HITRAN2020: ACT (ACCURACY, COMPLETENESS, TRACEABILITY)

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The HITRAN2020 database will be publicly released this year. It is a coordinated effort of experimentalists, theoreticians, atmospheric and planetary scientists who measure, calculate and validate the HITRAN data. The lists for most of the HITRAN molecules in the line-by-line section were updated in comparison with the previous compilation HITRAN2016[a]. The extent of the updates ranges from updating a few lines of certain molecules to complete replacements of the lists and introducing additional isotopologues. Six new molecules (SO, CH_3F, GeH_4, CS_2, CH_3I, and NF_3) were also added to HITRAN. In addition, the accuracy of the parameters for major atmospheric absorbers has been increased, often featuring sub-percent uncertainties. The number of parameters was also increased significantly, now incorporating, for instance, non-Voigt line profiles for many gases; broadening by water vapor[b]; update of collision-induced absorption sets[c].

The new edition will continue taking advantage of the modern structure and interface available at www.hitran.org and the HITRAN Application Programming Interface[d]. Their functionality has been extended for the new edition. This talk will provide a brief overview of HITRAN2020[e] and its main improvements with respect to the previous edition.

[a] Gordon et al., (2017). JQSRT. 203, 3–69.

[b] Tan et al., (2019) J. Geophys. Res. Atmos. 2019JD030929.

[c] Karman et al., (2019) Icarus 328, 160–175.

[d] Kochanov et al., (2016) JQSRT. 177, 15–30.

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