



## **k-binning: A new approach to simulate narrow band satellite channels in layered atmospheres with variable gas absorption**

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We present a new approach to optimally simulate the transmission characteristics of gaseous absorption bands. This approach is similar to a k-distribution approach but overcomes the main shortcomings of a conventional k-distribution. The major differences are 1) that for a given spectral interval no assumptions about the shape of the sensor weighting function have to be incorporated a-priori, 2) that not only the total atmospheric transmission is accurately described, also the transmission estimation of each atmospheric layer is precise (which is particularly important for radiative transfer simulations in cloudy atmospheres) and 3) that spectral regions with mixing contributions of different absorbing gases can precisely be described by one set of k-terms, since the uncorrelated contributions of the different gases to the extinction are decoupled.

We will outline the method and apply it to high resolution spectroscopic simulations in the oxygen-A-band (corresponding to the Orbiting Carbon Observatory O-C-O)