

- EO
- AEO
- RF
- GNSS
- RAY

# SE-ATMOSPHERE



**SPECIFY ATMOSPHERIC CONDITIONS FOR YOUR PHYSICAL SIMULATION**

**FAST**

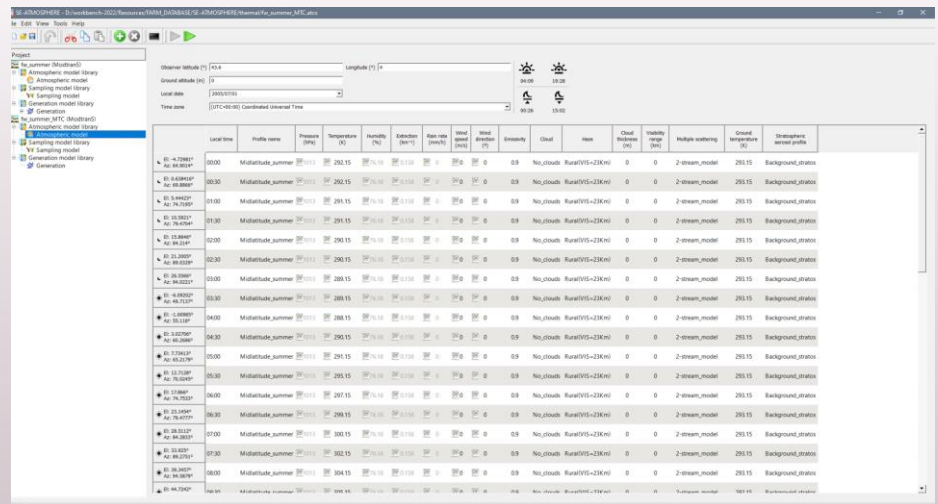
SE-ATMOSPHERE takes into account the atmospheric conditions, the ephemeris and the generation parameters to calculate radiance, irradiance and atmospheric transmission values. The software contains a phenomenological model of propagation and can also operate with MATISSE and MODTRAN propagation codes

## Features

- Exploitation of MATISSE and MODTRAN 5 validated atmospheric models
- Well adapted for spectral visible & infrared spectrum for synthetic environment modelling
- An easy and efficient user interface for parameterising of all the supported models
- Can be run in batch mode
- Errors prevention with a set of « default » parameters given to the user as a function of his selection
- A database of pre-computed (thermal and radiative) atmospheric files available on demand

## Easy Edition of Configuration Files

Simple GUI that manages the import parameters



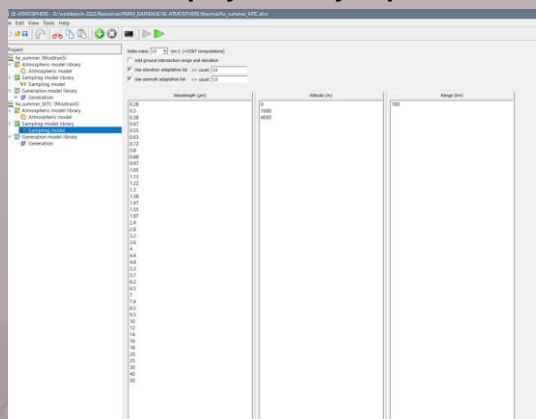
Local time	Profile name	Pressure (hPa)	Temperature (K)	Altitude (m)	Extinction (km <sup>-1</sup> )	Rain rate (mm/h)	Wind speed (m/s)	Wind direction (°)	Humidity (%)	Cloud	Sea	Cloud height (m)	Visibility (km)	Multiple scattering	Ground temperature (K)	Background status	
00:00	Midlatitude_summer	292.15	292.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
00:30	Midlatitude_summer	292.15	292.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
01:00	Midlatitude_summer	293.15	293.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
01:30	Midlatitude_summer	293.15	293.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
02:00	Midlatitude_summer	296.15	296.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
02:30	Midlatitude_summer	294.15	294.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
03:00	Midlatitude_summer	299.15	299.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
03:30	Midlatitude_summer	298.15	298.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
04:00	Midlatitude_summer	298.15	298.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
04:30	Midlatitude_summer	295.15	295.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
05:00	Midlatitude_summer	291.15	291.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
05:30	Midlatitude_summer	295.15	295.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
06:00	Midlatitude_summer	295.15	295.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
06:30	Midlatitude_summer	299.15	299.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
07:00	Midlatitude_summer	300.15	300.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
07:30	Midlatitude_summer	302.15	302.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
08:00	Midlatitude_summer	304.15	304.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status
08:30	Midlatitude_summer	306.15	306.15	0.0	0.0	0.0	0.0	0.0	0.0	No_clouds	Rural(15+230m)	0	0	2	stream_model	293.15	Background_status

## Atmospheric Configuration Preview

Used to analyse the results of a given atmospheric configuration without having to compute atmospheric file

## Parametric Study

Simple and fast multi curve display to analyse parameter's influence



## Benefits

- **Ease of use:** Powerful JAVA or QT interface
- **Reliability:** Benefits of validated radiative solvers like MODTRAN or MATISSE
- **High Efficiency:** Allows to generate many atmospheric databases
- **Modularity:** compliant with future atmospheric modules to come
- **Possibility to import user defined profiles** of temperature, pressure, hygrometry, ... in order to customize the atmospheric computation

## System requirements



## Selection of Global parameters

Date, latitude, longitude, global atmospheric model, ground altitude, ...

## Time dependant parameters

Haze, clouds, rain, temperature, visibility range, ...

## Sampling capabilities

Sampling of wavelength, azimuth, elevation, range and altitude for the spectral calculation of solar/lunar irradiance, atmospheric attenuation and sky radiance

Availability of template configuration files for basic wave bands (visible, SWIR, MWIR, LWIR)

## Import formats

User defined parameters  
MATISSE, MODTRAN

## Export formats

SE-WORKBENCH ATM format (for SE-THERMAL, SE-THERMAL-SHADOWS, SE-RAY-IR and SE-FAST-IR software)  
XWA format (for TAItherm<sup>®</sup> software by ThermoAnalytics)



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