doi:10.1038/nature13265

A. Impacts of open water body on VOD changes

The VOD product has some large uncertainties over open water areas[25-26]. When there is a large open water body on the surface, it may contaminate the microwave signal and underestimate the VOD values (i.e. retrieved VOD value is lower than the true value). So a considerably wet year such as 1992 and 2007 might result in standing open water on the surface and thus have VOD values lower than other years (Fig. 4a and Extended Data Fig. 5a). We note that the volcanic eruption around 1991/1992 might have also played a role in the VOD anomaly in 1992. However, the significant decreasing VOD trend during the period 1988-2010 remains robust even after excluding these two wet years. Moreover, if we were to assume that there were no vegetation changes during the period 1988-2010, the decline in rainfall would result in less standing open water spatially and temporally and thus larger increases in VOD values. On the contrary, we observed the VOD decline during this period. In addition, the high density of tall trees in tropical rainforests makes it less likely to observe open water bodies. Therefore, the most likely reason for the observed VOD decline is that the vegetation itself changed toward the direction with lower vegetation water content and biomass, which is in line with the changes in EVI and other satellite data shown in our main text.

B. Assessing EVI changes using MODIS spectral reflectance variations

Here we use MODIS measured surface reflectance data in the blue (BLU, 0.459–0.479 μm), red (RED, 0.62–0.67 μm), and near-infrared (NIR, 0.841–0.876 μm) spectral bands from the Terra satellite for the period 2000 to 2012 to evaluate EVI changes.

The decline of MODIS EVI can result from changes in the canopy reflectance at different spectral bands in response to real changes in vegetation characteristics. The most striking spectral feature of vegetation is the large contrast of strong absorption in the visible spectrum such as RED and BLU versus strong reflectance in the NIR spectrum. Assuming that non-vegetation effects due to clouds and aerosols are mostly corrected by the MODIS atmospheric correction processing, we expect to see a decrease in NIR reflectance versus an increase in RED and BLU reflectance if there is a reduction in vegetation photosynthetic activity.

A majority of pixels in our study region exhibit a decreasing trend in NIR and an increasing trend in RED and BLU (Extended Data Fig. 6), with about 27%, 47% and 13% of the study area showing a statistically significant trend at $P<0.1$ for BLU, RED and NIR, respectively. At the regional level, there is a significant trend (per decade) of +0.004±0.001 ($P=0.005$) in RED and +0.003±0.001 ($P=0.008$) in BLU for the period 2000-2012, and -0.020±0.006 ($P=0.007$) in NIR for the period 2003-2012 (Extended Data Fig. 7). Evidently, MODIS spectral measurements show decreasing trends in NIR that resemble those of EVI while RED and BLU exhibit the opposite trends, indicating that the MODIS measured EVI change is a true signal.

C. Assessing non-vegetation effects on EVI changes

C1. Uncertainties of MODIS EVI

Both the estimated linear EVI trends and the EVI differences between the last and first three years of the MODIS data quantified over our study region are much larger than the expected EVI errors (ref. 7), suggesting that the EVI changes cannot be simply explained by data errors.

C2. Impacts of residual atmospheric artifacts on EVI changes

Changes in MODIS vegetation indices may suffer from residual atmospheric artifacts due to the contaminations of aerosols and clouds[6-8,53]. Atmospheric corruption is known to artificially reduce vegetation greenness such as NDVI. MODIS EVI was designed to improve upon NDVI by introducing aerosol resistance using BLU to correct for aerosol influence in RED[15,17]. Although a recent analysis[6] indicates that the atmospheric corruption to the MODIS Collection 5 EVI used in this study is minimal due to refinements to the MODIS atmospheric correction and EVI algorithms, this does not exclude the possibility of residual atmospheric effects that could cause an artificial decrease in MODIS EVI over the Congo basin. Assuming that this is the case, the residual atmospheric effect may decrease pixel-level MODIS EVI at a particular time due to uncertainties in AOT and COT, but cannot cause a statistically significant decreasing trend in the EVI unless it also shows a statistically significant trend with time, i.e. the impreciseness of MODIS atmospheric correction contains a time trend, which is highly unlikely.

As clouds significantly decrease EVI, the evidently decreasing trend in COT over our study region would cause an increase in EVI if this change was not captured by the MODIS atmospheric corrections. Furthermore, the temporal decrease in clouds will reduce the reflectance values in RED, NIR and BLU (the same sign but with different magnitudes), which are not observed in the MODIS data (Extended Data Figs S6-7). However, MODIS surface reflectance was not produced for pixels flagged with clouds and only higher quality, cloud-free, quality assurance-filtered data were retained for compositing in the EVI product (MOD13C2).

Given the large spatiotemporal variability of aerosols, there is a possibility that the EVI changes may result from the residual atmospheric effect due to an increasing or decreasing trend in AOT. Here we use the 6S (Second Simulation of the Satellite signal in the Solar Spectrum) model to assess the range of residual atmospheric effects due to aerosol uncertainties. The 6S code is a widely used and advanced radiative transfer model designed to simulate the reflection of solar radiation by a coupled atmosphere-surface system for a wide range of atmospheric, spectral and geometrical conditions[54]. It is a basic code for the calculation of look-up tables in the MODIS atmospheric correction algorithm. Our simulations include 30 cases (Table S1) by considering three types of aerosol loading (small: AOT=0.1; medium: AOT=0.3; large: AOT=0.5), two view zenith angles (0° and 30°), five relative azimuth angles (0°, 45°, 90°, 135° and 180°), one solar zenith angle (30°) and water vapor amount of 3 g/cm^2. The actual surface reflectance is 0.03, 0.3, and 0.02 for RED, NIR and BLU respectively. The corresponding reflectance is simulated for 25% overestimation or 25% underestimation of AOT for each case.

Table S1. Input parameters to the 6S code for simulations of 30 cases

Case #	Solar zenith angle (°)	View zenith angle (°)	Water vapor amount (g/cm^2)	Aerosol optical thickness	Relative azimuth (°)	Actual reflectance		
						Red	NIR	BLU
1	30	0	3	0.1	0	0.03	0.3	0.02
2	30	30	3	0.1	0	0.03	0.3	0.02
3	30	0	3	0.1	45	0.03	0.3	0.02
4	30	30	3	0.1	45	0.03	0.3	0.02
5	30	0	3	0.1	90	0.03	0.3	0.02
6	30	30	3	0.1	90	0.03	0.3	0.02
7	30	0	3	0.1	135	0.03	0.3	0.02
8	30	30	3	0.1	135	0.03	0.3	0.02
9	30	0	3	0.1	180	0.03	0.3	0.02
10	30	30	3	0.1	180	0.03	0.3	0.02
11	30	0	3	0.3	0	0.03	0.3	0.02
12	30	30	3	0.3	0	0.03	0.3	0.02
13	30	0	3	0.3	45	0.03	0.3	0.02
14	30	30	3	0.3	45	0.03	0.3	0.02
15	30	0	3	0.3	90	0.03	0.3	0.02
16	30	30	3	0.3	90	0.03	0.3	0.02
17	30	0	3	0.3	135	0.03	0.3	0.02
18	30	30	3	0.3	135	0.03	0.3	0.02
19	30	0	3	0.3	180	0.03	0.3	0.02
20	30	30	3	0.3	180	0.03	0.3	0.02
21	30	0	3	0.5	0	0.03	0.3	0.02
22	30	30	3	0.5	0	0.03	0.3	0.02
23	30	0	3	0.5	45	0.03	0.3	0.02
24	30	30	3	0.5	45	0.03	0.3	0.02
25	30	0	3	0.5	90	0.03	0.3	0.02
26	30	30	3	0.5	90	0.03	0.3	0.02
27	30	0	3	0.5	135	0.03	0.3	0.02
28	30	30	3	0.5	135	0.03	0.3	0.02
29	30	0	3	0.5	180	0.03	0.3	0.02
30	30	30	3	0.5	180	0.03	0.3	0.02

Our analysis will be focused mostly on the cases of AOT underestimation in which the spectral reflectance changes simulated from 6S relative to the actual reflectance values (Extended Data Fig. S8) resemble those observed in MODIS in terms of signs (Extended Data Figs S6-7). If the residual atmospheric effect is underestimated over time, the simulated surface reflectance will increase by 0.002-0.013 (10%-65%) in BLU and 0.001-0.008 (3.3%-26.7%) in RED but decrease only slightly by 0.001-0.006 (0.3%-2%) in NIR for all types of AOT loadings (Table S2). BLU is expected to have the largest increase, followed by RED because atmospheric scattering of sunlight increases nonlinearly with the decrease in wavelength[6] as illustrated by Extended Data Fig. S8. However, the MODIS spectral data in our study region show that the increase in RED (0.003-0.004) is bigger than that in BLU (0.002-0.003) and the decrease in NIR (0.008-0.020) is several times more bigger than the increase in BLU and RED (Table S2), indicating that the

MODIS observed EVI decrease is unlikely to be an artifact of residual atmospheric aerosol effects.

Table S2. Observed and simulated surface reflectance changes

		RED	NIR	BLU
MODIS observations	Linear trend (2000-2012)	0.004	-0.008	0.003
	Linear trend (2003-2012)	0.003	-0.020	0.002
6S Simulations	Small AOT loading (AOT=0.1)	0.001	-0.001	0.002
	Medium AOT loading (AOT=0.3)	0.004	-0.004	0.007
	Large AOT loading (AOT=0.5)	0.008	-0.006	0.013

Note that the simulated reflectance due to 25% underestimation of AOT is averaged by the three different types of aerosol loadings.

C3. Impacts of sun-view angle effects on EVI changes

EVI is subject to variations caused by sun-view angle or bidirectional reflectance distribution function (BRDF) effects[55-56]. Methods have been proposed to estimate the BRDF effects but not implemented in the current MODIS products[55]. The EVI data used in this study (MOD13C2) does not have a BRDF correction although it has a quality assurance bit assigned for BRDF correction (as per personal communication of Dr. Kamel Didan, who is one of the EVI algorithm developers).

The MODIS instruments are stabilized in overpass time - i.e. there is no orbital drift, as in the case of Advanced Very High Resolution Radiometer[57]. Orbital drift may introduce a BRDF dependence of the EVI trends due to change in the mean solar geometry from year to year. For MODIS data, the mean solar geometry is the same during our study period in April-May-June (AMJ). Note that a recent study (Morton et al., 2014)[9] found that the intra-annual EVI changes between the beginning and the end of the dry season in Amazonia are due to changes in MODIS sampling geometry, while our study is focused on the inter-annual EVI changes. Because we are analyzing trends in AMJ average EVI, spurious effects due to changes in MODIS sampling have a negligible effect on our results and conclusions. MODIS sampling changes are largest between Solstices (data far from the principal plane) and Equinoxes (data from the principal plane). It is possible that year-to-year AMJ average EVIs may be impacted by slightly different proportions of samples from back- and forward-scattering regions, but such variations are not systematic. Therefore, the declining EVI trend reported in our study is not impacted by the seasonal variations in the solar geometry reported in Morton et al[9].

For wide-swath sensors such as MODIS, the wide view angles may introduce some variability in EVI. However, the MOD13C2 EVI product[58] at 0.05° resolution was spatially and temporally composited based on quality, cloud, and viewing geometry of daily 1km EVI data on a per-pixel basis. Cloud-contaminated pixels and extreme off-nadir sensor views were considered to be of lower quality. A cloud-free, nadir view pixel with no residual atmospheric contamination represented the best quality pixel. Only the higher quality, cloud-free, filtered data were retained for the compositing. The EVI algorithm used a compositing technique called Constrained View angle - Maximum Value Composite (CV-MVC). The CV-MVC is an enhanced MVC technique, in which only the observation with the highest VI value and the smallest view angle, i.e. closest to nadir view, is chosen to represent the composite cycle for each pixel[58]. This compositing approach should minimize, but not completely remove the view angle related BRDF effect on MODIS EVI variability.

The ideal way to assess the potential view angle effects on EVI variability is to perform a BRDF correction to the MODIS daily reflectance data at 1km resolution from the Terra satellite, which unfortunately is beyond the scope of this article and our computing resources. Furthermore, separating non-vegetation BRDF effects on EVI variability from real vegetation dynamics remains challenging[55]. Here we use a BRDF-corrected surface reflectance product (MCD43C4)[59-60] developed and implemented by the MODIS albedo team to assess the BRDF effects for the period 2003-2012. The MCD43C4 provides reflectance data adjusted via a BRDF to model the values as if they were taken from nadir view. We created a new monthly BRDF-corrected EVI product from MCD43C4 following the current MODIS EVI algorithm (Extended data Figs 9a and 9c) and compared it to the standard EVI product with proper quality assurance filtering (Fig. 2b and Fig. 3c). Unlike the standard EVI data, the regional mean BRDF-corrected EVI trend is statistically insignificant (P=0.269), but the general decreasing trend in the standard EVI remains robust in the BRDF-corrected EVI, particularly the large decreases after 2006 (Extended Data Fig. 9a). Similar to the spatial patterns of changes in the standard EVI data, the BRDF-corrected EVI decreased over 97% of the study area (Extended Data Fig. 9c), with 22% of the area showing a significant negative trend at P<0.1. Overall the BRDF-corrected EVI shows a smaller decrease than the standard data, particularly in southern Congo where fewer high-quality pixels are available than northern Congo. The differences in the EVI changes are expected given each EVI dataset was calculated from different reflectance data and was composited by different approaches (see more discussion next).

It should be noted that the BRDF-corrected surface reflectance (MCD43C4) was derived by combining MODIS measurements from the Terra and Aqua satellites. The local equatorial crossing time is approximately 10:30 a.m. for Terra and ~1:30 p.m. for Aqua. In general, more clouds are seen over land during the afternoon than in the morning. Our analysis of EVI data showed much fewer pixels flagged as high-quality in Aqua than Terra (that is the reason why we use the morning Terra data instead of the afternoon Aqua data in our analysis). Also the MCD43C4 product has some pixels with poor quality data because a smoothing algorithm was used, which resulted in the differences in surface reflectance when compared to the standard product (as per personal communication of Dr. Sangram Ganguly who has worked with MODIS EVI and Nadir BRDF Adjusted Reflectance (NBAR) products for phenological studies). Furthermore, the standard EVI data of MOD13C2 were spatially and temporally composited from daily 1km Terra data at pixel level using the CV-MVC approach, which minimizes the BRDF effect, while the BRDF-corrected EVI was calculated directly from the 16-day composite Terra and Aqua combined surface reflectance data at 0.05° resolution.

One alternative way to assess the BRDF effect is to use the MODIS NDVI data from MOD13C2 as a proxy because NDVI is insensitive to the sun-view angle effects, particularly for dense forests[55-56]. As the same compositing approaches and the same quality assurance flags were used to create the EVI and NDVI data by the same MODIS algorithm, this method helps to exclude the compositing differences in comparing the BRDF-corrected EVI to the standard EVI.

However, NDVI may saturate over dense forests and thus may be not as sensitive as EVI to rainfall variability. Nevertheless, the regional mean NDVI shows a statistically significant decreasing trend of -0.030±0.009 (*P*=0.012) for the period 2003-2012 or declined by -0.017 between the last and first three years (Extended Data Fig. 9b). Geographically, NDVI decreased over 96% of the study area (Extended Data Fig. 9d), with 42% of the area showing a significant negative trend at *P*<0.1.

The results from the above two approaches show the general decreasing trend of vegetation greenness over time, which is mostly consistent with the results from the standard product with proper quality assurance filtering. Given the wide swath covered by the MODIS sensors, the view angle effect may introduce some variability in EVI, but the EVI compositing approach (CV-MVC) in the standard product selected observations with the highest VIs and the smallest view angles and thus minimized the view angle related BRDF effect. Therefore, we do not envision that the sun-view angle effect played a significant role in the observed interannual and spatial patterns of EVI variability.

C4. Impacts of sensor degradation on EVI changes

Recent studies show that some of the Terra land bands have exhibited a systematic wavelength dependent drift because of sensor degradation[61]. It was estimated that the top-of-atmosphere reflectance has decreased by about 6% in blue and 2-3% in red and NIR since 2003 (ref. 62). This unaccounted sensor degradation or calibration artifact has affected the Terra MODIS Collection 5 level 1b, and therefore, the surface reflectance products. The top-of-atmosphere red and near-infrared (NIR) bands were affected equally, but due to the atmosphere impact, red reflectance decreased more than the NIR reflectance, resulting in a spurious increase in EVI and NDVI. However, the decreasing trend in EVI observed over our study region cannot be attributed to the calibration artifact for at least three reasons. First, the observed decrease in NIR since 2003 over the Congo, 0.02 (Table S2), is almost 6-7% of the average NIR value while the expected calibration artifact is only 2-3%. Second, the unaccounted sensor degradation effect, if dominant, would have decreased the MODIS reflectance in the blue, red and NIR bands (i.e., the changes should be in the same direction). However, the MODIS reflectance in the blue and red bands showed an increasing trend over our study region (Table S2), which is contrary to the expected calibration artifact. Third, the calibration artifact, if dominant, would not have demonstrated a strong correlation between MODIS EVI and other independent moisture and vegetation parameters (e.g., TWS, VOD and CBA) shown in the main text. Moreover, our preliminary results show a clear decreasing trend in EVI during the period 2001-2012 (the figure is not shown due to Nature's page limit) after we analyzed a sample of the MODIS Collection 6 data in which the artifact was corrected. We note that this Collection 6 data was also corrected for BRDF effects.

It is anticipated that the improvements made in the upcoming MODIS Collection 6 products will reduce, if not completely remove, some of the calibration artifact identified in the MODIS Collection 5 data product[62]. Further quantification of this artifact on EVI over our study region, however, cannot be done thoroughly before the MODIS Collection 6 data are available and our scientific understanding of such effects on EVI is sound.

D. Assessing Congo forest temporal dynamics using Landsat 7 ETM+ imagery

We explored the temporal dynamics of vegetation in the Congo basin using Landsat 7 ETM+ images for four scenes (Extended Data Fig. 10) where EVI, rainfall and TWS all show strong decreasing trends from 2000 to 2012 (Fig. 2). Although Landsat 7 has lost about 25% of its data at areas off-nadir due to the Scan-Line-Corrector since May 2003, the rest of the images are still of high quality and can be used to analyze vegetation dynamics. Landsat offers images at 30x30 meter spatial resolution, much higher than that for MODIS EVI, and thus help to better exclude non-vegetated areas. However, ETM+ imagery has a much lower temporal resolution (16 days). Therefore, high quality images are hard to come by. In addition, we also try to keep the images used within the study period of April-May-June to be consistent with the time window of MODIS EVI. As a result, we only have 3~5 images for each of the scenes (Table S3). Even with these limited images, they are still not cloud free. We manually created a cloud mask for each image, and combined the cloud mask for all images so that if a pixel is contaminated in any of the images, that pixel is excluded from the temporal variation analysis. The atmospheric effect was corrected to the surface reflectance by the Dark Object Subtraction Version 3 (DOS3) approach[63]. DOS3 is an improved DOS algorithm that considers the effect of Rayleigh scattering for the transmittance in both viewing and illumination directions. It was demonstrated to produce the best overall classification and change detection results when applied to a multi-temporal dataset consisting of seven Landsat 5 Thematic Mapper (TM) images over China[63]. Downwelling diffuse radiation was obtained by running 6S with Rayleigh atmosphere only.

Table S3: List of Landsat 7 ETM+ images used in the analysis

Path	Row	Year	Day of year	Image ID
176	057	2002	129	LE71760572002129SGS00
		2009	212	LE71760572009212ASN00
		2010	183	LE71760572010183ASN00
177	057	2004	126	LE71770572004126ASN01
		2006	115	LE71770572006115ASN00
		2008	121	LE71770572008121ASN00
		2009	139	LE71770572009139ASN00
		2013	102	LE71770572013102ASN00
178	057	2003	146	LE71780572003146ASN00
		2011	200	LE71780572011200ASN00
		2013	093	LE71780572013093ASN00
177	058	2004	126	LE71770582004126ASN01
		2006	115	LE71770582006115ASN00
		2013	102	LE71770582013102ASN00

We first converted the raw ETM+ images to surface reflectance[63] and then computed NDVI, EVI and performed Tasseled Cap transformation[64-65] with the surface reflectance. The mean temporal variations of NDVI and EVI for all vegetated pixels as well as their mean temporal trajectory in the Tasseled Cap brightness-greenness space were analyzed. To exclude non-vegetated pixels from being used in the analysis, we excluded pixels across the image stack with NDVI<0.5 in the first of the image time series. Extended Data Fig. 10 shows the temporal variations of NDVI and EVI for each of the scene. Overall, they show decreased NDVI and EVI values toward the end of the time series. The temporal trajectory of vegetation in the brightness-greenness space has long been used to understand forest successional rate and direction[66-69]. In general, closed canopy young forests have relatively high greenness and brightness. As forest growth and succession continue, self-thinning leads to gaps in the canopy. Forest canopies are increasingly dominated by fewer trees with larger crowns casting shadows on neighboring trees. As a result, both the brightness and greenness decreases with time. However, a decrease in greenness associated with an increase in brightness or an increase in brightness without significant change in greenness indicates forest degradation. Accordingly, we found that forests in three out of the four Landsat scenes analyzed are degrading with time (Extended Data Fig. 10). The vegetated pixels in scene Path=176, Row=57 do not show a clear trend in this space from 2002 to 2010.

E. Impacts of deforestation, human-induced forest degradation and fires on EVI changes

Most of the EVI decline cannot be attributed to human-induced deforestation and forest degradation. Although the spatial extent and rate of deforestation in Africa is debatable due to lack of reliable data and survey information, it is believed that deforestation in West Africa is significant[70-71] but is much lower in the Congo basin than other tropical rainforests[72-73]. The low deforestation rates in Congo are primarily attributed to (1) poor road network within the country that makes access to remote areas difficult, (2) political and regulatory changes that have dis-incentivized investment in the country, and (3) geographic constrains of forest clearing for agriculture activities that have expanded and occurred primarily outside of forested areas[74]. On the other hand, there is probably a notable human-induced degradation of the forests in this area[75]. However, this small-scale forest degradation over the Congo, particularly due to forest fragmentation and selective logging over certain regions, is difficult to monitor using moderate resolution MODIS data. Therefore, a small percentage of pixels exhibiting a decline in EVI might result from deforestation and human-induced forest degradation but this change should be small in magnitude and spatially extensive and fragmented[76], which cannot produce a notable vegetation browning trend at the basin scale. For example, the forest cover loss intensity in Congo between 2000-2005 and 2005-2010 was distributed unevenly, mainly located at the southern borders of Congo forests (which is outside of our study region) and was mostly correlated with areas of high population density and mining activity[73].

Fire is a significant and continuous natural factor that plays a central role in forest destruction in the tropical regions. Monthly fire counts show two peak fire seasons, coinciding with the bi-modal rainfall seasonal cycle and the total yearly fire counts show the highest number of fires in 2005 and the lowest in 2007 during 2003-2011, compared to other years[77]. As there are no evident upward trends in the yearly fire counts[77], it is reasonable to assume that fire is unlikely to be the major contributor to the widespread decline in EVI.

We used MODIS land cover classification and percent forest cover data to define our study region, which covers primarily the intact forest canopies and has no land cover/use changes detected in the Congo basin (see Methods for detail). We also used the MODIS data to quantify the year-to-year percent forest cover over our study region, which changed little from 2001 to 2012 (figures not shown for brevity), indicating that deforestation and fire cannot be the dominant factor for the observed basin-scale EVI decline.

Table S4: List of acronyms and abbreviations

AMJ	April-May-June
AMSR-E	Advanced Microwave Scanning Radiometer - Earth Observing System
AOT	Aerosol Optical Thickness
BLU	Blue
BRDF	Bidirectional Reflectance Distribution Function
CBA	Canopy Backscatter Anomaly
CERES	Clouds and Earth’s Radiant Energy System
COT	Cloud Optical Thickness
CRU	Climatic Research Unit
CSR	Center for Space Research
CV-MVC	Constrained View angle - Maximum Value Composite
DJFMAM	December-January–February-March-April-May
DOS3	Dark Object Subtraction Version 3
EOF	Empirical Orthogonal Function
ETM	Enhanced Thematic Mapper
EVI	Enhanced Vegetation Index
GFZ	Germany’s GeoForschungsZentrum
GPCC	Global Precipitation Climatology Centre
GPCP	Global Precipitation Climatology Project
GRACE	Gravity Recovery and Climate Experiment
JPL	Jet Propulsion Laboratory
LST	Land Surface Temperature
MAM	March-April-May
MODIS	MODerate resolution Imaging Spectroradiometer
VOD	Vegetation Optical Depth
NASA	National Aeronautics and Space Administration
NBAR	Nadir BRDF Adjusted Reflectance
NDVI	Normalized Difference Vegetation Index
NIR	Nar-Infrared
PAR	Photosynthetically Active Radiation
QSCAT	Quick Scatterometer
RED	Red
SSM/I	Special Sensor Microwave Imager
TM	Thematic Mapper
TRMM	Tropical Rainfall Measuring Mission
TWS	Terrestrial Water Storage
VOD	Vegetation Optical Depth

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