

**Summary of MODIS atmosphere QA plan**

**ECS data model functionality (release B.0 and B.1) related to QA**

**QA operational issues after launch**

- **A draft version of MODIS atmosphere QA plan submitted to EOS project office (Dr. Bob Lutz) on March 20, 1997**
- **Expected new version including level 3 QA to be finished in the end of July according to the delivery schedule.**

# MODIS Atmosphere (runtime) QA Flags and Sizes of storage

## All MODIS atmospheric products carry

- Cloud Mask QA flags: 8 bits
- Product Quality QA flags: 4 x N bits  
(N=number of parameters retrieved)
- Processing path - retrieval method - data resource QA flags: M bits
- Details see MODIS atmosphere QA plan

## Size of QA flags storage

Product Name	Size of Storage (byte)	Spatial resolution
MOD04	8	10x10 km
MOD05-NIR	1	1x1 km
MOD05-IR	5	5x5 km
MOD06-VIS	5	1x1 km
MOD06-IR	10	5x5 km
MOD07	9	5x5 km
MOD35	18	1x1 km

VOLUME  
INCREASE

+ 2%

+ 41%

+ 36%

+ 5%

+ 265%

# MODIS Atmosphere Inventory Metadata

## MOD35

//	ADDITIONALATTRIBUTENAME.1	STRING	1	"DayProcessedPct"
//	ADDITIONALATTRIBUTENAME.2	STRING	1	"NightProcessedPct"
//	ADDITIONALATTRIBUTENAME.3	STRING	1	"SunlintProcessedPct"
//	ADDITIONALATTRIBUTENAME.4	STRING	1	"SnowBackgroundProcessedPct"
//	ADDITIONALATTRIBUTENAME.5	STRING	1	"LandProcessedPct"
//	ADDITIONALATTRIBUTENAME.6	STRING	1	"WaterProcessedPct"
//	ADDITIONALATTRIBUTENAME.7	STRING	1	"ShadowDetectedPct"
//	ADDITIONALATTRIBUTENAME.8	STRING	1	"ThinCirrusSolarPct"
//	ADDITIONALATTRIBUTENAME.9	STRING		"ThinCirrusIR_Pct"
//	ADDITIONALATTRIBUTENAME.10	STRING	1	"NonCloudObstructionPct"
//	ADDITIONALATTRIBUTENAME.11	STRING	1	"MaxSolarZenithAngle"
//	ADDITIONALATTRIBUTENAME.12	STRING	1	"MmSolarZenithAngle"
//	ADDITIONALATTRIBUTENAME.13	STRING	1	"CloudProcessedPct"

## MOD04/MOD05/MOD07

//	ADDITIONALATTRIBUTENAME.1	STRING	1	"DayPct"
//	ADDITIONALATTRIBUTENAME.2	STRING	1	"NightPct"
//	ADDITIONALATTRIBUTENAME.3	STRING	1	"SunlintPct"
//	ADDITIONALATTRIBUTENAME.4	STRING	1	"SnowBackgroundPct"
//	ADDITIONALATTRIBUTENAME.5	STRING	1	"LandPct"
//	ADDITIONALATTRIBUTENAME.6	STRING	1	"WaterPct"
//	ADDITIONALATTRIBUTENAME.7	STRING	1	"ShadowPct"
//	ADDITIONALATTRIBUTENAME.8	STRING	1	"ThinCirrusSolar"
//	ADDITIONALATTRIBUTENAME.9	STRING	1	"ThinCimsIR_Pct"
//	ADDITIONALATTRIBUTENAME.10	STRING	1	"NonCloudObstructionPct"
//	ADDITIONALATTRIBUTENAME.11	STRING	1	"MaxSolarZenithAngle"
//	ADDITIONALATTRIBUTENAME.12	STRING	1	"MinSolarZenithAngle"
//	ADDITIONALATTRIBUTENAME.13	STRING	1	"CloudPct"

## MOD06

```
// ADDITIONALATTRIBUTENAME.1 STRING 1 "LowCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.2 STRING 1 "MidCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.3 STRING 1 "HighCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.4 STRING 1 "ThinCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.5 STRING 1 "ThickCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.6 STRING 1 "OpaqueCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.7 STRING 1 "CirrusCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.8 STRING 1 "IceCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.9 STRING 1 "WaterCloudDetectedIR_Pct"
// ADDITIONALATTRIBUTENAME.10 STRING 1 "MixedCloudDetectedPct"
// ADDITIONALATTRIBUTENAME.11 STRING 1 "CloudPhaseUncertainPct"
// ADDITIONALATTRIBUTENAME.12 STRING 1 "OceanCoverFractionPct"
// ADDITIONALATTRIBUTENAME.13 STRING 1 "LandCoverFractionPct"
// ADDITIONALATTRIBUTENAME.14 STRING 1 "SnowCoverFractionPct"
// ADDITIONALATTRIBUTENAME.15 STRING 1 "CloudCoverFractionPct"
// ADDITIONALATTRIBUTENAME.16 STRING 1 "WaterCloudDetectedVIS_Pct"
// ADDITIONALATTRIBUTENAME.17 STRING 1 "IceCloudDetectedVIS_Pct"
// ADDITIONALATTRIBUTENAME.18 STRING 1 "SuccessRateVIS_Pct"
```

# MODLAND QA flags and metadata

- 2 bits QA flags of data quality

00: Pixel produced, good quality, not necessary to examine more detailed QA

01: Pixel produced, unreliable or unquantifiable quality, recommend examination of more detailed QA

10: Pixel not produced due to cloud effects

11: Pixel not produced primarily due to reasons other than cloud

- 4 inventory QA metadata corresponding to the 4 qualities above

QAPercentGoodQuality

QAPercentOtherQuality

QAPercentNotProducedCloud

QAPercentNotProducedOther

# **ECS data model functionality of subscription, data search/order, and metadata update**

(B.0 release : 6-9 months pre AM-1 launch; B.1 release: 9 months post AM-1 launch)

## **Functions available from B.0 release:**

- All products generated can be automatically delivered via subscription, where the criteria for delivery can be combinations of metadata qualifiers (using >, <, =, = relation, and logical “and”).
- Update ScienceQualityFlag - granule by granule.

## **Something may not be available from B.0 release:**

- User (SCF) interface to establish subscription and a dialogue between SCF and DAAC staff will be necessary to both establish and update subscription.
- Metadata searches may be limited to only core metadata (not PSA) at launch.
- User has to acquire Processing Log in order to obtain User Log to know about production history.
- Updating ScienceQualityFlag of granules which are similar to the representative one.
- Batch updating of QA metadata.

## Review of B.1 Earth Science Data Model about QA metadata - Due 5/15/97

QA metadata	Content Source	Domain	Class	Constraint
AutomaticQualityFlag	PGE	Passed Failed Suspect	QA Flags	See (1)
AutomaticQualityFlagExplanation	PGE	Free Text	QA Flags	See (1)
OperationalQualityFlag	DAAC	Passed Failed Being Investigated Not Investigated	QA Flags	See (1)
OperationalQualityFlagExplanation	DAAC	Free Text	QA Flags	See (1)
ScienceQualityFlag	DAAC/SCF	Passed Failed Being Investigated Validated Not Investigated	QA Flags	See (1)
ScienceQualityFlagExplanation	DAAC/SCF	Free Text	QA Status	See (1)
QAPercentCloudCover	PGE	0-100%	QA Status	
QAPercentInterpolatedData	PGE	0-100%	QA Status	
QAPercentMissingData	PGE	0-100%	QA Status	
QAPercentOutOfBoundsData	PGE	0-100%	QA granule	Mandatory
QAGranulePointer	DSS		Review	See (2)
ScienceReviewDate (Date of last QA peer review)	DP,PGE		Review	
ScienceReviewStatus (Type of review occurred on Science Review Date)	DAAC	QC at DAACS QC at SCFS QC by Data Consumers None	Review	

(1) One flag from QA Flags must exist

(2) If QA granule exists then QAGranulePointer must exist



## **QA operational issues: EOS QA working group meeting: June-July 1997**

- **Discuss and formulate operational QA planning under release B0 and B1.**

B0 : focus on QA efforts such as algorithm debugging, trouble shooting and algorithm update

B1: focus on QA efforts such as documentation of the product quality during routine production

- **Ensure that each instrument team will be able to perform QA of their products shortly after launch.**

QA functionality of B0 and B1 release (subscription, data ordering, metadata update utility, logs, categories of metadata accessible)

QA communication tools (subscription, data ordering, metadata update utility and logs)

perceived shortfalls and workarounds of release B0

Perceived shortfalls and requirements of release B1

- **Discussion of instrument QA plans and operational scenarios**