

MATISSE: version 1.4 and future developments

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ABSTRACT

This paper concerns the presentation of the new version of the MATISSE code (MATISSE-v1.4) whose main functionality is to compute spectral or integrated natural background radiance images. The spectral bandwidth extends from 765 to 3300 cm^{-1} (3 to 13 μm) with a 5 cm^{-1} resolution. Natural backgrounds include the atmosphere, low and high altitude clouds, sea and land. The most particular functionality of the code is to take into account atmospheric spatial variability quantities (temperatures, mixing ratio, etc) along each line of sight of the image. In addition to image generation capacity, the code computes atmospheric radiance and transmission along a line of sight with the same spectral characteristics as in imaging mode. In this case, atmospheric refraction effects and radiation from high or low altitude clouds can be taken into account. A high spectral resolution mode is also available to propagate radiation from a high temperature medium in the same atmospheric state as that used for the image generation. Moreover, an Application Programming Interface (API) is included to facilitate its use in conjunction with external codes.

In comparison with the previous version, the main improvement of MATISSE-v1.4 concerns the line of sight mode, the possibility to use a user atmospheric profile and computations in the marine boundary layer. This paper describes the range of functionalities of MATISSE-v1.4 whose release is planned for May 2006. Future developments are also presented.

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