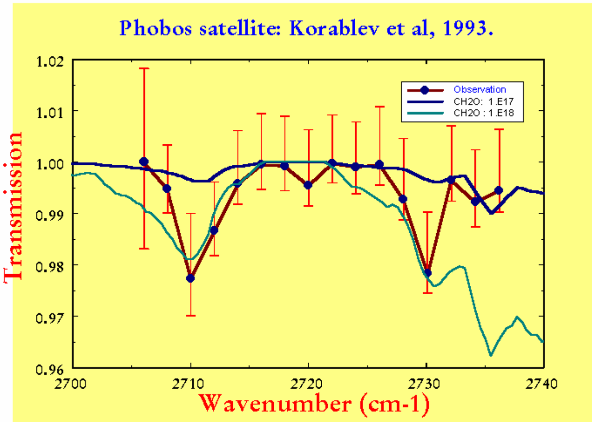
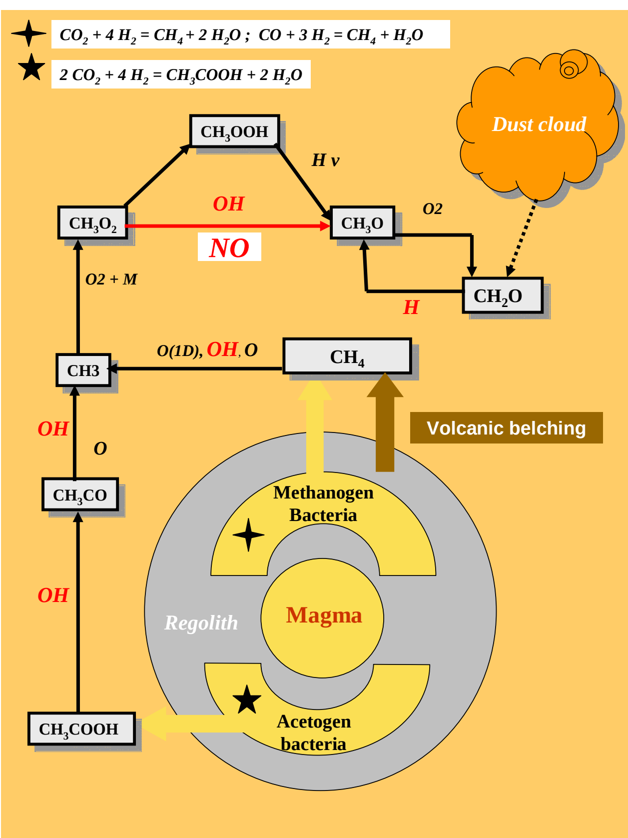
The IASB-BIRA involvement in Mars research began in 1989 when the PHOBOS mission in orbit around the planet Mars observed a few limb infrared occultation spectra before spacecraft failure. The instrument was the infrared Russian channel of the Franco-Russian AUGUSTE limb sounder and extensive contacts had been taken between IASB-BIRA and the Russian Institute for Space Research IKI since 1987 on the design and interpretation of this channel. The 3.7 m spectral interval used had been chosen for the detection of HDO in the lower Martian atmosphere and surprisingly showed two peaks which until now can only be identified as formaldehyde, a 1969 telescopic spectrum obtained by JPL was also then interpreted as containing a formaldehyde structure, this result was published (Korablev et al, 1993).





An extensive study of organic chemistry was then performed using the IASB-BIRA MARS-2D photochemical model (e.g. Moreau et al., 1991, Moreau et al., 1992; Moreau and Esposito, 1992; Moreau et al., 1995a; Moreau 1995a,b).

Modeling efforts were made for an explanation: the simplest one being that methane and/or acetic acid produced in the soil by microorganisms would oxidize to formaldehyde accumulating in the atmosphere in the absence of atmospheric water vapor (Moreau and Esposito, 1992; Moreau, 1995a). At this time, this mechanism had to be rejected due to the lack of methane observations and the consensus on the absence of life. However the model succeeds in producing formaldehyde through purely photochemical processes in quantities sufficient to reproduce the observations.

This work and the extensive efforts performed to repeat this observation by telescopic techniques (Moreau et al., 1995a) as well as modeling attempts are reviewed in Moreau et al (1995b).

This research continued by the study of the sterilization properties of the Martian environment as well as the role of airborne and deposited dust on the intensity of the UV flux reaching the Martian surface *(e.g.: Gillotay et al., 2004; Moreau and Muller, 2003; Muller et al., 2003;; Muller and Moreau, 2001; Muller et al., 2001; Moreau and Fonteyn, 1999; Muller and Moreau, 1997).*

Today, in view of the renewed speculation on a past or even contemporary life on Mars through the Mars Express PFS detection of reduced carbon species in the Martian Atmosphere, the present Martian atmospheric research program, represented by the SPICAM atmospheric sounder on Mars express (e.g.: Bertaux et al., 2000; Muller at al., 2001) including its infrared channel (Korablev et al, 2002), can be used directly and indirectly to study the different aspects of the Martian environment and their compatibility with the atmospheric stability of organic compounds. Even if the IASB-BIRA MARS 2D model was validated by spacecraft observation (MARINER 9, VIKING, PHOBOS, …) Comparing SPICAM observations with theoretical simulations will improve some of the assumptions taken several years ago.

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