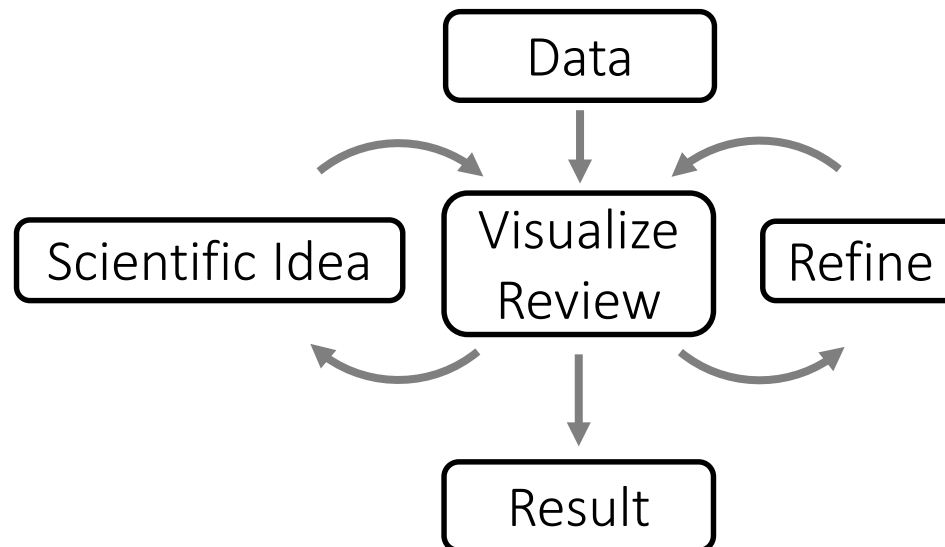


VAT - interactive data exploration for geoscience

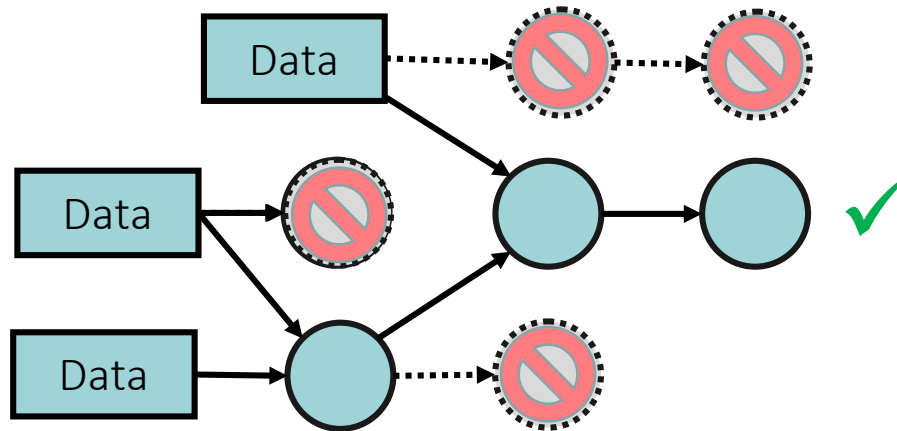
Johannes Drönner
Philipps-Universität Marburg

Data-Driven Research

- Enabled by data availability
 - satellites, sensors and observations...
- Visualization often triggers new scientific ideas



Explorative Workflows

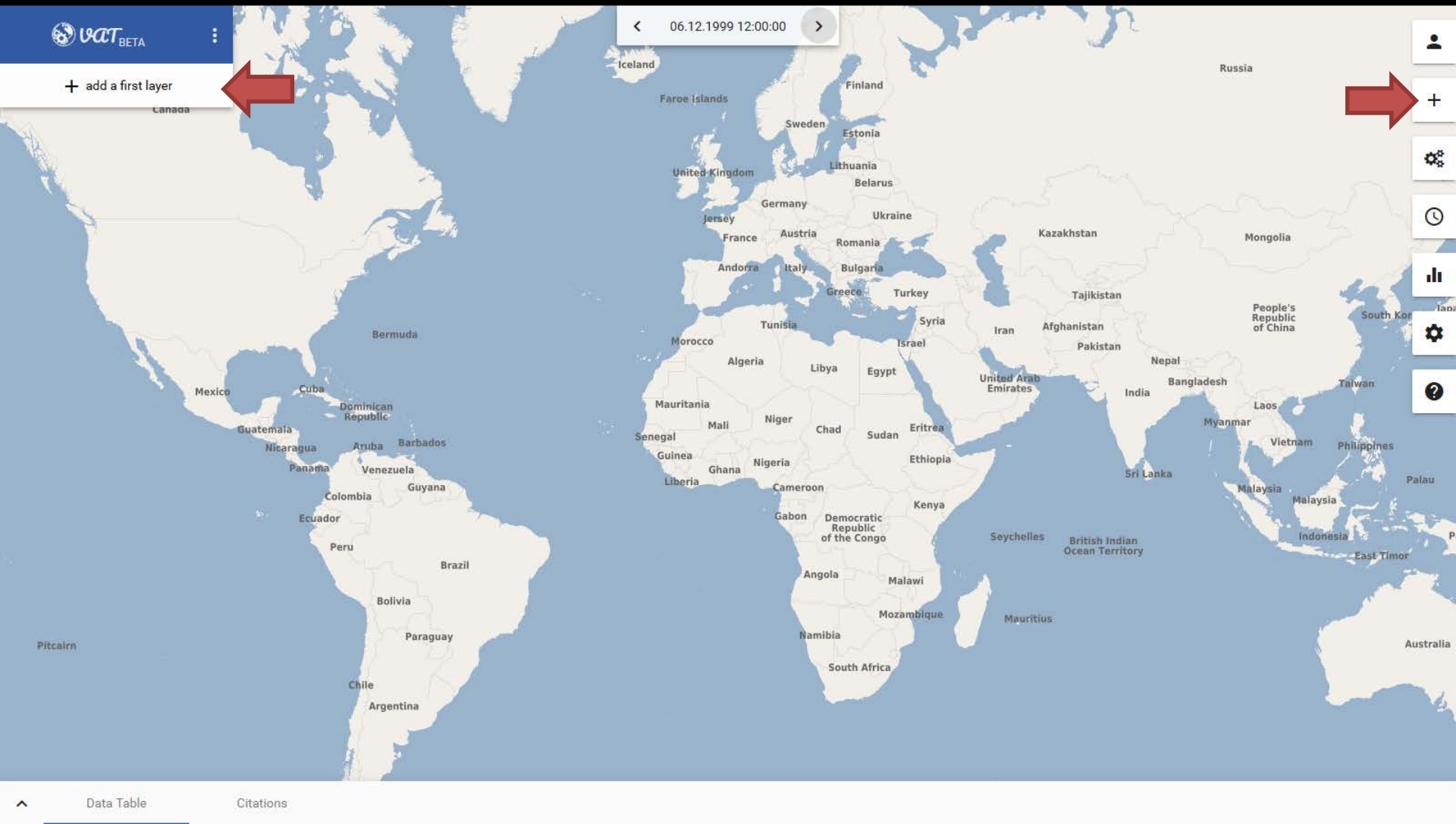


- Users explore data and various kinds of processing steps
 - Multiple paths are followed → separate workflows
- Requirements:
 - Low latency visualizations
 - Data abstraction and generalization
 - Citations + reproducibility

Visualization, Analysis & Transformation System



Adding (User) Data



Adding User Data

The screenshot displays the VCAT BETA web application. The main area features a world map with country labels. A date/time selector at the top center shows '06.06.2000 12:00:00'. On the left, a blue header contains the VCAT BETA logo and a button labeled '+ add a first layer'. On the right, a blue sidebar titled '> Add Data' lists several data sources: 'Environmental' (orange circle), 'ABCD Archives' (green circle), 'Custom Features' (orange circle), 'GFBio Baskets' (shopping cart icon), and 'Species Distribution' (dark green circle). A red arrow points to the 'Custom Features' option. Below the map, there are tabs for 'Data Table' and 'Citations'.

VCAT BETA

+ add a first layer

06.06.2000 12:00:00

> Add Data

- Environmental
Add environmental raster layers
- ABCD Archives
Lookup GFBio ABCD archives
- Custom Features
Add and use custom vector features like CSV
- GFBio Baskets
Display the GFBio Search Results
- Species Distribution
Query data from GBIF and IUCN

Data Table

Citations

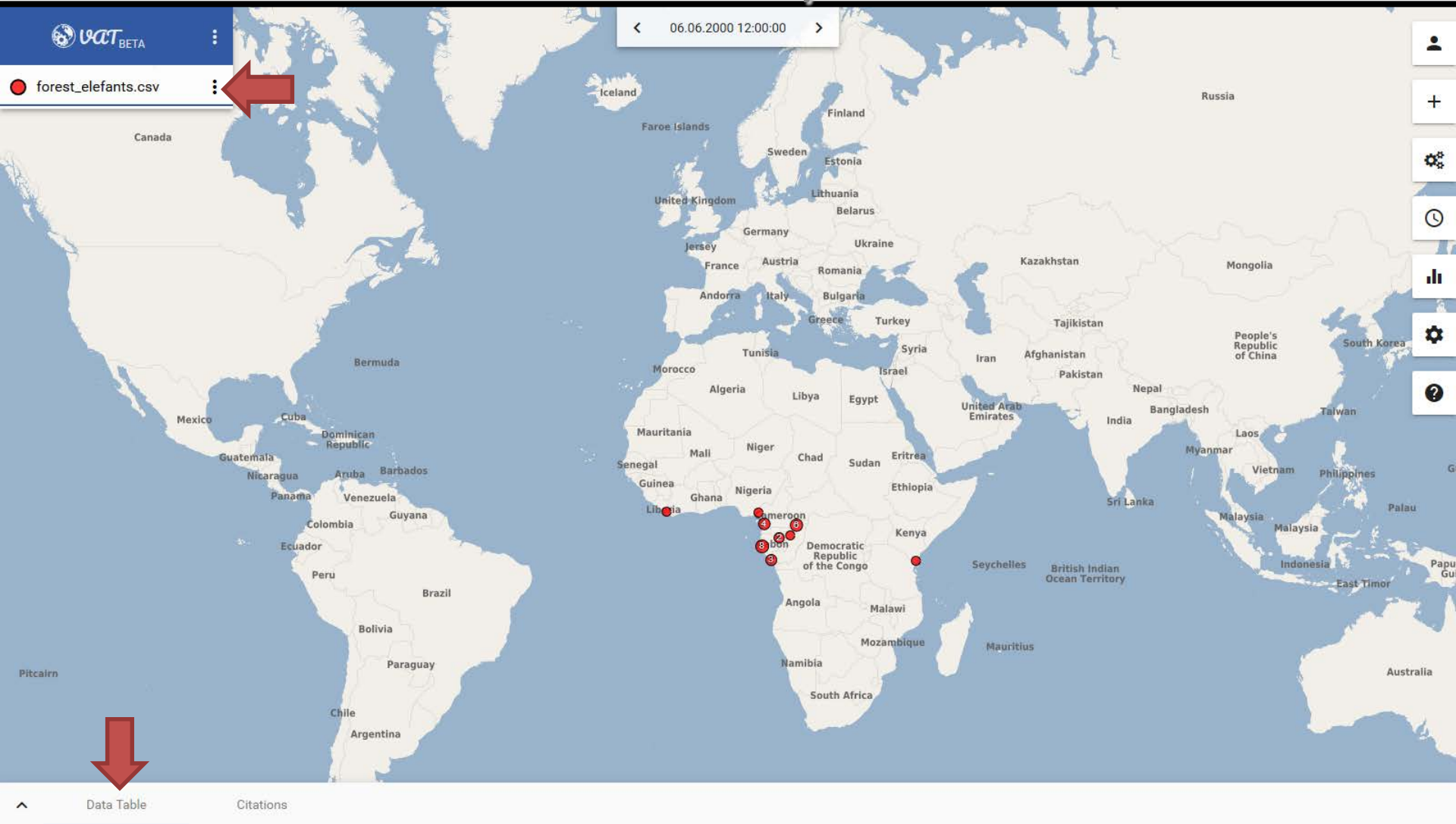
Adding User Data

The screenshot displays the VCAT BETA web application. The main area is a world map with various countries labeled. A date/time selector at the top center shows '06.06.2000 12:00:00'. On the left, a blue header contains the VCAT BETA logo and a button labeled '+ add a first layer'. On the right, a 'Custom Features' panel is visible, featuring a search bar and a red arrow pointing to a '+' icon. Below the map, there are tabs for 'Data Table' and 'Citations'.

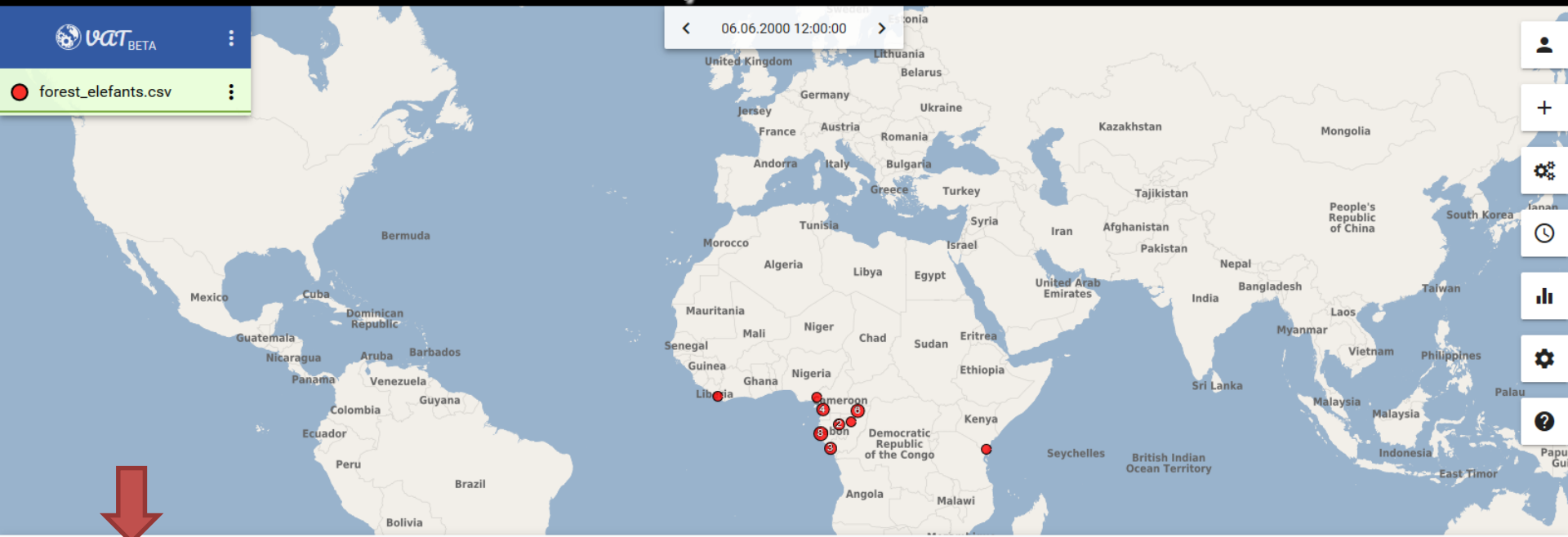
Adding User Data

The screenshot displays the VAT BETA web application. The main area is a world map with a date/time selector at the top center showing '06.06.2000 12:00:00'. On the left, a blue header contains the 'VAT BETA' logo and a button labeled '+ add a first layer'. On the right, a 'Custom Features' sidebar is open, featuring a search bar and a list of data layers. The first layer listed is 'forest_elephants.csv' with a purple circular icon and the description 'Add this Points data set.'. A large red arrow points from the right towards this layer. Below the map, there are tabs for 'Data Table' and 'Citations'.

Vector Layers

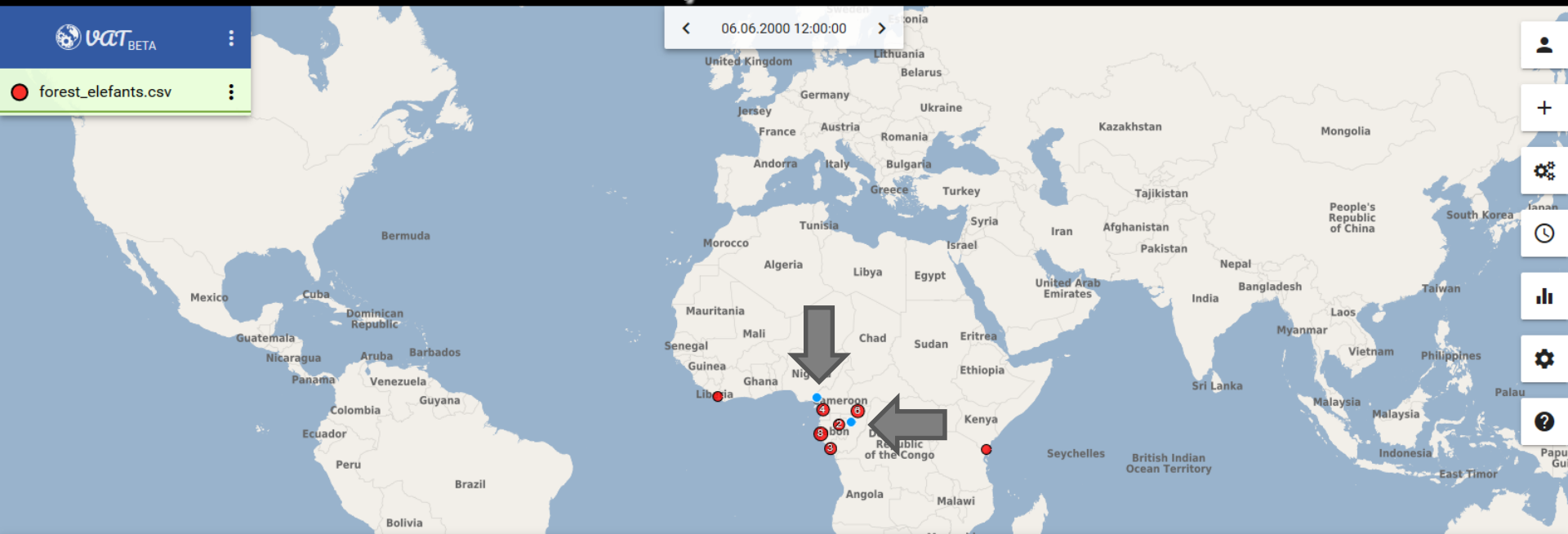


Vector Layers – Data Table



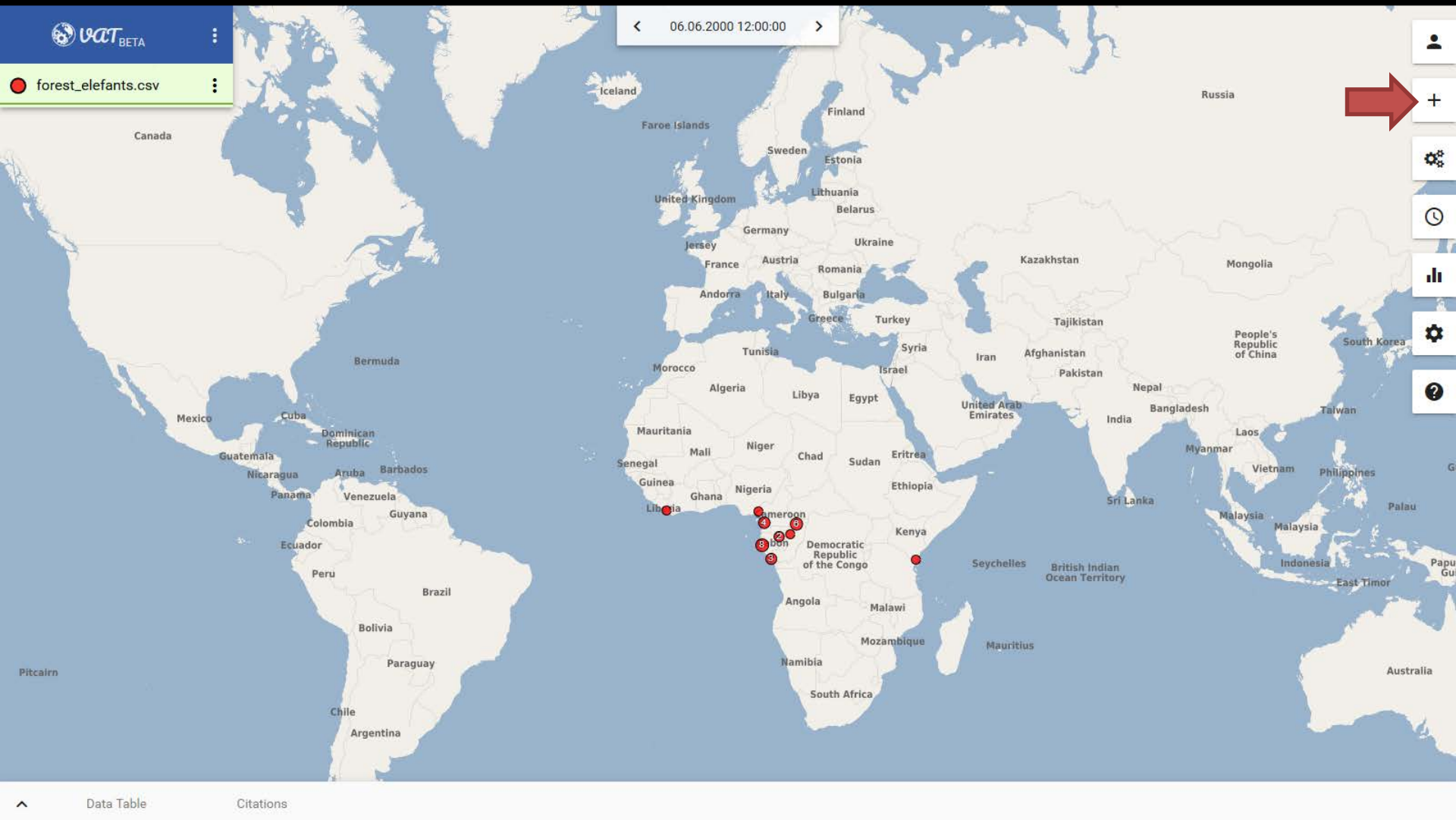
	basisofrecord	gbifid	scientificname
☐	PRESERVED_SPECIMEN	1.14511e+09	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	9.42872e+08 ± 1.36934e+08	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.2721e+09	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.25943e+09 ± 3.16561e+07	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.16102e+09 ± 1.01931e+08	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.33888e+09	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.09891e+09	Loxodonta cyclotis (Matschie, 1900)

Vector Layers – Data Table



	basisofrecord	gbifid	scientificname
☒	HUMAN_OBSERVATION	1.2721e+09	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.25943e+09 ± 3.16561e+07	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.16102e+09 ± 1.01931e+08	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION	1.33888e+09	Loxodonta cyclotis (Matschie, 1900)
☒	HUMAN_OBSERVATION	1.09891e+09	Loxodonta cyclotis (Matschie, 1900)
☐	FOSSIL_SPECIMEN	7.7089e+08 ± 3.28386e+08	Loxodonta cyclotis (Matschie, 1900)
☐	HUMAN_OBSERVATION, PRESERVED_SPECIMEN	1.08635e+09 ± 1.7226e+08	Loxodonta cyclotis (Matschie, 1900)

Adding (Occurrence) Data



Adding Occurrence Data

The screenshot displays the VCAT BETA web application interface. The main area is a world map showing occurrence data points (red dots) primarily in West and Central Africa. A date/time selector at the top center shows '06.06.2000 12:00:00'. On the left, a sidebar shows a file named 'forest_elephants.csv' loaded. On the right, a sidebar titled 'Add Data' lists several options: Environmental, ABCD Archives, Custom Features, GFBio Baskets, and Species Distribution. A red arrow points to the 'Species Distribution' option, which includes the subtext 'Query data from GBIF and IUCN'. At the bottom of the map area, there are tabs for 'Data Table' and 'Citations'.

VCAT BETA

forest_elephants.csv

06.06.2000 12:00:00

Add Data

- Environmental
Add environmental raster layers
- ABCD Archives
Lookup GFBio ABCD archives
- Custom Features
Add and use custom vector features like CSV
- GFBio Baskets
Display the GFBio Search Results
- Species Distribution
Query data from GBIF and IUCN

Data Table Citations

Adding Occurrence Data

VCAT BETA

forest_elephants.csv

06.06.2000 12:00:00

GBIF & IUCN Loader

1. Search Species
Lookup a Scientific Name

Scientific Name

Lookup

Output Name
Specify the name of the operator

Output Layer Name

Add

Data Table Citations

Occurrence Data – Errors?

The screenshot displays the VCAT BETA GBIF & IUCN Loader interface. The main map shows the distribution of *Loxodonta africana* (African elephants) with green dots representing occurrence data. Two red circles highlight specific data points: one in the Atlantic Ocean near the Azores and another in Central Europe (Germany/Poland area). Red arrows point to the species selection dropdown on the left and the 'Add' button on the right.

Left Panel (Species Selection):

- VCAT BETA
- Loxodonta africana (G...)
- forest_elephants.csv

Top Panel (GBIF & IUCN Loader):

- 1. Search Species
Lookup a Scientific Name
Scientific Name: Loxodonta africana
Reset
- 2. Select Resources
Select different source results
☒ GBIF (2103)
☐ IUCN (164)
- Output Name
Specify the name of the operator result
Output Layer Name: Loxodonta africana
Add

Map Interface:

- Time: 06.06.2000 12:00:00
- Map showing occurrence data points (green dots) across the world.
- Red circles highlight specific data points in the Atlantic and Europe.

Bottom Panel:

- Data Table
- Citations

Occurrence Data – Ranges

VCAT BETA

06.06.2000 12:00:00

GBIF & IUCN Loader

1. Search Species
Lookup a Scientific Name
Scientific Name
Loxodonta africana

Reset

2. Select Resources
Select different source results
☐ GBIF (2103)
☒ IUCN (164)

Output Name
Specify the name of the operator result
Output Layer Name
Loxodonta africana

Add

Data Table Citations

Occurrence Data – Ranges

The screenshot displays the VCAT BETA web application interface for managing occurrence data. The main map shows the distribution of *Loxodonta africana* across Africa, with data points represented by green circles. A red arrow points to the species selection menu on the left sidebar, which lists *Loxodonta africana* (IU...) and *Loxodonta africana* (G...), along with a file named *forest_elephants.csv*.

The top navigation bar includes the VCAT BETA logo and a date/time filter set to 06.06.2000 12:00:00. The right sidebar contains the 'GBIF & IUCN Loader' section, which includes a search bar for species names, a 'Reset' button, and a '2. Select Resources' section where users can choose between GBIF (2103) and IUCN (164) data sources. The 'Output Name' section allows users to specify the name of the operator result, with 'Loxodonta africana' entered in the 'Output Layer Name' field. An 'Add' button is located at the bottom of the right sidebar.

At the bottom of the interface, there are links for 'Data Table' and 'Citations'.

Occurrence Data - Refinement

The screenshot displays the VCAT BETA web application interface for refining occurrence data. The main map shows the distribution of *Loxodonta africana* across Africa, with data points color-coded by source: green for GBIF and blue for IUCN. The left sidebar lists the species and data sources, with a red arrow pointing to the selected species. The top navigation bar shows the date and time of the data. The right sidebar contains the search and resource selection options, with a red arrow pointing to the search input field.

VCAT BETA

06.06.2000 12:00:00

GBIF & IUCN Loader

1. Search Species
Lookup a Scientific Name

Scientific Name
Loxodonta africana

2. Select Resources
Select different source results

☐ GBIF (2103)
☒ IUCN (164)

Output Name
Specify the name of the operator result

Output Layer Name
Loxodonta africana

Data Table **Citations**

Operator Toolbox

Operator Toolbox

Layers:

- Loxodonta africana (G...
- forest_elephants.csv
- Loxodonta africana (IU...

Operators:

- Mixed**
 - Raster Value Extraction: Attach raster values to vector data
 - R Script: Execute an R script (experimental)
- Plots**
 - Histogram: Create a histogram from vector or raster data
- Raster**
 - Expression: Calculate an expression on a raster
- Vector**
 - Numeric Attribute Filter: Filter data via numeric range
 - Point in Polygon Filter: Filter points that are enclosed by a polygon

Operators – Data Refinement

VCAT BETA

06.06.2000 12:00:00

Point in Polygon Filter

Point
Select Input Point

input
Loxodonta africana (GBIF)

Polygon
Select Input Polygon

input
Loxodonta africana (IUCN)

Output Name
Specify the name of the operator result

Output Layer Name
LA (IUCN\GBIF)

Apply

Operator Results



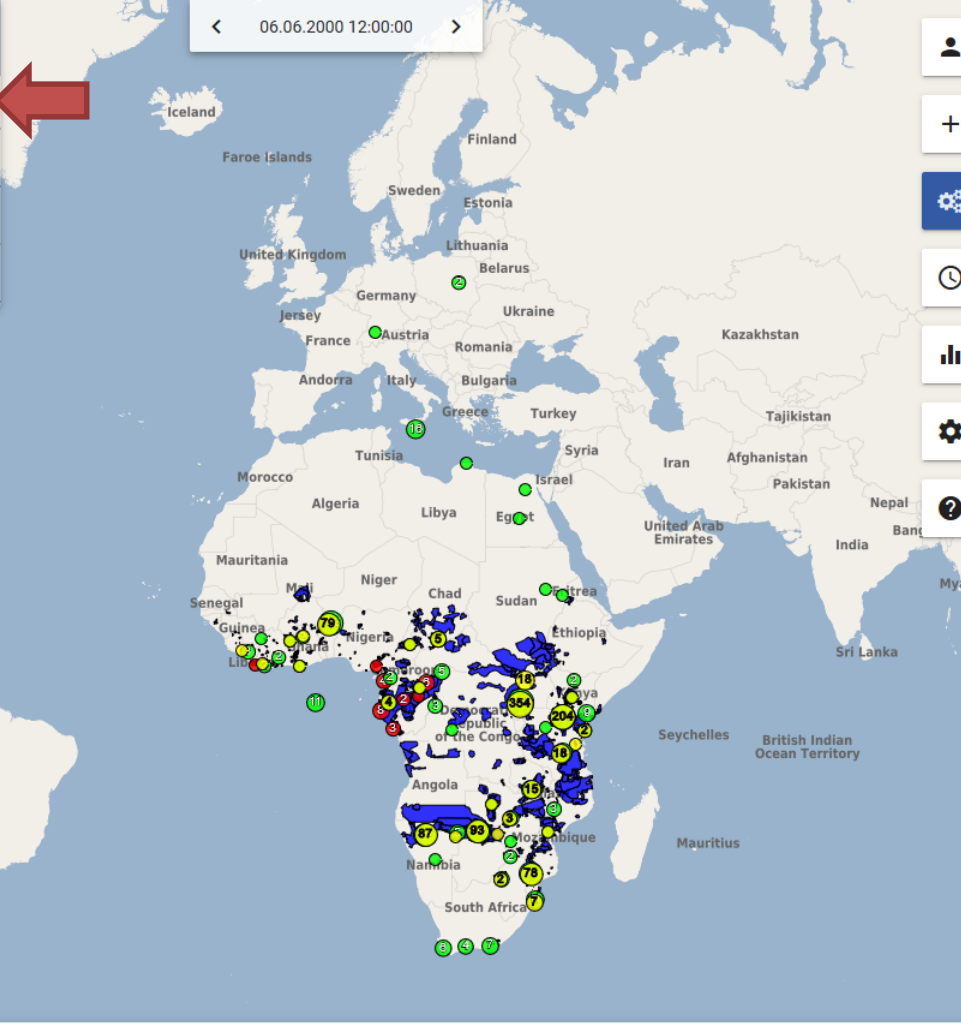
LA (IUCN\GBIF)

Loxodonta africana (G...

forest_elephants.csv

Loxodonta africana (IU...

< 06.06.2000 12:00:00 >



 > Point in Polygon Filter

 **Point**
Select Input Point

 Input
Loxodonta africana (GBIF)

 **Polygon**
Select Input Polygon

 Input
Loxodonta africana (IUCN)

 **Output Name**
Specify the name of the operator result

 Output Layer Name
LA (IUCN\GBIF)

Apply

Data Table

Citations

Helmholtz Open Science Webinars on Research Data
Webinar 40 – 21 / 26 April 2017

 **HELMHOLTZ**
GEMEINSCHAFT
Open Science



Layer Options

The screenshot displays the VCAT BETA web application interface. The main map shows a world map with various layers. A red arrow points to the 'forest_elephants.csv' layer in the legend. The 'Layer Options' menu is open, showing options: Hide Layer, Show Legend, Lineage, Remove, Rename, Edit Symbology, and Export. The 'Point in Polygon Filter' panel on the right shows the 'Point' layer selected, with 'Input' set to 'Loxodonta africana (GBIF)' and 'Polygon' set to 'Loxodonta africana (IUCN)'. The 'Output Name' is 'LA (IUCN\GBIF)'. The 'Apply' button is visible at the bottom right.

VCAT BETA

06.06.2000 12:00:00

LA (IUCN\GBIF)

Loxodonta africana (G...)

forest_elephants.csv

Loxodonta africana (IU...)

Hide Layer

Show Legend

Lineage

Remove

Rename

Edit Symbology

Export

Point in Polygon Filter

Point

Select Input Point

Input

Loxodonta africana (GBIF)

Polygon

Select Input Polygon

Input

Loxodonta africana (IUCN)

Output Name

Specify the name of the operator result

Output Layer Name

LA (IUCN\GBIF)

Apply

Lineage

The screenshot displays the VCAT BETA web application interface. The main map shows Africa with various data points (yellow circles with numbers) and polygons (blue shapes). A red arrow points to the 'Citations' tab at the bottom. The sidebar on the right contains the following sections:

- Point in Polygon Filter**
 - Point**
 - Select Input Point
 - Input: Loxodonta africana (GBIF)
 - Polygon**
 - Select Input Polygon
 - Input: Loxodonta africana (IUCN)
 - Output Name**
 - Specify the name of the operator result
 - Output Layer Name: LA (IUCN\GBIF)

At the bottom of the sidebar is an 'Apply' button. The bottom of the interface shows tabs for 'Data Table' and 'Citations', and a 'Removed Layer »Loxodonta africana (GBIF)«' notification.

Lineage - Citations

- LA (IUCN\GBIF)
- forest_elephants.csv
- Loxodonta africana (IU...

< 06.06.2000 12:00:00 >

Point in Polygon Filter

Point
Select Input Point

Input
Loxodonta africana (GBIF)

Polygon
Select Input Polygon

Input
Loxodonta africana (IUCN)

Output Name
Specify the name of the operator result

Output Layer Name
LA (IUCN\GBIF)

Apply

▼ Data Table Citations

Citation: New Mexico Museum of Natural History and Science
License:
URI: <http://www.gbif.org/dataset/4e50e3a6-8d31-44bc-ad3d-de6311ad0943>

Citation: Western Australian Museum: Western Australian Museum provider for OZCAM
License:
URI: <http://www.gbif.org/dataset/7c93d290-6c8b-11de-8226-b8a03c50a862>

Citation: Biodiversity Research and Teaching Collections, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX, USA.
License:
URI: <http://www.gbif.org/dataset/b6015b60-6f96-43a9-88e5-2f41854e8f07>

Citation: IUCN 2014. The IUCN Red List of Threatened Species. Version 2014.1. <http://www.iucnredlist.org>. Downloaded on 06/01/2014.
License: <http://spatial-data.s3.amazonaws.com/groups/Red%20List%20Terms%20&%20Conditions%20of%20Use.pdf>
URI: <http://www.iucnredlist.org/>

Lineage - Workflows

The screenshot displays a QGIS interface with a workflow diagram titled "Lineage for LA (IUCN\GBIF)". The diagram illustrates the data lineage for a specific layer. It starts with two "GFBio Source" inputs. The left input, labeled "dataS... GBIF", "scient... Loxodonta afri...", and "colum... basisofrecord, ...", feeds into a "Point in Polygon Fi..." processing step. The right input, labeled "dataS... IUCN", "scient... Loxodonta afri...", and "colum...", feeds into a "Loxodonta africana (IUCN)" layer. The "Point in Polygon Fi..." step then feeds into the final output layer, "LA (IUCN\GBIF)". The interface also shows a sidebar with layers: "LA (IUCN\GBIF)", "forest_elephants.csv", and "Loxodonta africana (IU...". The top of the interface displays the date and time "06.06.2000 12:00:00" and a "Point in Polygon Filter" button. The bottom of the interface shows a "Data Table" and "Citations" tab, and an "Apply" button.

Raster Layers

The screenshot displays the VCAT BETA web application interface. The main map shows a view of Africa with various data layers overlaid. The left sidebar contains a legend with two items: 'LA (IUCN\GBIF)' represented by a yellow circle and 'forest_elephants.csv' represented by a red circle. The top of the interface shows a date and time selector set to '06.06.2000 12:00:00'. The right sidebar, titled 'Add Data', lists several options: 'Environmental' (orange circle), 'ABCD Archives' (green circle), 'Custom Features' (orange circle), 'GFBio Baskets' (blue circle), and 'Species Distribution' (dark green circle). A red arrow points to the 'Environmental' option. The bottom of the interface has a 'Data Table' and 'Citations' tab.

VCAT BETA

LA (IUCN\GBIF)

forest_elephants.csv

06.06.2000 12:00:00

Add Data

- Environmental
Add environmental raster layers
- ABCD Archives
Lookup GFBio ABCD archives
- Custom Features
Add and use custom vector features like CSV
- GFBio Baskets
Display the GFBio Search Results
- Species Distribution
Query data from GBIF and IUCN

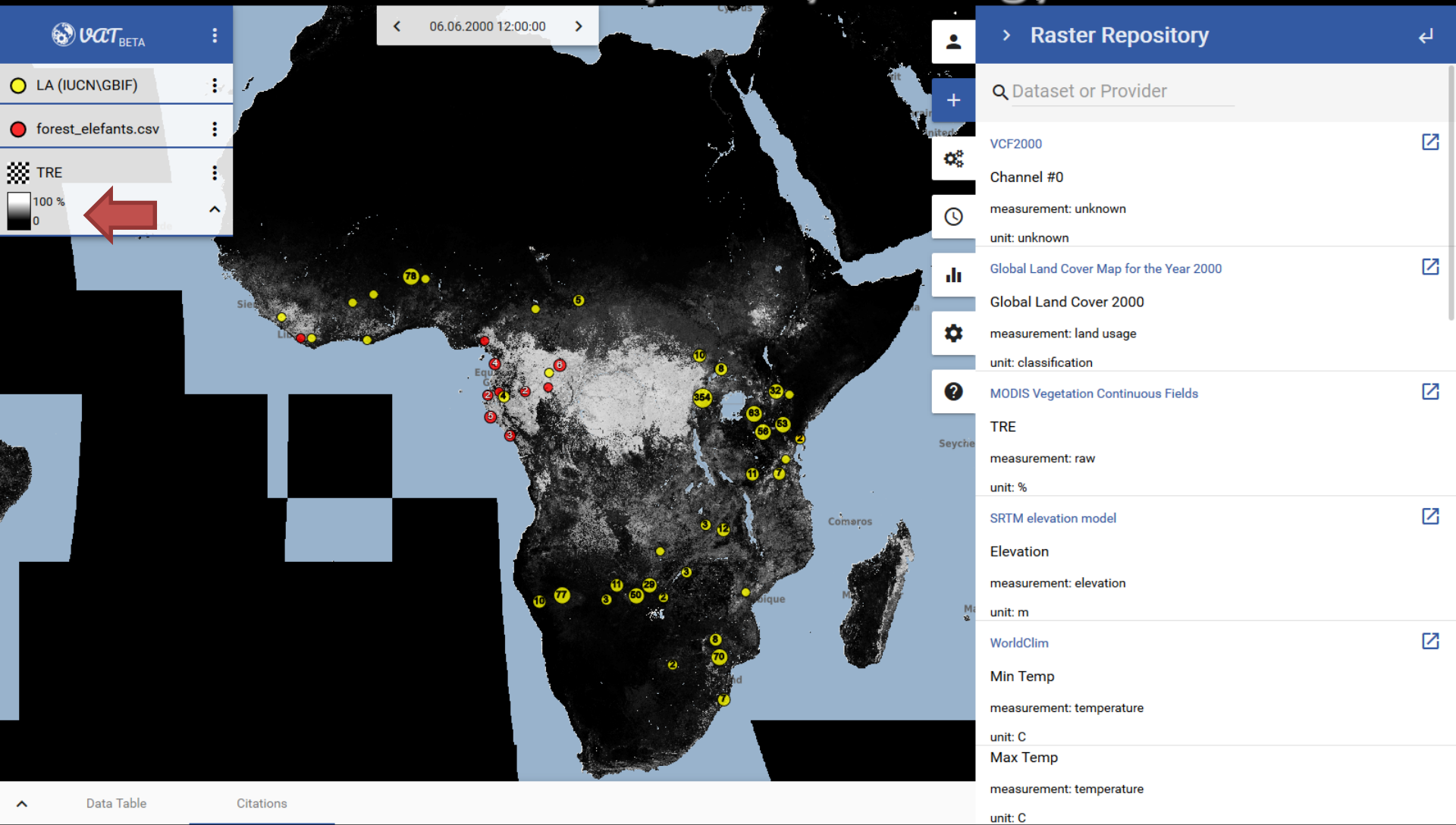
Data Table Citations

Raster Layer Repository

The screenshot displays the Raster Layer Repository web application. The main map shows Africa with numerous yellow circular markers, each containing a number. A red arrow points to the 'MODIS Vegetation Continuous Fields' dataset entry in the right sidebar. The left sidebar shows the selected layers: 'LA (IUCN\GBIF)' and 'forest_elephants.csv'. The top navigation bar includes the VCAT BETA logo and a date/time selector set to '06.06.2000 12:00:00'. The right sidebar lists various datasets with their measurement types and units.

Dataset	Measurement	Unit
VCF2000	Channel #0	measurement: unknown unit: unknown
Global Land Cover Map for the Year 2000	Global Land Cover 2000	measurement: land usage unit: classification
MODIS Vegetation Continuous Fields	TRE	measurement: raw unit: %
SRTM elevation model	Elevation	measurement: elevation unit: m
WorldClim	Min Temp	measurement: temperature unit: C
	Max Temp	measurement: temperature unit: C

Raster Layer - Symbology



Vector / Raster Combination

The screenshot displays the QGIS desktop environment. The main map window shows a grayscale satellite image of Africa with several vector points overlaid, some labeled with numbers. The left sidebar contains a layer list with 'LA (IUCN\GBIF)' (yellow circle), 'forest_elephants.csv' (red circle), and 'TRE' (checkered pattern). The top bar includes a date/time selector set to '06.06.2000 12:00:00'. The right sidebar shows the 'Operators' menu with a search bar and various processing tools. A red arrow points to the 'Raster Value Extraction' option under the 'Mixed' category.

Layers:

- LA (IUCN\GBIF)
- forest_elephants.csv
- TRE

Operators:

- Mixed**
 - Raster Value Extraction (Attach raster values to vector data)
 - R Script (Execute an R script (experimental))
- Plots**
 - Histogram (Create a histogram from vector or raster data)
- Raster**
 - Expression (Calculate an expression on a raster)
- Vector**
 - Numeric Attribute Filter (Filter data via numeric range)
 - Point in Polygon Filter (Filter points that are enclosed by a polygon)

Vector / Raster Combination

The screenshot displays the VCT BETA web application. The main map shows a vector layer of red points and a raster layer of forest cover over Africa. The left sidebar lists layers: FE+TRE, LA (IUCN\GBIF), forest_elephants.csv, and TRE. The right sidebar shows the configuration for the 'Point' operation, where the input is 'forest_elephants.csv' and the raster is 'TRE'. The output layer name is 'FE+TRE'. A red arrow points to the 'TRE' value in the configuration panel.

Left Sidebar:

- FE+TRE
- LA (IUCN\GBIF)
- forest_elephants.csv
- TRE

Right Sidebar:

- Point**
Select Input Point
Input: forest_elephants.csv
- Raster**
Select input Raster
Input A: TRE
- Configuration**
Specify the operator
Value Name for Raster A: TRE
- Output Name**
Specify the name of the operator result
Output Layer Name: FE+TRE

Bottom Bar:

- Data Table
- Citations
- Create

Vector / Raster Combination

Layers

- FE+TRE
- LA (IUCN\GBIF)
- TRE

Extract a Raster Value and Add it to...

Point
Select Input Point

Input
forest_elephants.csv

Raster
Select input Raster

Input A
TRE

Configuration
Specify the operator

Value Name for Raster A
TRE

Output Name
Specify the name of the operator result

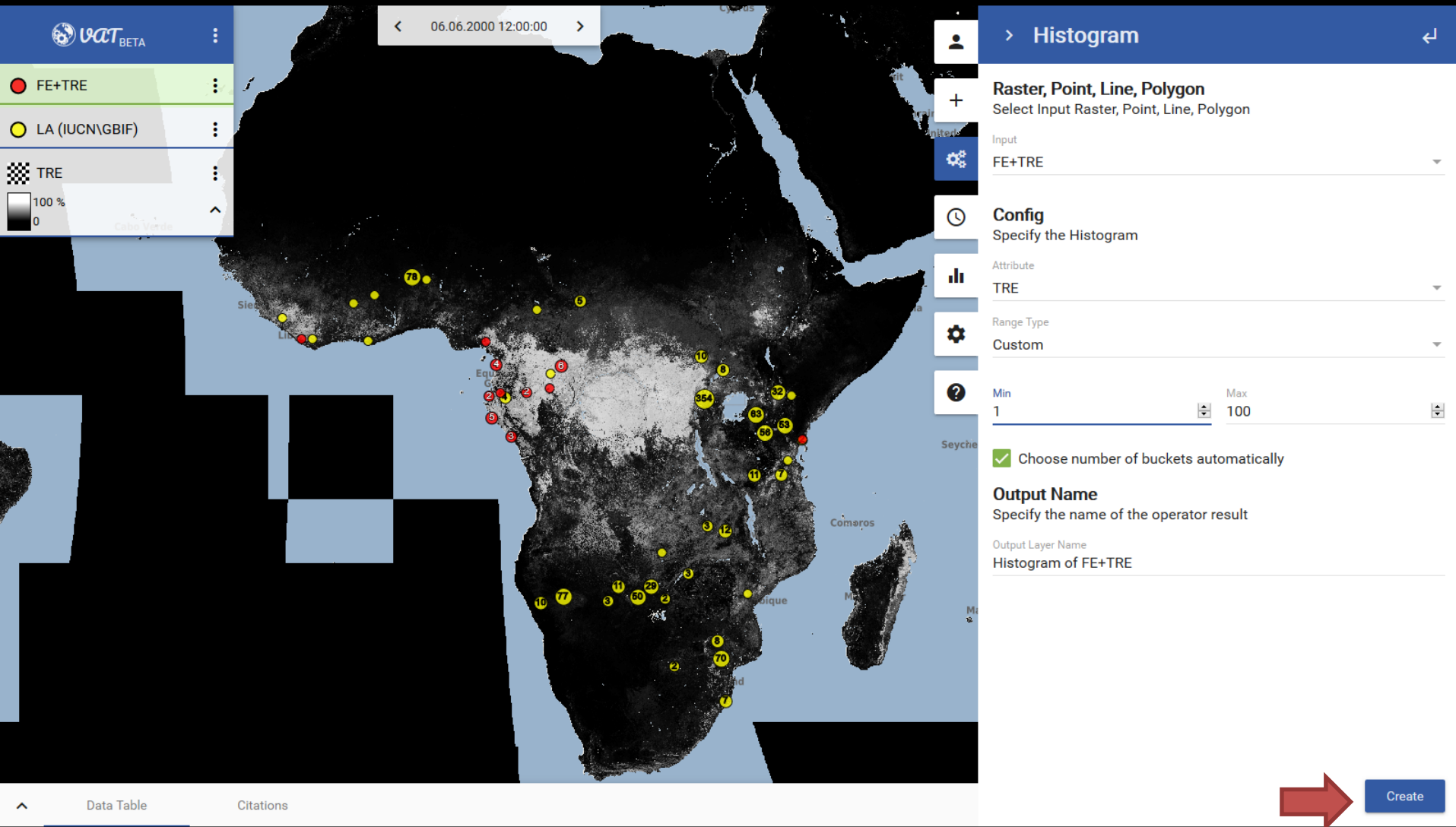
Output Layer Name
FE+TRE

Create

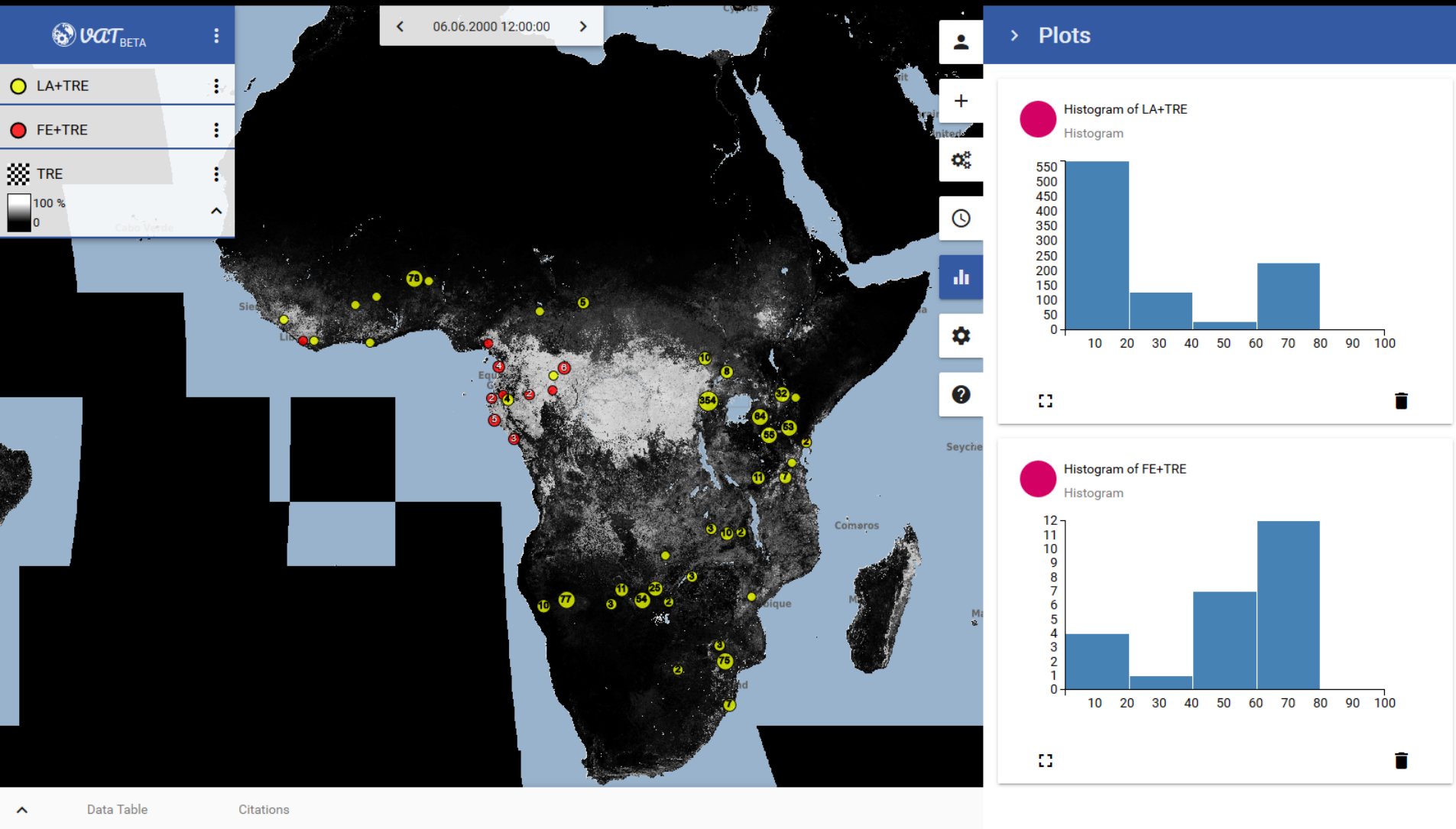
Data Table

	TRE	basisofrecord	gbifid	scientificname
☐	70	HUMAN_OBSERVATION	1.09891e+09	Loxodonta cyclotis (Matschie, 1900)
☐	56	HUMAN_OBSERVATION	1.30516e+09	Loxodonta cyclotis (Matschie, 1900)
☐	65 ± 5	HUMAN_OBSERVATION	1.25943e+09 ± 3.16561e+07	Loxodonta cyclotis (Matschie, 1900)
☐	63	PRESERVED_SPECIMEN	1.14511e+09	Loxodonta cyclotis (Matschie, 1900)
☐		HUMAN_OBSERVATION	1.16102e+09 ± 1.01931e+08	Loxodonta cyclotis (Matschie, 1900)
☐	7	HUMAN_OBSERVATION	1.33888e+09	Loxodonta cyclotis (Matschie, 1900)
☐	58	FOSSIL_SPECIMEN	7.7089e+08 ± 3.28386e+08	Loxodonta cyclotis (Matschie, 1900)

Plots - Histogram



Plots - Histogram



Plots – R Integration

The screenshot displays the VCT BETA web interface. On the left, a sidebar contains a legend with three layers: 'LA+TRE' (yellow circle), 'FE+TRE' (red circle), and 'TRE' (black square). Below the legend is a grayscale color bar ranging from 0 to 100%. The main map area shows a satellite view of Africa with numerous yellow and red circular markers, many of which are numbered. A date/time selector at the top of the map shows '06.06.2000 12:00:00'. On the right, the 'R Operator' panel is active, showing a table of variables and a script editor.

Variable	Description
pointscout	amount of point collection inputs.
qrect	This variable is a list that contains the fields t1, t2, x1, y1, x2, y2, xres, yres and epsg.

An example is `mapping.loadRaster(0, mapping.qrect)` for accessing the first raster.

```
1 la <- mapping.loadPoints(0, mapping.qrect)
2 l <- la["TRE"]
3 hist(l, breaks=(0,100,by=5))
```

Buttons: Load Script, Save Script

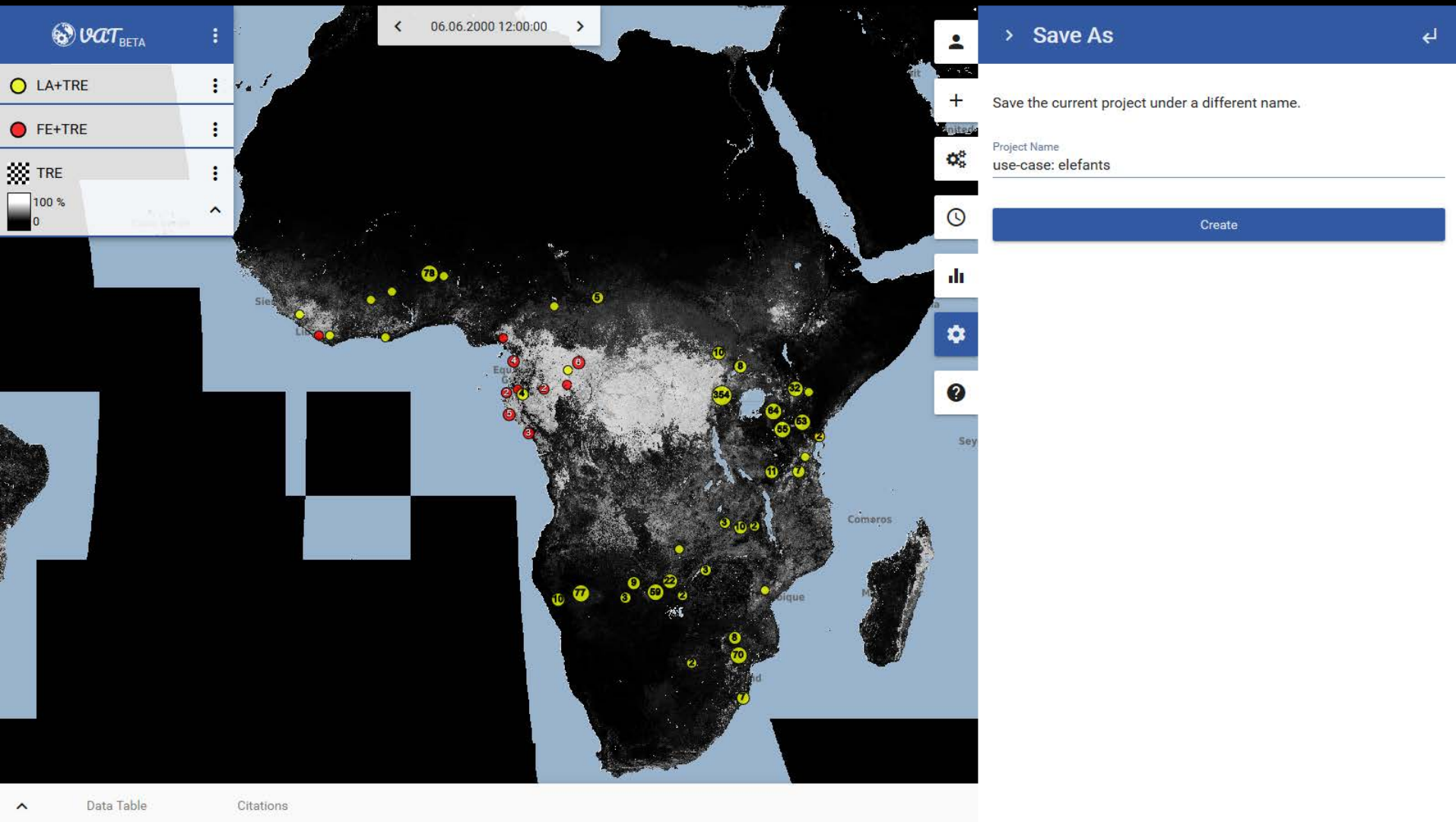
Result Type: Plot

Output Name: Specify the name of the operator result

Output Layer Name: R Plot

Create

Projects



GFBio

Overall Goal: Sustainable, service oriented, national data infrastructure facilitating data sharing for biological and environmental research.



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Showing 1 to 10 of 46 entries

[Burkhardt, Elke \(2013\): Whale sightings during POLARSTERN cruise ANT-XXVIII/4](#)*Data Center:* PANGAEA: Data Publisher for Earth & Environmental Science*Summary:* From 13 March to 09 April 2012 Germany conducted a fisheries survey on board RV Polarstern in the Scotia Sea (Elephant Island - South Shetland Island - Joinville Island area) under...(+)*Parameters:* DATE/TIME; LATITUDE; LONGITUDE; Whale species; Certainty of identification; Individuals*License/Rights:* CC-BY: Creative Commons Attribution 3.0 Unported[Data Description](#) - [Data Download](#)[Burkhardt, Elke \(2011\): Whale sightings during POLARSTERN cruise ANT-XXVII/2](#)*Data Center:* PANGAEA: Data Publisher for Earth & Environmental Science*Parameters:* DATE/TIME; LATITUDE; LONGITUDE; Whale species; Certainty of identification; Individuals*License/Rights:* CC-BY: Creative Commons Attribution 3.0 Unported[Data Description](#) - [Data Download](#)[Burkhardt, Elke \(2009\): Whale sightings during POLARSTERN cruise ANT-XXII/3](#)*Data Center:* PANGAEA: Data Publisher for Earth & Environmental Science*Parameters:* DATE/TIME; LATITUDE; LONGITUDE; Whale species; Certainty of identification; Number of individuals*License/Rights:* CC-BY: Creative Commons Attribution 3.0 Unported[Data Description](#) - [Data Download](#)[Burkhardt, Elke \(2009\): Whale sightings during POLARSTERN cruise ANT-XXIII/10](#)*Data Center:* PANGAEA: Data Publisher for Earth & Environmental Science*Parameters:* DATE/TIME; LATITUDE; LONGITUDE; Whale species; Certainty of identification; Number of individuals*License/Rights:* CC-BY: Creative Commons Attribution 3.0 Unported[Data Description](#) - [Data Download](#)Filter Results: [clear filters](#)

* Author

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* Geographical Region

[Atlantic Ocean](#)(22)

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* Geographical Region

[Atlantic Ocean](#) (22)

Visualization, Analysis & Transformation System

The screenshot displays the VAT BETA web application. The main area features a map of Africa with country labels. A date/time selector at the top center shows '06.06.2000 12:00:00'. On the left, a blue header contains the 'VAT BETA' logo and a button '+ add a first layer'. On the right, a sidebar titled 'New Project' includes a '+ Create a new, blank project.' button, a 'Project Name' field with the value 'use-case: gfbio-basket', a 'Projection' dropdown menu set to '[EPSG:3857] WGS84 Web Mercator', and a 'Create' button. A vertical toolbar on the right side of the map contains icons for user profile, layer management, settings, and help. At the bottom left, there are tabs for 'Data Table' and 'Citations'.

GFBio – Search Baskets

The screenshot displays the GFBio Search Baskets web application. The interface features a world map as the central element, with a date and time selector at the top center showing '06.06.2000 12:00:00'. On the left, a blue header bar contains the 'GFBio BETA' logo and a button labeled '+ add a first layer'. On the right, a blue sidebar titled '> Add Data' lists five categories: 'Environmental' (orange circle), 'ABCD Archives' (green circle), 'Custom Features' (orange circle), 'GFBio Baskets' (blue circle with a red arrow pointing to it), and 'Species Distribution' (dark green circle). Each category has a brief description. At the bottom, a light gray bar contains 'Data Table' and 'Citations' links.

GFBio – Search Baskets

GFBio Search Baskets

Basket: 2017-04-17 18:37:32.412 - Wh...

Whale sightings during POLARSTERN cruise ANT-XXVIII/4

Authors: Burkhardt, Elke
Data center: PANGAEA: Data Publisher for Earth & Environmental Science
Metadata: [Dataset landing page](#)

[Add dataset as layer](#)

Whale sightings during POLARSTERN cruise ANT-XXVII/2

Authors: Burkhardt, Elke
Data center: PANGAEA: Data Publisher for Earth & Environmental Science
Metadata: [Dataset landing page](#)

[Add dataset as layer](#)

Whale sightings during POLARSTERN cruise ANT-XXII/3

Authors: Burkhardt, Elke
Data center: PANGAEA: Data Publisher for Earth & Environmental Science
Metadata: [Dataset landing page](#)

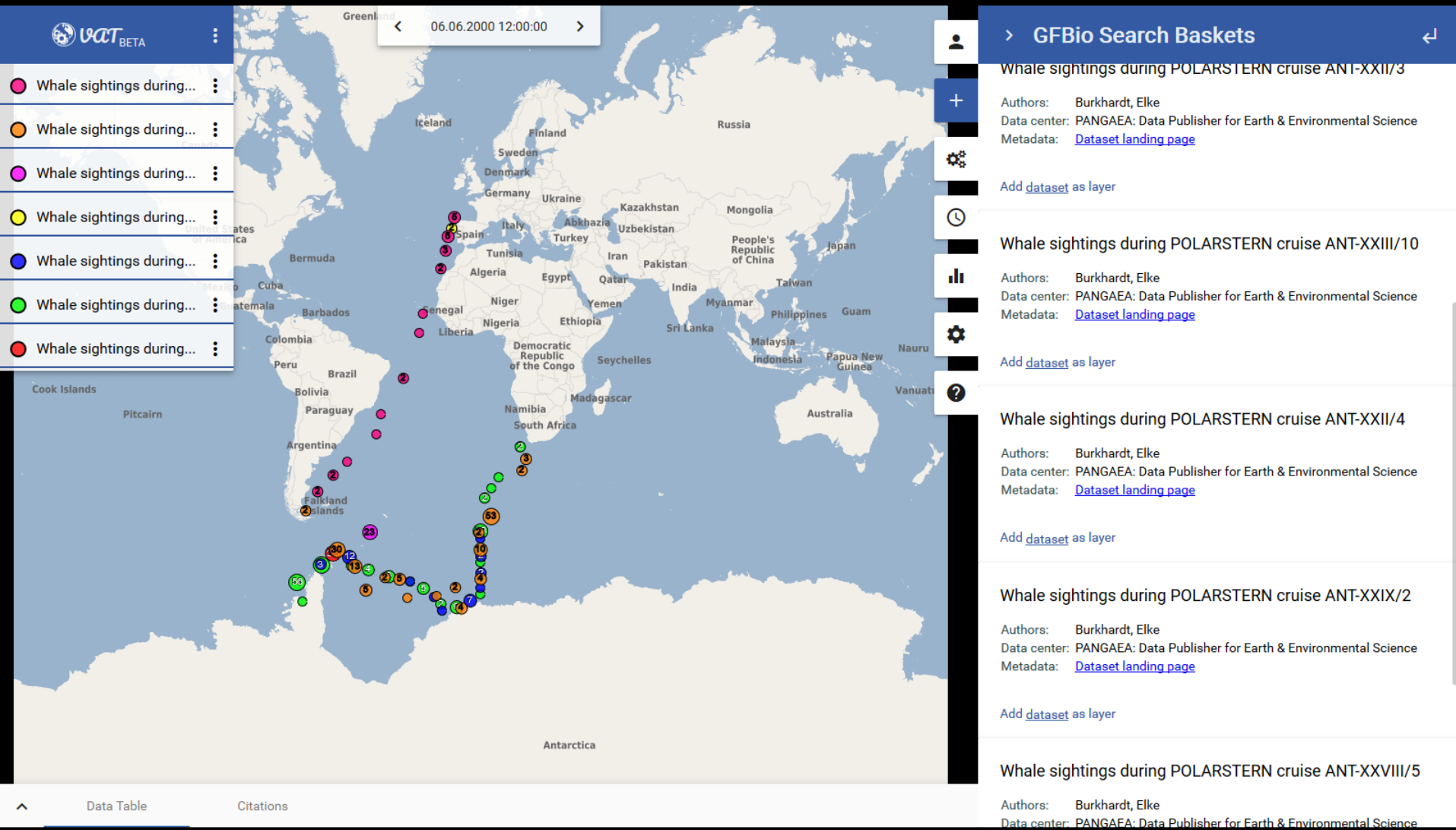
[Add dataset as layer](#)

Whale sightings during POLARSTERN cruise ANT-XXIII/10

Authors: Burkhardt, Elke
Data center: PANGAEA: Data Publisher for Earth & Environmental Science
Metadata: [Dataset landing page](#)

[Add dataset as layer](#)

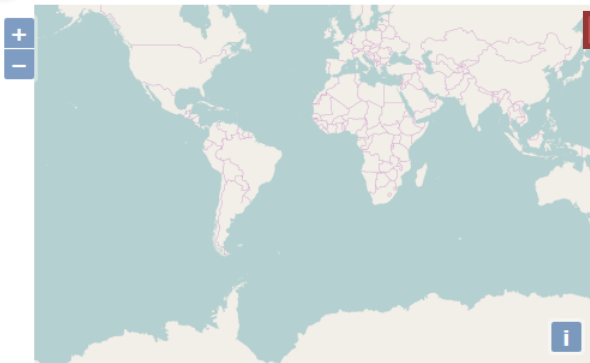
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Digitization of plant specimens from Rhoen and Vogelsberg (FLAD)*Data Center:* Data Center SGN*Summary:* The digitization from the possessions of the herbarium of the Rhönmuseum Fladungen comprises metadata from specimen labels, georeferencing of localities and a digital image of the...[\(+\)](#)*License/Rights:* Licence: CC-BY-SA 3.0[Data Download](#)**Digitization of plant specimens from Rhoen and Vogelsberg (FULD)***Data Center:* Data Center SGN*Summary:* The digitization from the possessions of the herbarium of the Verein für Naturkunde in Osthessen (FULD) comprises metadata from specimen labels, georeferencing of localities and a...[\(+\)](#)*License/Rights:* Licence: CC-BY-SA 3.0[Data Download](#)**Digitization of plant specimens from Rhoen and Vogelsberg (FR)***Data Center:* Data Center SGN*Summary:* The digitization from the possessions of the Herbarium Senckenbergianum Frankfurt (FR) comprises metadata from specimen labels, georeferencing of localities and a digital image of ...[\(+\)](#)*License/Rights:* Licence: CC-BY-SA 3.0[Data Download](#)[Rosa tomentosa Sm., a preserved specimen record of the "Digitization of plant specimens from Rhoen and Vogelsberg \(FULD\)" dataset \[ID: 6738\]](#)*Data Center:* Data Center SGN*Summary:* The digitization from the possessions of the herbarium of the Verein für Naturkunde in Osthessen (FULD) comprises metadata from specimen labels, georeferencing of localities and a...[\(+\)](#)Filter Results: [clear filters](#)

▼ Geographical Region

[Europe](#)(19768)[Germany](#)(14501)[Kr. Alsfeld, Gr. Felda, Weidenberg](#)(228)[Kr. Alsfeld, Kestrich, Koppenberg](#)(181)[Hünfeld](#)(170)[More...](#)

▼ Data Center

[Data Center SGN](#)(24196)

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GFBio Search Baskets

Basket: 2017-04-17 18:49:03.835 - Digi...

Digitization of plant specimens from Rhoen and Vogelsberg (FULD)

Authors:
Data center: Data Center SGN
Metadata: [Dataset landing page](#)

Units from multiple search results based on this dataset

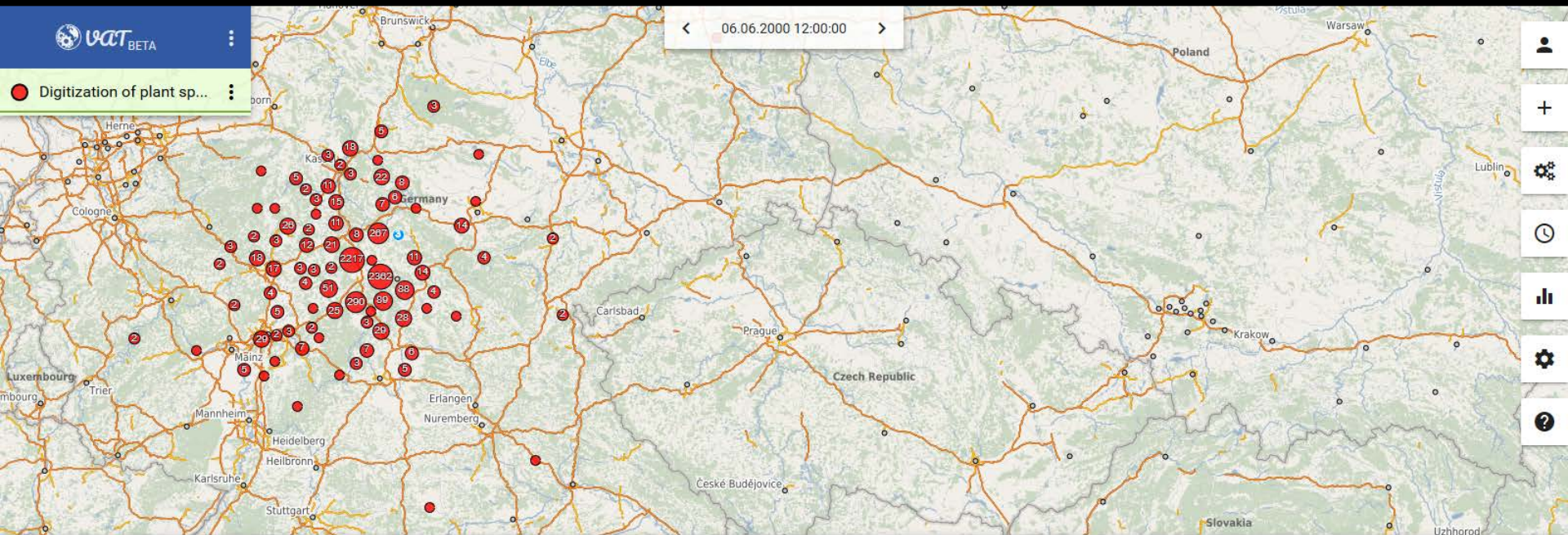
Unit	Type	Unit id
Rosa tomentosa Sm.	preserved specimen	6738

Toggle Units

[Add dataset as layer](#)

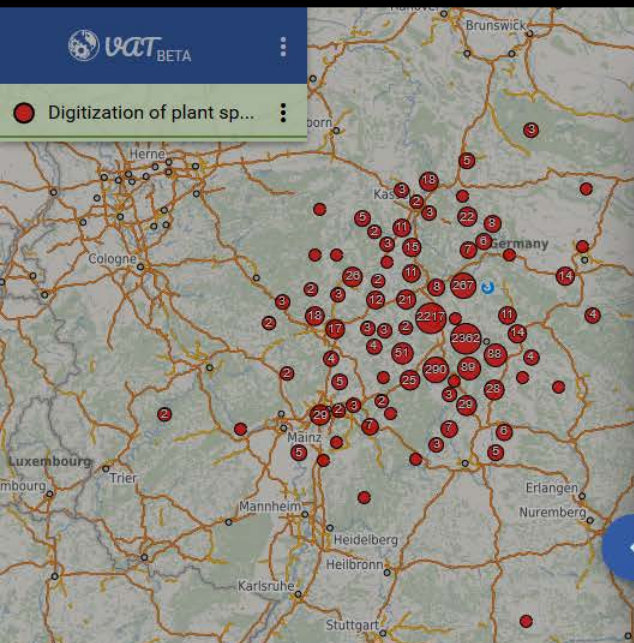
Data Table Citations

Data Table - Multimedia



Data Table		Citations		
	Identifications/Identification/Result/TaxonIdentified/ScientificName /FullScientificNameString	MultiMediaObjects/MultiMediaObject/ /Creator	MultiMediaObjects/MultiMediaObject/FileURI	MultiMediaOb /Format
☐	Rubus sp., Rubus radula Weihe, Rosa tomentosa Sm.	Verein für Naturkunde in Osthessen,	4 images , ...	jpg,
☒	Rumex maritimus L., Rumex longifolius DC., Galium palustre L.	Verein für Naturkunde in Osthessen	3 images	jpg
☐	Vinca major L.	Verein für Naturkunde in Osthessen	1 image	jpg
☐	Carex humilis Leyss., Thymus praecox Opiz, Viola collina Besser, Viola mirabilis L., Zannichellia palustris L., ...	Verein für Naturkunde in Osthessen	5 images ...	jpg
☐	Eragrostis pilosa (L.) P. Beauv., Lavandula angustifolia Mill.	Verein für Naturkunde in Osthessen	2 images	jpg
☐	Filago arvensis L.	Verein für Naturkunde in Osthessen	1 image	jpg

Data Table - Multimedia



WAT BETA

Digitization of plant sp...

Map showing locations in Central Europe (Germany, Poland, Luxembourg, etc.) with red dots indicating digitization sites. A date/time stamp shows 06.06.2000 12:00:00.

FULD-005600.jpg

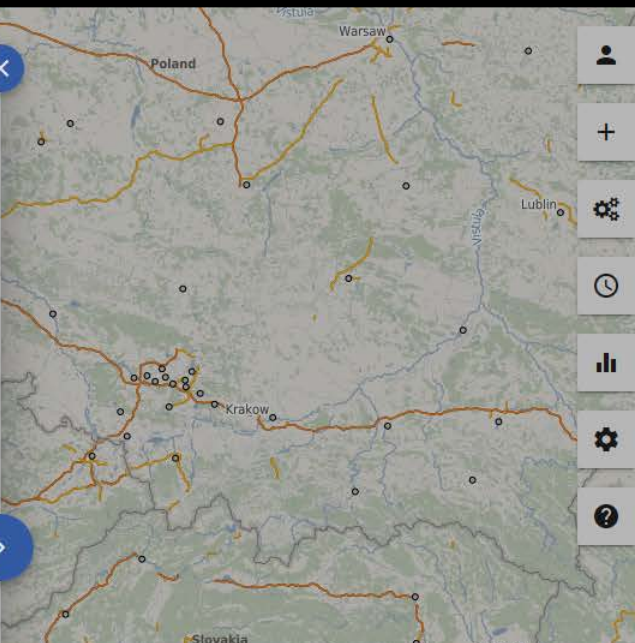
Image 2 of 3



Rumex longifolius (Rumex) - Rumex longifolius DC., Galium palustre L.

Scale bar: 0 1 2 3 4 5 6 7 8 9 10 cm

Color calibration chart



Map showing locations in Central Europe (Germany, Poland, Luxembourg, etc.) with red dots indicating digitization sites.

	Identifications/Identification/Result/TaxonIdentified/ScientificName/FullScientificNameString	MediaObject/FileURI	MultiMediaOb/Format
☐	Roth, Scutellaria galericulata L., ...		
☐	Rubus sp., Rubus radula Weihe, Rosa tomentosa Sm.		jpg,
☒	Rumex maritimus L., Rumex longifolius DC., Galium palustre L.		jpg
☐	Vinca major L.		jpg
☐	Carex humilis Leyss., Thymus praecox Opiz, Viola collina Besser, Viola Zannichellia palustris L., ...		jpg
☐	Eragrostis pilosa (L.) P. Beauv., Lavandula angustifolia Mill.		jpg
☐	Filago arvensis L.		jpg

Verein für Naturkunde in Ostfriesland 1 image

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Contact: droenner@mathematik.uni-marburg.de