

F18/38 Atmospheric Spectroscopy

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1 Abstract

Lorem Ipsum.

2 Introduction

3 Background

3.1 Ozone and Nitrogendioxid

3.2 The DOAS Measurement System

4 Active Measurement of a Nitrogendioxid gas-cell

In this part of the experiment we measured the absorption of a NO_2 gas-cell in the spectrum of an Hg-lamp. Due to the nature of this measurement we could simplify the problem by using the fact that we have access to I_0 by taking a spectrum without the gas cell in the light path and then take a measurement with the gas-cell in the light path to measure I . After dark current and offset were corrected for both measurements we used the simplified

lambert-beer law to get to equation.

$$\tau = \log\left(\frac{I_0(\lambda)}{I(\lambda)}\right) = \sigma_{NO_2} \cdot \rho \cdot L \quad (1)$$

The reference convolution for NO_2 was then used to compute the $SCD = \rho \cdot L$. This was then used to compute the density $\rho = (2.81 \pm 0.07) \cdot 10^{-7} \frac{\text{mol}}{\text{cm}^3}$ and the mixture ratio $(6.29 \pm 0.39) \cdot 10^3 \text{ppm}$.

5 Sunlight Measurement of a recorded daycycle

6 Sunlight Measurement