

Moving Mountains: Analyzing Spatial Narratives in *Ukiyo-e* through Citizen Science

山を動かす：浮世絵における 空間物語の市民科学的分析

Early Modern Graphic Narratives (*kusazōshi*):

Making the Most of Digital Data

「草双紙ーデジタルデータをどう活かすかー」

18–20 September 2025 / 2025年9月18～20日

Faculty of Asian and Middle Eastern Studies, The University of Cambridge

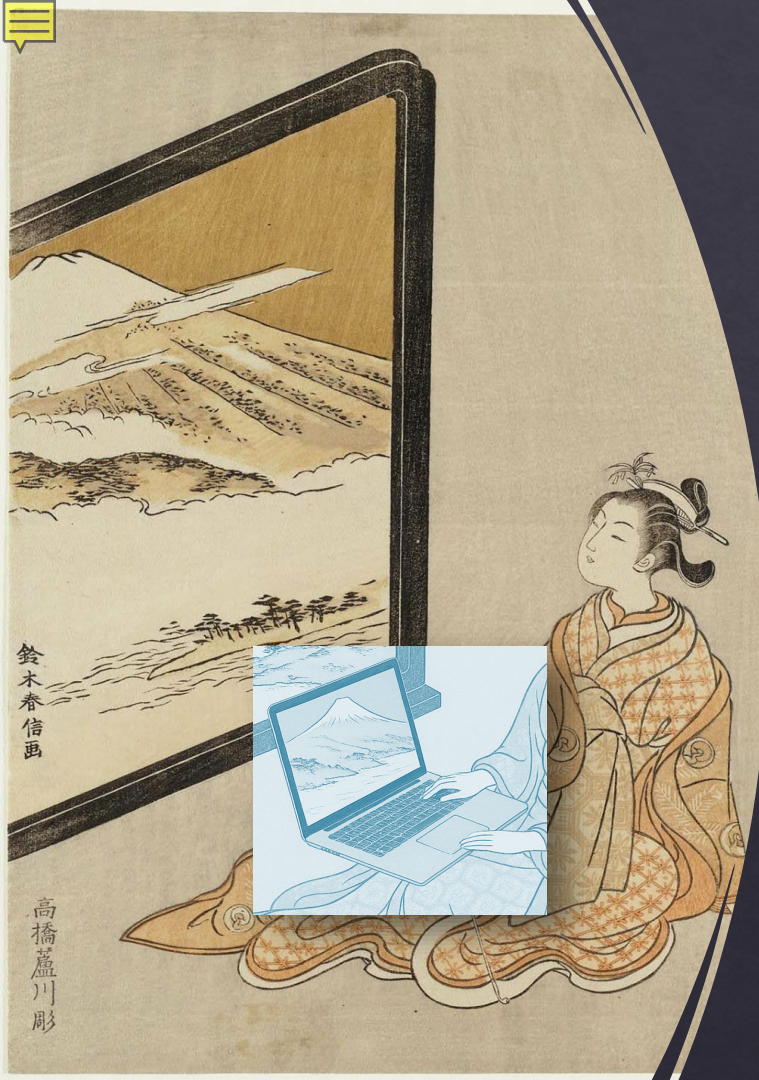
ケンブリッジ大学アジア・中東学部

Stephanie SANTACHI, Postdoctoral Fellow

Chair of East Asian Art History, Universität Zürich

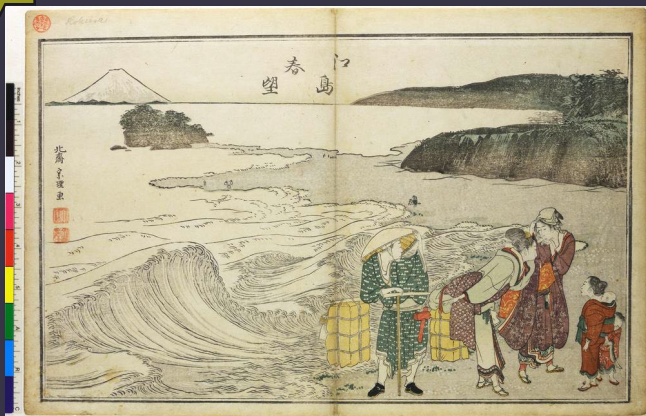
チューリッヒ大学・東洋美術史・サンチ・ステファニー（博士研究員）

スライド翻訳検証：辻博仁



鈴木春信画

高橋蘆川彫



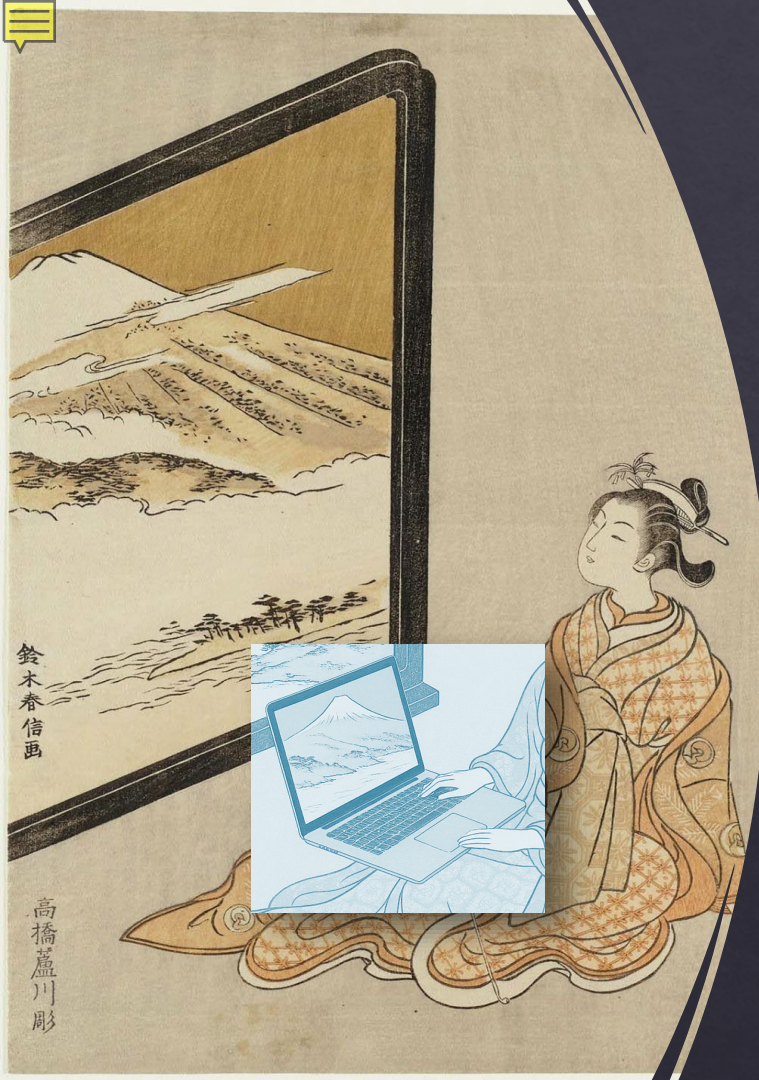
Katsushika Hokusai 葛飾北斎 (1760–1849),
Enoshima shunbo 江ノ島春望 (Spring at Enoshima),
 «Yanagi no ito (Willow-silk)» 『柳の糸』, 1797.
 The British Museum, 1937,0710,0.206.



Katsushika Hokusai 葛飾北斎 (1760–1849).
Enoshima 江ノ島 (desk. title 記述的題名),
 undated 年代不詳,
 Art Institute Chicago, 1939.1125.



Katsushika Hokusai 葛飾北斎 (1760–1849),
 Fujisawa 藤沢,
Tôkaidô gojusan tsugi 東海道五十三次
 (Fifty-three Stations of the Tôkaidô), c. 1806.
 Art Institute Chicago, 1929.504



Moving Mountains: A Citizen Science Analysis of Spatial Narratives in *Ukiyo-e* Using "Drawing from the Crowd" 山を動かす：浮世絵における空間物語の 「Drawing from the Crowd」による 市民科学的分析

Overview

1. Background:
Project & Framework
2. Data and Method
3. Case Study:
Enoshima
4. Broader Impact

概要：

- プロジェクト・
枠組み
- データ・方法
- 事例研究： 「
江ノ島」
- 広範な影響

“Drawing from the Crowd”

- **Prototype Development:** Nippon Foundation Alumni Team (August 2024–January 2025)
 - **Beta Launch:** January 2025
 - **Full Implementation:** UZH Graduate Research Center support (July 2025–June 2026)
 - **Partnership:** Art Research Center, Ritsumeikan University (ARC-iJAC project)
- プロトタイプ開発 : 日本財団同窓生チーム (2024年8月～2025年1月)
 - ベータ版公開 : 2025年1月
 - 完全実装 : UZHグラデュエイト研究センター支援 (2025年7月～2026年6月)
 - 協力関係 : 立命館大学アート・リサーチセンター (ARC-iJAC プロジェクト)



Project team チーム (beta):
Dr. Drew RICHARDSON
ドリュー・リチャードソン 博士,
Dr. Stephanie SANTACHI (PI)
ステファニー・サンチ 博士 (主任研究員)
Hirohito TSUJI 辻博仁
Dr. Himanshu PANDAY
ヒマンシュ・パンデー 博士



Universität
Zürich^{UZH}



Research Question 質問

(How) did *ukiyo-e* print designers balance in-situ observation of real places with artistic conventions and literary traditions?

浮世絵師はいかに直接観察、二次資料、芸術的慣習の間で空間表現を調整し、文学文化と交差する共有された空間的想像力を創出したか？



Katsushika Hokusai 葛飾北斎 (1760–1849).
Enoshima 江ノ島 (descriptive title 記述的題名), undated 年代不詳,
Art Institute Chicago, 1939.1125.

Theoretical Background

理論的背景

Yonemoto's «Spatial Vernacular» + visual culture as historical source

- Methods of spatial knowledge production in Edo-period Japan extended to visual vocabularies
- Visual materials provide complementary evidence to textual sources
- Building beyond utamakura/meisho literary traditions to understand visual spatial imaginaries
- "Significant topography": landscape features arranged for recognition rather than accuracy

ヨネモト氏の「空間言葉」＋歴史資料としての視覚文化

- 江戸時代の空間知識生産方法を視覚的語彙に拡張
- 視覚資料は文字資料を補完する証拠を提供
- 歌枕・名所の文学的伝統を超えた視覚的空間想像力の理解
- 「意味ある地形」：正確性より認識のために配置された風景要素

Literature 出典:

Lefebvre, Henri, und Donald Nicholson-Smith. (2014). *The Production of Space*. Malden, MA: Blackwell.

Nenzi, Laura. (2004). „Cultured Travelers and Consumer Tourists in Edo-Period Sagami.“ *Monumenta Nipponica* 59, no. 3: 285-319.

Yonemoto, Marcia. (2000). „The 'Spatial Vernacular' in Tokugawa Maps.“ *The Journal of Asian Studies* 59, no. 3: 647-66.

Yonemoto, Marcia. (2003). *Mapping Early Modern Japan: Space, Place, and Culture in the Tokugawa Period*. University of California Press.



Significant Topography 意味ある地形

- NO strict linear perspective or topographic accuracy
- Instead: "Significant Topography"
 - features that make places recognizable
 - aimed at composition
- 厳密な線形遠近法・地形的正確性なし
- その代わり：「意味ある地形」
 - 場所を識別可能にする特徴
 - 構図重視

Data データ

Prints:

- **Ritsumeikan ARC Ukiyo-e Portal**
- Selection of ~10,000 landscape selection from 200'000+ entries

Terrain Models:

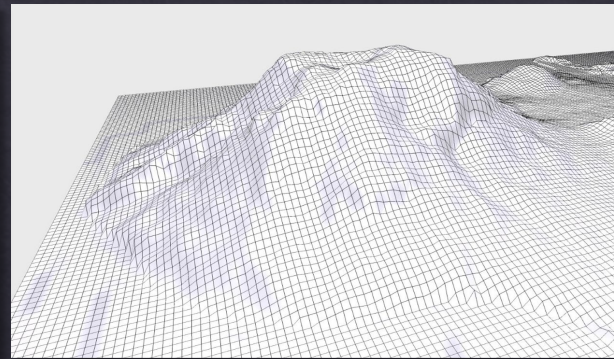
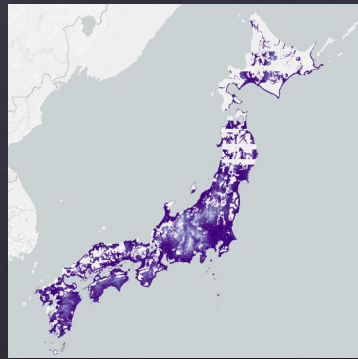
- Japan Geospatial Information Authority
- 5m resolution

版画

- **ARC浮世絵ポータル** (立命館大学)
- 20万点以上のエントリから約1万点の風景作品を選択

地形モデル

- 国土地理院
- 5メートル解像度



Above: Screenshot of the Ukiyo-e Portal Database, Art Research Center, Ritsumeikan University.

Below: Digital Elevation Model, Geospatial Information Authority, Japan.

上：立命館大学アート・リサーチセンター浮世絵ポータルデータベースのスクリーンショット

下：国土地理院デジタル高度モデル



Three-Component Framework 三要素枠組み

Computer Vision

CLIP/SigLIP models for
landscape feature recognition

コンピュータビジョン

CLIP/SigLIPモデルによる風景
特徴認識

Citizen Science

Human expertise for spatial
contextualization via
Snapshot platform

市民科学

Snapshotプラットフォーム経
由の空間文脈化

GIS Integration

Systematic geographical
reference framework

GIS統合

系統的地理参照枠組み

Computer Vision コンピュータビジョン

CLIP/SigLIP models / モデル

- Identify landscape features automatically
- Example: Boats → Seascape classification
- Role: Organizational tool for large datasets

- 風景特徴を自動識別
- 例：船→海景分類
- 役割：大規模データセットの整理ツール



→ **Human expertise handles interpretation**

→ 人間の専門知識が解釈を担当



Feature recognition
in MET examples
MET事例における
特徴認識

Participative Science 参加型科学

Art Historical + Local Expertise

Access:

Beta-Platform via QR-Code

Development:

Snapshot-Lab
(EPFL Lausanne)

Languages:

Japanese and English (planned)

Outreach:

Existing volunteers, academics,
students, media contacts

美術史的・地域的専門知識

アクセス:

QRコード経由の
ベータプラットフォーム

開発:

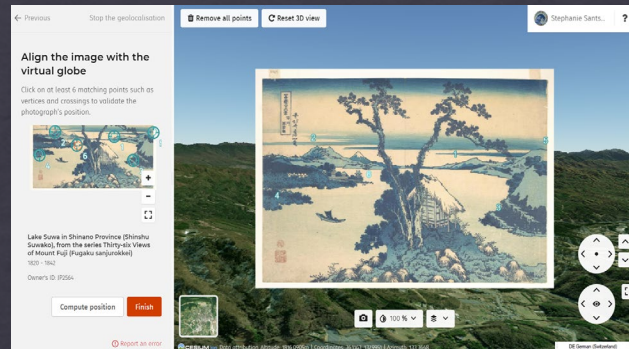
Snapshot ラボ (EPFL ローザンヌ)

言語:

日本語・英語(予定)

アウトリーチ:

既存ボランティア、研究者、学生、メディア接触



Platform-
Prototyp in
Snapshot
(Betaversion)



Snapshot
プラットフォーム
プロトタイプ (ベータ版)



← 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](#)

[Download](#) [Share](#)

[Geolocalise](#)

[Image Details](#) [Observations](#)

データセットから
浮世絵版画を選択



Stephanie Sants...

?

+

-

⌂

48 photos ^



DE German (Switzerland)

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

版画と地図間に基
準点設定
(最低6点)



CESIUM ion Data attribution Altitude: 5505.3322m | Coordinates: 36.145, 138.008 | Azimuth: 137.765

DE German (Switzerland)



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

[Compute position](#)[Finish](#)[Report an error](#)

システムが
視点位置を計算し
空間データを生成



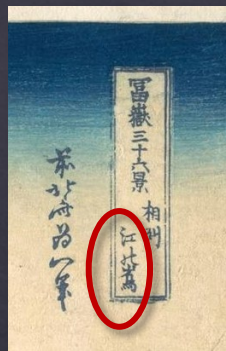
100 %



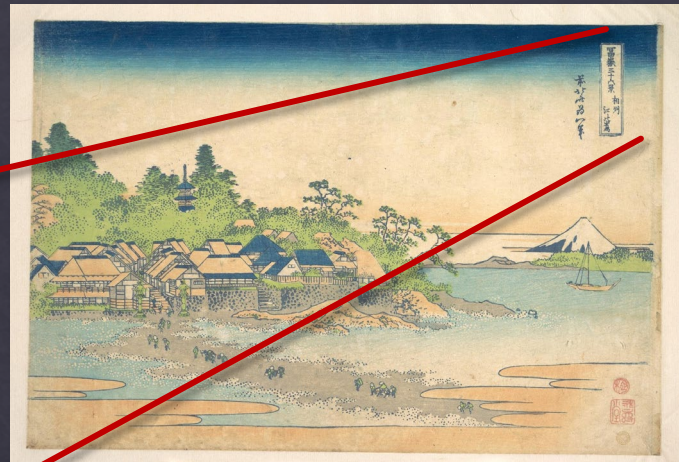
Aggregating Place IDs

場所ID集約

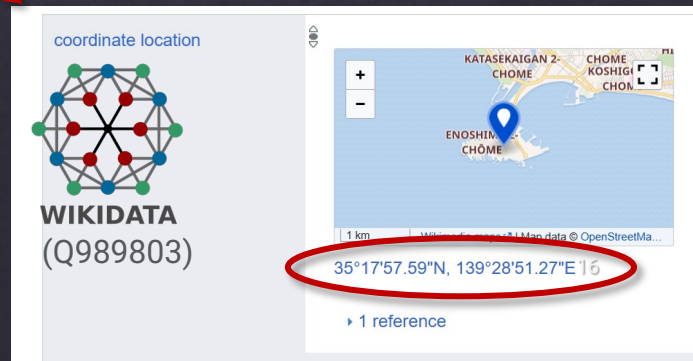
- Automated place name extraction from print titles
- Wikidata linking for geocoordinates
- Approximate placement on Japanese map
- 版画題名からの地名自動抽出
- 地理座標のためのWikidataリンク
- 日本地図上への概略配置



江の島 = Enoshima



Katsushika Hokusai 葛飾北斎 (1760–1849),
Sōshū Enoshima 相州江ノ島 (Enoshima in Sagami
Province), *Fugaku sanjūrokkei*
富嶽三十六景 (36 Views of Mt. Fuji), 1830–32.
Metropolitan Museum of Art, JP2559.

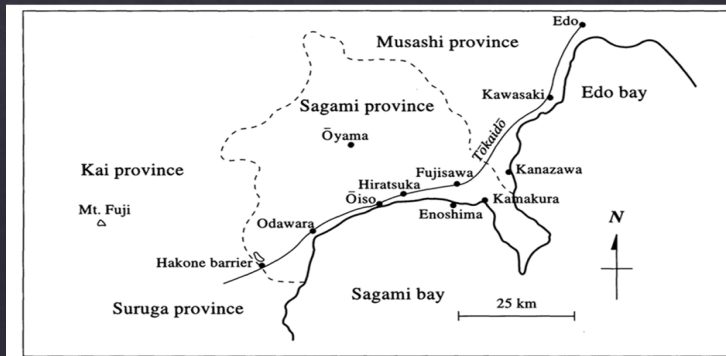
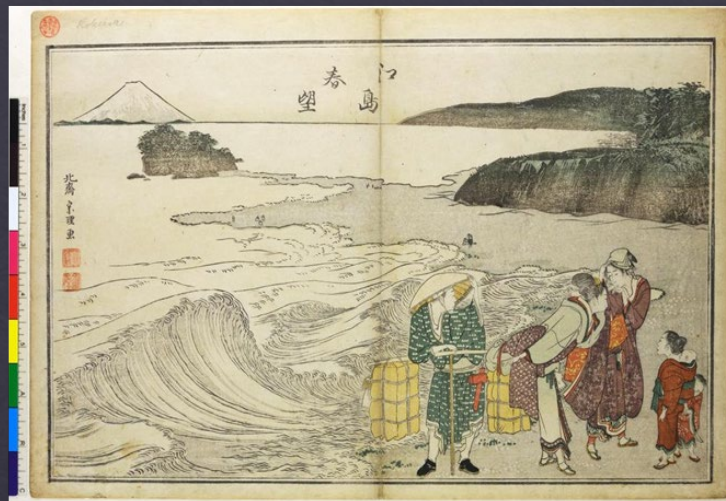


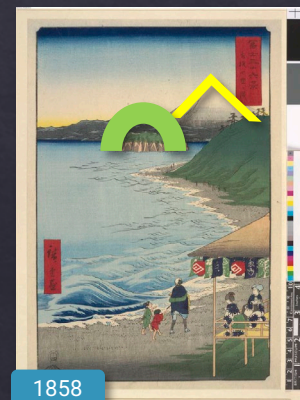
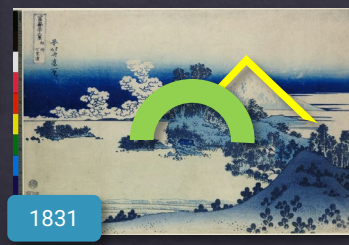
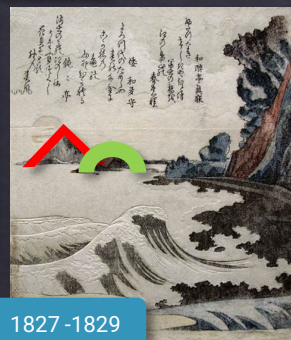
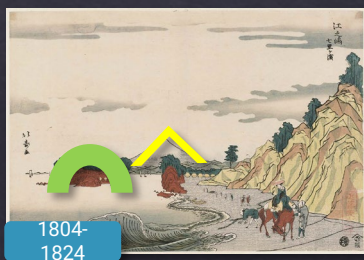
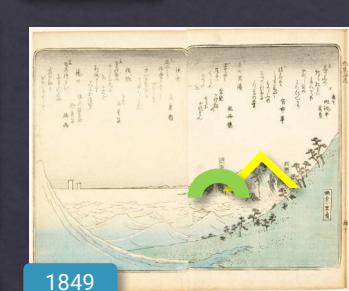
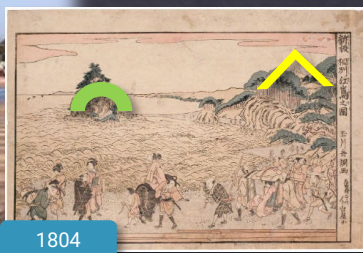
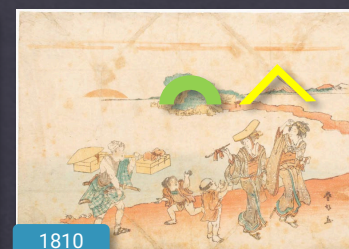
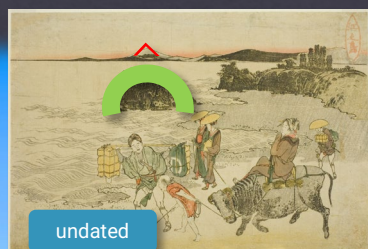
Konstantina Liagkou, John Pavlopoulos, and Ewa Machotka. 2022. «A Study of Distant Viewing of ukiyo-e prints.» *In Proceedings of the Thirteenth Language Resources and Evaluation Conference*, 5879–5888, Marseille, France. European Language Resources Association.

Enoshima peninsula 江ノ島半島



Above 上 : Aerial view of Enoshima 江ノ島の航空写真.
Top right 右上: Katsushika Hokusai 葛飾北斎 (1760–1849), *Enoshima shunbō* 江ノ島春望 (Spring in Enoshima), *Yanagi no ito* 『柳の糸』 (Willow-silk), 1797.
The British Museum, 1937,0710,0.206.
Right below 右下: Enoshima in Sagami Province, from: Nenzi, Laura. „Cultured Travelers and Consumer Tourists in Edo-Period Sagami.“ *Monumenta Nipponica* 59, no. 3 (2004): 285–319, S. 287.





Initial Findings and Textual Evidence

最初の知見・文献的証拠

「此絵は富士の形かたちのその所によりて異なる事を示す 或は七里ヶ浜にて見るかたち 又は佃島より眺る景など 総て一やうならざるを著あらはし 山水を習ふ者に便す」

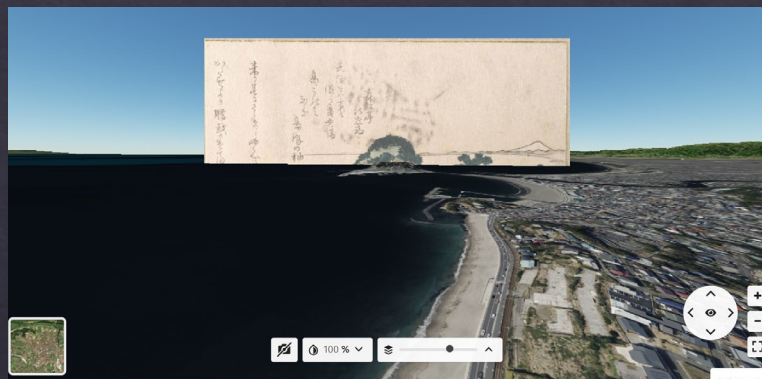
"These pictures show the shape of Fuji as it differs depending on the place... the shape as seen from the beach at Shichirigahama, or the view as seen from Tsukuda Island, etc. showing that it is not all the same, and is useful for those learning landscape [painting]"

Niishimura Yohachi's advertisement for Hokusai's series *Fugaku sanjūrokkei* 富嶽三十六景 (36 Views of Mount Fuji)
西村与八による北斎の『富嶽三十六景』の広告

In *Shohon jitate* 『正本製』 (Stories in Promptbook Form),
Illustrator: Utagawa Kunisada 歌川国貞画,
publisher: Ryūtei Tanehiko 柳亭種彦版, 1831.



Katsushika Hokusai 葛飾北斎 (1760–1849), *Sōshū Shichirigahama* 相州七里ヶ浜, (Shichirigahama in Sagami Province), *Fugaku sanjūrokkei* 富嶽三十六景 (36 Views of Mt. Fuji). Publisher: Nishimuraya Yohachi (Eijudō), probably early 1831.
出版：西村屋与八（永寿堂）、推定1831年初
(Keyes & Morse, 2015).
The British Museum, 1907,0531,0.144.

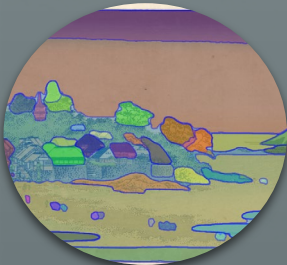


Ryūryūkyō Shinsai 柳々居辰斎 (active ca. 1799–1823 年頃活動),
Turtle Island and Fuji (surimono), 亀島と富士 (摺物), 19th century 世紀.
Metropolitan Museum of Art, JP1950.



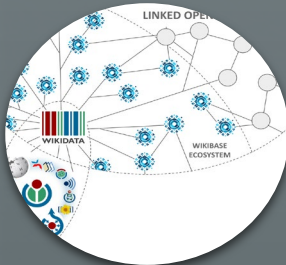
1. Aggregate 収集

Download Druck-Digitalisate + Metadaten
版画デジタル化・メタデータダウンロード
→ Data acquisition
データ取得



2. Filter フィルター

Computer Vision zu Landschaftsmerkmalen
風景特徴のコンピュータビジョン
→ Narrowing dataset
データセットの絞り込み



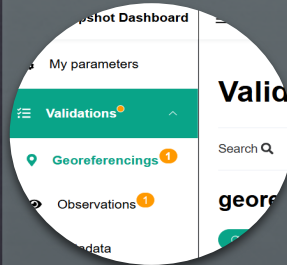
3. Enrich metadata メタデータ拡張Ⅰ

Reference data 参照データ (Wikidata、GeoID)
→ System integration
システム統合



4. Enrich metadata Ⅱ メタデータ拡張Ⅱ

Geographic localization through Citizen Scientists
市民科学者による地理的位置特定
→ «Human in the Loop»



5. Verifiy 検証

Review, authorization and publication
査読・承認・公開
→ Quality control
品質管理



6. Contextualize 文脈化

How/where does the illustration match or deviate from topography?
図像は地形とどこで一致・逸脱するか?
→ Qualitative research
質的研究

Computer Vision + metadata aggregation
コンピュータビジョン・メタデータ集約

Citizen Science
市民科学

GIS integration
GIS統合



Implications for *Kusazōshi* Studies:

草双紙研究への示唆

- Quantitative approaches to cultural geography in literature
- Cross-media spatial vocabulary analysis
- Text-image relationship systematic analysis
- "Significant topography" patterns in illustrated books
- 文学における文化地理学への定量的アプローチ
- メディア横断空間語彙分析
- テキスト・画像関係の体系的分析
- 絵本における「意味ある地形」パターン



Thank you!

ご清聴ありがとうございました!

The organisers & supporters, and especially 主催者・支援者、特に

Nippon Foundation 日本財団 (Social Innovator team: Himanshu Panday, Hirohito Tsuji, Drew Richardson);

The Nippon Foundation Scholars Association (Kairi Yamada, James Huffman)

Snapshot, EPFL (Jens Ingensand, Stéphane Lecorney)

University of Zurich (GRC, Ewa Machotka)

Contact 連絡: stephanie.santschi@khist.uzh.ch

Questions welcome - ご質問をお待ちしております



Access to
Snapshot (Beta)
Snapshot
アクセス (ベータ版)



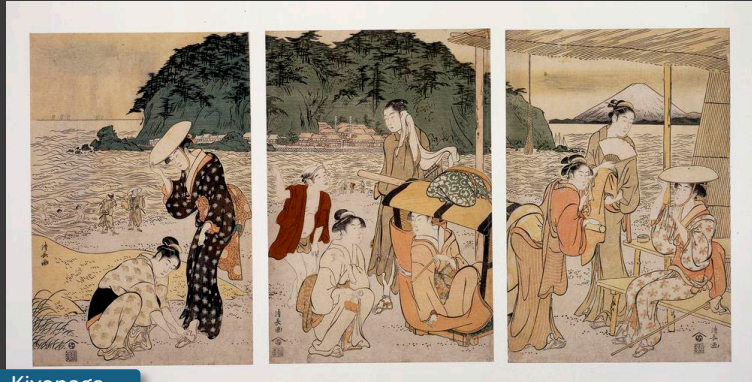
Feature
recognition in
MET example
MET事例における
特徴認識



The project ‘Drawing from the Crowd’ (initiated by four Nippon Foundation scholarship alumni, August 2024–January 2025) integrates citizen science and machine learning to analyse spatial representation in early-modern Japanese visual culture. Addressing a fundamental question in Japanese art history, namely, how and to what extent illustrators constructed narrative space through direct observation or relied on secondary sources and artistic-literary conventions to create a shared spatial imaginary, this experimental six-month project focused on developing and testing computational methods to analyse patterns and processes of observation in *ukeijo-e* (Tokugawa-period Japanese woodblock prints) landscapes.

This presentation introduces its digital workflow prototype which combines citizen science, artificial intelligence, and geographical information systems (GIS) in a mixed micro-macro history approach. Whereas distant reading enables clustering of large datasets to visualise trends and patterns across schools, object types or time periods, citizen scientists contribute close readings to the project’s GIS system through spatial observations and comments. They do so in selected *ukeijo-e* case studies, such as comparing Mt. Fuji’s changing visual placement in Enoshima shore views against a topological elevation model of that area. Building on these contextualised case studies, the discussion expands to implications of printed visual and textual data for refining topological understanding, particularly in cases where illustrators balanced artistic and poetic conventions with geographical realities. This analysis, relevant to *ukeijo-e* and *kusazōshi* studies, reveals how such materials depended on and furthered the shared spatial imaginary of their early-modern readers. The project’s GIS-enhanced digital humanities approach establishes communally generated geographic observations as key evidence for understanding the spatial narratives of early-modern Japanese print culture.

Torii School



Kiyonaga



Kiyonaga



Kiyonaga

Ippitsusai Bunchô Tradition



Tamagawa Shûchô

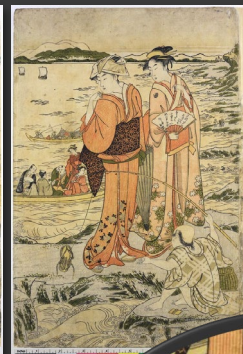
Kitagawa School



Utamaro



Utamaro



Utamaro





Shunsho

Katsukawa School



Hokusai



Hokusai



Hokusai



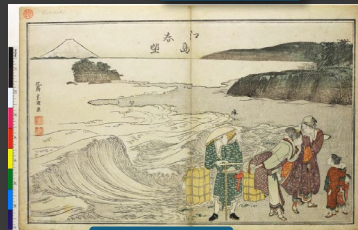
Hokkei



Shunko II (Shunsen)



Shunko II (Shunsen)

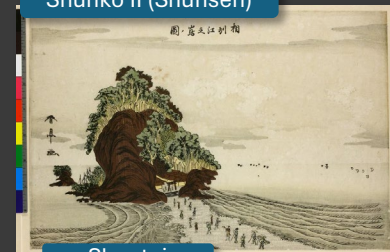


Hokusai



Hokusai

Hokusai School



Shuntei



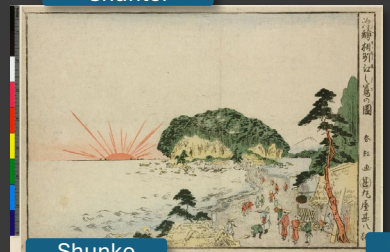
Shuntei



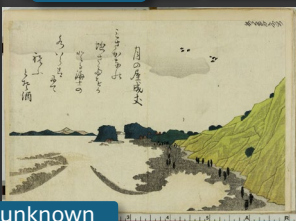
Hokusai



Hokkei



Shunko



unknown



Hokusai

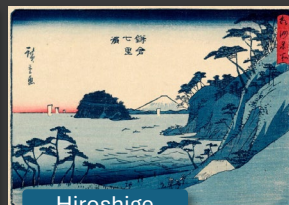


Hokuju

Most of Digital Data (Cambridge University) | Santschi | 20 Sept.



Hiroshige



Hiroshige



Hiroshige



Hiroshige



Hiroshige



Hiroshige



Hisakuni



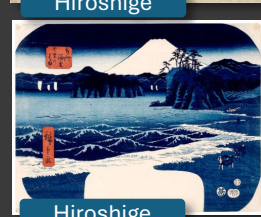
Hiroshige II



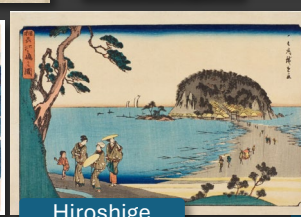
Hiroshige



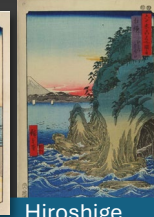
Hiroshige



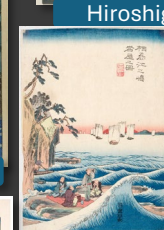
Hiroshige



Hiroshige



Hiroshige



Hiroshige



Hiroshige



Sadatora



Hiroshige II



Toyokuni II



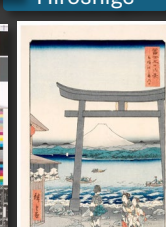
Hiroshige



Hiroshige



Hiroshige



Hiroshige



Hiroshige

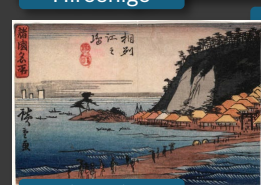
Utagawa School



Kuniyoshi



Kuniyoshi



Hiroshige



Hiroshige



Hiroshige



Kuniyoshi



Kuniyoshi

Most of Digital Data (Cambridge
contains | Santschi | 20 Sept. 202



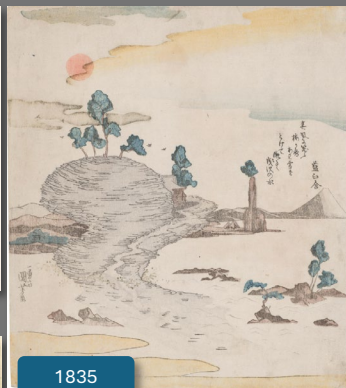
1770-
1820s



c.1785



1830-
1832

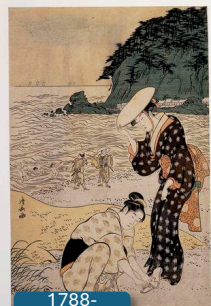


1835



1840-42

Land-bridge views



1788-
1789



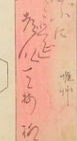
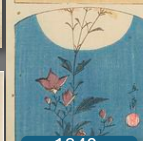
1834



1859



1832-
1855



1840-
1853



1808

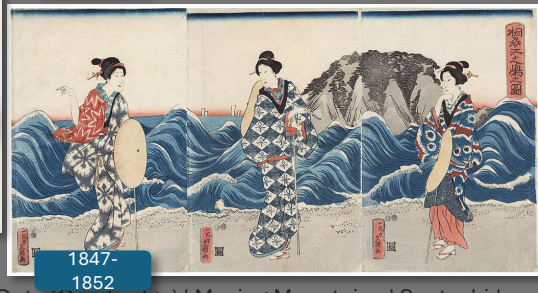
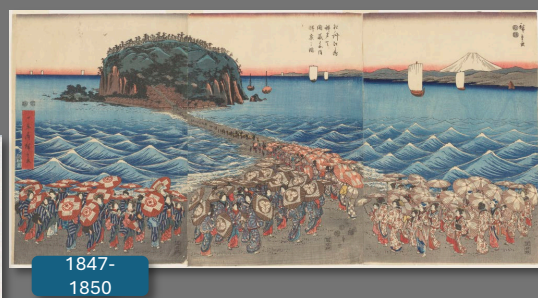


1847-
1850

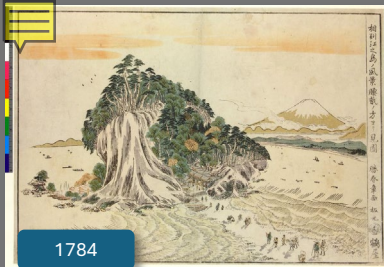


Reverse-side Views





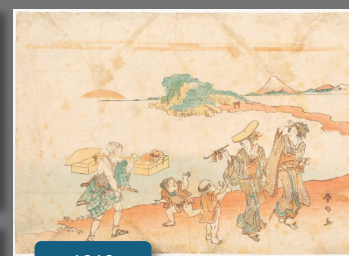
Wave Views



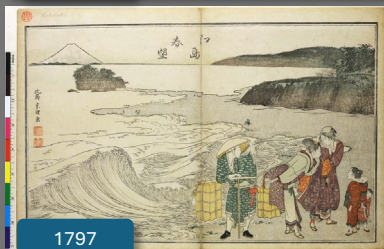
1784



undated



1810



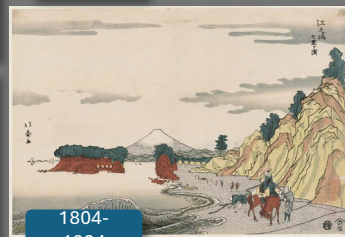
1797



1794-98



1790s-
1820s



1804-
1824



1804



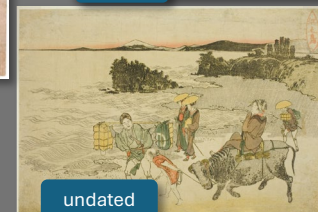
1804



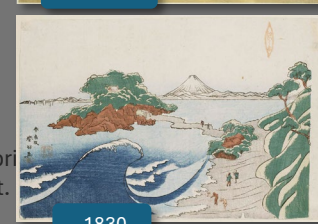
1806

Staffed Shore Views

Lost of Digital Data (Cambr
ntains | Santschi | 20 Sept.



undated



-1830



1858



1848-
1852



1847-
1852



1860



c. 1860



Minimally or Unstaffed Shore Views



1796



1804



1843-
1847



1827
-
1829



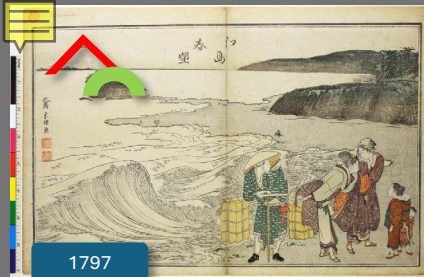
1831



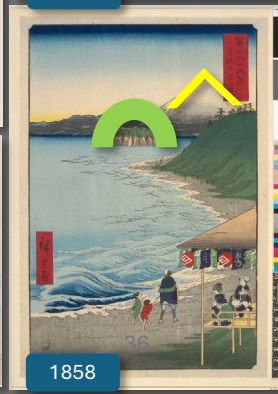
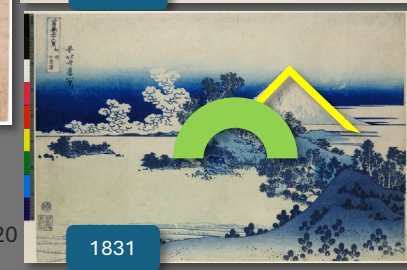
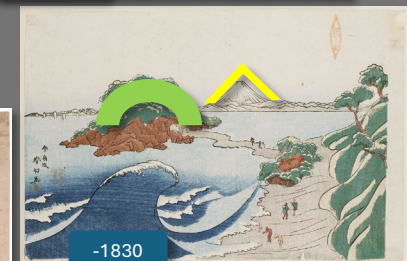
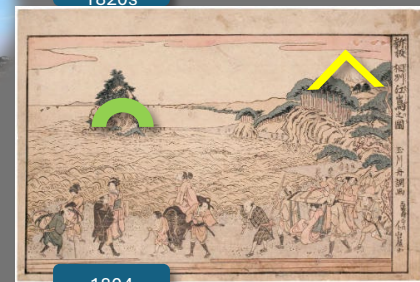
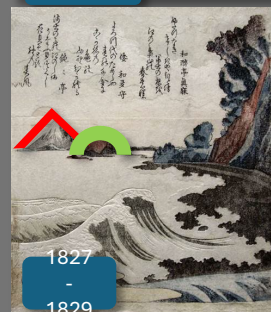
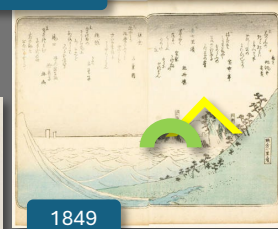
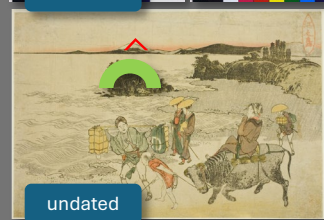
1832



1849



Shore Views



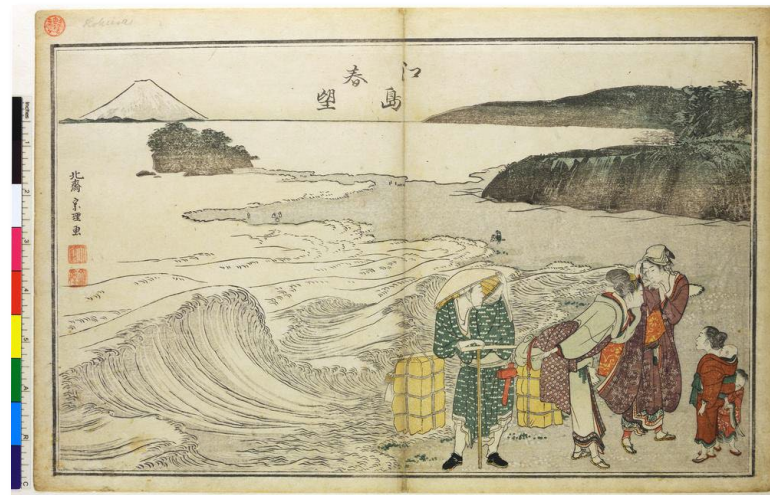


Shiba Kōkan (1747–1818), Shichirigahama Beach at Kamakura in the Sagami Province, 1796, two-fold folding screen converted from a large votive tablet (ema) at Atago shrine, Kobe City Museum.

The text above, written by Ota Nanpo 大田南畝 and Nakai (Tôdô) Keiyoshi 中井 (董堂) 敬義, states that it had been removed from Atago Shrine 愛宕神社 before Bunka 6 (1809), and entered the hands of calligrapher/publisher Seizan-do 青山堂 (Aoyama Seikichi)

“Hokusai’s printed spring view of a beach, with Mt Fuji seen in the distance past the island of Enoshima, is surely based on Kōkan’s painting of the same subject that was on public view at the Atago shrine, Edo, from the previous year (cat. 15).”

Clark 2017 / Hokusai: Beyond the Great Wave, p.17.



Katsushika Hokusai (1760–1849), *Enoshima shunbo* 江ノ島春望 (Spring at Enoshima), illustration from the illustrated *kyōka*-verse book 'Yanagi no ito' (Willow-silk), 1797.

Teil II: Workshop

Testen der Plattform (Beta)

Platform testing (Beta)

Gesamte Anleitung
verfügbar unter:



Anleitung
(in deutscher Sprache)

Full instructions
available at:



Instruction
(in English language)

Semantics

Terms that integrate the viewer into the act of sensemaking:

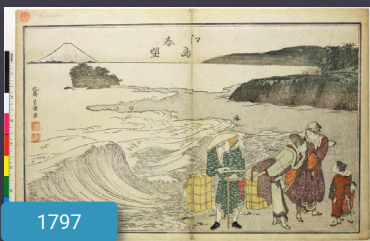
景	kei	view
真景	shinkei	true view
景色	keshiki	scenery ('sense of view ')
風景	fûkei	sight ('styled view ')
光景	kôkei	spectacle ('lit view ')
鏡	kagami	looking-glass, mirror, 'reproduce faithfully'
鑑 (鑒)	kagami	model, pattern, exemplar
名所	meisho	place of historical-cultural interest
眺め	nagame	prospect, outlook

Terms that refer to the creative process:

写生	shasei	drawing from nature, portrayal
----	--------	--------------------------------

Terms that refer to the depicted elements:

山水	sansui	mountain-and-water (pictures)
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Wave Views



Hisakuni



Hiroshige II



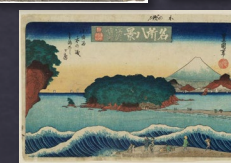
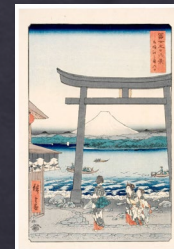
Sadatora



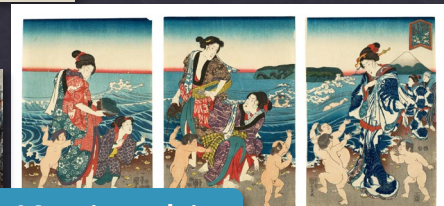
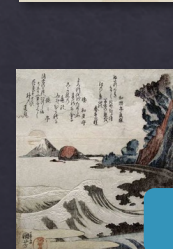
Utagawa School



Hiroshige

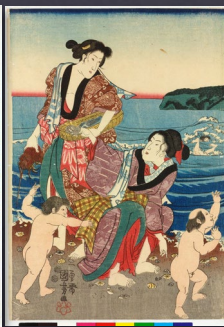
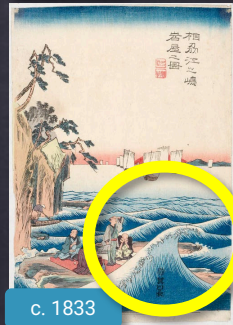
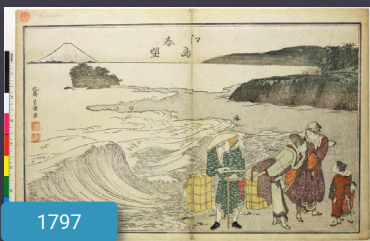


Toyokuni II

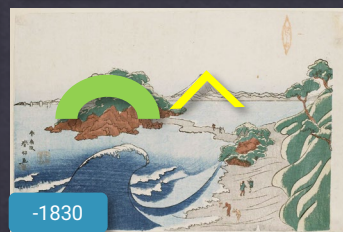
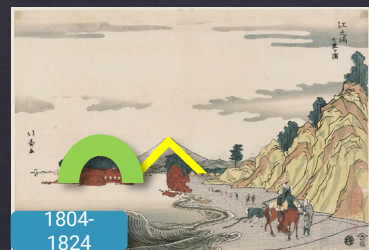
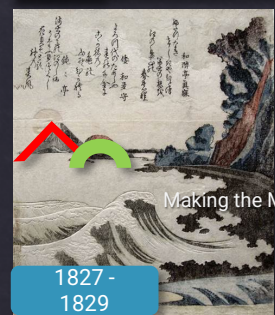
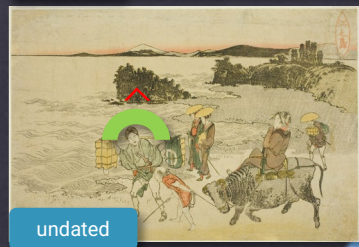


Kuniyoshi





Wave Views



Making the Most of Digital Data (Cambridge) | Moving Mountains | Santschi | 20 Sept. 2025

19. Japanologentag | Sektion 03 (luR) | Drawing from the Crowd | Santschi | 20. Aug. 2025