

Geophysical Research Abstracts,
Vol. 10, EGU2008-A-10664, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-10664
EGU General Assembly 2008
© Author(s) 2008



Adjoint approach to evaluation of weighting functions for remote sensing of scattering planetary atmospheres in thermal spectral region with limb-viewing geometry

E. Ustinov

Jet Propulsion Laboratory, California Institute of Technology, California, USA
(Eugene.A.Ustinov@jpl.nasa.gov / Tel: +1-818-354-2048, Fax: +1-818-393-4619)

In a recent presentation at EGU (Ustinov, 2006) we have applied the direct linearization approach (Ustinov, 2002) to analytic evaluation of the weighting functions for remote sensing of blackbody planetary atmospheres with limb-viewing geometry. In the case when atmospheric scattering is non-negligible, no analytic solution of the equation of radiative transfer (RT) exists, in general. In this presentation, we apply the general adjoint approach used for the nadir-viewing geometry (Ustinov, 2005) to obtain corresponding weighting functions for the case of limb-viewing geometry. As in the case of nadir-viewing geometry, actual RT computations need to be done only for the weighting functions for a few key radiative parameters directly entering the forward RT problem. The weighting functions for all geophysical parameters of interest can be obtained from these weighting functions using known partial derivatives of radiative parameters with respect to these geophysical parameters.