AIRBUS

Basemap
Bundle Offer

▷ *2 for the Price of 1*

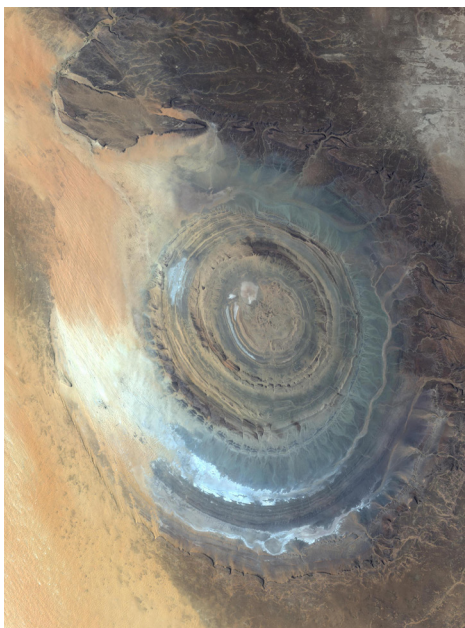*From now* until **Dec 31,** *2020 purchase our Basemap and get a Living Library subscription for free!*

Interested in this offer?

Get started

OneAtlas Services: Using Basemap and Living Library Together

Standalone Services, or use them in harmony.
How to determine which (or both) is right for your application?

OneAtlas provides quick and easy access to satellite imagery, analytics and thematic services to help build applications and solve business challenges.

Two of the most powerful OneAtlas products are the Basemap and Living Library. Each is capable of standing on its own as a valuable source of satellite-derived information for Airbus customers, yet they may also be used together as complementary data products.

This paper describes the similarities and differences between the Basemap and Living Library products and explains how they can be leveraged most effectively either by themselves or together in specific vertical market applications.

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OneAtlas Basemap

A Global Layer of Quality Imagery

Airbus introduced the Basemap product to provide a consistent, reliable context to professional-grade geospatial applications anywhere on Earth.

The Basemap is a structured single layer of Pléiades (50cm) and SPOT (1.5m) imagery that has been curated to include the highest-quality data available. Developed as a global off-the-shelf foundational data set, Basemap is constantly updated with new imagery with a commitment to refresh the entire world's landmass annually.

Customers can request access to the entire global layer or choose their areas of interest. The data set can be streamed directly into your GIS, downloaded via a digital copy (online) or delivered via physical delivery if needed. APIs are also available for developers and API users who need to develop their own application.

The Basemap offers a seamless visual experience made of Sentinel and Landsat imagery up to 10m resolution. It also offers 0.5m resolution over urban areas that have more than 300,000 inhabitants. This represents roughly 3,000 urban areas composed of 14,000 different cities all over the world and 1.5-meter SPOT data over the rest of the Earth's landmasses.

Each image has been processed, pan-sharpened and professionally selected based on visual clarity, accuracy and consistency. Every Basemap image has no more than 5% cloud cover and less than a 20-degree incidence angle.

Each scene of the SPOT and Pléiades Basemap retains its own environmental characteristics which add vital and reliable context on the ground. While keeping reliability at the core of our value proposition, visual experience is also at the heart of the product identity. SPOT and Pléiades Images are processed and dehazed to ensure an aesthetic rendering.
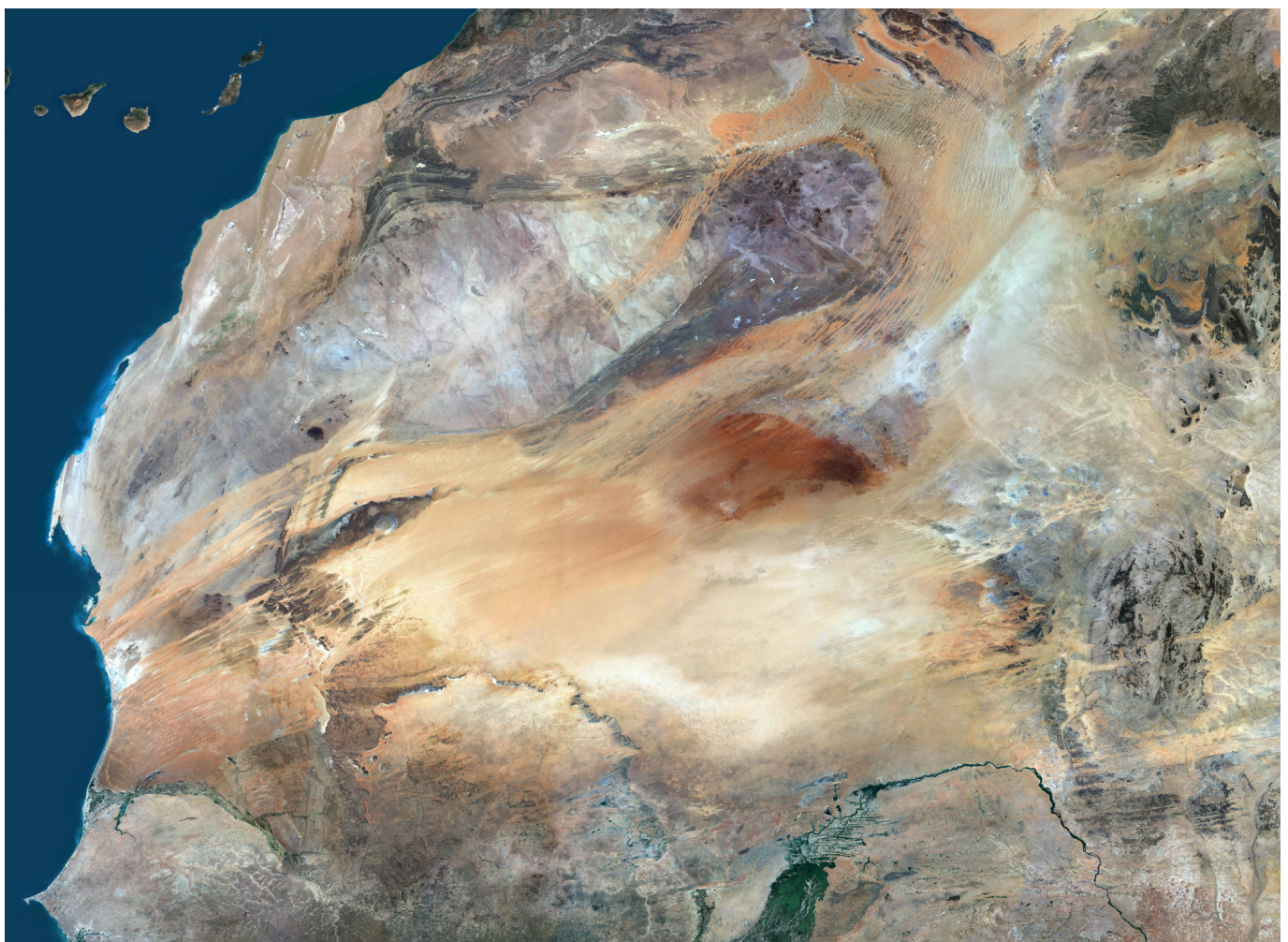
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How is OneAtlas Basemap used?

The Basemap can be used in numerous professional applications that rely on geographic context, geospatial analysis, map creation and machine learning.

The two most common uses are as an embedded background layer and as a GIS foundation. As a background to nearly any application, the Basemap gives unbiased context to information, showing the accurate geographic relationships between landmasses, features and objects on the Earth's surface. Used in a GIS, Basemap is the foundational geospatial layer from which reliable, up-to-date maps and vectors may be extracted at scale.

The Basemap can also be used for machine learning. It allows users to compute analytics over large areas, at a regional, national or continental scale.

The Basemap service has been running since 2016 and provides access to different vintages of imagery that can be computed to extract statistics or analytics over time over broad areas.

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Basemap **Benefits**

Off-the-Shelf
Ready to purchase now with complete and consistent coverage of all Earth landmasses.

Sharp, Detailed
1.5-meter spatial resolution worldwide and 50-cm over urban areas.

Curated for Quality
Selected for accuracy, low cloud cover and best incidence angle.

Fresh
Most imagery is refreshed annually. Some is fresher than 8 months, depending on the area.

OneAtlas Living Library

A Stack of Continuously Updated Imagery

Airbus created the Living Library to give users instant access to multiple new and archived images captured over their area of interest anywhere on Earth.

Living Library is a stack of Pléiades and SPOT satellite images that are continuously updated as new data is acquired. Airbus has curated the data to include only imagery with low cloud cover and incidence angle. In addition, customers will also be able to take advantage of our deeper Pléiades and SPOT 6/7 imagery archive which allows users to access imagery with a greater cloud cover and incidence angle, up to 2012.

Content can be discovered in the OneAtlas Data Content Preview map, and is constantly updated.

Subscribers can use the Living Library to view a recently acquired image over an area of interest and then dig into the archive to find additional images of the same area captured on a different date, by another satellite, or at an alternate incidence angle. The Living Library content can also be enriched with Tasking. The OneTasking service offers a commitment to deliver new imagery collections when and where its customers need them, to complement and increase the content that is available in the Living Library.

Living Library can be utilized via the OneAtlas Data web interface, streamed or downloaded into your own GIS, or accessible via an API. All paid users have access to the full global Living Library archive of imagery with the option to stream or download imagery as they choose with no traditional limitations based on square kilometers. The content available in the Living Library
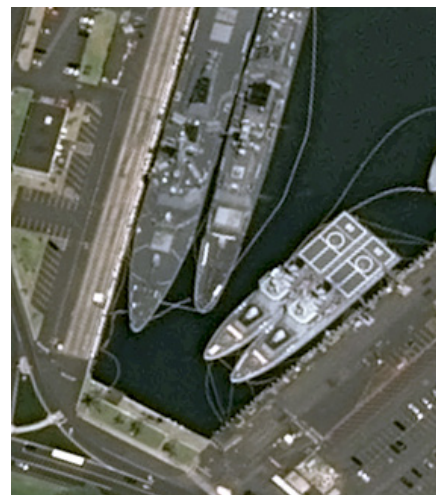
Pléiades © CNES 2014, Distribution Airbus DS

will be progressively enriched with other data sources that include Pleiades Neo (30cm) and Vision-1 (87cm) optical imagery, as well as imagery and data from the Radar Constellation in the future.

How is OneAtlas Living Library Used?

Put simply, Airbus customers rely on the Living Library to gain the freshest insights from the newest imagery in the quickest way possible. The uses of this product span the entire spectrum of professional Earth Observation applications.

In addition to creating up-to-date maps, Living Library and its archive of data sets are used to extract and analyze spatial and spectral information and to monitor change and identify trends over time. With the relatively new capability of streaming image data directly into customers' computers where Artificial Intelligence and Machine Learning drive processing algorithms, Living Library is now being used in Automatic Detection and Identification as well as Automatic Prediction applications.

Living Library **Benefits**

Quick and Easy
Instant access to the data you need right on your desktop or mobile device.
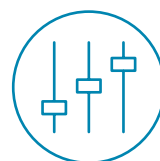
Fresh
Updated daily.

Pay for What You Need
Within your subscription package, stream and download only the imagery you need.

Flexible
Access the data you need when you need it.

Complementary Basemap and Living Library Use Cases

While Living Library and Basemap can each stand alone in many applications, as previously noted, the most common uses for these products are as complements to each other. The complementary applications fall into four broad categories that span multiple vertical markets – Monitoring, Analysis, as well as Mapping and Machine Learning.

Monitoring

Monitoring involves the use of multi-temporal satellite imagery to observe and check on the progress or quality of something over a period of time. In services such as the OneAtlas Earth Monitor service, monitoring may even be a continuous, systematic observation of a geographic location.

In these applications, the Basemap product serves most often as the baseline layer representing conditions at a point in time to compare progress. Archived and future acquisitions in Living Library provide the comparisons from the baseline either in the past or in the future. Once progress has been identified with Living Library, the results can be overlaid on the Basemap image to provide overall context.

These are common complementary Monitoring applications of Basemap and Living Library in specific vertical markets:

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Global vision of New York Manhattan with Basemap Imagery from May 2020 - Zoom over Central park in 50cm with an image from July 2020 to detect early changes and update maps accordingly.
@PlanetObserver / Pléiades © CNES, Distribution Airbus DS

Defence and Security
Multi-temporal satellite imagery is routinely used by Defence and Security organizations to monitor sensitive infrastructure sites that must be guarded against human or natural threats. In particular, high-resolution imagery is used to monitor activity on the ground at national borders that indicate an incursion has occurred or soon will occur.

Oil, Gas, and Mining
Monitoring pipeline right-of-way involves observing geomorphic or other conditions that may threaten the structure. Leaks of hydrocarbons can often be identified in remote areas with continually acquired imagery.

Location-Based Services
Urban planners need the latest information on where new roads, parks and housing developments have been built before they can start planning new infrastructure. In many cases, satellite imagery is more up to date than official city or country GIS layers.

Agriculture
Repeated collection of multispectral imagery over agricultural regions and even individual farms enable agronomists to assess overall crop health and forecast harvest yields. Crop condition problems can be identified early enough in many cases for farmers to take corrective actions.

Maritime
Due to increasing acts of piracy, port authorities are now routinely monitoring their harbors with high-resolution imagery to identify ships as they enter and leave the facilities, keeping a log of where vessels were at given times.

Environment
The environment is being altered by man-made activities and the changing climate around the world. Monitoring programs are employing satellite imagery to document how the natural environment is impacted.

Analysis

Geospatial Analysis takes a deep dive into the spatial and spectral content of an image or series of images captured over time to identify features and objects and detect changes in the scene or in a feature.

Living Library gives users access to archived imagery so they can analyze conditions in the past to better understand the current situation. In addition, Living Library provides access to spectral content of image data for multispectral analysis. These results may be displayed as layers on top of Basemap to provide context and a global view of the area analyzed. Here are examples of how Basemap and Living Library are used as complementary resources in common applications:

Defence and Security

Military commanders in war zones often rely on newly acquired imagery for comparison with recent archived imagery to assess infrastructure damage following a battle or attack. Counter Terrorism officials can request periodic acquisition of high-resolution imagery at sensitive facilities and sites using tasking services within the Living Library to identify the presence of suspicious or anomalous conditions that require ground inspection. Fresh satellite imagery from the Living Library is contextualized with the Basemap, to gain understanding of what has happened over regional areas, or specific sites.

Oil, Gas and Mining

When a pipeline leak is detected, hydrocarbon facility operators analyze archived imagery from the Living Library of the site to determine what conditions, such as land subsidence, possibly contributed to the damage. Recently acquired, or newly tasked imagery can be used as well to assess damage. During analysis, the Basemap can be used for contextualization to have a global view of the site.

Retail

Managers of retail chains can use satellite imagery to collect and analyze the ebb and flow of vehicles in the parking lots of their stores to identify shopping trends by season or month. This information can be leveraged to prepare for anticipated spikes in store visits. Living Library gives access to a stack of archive on a given area to perform these analyses.

Agriculture

Crop health is now routinely analyzed through multispectral processing techniques applied to images captured throughout the growing season through the Living Library or even tasking services. This analysis can spot trends in agricultural conditions that may relate to farming practices, identifying what works and what doesn't in terms of generating greater crop yield.

Maritime

To quickly identify ships that may have been hijacked, maritime officials are analyzing vessel movements over time in multiple satellite images to detect odd behavior that may be a tip-off the ship is engaged in suspicious or illegal activity.

Polygon 1 (7,00 km²)

Global vision of Lebanon with Basemap - Images from June 2020.
Zoom over Beirut Port explosion – Image from August 5th 2020.
@PlanetObserver / Pléiades © CNES, Distribution Airbus DS

Mapping

Creating accurate, up-to-date representations of conditions on the ground and geographic relationships among objects and features is the most common application for satellite imagery.

This is map creation. Using the Basemap as a foundation layer sets an accurate and geographically precise context globally, which can be enriched with fresh imagery from the Living Library, over specific areas.

Here are examples of how customers use the Basemap and Living Library together in creating maps:

Defence and Security

Areas of strategic interests are mapped using satellite imagery to show the locations of infrastructure and terrain. This is made available globally thanks to the Basemap, so that Defence and Security organizations can plan operations, deployments and missions very easily. This capacity can be completed with fresh imagery from the Living Library, to update changes detected and keep maps up to date.

Oil, Gas and Mining

For energy producers, the safe and efficient transportation of hydrocarbon products to refineries is of major importance. They maintain detailed maps of their sites, precisely noting the locations of their equipment and infrastructure. This is facilitated thanks to the global Basemap layer, providing precise and accurate imagery of all their sites.
In addition, they can monitor changes to the natural environment in and around their operations by continually updating their site maps with satellite imagery from the Living Library.

Location-Based Services

Regardless of the end use, LBS applications rely on up-to-date maps, showing where new development has occurred and where the natural environment has been changed. Recent satellite imagery provides map information that is more timely than any other source. Fresh images from the Living Library can be used on top of the Basemap to update map features such as buildings, roads and infrastructures.

Agriculture

The multispectral data in newly acquired Living Library imagery can be interpreted to reveal the type of crop and its condition in even the smallest farm fields. County and regional governments rely on these updated images throughout the growing season to keep an accurate field map for their area.

Transportation

In the fierce competition to deliver goods and passengers to their intended destinations quickly and safely, fleet operators rely on transportation maps that are updated periodically with new satellite imagery, especially in rapidly developing areas where infrastructure is changing by the week.

Global vision of Crops in Texas from the Basemap – January 2020
Zoom over Parcels to delineate parcels over recent imagery from March 2020 with Living Library.
@PlanetObserver / Pléiades © CNES, Distribution Airbus DS

Machine Learning

Applying Machine Learning over satellite imagery is useful for generating automatic detection, identification and prediction algorithms. The Living Library offers an exhaustive stack of imagery, while different vintages of Basemap can be computed to extract statistics or analytics over time over broad areas, even at a worldwide scale.

Today, more and more organizations rely on such technologies to facilitate analysis over imagery and focus on insights. Thanks to a massive stack of data, you can train algorithms to automatically detect changes between images of different dates for applications such as: land use, infrastructure, military sites etc.

You can also train algorithms to automatically identify objects, assets and features that include: cars, trucks, vegetation, military objects and so on. Lastly, deep knowledge about the past can even be useful for automatic prediction of events, such as stock market prices, factory shutdown, real estate transactions, insurance and so on.

Defence and Security

The Living Library stack of imagery can be used to train algorithms to automatically detect and identify military assets, at a small or broad scale. Defence and security organisations can compare the evolution of one country's military assets over years using the different vintages of Basemap. They can even use this data to predict their behavior over the next few years by correlating this data with other sources of data, such as OSINT data.

Oil, Gas and Mining

Stacks of the Living Library can be computed to automatically detect abnormal refinery behavior, or pipelines leaks. If correlated to other sources of data, algorithms can even predict pipeline leaks.

Location-based services

The stack of the Living Library or the different Basemap vintages can be computed to automatically detect infrastructure changes for map renewal. It is particularly interesting to use different Basemap vintages to compute infrastructure changes at a national, continental, or even worldwide scale.
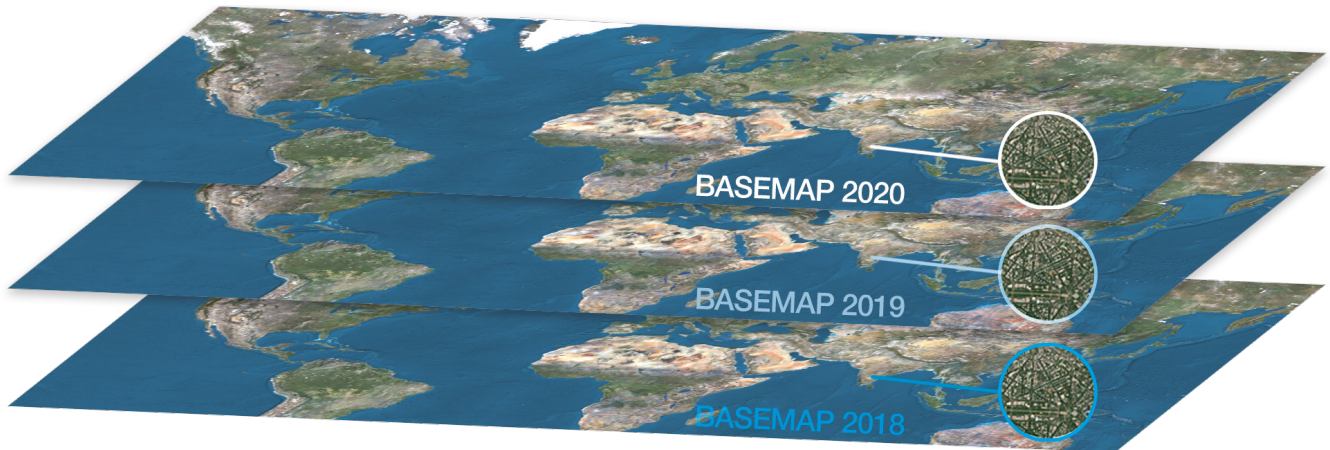
Basemap vintages from 2018, 2019 and 2020 to compute a worldwide car counting evolution index Focus with the Living Library to compute car counting evolution index over New Delhi between 2018 and 2020 on a quaterly basis.
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Conclusion

OneAtlas provides a range of services and solutions that help provide data and insights to users.
The OneAtlas Living Library and Basemap services help provide powerful resources and context to enable quicker and more reliable decision-making.

OneAtlas Imagery and layers are even more efficient coupled with analytics services to automatically detect and identify changes. It allows operators to focus their time on the analysis and map creation. Analytics services are available over Living Library images, and allow

to automatically detect Infrastructure changes, Cars, Trucks, Ships and Aircraft Identification.

To learn more about Living Library and Basemap, or to sign up for a free trial of our services, visit: **oneatlas.airbus.com**

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