Rain-Snow Elevation (RSNWELEV) Model

1. Description of Algorithm

The Rain-Snow Elevation model computes the elevation that separates rain from snow.

2. Model Parameters

RSNWELEV uses an xml representation of model parameters where each parameter is captured within a separate xml tag. The tags are closely related to the NWSRFS definition of RSNWELEV defined at

https://vlab.ncep.noaa.gov/documents/207461/1893022/533rsnwelev.pdf

Name	Type	Required [Yes/No]	Comment
RSEL_TS_ID	String	Yes	Output time series id
RSEL_TS_TYPE	String	Yes	Output time series type
RSEL_TS_TIME_STEP	Integer	Yes	Output time series duration
THRESHOLD_TEMPERATURE	Double	Yes	Threshold temperature [Deg C]
LAPSE_RATE	Double	Yes	Lapse rate during precipitation [Deg C per 100 M]
MAT_TS_ID	String	Yes	Input temperature time series id
MAT_TS_TYPE	String	Yes	Input temperatures time series type
ELEVATION_OF_TEMPERATURE_DATA	Double	Yes	Elevation of air temperature data [M]
FREEZING_LEVEL_TS_ID	String	No	Freezing level time series id
FREEZING_LEVEL_DATA_CODE	String	No	Freezing level time series type

3. Model States

RSNWELEV model states are defined in a property file format. An example is shown below. The model state property names are:

Property Name	Description
FREEZING_LEVEL_TS	The initial value of freezing level [M]
UNIT	Units for State Variables (always METRIC)

An example is shown below.
UNIT=METRIC
FREEZING_LEVEL_TS=2130

4. Model Time Series

RSNWELEV requires a minimum of 1 input time series, a maximum of 2 input time series, and 1 output time series

INPUT TIMESERIES:

Time Series Type	**Internal Model Units**	**Time Step**	**Missing Values Allowed**	**Required [Yes or No]**
Air Temperature	DEGC	any[1]	No	Yes
Freezing Level	M	any[1]	Yes	No

OUTPUT TIMESERIES:

Time Series Type	**Internal Model Units**	**Time Step**	**Missing Values Allowed**	**Required [Yes or No]**
Rain-Snow Elevation	M	any	No	Yes

[1]Must be the same as the rain-snow elevation time series

5. Notes about configuring Model in FEWS workflow

Examples:

Module Configuration File
ModuleConfigFiles\RSNWELEV_FSNC1L_FSNC1LOF_Forecast.xml

Module Parameter File
ModuleParFiles\RSNWELEV_FSNC1L_FSNC1LOF_UpdateStates.xml

6. FEWS Adapter Used

The RSNWELEV model uses the OHDFewsadapter to communicate. Information about this adapter can be found at OHDFewsadapter.