AC-S scattering corrections

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“Flat” or “Baseline” method

$$a_{\text{flat}}(\lambda) = a_{\text{m}}(\lambda) - a_{\text{m}}(\lambda_0)$$

Reference wavelength (λ_0):
AC-9 use 715 nm
AC-S use longest wavelength in NIR band

Constant fraction of b (scattering) “fixed”

$$a(\lambda) = a_m^{TS}(\lambda) - F\,[c_m^{TS}(\lambda) - a_m^{TS}(\lambda)\,].$$

Where F is a constant
Choice of F between 0.14 (clear waters) to 0.18 (turbid waters)

“Proportional” method

$$a_{corr}^{TS}(\lambda) = a_m^{TS}(\lambda) - \frac{a_m^{TS}(\lambda_r)}{c_m^{TS}(\lambda_r) - a_m^{TS}(\lambda_r)}\,[c_m^{TS}(\lambda) - a_m^{TS}(\lambda)]$$

Reference wavelength (λ_0):
AC-9 use 715 nm
AC-S use longest wavelength in NIR band

Method 1: Flat

- At reference wavelength, particulate and dissolved absorption = 0 so that the measurement at this wavelength is due to scattering.
- The shape and magnitude of the volume scattering function is independent of wavelength.

Method 2: Fixed scattering correction
- Scattering correction 14% where biological particles dominate, 18% where sediments dominate.
- The shape of the volume scattering function is independent of wavelength and type of material. Scattering correction is independent of wavelength.
- No reference wavelength used thus no temperature and salinity correction is needed in the visible region.

Method 3: Proportional - Reference wavelength and variable scattering correction

- At reference wavelength, particulate and dissolved absorption = 0 so that the measurement at this wavelength is due to scattering.
- The shape and magnitude of the volume scattering function is independent of wavelength.

Questions?