Averaging scheme	Abbreviation	Definition	Bias characteristics
Averaging of columns of X_{CH_4}	AVX	$\overline{X_{CH_4}}^{avx} = \langle \frac{\delta}{IWF} \rangle_{w[IWF]}$	– Statistical bias due to measurement noise on every shot – Type 1 geophysical bias from averaging concentrations instead of molecular content
Averaging of columns of DAOD and IWF	AVD	$\overline{X_{CH_4}}^{avd} = \frac{\langle \delta \rangle}{\langle IWF \rangle}$	– Statistical bias due to measurement noise on every shot
Averaging of signals	AVS	$\overline{X_{CH_4}}^{avs} = \frac{\frac{1}{2} \cdot \ln\left(\frac{\langle Q^{off} \rangle}{\langle Q^{on} \rangle} \right)}{\langle IWF \rangle_{w\left[Q^{off}\right]}}$	– Statistical bias due to measurement noise of the resulting signals on the averaging window – Type 2 geophysical bias due to linearization of the DAOD variations and correlation between DAOD and reflectivity variations – Type 3 geophysical bias due to the higher sensitivity to measurements with high offline signal strength
Averaging of quotients (not detailed in this paper due to bad performances)	AVQ	$\overline{X_{CH_4}}^{avq} = \frac{\frac{1}{2} \cdot \ln\langle \frac{Q^{off}}{Q^{on}} \rangle}{\langle IWF \rangle}$	– Statistical bias due to measurement noise mixed with geophysical biases into the non-linear equation (cf. Appendix B)