



Application of O₂ and OH SABER measurements and studies to the search of O₃ in other planetary atmospheres

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The Sounding of the Atmosphere using Broadband Radiometry (SABER) was launched on the NASA TIMED satellite in December 2001. Since then SABER is continually measuring emission from the Earth's limb by scanning from 400 km tangent altitude down to the Earth surface.

Three of the 10 SABER channels are devoted to observe the airglows from the O₂(¹Δ-ground) band at 1.27-μm (channel 10) and from the OH Meinel bands at 1.8- (channel 9) 2.0-μm (channel 8).

A fundamental goal of SABER is to derive the daytime ozone abundance from the O₂ airglow. Moreover nighttime atomic oxygen is derived as by-product from the OH measurements. Integrated SABER data can give a good picture of what Earth-like atmospheres would look like as a function of how far one can penetrate optically into the atmosphere. In this paper we outline the SABER observations of the OH and O₂ airglows and the data products derived from them; and propose methods to use them as proxies for ozone in planetary searches, such as those to be conducted by the Terrestrial Planet Finder or Darwin.

The data presented here are based on the Version 1.07 processing which will be publicly available in early 2007 at the SABER webpage (saber.larc.nasa.gov).