

The Atmospheric Greenhouse Effect and Global Warming
Short Course, March 2025
Indian Institute of Technology, Kharagpur
Homework 3

Due Friday March 28

The atmosphere of Mars is comprised of 95% CO₂. The rest is primarily nitrogen and argon. The average pressure is about 610 Pa and the temperature is about 210 K. Assuming that the Martian atmosphere is 40 km thick and has uniform composition,

- (a) calculate the spectral transmissivity and plot it (transmissivity versus wavelength)
- (b) calculate the total incoming and outgoing transmissivity of the Martian atmosphere.

Note: For CO₂ data, use the data corresponding to 217 K (9th layer of Earth's atmosphere).