AQUALOOKS

Improving atmospheric correction and aquatic particle retrieval with bidirectional remote sensing data

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The number of pixel masked because of high sunglint and atmospheric correction failure remains one of the main limitations of ocean color remote sensing.

To correct sunglint many approaches have been proposed with relative success but the multi-view approach available on some satellites have not been intensively exploited so far. **The multi-view approach** could be a very good tool to correct and analyze sunglint and to improve AC correction.
Remote sensing multi-view: a same target, a same time: different viewing geometries

Multi-view satellites for AQUALOOKS:
- **Pleiades** (dual or trial view)
- **CHRIS-PROBA** (5 images of a same target)
- **SEVIRI** (constellation of 3 satellites + geostationary satellite)
Multi-view imagery can be used to developed/validate sunglint correction algorithms. (Dual-view Pleiades)

Pléiades, 2016-04-21, 14:05:39  
(20.3° VZA into sun)  

Apply sunglint removal algorithms here

Pléiades, 2016-04-21, 14:04:37  
(19.6° VZA away from sun)  

Validate here
AQUALOOKS aims to better characterize BRDF from water to satellite in turbid waters

**BRDF: Bidirectional Reflectance Distribution Function**

*A function that defines how light is reflected by a surface. It is a function of illumination and viewing geometry.*

- **Water BRDF**: affected by particle size and composition
- **Air-water interface BRDF**: affected by sunglint and skyglint
- **Atmospheric BRDF**: affected by air mass and atmosphere composition

**Above water reflectance measurements**

**PANTHIR**

**In situ measurements**

**Multi-view remote sensing**

**Theoretical analysis with radiative transfer models**
AQUALOOKS main objectives

• Design of **multi-look algorithms for improved atmospheric correction** over turbid waters

• Design and testing of **multi-look algorithms for improved air-water interface (including sunglint) correction** over turbid water

• Investigation of feasibility of **multi-look algorithms for retrieval of aquatic particle size/type**

• Refinement of a pan-and-tilt system for **above water radiometry to provide multi-look BRDF data**

• Provide recommendations for **future satellite missions**
REMSEM activities in AQUALOOKS

AQUALOOKS project

1. COORDINATION
2. THEORY
3. MEASUREMENTS
4. IMAGERY
5. QUALITY CONT.
6. APPLICATIONS
7. DISSEMINATION

INTERNAL and EXTERNAL PROJECTS/USERS

Scientific Community

General Public
Multi-view imagery can be used to improve atmospheric correction algorithms. (CHRIS-PROBA)