IOCCG WG on the detection of Phytoplankton Functional Types — Update —

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History

- **July 2006**: 1st meeting in Paris
  - ➔ Scientific discussions
- **October 2006**: 2nd meeting in Montreal
  - ➔ Table of content (with chapter's leaders)
- **March & July 2007**: Call for contributions
  - ➔ About half of the contributions received
- **March 2007**: HPLC data into NOMAD (J. Werdell)
  - ➔ Expected to be used for validation
- **July 2007**: PFT inter-comparison project (CNES)
  - ➔ Expected to be used for validation
- **I have been quite inefficient since then…**

Report status (1)

Chap. I: Introduction to PFTs (Heidi)

- Introduction (Heidi/Lesley)
- Forms of PFTs (all)
- Motivation for the detection of PFTs from space

Chap. II: Inherent Optical Properties of PFTs (Dariusz)

- Phytoplankton Properties
- Phytoplankton IOPs
- Forward models

Report status (2)

Chap. III: Inverse Models (Collin)

- Techniques
- Inputs/outputs
- Sensitivity analyses
- Wavelength number and bandwidth considerations

Chap. IV: Existing Remote Sensing Algorithms (Cyril)

- Empirical algorithms
- Ecological algorithms
- Semi-analytical algorithms
- Analytical algorithms

Report status (3)

Chap. V: Comparison of Algorithms (Cyril)

- Monthly global results for global empirical algorithms
- Regional daily or weekly results
- NOMAD dataset (HPLC, Chl and Rrs)

Chap. VI: Conclusions/Recommendations (Cyril)

- Definitions and characteristics of PFTs
- Summary of the Algorithms' comparison
- What in situ measurements do we need?
- What satellite measurements do we need?

Analysis

- **It’s too slow**
  - ➔ Need to “reactivate” people’s interest
- **It’s too ambitious**
  - ➔ Need to revise the scope of the report content

Proposed new report

Chap. I: Introduction to PFTs

- Introduction
- Forms of PFTs
- Inherent Optical Properties of PFTs
- Inverse models
- Motivation for the detection of PFTs from space

Chap. II: Existing Remote Sensing Algorithms

- Empirical algorithms
- Ecological algorithms
- Semi-analytical algorithms
- Analytical algorithms

Chap. III: Comparison of Algorithms

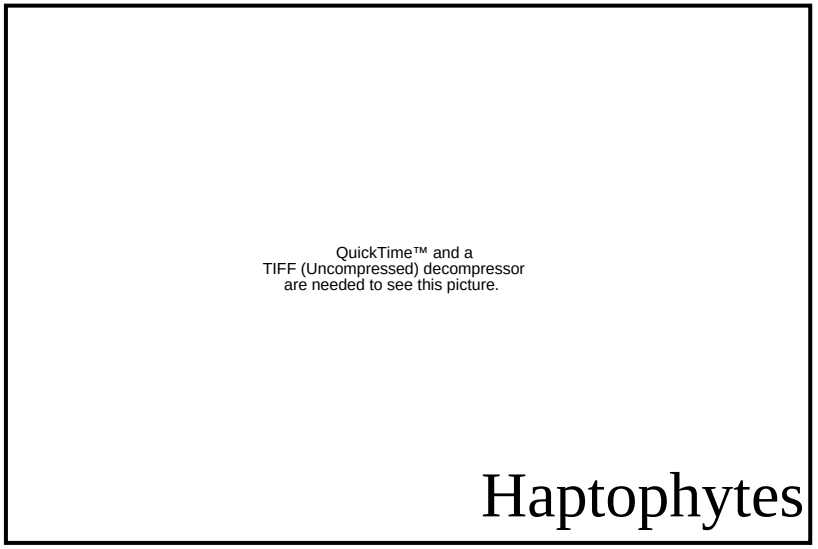
- Monthly global results for global empirical algorithms
- NOMAD dataset (HPLC, Chl and Rrs)

Chap. IV: Conclusions/Recommendations

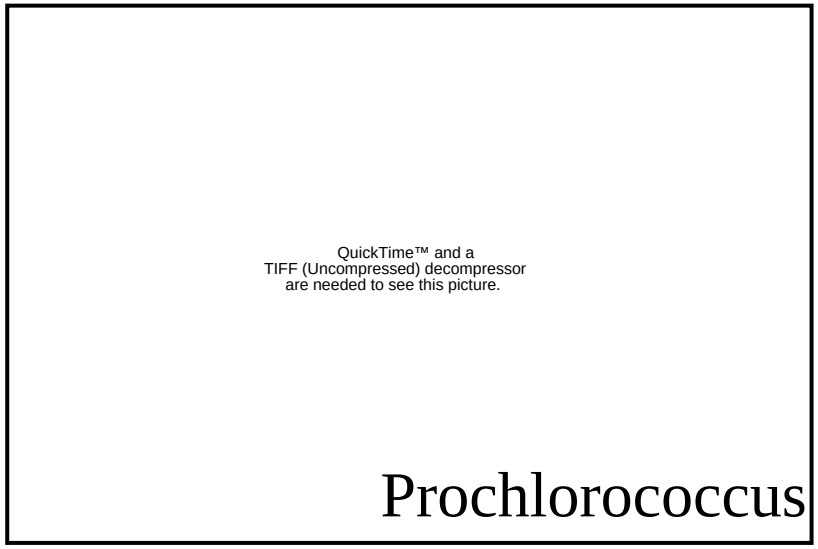
- Definitions and characteristics of PFTs
- What in situ measurements do we need?
- What satellite measurements do we need?

The NOMAD HPLC dataset

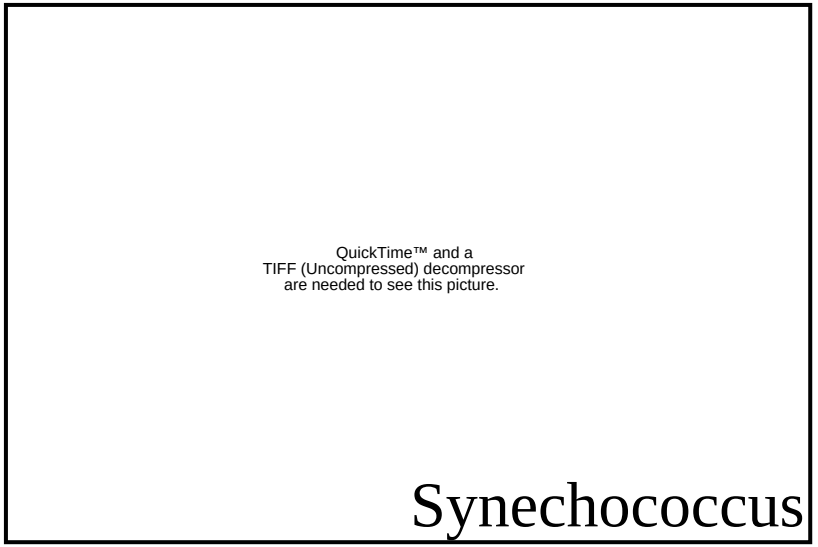
PFT identification using pigment criteria of Alvain et al. (2005)



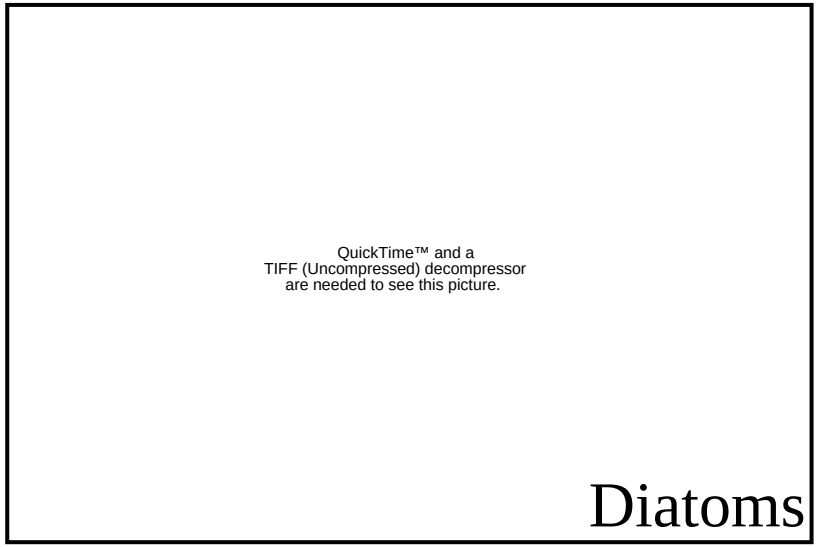
Haptophytes



Prochlorococcus



Synechococcus



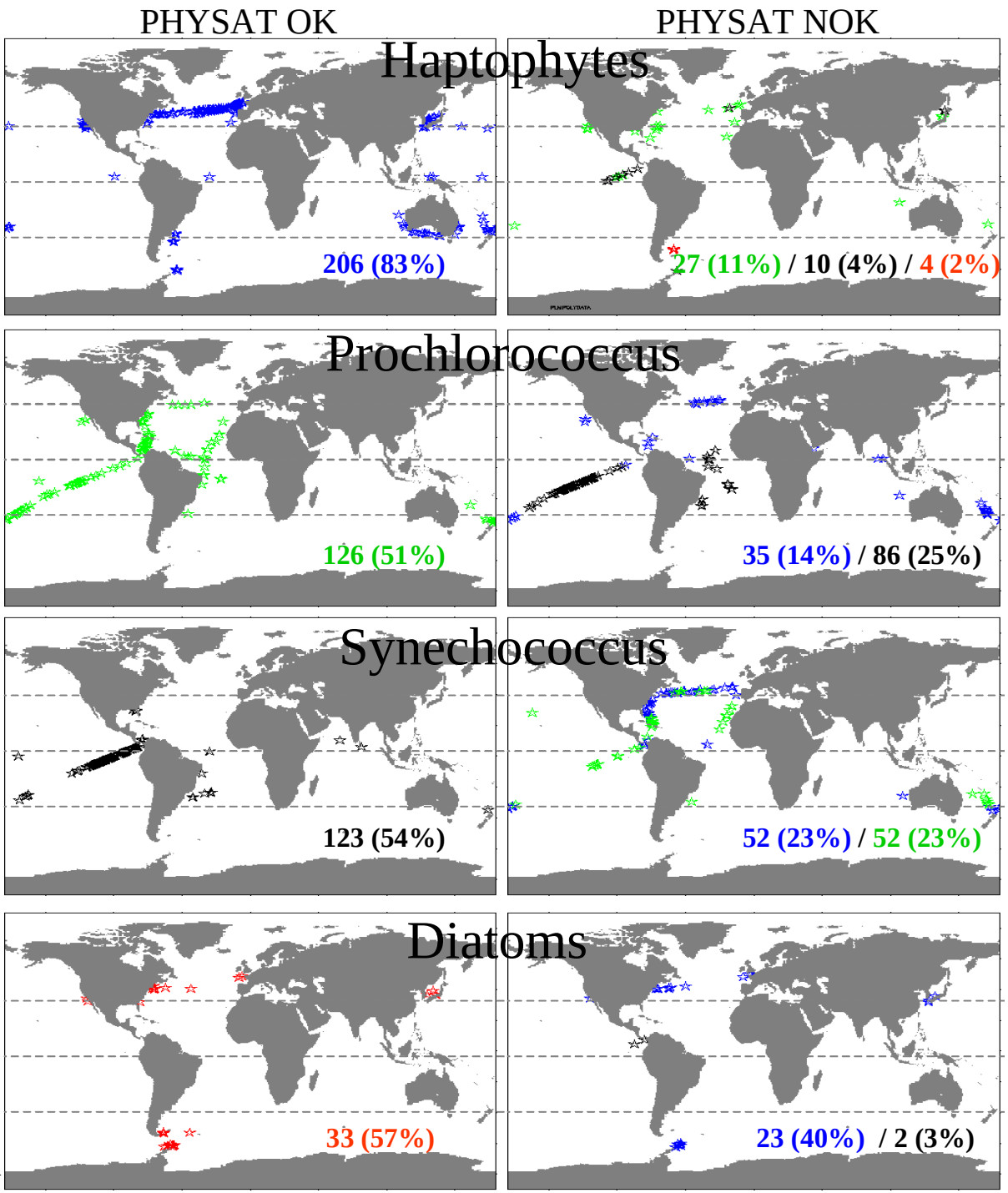
Diatoms

Use of NOMAD and GEP&CO to validate PFT algo

Matchups between in-situ data and PHYSAT monthly PFT

➔Apply this approach to other algorithms

Alvain et al., in revision

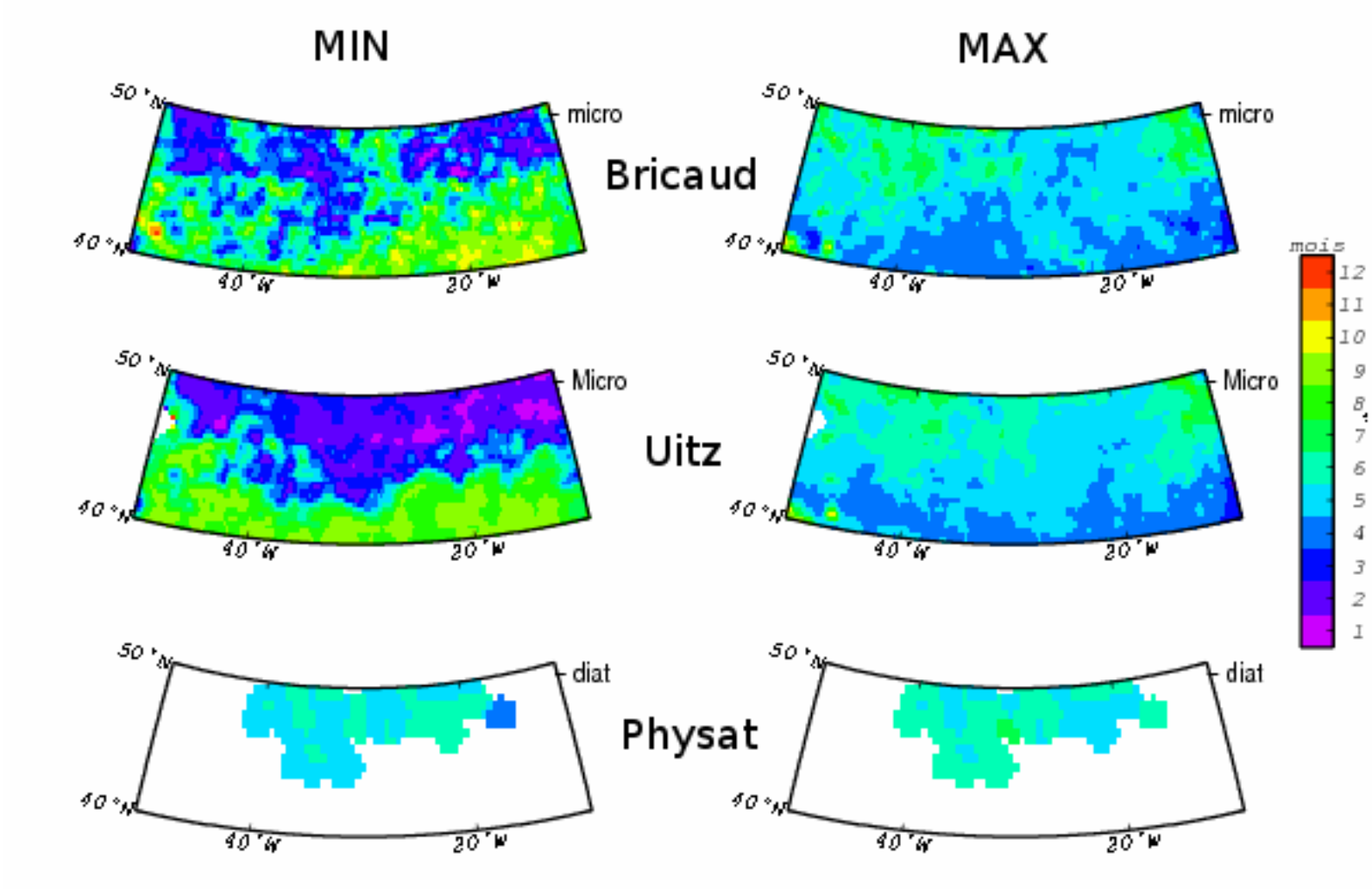


The PFT inter-comparison project

- Funded by CNES, leaded by H. Loisel
- Studied PFT algorithms:
  - PFT (Alvain et al., 2005)
  - Pico/Nano/Micro (Uitz et al., 2006)
  - Size Index (Ciotti and Bricaud, 2006)
  - Gamma (Loisel et al., 2006)
- Comparison of monthly global products
- Compare the seasonal cycle of the different parameters

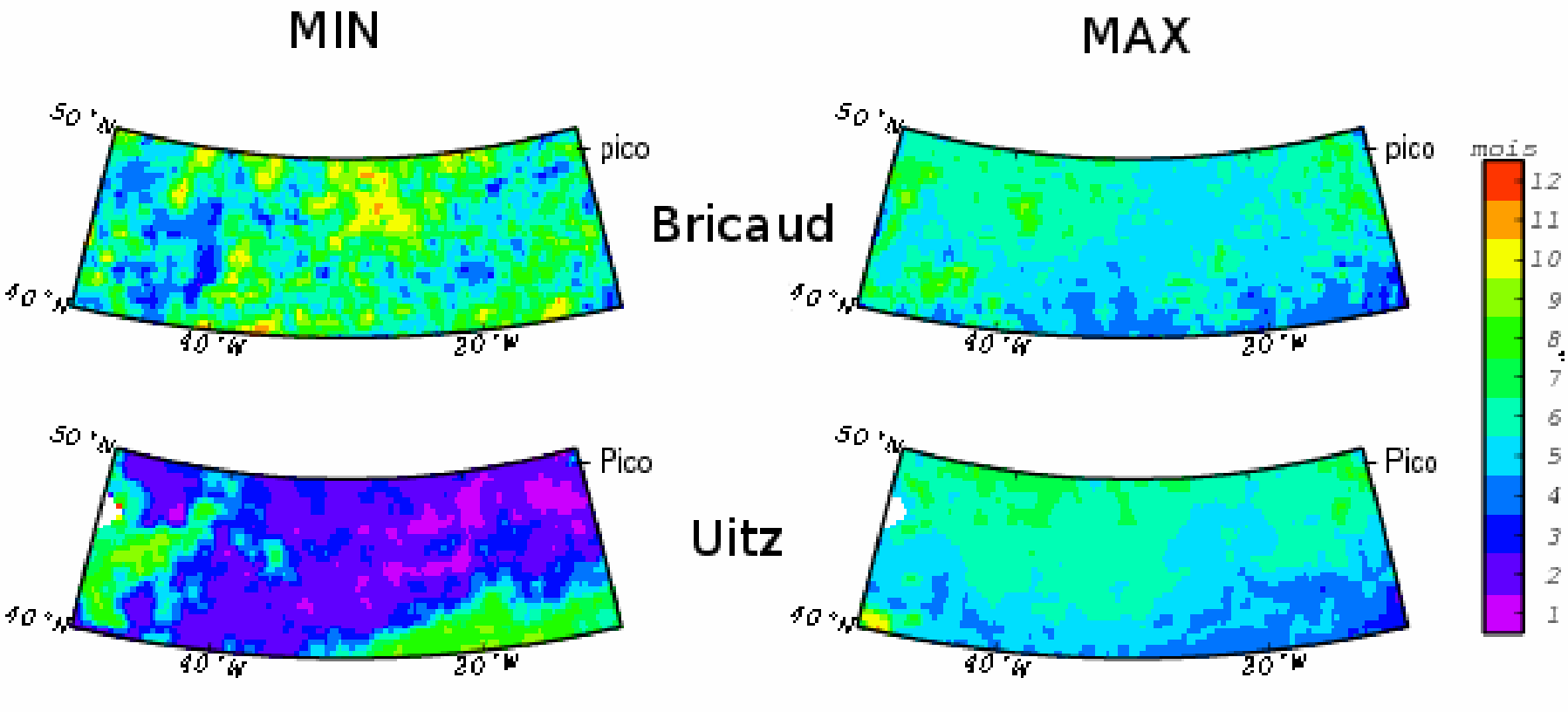
Example of the North Atlantic

For micro (diatoms): Good agreement in the months of max and min



Example of the North Atlantic

For pico: Good agreement in the months of max, but not for the min



Example of the North Atlantic

Good agreement in the months of min and max for S and γ