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An update on the 'excess' or the 'anomalous' absorption problem.

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The protocol for a recently published intercomparison effort, that was undertaken to compare the calculation of shortwave (SW) irradiance components in the Earth-atmospheric system, enabled the comparison of sixteen different 1-D radiative transfer codes, of varying wavelength resolutions ranging from line-by-line models to a GCM. This effort was originally designed to assess whether adequate shortwave absorption was included in the models in light of some serious discrepancies that were observed between model estimates and measurements in the mid-90s. Results showed that the agreement among models for the computation of the SW components and hence absorptance is much smaller than model - measurement differences and was consistent with (and slightly better than) a previous landmark study. This meant that the likely problem of overestimation in atmospheric absorption was due to errors in broadband measurements and estimates of SW irradiance components at the surface and at the top-of-the-atmosphere. Indeed, the sources of many of these errors have now been identified and remedied. New results for cloud-free cases show much better agreement and any discrepancy that remains can now be attributed to conventional sources such as the aerosol single scattering albedo.