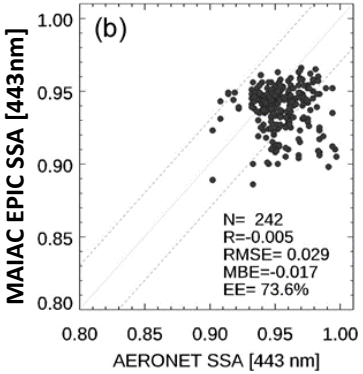
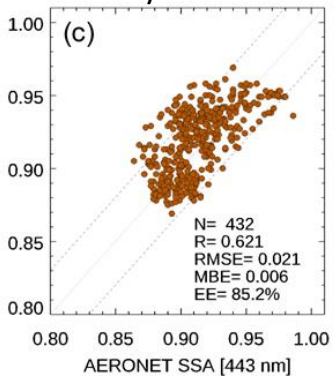
Aerosol Speciation Using UV-Vis Observations by DSCOVR/EPIC

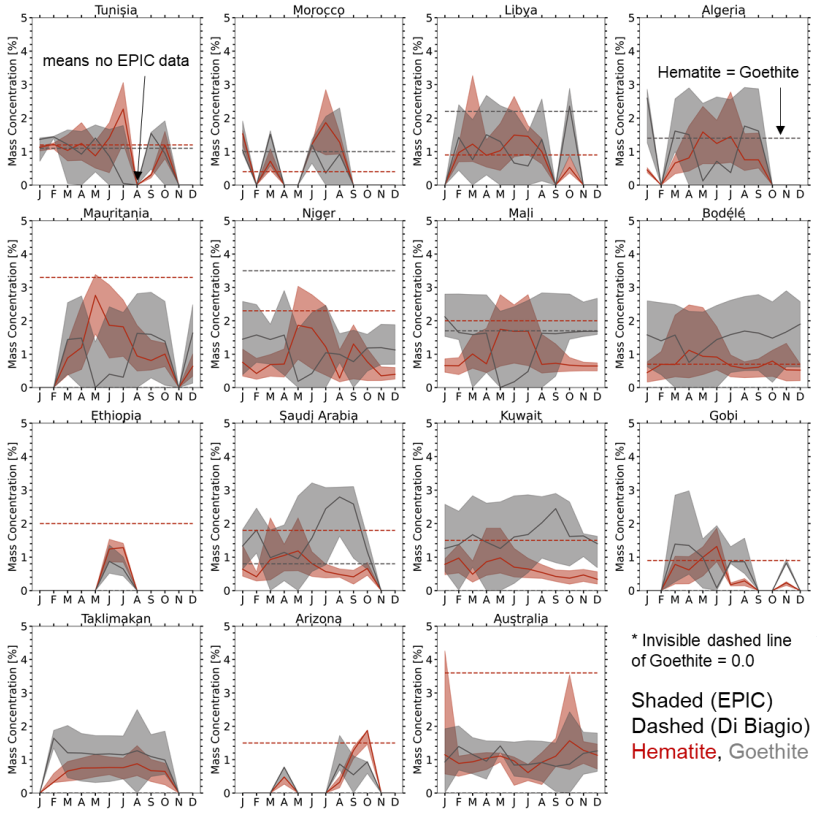
1. DSCOVR EPIC is at L1 point since 2015
2. The **v2 MAIAC EPIC** algorithm features ***joint retrieval of AOD and spectral aerosol absorption*** for dust and smoke
3. Retrieve {AOD, k_0, b} using optimal fit of 340, 388, 443 and 680nm, where ***imaginary ref. index***: $k_\lambda = k_0 (\lambda/\lambda_0)^{-b}$, λ_0 = 680nm
4. Good SSA accuracy vs AERONET: R~0.62, rmse~0.02, bias ~0.006 (dust @1km) and rmse~0.029, EE=73.6% (smoke @ 4km)

Smoke @4km height: North America



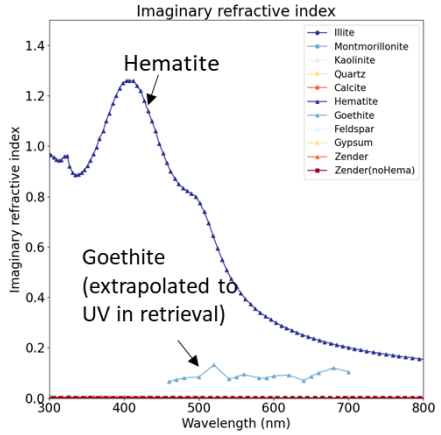
Dust: North Africa/ Arabia/Middle East

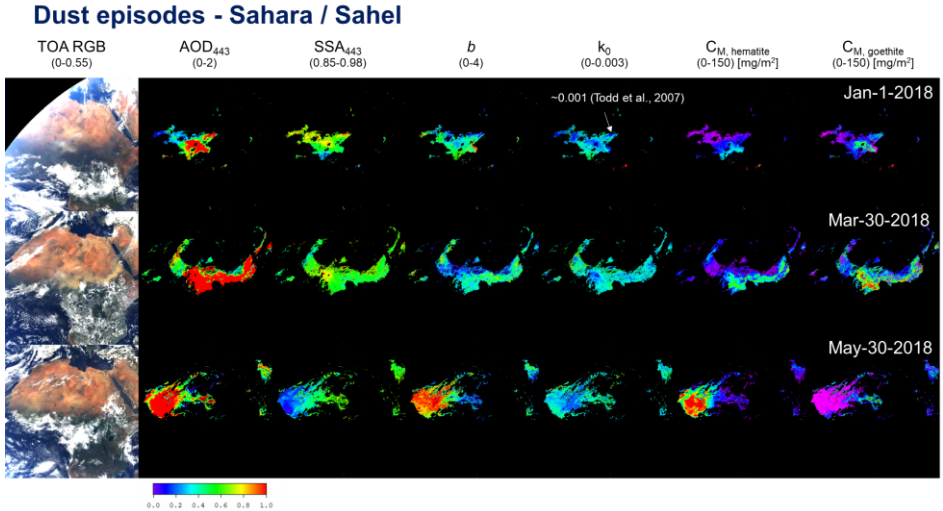




* Invisible dashed line of Goethite = 0.0

Shaded (EPIC)
Dashed (Di Biagio)
Hematite, Goethite





1. Following **Schuster et al. (2016)**, use Maxwell Garnett approx. to invert AOD-k_λ for Hematite/Goethite for dust and Black/Brown C for biomass burning aerosol
2. Global dust analysis completed: a) Hm/Gt range agree with Di Biagio (2019); b) Hm/Gt ratio shows seasonal and spatial variability (local sources vs transport)
3. Initial Climatology of Hematite and Goethite content is provided
4. BC/BrC analysis is coming soon