

Algorithm for the Determination of the Optical Depth and Lidar Ratio of Cirrus Clouds by Elastic Lidar Measurements

(Send abstract to 8th.wmla@gmail.com)

Diego Alves Gouveia ⁽¹⁾

(1) *Applied Physics Department. Physics Institute. Sao Paulo University (USP), Ed. Basilio Jafet, Sala 100. Rua do Matao, Travessa R, 187. 05508-900, Sao Paulo, SP, Brazil.*

diego.gouveia@usp.br

Henrique Barbosa⁽¹⁾, Boris Barja^(1,2), XX nesse caso nao precisa colocar eles dois, pois eles nao mexeram nisso.

Falei pro Boris colocar porque tinha dados do tiwa.

(2) *Atmospheric Optics Group of Camagüey. Meteorological Institute of Cuba. Av. Finlay km 7 ½ Camagüey, Cuba*

(3) *Centro de Lasers e Aplicações, Instituto de Pesquisas Energéticas e Nucleares (IPEN), Avd. Prof. Lineu Prestes 2242, 05508-000, São Paulo, Brasil;*

Abstract: We present an algorithm for determination of cloud optical depth and average extinction-to-backscattering ratio (lidar ratio) of cirrus clouds from the elastic backscatter vertical profiles measured by lidar systems. The cirrus optical depth can be obtained from the transmission factor of the lidar equation for elastic backscattering by the evaluation of the attenuation caused in the lidar signal due to cirrus cloud. **This method is known as the transmittance method**, and requires no previous information of the lidar ratio of the cirrus cloud. An average value for the lidar ratio of this cloud can then be estimated by comparing the optical depth obtained by the transmittance method and the optical depth obtained by integrating the cloud extinction coefficient profile obtained by Klett-Fernald method, assuming that the optical depth by the two methods are equal when the true value of the lidar ratio of the cirrus cloud is used as input to the Klett-Fernald method. In order to validate the methodology, we performed computer simulations os cirrus clouds with COD varying from XXX to YYY, and LR varying from ZZZ to WWW. The RMS error of the retrived COD and LR are very small, typicall less then 5%. As an application, we will present and discuss COD and LR obtained when applying the algorithm to cirrus clouds measured by a ground based lidar system in the Amazon forest region.

XX quando for transformer em paper, temos que ver se vai ser para OPA ou para outra revista melhor... Ai o titulo tem que ser diferente: focar no resultado e nao no metodo.... Poderia ser "extinction to backscatter ratio of cirrus clouds over a tropical rain forest", ou algo assim.

Keywords: Cirrus; Lidar Ratio; Optical Depth.

VIII WLMLA Topic: [Lidar applications in environmental sciences](#) OU [Lidar technologies and methods](#)

Presentation: [Poster Presentation](#)

Henrique de Melo Jo..., 12/11/2014 23:54

Comment [1]: Nao entendi... esse método já e' conhecido? Ou vcoes desenvolveram? Porque pela 1ª frase do resumo da a entender que eh um método novo, apresentado agora...