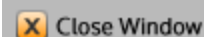




Print



Close Window

**Print****Submitted**

on August 07, 01:04 PM

for agu-fm12

Arnaud Stiepen Paid: \$30.00, Transaction #: 768682

Credit Card Type: MasterCard

Credit Card Number: xxxxxxxxxxx8002

Your abstract appears below.

**Please print a copy of this page for your records.**

To return to the Submission Center and check your list of submissions; click "View Submissions" in the left menu.

**Proof****CONTROL ID:** 1480922**TITLE:** Martian thermospheric temperatures retrieved from CO<sub>2</sub><sup>+</sup> SPICAM dayglow measurements.**AUTHORS (FIRST NAME, LAST NAME):** Arnaud Stiepen<sup>1</sup>, Jean-Claude M C Gerard<sup>1</sup>, Stephen W Bougher<sup>2</sup>, Franck Montmessin<sup>3</sup>**INSTITUTIONS (ALL):** 1. Laboratoire de Physique Atmosphérique et Planétaire (LPAP), University of Liège, Liège, Belgium.

2. Atmospheric, Oceanic and Space Sciences, University of Michigan, Ann-Arbor, MI, United States.

3. Laboratoire Atmosphères, Milieux, Observations Spatiales, Université de Versailles Saint-Quentin, Versailles, France.

**ABSTRACT BODY:** A large dataset of dayside grazing limb CO<sub>2</sub><sup>+</sup> observations performed by the SPICAM (Spectroscopy for Investigation of Characteristics of the Atmosphere of Mars) instrument on board Mars Express is analyzed to retrieve Martian thermospheric temperature, as well as its variation with solar activity, season and latitude. The method permits to retrieve the temperature from the scale height of the CO<sub>2</sub><sup>+</sup> emission. We also present puzzling features such as limb profiles exhibiting multiple peaks and their characteristics. We furthermore study the behavior of the main emission peak of the CO<sub>2</sub><sup>+</sup> vertical emission profiles. The CO<sub>2</sub><sup>+</sup> emission at 289 nm arises from the relaxation of the CO<sub>2</sub><sup>+</sup> molecule in the B<sup>2</sup>Σ<sup>+</sup> state to the X<sup>2</sup>Π state. CO<sub>2</sub><sup>+</sup> molecules are mainly produced in the Martian dayside through photoionisation and photoelectron impact. The CO<sub>2</sub><sup>+</sup> emission exhibits features that constrain the temperature and density vertical profiles of CO<sub>2</sub>. Comparisons of retrieved temperatures are made with corresponding simulations from the coupled MGCM-MTGCM. We also use a Monte-Carlo code to model the observed intensity limb profiles.

**INDEX TERMS:** [0310] ATMOSPHERIC COMPOSITION AND STRUCTURE / Airglow and aurora.

(No Image Selected)

(No Table Selected)

**SPONSOR NAME:** Benoit Hubert**Additional Details**

**Previously Presented Material:****Contact Details****CONTACT (NAME ONLY):** Arnaud Stiepen**CONTACT (E-MAIL ONLY):** arnaud.stiepen@ulg.ac.be**TITLE OF TEAM:**

---

ScholarOne Abstracts® (patent #7,257,767 and #7,263,655). © [ScholarOne](#), Inc., 2012. All Rights Reserved.  
ScholarOne Abstracts and ScholarOne are registered trademarks of ScholarOne, Inc.

 Follow ScholarOne on Twitter

[Terms and Conditions of Use](#)

Product version number 4.0.0 (Build 56)  
Build date Aug 07, 2012 12:22:26. Server tss1be0014