

## **Request for Interest in Licensing EOSPEC-LIB Technology**

Defence Research & Development Canada – Valcartier Research Center (Valcartier Center) is interested in licensing its EOSPEC-LIB (EO-IR Sensor Performance Computation Library) technology to a Canadian company or agency for commercialization. EOSPEC-LIB is a Library of computer models for the calculation of atmospheric effects on EO-IR sensor performance. The Library has been designed as a complement to MODTRAN™, a radiative transfer code developed by the Air Force Research Laboratory and Spectral Science Inc. in the USA for the calculation of atmospheric transmission and radiances.

### **Brief description of the Technology**

EOSPEC-LIB comprises 2 categories of modules: one for environmental characterization and the other one for the computation of atmospheric propagation effects.

Environmental characterization modules help define the atmospheric conditions and parameterize the surrounding environment. The main outputs are the vertical profiles of thermodynamic quantities, aerosol properties, along with refractivity and structure-parameter ( $C_n^2$ ) profiles. Formats compatible with MODTRAN 5 can be generated. EOSPEC features a unique blending approach for the merge of surface layer profiles with upper-air profiles. This allows production consistent of radiofrequency and infra-red refractivity profiles for a given thermodynamic condition specified as input.

The propagation effect modules include ray-tracing functions for the calculation of ray-paths in the defined atmosphere. Complementary functions are included to describe finely the overall refraction and turbulence effects. Moreover, a key utility of EOSPEC is SMART (Suite for Multi-resolution Atmospheric Radiative Transfer) which can perform very fast wide-band correlated-k computations of transmittances and radiances through an advanced exploitation of MODTRAN.

EOSPEC-LIB is in continuing development at Valcartier Center. It is presented as a suite of C++ modules and Utilities. The Library itself contains C, C++, C#, FORTRAN and Java elements. EOSPEC-LIB comes with an Advanced Peripheral Interface (API) and a Graphical Interface with Demos to get rapidly acquainted with the EOSPEC main modules. Examples are also given for all Modules and for the main utility functions. The EOSPEC library also provides an Integrated Development Environment (IDE) compatible to VisualStudio to facilitate the exploitation of the Modules and Utilities in the new user applications, through VisualStudio.

### **EOSPEC potential market**

EOSPEC-LIB can be seen as a tool box for the modeling of environmental effects on sensor performances in complementarity with MODTRAN. All MODTRAN users could likely be interested in acquiring EOSPEC. The need for EOSPEC should be more pronounced for calculations in maritime environments, especially near the sea surface at horizon ranges where MODTRAN limitations have been noted.

Various Defence Laboratories around the world have shown an interest in EOSPEC to Valcartier Center.

## Consideration in Licensing

A licence will be granted under the following key terms and conditions:

- Non-exclusive licence
- Royalty based on the number of EOSPEC versions distributed/sold
- Restrictions to do business with some countries
- Technology provided "as is" with no ongoing support from Valcartier Center.

Since the main objective of Valcartier Center is to promote the evolution of the technology in a large field of applications, candidates must demonstrate a solid expertise in computer science, particularly in the programming languages found in EOSPEC, and software architecture of various operating systems (mainly Windows, Linux). Experience in computations with MODTRAN 5 is also highly suitable.

Furthermore, knowledge and expertise in the scientific fields covered by the Library is required, as the Licensee will likely be requested to proceed by itself to model corrections and improvements to satisfy users' requirements. The EOSPEC fields cover the atmospheric sciences, and the atmospheric electromagnetic propagation and radiative.

Interested parties are asked to submit a Notice of Interest providing the following information:

- Expertise and experience in the Technology domain (as described above)
- Interests with regard to the Technology, specifying how it fits to the company's business plan
- Contact information and the name of the person authorized to sign the license agreement
- Statement of acceptance of the key terms and conditions of the license agreement cited above.