Diel variations of the optical properties of oceanic phytoplankton - Preliminary results
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Introduction
With the recent development of geostationary satellites equipped with ocean color sensors and the increasing availability of moored sensors, temporal resolution of ocean color data is higher than ever. This allows the investigation of diel variations of phytoplankton ecology and physiology from in situ and space potentially providing new insights into growth and physiology. This study aims to characterize the diel variations of phytoplankton optical properties and possible covarying factors in the lab, to understand what can be observed in situ and from space.

Materials and Methods
- 4 species
- 3 - 4.2 L semi-continuous cultures per species
- Realistic illumination with light intensity mostly following a sinusoidal curve during the day and no light at night
- Max PAR at midday in cultures: 400 μmol photons/m²
- Temperature maintained at 19°C
- 1 sampling day per species every hour from 7 am to 9 pm
- 7 time points with reduced dataset
- Cell counts (Coulter Counter)
- Chl (Turner fluorometer, N-A method)
- Flow cytometry samples (ethanol fixation)
- Flowcam
- Fv/Fm (FRRF fluorimeter, Solisense)
- 8 time points with complete dataset every two hours, including all samples from the reduced dataset
- Optical measurements (Chl from a BB9 (Wetlabs Inc.) and c from an ACS (Wetlabs Inc.))

Results

E. Huxleyi (cocolithophore)

D. Tertiolecta (green algae)

T. Pseudonana (diatom)

P. Tricornutum (diatom)

Discussion and conclusion
We did not observe clear diel variations for dsw*, but some changes in csw*
This poster presents only preliminary results, further analyses are planned with additional measures to understand more deeply these results.

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Background image: Geostationary Ocean Color Imager (GOCI) Satellite, Korea Ocean Satellite Center (KOSC).