



# Training Segment ZFL – Input Data

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# MODIS Terra EVI and Pixel Reliability

## Data Layer Characteristics

SDS Layer Name	Description	Units	Data Type	Fill Value	Valid Range	Scaling Factor
250m_16_days_NDVI	16 day NDVI average	NDVI	16-bit signed integer	-3000	-2000 to 10000	0.0001
250m_16_days_EVI	16 day EVI average	EVI	16-bit signed integer	-3000	-2000 to 10000	0.0001
250m_16_days_VI_Quality	VI quality indicators	Bit Field	16-bit unsigned integer	65535	0 to 65534	N/A
250m_16_days_red_reflectance	Surface Reflectance Band 1	Reflectance	16-bit signed integer	-1000	0 to 10000	0.0001
250m_16_days_NIR_reflectance	Surface Reflectance Band 2	Reflectance	16-bit signed integer	-1000	0 to 10000	0.0001
250m_16_days_blue_reflectance	Surface Reflectance Band 3	Reflectance	16-bit signed integer	-1000	0 to 10000	0.0001
250m_16_days_MIR_reflectance	Surface Reflectance Band 7	Reflectance	16-bit signed integer	-1000	0 to 10000	0.0001
250m_16_days_view_zenith_angle	View zenith angle of VI pixel	Degree	16-bit signed integer	-10000	0 to 18000	0.01
250m_16_days_sun_zenith_angle	Sun zenith angle of VI pixel	Degree	16-bit signed integer	-10000	0 to 18000	0.01
250m_16_days_relative_azimuth_angle	Relative azimuth angle of VI pixel	Degree	16-bit signed integer	-4000	-18000 to 18000	0.01
250m_16_days_composite_day_of_the_year	Day of year of VI pixel	Julian day of year	16-bit unsigned integer	-1	1 to 366	N/A
260m_16_days_pixel_reliability	Quality reliability of VI pixel	Rank	8-bit signed integer	255	0 to 3	N/A

## Collection

Characteristic	Description
Temporal Granularity	16-day
Temporal Extent	February 2000 - Present
Spatial Extent	Global
File Size	~92.96 MB
Coordinate System	Sinusoidal
Datum	N/A
File Format	HDF-EOS
Geographic Dimensions	1200 km x 1200 km

## Granule

Characteristic	Description
Number of Science Dataset (SDS) Layers	12
Rows/Columns	4800 cols x 4800 rows
Pixel Size	250 m

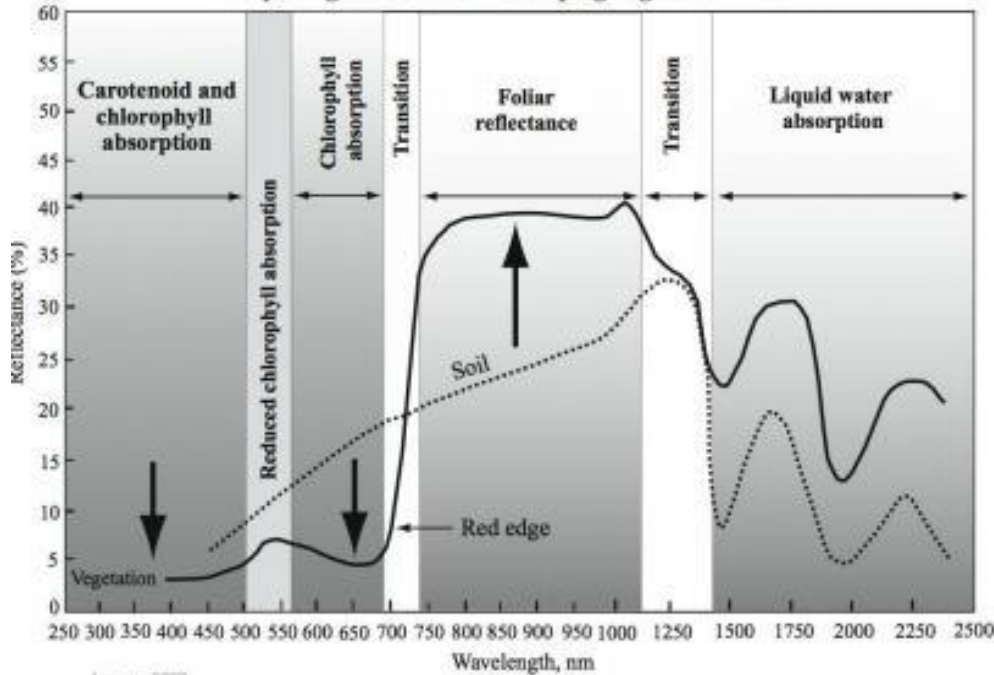
# Pixel reliability

Rank Key	Summary QA	Description
-1	Fill/No Data	Not Processed
0	Good Data	Use with confidence
1	Marginal data	Useful, but look at other QA information
2	Snow/Ice	Target covered with snow/ice
3	Cloudy	Target not visible, covered with cloud



# EVI

Physiological Basis for Developing Vegetation Indices

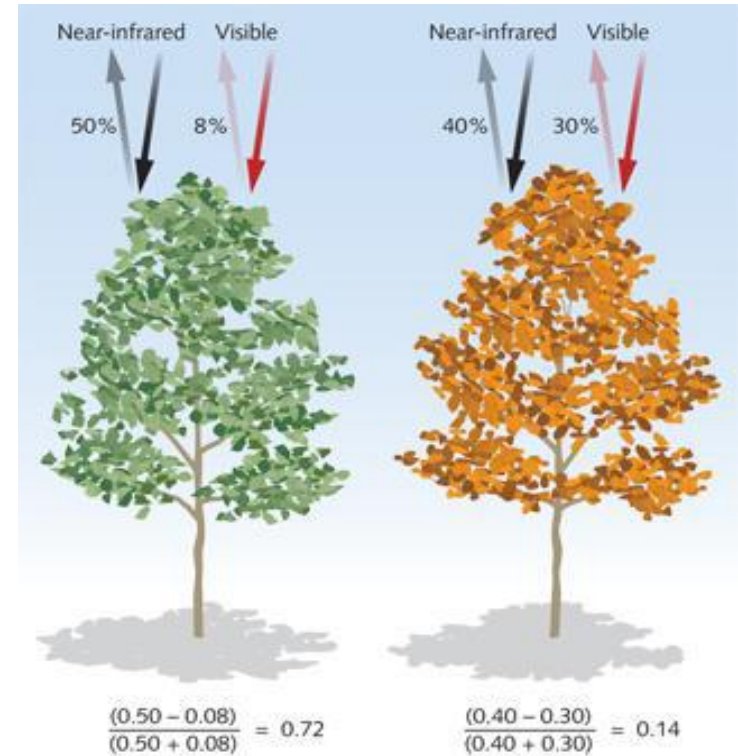


Jensen, 2007

L = canopy background adjustment  
 NIR & Red = differential radiant transfer through a canopy

C1=6, C2=7.5 are the coefficients of the aerosol resistance term, which uses the blue band to correct for aerosol influences in the red band

Gain Factor/Scaling Factor (G)=2.5



$$EVI = G \cdot \frac{\rho_{NIR} - \rho_{red}}{\rho_{NIR} + C_1 \cdot \rho_{red} - C_2 \cdot \rho_{blue} + L}$$

# MODIS Dates

**Julian Day Table**

Add one to day number for leap years: 1972, 1976, 1980, 1984, 1988, 1992, 1996, 2000, 2004, 2008, 2012, 2016, 2020

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	001	032	060	091	121	152	182	213	244	274	305	335
2	002	033	061	092	122	153	183	214	245	275	306	336
3	003	034	062	093	123	154	184	215	246	276	307	337
4	004	035	063	094	124	155	185	216	247	277	308	338
5	005	036	064	095	125	156	186	217	248	278	309	339
6	006	037	065	096	126	157	187	218	249	279	310	340
7	007	038	066	097	127	158	188	219	250	280	311	341
8	008	039	067	098	128	159	189	220	251	281	312	342
9	009	040	068	099	129	160	190	221	252	282	313	343
10	010	041	069	100	130	161	191	222	253	283	314	344
11	011	042	070	101	131	162	192	223	254	284	315	345
12	012	043	071	102	132	163	193	224	255	285	316	346
13	013	044	072	103	133	164	194	225	256	286	317	347
14	014	045	073	104	134	165	195	226	257	287	318	348
15	015	046	074	105	135	166	196	227	258	288	319	349
16	016	047	075	106	136	167	197	228	259	289	320	350
17	017	048	076	107	137	168	198	229	260	290	321	351
18	018	049	077	108	138	169	199	230	261	291	322	352
19	019	050	078	109	139	170	200	231	262	292	323	353
20	020	051	079	110	140	171	201	232	263	293	324	354
21	021	052	080	111	141	172	202	233	264	294	325	355
22	022	053	081	112	142	173	203	234	265	295	326	356
23	023	054	082	113	143	174	204	235	266	296	327	357
24	024	055	083	114	144	175	205	236	267	297	328	358
25	025	056	084	115	145	176	206	237	268	298	329	359
26	026	057	085	116	146	177	207	238	269	299	330	360
27	027	058	086	117	147	178	208	239	270	300	331	361
28	028	059	087	118	148	179	209	240	271	301	332	362
29	029	088	119	149	180	210	241	272	302	333	363	
30	030	089	120	150	181	211	242	273	303	334	364	
31	031	090		151			212	243		304		365