HITRAN2012: DOWN TO EARTH

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The HITRAN2012[a] database is now officially released.
As usual, the assembly of the HITRAN database exemplifies the efficiency and necessity of worldwide scientific collaborations. It is a remarkable effort of experimentalists, theoreticians and atmospheric scientists who measure, calculate, and validate the HITRAN data. The line-by-line lists for almost all of the 42 HITRAN molecules were updated in comparison with the previous compilation (HITRAN2008[b]). The scope of the updates ranges from corrections to the representations of quantum assignments to complete replacements of the lists and introduction of new molecules and isotopologues. Some of the most important updates, relevant to the studies of terrestrial atmosphere such as for water vapor, CO_2, molecular oxygen, etc, will be presented in more detail. The HITRAN2012 database now provides alternative line-shape representations for a number of molecules, whereas previous editions of database provided parameters only for Voigt profile. In addition, new as well as improved sets of cross-section data have been added. Finally, collision-induced absorption (CIA) parameters were introduced to the database for the first time. The new edition of the database is a substantial step forward to improve retrievals of the atmospheric constituents in comparison with previous editions.
Note that another talk will be given in the "Planetary Atmospheres" session describing the new features in HITRAN2012 that will aid remote sensing of planetary atmospheres.

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[b]L. S. Rothman, I. E. Gordon, et al. "The HITRAN 2008 molecular spectroscopic database," JQSRT, 110, 532-572 (2009).