As mentioned in the telecon, I think it's probably more informative to give a "detection limit interval" $[L_\alpha, L_{1-\alpha}]$, such that for any source intensity $S < L_\alpha$, the detection probability is less than α, and for any $S > L_{1-\alpha}$, the detection probability is larger than $1-\alpha$. α is a small number such as 0.01 or 0.00135 (which corresponds to 3σ). Would this summary statistics be useful for astronomer? Given the backgroud and the detection threshold, it would be rather trivial to compute such interval for the simpliest cases given by DvD and Vinay.

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