**Particle absorption method**

**Sampling**

Seawater volumes of 340-630 ml are filtered onboard through 25 mm Whatman GF/F filters. After filtration, filters are stored in liquid nitrogen until analysis. Samples are run within a week after collection.

**Analysis procedure**

Optical densities of particulate matter are measured with a Shimadzu UV-2401PB dual-beam spectrophotometer equipped with a 60mm diameter ISR-2200 integrating sphere.

Two wetted blank filters are used for baseline correction. Three replicates are performed in different parts of the blank filter. Each frozen sample filter is allowed to thaw and placed in Petri dish on Q-water to ensure proper hydration. The sample filter is then placed on the integrating sphere and run against the blank reference. Three replicates are also performed on each sample filter.

After determination of the particle optical density, samples are de-pigmented in 100% methanol for 48 hours. De-pigmented filters are then rinsed with Q-water on a filtration apparatus and re-scanned following the same procedure as described above.

**Data processing**

The three measurements performed on blank and samples are averaged. The averaged blank filter measurement is subtracted from the averaged absorbance of sample filter. Then spectra are zeroed at 850 nm. Beta correction is then applied to the data. The beta-correction coefficients used are derived from local phytoplankton populations (Guillocheau 2003):

ODs corr = 0.251 ODf + 0.283 (ODf)2

The final absorption coefficients are calculated as:

Ap final = 

The same equation is used to calculate the final de-pigmented absorption coefficients, adfinal.

The spectral absorption for phytoplankton pigments is computed as the difference between particulate and de-pigmented absorption coefficients.

**Reference:**

Guillocheau, N. 2003. -correction experiment report. University of California, Santa Barbara.