HAZES AND CLOUDS ON MARS: SOME OF THE PHOBOS MISSION RESULTS.
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Phobos-2 spacecraft collected in February and March of 1989 some new information about aerosols in the Martian atmosphere. Most of the observations were done from nearly round orbit almost coincided with the orbit of the Phobos satellite. New studies of the martian aerosols were made in four experiments:

1) solar occultation spectrometry (ISO/August [1,2]),
2) photometric measurements of center/limb effects (KRFM [3-5]),
3) spectrometry in the near IR range (ISM [6,7]),
4) limb photometry in thermal IR and visible (Thermoscan [8]).

The analysis is on different stages in different cases but some comparisons and general conclusions are possible now (see below).

1) It is necessary to involve in sorts of aerosols: a "permanent" haze, ice clouds above and around mountains, a layer (one or more) of ice particles on heights 50-80 km.

2) The permanent haze have optical thickness $0.1<\tau<0.2$ at the range from 0.3 to 3$\mu$ [1,4-6]. This is 2 times less than was obtained by Viking landers for the same season [9]. Particle size distribution more narrow than proposed earlier was inferred from new observations [1.7]. The effective radius $\sim 2.5\mu$ was estimated in Viking landers data analysis [10], but analysis of results of two new sets of measurements (solar occultation spectrometry and ISM) lead to approximately twice less value. Longterm variability (from one Martian year to another) of the constant haze properties is suspected. The imaginary part of refraction index is $0.015<\kappa<0.03$ for $\lambda=0.315\mu$ and go down by rising of the wavelength. This correspond to the silicate material with the admixture of some ferric oxides (1-3%).

The most important new result is measurement of the altitude profile of the constant haze by the solar occultations spectrometry on 1.9 and 3.7 $\mu$. The extinction coefficient goes down smoothly to the height about 25 km, and there is sharp decline above this boundary. The permanent haze aerosols can be supported by the turbulence with eddy diffusion coefficient $K\sim 1.5\times 10^8$ cm$^2$s$^{-1}$ [1].

3) Ice clouds observed above Arsia Mons and Pavonis Mons (fig. 3) have optical thickness $\tau=0.1$. The full content of ice is $10^{-6}$ g cm$^{-2}$, effective radius of particles $\sim 1\mu$ [3-6].

4) Thin layers of ice particles on heights 50-70 km have optical thickness $\tau=0.03$ but clearly visible by the solar occultations in UV [2] and also on brightness profiles near the limb [8]. The typical full content of ice is $10^{-7}$ g cm$^{-2}$, effective radius varies between 0.2 and 0.6 $\mu$.

All measurements were made in spring season ($30^\circ<L_0<180^\circ$) and inside of the latitude belt $\pm 10$. More extended studies of aerosols by these methods and also some others are planning in the frame of Mars-94/96 mission. The long as possible monitoring of the martian aerosols is necessary for the better understanding of the martian climate, surface/atmosphere exchanges processes and also for the so called engineering models of the atmospheres.