PNRR Project – Task 1420.1 | Project: EMM – Earth Moon Mars

MERIDIAN (Moon EaRth leto vIsibility and raDIative trANsfer) – Web-based simulation tool for the EMM community

Overview

MERIDIAN (Moon EaRth leto vIsibility and raDIative trANsfer) is a tool for calculating and simulating the radiative transfer from the Earth's disk to a specific point on the lunar surface (the LETO position) in the IR band of interest, while taking into account visibility conditions. It is a product offered to the EMM research community thanks to a web interface that facilitates access.

Technical specifications

- Interface: **Web-based**
- Main input parameters: **LETO position, time parameters, IR band of interest**
- Spectral range and field of view: **100-1600 cm^{-1} (6 – 100 µm), 2.3° (same as LETO)**
- Terrestrial environment: **exploitation of the ERA5 database**
- Processing time: **tens of minutes / hours (function of parameters)**
- Output: **dataset and spectrum graph**

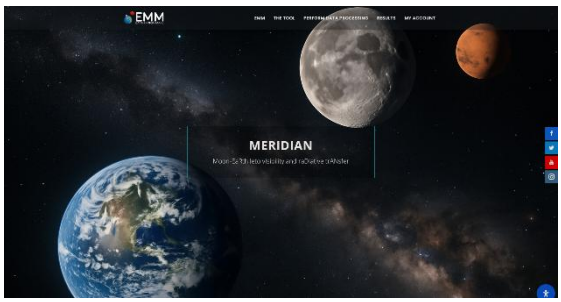
Features

- Evaluation of the visibility conditions of the Earth's disk from the lunar reference site
- Calculation of radiative transfer based on Earth-Moon distance and orientation of atmospheric sectors
- Integration of databases (ECMWF-ERA5 and CMIP6) for the accurate calculation of radiative contributions from different types of land surfaces (land, oceans, etc.)

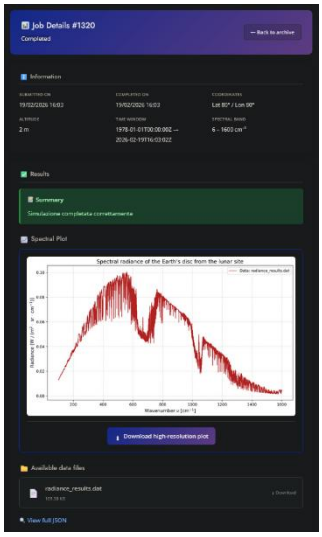
Applications planned to support the EMM community

- Calculation of the spectrum received by LETO
- Save output data as both a dataset and a graph
- Save work session for later reference

Application Images



MERIDIAN on the EMM website



Job details output page