HITRAN2012 AND REMOTE SENSING OF PLANETARY ATMOSPHERES

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For the recently-released HITRAN2012 edition [a] of the database, a substantial effort was taken to extend the HITRAN database to have capabilities for studying a variety of planetary atmospheres. Spectroscopic parameters for gases and spectral bands of molecules that are germane to the studies of planetary atmospheres have been assembled. These parameters include the types of data that have already been considered for transmission and radiance algorithms, such as line position, intensity, broadening coefficients, lower-state energies, and temperature dependence values. Besides adding new bands and isotopologues to the relevant molecules that already exist in HITRAN (methane, hydrogen halides, hydrogen disulfide, etc.), a number of new molecules, namely H_2, CS, C_4H_2, HC_3N and SO_3 have been incorporated into the HITRAN2012 database. For some of the molecules, additional parameters, beyond what is currently considered for the terrestrial atmosphere, have been archived. Examples are pressure-broadened half widths due to various foreign partners. Collision-induced absorption data for a large variety of the collision partners are provided in HITRAN for the first time. Future efforts, including preparation of a new edition of the HITEMP database, will be discussed.
Note that another talk is given in the "Atmospheric Species" session, describing HITRAN improvements towards remote sensing of terrestrial atmosphere. This effort is supported by the NASA Planetary Atmospheres program, under the grant NNX10AB94G.

[a] L. S. Rothman, I. E. Gordon, et al. "The HITRAN 2012 molecular spectroscopic database," JQSRT, submitted 2013.