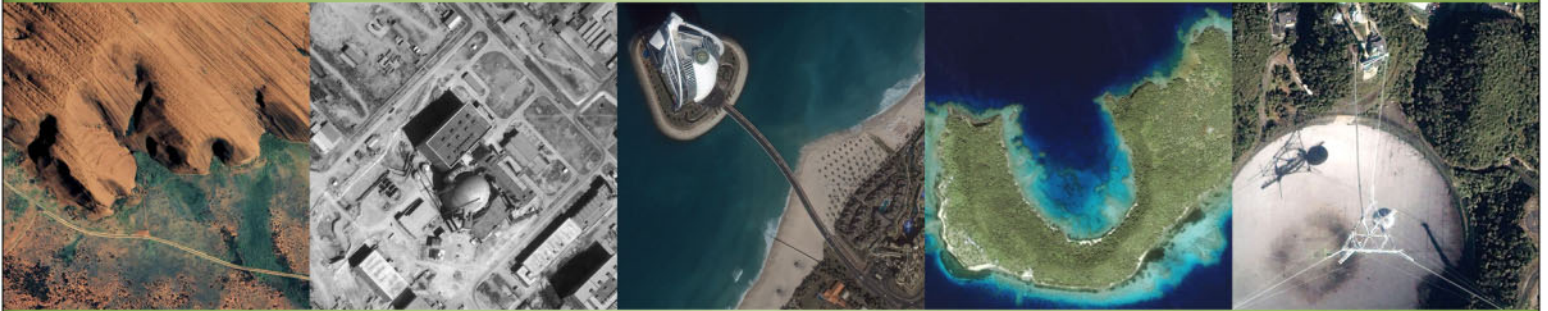


IKONOS

Imagery Products Guide



IKONOS® Imagery Products

- Geo
- Standard Ortho
- Reference
- Pro
- Precision
- PrecisionPlus
- Reference Stereo
- Precision Stereo

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Introduction

When GeoEye successfully launched the IKONOS® satellite in 1999, it made history with the world's first one-meter commercial remote sensing satellite. Since then, GeoEye has set the standard for quickly delivering large volumes of tonally balanced, map accurate, mosaicked images for a variety of industries and applications. To date, IKONOS has collected nearly 200 million square kilometers of imagery that is readily available in our digital archive.

Moving over the ground at approximately seven kilometers per second, IKONOS collects black-and-white and multispectral data at a rate of over 2,000 square kilometers per minute. IKONOS satellite imagery provides access to any location on the Earth's surface. Through the nearly fifteen, 98-minute journeys it makes around the globe each day, IKONOS collects vital statistics about the Earth's ever-changing features—from fluctuations in land and water resources to the build-out of new urban areas. Commercial and governmental organizations rely on GeoEye's high-resolution imagery to view, map, measure, monitor and manage global activities. Applications range from national security and disaster assessment to urban planning and agricultural monitoring. Drawing on the spectacular views from IKONOS, the possibilities are endless.

IKONOS Facts at a Glance

| | |
|---|---|
| Launch Date | 24 September 1999 Vandenberg Air Force Base, California |
| Operational Life | Over 8.5 Years |
| Orbit | 98.1 degree, sun synchronous |
| Speed on Orbit | 7.5 kilometers (4.7 miles) per second |
| Speed Over the Ground | 6.8 kilometers (4.2 miles) per second |
| Number of Revolutions Around the Earth | 14.7 every 24 hours |
| Orbit Time Around the Earth | 98 minutes |
| Altitude | 681 kilometers (423 miles) |
| Resolution | Nadir: 0.82 meters (2.7 feet) panchromatic 3.2 meters (10.5 feet) multispectral 26° Off-Nadir 1.0 meter (3.3 feet) panchromatic 4.0 meters (13.1 feet) multispectral |
| Image Swath | 11.3 kilometers (7.0 miles) at nadir 13.8 kilometers (8.6 miles) at 26° off-nadir |
| Equator Crossing Time | Nominally 10:30 a.m. solar time |
| Revisit Time | Approximately 3 days at 1-meter resolution, 40° latitude |
| Dynamic Range | 11-bits per pixel |
| Image Bands | Panchromatic, blue, green, red, near infrared |

Product Levels

GeoEye categorizes the imagery products gathered from IKONOS according to positional accuracy, which is determined by the reliability of an object in the image to be within the specified accuracy of the actual location of the object on the ground.

Within each IKONOS-derived product, location error is defined by a circular error at 90% confidence (CE90), which means that locations of objects are represented on the image within

the stated accuracy 90% of the time. This CE90 accuracy level can be related to Root Mean Square Error (RMSE) as well as the U.S. National Map Accuracy Standards (NMAS).

There are six levels of IKONOS imagery products, determined by the level of positional accuracy: Geo, Standard Ortho, Reference, Pro, Precision and PrecisionPlus. The following chart outlines product details.

IKONOS Product Levels at a Glance

| | Positional Accuracy | | | Ortho Corrected | Target Elevation Angle | Mosaicked | Stereo Option | Applications |
|-----------------------|---------------------|-------------|-----------|-----------------|------------------------|-----------|---------------|--|
| | CE90 | RMS | NMAS | | | | | |
| Geo | 15.0 meters* | N/A | N/A | No | 60° to 90° | No | No | Visual & interpretive applications |
| Standard Ortho | 50.0 meters** | 25.0 meters | 1:100,000 | Yes | 60° to 90° | No | No | Basic mapping projects |
| Reference | 25.4 meters | 11.8 meters | 1:50,000 | Yes | 60° to 90° | Yes | Yes | Regional, large area mapping and general GIS applications |
| Pro | 10.2 meters | 4.8 meters | 1:12,000 | Yes | 66° to 90° | Yes | No | Transportation, infrastructure, utilities planning, economic development |
| Precision | 4.1 meters | 1.9 meters | 1:4,800 | Yes | 72° to 90° | Yes | Yes | High positional accuracy for urban applications |
| PrecisionPlus | 2.0 meters | 0.9 meters | 1:2,400 | Yes | 75° to 90° | Yes | No | Detailed urban analysis, cadastral & infrastructure mapping |

* Exclusive of terrain effects
 ** May be up to 75 meters CE90 in undeveloped areas with high terrain relief (e.g., Andes or Himalayan mountain ranges)

Georectified Products

GEO PRODUCT SUITE

GeoEye's line of 1m and 4m Geo products are ideal for visual and interpretive applications such as intelligence or visualization that do not require high positional accuracy.

All Geo products are map projected—rectified to a datum and map projection system. To produce a Geo product, GeoEye uses a correction process that removes image distortions introduced by the collection geometry and then resamples the imagery to a uniform ground sample distance (GSD) and a specified map projection. Because Geo images are not orthorectified, their accuracy is limited by terrain displacement.

Typically, Geo products are developed from IKONOS images captured at an elevation angle between 60 and 90 degrees from the Earth's horizon. Because multiple Geo images in a single order are not mosaicked, tonal variations may be evident among images.

GEO ORTHO KIT

A subset of the Geo product line, the Geo Ortho Kit is tailored for sophisticated users such as photogrammetrists who want to control the orthorectification process.

Geo Ortho Kit images include the camera geometry obtained at the time of image collection. Applying Geo Ortho Kit imagery, customers can produce their own highly accurate orthorectified products by using commercial off the shelf (COTS) software, digital elevation models (DEMs) and optional ground control.

IKONOS collects 1m and 4m Geo Ortho Kit imagery at an elevation angle between 60 and 90 degrees. To increase the positional accuracy of the final orthorectified imagery, customers can upgrade IKONOS' elevation angle to be between 72 and 90 degrees.

Orthorectified Products

STANDARD ORTHO PRODUCT SUITE

Standard Ortho is GeoEye's entry-level orthorectified product. It is designed for basic mapping projects that are on a tight budget and need to meet the 1:100,000 National Map Accuracy Standard.

Positional accuracy of the Standard Ortho products are superior to Geo products, offered worldwide, and can be delivered in a shorter timeframe and at a lower cost to you than other orthorectified imagery.

Standard Ortho products are orthorectified and have an accuracy of 50-meter CE90 in most locations but may be up to 75-meters in undeveloped areas with high terrain relief (e.g., Andes or Himalayan mountain ranges).

REFERENCE PRODUCT SUITE

GeoEye designed 1m and 4m Reference products to be suitable for regional mapping, in addition to projects requiring an orthorectified image product with accuracy suitable for 1:50,000 mapping applications.

IKONOS collects Reference imagery at an elevation angle between 60 and 90 degrees. GeoEye orthorectifies and mosaics all Reference-level imagery to a minimum accuracy of 25 meters CE90.

PRO PRODUCT SUITE

Pro-level products are perfect for projects requiring high-resolution imagery and medium-scale accuracy when ground control may be costly, difficult or impossible to acquire.

The 1m and 4m Pro products are the most accurate, orthorectified imagery derived from IKONOS that do not require ground control. Consistent within the 10-meter CE90 accuracy level, the Pro product line provides global access to 1:12,000 NMAS imagery.

IKONOS Pro imagery is typically collected at a slightly higher elevation angle—between 66 and 90 degrees—to ensure positional accuracy.

PRECISION PRODUCT SUITE

With a 1:4,800 NMAS map accuracy level, GeoEye's Precision products support most regional and large-scale urban planning projects. IKONOS typically collects imagery for the 1m and 4m Precision products at elevation angles between 72 and 90 degrees. To increase positional accuracy, GeoEye uses ground control and high-quality elevation models for all Precision products.

PRECISIONPLUS PRODUCT SUITE

PrecisionPlus, the most positionally accurate product offered by GeoEye, provides the spatial accuracy necessary for most urban planning applications, as well as cadastral and infrastructure mapping requirements.

With a two-meter CE90 accuracy, PrecisionPlus is only available in one-meter black-and-white and one-meter color. To meet these premier accuracy levels, GeoEye uses high-precision ground control and precise terrain models to create PrecisionPlus products.

Stereo Products

Stereo imagery is available at one-meter resolution for the Reference and Precision accuracy levels. GeoEye provides the stereo imagery pairs with a rational polynomial coefficient (RPC) camera model file. The RPC file provides camera model data to popular software packages for photogrammetric extraction of 3D feature coordinates, digital elevation models (DEMs) and orthorectified imagery.

Each stereo pair contains an image collected at a low elevation angle (above 60 degrees) as well as an image collected at a higher elevation angle (above 72 degrees) with 30°-45° convergence (0.54 to 0.83 base-to-height ratio).

Reference Stereo products have a horizontal accuracy of 25 meters CE90 and a vertical accuracy of 22 meters LE90. Precision Stereo products have a horizontal accuracy of four meters CE90 and a vertical accuracy of five meters LE90.

Off-the-Shelf Products

1m USA

GeoEye offers a 1-meter, off-the-shelf imagery product of select cities within the United States. 1m USA products are created from the highest-quality, true color IKONOS imagery, and are orthorectified to 10.2 meter CE90, mosaicked and tonally balanced. The best images for each city have already been selected, eliminating the need to search through multiple images of the same Area of Interest (AOI) to find the best image.

Using our online ordering and delivery tool, CARTERRA® Online, 1m USA products can be ordered using a credit card and delivered online. 1m USA product orders of less than 250 megabytes are readily available and can be purchased and downloaded online. After placing an order online for 1m USA, you will receive instructions by email within 24 hours (usually within 1 hour) on how to download your completed order. 1m USA products larger than 250 megabytes can be purchased online, and shipped to you on CD, DVD or hard disk. These orders will be shipped within 5 business days after an order is placed.

Because 1m USA products are already processed, they can only be ordered as 8-bit, true color GeoTIFF format files in a Geographic projection. Existing off-the-shelf products are also available for some selected cities outside of the United States.

Specifications

Spectral Range

| | | |
|---|------------------------|---------------------------|
| 1-meter Black-and-White | Panchromatic | 0.526 – 0.929 micrometers |
| 4-meter Multispectral or 1-meter Color | Band 1 (blue) | 0.445 – 0.516 micrometers |
| | Band 2 (green) | 0.506 – 0.595 micrometers |
| | Band 3 (red) | 0.632 – 0.698 micrometers |
| | Band 4 (near infrared) | 0.757 – 0.853 micrometers |

For more information about the absolute radiometric calibration of the multispectral sensor, contact a GeoEye Customer Service Representative at 1.800.232.9037 (within the U.S.) or +1.301.552.0537 (internationally).

Clouds

All IKONOS imagery contains less than 20% cloud cover. Customers can designate a single coordinate within the image that must be cloud free.

Sun Angle

IKONOS collects imagery at an elevation angle (measured from the Earth's surface to the sun) of greater than 15 degrees, azimuth unrestricted. Because the orbit is sun synchronous, all imagery is collected at approximately 10:30 a.m. local solar time. Therefore, all imagery has consistent sun angles.

File Sizes

Use the following table to determine the file size for an IKONOS product order, according to specific color, bit, band and resolution requirements.

| | Bits per Pixel | Number of Bands | Resolution | File Size per Square Kilometer |
|--|----------------|-----------------|-------------------|--------------------------------|
| Black & White | 8 | 1 | 1-meter | 1 megabyte |
| | 11 | 1 | 1-meter | 2 megabyte |
| Multispectral (true or false color) | 8 | 3 | 4-meter | .1875 megabyte |
| | 11 | 3 | 4-meter | .375 megabyte |
| Multispectral (4-band) | 8 | 4 | 4-meter | .25 megabyte |
| | 11 | 4 | 4-meter | .5 megabyte |
| Color (true or false color) | 8 | 3 | 1-meter | 3 megabytes |
| | 11 | 3 | 1-meter | 6 megabytes |
| Color (4-band) | 8 | 4 | 1-meter | 4 megabytes |
| | 11 | 4 | 1-meter | 8 megabytes |
| Bundle (true or false color) | 8 | 4 | 1-meter + 4-meter | 1.1875 megabytes |
| | 11 | 4 | 1-meter + 4-meter | 2.375 megabytes |
| Bundle (4-band) | 8 | 5 | 1-meter + 4-meter | 1.25 megabytes |
| | 11 | 5 | 1-meter + 4-meter | 2.5 megabytes |

Support Data

All GeoEye products are shipped with a metadata file, license file and shape files. The metadata includes order parameters as well as source image and product file descriptions.

Order parameters include area of interest (AOI), spectral bands and coordinate system. Source image descriptions include acquisition date, sun angles and viewing geometry. Product file descriptions include geocoding, spectral bands and coverage area.

Metadata is provided in an ASCII text file. Shape files show order AOI, delivery component layout, and source image footprints with acquisition geometry.

Options

Band Combinations

BLACK-AND-WHITE

One-meter IKONOS panchromatic imagery delivered as a single band.

MULTISPECTRAL

Four-meter IKONOS imagery delivered as one file with three bands in true color (red, green, blue) or false color (near infrared, red, green); or four files of one band each (near infrared, red, green, blue).

COLOR

IKONOS imagery created using a pan-sharpening process that combines one-meter spatial resolution of the panchromatic image with the spectral resolution of the multispectral bands to create a one-meter color product.

GeoEye delivers one-meter color imagery as either one file with three bands in true color (red, green, blue) or false color (near infrared, red, green); or four files of one band each (near infrared, red, green, blue).

BUNDLE

When the bundle order option is selected, customers receive both one-meter black-and-white and four-meter multispectral IKONOS imagery. GeoEye delivers one-meter black-and-white imagery as a single band file. Multispectral imagery is delivered as either one file with three bands in true color (red, green, blue) or false color (near infrared, red, green); or four files of one band each (near infrared, red, green, blue).

IKONOS collects the images for a bundle order simultaneously to ensure radiometric and temporal consistency.

Horizontal Units

Meters, International Feet, or U.S. Survey Feet.

Projections

Choice of UTM, State Plane, Albers Conic Equal Area, Lambert Conformal Conic, or Transverse Mercator. Stereo products are also available in an epi-polar projection to facilitate stereo feature extraction applications.

Datums

Choice of:

- WGS84 (available worldwide)
- NAD83 (available in North America only)
- NAD27 (available in conterminous United States only)

File Format

GeoEye delivers monoscopic IKONOS imagery in electronic format as an untiled GeoTIFF file or as an uncompressed NITF 2.0 file. Geo products in NITF format have a limited distribution.

Stereo imagery is available in TIFF format for epi-polar projected imagery and GeoTIFF for map-projected imagery.

Bits/Pixel

GeoEye produces IKONOS imagery at either 8 or 11-bits per pixel.

- Customers interested in small, easy to use images for visual interpretation should select 8-bit images. In an 8-bit image, each pixel is represented by 256 shades of gray per band.
- Customers interested in full, dynamic range should select 11-bit images. When viewing an IKONOS 11-bit image, use an application that is capable of reading 16-bit file formats and adjusting both image brightness and contrast. In an 11-bit image, each pixel is represented by 2,048 shades of gray, which provides more information to discern subtle differences among objects.

Dynamic Range Adjust

When ordering an IKONOS imagery product, specify whether Dynamic Range Adjust (DRA) should be “on” or “off.” If “on” is selected, GeoEye will apply DRA to enhance the visual interpretability of the image. If “off” is selected, GeoEye will maintain absolute radiometric accuracy and full dynamic range for scientific applications. The DRA option is not available for NITF file formats.

Mosaic

Reference, Pro, Precision & PrecisionPlus orthorectified products ordered with DRA “on” may be mosaicked with tonal balancing. Mosaic seams will be positioned to reduce visibility. Geo, Geo Ortho Kit, and Standard Ortho products as well as products ordered with DRA “off” will not be mosaicked.

Resampling

Cubic convolution (also called bi-cubic) is used by default. Nearest neighbor resampling is available on request.

Media

GeoEye can deliver imagery on CD-ROM, DVD, hard drive or electronically. Electronic delivery requires system set-up and client software installation prior to delivery.

Ordering and Delivery

How to Order

To order IKONOS products, contact a GeoEye Customer Service Representative at 1.800.232.9037 (within the U.S.) or +1.301.552.0537 (internationally).

Customers can purchase imagery from GeoEye for any areas of interest in the world. Customers can also purchase imagery directly from GeoEye Regional Affiliates for areas of interest within their specific communication cones. For more information on GeoEye Regional Affiliates, see **Regional Affiliates** on page 15 of this product guide.

New Collections

New collections are orders for imagery that are not being fulfilled from GeoEye's imagery archive and require scheduling and tasking of the IKONOS satellite. All non-standard collections such as a short-term collection window, rush delivery, etc. require a feasibility assessment and a Custom Quotation (CQ).

Archive

GeoEye maintains an extensive archive of IKONOS imagery that has been collected since the launch of IKONOS in September 1999. To determine if archive imagery is available for any area of interest use GeoEye's advanced, full featured online search tool at: <http://carterraonline.spaceimaging.com>

Minimum Order Size

The minimum order for new collections is 100 square kilometers. For archive Geo, Geo Ortho Kit, Standard Ortho and Reference Stereo products, the minimum order size is 49 square kilometers. All other archive products have a 100-square kilometer minimum.

All orders must be a minimum of five kilometers wide in any direction.

Delivery Times

| Product | Size | Delivery Days |
|--|---|------------------|
| Geo Geo Ortho Kit Standard Ortho Reference Stereo | GeoEye North America Archive | 5 business days |
| | GeoEye Regional Affiliate Archive | 10 business days |
| | Less than 500 square kilometers (New Collection) | 60 days |
| | 500 – 5,000 square kilometers (New Collection) | 90 days |
| | 5,000 – 10,000 square kilometers (New Collection) | 120 days |
| | More than 10,000 square kilometers (New Collection) | Custom quote |
| Reference & Pro | Less than 5,000 square kilometers | 90 days |
| | 5,000 – 10,000 square kilometers | 150 days |
| | More than 10,000 square kilometers | Custom quote |
| Precision PrecisionPlus Precision Stereo | Less than 5,000 square kilometers | 120 days |
| | 5,000 – 10,000 square kilometers | 150 days |
| | More than 10,000 square kilometers | Custom quote |

IKONOS Copies and Redeliveries

COPIES

Additional copy of imagery requested at the time of original purchase.

REDELIVERY

Additional copy of imagery requested after original data purchase.

| Copy and Redelivery Minimums | | | |
|--|----------|--------------------------|------------------|
| | Copies | Geo or Stereo Redelivery | Ortho Redelivery |
| Minimum | \$250.00 | \$250.00 | \$1,250 |
| Redelivery available for licensed users only and with permission from original purchaser | | | |
| Minimums apply only for SINA and Outside Communication Cones | | | |

Order Cancellations and Modifications

CANCELLATIONS

| Days Since the Order Date | Order Conditions | Cancellation Fee |
|---------------------------|------------------|------------------|
| Less than 3 | N/A | 0% |

| | | |
|-------------|-----------------|------------------|
| 3 – 30 days | N/A | 25% of the order |
| 30+ days | N/A | 50% of the order |
| N/A | Late Delivery | 0% |
| N/A | Error by GeoEye | 0% |

MODIFICATIONS

| Imagery Collected? | Order Conditions | Fee |
|--------------------|---------------------------------------|--|
| N/A | Error by GeoEye | 0% |
| No | Order falls under cancellation policy | Ordered less than 3 days: No Fee Ordered 3 – 30 days: 25% of order Ordered 30+ days: 50% of order |
| Yes | Cancel and reorder as desired | Invoice for percent of collection completed, but if over 30 days since order date, assess a minimum of 50% |

Licensing

Upon sale of an image product, GeoEye retains copyright and ownership to all images we collect and produce. In effect, customers are not purchasing the image itself; rather, they are purchasing the non-exclusive right to use the image. GeoEye defines how a customer may use the image through a license. The license that is purchased by the customer also determines how much they are charged for the right to use the image. For example, a company that purchases a "Single Organization" license that only allows internal use of the data is charged less than a company that purchases a "Multiple Organization" license because they intend to share the data with another company.

Permitted Activities

Under GeoEye licenses, customers may do the following.

- Reformat the Product for Customer's use into different formats or media from those in which it is delivered.
- Make an unlimited number of hardcopies and softcopies of the Product for Customer's internal use.
- Distribute the Product (with copyright markings) on an isolated, non-commercial basis. For example, as part of a hardcopy research report or publication.
- Modify the imagery Product, through manipulation techniques and/or the addition of other data, and make copies of the resulting bundled image product, for Customer's internal use only.
- Distribute works derived from the Product ("Derived Works"). Derived Works that contain the source image data (pixels) or reasonable facsimile of the source image data, inherit the copyright and license restrictions of the source data. Other Derived Works (vector extraction, classification, etc.) have no restrictions on use and distribution. Reduced resolution data sets (RRDS) with ratios of 16:1 or higher shall have no restrictions on use and distribution, but shall contain the copyright markings.
- Make the Product available to its consultants, agents and subcontractors for purposes otherwise consistent with the Permitted Use and subject to the restrictions herein, and without the right to transfer, modify, copy or sublicense.
- Post the Product and Derived Works, with copyright markings, in a non-downloadable fashion, on an Internet site with the following credit conspicuously displayed, "Includes material ©GeoEye"

Prohibited Activities

GeoEye licenses prohibit the following:

- Copy or reproduce (even if merged with other materials), other than as consistent with the Permitted Use.
- Sell, license, transfer or disclose the Products, or use them in any manner not expressly authorized by this Agreement.

- Alter or remove any copyright notice or proprietary legend contained in, or on the Products. Customer agrees that any embodiment of the Products permitted under this Agreement will contain a notice similar to the following: “Includes material © GeoEye all rights reserved.”

License Levels

GeoEye’s license structure allows the customer to choose from 5 license levels.

| License | Price Uplift |
|-----------------------|--------------|
| Single Organization | 0% |
| Multiple Organization | 15% |
| Tier 1 | 30% |
| Tier 2 | 55% |
| Tier 3 | 90% |

SINGLE / MULTIPLE ORGANIZATION LICENSE

The Single Organization license allows customers to use the data at one of the following narrowly Defined Customer Groups. The multiple organization license allows the customer to select two of these narrowly defined customer groups.

- One private individual
- One company or corporation, but not subsidiaries
- One civilian federal agency below the U.S. Cabinet level
- One of the four branches of the military, a defense agency, one of the unified commands, one of the non-DoD entities identified in the Title 50 USC 401a or the State Department (U.S. A.I.D. shall not be considered to be a component of the State Department)
- One state or provincial agency
- All departments of one county government
- All departments of one city government
- One Non Governmental Organization (NGO) or Non-Profit Organization (NPO)
- All departments within a single educational organization within a single country

TIER LICENSE

A “Tier 1” license allows the data to be used by one more Broadly Defined Customer Groups. A “Tier 2” allows data to be shared by two of the following customer groups. A “Tier 3” license allows data to be used by all customer groups.

- Multiple private companies and/or corporations to include subsidiaries
- All Federal Civilian Government Agencies of a single country
- All DoD/Title 50 Government Agencies of a single country. Includes all Title 50 organizations as defined in 50 USC 401a in the United States.

- One of the four branches of the military, a defense agency, one of the unified commands, one of the non-DoD entities identified in the Title 50 USC 401a or the State Department (U.S. A.I.D. shall not be considered to be a component of the State Department); and "Coalition Forces" including the foreign Department/Ministry of Defense (DoD/MoD) and intelligence organizations, as well as headquarters elements of the UN, NATO, and similar coalitions.
- All state or provincial government agencies of a single state or province
- All local municipal government agencies (county and city) of a single municipality
- Multiple Non Governmental Organizations (NGO) and/or Non-Profit Organizations (NPO)
- All departments within a single educational organization within a single country
- Multiple International Agencies (such as the U.N.) and host nations

Regional Affiliates

GeoEye maintains a network of Regional Affiliates (RA) who are involved in collecting, processing, marketing and distributing imagery products based on GeoEye's IKONOS satellite.

The Regional Affiliate network provides the operating framework for streamlining commercial operations and procedures on a worldwide basis. It also standardizes order management processes across all RAs, to ensure the best customer service experience in the industry. The Regional Affiliate program maximizes direct access to the IKONOS satellite, thereby increasing commercial order fulfillment capacity.

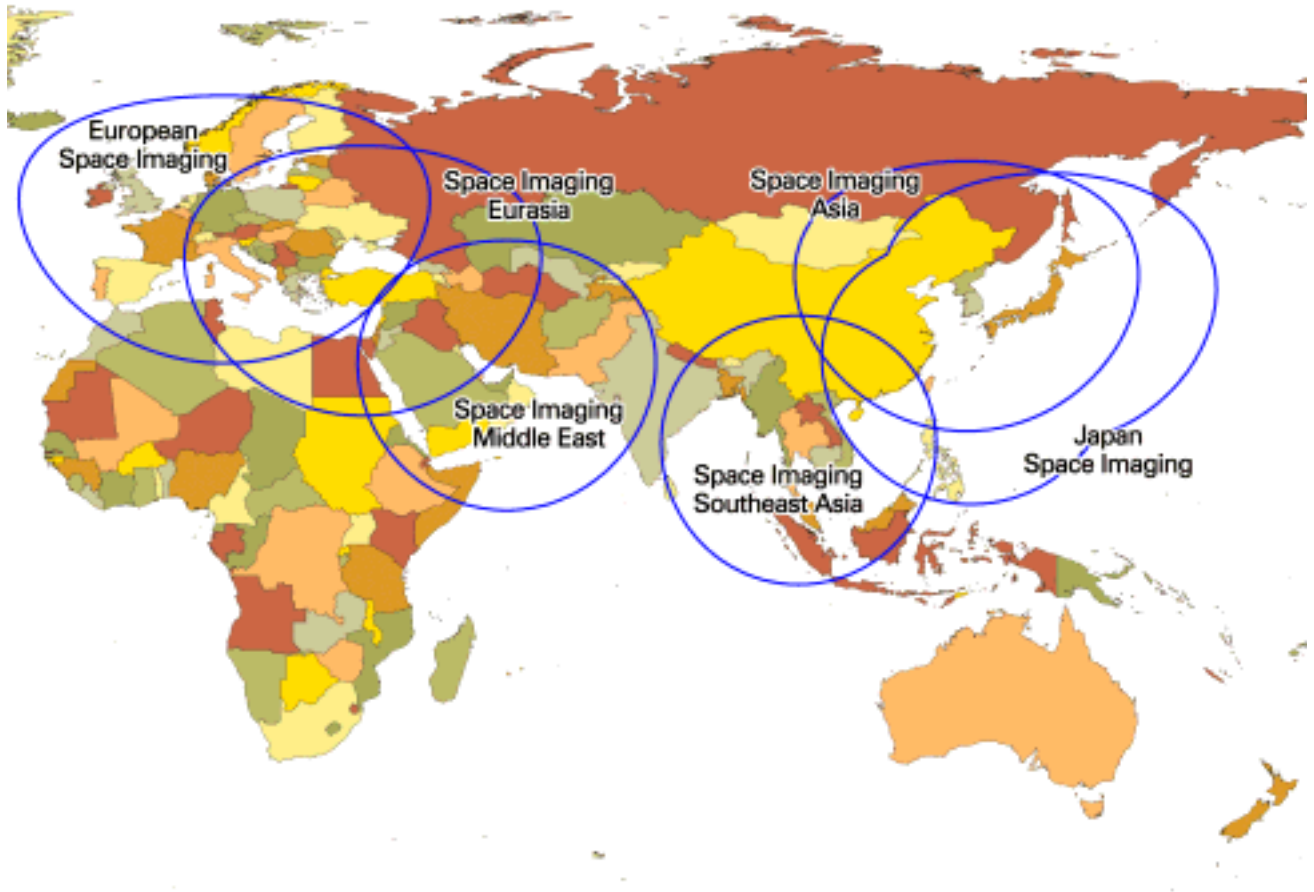
The Regional Affiliates include:

| | |
|--|---|
| Japan Space Imaging Tokyo, Japan | INTA Spaceturk Ankara, Turkey |
| WIA Corporation Seoul, Korea | Space Imaging Middle East Dubai, United Arab Emirates |
| European Space Imaging Munich, Germany | Space Imaging SouthEast Asia Bangkok, Thailand |

GeoEye's CARTERRA® Online (<http://carterraonline.spaceimaging.com>) allows customers worldwide to have instant access to all Regional Affiliate IKONOS data archives.

Customers located within any of the RAs' communications cones are encouraged to deal directly with the RA closest to their location or an authorized local GeoEye Reseller. Customers outside of any of the communications cones may deal directly with any RA or Reseller. GeoEye's exclusive sales territory includes Canada, the United States, Mexico and the Caribbean.

Regional Affiliate communication cones are shown in the diagram below.



Abbreviations, Acronyms and Terms

| | |
|------------------------|---|
| AOI | Area of Interest. |
| B/H | Base-to-height ratio of a stereo pair. |
| Black-and-white | Single band, black-and-white imagery. Also referred to as <i>panchromatic</i> . |
| CE90 | Circular Error 90. Indicates that the actual location of an object is represented on the image within the stated accuracy 90% of the time. |
| color | Imagery derived by fusing black-and-white and multispectral imagery. |
| COTS | Commercial Off The Shelf. |
| DEM | Digital Elevation Model. |
| DRA | Dynamic Range Adjust. An optional post-processing feature that enhances the visual interpretability of the image. |
| DTM | Digital Terrain Model. |
| false color | Viewing multispectral or color imagery in a specific combination of bands (near infrared, red, green). When viewing false color imagery, colors appear “abnormal” (e.g., healthy, green vegetation appears in red on a false color image). False color imagery is commonly used in vegetation analysis. |
| GSD | Ground Sample Distance. The size of a single pixel as measured on the ground. |
| IGM | Image Geometry Model. Also referred to as <i>Rational Polynomial Coefficients</i> (RPC). |
| LE90 | Linear Error 90. Indicates that the actual elevation of an object is represented on the image within the stated accuracy 90% of the time. |
| monoscopic | The collection of a single image, as opposed to a stereo collection. |
| mosaic | The process of digitally assembling images to create contiguous large-area coverage. |

ABBREVIATIONS, ACRONYMS AND TERMS (CONTINUED)

| | |
|---------------------------|--|
| multispectral | Imagery collected by IKONOS in two or more ranges of wavelengths in the electromagnetic spectrum. |
| nadir | The point on the ground vertically beneath the sensor. |
| NMAS | United States National Map Accuracy Standards. |
| orthorectification | The process of removing image distortions introduced by the collection geometry and variable terrain, and re-sampling the imagery to a specified map projection. Also referred to as <i>orthocorrection</i> . |
| RA | GeoEye Regional Affiliate. The current GeoEye Regional Affiliates are Japan GeoEye, GeoEye Asia, European GeoEye, GeoEye Eurasia, GeoEye Middle East, and GeoEye Southeast Asia. |
| RMSE | Root Mean Square Error. |
| RPC | Rational Polynomial Coefficient camera model. RPCs provide the camera geometry obtained at the time of the image collection. Commercial Off the Shelf (COTS) software can utilize RPC to allow photogrammetric processing. |
| stereo | The collection of two or more images of the same Area of Interest (AOI) from different viewing angles. |
| true color | Viewing multispectral or color imagery in a specific band combination (red, green, blue). When viewing true color imagery, colors appear "normal" (e.g., vegetation is green). |

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