Proposal for a New IOCCG Working Group

Proposed by:
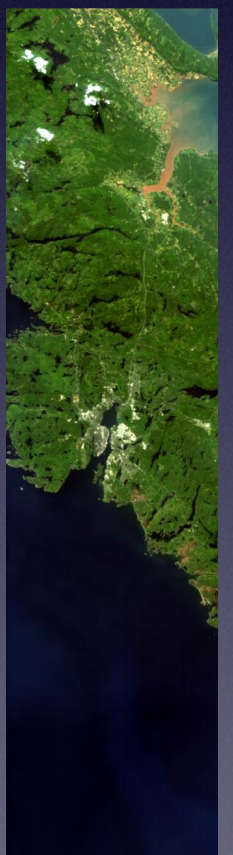### *Vitorrio Brando, CNR, Italy*
Susanne Craig, Dalhousie University, Canada

Working Group Title:
Guidelines for Algorithm Selection for Optically Complex Waters - GASOCW

HICO image of Lake Erie, Ohio
http://hico.coas.oregonstate.edu/

HICO image of Bedford Basin
Dave Millar, NRL, DC

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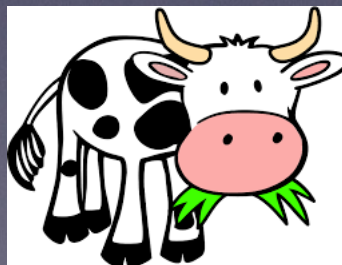
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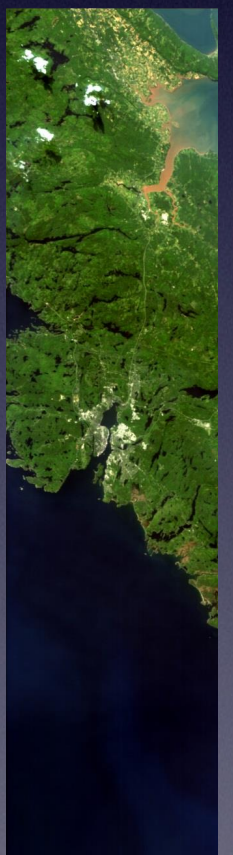## *Susanne Craig, Dalhousie University, Canada*

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Other suggestions for name/acronym gratefully received (sounds like gassy cow)

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Background & Rationale

- Coastal & inland waters play host to an enormous suite of vital ecosystem services and resources

- Under increasing pressure from a rapidly changing climate & anthropogenic influences

- Ocean colour radiometry has the potential to synoptically reveal systems' responses to these pressures
  - ➡ *Facilitate rapid & appropriate response & mitigation measures*

Background & Rationale

- Many approaches for retrieving IOPs and/or water constituent concentrations exist (e.g. semi-analytical, neural networks, empirical,…)

- A universally 'perfect' algorithm or approach does not exist

- Both specialists and non-specialists remain uncertain over how to choose the most appropriate algorithm for their area/application of interest

Proposed Solution...

- Develop a framework to objectively guide algorithm implementation for optically complex waters

  ➡ Develop a deeper understanding of algorithms' strengths & weaknesses

  ➡ Provide a robust, unambiguous operational strategy for end users

  ➡ Exploit the full potential of a new generation of ocean colour sensors

Terms of Reference

- Identify current algorithms suitable for use in optically complex waters (e.g. band ratio, SAA, NN,…)
  - The field has evolved substantially since Report Nos. 3 & 5
  - A conceptual & applications-focussed update will be performed
- Characterise underlying principles of each algorithm type
  - Identify what components perform well/poorly & in what scenarios (when/ where)
- Define a procedure and set of evaluation metrics to identify the best-performing algorithm for key geophysical parameters/IOPs
- Examination of the potential of multi-water type processing
  - Combination of different (optimal) algorithm products to produce a single OC end product
- Formulation of guidelines for specialists & non-specialists for algorithm selection and implementation

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> *This group will NOT perform an inter-comparison of algorithms!!*

Deliverable

- *Documentation of an integrated approach to assess algorithm performance and suitability:*
    - *Combines fundamental scientific principles and real-life requirements of managers & researchers*

Proposed Membership

Academic/Government Research Community
- Vittorio Brando (co-chair): CNR, Italy
- Susanne Craig (co-chair): Dalhousie University, Canada
- Jeremy Werdell: NASA, USA
- Zhongping Lee: UBoston, USA
- Chuanmin Hu: USF, USA
- Timothy Moore: UNH, USA
- Rick Stumpf: NOAA, USA
- Caren Binding: Environment Canada, Canada (TBC)
- Vincent Vantrepotte: CNRS, France
- Hubert Loisel: IRD France & STI Vietnam
- Bouchra Nechad: RBINS, Belgium
- Thomas Schroeder: CSIRO, Australia

Private Sector
- Daniel Odermatt: O&B, Switzerland (TBC)
- Mark Matthews: South Africa (TBC)
- Steef Peters: Water Insight, Netherlands

Draft Timeline

- *Q4 2016: 2-day workshop in to develop report structure (before/after Ocean Optics, Oct. 2016?). Estimate 12 months for draft report.

- Q2 2017: 1-day workshop in first half of 2017 to check report progress (before/after IOCS Meeting, May 2017?)

- Q3-4 2017: First draft of report, ~Oct. 2017

- Q4 2017: 2-day workshop to finalise report

*Q - yearly quarter

Thank you