

NSIC Citizen Science Webinar on Localizing Japanese Ukiyo-e Landscapes

Dr. Stephanie Santschi (PI), Dr. Himanshu Panday, Dr. Drew Richardson, Hirohito Tsuji

Webinar, January 20, 2025, 17:30-19:00 JST

The Nippon Foundation, Tokyo + online

Today's Agenda

- A. Introduction and Goal
- B. The Citizen Science Platform
 - 1. Observations
 - 2. Research Questions
 - 3. Study Design
 - 4. Data Collection
 - 5. Data Analysis
 - 6. Communication

- C. Workshop
- D. Call for Action

A. Introduction and Goal

Introduction

- Dr. Stephanie Santschi
- Dr. Himanshu Panday
- Dr. Drew Richardson
- Hirohito Tsuji



The project team: Dr. Drew Richardson, Dr. Stephanie Santschi, Hirohito Tsuji, and Dr. Himanshu Panday

Drawing from the Crowd:
A Citizen Science Platform for Mapping *Ukiyo-e* Geography

集合知を描く: 市民科学浮世絵マッピングプラットフォーム

8/2024-1/2025

"georeferencing"



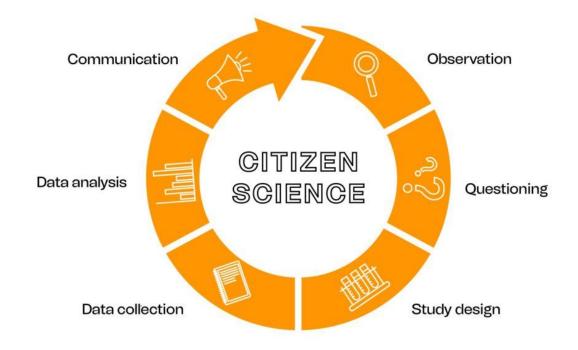
"Citizen Science"?



- involves the public in scientific research
- brings together science, policy makers, and society
- scientific work that may be used as a part of a broader scientific activity

Definition and image from: https://eu-citizen.science/

Contributing At Every Step



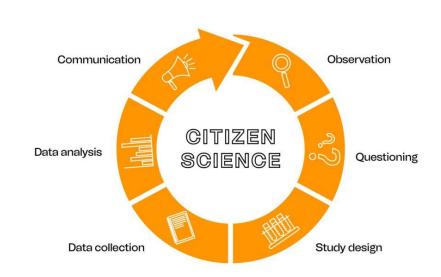
Webinar Objective and Project Goal

Objective:

Gather initial crowd feedback on our citizen science platform

Goal:

Bring the past to the present in scientifically reflected ways by bridging historical artistic representation and computational models



What comes to your mind when I say
Japanese landscape and ukiyo-e?

Ukiyo-e

Tokugawa-period (1603—1868) *ukiyo-e* prints

Thumbnail screenshot, ARC 浮世絵ポータルデータベース / Ukiyo-e Portal Database, Art Research Center, Ritsumeikan University, Kyoto (containing 239'907 entries on 4.7.2024) https://www.dh-jac.net/db/nishikie/s earch_portal.php



"Landscapes?"

- landscape vs. Landscape
- meisho-e 名所絵: pictures of famous places
- fūkei-ga 風景画 scenic pictures
- Sansui-ga 山水画 idealized depictions of mountains and waters
- uki-e 浮絵 linear perspective view

Thirty-six Views of Mount Fuji (Fugaku Sanjūrokkei 富嶽三十六景)

Famous Places in the Eastern Capital (Tōto meisho 東都名所)

One Hundred Views of Famous Places in the Various Provinces (Shokoku meisho hyakkei 諸国 名所 百景)

Project Partners:

- Smapshot at HEIG-VD, Yverdon, EPFL, Lausanne
- University of Zurich, Switzerland
- International Joint Digital Archiving Center for Japanese Art and Culture (ARC-iJAC), Kyoto











Plan vs. Progress

- 6 month development period
- Initially planned as a web page prototype
- Launch of beta functionalities and platforms in mid-January 2025
- Continuous development of beta version planned in the future

B. The Citizen Science Platform



1. Observation

Negotiating Commercial Interests

Katsushika Hokusai (1760-1849), Tsutaya book and print shop, book illustration, Edo period, 1799.



Poem Pictorializations vs. Topological Representation



Katsushika Hokusai (1760–1849), Yoshino (Cherry Blossoms at Yoshino), from the series Setsugekka (Snow, Moon, and Flowers), ca. 1833. MET.



Utagawa Hiroshige (1797–1858), Enjoying the Evening Cool at Ryogoku Bridge, from the series *Edo meisho* (Famous views of Edo), 1853. Ronin Gallery.



Katsushika Hokusai (1760–1849), *Yoshino* (Cherry Blossoms at Yoshino), from the series *Setsugekka* (Snow, Moon, and Flowers), ca. 1833. MET.

音にきく よしののさくら 咲きにけり 山のふもとに かかる白雲

oto ni kiku
yoshino no sakura
sakinikeri
yama no fumoto ni
kakaru shirakumo

The famed
Yoshino cherries
Have bloomed;
Around the mountains' feet
Cling clouds of white.

(Kinkai wakashū 金槐和歌集,1213: no. 51)

Academic Dispute

Matthi Forrer, Suzuki Jūzō and Henry D. Smith. 1997. Hiroshige: Prints and Drawings. Munich: Prestel, 39.

Hiroshige did indeed travel from time to time, as did increasing numbers of his countrymen in the late Tokugawa period, and it was such travel that generated the demand for his prints. It is equally clear, however, that the majority of his prints of places outside Edo did not derive from direct observation. Most scholars agree that Hiroshige really did make the trip along the Tokaido Road to Kyoto in about 1832, as a member of an annual autumn mission from the shogun in Edo, the seat of actual governance, to the emperor, who resided in Kyoto and retained a strong ceremonial and symbolic role as the legitimator of the Tokugawa regime. This trip presumably served as inspiration for the famous series The Fifty-three Stations of the Tōkaidō Road, published by Hōeidō, probably in 1833, but Suzuki Jūzō has observed that Hiroshige probably did not rely on actual sketches, at least not for most of the stations more distant from Edo: those up to about Fujisawa (the sixth station from Edo) have a detailed quality of direct observation, but later views are more abstract and, after Okitsu (seventeenth station), he even relied for some views on a published gazeteer. 14 The sources for Hiroshige's Kisokaido views are unknown, but certainly did not include direct experience, while the majority of his depictions in Famous Views in the Sixty-odd Provinces were modelled after illustrations in printed gazeteers.15





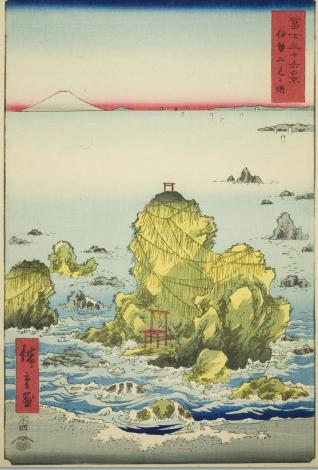






Looking at
Hiroshige's sketch
and the final print,
what kind of
artistic
modifications do
you notice?







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2. Questioning



Research Questions

- I. How close are prints to topographical reality?
- II. What can print features tell us about viewer expectations?, and
- III. How did visual culture shape landscape representation?

Kitagawa Utamaro (ca. 1753–1806)
The Artist Kitao Masanobu Relaxing at a Party,
Left-hand of a triptych of woodblock prints, 1790s.
MET, JP737.



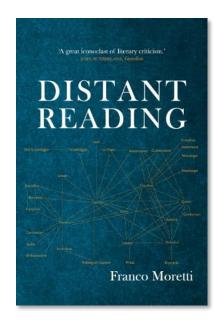
Three Focus Areas

- 1. Feature recognition with Al
- 2. Systematic analysis of viewpoints
- 3. Comparative spatial analysis

3. Study Design



Method



Franco Moretti: *Distant Reading*. London: Verso, 2013.

☐ "Distant viewing":

Computational analysis

- Pattern detection (image clustering)
- Computer vision (masking, feature extraction)
- Geospatial analysis (mapping, data visualization)

Dataset

- MET Collection Online (3k), filtered for prints containing landscape features → initial training dataset
- ARC Ukiyo-e Portal Database (200k), filtered for prints containing landscape features
- Terrain models created from elevation data (Japan's Geospatial Information Authority)

Top: Screenshot from the Ukiyo-e Portal Database, Art Research Center, Ritsumeikan University.

Bottom: Digital Elevation Model (DEM), Geospatial Information Authority, Japan.



3.1. Similar Projects

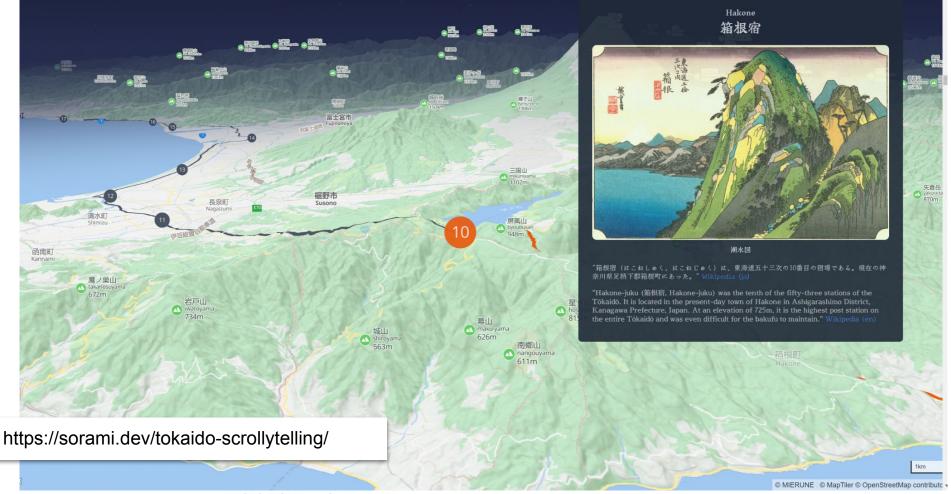
Related Projects in Japan

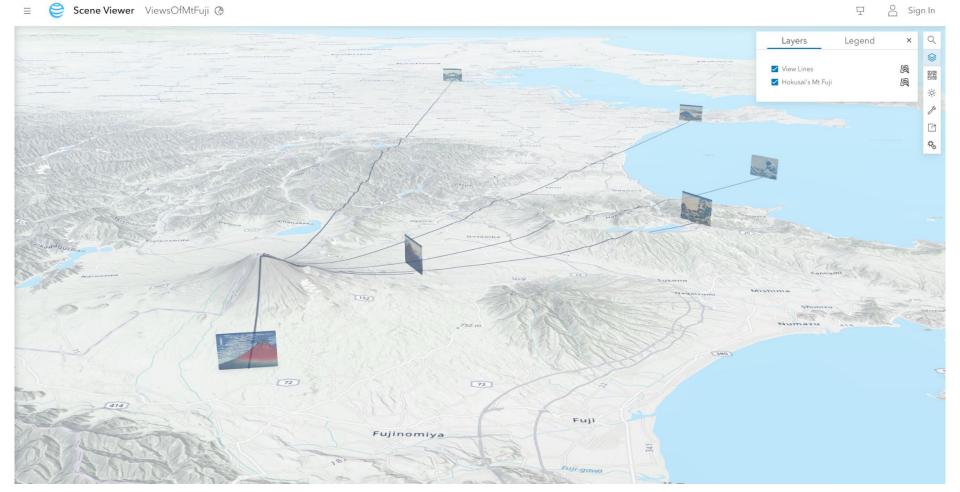
Citizen Science

- Ecology
- Public Health
- Disaster Mitigation

Ukiyo-e Maps

- Ukiyoe Immersive Art Exhibition, Tokyo, 3DCG mapping and projection by HITOHATA, TV Aichi
- https://ukiyo-emap.com/ (map visualisation, static)
- Mapping the Utamakura in Hyakunin Isshu https://storymaps.arcgis.com/stories/2c3ebd99a 2124ae4bd509ed6d8695a33
- Sorami Hisamoto: Scrollytelling the 53 Stations by combining maps with wikidata https://sorami.dev/tokaido-scrollytelling/
- 7 viewpoints towards Mt. Fuji using ArcGIS: https://www.arcgis.com/home/webscene/viewer.html





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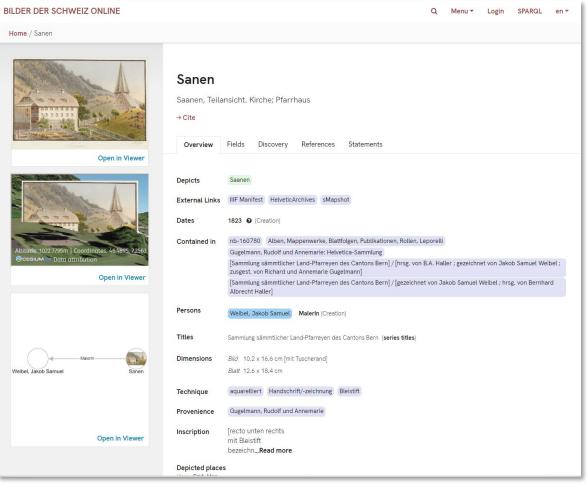


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Bilder der Schweiz Online (Images of Switzerland)

«Bilder der Schweiz Online» Swiss Art Research Infrastructure (SARI), University of Zurich, 2020—2022. https://bso.swissartresearch.net/



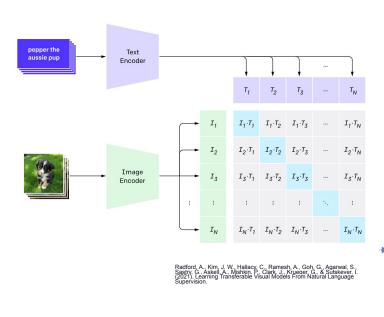


4. Data Collection



4.1. Vision Models and Algorithmic Image Analysis

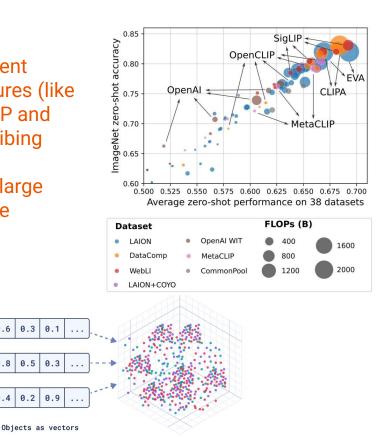
Recognising **landscapes**



Evaluating different model architectures (like variations of CLIP and SigLIP) in describing and detecting landscapes in a large corpus of Ukiyo-e images

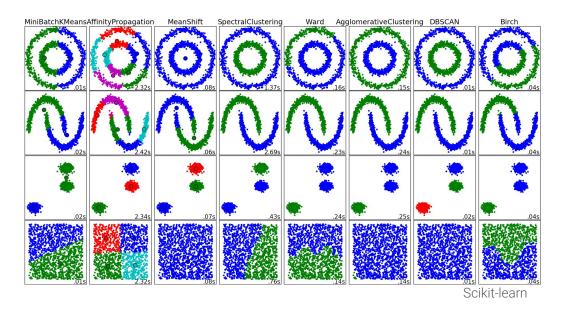
0.1

0.2 0.9



Embedding Model

Clustering performance



Comparing clustering performances of different algorithms on the embedding data to aid in the citizen science workflow

Segmentation









Utilizing the advancements in segmentation models to segment landscape features

Al recreation for localising



Feature Recognition



TRUE

The image is a traditional Japanese woodblock print of a wooden bridge over a body of water. The bridge appears to be old and weathered, with wooden beams and railings. There are several people walking on the bridge, some of them are carrying umbrellas to protect themselves from the rain. The sky is dark and doudy, and there are raindrops stalling from the sky, in the badground, there are mountains and as small sland in the distance. On the right side of the image, there is a red banner with Chinese characters written on it. The overall color palette is muted, with shades of blue, green, and yellow.

Description

The image is a pair of two Japanese woodblock prints of a man and a woman. The man is on the left side of the image, wearing a traditional kinono with a colorful pattern and a red scarl around his neck. He has a science spreason on this fear and is foliage a book in his left hand. The woman on the right side is wearing a pink and blue kimonos with a large hat on her head. She is also holding a small bag in her right hand. Both prints are set against a beige background with a geometric pattern. The prints appear to be hand-colored and have a viritage feel to them.

The image is a pair of two illustrations of a main in traditional Japanese clothing. The illustrations are in a beige color and are set against a background of orange leaves.

The first illustration on the left shows the man in a couching position, with his left arm stretched out to the side and his right meet at the elbow. He is wearing a red and gold kinnon with intricate patterns and designs. His hair is styled in a mesy but and he has a serious expression on his face. The second illustration in the right shows the same man, but with a more relaxed posture and a more serious expression. He appears to be holding a staff or a staff in his right hand. The human facepers https://mages.m/ Asian Art The image is a pair of two illustrations from a Japanese woodblock print. The illustrations are in a traditional Japanese whyle, with when cloors and intricate details.

Terned shawl draped over his shoulders. He is holding a sword in his right hand and a shield in hand. He has a serious expression on his ear and is standing in front of a wooden fence.

On the right side, there are two men wearing traditional Japanese codining, one in a red robe and the other in a white robe. They are both holding swords and appear to be engaged in a human faceman https://images.m/ Asian Art

The image is a set of three panels from a Japanese woodblock print. The panels are arranged in a triangular formation, with each panel showing a different pose of a man wearing a traditional Japanese outfit.

On the left side of the image, there is a man wearing a green kimono with a red and white

The first panel on the left shows the man standing with his back to the viewer, facing away from the viewer. He is wearing a green kimono with a red and gold patterned shawl draped over his shoulders. He has a black hat on his head and is holding a sword in his right hand. The second







Drawing from the Crowd

A Citizen Science Platform for Mapping Ukiyo-e Geography

Enter keywords to find artworks that match your interest.

Search keywords (e.g., 'bridge', 'rain', 'woodblock'):

Artworks Matching Your Search

Show Metadata by Default

Results Summary

Total Artworks Found: 3



Automatically generated image descriptions that we can filter for keywords to assess whether a print contains elements of landscape

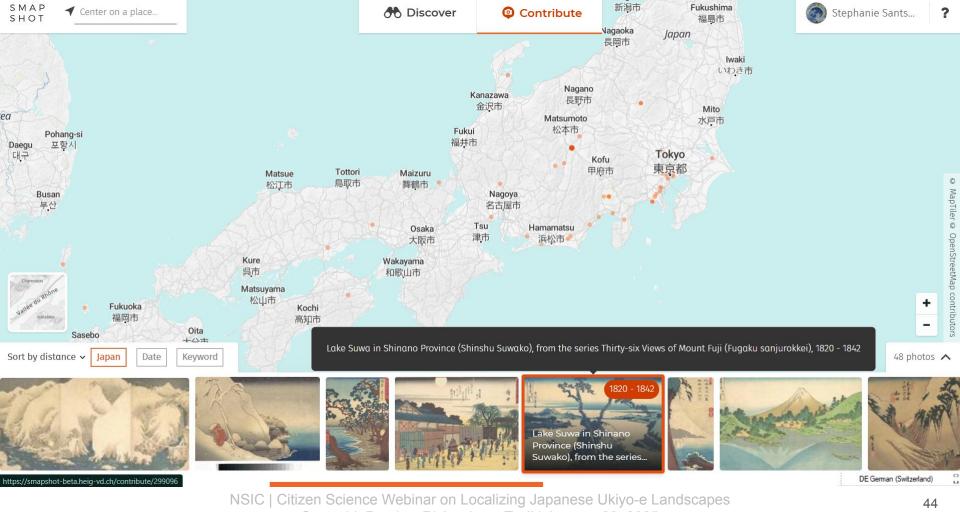
https://drawingfromthecrowd.streamlit.app/

Similarity Clustering

Clustering algorithms to group prints according to...

- Viewpoints (how the scene is framed)
- Geographical features (what landmarks are shown)
- Artistic elements (how these features are depicted)

4.2. With Citizen Scientists



Niigata

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← Back to the map

Japan

Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

Add a caption

Geolocalise

i Image Details 🕏 Observations

































Mark the position of the photographer

Position the marker at the approximate location of the shot by clicking on the map or by dragging the marker. Orange circles are placed on the map by Smapshot's algorithms. These may provide you with an indication as to the photographer's position

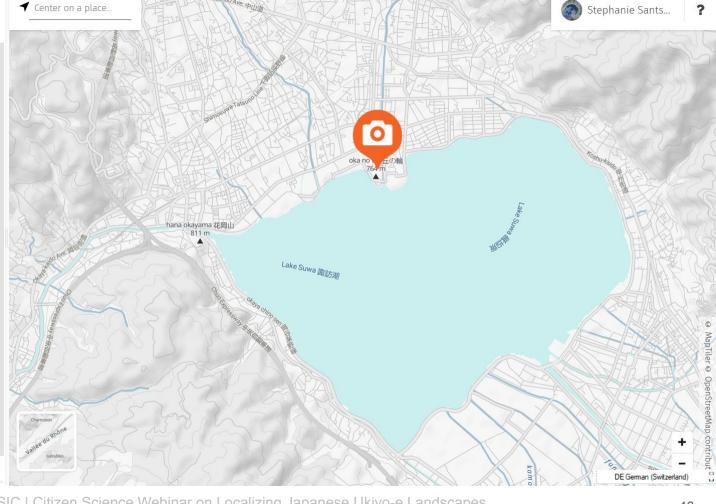


Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei) 1820 - 1842

Owner's ID: JP2564

The position of the marker is: approximate >

Next





Indicate the direction of the photograph

Click on the map to change the direction of the photograph.



Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

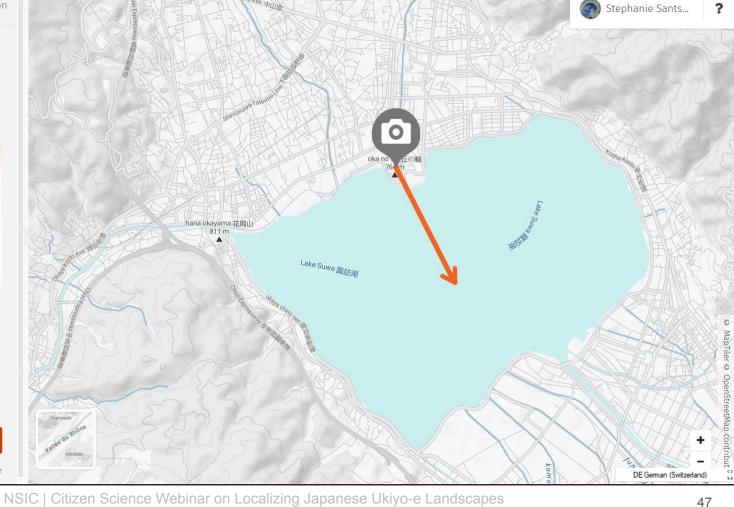
← Previous

Owner's ID: JP2564

The position of the marker is: approximate >



Report an error



Align the image with the virtual globe

Click on at least 6 matching points such as vertices and crossings to validate the photograph's position.



Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

Owner's ID: JP2564



① Report an error

Align the image with the virtual globe

Click on at least 6 matching points such as vertices and crossings to validate the photograph's position.



Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

Owner's ID: JP2564



(!) Report an error

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Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

Owner's ID: JP2564



(!) Report an error

Align the image with the virtual globe

Click on at least 6 matching points such as vertices and crossings to validate the photograph's position.



Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirtysix Views of Mount Fuji (Fugaku sanjurokkei)

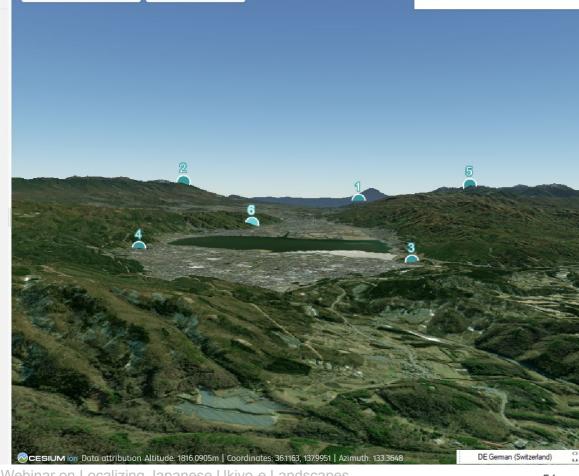
1820 - 1842

Owner's ID: JP2564

Compute position

Finish

(!) Report an error



Remove all points

C Reset 3D view

Align the image with the virtual globe

Click on at least 6 matching points such as vertices and crossings to validate the photograph's position.



Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirty-six Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

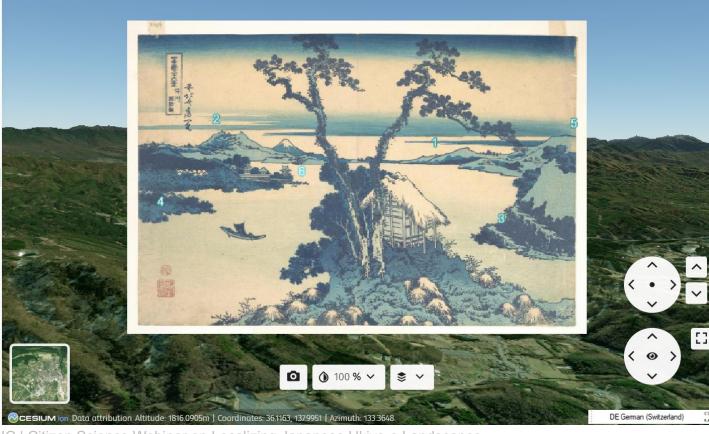
← Previous

Owner's ID: JP2564

Compute position

Finish

① Report an error



Stephanie Sants...

Remove all points

C Reset 3D view

Stephanie Sants...

Bravo!

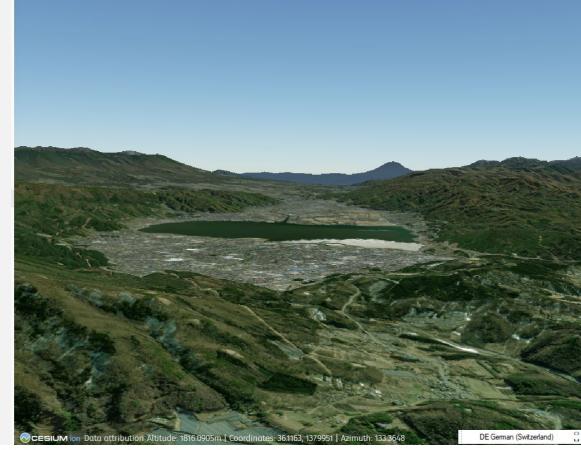
You have successfully done all the steps! Thank you for your great work. Your geolocalisation will be validated by one of our moderator's. You can see the status of the picture in your account.



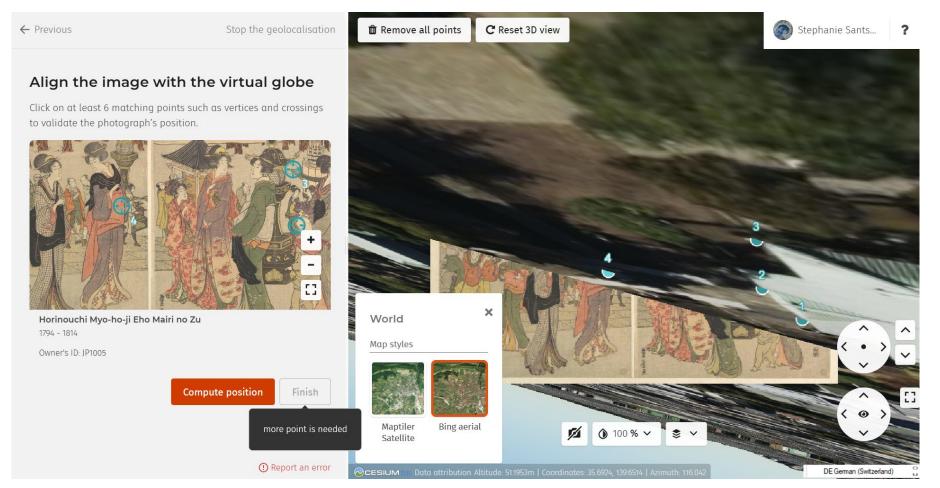
Lake Suwa in Shinano Province (Shinshu Suwako), from the series Thirtysix Views of Mount Fuji (Fugaku sanjurokkei)

1820 - 1842

Owner's ID: JP2564



(!) Report an error



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5. Data Analysis

Analogue Example



Kyoto: The Great Bridge at Sanjō (Taibi, Keishi, Sanjō Ōhashi), from the series Fifty-Three Stations of the Tōkaidō (Tōkaidō gojūsan tsugi)

Utagawa Hiroshige, ca. 1833-34

For those familiar with Kyoto:

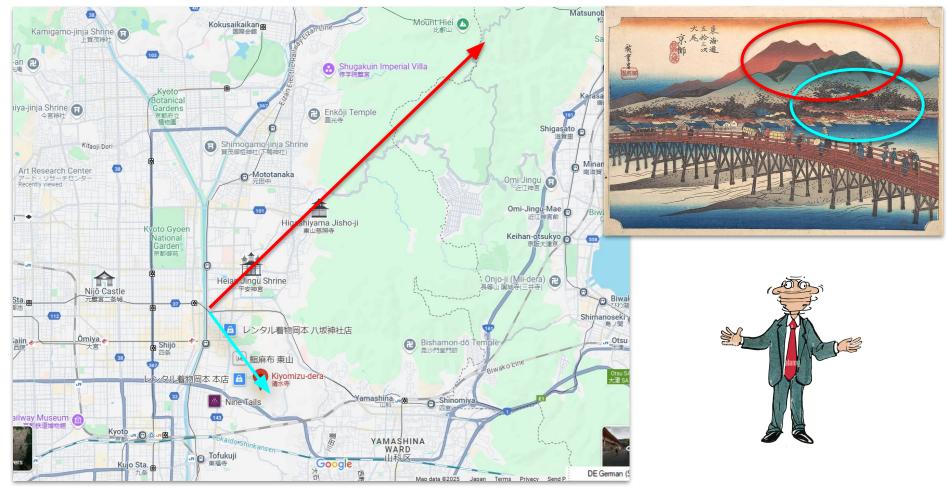
- What is your reaction to the print?
- Where would the viewer have stood?
- Why do you think so?
- Do you notice something unusual?

Please raise your hand using the Zoom Button.





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The PrintLab: A Print and Code Collective

- Develop technical tools for print analysis
- Build a knowledge base for computational art history
- Foster collaboration between researchers, citizens, and institutions

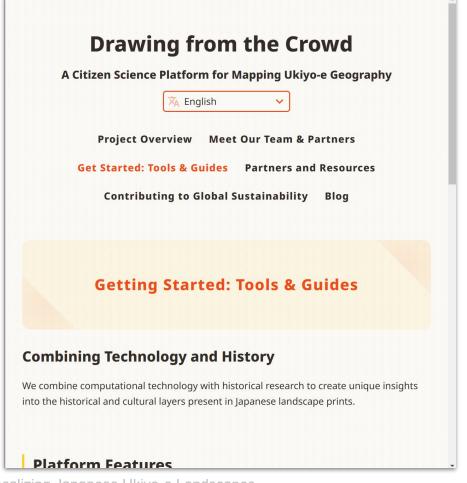


6. Communication

Landscapes.theprintlab.org

Currently under construction, so please don't share widely yet

Here, we will communicate about the project, share insights, link to the geolocalisation processes, etc.



Questions on the Project?

C. Workshop

Introduction: The Crowd

Briefly introduce yourself with name, affiliation, and why you are interested in this topic

→ raise your hand and unmute yourself, or type in chat

C1: Geographical Comparison

Which historical Japanese landscapes have you researched?

What challenges did you face when trying to understand their geography?

Which tools help you to compare past and present?

→ please raise your hand or type in the comments

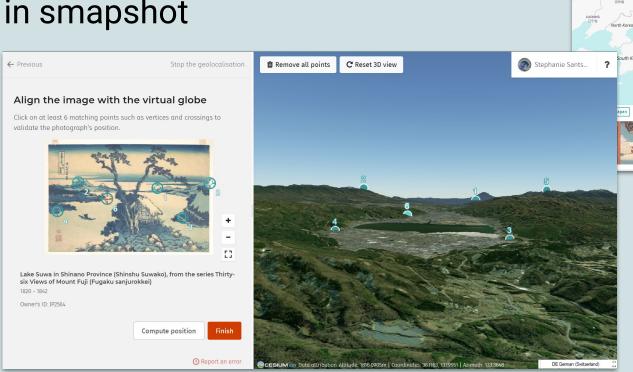
Based on your research experience, would a tool like the proposed georeferencing process change how you research?

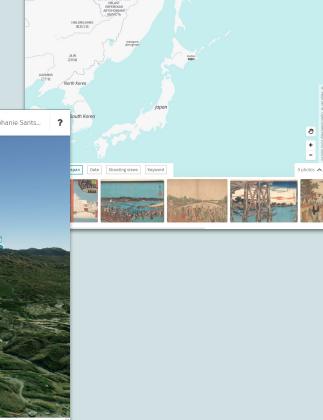
Is it interesting, complicated, wrong, useful?

→ please raise your hand or type in the comments

C2: Technical Implementation / Platform

Georeferencing in smapshot





Discover

Contribute

- How would you determine the viewer's position?
- What features would you use to locate this view?

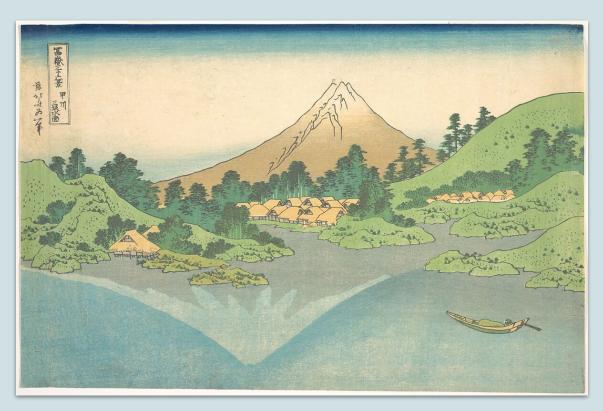


Hiroshige, Nihonbashi: Setting Out at Dawn, The Fifty-three Stations of the Tôkaidô Road, about 1841–44. MFA 06.1790.



Hiroshige, Suruga-cho, One Hundred Famous Views, 1856. Brooklyn Museum 30.1478.8.

What would you do in this case?



→ please raise your hand or type in the comments

C3: Critical Embedding

What research questions could this tool help answer for you? How could this enhance your own research? Where do you see limitations? How would you overcome those?

→ please raise your hand or type in the comments

Consider...

- Historical accuracy
- Technical implementation
- Potential research
- Data management

What would be other ways to compare historical landscape with topography?

→ please raise your hand or type in the comments

Consider...

- Apps to use in-place
- Virtual realities
- Additional sources

Do you have an immediate wish what you would like the platform to be able to do?

→ please raise your hand or type in the comments

C4: Future Collaboration

Are you interested in collaborating going forward? In which capacities?

→ please raise your hand or type in the comments

Examples:

- Researcher
- Citizen scientist
- Teacher
- Tourism agency
- ..

Finally, do you have any unanswered questions?

→ please raise your hand or type in the comments

D. Conclusion

Challenges and Growth

Scale of project

- Short 6 month project duration to kickstart prototype
- Vs. Long-term implementation + funding

Interdisciplinary project team

- Growth of knowledge through sharing explanations across disciplinary boundaries
- Resource requirements to bridge expertises

Speed of computational development (AI, published data)

- Keeping up with latest developments vs. using tools effectively
- Research community important!

A Note on Digital Humanities

- Art Historical Research within Digital Humanities advocates for digitally supported visual studies → using images as data to answer historical research combination
- Images do not represent absolute truth, but art history allows to decode their communication mechanisms

⇒ Let's use texts and images as historical evidence to learn about the past!

Acknowledgements

- The Nippon Foundation Scholars Association, especially James Huffman and Kairi Yamada
- The Nippon Foundation Social Innovators Collaboration, esp. Dr. Himanshu Panday, Dr. Drew Richardson and Hirohito Tsuji
- EPFL Smapshot Team, esp. Prof. Dr. Jens Ingensand and Prof. Dr. Stéphane Lecorney
- Ritsumeikan Art Research Center: Portal Database, ARC-iJAC
- Metropolitan Museum of Art Collections Online
- you!!

Thank you for your kind attention.



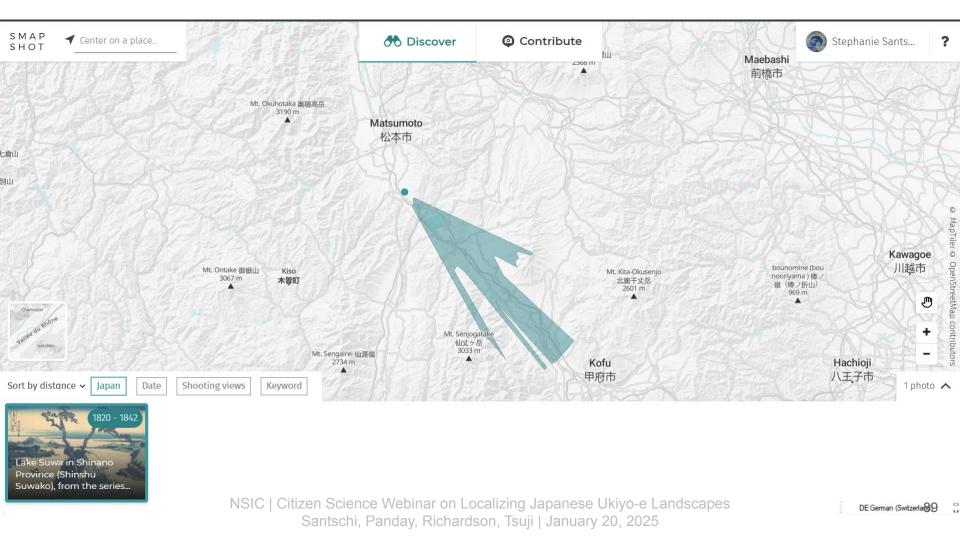
Spare slides below

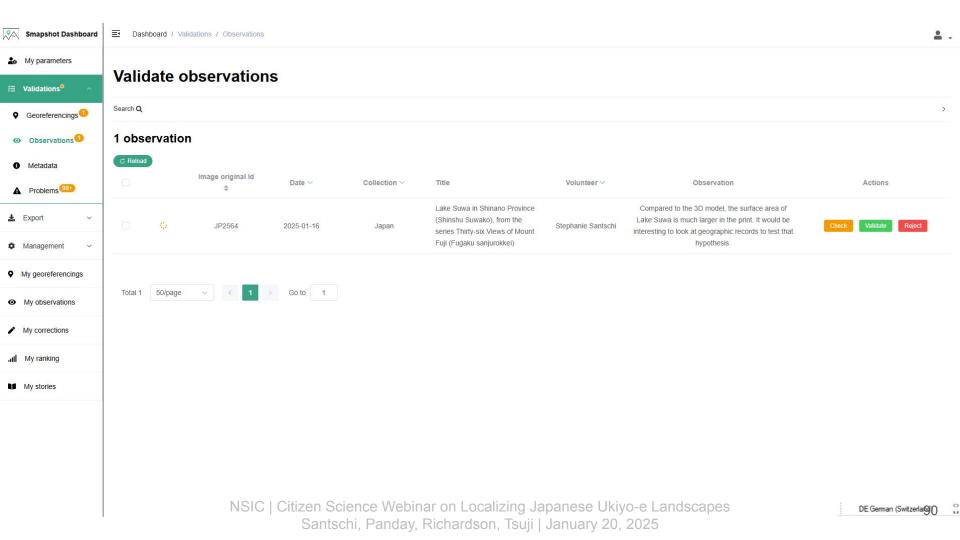
Relevance

- Comparison across different artists and time periods
- Discourses on visual "truth," reality and representation
- Culturally established viewing patterns (utamakura)

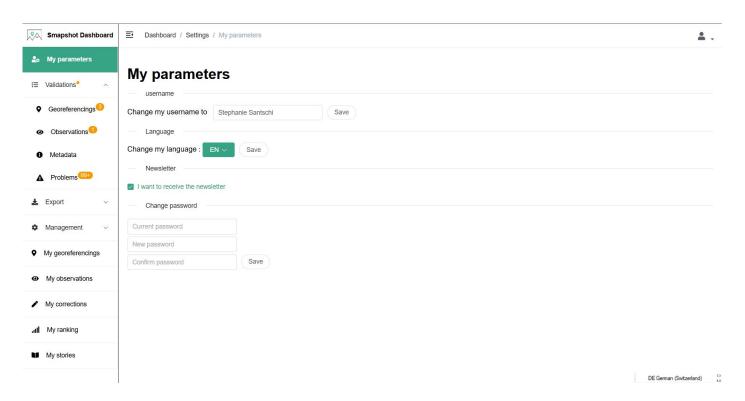


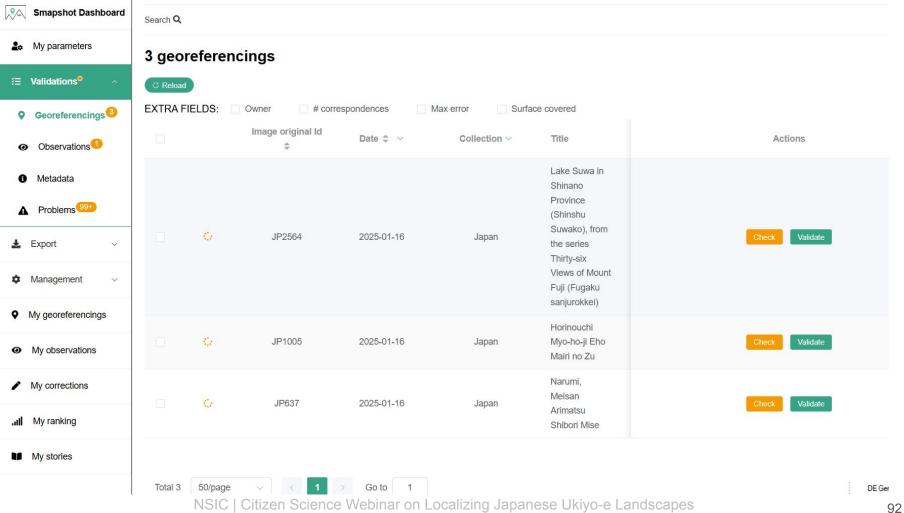
Katsushika Hokusai (1760–1849), Reflection in Lake at Misaka in Kai Province (*Kōshū Misaka suimen*), from the series Thirty-six Views of Mount Fuji (*Fugaku sanjūrokkei*), ca. 1831–1832. MET, JP14.



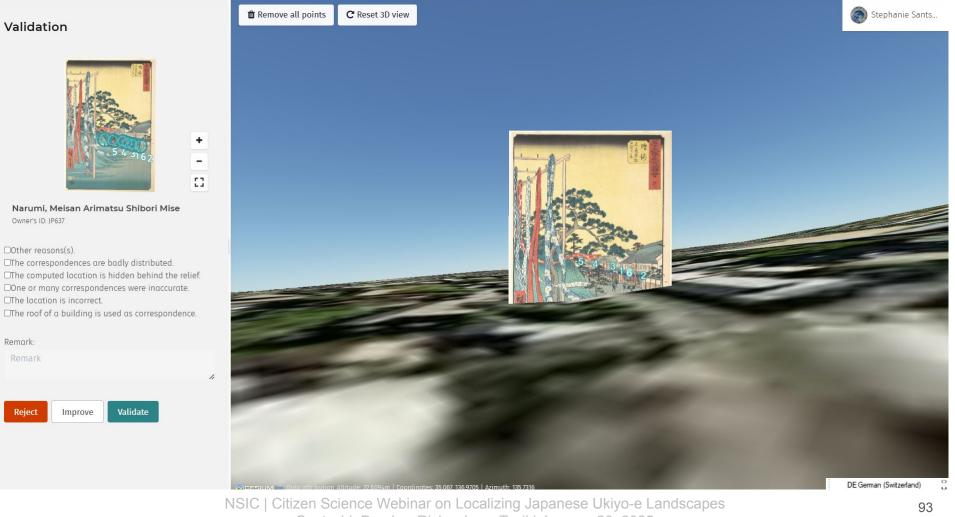


Validations





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Validation

Owner's ID: JP637

Other reasons(s).

Remark:

Reject

The location is incorrect.

The correspondences are badly distributed.

Improve

Validate









Left: Illustration of Okabe from «Compilation of Views of Famous Sights along the Tōkaidō» (東海道名所図会, Tōkaidō meisho zue); text by Akisato Ritō and illustrated by Kitao Masayoshi and Takehara Shunsensai, 1797, vl. I, Waseda University. Middle: Utagawa Hiroshige: «Changing Porters and Horses at Fujieda (藤枝 人馬継立 Fujieda: Jinba Keitatsu)», from the series Fifty-Three Stations of the Tōkaidō (東海道五十三次之内 Tōkaidō gojūsan tsugi no uchi), c.1834, Minneapolis Institute of Art. Right: Utagawa Hiroshige: «Kyoto: The Great Bridge at Sanjō (大尾 京師 三条大橋 Taibi, Keishi, Sanjō Ōhashi), from the series Fifty-Three Stations of the Tōkaidō (東海道五十三次 Tōkaidō gojūsan tsugi), c. 1834, Metropolitan Museum of Art.