode>add originals</readWriteMode>
      <expiryTime unit="day" multiplier="400"/>
    </timeSeriesSet>
    <externUnit unit="0.1mm" parameterId="P"/>
  </import>
</timeSeriesImportRun>
```