J. J. Pan

Circa: July/Aug 1992

NASA

National Aeronautics and
Space Administration

Washington, D C
20546

Jeff Dozier
Code 900
Goddard Space Flight Center
National Aeronautics and
Space Administration
Greenbelt, MD 20771

Dear ~~Dr. Dozier~~ Jeff:

I have enclosed copies of the original and revised scientific data products that were the subject of some discussion at the IWG in Keystone. The revised list was obtained from the original list by applying the following criteria: (i) focus on Level 1B radiance data, which is essential for producing the higher level data products; (ii) focus on Level 2 products that meet the established scientific priorities for EOS and are in a mature state of development; (iii) remove redundant data products; (iv) defer those scientific products that require further development due to either a lack of current measurement capabilities or a requirement for additional research beyond the launch of respective instruments; and (v) remove highly specific data products, which are required by individual investigators but may not have broad utility for the entire EOS and Global Change community. Redundant data products were identified through designated primary instrument teams that were encouraged to seek collaborative efforts with other interested teams.

I consider the enclosed revised list as a first draft which needs to be examined by you and the rest of the EOS investigators. If you would like to include additional products in the list, please give me a clear and concise scientific justification. This should include: (i) a brief statement of the scientific problem(s) to be addressed; (ii) current developmental status of the product(s); (iii) source(s) of existing data, if any, to generate the product(s); and (iv) the need for the product(s) if they could be construed as redundant with those identified on the revised list.

I envision that the number of data products will increase gradually as the EOS program matures, and that EOS investigators will work with the broader Earth science and Global Change communities to identify, produce, validate and promote additional products. The criteria for accepting additional standard products to EOSDIS will have to include both a clear and concise scientific justification and an acceptance by the EOS and broader Earth science communities.

Attach. #1
Tech Terminata 3/4/93

Please return your comments/suggestions to me by Thursday, August 27, 1992. This will allow me to use your input during the discussions at the Payload Panel meeting in early September.

Sincerely,

Ghassem Asrar
EOS Program Scientist

Enclosures:

Original List of Scientific Data Products
Revised List of Scientific Data Products

MX Selected Time Products

New #	Prod #	Product Name	Type *	Investigator	Instrument	Platform	DAAC	Time frame
	2575	Chlorophyll Fluorescence Line Height	S	Abbott	MODIS	AM,PM	OSPC	AL
	2602	Ocean Productivity, Primary, Near sfc [via	S	Abbott	MODIS	AM,PM	OSPC	PL
	2527	Sea sfc Temperature (SST)	S	Brown	MODIS	AM,PM	OSPC	AL
2569	2570	Chlorophyll a Conc	S	Carder	MODIS	AM,PM	OSPC	AL
2580	2581	Organic Matter Conc, Dissolved	S	Carder	MODIS	AM,PM	OSPC	PL
	2571	Chlorophyll a Conc	S	Clark	MODIS	AM,PM	OSPC	AL
	2311	Cloud Optical Depth	M	King	MODIS	AM,PM	OSPC	AL
	1764	Cloud Drop Phase	M	King, Menzel	MODIS	AM,PM	OSPC	AL
	1780	Cloud Drop Size(Effective Radius)	M	King, Menzel	MODIS	AM,PM	OSPC	AL
1528	2467	Cloud Temperature, Top	M	Menzel	MODIS	AM,PM	OSPC	AL
	3646	Radiance, At-Satellite, MODIS Level-1	S	Salomonson, Barker	MODIS	AM,PM	OSPC	AL
2338	2338	Level-1B Radiance, MODIS<3um	S	Salomonson	MODIS	AM,PM	OSPC	AL
	2339	Level-1B Radiance, MODIS<3um	S	Salomonson	MODIS	AM,PM	OSPC	AL
	2392	Level-1B Radiance, MODIS<3um	S	Salomonson	MODIS	AM,PM	OSPC	AL
	2340	Level-1B Radiance, MODIS>3um	S	Salomonson	MODIS	AM,PM	OSPC	AL
2081	3641	Cloud Cover	S	Salomonson? King, Kaufman	MODIS	AM,PM	OSPC	AL
	2484	Land sfc Temperature	S	Wan	MODIS	AM,PM	EDC	AL
Level-3	2606	Ocean Productivity, Primary	M	Hanlas	MODIS *	AM,PM	OSPC	AL
	2416	Level-2 Radiance, Water-leaving	S	Gordon et al	MODIS *	AM,PM	OSPC	AL
2749	2750	Vegetation Index	S	Justice, Huete et al	MODIS *	AM,PM	EDC	AL
2015 ← 2429	2430	Land sfc Reflectance, Directional	M	Kaufman et al (BRDF)	MODIS *	AM,PM	EDC	AL
← 2015	2379	Level-2 Radiance, Land leaving	S	Kaufman, Tanre	MODIS *	AM,PM	OSPC	AL
	2381	Level-2 Radiance, Land leaving	S	Kaufman, Tanre	MODIS *	AM,PM	OSPC	AL
	2404	Land sfc Radiance Correction, Topographic	M	Muller	MODIS *	AM,PM	EDC	AL
← 2429	2434	Land sfc Reflectance, Directional	M	Muller, Strahler	MODIS *	AM,PM	EDC	AL
2582	2583	Organic Matter Conc, Dissolved	M	Parslow et al	MODIS *	AM,PM	OSPC	AL
3153	3154	Sea Ice Max Extent	M	Salomonson	MODIS *	AM,PM	NSIDC	AL
3020	3021	Snow Cover	M	Salomonson	MODIS *	AM,PM	NSIDC	AL
2266	2268	PAR, Incident, (IPAR)	S	Tanre Gordon	MODIS *	AM,PM	EDC	PL
2273	2294	Aerosol Optical Depth, Spectral	M	Tanre, Kaufman	MODIS *	AM,PM	OSPC	AL
	1022	Aerosol Size-distribution (Radius Dispersion)	M	Tanre, Kaufman	MODIS *	AM,PM	OSPC	AL
	2015	Albedo, Land sfc	M	Tanre, Muller	MODIS *	AM,PM	EDC	PL
3669	2424	Land sfc Reflectance, Bi-directional, (BRDF)	M	Tanre, Muller	MODIS *	AM,PM	EDC	PL

* S: Single Instrument Product, M: Multi Instrument Product

MODIS Level 1A and 1B Data Products

Product #	Product Name	Investigator(s)	HQ	Team	Priority
1001	Level-1A Radiance	Salomonson	A	A	1
2338	Level-1B Radiance	Salomonson	A	A	1
3660	Classification Masks, Clouds/Snow/Land/Water	Salomonson, Barker (with Hall)	N	A*	1

(Note: A* means the product is required for other HQ selected products)

MODIS Level 2 Data Products (Atmosphere Group)

Product #	Product Name	Investigator(s)	HQ	Team	Priority
2294	Aerosol Optical Depth, Spectral	Kaufman, Tanre	A	A	1
1022	Aerosol Size-Distribution (Radius-Dispersion)	Tanre, King	A	A	2
3641	Cloud Cover	King, Kaufman	A	A	1
1764	Cloud Drop Phase	King, Menzel	A	A	1
1780	Cloud Drop Size (Effective Radius)	King	A	A	1
2311	Cloud Optical Depth	King	A	A	1
2467	Cloud Top Properties	Menzel	A	A	1
1017	Aerosol Mass Loading	Kaufman	N	P	3
2003	Single Scattering Albedo, Aerosol	Tanre, Kaufman	N	P*	3
1333	O_3 Total Burden	Menzel	N	A*	3
1874	Precipitable Water	Kaufman, Tanre, Menzel	N	A*	1
1559	Stability (Lifted Index), Atmospheric	Menzel	N	A	2

(Note: A* (or P*) means the product is required for other HQ selected products)

MODIS Level 2 Data Products (Land Group)

Product #	Product Name	Investigator(s)	HQ	Team	Priority
2404	Land_sfc Radiance-Correction, Topographic	Muller	A	A	3
2484	Land_sfc Temperature	Wan	A	A	1
3021	Snow Cover	Salomonson, Hall	A	A	2
2015	Spectral Reflectance/Surface Leaving Radiance	Kaufman, Tanre, Justice	A	A	1
2750	Vegetation Indices	Justice, Huete	A	A	2
2424	Bidirectional Reflectance/Spectral Albedo	Muller, Strahler, Tanre	P	A	3
3323	Land_sfc Emissivity	Wan	N	P	4
3670	Land_sfc Roughness	Muller	N	P	4
2047	Soil Index	Huete	N	P	4
2471	Thermal Anomalies (Fire size and Temperature)	Kaufman, Justice	N	A	3

MODIS Level 2 Data Products (Ocean Group)

Product #	Product Name	Investigator(s)	HQ	Team	Priority
2570	Case II Waters Chlorophyll_a Conc	Carder	A	A	1
2575	Chlorophyll Fluorescence Line Height	Abbott, Evans	A	A	1
2571	Chlorophyll_a Pigment Conc	Clark	A	A	1
2416	Level-2 Radiance, Water-leaving	Gordon et al	A	A	1
2583	Organic Matter Conc, Dissolved	Gordon, Parslow	A	A	1
2268	PAR_Sfc (IPAR) and Incident (IPAR)	Carder	A	A	1
3154	Sea_Ice Max Extent	Salomonson, Hall	A	A	1
2527	Sea_sfc Temperature (SST)	Brown, Barton	A	A	1
2602	Ocean Productivity, Primary, Near_sfc (via Fluorescence)	Abbott, Esaias	P	P	2
2581	Organic Matter Conc, Dissolved	Carder, Hoge	P	A	1
3211	Chlorophyll Fluorescence Efficiency	Abbott	N	P*	2
2566	Chlorophyll_a Conc (via Fluorescence)	Abbott	N	P	2
2577	Coccolith Conc, Detached	Gordon, Clark	N	P	2
2254	Glint Field	Gordon	N	P*	2
2608	Organic Matter Conc, Particulate	Clark	N	P	2
2330	PAR	Esaias	N	P*	1**
3320	Phycoerythrin Pigment	Hoge	N	P	2
2555	Phytoplankton Backscatter Coef	Gordon, Clark	N	P	2
2593	Pigment Conc (via Spectral Curv)	Hoge, Esaias	N	P	2
1688	Wind Velocity, Sea_sfc Glint-Pattern	Gordon	N	P	2
2295	Aerosol Angstrom Exponent	Gordon	N	A*	1
2344	Aerosol Radiance	Gordon	N	A*	1
A	Calibration Data	Evans	N	A*	1
2573	Chlorophyll Fluorescence Line Curv	Hoge	N	A	1**
4002	Clear Water Epsilon	Carder	N	A	1**
4001	Normalized Clear Water Radiance	Carder	N	A	1**
2031	Ocean Water Attenuation Coef, PAR	Clark, Gordon	N	A	1
3199	Ocean Water Attenuation Coef@490nm	Gordon, Clark	N	A	1
3206	Ocean Water Attenuation Coef@520nm, Beam	Clark, Gordon	N	A	1**
2559	Ocean Water Backscatter Coef, Total	Gordon, Parslow	N	A	1**
3662	Organic Matter Degradation_Product Absorption Coef@415nm (DOM+Detritus)	Carder, Hoge	N	A	1
3216	Particulate Backscatter Coef	Gordon, Parslow	N	A	1**
2591	Pigment Conc	Gordon, Clark	N	A	1
3085	Suspended-Solids Conc, Ocean Water	Clark	N	A	1**

(Note: A* (or P*) means the product is required for other HQ selected products.
1** means the product is necessary for the algorithm validation and development by Team Members, routine processing is required somewhere.)

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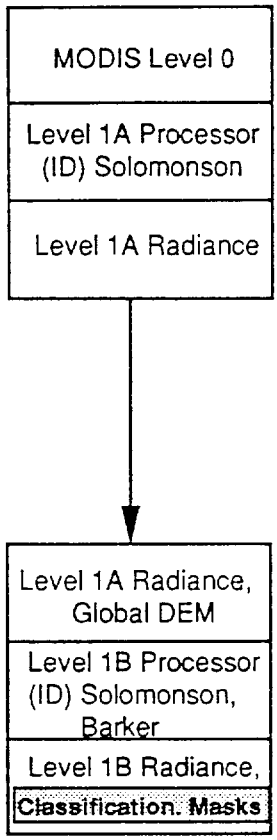
MODIS Level 3 Data Products

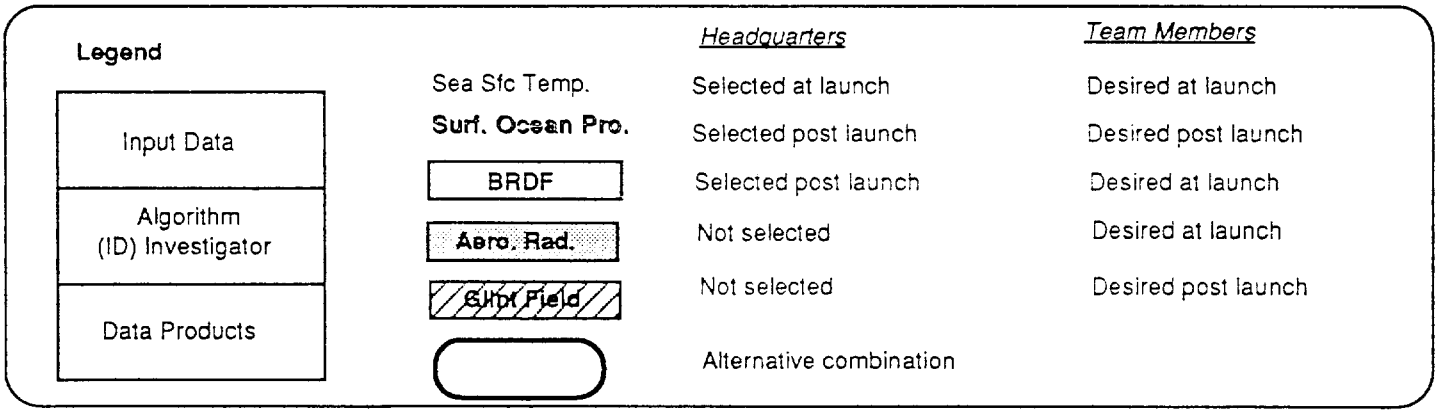
Product #	Product Name	Investigator(s)	HQ	Team	Priority
2606	Ocean Productivity, Primary	Abbott, Esaias	A	A	
2068	Cloud Field Area	Kaufman	N	P	
2094	Cloud JPDF	King, Menzel	N	P	
3696	Land_sfc BRDF, AM-PM Asymmetry	Vanderbilt	N	P	
2337	Vegetation Index, Polarization	Vanderbilt	N	P	
2669	Land_Cover Type	Strahler, Huete	N	A	
2671	Land_Cover Type-Change	Strahler, Huete	N	A	

MODIS Level 4 Data Products

Product #	Product Name	Investigator(s)	HQ	Team	Priority
2683	Evapotranspiration	Running	N	A	
2682	Net Primary Production	Running	N	A	
2681	Photosynthesis-Respiration	Running	N	A	
2680	Vegetation Index, Leaf Area, (LAI)	Running	N	A	

MODIS Level 1A, 1B, and Mask Products





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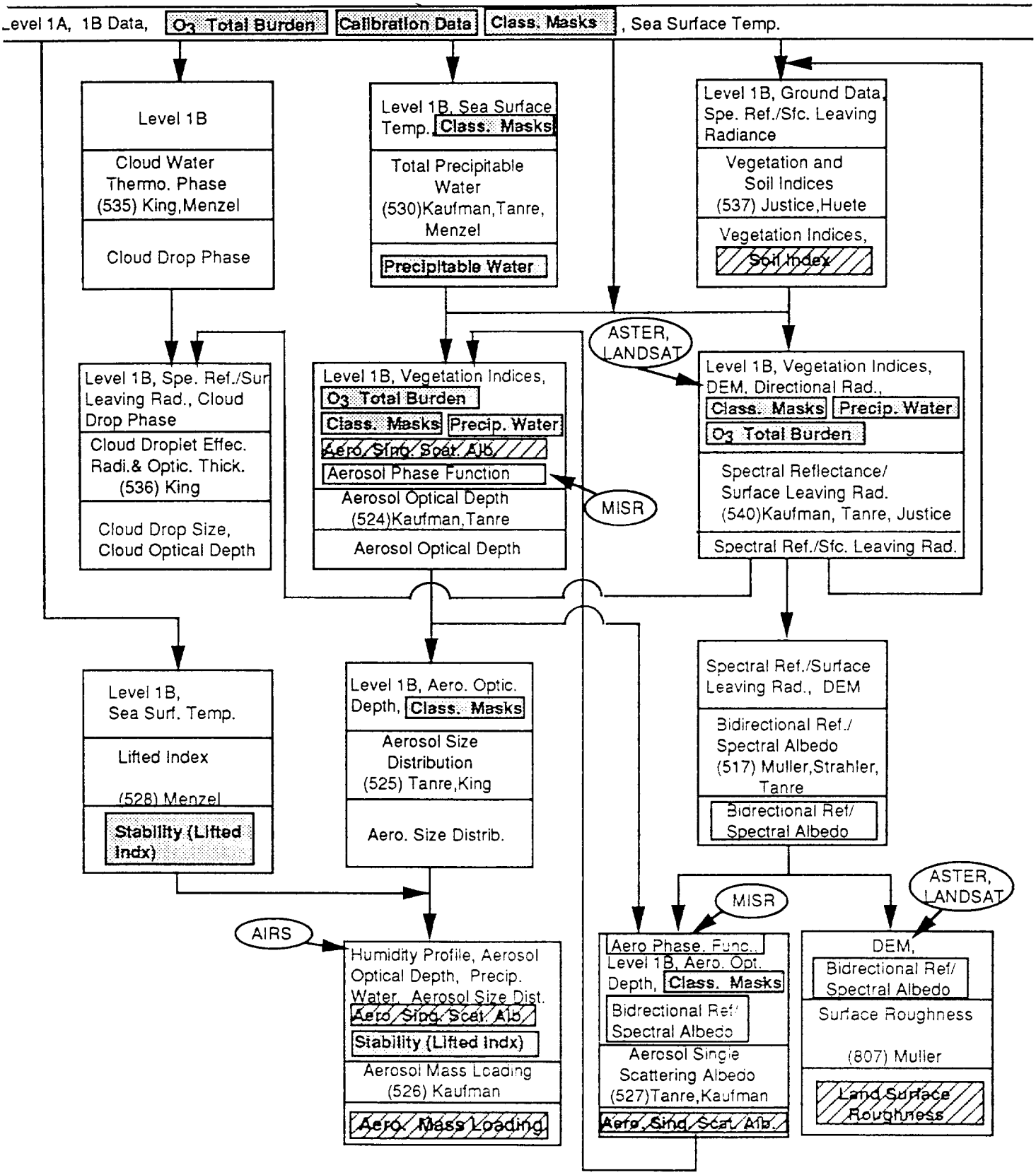
MODIS Level 2 Atmospheric and Land Products (Page 1)



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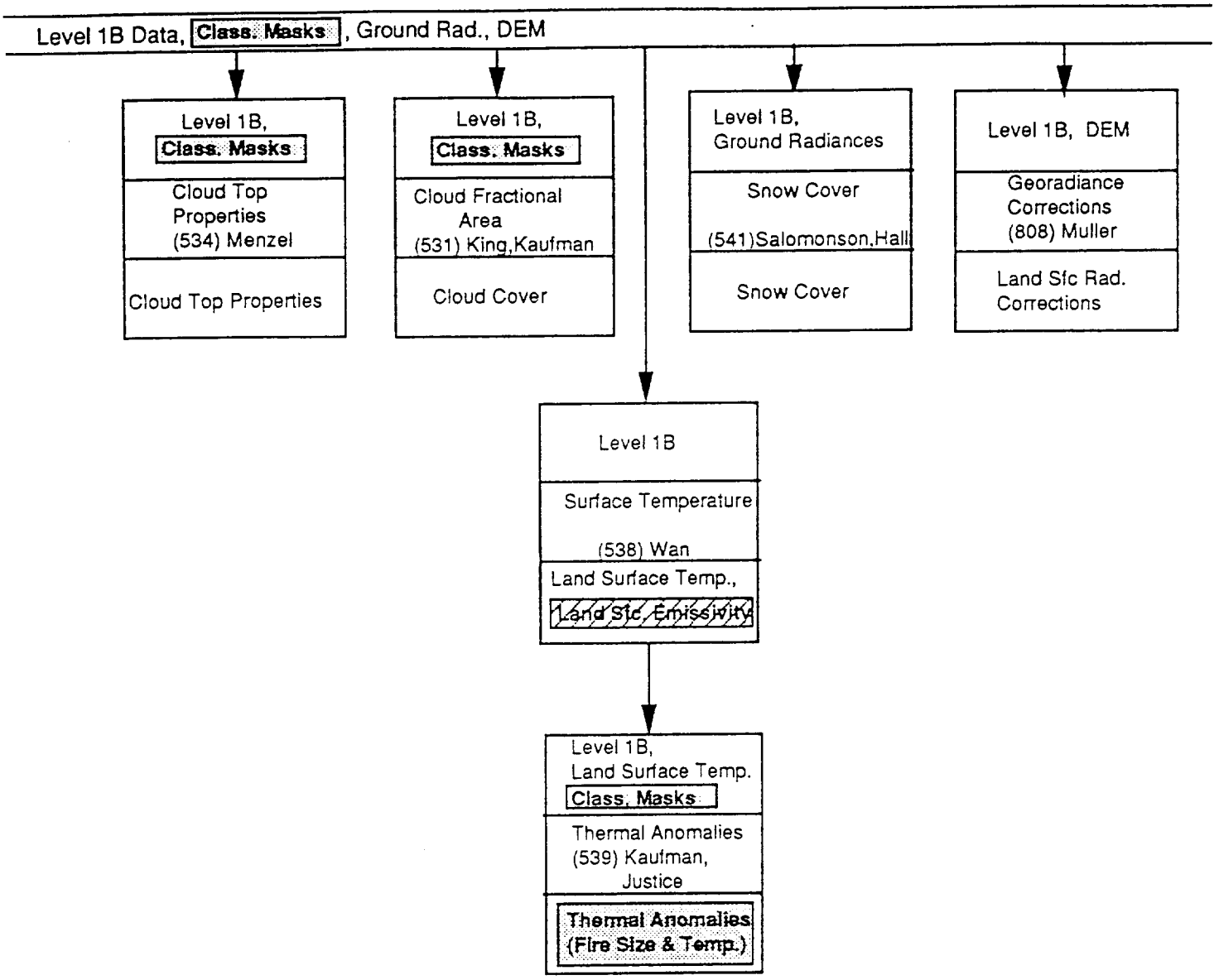
MODIS Level 2 Atmospheric and Land Products (Page 2)



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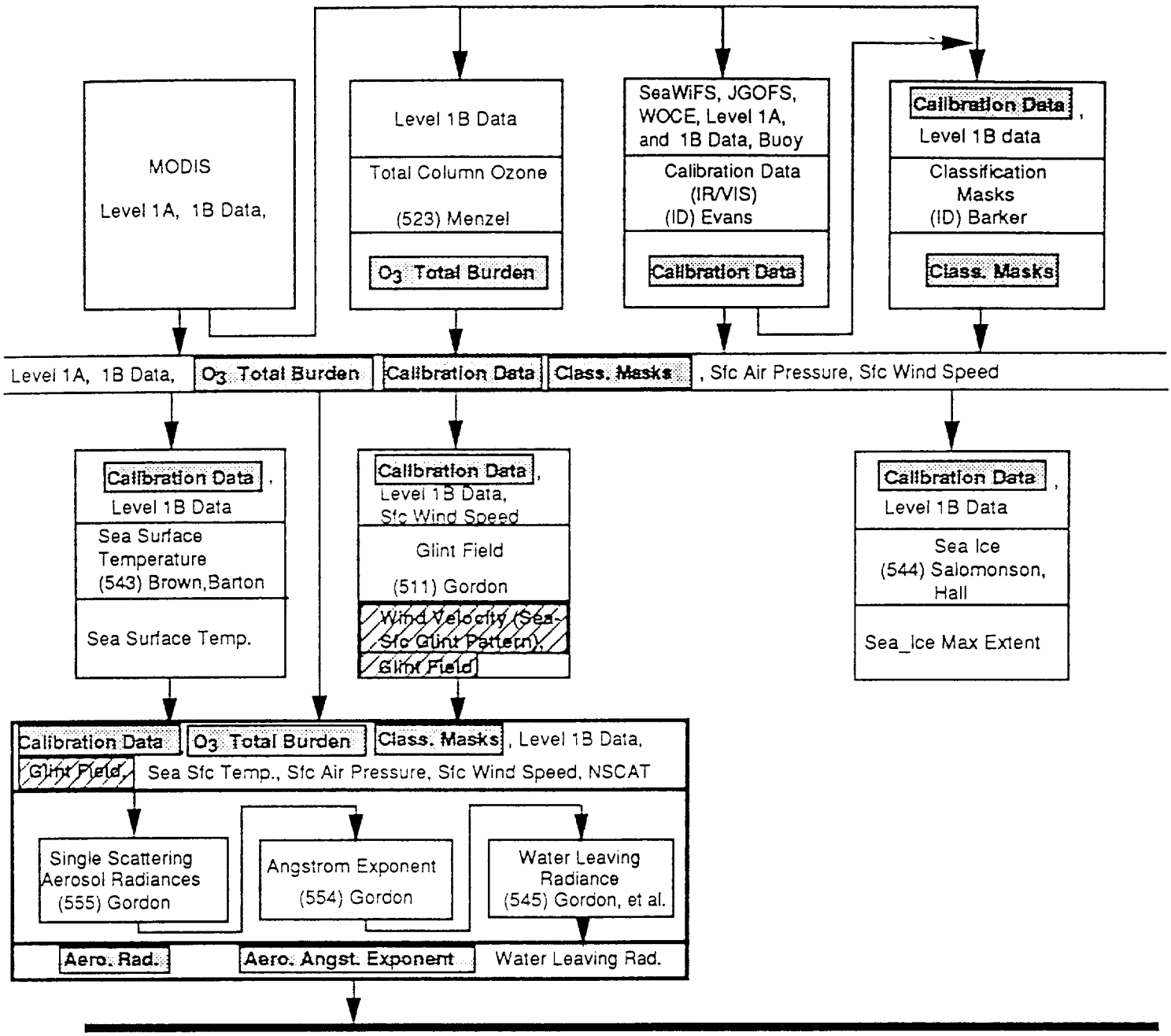
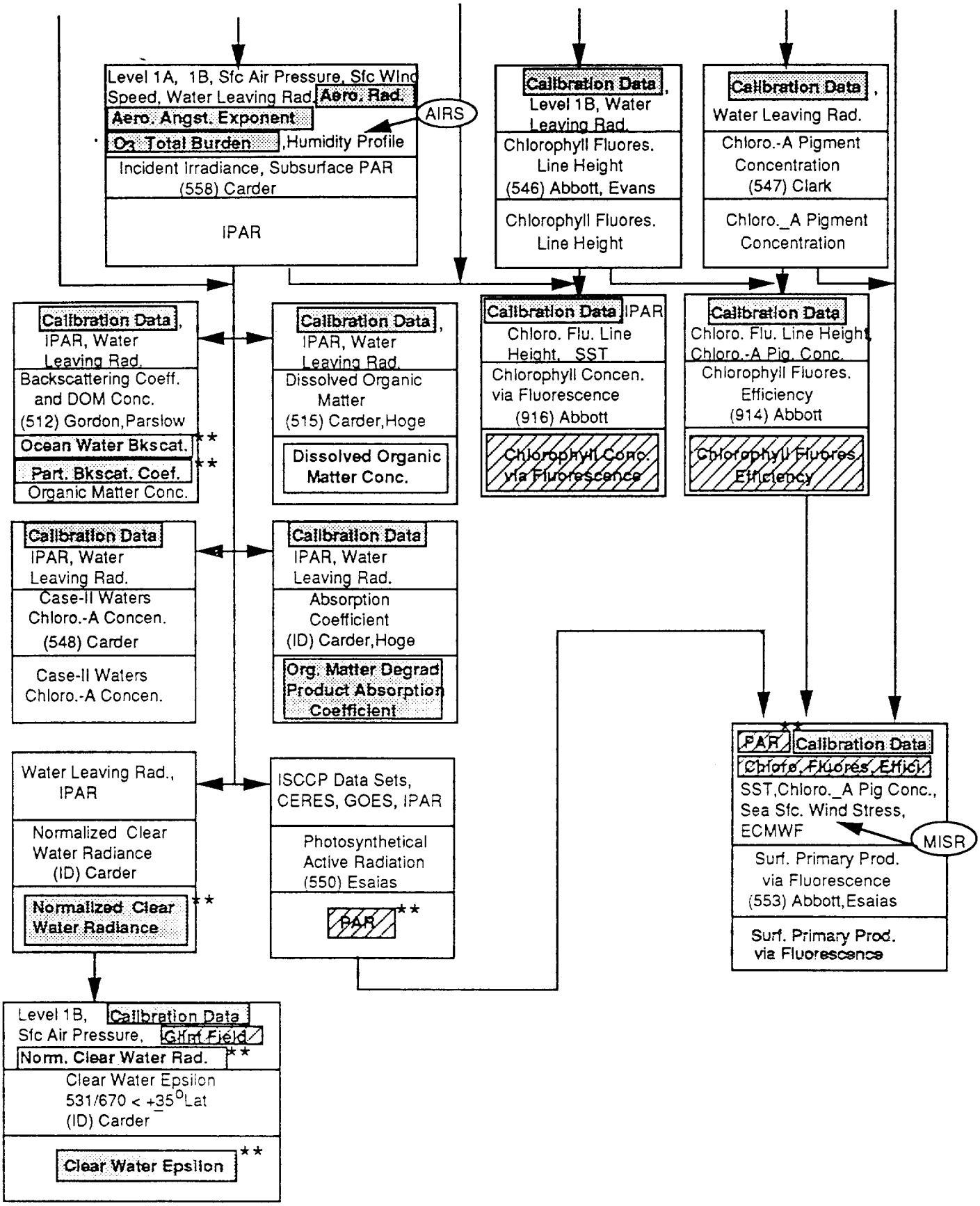
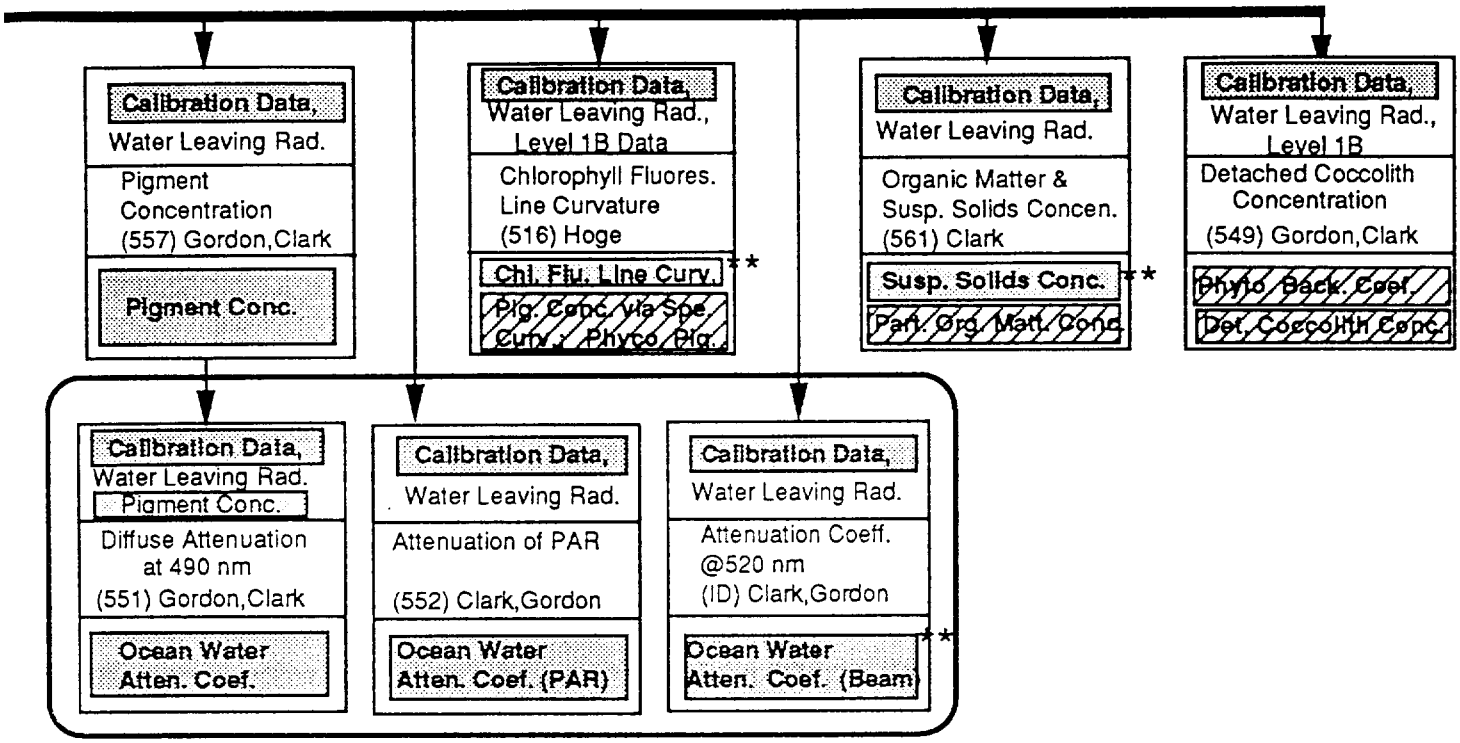
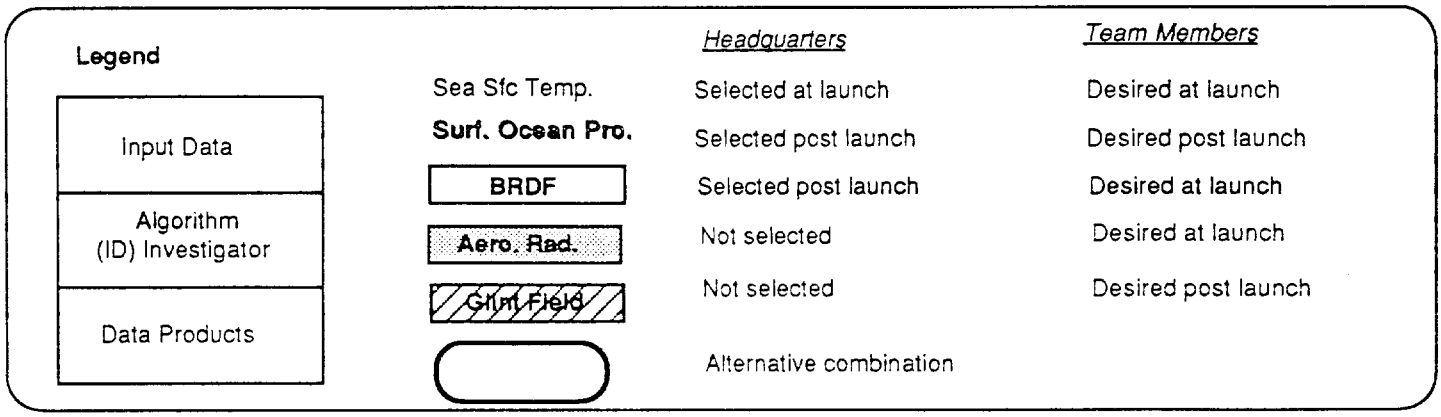
MODIS Level 2 Ocean Products




Level 1A, 1B, Sfc Air Pressure, Sfc Wind Speed, Water Leaving Rad, Aero. Rad.
Aero. Angst. Exponent
O3 Total Burden, Humidity Profile
AIRS
Incident Irradiance, Subsurface PAR
(558) Carder
IPAR
Calibration Data, Level 1B, Water Leaving Rad.
Chlorophyll Fluores. Line Height
(546) Abbott, Evans
Chlorophyll Fluores. Line Height
Calibration Data, Water Leaving Rad.
Chloro.-A Pigment Concentration
(547) Clark
Chloro._A Pigment Concentration
Calibration Data, IPAR, Water Leaving Rad.
Backscattering Coeff. and DOM Conc.
(512) Gordon, Parslow
Ocean Water Bkscat. **
Part. Bkscat. Coef. **
Organic Matter Conc.
Calibration Data, IPAR, Water Leaving Rad.
Dissolved Organic Matter
(515) Carder, Hoge
Dissolved Organic Matter Conc.
Calibration Data IPAR
Chloro. Flu. Line Height, SST
Chlorophyll Concen. via Fluorescence
(916) Abbott
Chlorophyll Conc. via Fluorescence
Calibration Data
Chloro. Flu. Line Height, Chloro.-A Pig. Conc.
Chlorophyll Fluores. Efficiency
(914) Abbott
Chlorophyll Fluores. Efficiency
Calibration Data
IPAR, Water Leaving Rad.
Case-II Waters Chloro.-A Concen.
(548) Carder
Case-II Waters Chloro.-A Concen.
Calibration Data
IPAR, Water Leaving Rad.
Absorption Coefficient
(ID) Carder, Hoge
Org. Matter Degrad Product Absorption Coefficient
Water Leaving Rad., IPAR
Normalized Clear Water Radiance
(ID) Carder
Normalized Clear Water Radiance **
ISCCP Data Sets, CERES, GOES, IPAR
Photosynthetical Active Radiation
(550) Esaias
PAR **
PAR **
Calibration Data
Chloro. Fluores. Effici.
SST, Chloro._A Pig Conc., Sea Sfc. Wind Stress, ECMWF
MISR
Surf. Primary Prod. via Fluorescence
(553) Abbott, Esaias
Surf. Primary Prod. via Fluorescence
Level 1B, Sfc Air Pressure,
Calibration Data
Glint Field
Norm. Clear Water Rad. **
Clear Water Epsilon
531/670 < ±35° Lat
(ID) Carder
Clear Water Epsilon **


Calibration Data,
Water Leaving Rad.
Pigment Concentration
(557) Gordon,Clark
Pigment Conc.
Calibration Data,
Water Leaving Rad., Level 1B Data
Chlorophyll Fluores. Line Curvature
(516) Hoge
Chl. Flu. Line Curv.
Pig. Conc. via Spe. Curv., Phyco. Pig.
**
Calibration Data,
Water Leaving Rad.
Organic Matter & Susp. Solids Concen.
(561) Clark
Susp. Solids Conc.
Part. Org. Matt. Conc.
**
Calibration Data,
Water Leaving Rad., Level 1B
Detached Coccolith Concentration
(549) Gordon,Clark
Phyto. Back. Coef.
Det. Coccolith Conc.
Calibration Data,
Water Leaving Rad.
Pigment Conc.
Diffuse Attenuation at 490 nm
(551) Gordon,Clark
Ocean Water Atten. Coef.
Calibration Data,
Water Leaving Rad.
Attenuation of PAR
(552) Clark,Gordon
Ocean Water Atten. Coef. (PAR)
Calibration Data,
Water Leaving Rad.
Attenuation Coeff. @520 nm
(ID) Clark,Gordon
Ocean Water Atten. Coef. (Beam)
**


Legend
Input Data
Algorithm
(ID) Investigator
Data Products
Headquarters
Team Members
Sea Sfc Temp.
Selected at launch
Desired at launch
Surf. Ocean Pro.
Selected post launch
Desired post launch
BRDF
Selected post launch
Desired at launch
Aero. Rad.
Not selected
Desired at launch
Glint Field
Not selected
Desired post launch
Alternative combination

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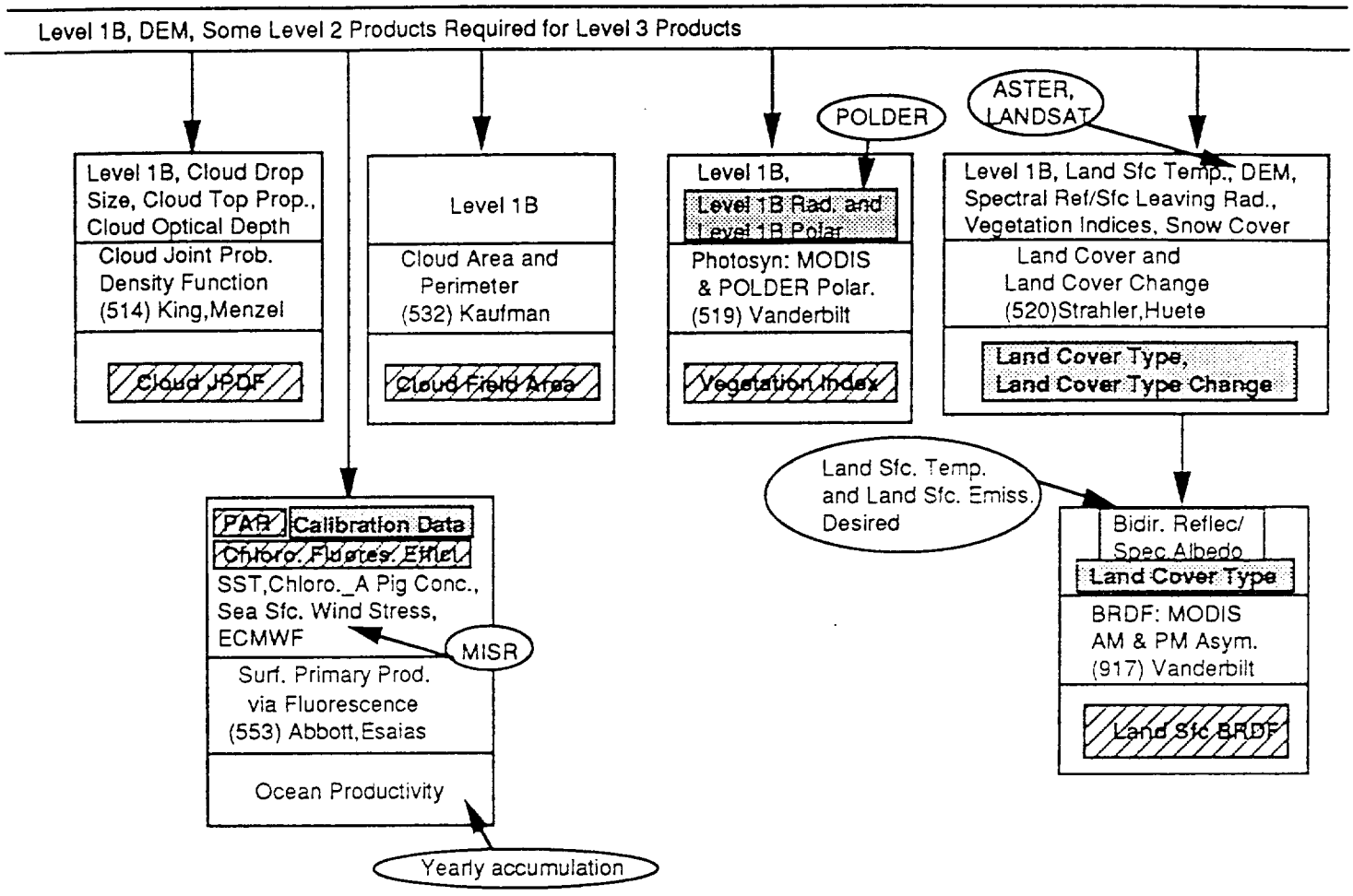
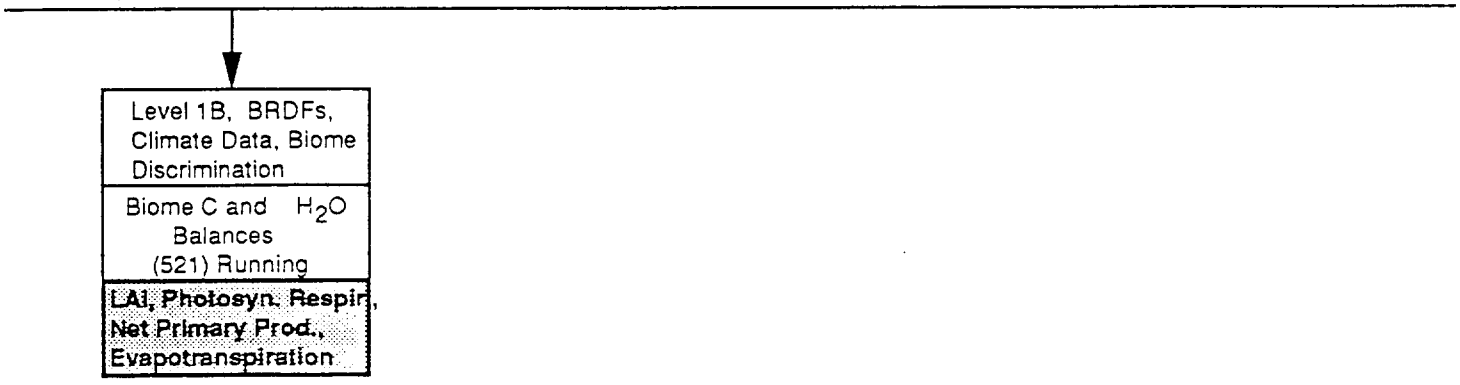
MODIS Level 3 and Level 4 Products

Level 3



Level 4



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MODIS PRODUCTS

I. NASA Headquarters List

	At Launch	Post Launch
Level 1	5	0
Level 2 (Land)	8	2
Level 2 (Ocean)	8	3
Level 2 (Atmosphere)	7	0
Total	28	5

II. Science Team List

	At Launch	Post Launch
Level 1	3	0
Level 2 (Land)	7	3
Level 2 (Ocean)	23	11
Level 2 (Atmosphere)	10	2
Level 3	3	4
Level 4	4	0
Total	50	20