CO2 supersaturation observed in the Martian atmosphere with the MGS radio occultation measurements

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The present study focuses on the supersaturation of carbon dioxide (CO2), which is the main constituent of the Martian atmosphere. We carefully analyzed the pressure-temperature profiles obtained by MGS radio occultation measurements (1998-2006), and we found that the events with the supersaturation degrees (S) severer than those shown by laboratory experiments (S=˜34%) occurred in the Martian lower atmosphere (up to ˜35km) during the polar nights. Those severe supersaturation events are found more frequently in the southern hemisphere (12% of all the saturation events in the southern hemisphere) than in the northern hemisphere (3% of all the saturation events in the northern hemisphere). We discuss the candidates of the reasons why such a dissymmetry between the both hemispheres was observed.