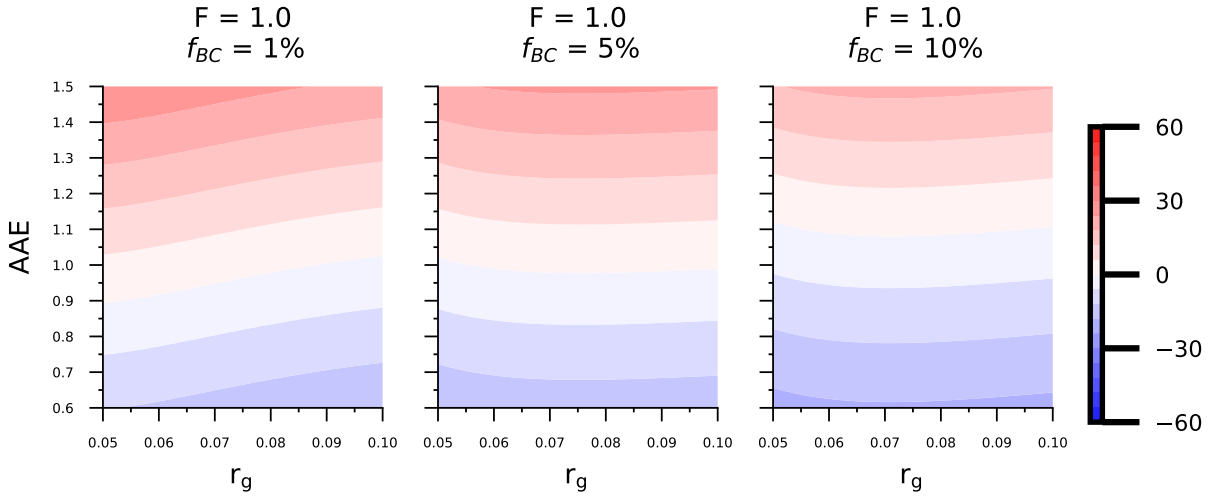

Figure S1. The variations of ABS_{BrC} of fully coated BC (F = 1.0) estimated based on the fixed AAE with the function of AAE and r_g, where the wavelength pair is 440 nm - 675 nm.

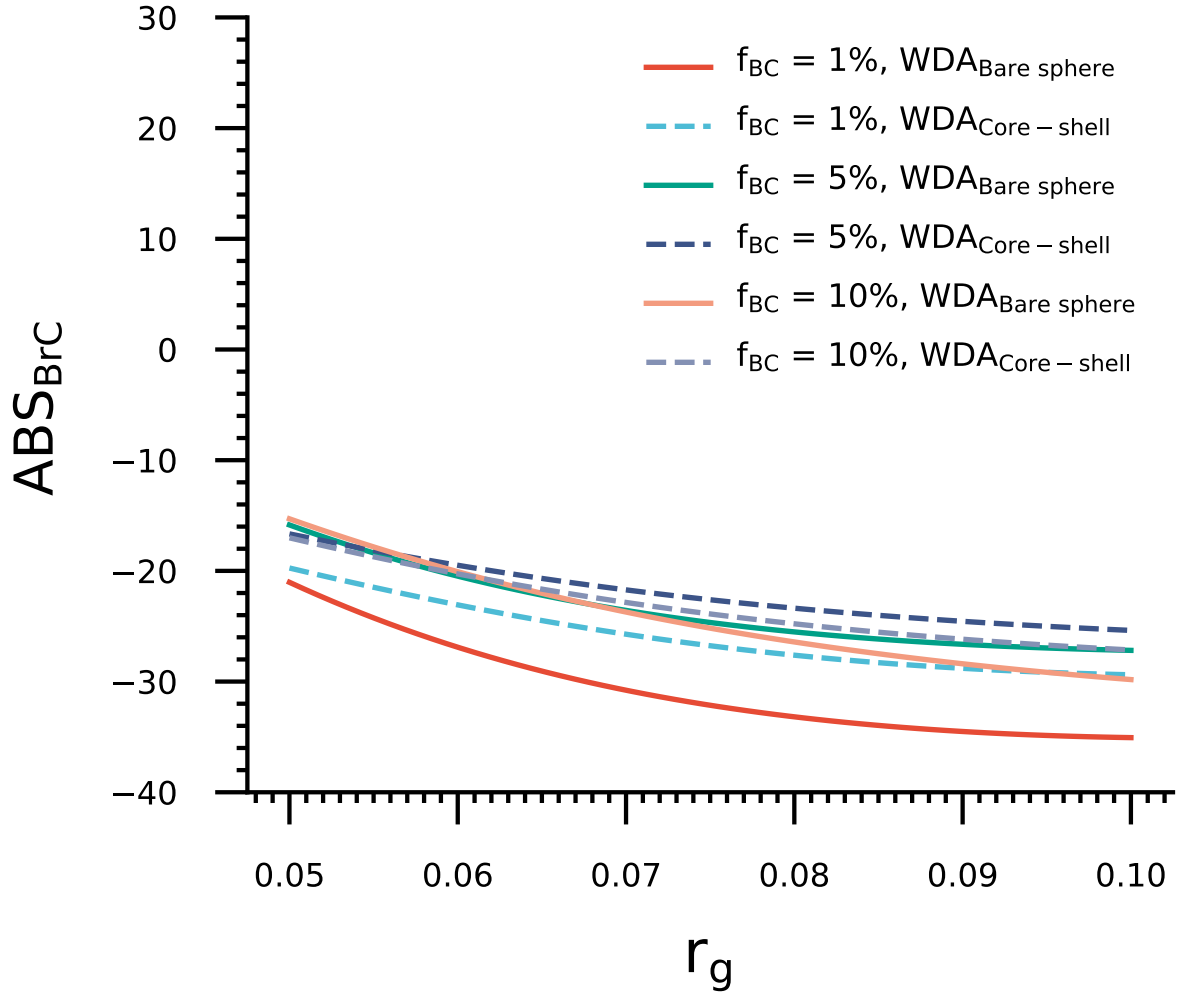

Figure S2. The variations of ABS_{BrC} estimated using the WDA method with r_g for fully coated BC (F = 1.0).

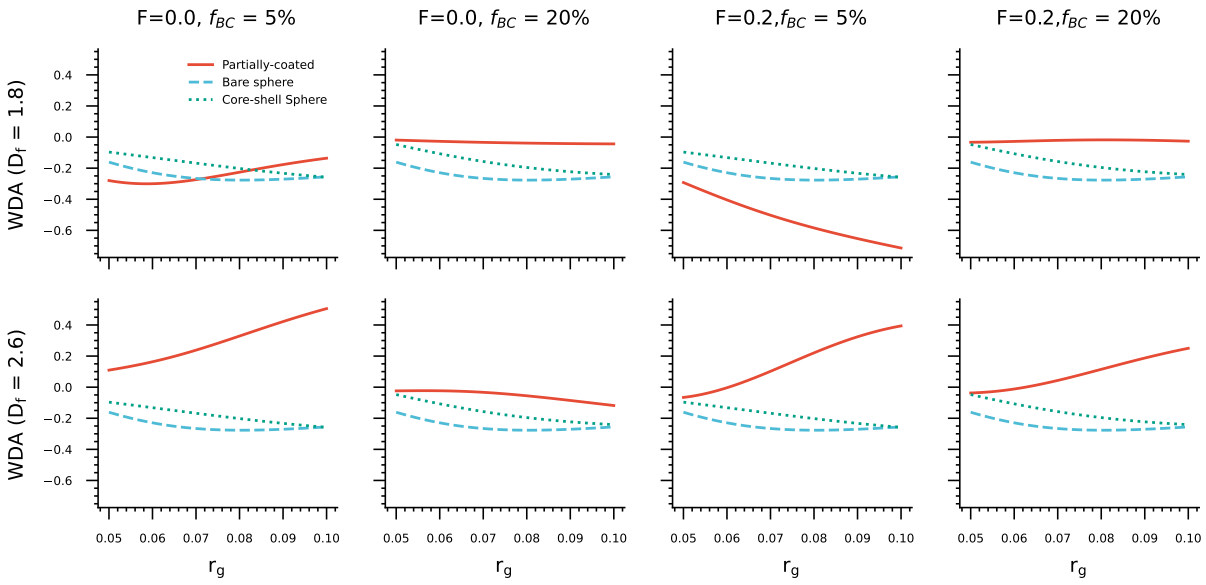

Figure S3. The variations WDA of BC with different morphologies with r_g at different mixing states, where σ_g = 1.4.

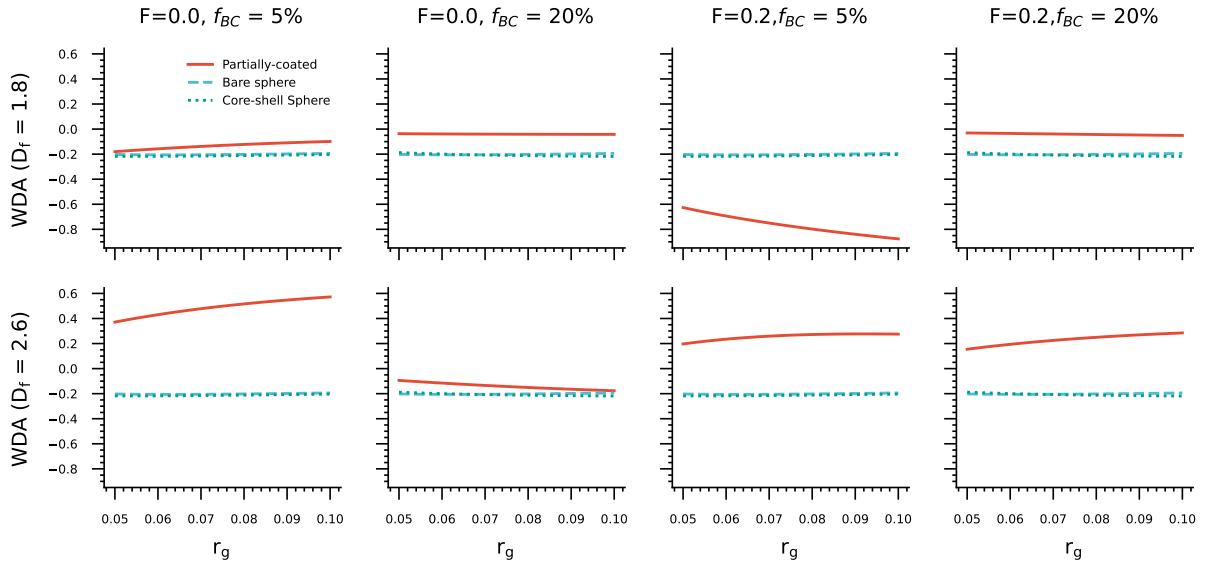

Figure S4. Similar to Figure S3, but for σ_g = 1.8.

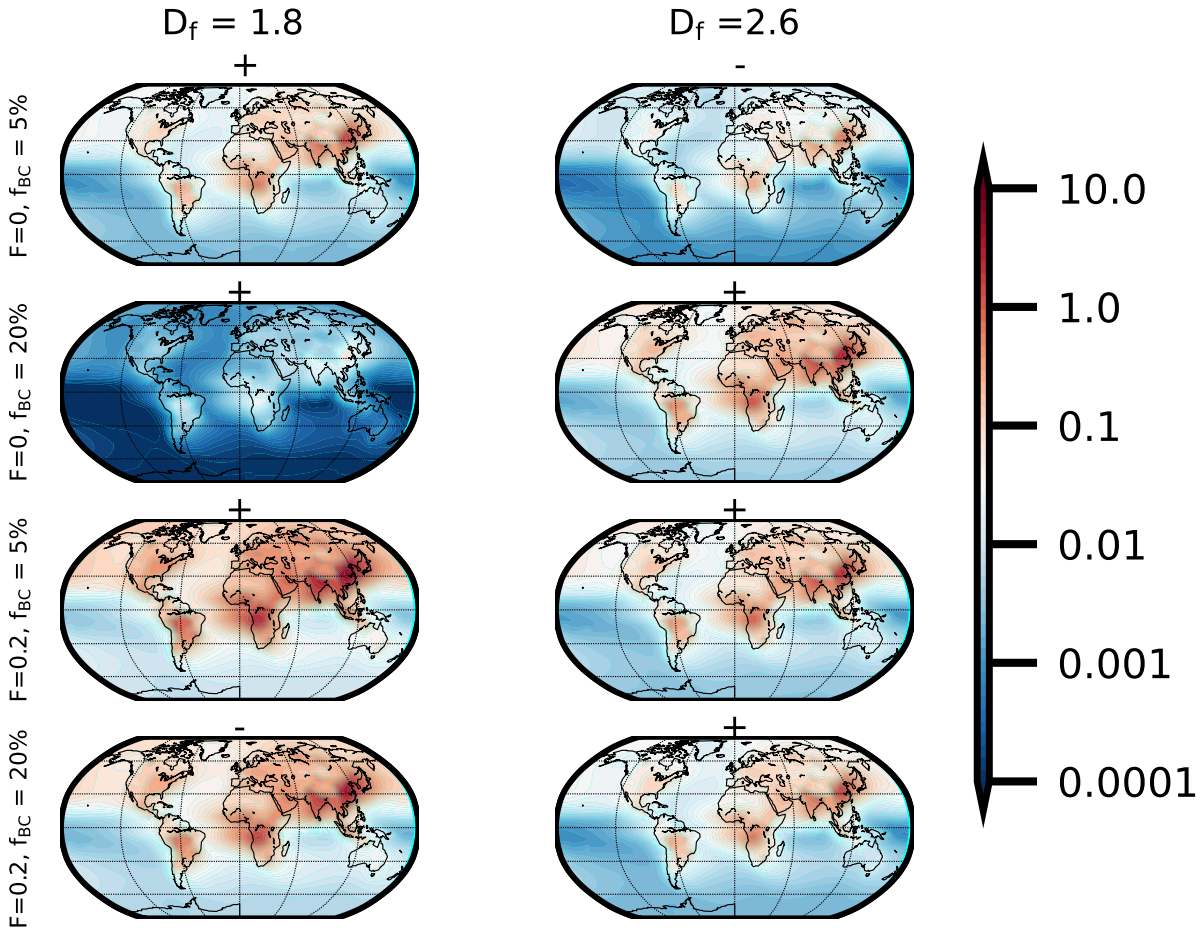

Figure S5. The global distributions of BC AAOD that is miattributed BrC based on the AAE_{440_675} = 1 method, where negative sign means underestimation, and positive sign means overestimation.

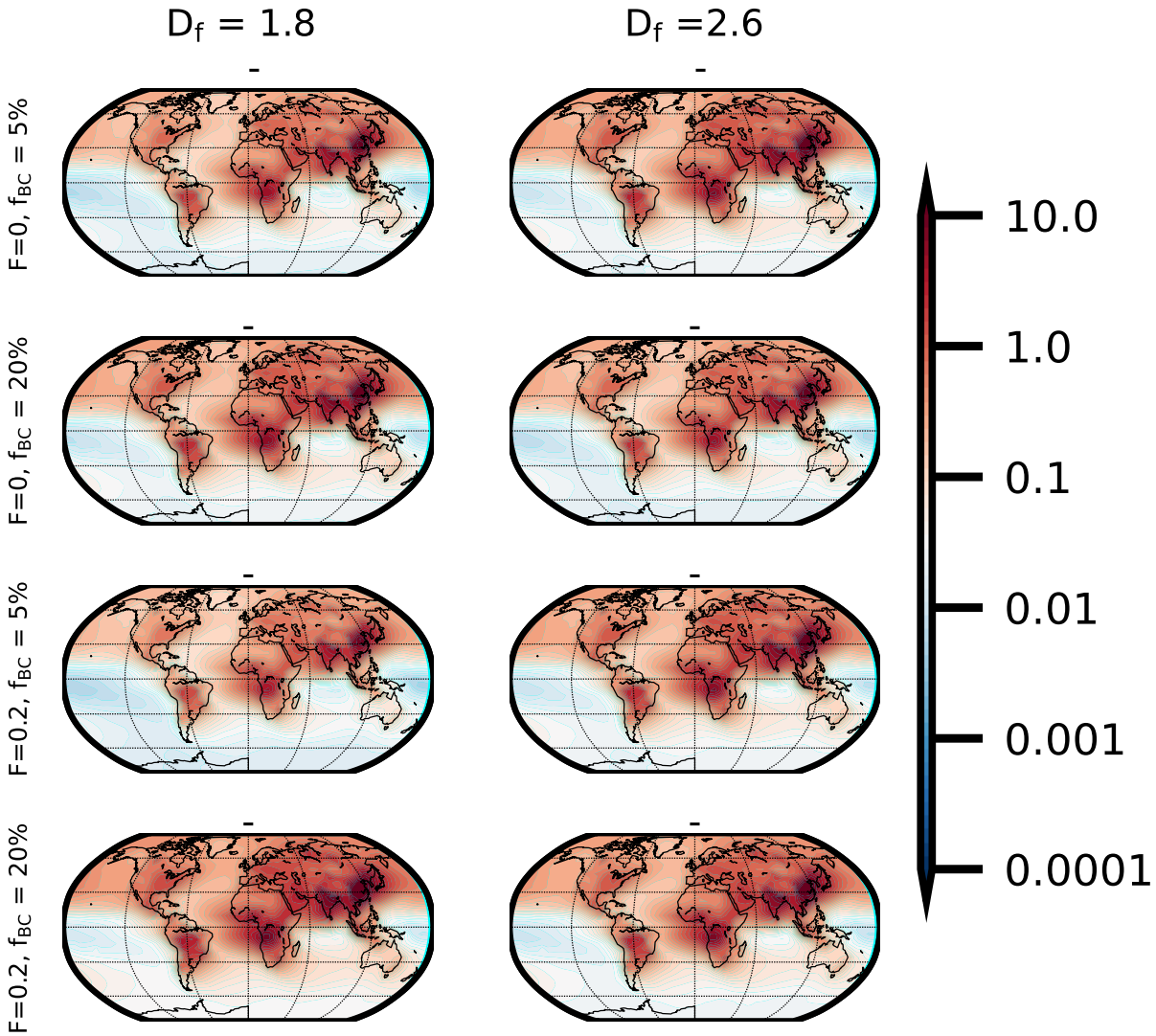

Figure S6. Similar to Figure S5, but for but using the core-shell WDA method.