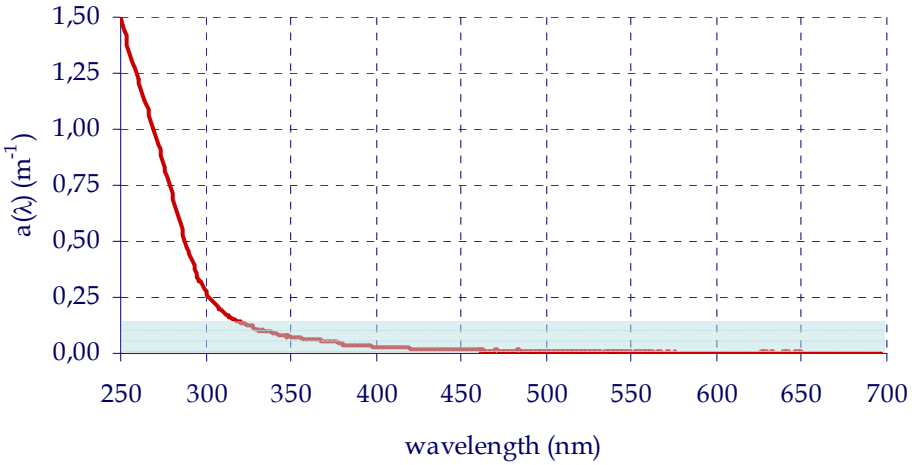
International Training Workshop on CDOM Characterization using Spectroscopic Techniques

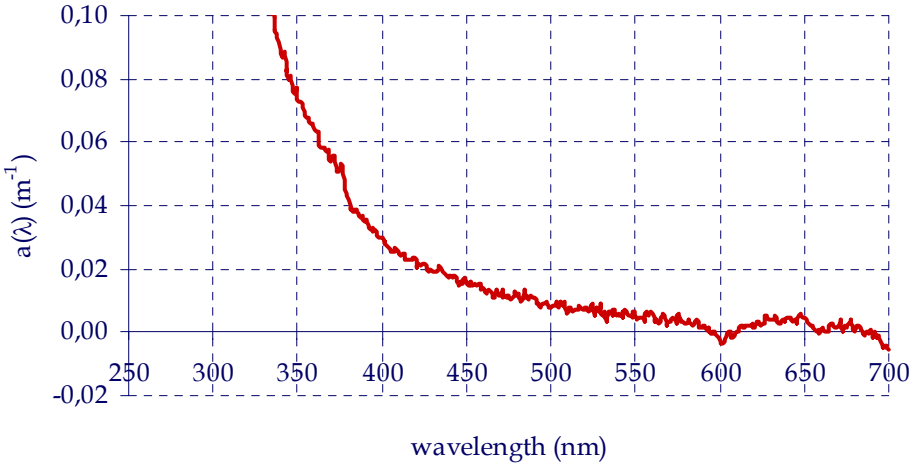
Granada, 19-21 May 2010

Corrections and Compatibility

discussion group

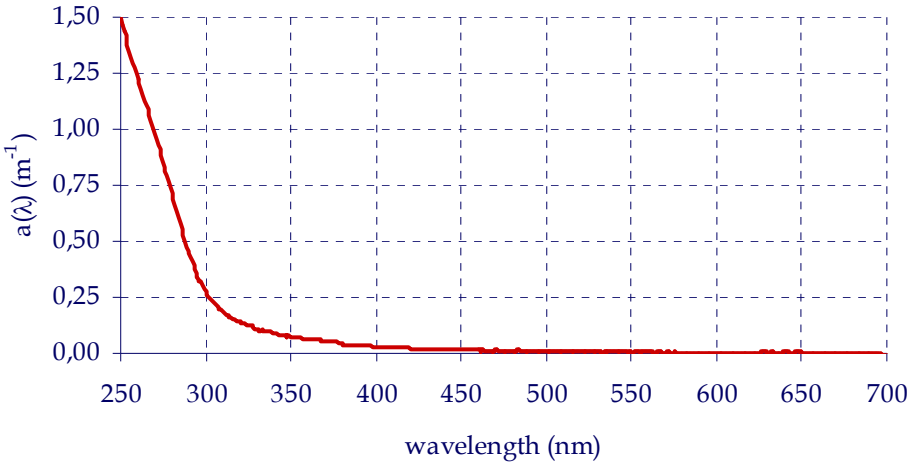
ABSORBANCE

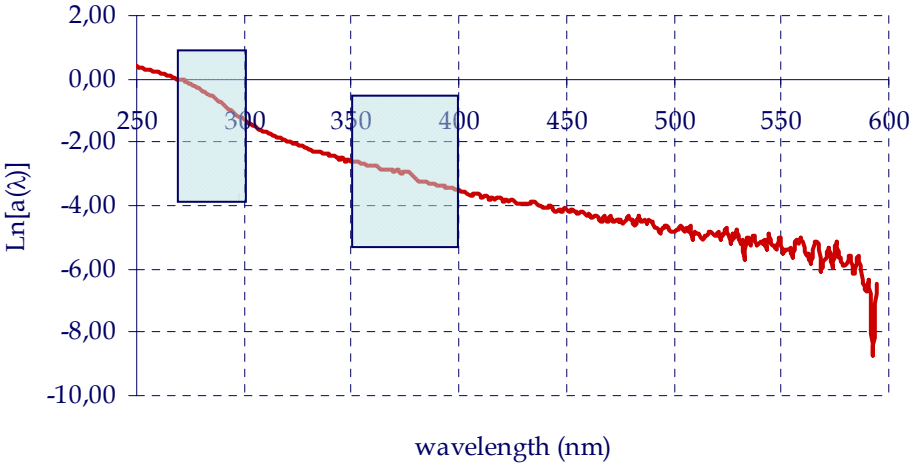




- **filtration**
  - GF/F (0.7 µm) ?
  - polycarbonate (0.2 µm)?
  - nitrocelulose (0.2 µm)?
  - supor (0.2 µm)?
- **cell path length**
  - 1 cm (±0.2 m^{-1})
  - 5 cm (±0.05 m^{-1})
  - 10 cm (±0.02 m^{-1})
  - 1-5 m (±0.002 to (±0.0005 m^{-1})
- **scan speed** (250 nm/min)
- **slit width** (1 nm)
- **Wavelength collection range**
  - 250 nm – 800 nm

ABSORBANCE





- **spectral corrections**

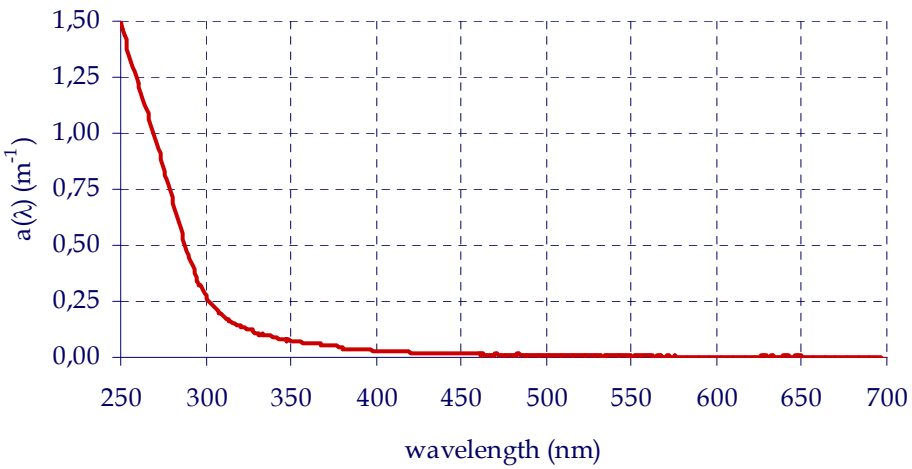
- $a(\lambda) = 2.303 \cdot \frac{Abs(\lambda) - Abs(600-700)}{L}$

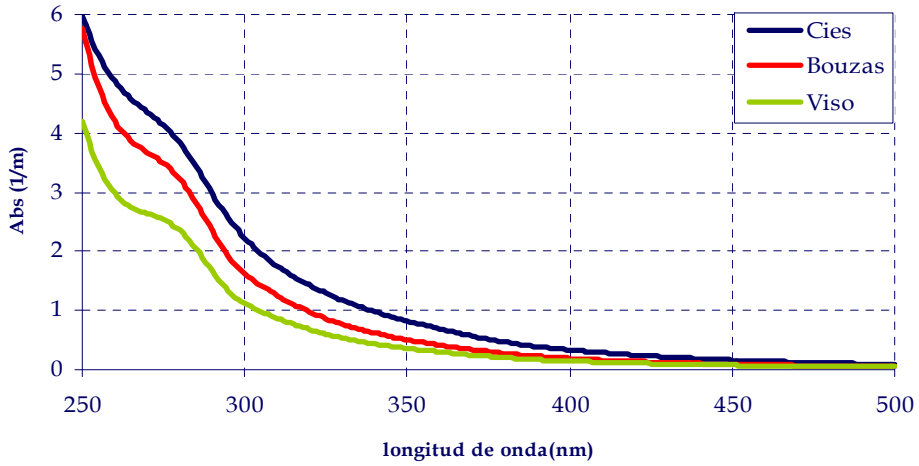
- **Spectral slope**

- $a(\lambda) = a(\lambda_0) \cdot \exp[-S \cdot (\lambda - \lambda_0)]$

- $\log[a(\lambda)] = Ln[a(\lambda_0)] - S \cdot (\lambda - \lambda_0)$

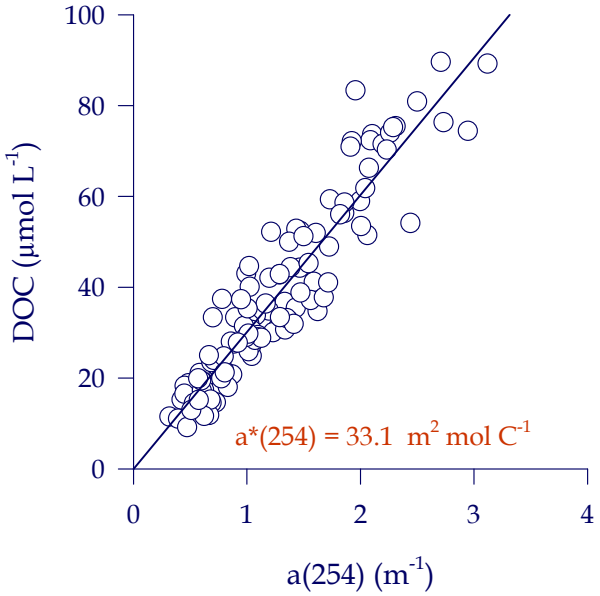
ABSORBANCE

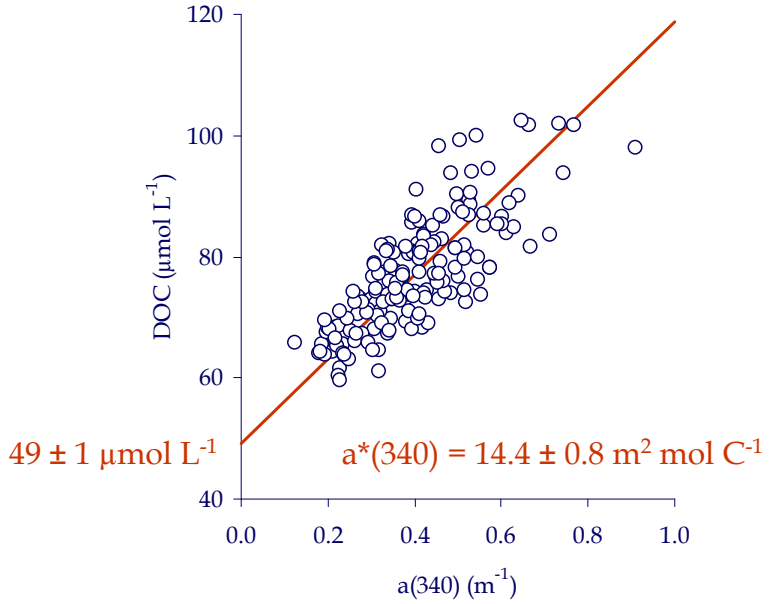




- spectral corrections
- $a(\lambda) = 2.303 \cdot \frac{Abs(\lambda) - Abs(650-750)}{L}$
- Spectral slope
- $a(\lambda) = a(\lambda_0) \cdot \exp[-S \cdot (\lambda - \lambda_0)]$
- $\log[a(\lambda)] = Ln[a(\lambda_0)] - S \cdot (\lambda - \lambda_0)$
- Non exponential decay
- Spectral indices
  - a(λ), with λ = 254, 325, 340, 350, 355, 443 nm, …
  - a*(λ), e.g SUVA = a*(254)

ABSORBANCE





- spectral corrections
- $a(\lambda) = 2.303 \cdot \frac{Abs(\lambda) - Abs(600-700)}{L}$
- Spectral slope
  - $a(\lambda) = a(\lambda_0) \cdot \exp[-S \cdot (\lambda - \lambda_0)]$
  - $\log[a(\lambda)] = Ln[a(\lambda_0)] - S \cdot (\lambda - \lambda_0)$
- Non exponential decay
- Spectral indices
  - a(λ), with λ = 254, 325, 340, 350, 355, 443 nm, …
  - a*(λ), e.g SUVA = a*(254)
  - a(254)/a(365)

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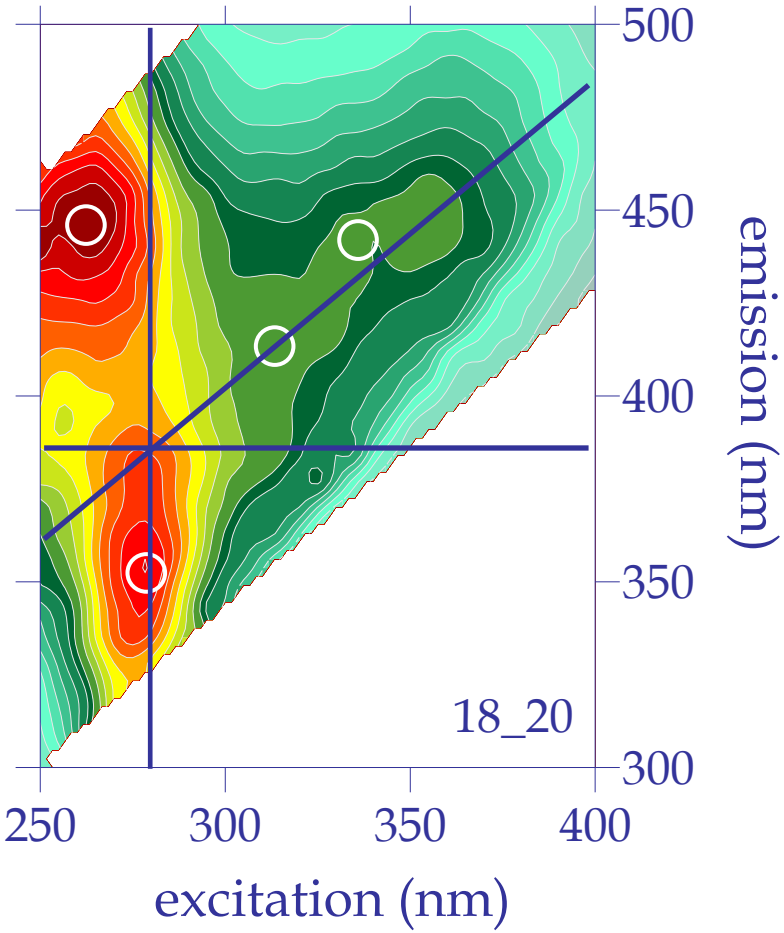

- **filtration/preservation**
- **cell path length** (1 cm)
- **integration time** (0.25-0.50 s)
- **slit width**
  - excitation 1.5 -10 nm
  - emission: 1.5 -10 nm
- **data acquisition**
  - excitation/emission pairs
  - Exc/Emm indices (e.g. F.I.)
  - excitation spectra
  - emission spectra
  - syncronous spectra
  - excitation/emission matrices
    - excitation
    - emission
    - syncronous

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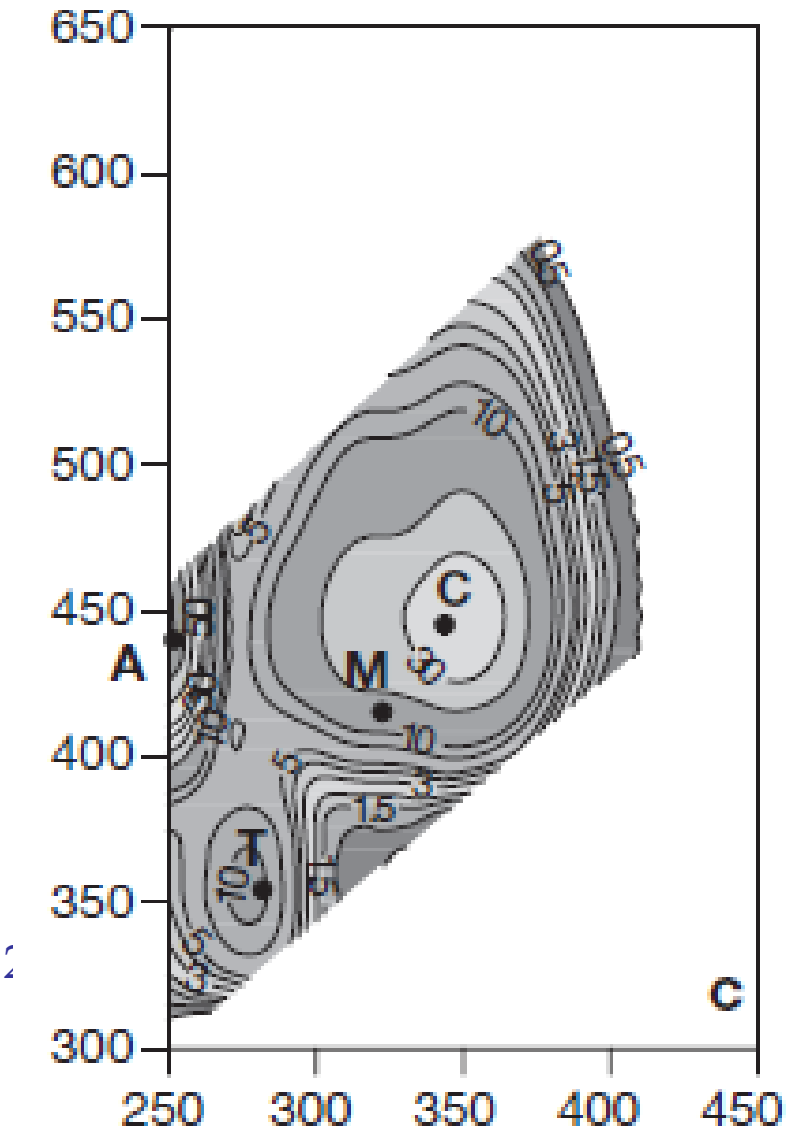

- **spectral corrections**
  - Raighley scater
  - Raman scatter
  - inner filter effect (> 10 m^{-1})
  - excitation spectral correction
  - emission spectral correction
- **calibration**
  - Raman peak height/area
  - QS units (Exc/Em = 350/450)
  - QS units (specific Exc/Em)
  - QS units /Trp units
  - **natural CDOM (IHSS?)**