The Astrophysical Journal Letters, 768:L23 (3pp), 2013 May 1 doi:10.1088/2041-8205/768/1/L23

ERRATUM: "AN ESTIMATE OF THE CHEMICAL COMPOSITION OF TITAN'S LAKES" (2009, ApJL, 707, L128)

Daniel Cordier[1], Olivier Mousis[1], Jonathan I. Lunine[2], Panayotis Lavvas[3], and Véronique Vuitton[4]
[1] Université de Franche-Comté, Institut UTINAM, CNRS/INSU, UMR 6213, Observatoire des Sciences de l'Univers THETA, F-25030 Besançon Cedex, France; daniel.cordier@obs-besancon.fr
[2] Center for Radiophysics and Space Research, Space Sciences Building Cornell University, Ithaca, NY 14853, USA
[3] Groupe de Spectrométrie Moléculaire et Atmosphérique - UMR 6089 Campus Moulin de la Housse - BP 1039 Université de Reims Champagne-Ardenne 51687 REIMS, France
[4] UJF-Grenoble 1/CNRS-INSU Institut de Planétologie et d'Astrophysique de Grenoble (IPAG) UMR 5274 Grenoble, F-38041, France
Received 2013 April 4; published 2013 April 19

An error was found in the saturation mole fractions $X_{i,\,\mathrm{sat}}$ calculated from Equation (2) of the published version of this Letter:

$$\ln(\Gamma_i\, X_{i,\,\mathrm{sat}}) = (\Delta H_\mathrm{m}/RT_\mathrm{m})\,(1 - T_\mathrm{m}/T).$$

The enthalpies of melting ΔH_m have been taken in kJ mol^{-1} instead of J mol^{-1}. Considering ΔH_m's with the right unit leads to much lower $X_{i,\,\mathrm{sat}}$'s. In the published version of this Letter, only HCN appeared to precipitate. Now, taking into account the corrections, the species reaching saturation are HCN, C_6H_6, and CH_3CN. As an indirect effect, the mole fractions of other compounds are marginally changed. The corrected Table 3 and Figures 1 and 2 are presented here.

Table 3
Chemical Composition of Lakes at the Poles and the Equator

	Equator (93.65 K)	Poles (90 K)
Main composition (lake mole fraction)		
N_2	3.67×10^{-3}	5.91×10^{-3}
CH_4	6.34×10^{-2}	1.09×10^{-1}
Ar	3.52×10^{-6}	5.52×10^{-6}
CO	2.57×10^{-7}	5.10×10^{-7}
C_2H_6	8.14×10^{-1}	7.72×10^{-1}
C_3H_8	7.90×10^{-2}	7.49×10^{-2}
C_4H_8	1.48×10^{-2}	1.41×10^{-2}
H_2	4.41×10^{-6}	3.92×10^{-6}
Solutes (lake mole fraction)		
HCN	2.42×10^{-5} (s)	1.17×10^{-5} (s)
C_4H_{10}	1.29×10^{-2} (ns)	1.23×10^{-2} (ns)
C_2H_2	1.22×10^{-2} (ns)	1.16×10^{-2} (ns)
C_6H_6	1.10×10^{-4} (s)	5.97×10^{-5} (s)
CH_3CN	9.90×10^{-5} (s)	5.12×10^{-5} (s)
CO_2	3.11×10^{-4} (ns)	2.95×10^{-4} (ns)

Note. (s): saturated; (ns) non saturated.

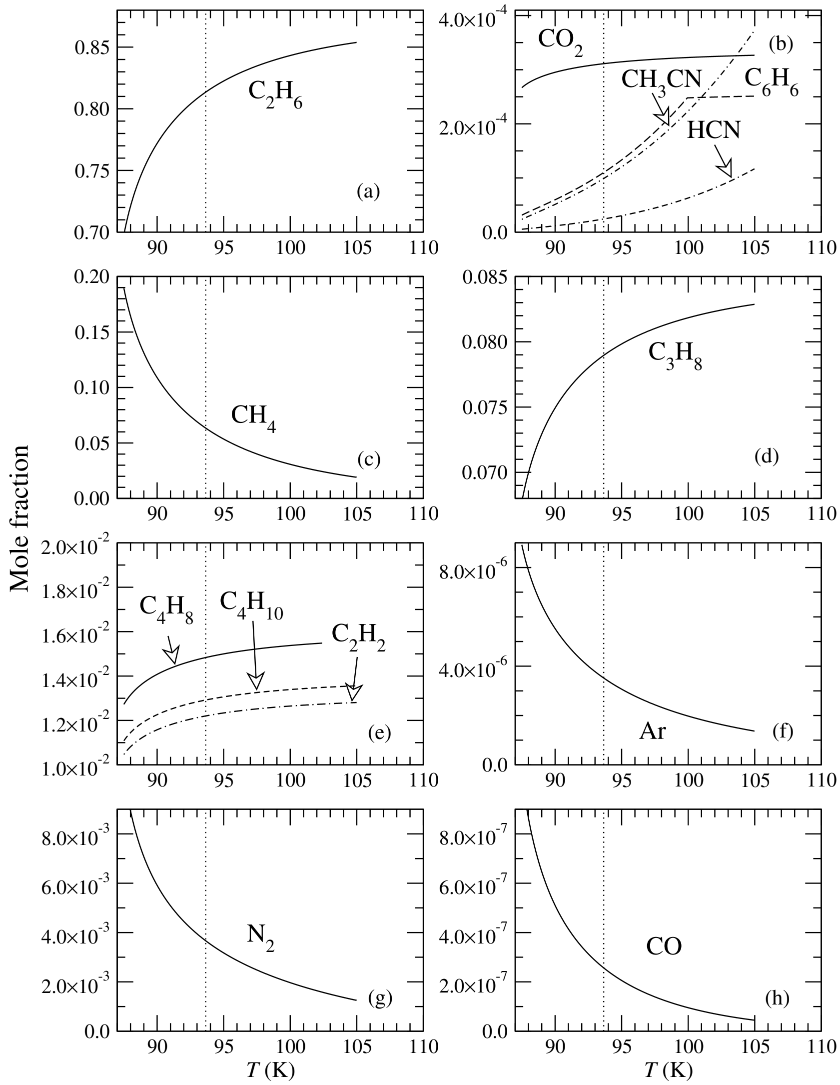

Figure 1. (a)–(h): composition of lakes as a function of the surface temperature. The vertical dashed line corresponds to the surface temperature of 93.65 K measured by Huygens.

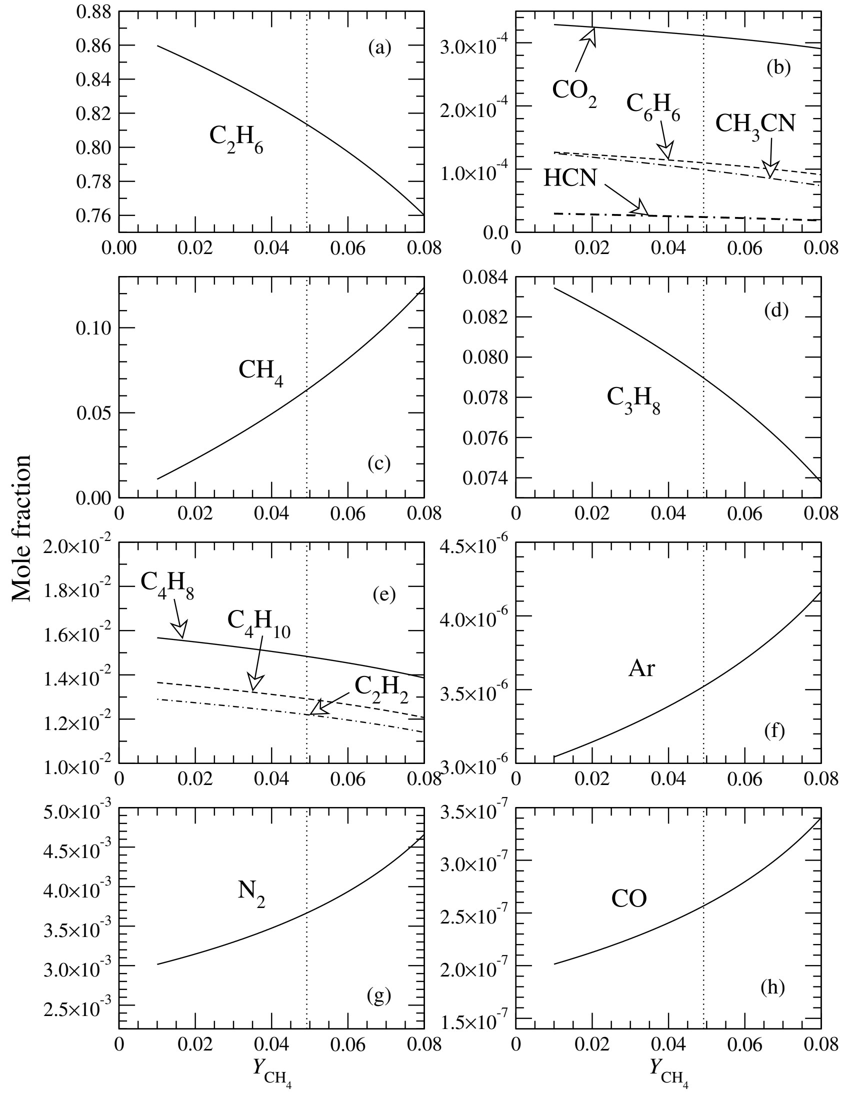

Figure 2. (a)–(h): composition of lakes as a function of the methane atmospheric mole fraction, assuming a surface temperature of 93.65 K. The vertical dashed line corresponds to the methane atmospheric mole fraction measured by Huygens at the ground level.