Collect Earth – Training Plots

Augmented Visual Interpretation
Learning by example
Before you start

- This presentation complements the Collect Earth survey that is shown the first time Collect Earth is run after installation. This survey is also available [HERE](#).

- The examples on the coming slides are shown on the Google Earth interface when Collect Earth is loaded with the survey. Try to visualize them while you read this guide.

- Collect Earth requires the user to have the latest version of [Chrome](#) installed, please make sure you do! Also, if you don't have [Google Earth](#) installed you are in the wrong presentation 😊

- It is not easy to understand the mechanism of the interpretation on the first plots, try to connect what you see in the Google Earth Very High Resolution imagery to the False Color imagery to better understand how the land cover is being visualized.
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• Training plots:
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  ➢ Plots are distributed in BEGINNER ☀ and ADVANCED ⚡ plots depending on their level of difficulty.
Training plots

➢ Forest:
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  - Grassland with trees - (Serengeti, Tanzania)
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  - Salt extraction - (Qoqek, China)
  - Peatland - (Muyaga, Rwanda)

➢ Settlement:
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  - Infrastructure - (Hamburg, Germany)
  - Mining - (North Rhine Westphalia, Germany)
  - Village - (Island, Lake Chad)
  - Urban Park - (London, UK)

➢ Otherland:
  - Snow - (Arusha, Tanzania)
  - Sand - (Easter Island, Chile)
  - Dune - (Mingsha Shan, China)
  - Ice - (Graham Land, Antarctica)

The KML (Google Earth file) with all these plots can be found here **HERE**
What is the Normalized Difference Vegetation Index (NDVI)?

The NDVI quantifies vegetation by measuring the difference between near-infrared (which vegetation strongly reflects) and red light (which vegetation absorbs). These bands are present on the imagery collected by the MODIS, Landsat and Sentinel sensors.

\[ \text{NDVI} = \frac{\text{NIR} - \text{Red}}{\text{NIR} + \text{Red}} \]

- Calculations of NDVI for a given pixel always result in a number that ranges from minus one (-1) to plus one (+1)
- No vegetation (trees of grass) gives a value close to zero
- A zero means no vegetation
- Close to +1 (0.8 - 0.9) indicates the highest possible density of green leaves
- A negative value indicates the presence of water, snow or ice
What is a False Color image?

- Instead of using the human-visible bands (Red-Green-Blue) these images show a composition of Near Infrared, Short Wave Infrared and Red (NIR-SWIR-Red) bands.

- This band combination allows the vegetation to be shown more prominently.

- Using this False Color combination the highly vegetated areas (forest) will be shown with different shades of red/orange, the less vegetated areas (open forest and grasslands) as shades of orange/yellow and areas of very little vegetation as shades of green/blue. Water will be represented in black/dark blue. Areas with wet terrain or snow/ice will be shown purple/pink.

- In the coming slides you will be able to see the different ways that this false color combination behaves depending on the land cover.
Why do we need the GEE app?

- Google Earth has a historical repository of Very High Resolution (VHR) imagery that usually makes visual interpretation easy.

- But this repository is limited, some areas will have dozens of VHR images while others will have one or none.

- The GEE App integration allows Collect Earth to give the user a historical perspective of the changes in the landscape as the MODIS, LANDSAT 7/8 and Sentinel-2 imagery is collected globally and systematically.

- Being able to access the NDVI graphs and False Color images allows the user to really understand the dynamics of the plot.
Which satellite images and graphics can you find in the GEE app?

**Images:** Sentinel 2 and Landsat 7/8 False Color Mosaics (NIR-SWIR-Red)

**NDVI graphs:** MODIS, Landsat 7/8 and Sentinel-2 NDVI (vegetation index showing the vegetation intensity)

**Precipitation graph:** Representation of precipitation. ECMWF Precipitation in (meters/month) - ERA5 Monthly aggregates. The precipitation should influence the variation of the NDVI.

**Fire graph (MODIS):** Representation of possible fires with MODIS Burned Area Monthly Global 500m
Which satellite images and graphics can you find in the GEE app?

**Spatial and temporal resolution of satellite images:**

<table>
<thead>
<tr>
<th>Satellite</th>
<th>Spatial resolution</th>
<th>Temporal resolution</th>
<th>Imagery available since</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODIS</td>
<td>Low (250 m)</td>
<td>High (daily revisit time, graph shows less-cloudy image during 16 days)</td>
<td>2000</td>
</tr>
<tr>
<td>Landsat 7/8</td>
<td>High (30m)</td>
<td>Low (16 days revisit time)</td>
<td>2000</td>
</tr>
<tr>
<td>Sentinel 2</td>
<td>High (20m)</td>
<td>High (5 days revisit time)</td>
<td>2015</td>
</tr>
</tbody>
</table>
Which satellite images and graphics can you find in the GEE app?

The graphs and the images are connected. Clicking on a certain date in the graph the image of the same day will appear.

But they are not showing the same information!!
The graphs display NDVI values and the false color mosaics show the vegetation intensity.
How to activate historical images in Google Earth?

Show historical imagery. Use the time slider to move between acquisition dates.
Forest - Broadleaf evergreen
(Corcovado, Costa Rica)

Category: Forest
Subcategory: Broadleaf evergreen

Description: In the plot and surroundings a dense forest can be seen. The plot is in Corcovado, one of the most important and untouched protected areas in Pacific Costa Rica established in 1975.
Forest - Broadleaf evergreen
(Corcovado, Costa Rica)

Land use change: Since 1970 no changes perceived in terms of forest area and density.
Forest - Broadleaf evergreen
(Corcovado, Costa Rica)

Interpretation of NDVI graphs:

- In both graphs the average is above 0.5 which means presence of healthy vegetation throughout the year.

- The lack of annual fluctuations reflects the evergreen character of the forest.

- The steep drops in the graph are a consequence of the clouds that cover the forest and satellites do not receive the reflection.
Forest - Broadleaf deciduous
(Sinaloa, Mexico)

Category: Forest
Subcategory: Broadleaf deciduous

Description: In the plot and surroundings a semi-dense forest can be seen. The plot is in an arid area in the western part of the Sierra Madre Mountains in Mexico.
Between June and November 2019 the landscape and colors look different due to the fall of the leaves in the deciduous forest.
Forest - Broadleaf deciduous (Sinaloa, Mexico)

Interpretation of NDVI and precipitation graphics:

- The NDVI graph shows that the highest NDVI value is above 0.5 and drops till 0.25 in the dry season.
- The annual pattern reflects the deciduous character of the forest that match with the precipitation graphic.
Forest - Broadleaf mixed  
(Cuvette, Congo)

**Category:** Forest

**Subcategory:** Broadleaf mixed

**Description:** The plot is located close to the Congo river. Nevertheless, it is not a riparian forest because it does not look like a transition zone between the terrestrial and aquatic environment.

[View in Google Earth](#)
Real color image on the left side and false color image (Sentinel 2 composite of last 12 months) on the right side in comparison. In the Sentinel 2 image water is represented in dark blue, vegetation in orange and a village on the sidelines of the river in green.
Forest - Broadleaf mixed
(Cuvette, Congo)

Interpretation of NDVI graph:
• The average is above 0.5 which means presence of healthy vegetation throughout the year.
• The slightly recognizable annual pattern reflects the mixed character of the forest.
• Like in the broadleaf evergreen forest, the steep drops in the graph are a consequence of the clouds that cover the forest.
Forest – Mixed forest (brod-con)  
(Hokkaido, Japan)

Category: Forest

Subcategory: Mixed forest (brod-con)

Description: The plot is located in the plains of Hokkaido in Japan. The satellite image suggests the presence of coniferous and broadleaf species in the forest.
The Google Earth pictures can be very helpful for the identification of land use categories and especially subcategories. In this picture the coniferous and deciduous trees that compose the mixed forest can be seen in the winter time.
Land use change: Since 2000 (using NDVI graphs) no changes perceived in terms of forest area and density. The image on the right side in June 2012 shows how the color of the leaves start to turn red.
Forest – Mixed forest (brod-con)  
(Hokkaido, Japan)

Interpretation of NDVI graphs and images:

- The NDVI graph shows that the highest NDVI value is above 0.5 and drops till 0.25 when a part of the forest loses its leaves or when the forest is covered by snow.

- On the left image in July, the forest is represented in orange as a sign of healthy vegetation.

- On the right image the forest is brownish, and the path and lake are pink/purple because covered with snow.
Forest – Riparian forest
(Alfeiós, Greece)

Category: Forest
Subcategory: Riparian forest

Description: The plot is located adjacent to the Alfeiós which is the longest river in the Peloponnese, in Greece.

Riparian zones are transition zones between an upland terrestrial environment and an aquatic environment.
In this picture riparian forest species (Salix etc.) can be appreciated.
Interpretation of NDVI graph:
• The average is above 0.5 which means presence of healthy vegetation throughout the year.
• This riparian forest is deciduous that is why it fluctuates as year seasons change.
Forest – Mangrove forest
(Mekong Delta, Vietnam)

Category: Forest
Subcategory: Mangrove forest
Description: The plot is located in the Mekong Delta.

Mangrove forests grow on coastal intertidal zones in tropical and subtropical latitudes.
In this picture the mangrove species can be appreciated. They are easy to recognize due to their particular roots system.
Forest – Mangrove forest
(Mekong Delta, Vietnam)

Real color image on the left side and false color image (Sentinel 2 composite of last 12 months) on the right side in comparison. In the Sentinel 2 image vegetation is represented in orange and **mangroves are easy to spot due to the fact that the orange color is very strong**. Water is represented in dark blue.
Forest – Mangrove forest  
(Mekong Delta, Vietnam)

Interpretation of NDVI graph:
- The average is above 0.5 which means presence of healthy vegetation throughout the year. Mangroves are evergreen forests.
- Like in the broadleaf evergreen forest, the steep drops in the graph are a consequence of the clouds that cover the forest.
Cropland – Rice paddy
(Biliran, Philippines)

Category: Cropland

Subcategory: Rice paddy. Annual crop

Description: The presence of terraces makes it very easy to identify paddy fields. These rice fields are located in a mountainous region in Biliran Island in the Philippines.

View in Google Earth
The Google Earth pictures can be very helpful for the identification of land use categories and especially subcategories. In this pictures we see the paddy fields and the watered terraces.

Cropland – Rice paddy
(Biliran, Philippines)
Category: Cropland

Subcategory: Land under permanent crop. Annual crop. Sugarcane

Description: In the satellite image we see a cropland surrounded by forest and big roads that reveal the existence of deforestation and extensive farming systems.
The Google Earth pictures can be very helpful for the identification of land use categories and especially subcategories. In this pictures we see a burned sugar cane field.

Cropland – Permanent crop, Sugarcane (Corozal, Belize)
Cropland – Permanent crop, Sugarcane
(Corozal, Belize)

Land use changes in time: Between 2003 and 2013 we see a land use change in our plot. In 2003 the land use was forest. It was converted to cropland in 2011.
Interpretation of NDVI graphics:

Conversion from forest to cropland as seen in imagery. Change occurs in 2011.
Cropland – Orchard, Vineyard
(Kakheti, Georgia)

Category: Cropland
Subcategory: Orchard. Perennial crop. Vineyard
Description: In the Google Earth image we see a vineyard that can be identified due to its particular row spacing scheme.

Kakheti is the oldest and most important wine region in Georgia.

View in Google Earth

BEGINNER PLOT
Interpretation of NDVI graphic:

- Looking at the graphic, we will see that vineyards have a particular growing pattern with its highest peak in the summer months and drops after the grapes harvest.

- The picking and pressing of grapes in Georgia's main wine-producing region, Kakheti, lasts from about 20 September to 20 October. The vegetation intensity can vary according to the yearly climatic conditions.
Cropland – Permanent crop, Cereal
(Guadalajara, Spain)

Category: Cropland

Subcategory: Land under permanent crop. Annual crop. Cereal

Description: The bright yellow colors and parallel stripes after the harvest make it easy to identify cereal plantations such as wheat, oat, barley or spelt. These are rainfed plantations.

View in Google Earth
Land use changes in time: In this area farmers rotate crop systems such as cereals, sunflowers and legumes in order to obtain benefits for the soil.
Interpretation of NDVI and precipitation graphics:

- NDVI fluctuates reaching 0.5 in the spring when plantations are in its growing phase and drops down in the summer when farmers harvest their land.
- Maximum NDVI value is 0.5 denoting a rainfed crops. Usually irrigated crops will have higher NDVI values.
- The graphs shows that the plantation in this particular field might not have been the same in 2017, 2018 and 2019 and 2020, as NDVI curves behave differently.
- Maximum precipitations fall in the spring months.
Interpretation of Sentinel 2 composite images (20 m resolution) showing the vegetation intensity (orange is high vegetation intensity and green is low vegetation intensity): The image in May 2017 shows its vegetation in its maximal intensity. In the image on the right in June 2017 the vegetation intensity is very low after the harvest.
Cropland – Palm
(West Sepik, PNG)

Category: Cropland
Subcategory: Perennial crop. Oil Palm

Description: This forest located in Papua New Guinea looks like a broadleaf evergreen forest. The land use change from forest to oil palm plantation cannot be appreciated with Google Earth images because the last satellite image available in the GE repository is from the year 2014.
Land use changes in time: Between 2013 and 2014 we can see that big roads were built within the forest.
Interpretation of NDVI and precipitation graphics:

- The NDVI values in the Landsat and MODIS graphs reflect the evergreen character of the forest until the year 2015.

- In **2015 a steep vegetation drop** can be read in both graphs. This happened after the fields for the oil palm plantations were cleared down. If we look at Landsat images in April 2015 we can clearly identify the cleared parts of the forest.
Grassland – Grassland with trees and shrubs
(Western Rwanda, Rwanda)

Category: Grassland

Subcategory: Grassland with trees and shrubs

Description: The plot is located in a hilly region in Western Rwanda at 2660 m altitude. The fences suggest the presence of grazing.

The difference between tree and shrub is very clear in this grassland. The one tree on the left upper side of the plot is very high and the shade can be recognized easily.
Grassland – Grassland with trees and shrubs (Western Rwanda, Rwanda)

In this case the Google Earth picture shows the hilly nature of the terrain and the healthy grassland vegetation.
Grassland – Grassland with trees and shrubs (Western Rwanda, Rwanda)

Land use changes in time: No changes in the land use identified.
Interpretation of NDVI graphic:
NDVI ranges between 0.75 and 0.5. This is a sign of a grassland with healthy vegetation.
Grassland – Grassland
(Southland, New Zealand)

Category: Grassland
Subcategory: Grassland
Description: The plot is located in the southern part of New Zealand. From the color of the grassland we can see that the vegetation intensity is very high.
Grassland – Grassland
(Southland, New Zealand)

Google Earth pictures nearby show that we are talking about pasturelands for sheep.
Grassland – Grassland
(Southland, New Zealand)

Natural color image on the left side and false color image (Sentinel 2 composite of last 12 months) on the right side in comparison. In the Sentinel 2 image vegetation is represented in orange.
Grassland – Grassland
(Southland, New Zealand)

Interpretation of NDVI graphic:
NDVI ranges between 0.5 and 0.75. This is a sign of a grassland with healthy vegetation.
The steep drops in the graph are a consequence of the clouds.
Grassland – Grassland with trees
(Serengeti, Tanzania)

Category: Grassland
Subcategory: Grassland with trees

Description: The plot is located in the Serengeti National Park in Tanzania. In this case it is easy to differentiate between trees and bushes when zooming out and activating the historical images.
Grassland – Grassland with trees
(Serengeti, Tanzania)

Land use changes in time: The difference between the image on the left in August 2010 and the one on the right in September 2016 is the vegetation intensity of the grassland. In the images we can see degraded soils due to possible fire events and paths used by wild animals.
Interpretation of NDVI graphic:
NDVI ranges between 0.25 and 0.75. This is a sign of a grassland with healthy vegetation. NDVI graph shows growing phases of grass that depends on precipitation.
Grassland – Shrubland
(La Palma, Spain)

Category: Grassland
Subcategory: Shrubland

Description: This plot is located in the Caldera de Taburiente National Park, a national park on the island of La Palma, Canary Islands in Spain.

View in Google Earth
In this case the Google Earth picture shows the shrubs with the yellow flowers that are typical for this region in the island of La Palma.
Grassland – Shrubland
(La Palma, Spain)

Land use changes in time: In the winter months the territory is a lot drier (left image). In July the yellow flowers of the shrub can be seen in the satellite image (right image).
Grassland – Shrubland
(La Palma, Spain)

Natural color image on the left side and false color image (Sentinel 2 composite of last 12 months) on the right side in comparison. The images show how vegetation intensity changes in accordance to the altitude.
Interpretation of NDVI graphic:
NDVI values are constant around 0.3 and 0.5. This is a sign of a shrubland with healthy vegetation and little seasonal changes.
Grassland – Grassland with trees
(Mato Grosso, Brazil)

Category: Grassland

Subcategory: Grassland with trees

Description: In the plot we can see a grassland with some palm trees.

View in Google Earth

ADVANCED PLOT
FIRST Land use change: Between 2000 and 2001 we see a land use change from forest to cropland. The forest is cleared and the area is used as grassland or cropland. The conversion in the full area is even clearer when looking at the 2004 Landsat 7 yearly mosaic.
SECOND Land use change: Between 2010 and 2019 we see a land use change from cropland to grassland. Palm tree plantations converted to grassland with trees within 9 years. The area is now used for cattle.
Land use changes in time: Land use between 1985 and 2016 has changed from forest (through cropland) to grassland within the plot and all around the area where the Amazon forest has been massively deforested.
Wetland – Lagoon  
(Rio de Janeiro, Brazil)  

Category: Wetland  
Subcategory: Lagoon  
Description: The plot is located in a coastal nature preserve located in neighborhoods of Rio de Janeiro, Brazil.
Wetland – Lagoon  
(Rio de Janeiro, Brazil)
Interpretation of Sentinel 2 composite images (20 m resolution):

• In these Sentinel 2 composite images water is represented in black.

• The plot is located in the lagoon surrounded by areas with healthy vegetation. In the upper part of the image the coastline and the sea can be recognized.
Interpretation of NDVI graphic:

Negative values of NDVI (values approaching -1) correspond to water. In this case, NDVI values above 1 appear when clouds are covering the area.
Wetland – Seasonal river
(Ghaggar, India)

Category: Wetland
Subcategory: Seasonal river

Description: The plot is located in the Ghaggar river which is an intermittent river in India that flows during the monsoon rains.

View in Google Earth

ADVANCED PLOT
In this case the Google Earth picture shows a bridge that crosses the river in front of the plot and will influence the river’s water regime.
Land use changes in time: The river flows with water only in the rainy season as seen in the left side and dries up the rest of the year as seen in the image on the right side.
Interpretation of NDVI graphic:
NDVI values are so high because vegetation might cover the river bed when it is not covered by water. Based on the NDVI graph the water does not often flow in the river only in the monsoon period (NDVI values lower than 0).
Wetland – Permanent river
(Nyabarongo, Rwanda)

Category: Wetland
Subcategory: Permanent river
Description: The plot is located in the Nyabarongo river, the longest river entirely flowing in Rwanda.

View in Google Earth
Interpretation of Sentinel 2 NDVI image (20 m resolution):

- In this Sentinel image water is represented in purple. The color of the water is purple and not black/dark blue due to the fact that it is a river with shallow waters.

- The river is surrounded by areas with healthy vegetation that are represented in orange (orange is high vegetation intensity and green is low vegetation intensity).
Wetland – Permanent river
(Nyabarongo, Rwanda)

Interpretation of NDVI graphic:

Negative values of NDVI correspond to water. In this case NDVI values above 0 appear when clouds are covering the area. Also probably due to the fact that the river is transporting sediment NDVI values are not constantly negative.
Category: Wetland

Subcategory: Salt extraction

Description: The plot is located in an arid area in the northern part of China. Without zooming out the terrain looks like a very dry soil or a salty soil.
Land use changes in time:
It used to be a seasonal salt lake. Now it is being used to extract salt as can be seen in the last image in the year 2016.
Interpretation of NDVI and precipitation graphic:

- Values close to 0 mean no vegetation like in this arid area.
- In this case we are considering the low spatial resolution (250m) MODIS graph because the area around the plot is homogeneous.
- The NDVI values drop to minus 0 when the lake is covered by water.
- Precipitation is extremely low as the plot is located in an arid area.
Wetland – Peatland
(Muyaga, Rwanda)

Category: Wetland
Subcategory: Peatland

Description: This plot in Rwanda is located in a peatland which is basically an area of land with layers of accumulated organic surface material in a state of decay (known as peat).

This area is used for extraction of peat for energy production.
Land use changes in time: Between 2007 and 2019 the area around this plot changed in many aspects. In 2007 it was used for small holder agriculture and between 2016 and 2019 a power plant was built in the southern tip of the bog and the area is used for extraction of peat for electricity generation.
Interpretation of NDVI graphic and Sentinel 2 NDVI image (20 m resolution):

- The land use conversion can be observed from the NDVI graph. Before 2016 the land use was agriculture (high NDVI values, high vegetation intensity). The peatland extraction commenced as the power plant was built.
- The Sentinel 2 false color mosaic shows the peatland in green (no vegetation) and the power plant in white/yellow. On the right side the river in purple and agricultural plantations in orange (vegetation) over the border with Burundi.
Settlement – City
(Essaouira, Morocco)

Category: Settlement
Subcategory: City

Description: The plot is located in the old medina of the coastal city of Essaouira in Morocco.

View in Google Earth

BEGINNER PLOT

COLLECT EARTH
Land use changes in time: In the medina of the city, no land use change would be expected as the city has been occupied since prehistoric times.
Interpretation of NDVI graphic: NDVI values close to and above 0 are expected as in this part of the city no trees are found. The variation of the value is due to differences on the illumination of the images (taken at different times of the day or affected by the seasonal tilting of the sun), shades and clouds.
Settlement – Infrastructure
(Hamburg, Germany)

Category: Settlement
Subcategory: Infrastructure

Description: The plot is located in the port in Hamburg on the sidelines of the Elbe river.

View in Google Earth
Interpretation of NDVI graphs:

- **Sentinel 2 (20 m pixel):** NDVI values close to 0 concords with the VHR images from Google Earth. Variation due to clouds/shades and illumination conditions.

- **MODIS (250 m pixel):** NDVI values between 0 and 0.25 means the surroundings of the plot with green areas are also being considered.
Settlement – Mining
(North Rhine Westphalia, Germany)

Category: Settlement
Subcategory: Mining
Description: The plot is located in the Hambach coal mine in North Rhine Westphalia.

View in Google Earth

BEGINNER PLOT

COLLECT EARTH
Settlement – Mining
(North Rhine Westphalia, Germany)

In this case the Google Earth picture shows the landscape in Hambach coal mine which is the largest open pit mine in Germany.
Land use changes in time: The mine is on the site of the ancient Hambach Forest which was purchased in 1978. The forest was cut down and cleared into a mine.
Interpretation of NDVI graph:
NDVI values in the graph reflect the land use change from forest to bare soil in 2012. NDVI values slowly drop and start approaching close to 0 values.
Settlement – Village
(Island, Lake Chad)

Category: Settlement
Subcategory: Village

Description: The plot is located in a little village in one of the Lake Chad Islands. Housing and bare soil can be seen within the plot.
Land use changes: Between 2009 and 2012, the village got smaller and its inhabitants built a fence around the settlements. In the last image the village seems to be affected by a flooding, no land use change.
Settlement – Village (Island, Lake Chad)

Interpretation of NDVI graphic:
The NDVI values range between 0 and 0.3. The village is located on a grassland with vegetation that fluctuates with the rainy and dry seasons. The area is affected by fires and floodings.
Settlement – Urban Park
(London, UK)

**Category:** Settlement

**Subcategory:** Urban Park

**Description:** The plot is located in a famous urban park, the Hyde park in London. Even though an urban park has a green cover it would be categorized as a settlement.
Interpretation of NDVI graph:
The NDVI values range between 0.3 and 0.5. The urban park is covered by grassland with trees and fluctuates depending on weather seasonality.
Category: Other land

Subcategory: Snow

Description: The plot is located on Mt-Kilimanjaro in Arusha, Tanzania close to the crater of an inactive volcano at 5779m altitude.
Otherland – Snow
(Arusha, Tanzania)

In this case the Google Earth picture shows an areal image of the Mt- Kilimanjaro covered with snow.
Otherland – Snow
(Arusha, Tanzania)

The area is covered by snow in both winter and summer seasons.
Interpretation of NDVI graphic:
NDVI values are below 0 throughout the year indicating that the area is permanently covered with snow.
Otherland – Sand
(Easter Island, Chile)

**Category:** Other land

**Subcategory:** Sand

**Description:** The plot is located on a beach in the Eastern Island in the middle of the Pacific.
**Otherland – Sand**  
(Easter Island, Chile)

Land use change: In these Sentinel 2 composite images water is represented in black, vegetation in orange and sand in white. No land use change can be perceived.
Interpretation of NDVI graphic:
NDVI values are slightly above 0. These values represent bare soil or sand. The peaks are usually caused by clouds or sun reflection.
Otherland – Dune
(Mingsha Shan, China)

Category: Other land
Subcategory: Dune
Description: The plot is located in the middle of a gigantic sand dune in Mingsha Shan, China.

View in Google Earth

BEGINNER PLOT

COLLECT EARTH
Otherland – Dune
(Mingsha Shan, China)

Land use change: High resolution satellite images from the area are available since 2003.
Interpretation of NDVI graphic and false color image: NDVI values are slightly above 0. These values represent bare soil or sand. The presence of green and white in the false color image shows the lack of vegetation.
Otherland – Ice
(Graham Land, Antarctica)

Category: Other land
Subcategory: Ice

Description: The plot is located in Graham Land in Antarctica.
Otherland – Ice
(Graham Land, Antarctica)

Land use change: The ice sheet has not changed since 2000.
Otherland – Ice
(Graham Land, Antarctica)

Interpretation of NDVI graphic and false color image:
NDVI values are below 0. These values represent water or ice. Pink/Purple colors indicate the presence of snow or ice.