

GLI Ocean Channel Saturation Issue Report

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ADEOS-II GLI Workshop 2000

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Summary of GLI Saturation

- Inappropriate specification at some of the ocean channels found in PFT data analysis.
- Utilizing the launch delay, planning for PFM modification studied.
- Software efforts without hardware modification also studied.
- Conclusion in October 2000.

History of GLI Saturation

- May, Jun, Oct 1999 Review Meetings
Report of PFT results, Non-linearity pointed
- Dec 1999 ADEOS/ADEOS-II W/S
Report to PI at Workshop, Discuss measures
- Jan 2000 GLI Leaders Meeting
Simulation with OCTS data, Saturation
pointed out

History of GLI Saturation (2)

- MAR 2000 GLI Leaders Meeting
Investigation Status Updates
- May 2000 GLI Leaders Meeting
PI team Interim Report
- June 2000 GLI Leaders Meeting
Summary & Conclusion
- August 2000 English Translation of the PI
team Report

ADEOS-II Geophysical Products

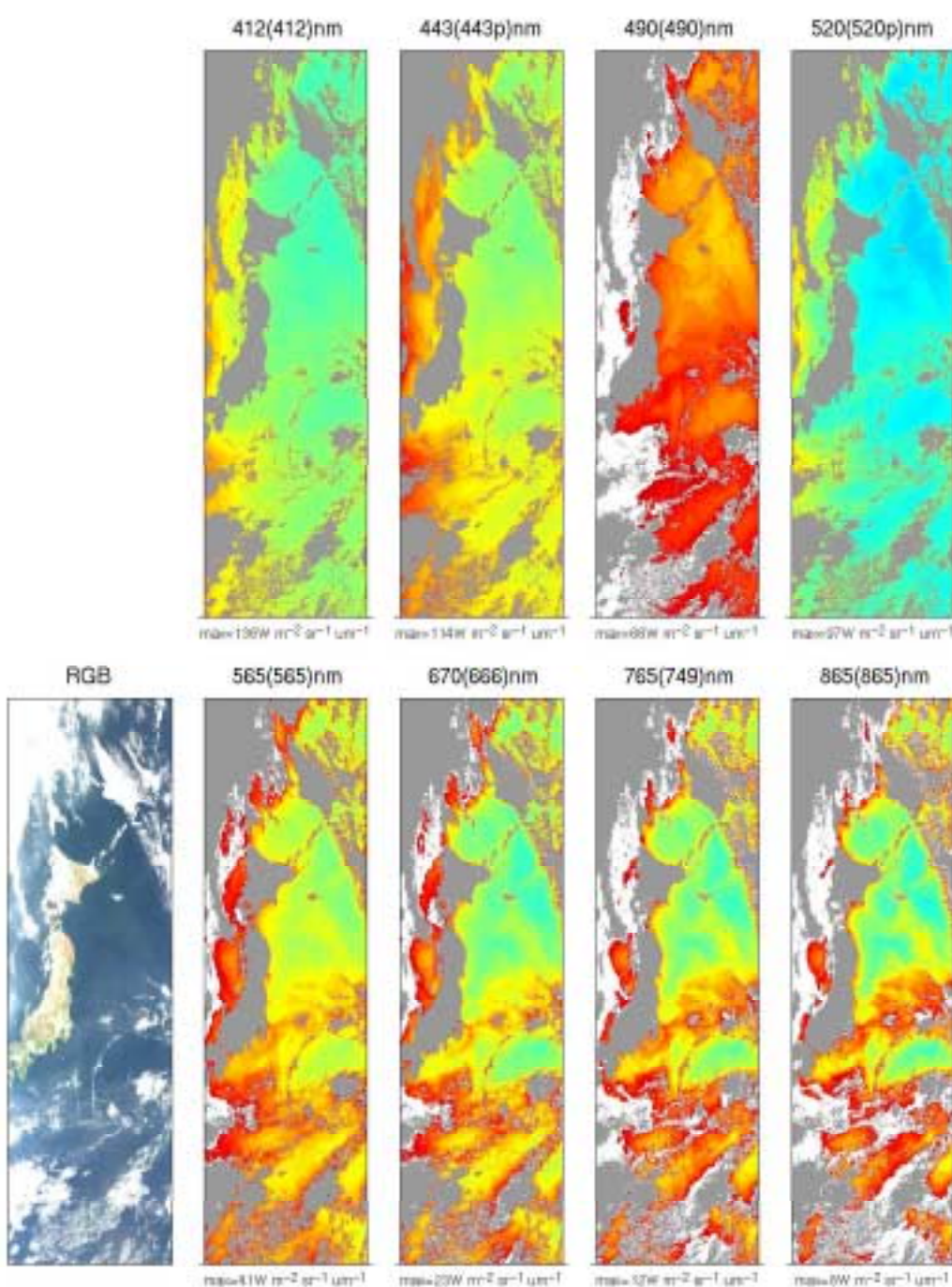
GLI <overview>

- Aerosol parameters
- Cloud parameters
- Chlorophyll-a
- Colored Dissolved Organic Matter
- Suspended Solid weight
- Sea Surface Temperature
- Vegetation Index
- Snow Grain Size & Impurities

OCTS data,
1997/4/26,
around Japan.

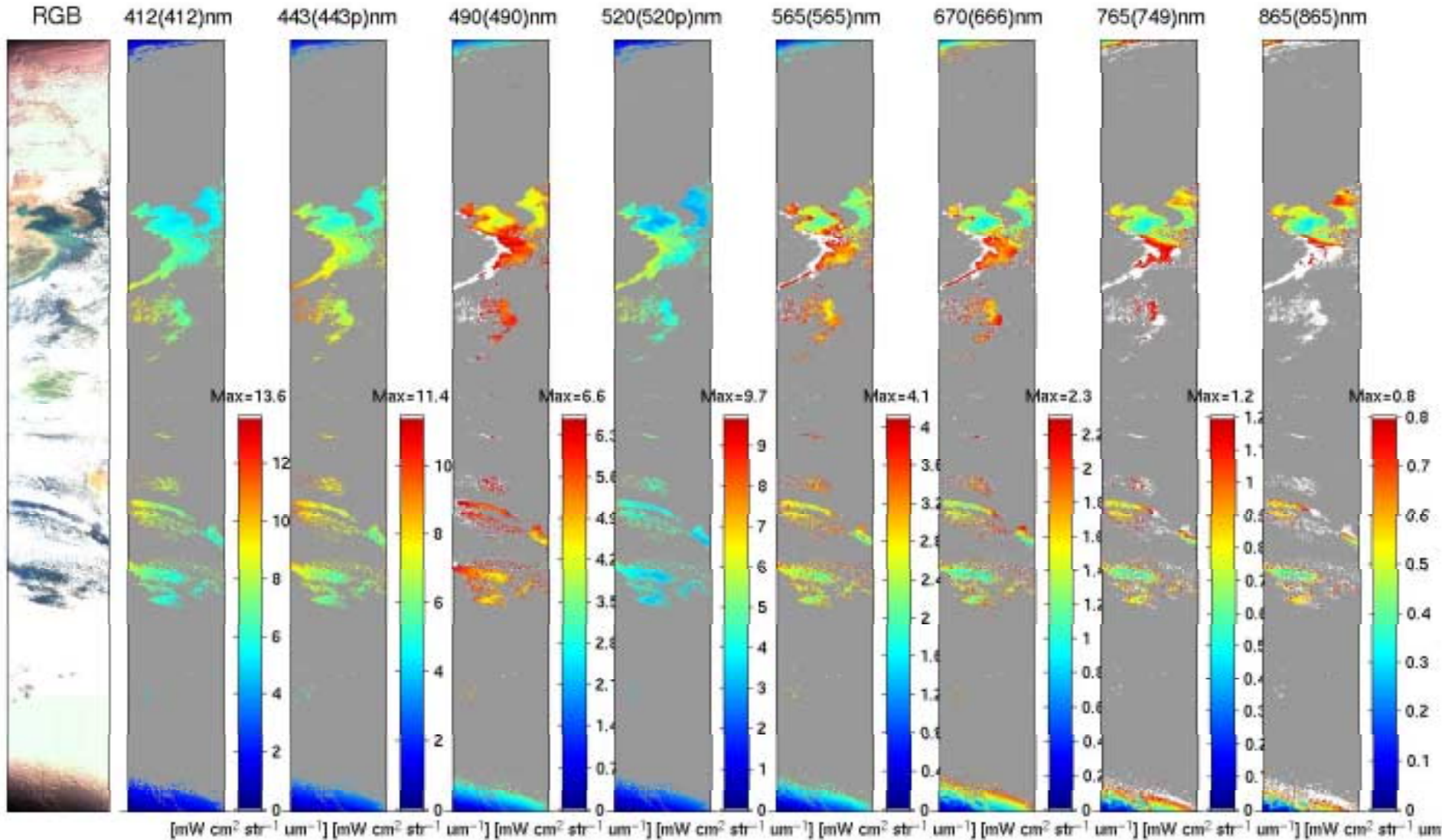
White colored
parts are saturated
by GLI SPEC.

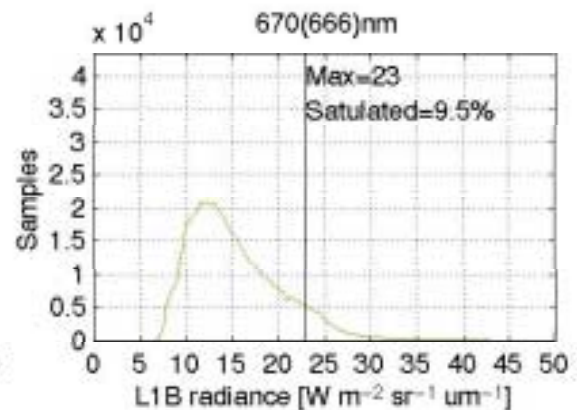
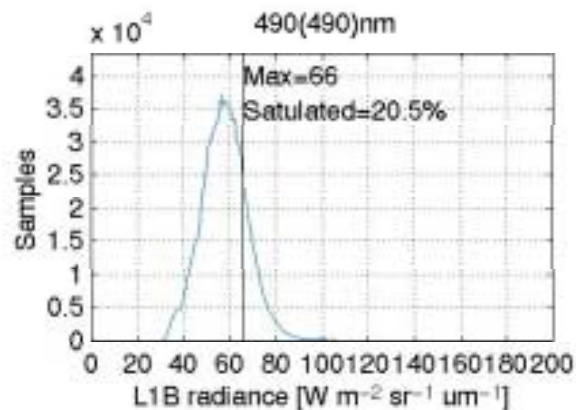
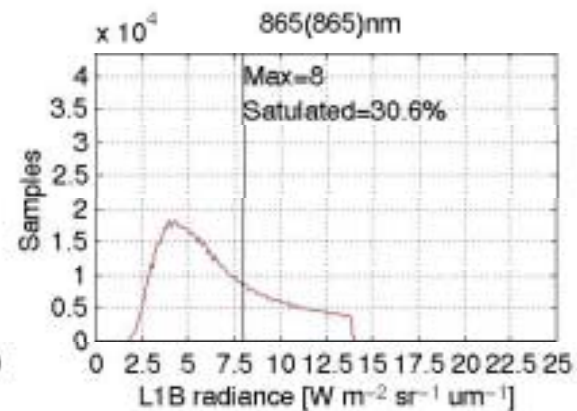
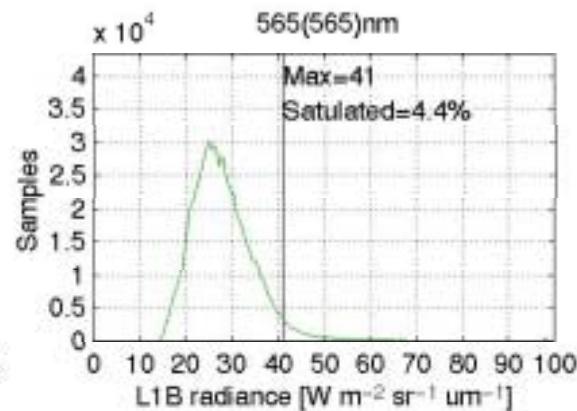
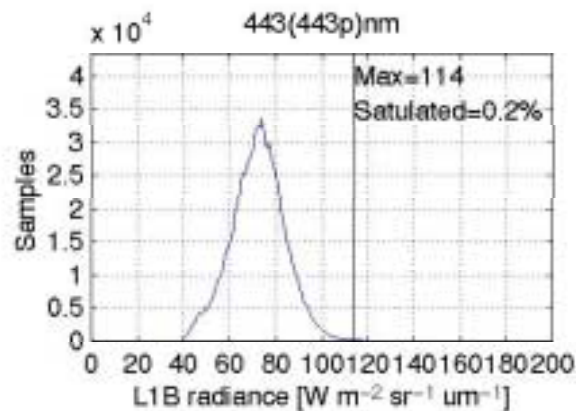
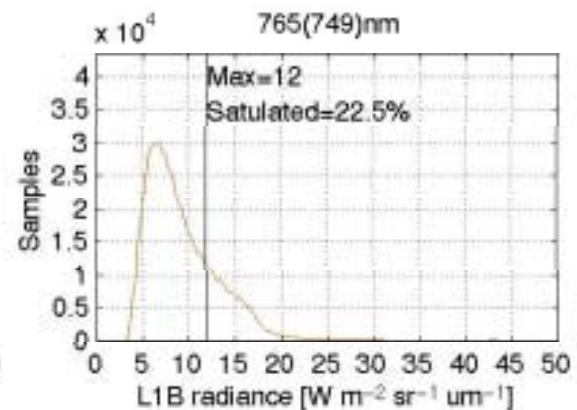
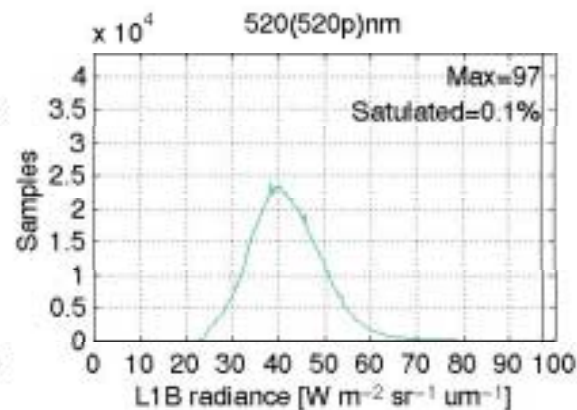
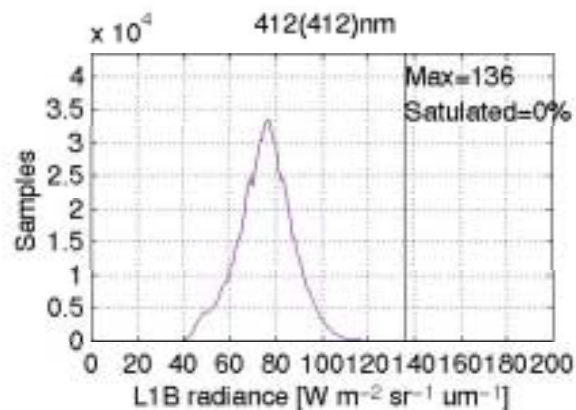
Grey color indicate
cloud and land
area.



Simulated image from OCTS data, 19Feb97, East China Sea

OCTS RSP-084 at 19970219





865nm threshold= 14 W m⁻² sr⁻¹ μm⁻¹

Histogram of OCTS data

GLI PFM Hardware Study

Boundaries:

- Keep the November 2001 launch
- Avoid Risk of Loss of all the GLI mission by the Modification

Scope:

- All the Possible Actions including Optical and Electrical measures

Conclusions:

- Reduce Input Light Energy by Inserting Iris Stop at VNIR Focal Plane

GLI Science Side Study

Ocean Group :

- propose modification specifications.
- develop algorithm using alternative channels.

Other discipline group :

- investigate impacts of ocean-group-proposed modification specifications on each products.
- Check if similar mistakes remain.

Max. Radiance SPEC of GLI

λ_c	Spec	PFT	OCTS data (coast)	New Spec Prop.
413	130	136	120-140	
443	109	114	115-160	
490	86	66	95-135	95
565	47	41	60-95	60
625	33	37		47
666	26	23	40-60	40
680	24	24		37
710	18	17		31
749	14	12	30-45 (765nm)	24
865	9	8	14	14

GLI PFM Dynamic Range Issue

Study on Utilization Alternative Channels

Ocean Ch.	Replace Ch.	Purpose
749nm (Ch. 16)	710nm (Ch. 15)	Atmos. Corr.
865nm (Ch. 18)	865nm (Ch. 19)	Atmos. Corr.
490nm (Ch. 6)	443nm (Ch. 4)	In-water Algo.
565nm (Ch. 9)	545nm (Ch. 8)	In-water Algo.

GLI PFM Dynamic Range Issue

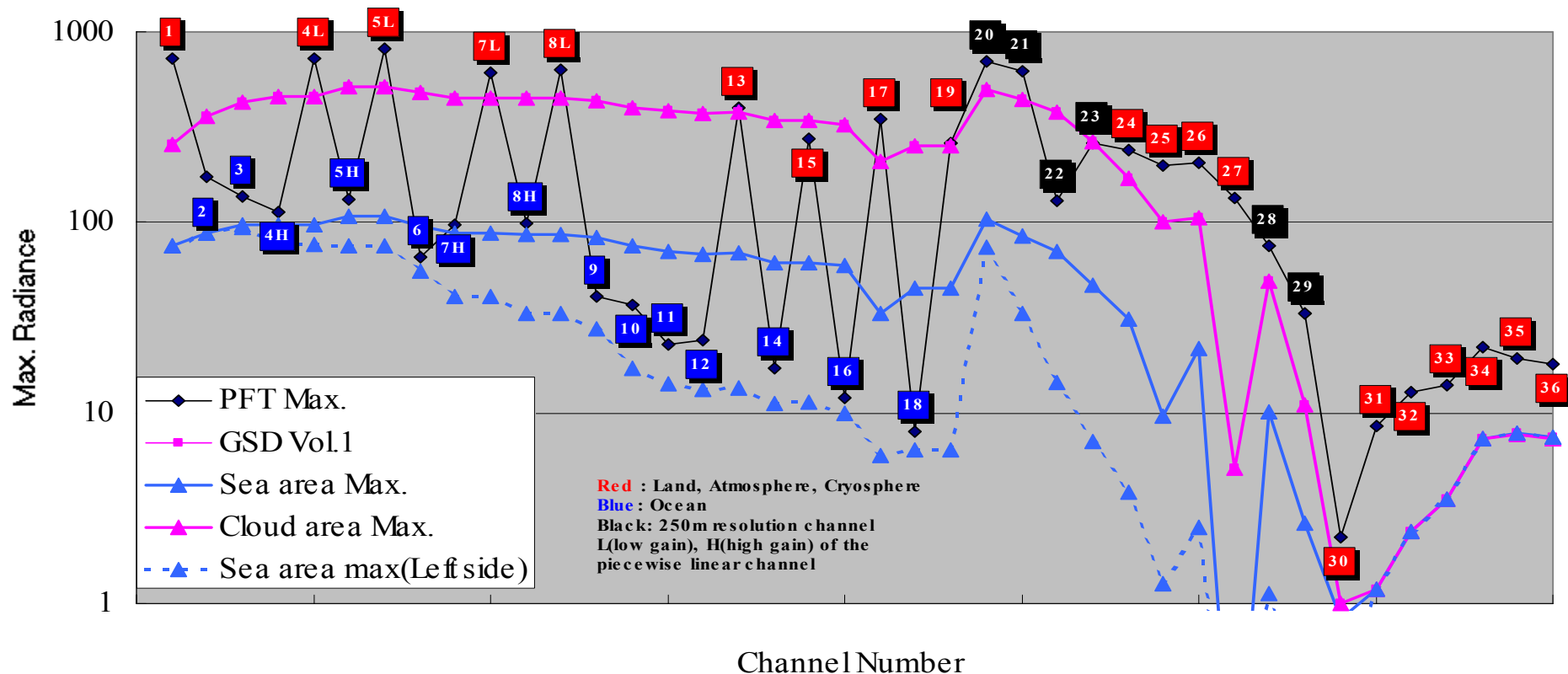
Study on Utilization Alternative
Channels

noise added simulations

PDF file images

Comparison of Simulation & PFT data (Blue points are Ocean Channels)

GSD Vol.1 vs PFT Max. radiance



Conclusion of GLI PI Leaders

Leaders Meeting in June 2000

GLI PI-Leaders Meeting, 23 June, concluded :

- NOT recommend hardware modification, BUT recommend software measures using alternative channels, considering every aspects.
- To Issue English report by July and with that inform every PI over the world.
- Fishery related agencies accept PI-leaders conclusion.

Conclusion of GLI PI Leaders

- Points of Discussions -

Hardware detailed study based on DO modifications.

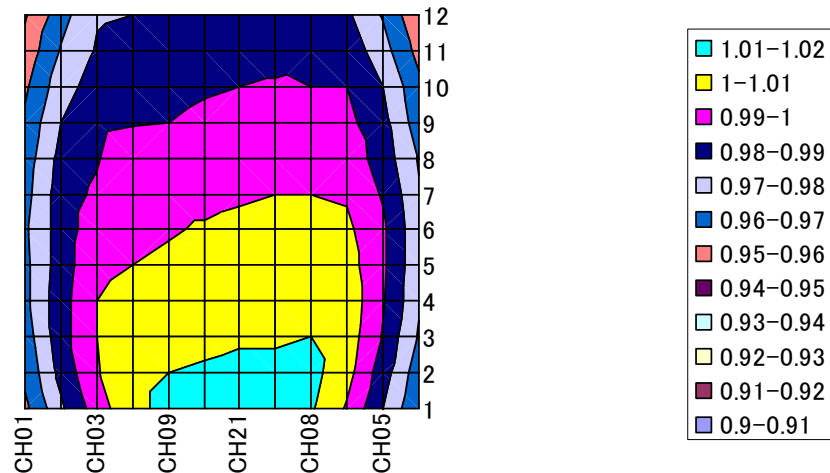
Science community almost agreement of cutting input light energy to “about 75%”.

- Concern on calibration with non-uniform light energy distribution on the focal plane, by inserting iris stop to decrease the energy.
- Alternative channel algorithm study showed CZCS level retrieval performance for the ocean products.
- Concern on PFM modification implementation.

Light Energy Distribution on the VNIR Focal Plane

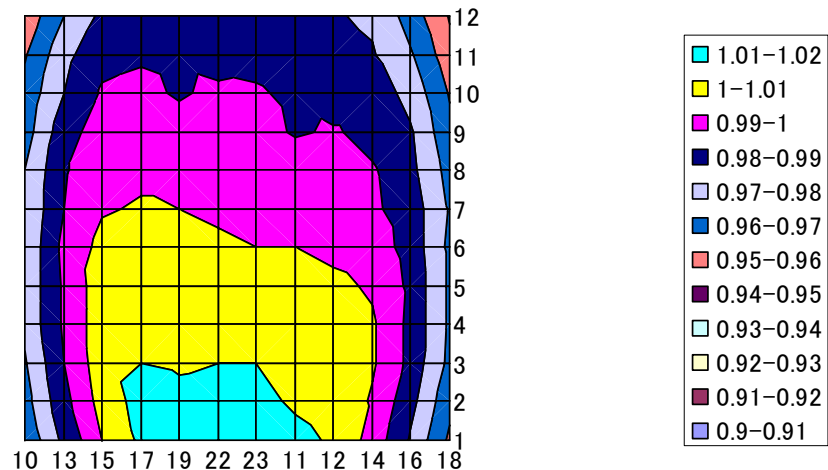
VNIR1の光量比分布(解析値)

VNIR1



VNIR2の光量比分布(解析値)

VNIR2



Decision

on GLI PFM Dynamic Range Issue

- Study on Software Methods and Hardware Methods in parallel.
- Science leaders decision in June on Software methods.
- No new findings after.
- Final decision in October, 2000.