

Appendix K

Approximate Solutions of Prototype Radiative Transfer Problems

AK.1 Numerical Implementation of the Discrete Ordinate Method

The solution of the radiative transfer equation described in previous sections has been implemented numerically into a code written in FORTRAN. This code applies to vertically inhomogeneous, nonisothermal, plane-parallel media and it includes all the physical processes discussed previously, namely thermal emission, scattering, absorption, bidirectional reflection and thermal emission at the lower boundary. The medium may be forced at the top boundary by direct (collimated) or diffuse illumination and by internal and boundary sources as well. The coded algorithm is called DISORT (**DIS**crete **O**rdinate **R**adiative **T**ransfer). To make the computer code as clean, robust, and reliable as possible, it was decided to make it highly modularized by constructing many individual subroutines. Each of these subroutines is focused on a particular task, and they are designed to be self-contained, well documented and readable.

The DISORT Fortran-77 code is available at:

[ftp://climate.gsfc.nasa.gov/pub/wiscombe/Multiple Scatt/](ftp://climate.gsfc.nasa.gov/pub/wiscombe/Multiple%20Scatt/)

A comprehensive report providing a detailed documentation of the methodology as well as the numerical implementation of the code is also available at the web-site given above.