可用於地景紀錄的開放儲存庫

Open Repositories for Landscape Documentations

「臺南四百，擱來咧？」論壇
歷史場域與平台 場次

2023-06-04

莊庭瑞 Tyng-Ruey Chuang
trc@iis.sinica.edu.tw

資訊科學研究所・資訊科技創新研究中心・人文社會科學研究中心（地理資訊科學研究專題中心）
中央研究院 Academia Sinica

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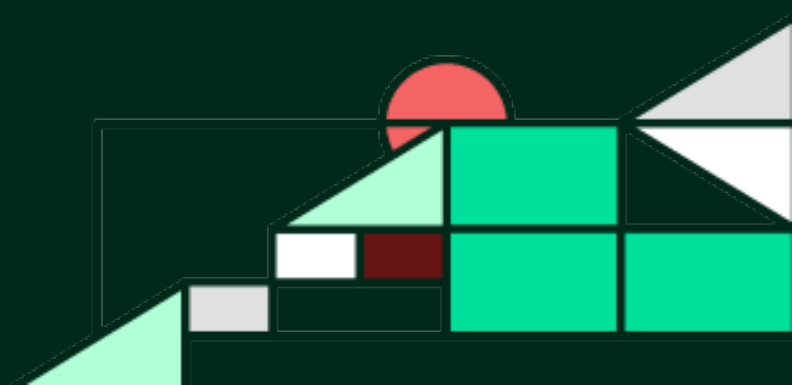
#抗疫藍儒

BORN
1849
THOMAS BARCLAY
DIED
1935

研究資料寄存所 *depositar*

https://data.depositar.io/



眾人皆可使用的開放儲存庫
An Open Repository for All

- 「研究資料寄存所」 (depositar) 功能簡介
- 文化與自然的地景紀錄可視為研究資料
  - “as open as possible, as closed as necessary”
    「盡可能都開放，視需要再保留」
  - 研究資料的 FAIR 原則：
    - Findable, Accessible, Interoperable, Reusable
      可被找到、可被取用、可相互操作、可再次使用

一份在研究資料寄存所上的資料集

https://data.depositar.io/en/dataset/coral-reef-sesoko

要點 highlight

- 關於資料集與專案的長段落描述
- （寄存的）資料 data
  （外部的）資源 resources
  以及關於他們的長段落描述
- 標籤 (tags) 以及 Wikidata 關鍵字 (keywords)
- 基本資訊 Basic information
- 時空資訊 Spatio-temporal information
- 管理資訊 Management information
- 資料授權條款 Licenses
- 資料引用格式 Citation snippets
- 資料取用端點 Data endpoints
  - JSON-API
  - RDF 串例式

Coral Reef Soundscapes off Sesoko Island, Okinawa, Japan

Followers

0

Project

Ocean Biodiversity Listening Project

Project Website The ocean is full of sounds that are generated from geophysical events, marine animals, and human activities. By using a hydrophone (a microphone for underwater... read more

Dataset | Topics | Activity Stream | History

Coral Reef Soundscapes off Sesoko Island, Okinawa, Japan

This dataset is an archive of audio data of shallow-water and upper-mesophotic coral reefs off Sesoko Island, Okinawa, Japan. Python codes to visualize the audio data were also provided in a notebook based on Google Colab.

Recording Locations

Three long-term recording sites were established since May 2017. Site A (N26.635° E127.865°) is located on the southeast coast of Sesoko Island and in front of the Sesoko Station of the University of the Ryukyus. The water depth is 1.5 m. Site B (N26.665° E127.869°) is located at the bottom of a reef slope on the north of Sesoko Island and the west of Toguchi Port. The water depth is 20 m. Site C (N26.670° E127.866°) is located on a nearly flat plateau to the north of Sesoko Island and the west of Toguchi Port. The water depth is 40 m.

Acoustic Recorders

AUSOMS-mini stereo recorders (AquaSound, Kobe, Japan) were used to collect underwater sounds. From May 2017 to July 2018, six AUSOMS-mini recorders were used: 14-0106, 14-0107, 15-0106, 15-0107, 15-0109, 15-0110.

Configuration of Audio Recording

(1) Duty Cycle: continuous. (2) Sampling Rate: 44.1kHz. (3) Channels: 2. (4) File Format: MP3 (128 kbps). (5) Audio Gain: High. (6) High Pass Filter: Off.

Field Deployment

At each recording site, one AUSOMS-mini stereo recorder was fixed to a cement

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Cite as Beta

American Psych…

Tzu-Hao Lin, Tomonari Akamatsu, Frederic Sinniger, Saki Harii. (2021). *Coral Reef Soundscapes off Sesoko Island, Okinawa, Japan* (Version 2021-01-09T09:11:31.023608) [Data set]. Retrieved from https://data.depositar.io/en/dataset/coral-reef-sesoko

Cut to clipboard

Deployment and recovery of recorders were conducted by divers.

Data Processing

Audio recordings generated by AUSOMS-mini recorders were saved in MP3 format. Each MP3 is about 8-hour long and do not have a time stamp on the file name. To facilitate data management, we segmented the 8-hour long MP3 into WAV files of 5-min duration.

We used the LTSA_gui to generate long-term spectrograms (LTS) and save the LTS in mat files. Each mat file contains median-based LTS and mean-based LTS. Median-based LTS was obtained by measuring median power spectral densities within each 5-min segment. Mean-based LTS was obtained by measuring mean power spectral densities within each 5-min segment.

Associated Publication

Tzu-Hao Lin, Tomonari Akamatsu, Frederic Sinniger, Saki Harii (2020) Exploring coral reef biodiversity via underwater soundscapes. Biological Conservation, 253: 108901.

Data and Resources

Audio data — Explore

A link to a shared Drive folder of underwater recordings (WAV) and long-term...

Long-term spectrogram of Site A — Explore

A mat file contains the median- and mean-based long-term spectrograms.

Long-term spectrogram of Site B — Explore

A mat file contains the median- and mean-based long-term spectrograms.

Long-term spectrogram of Site C — Explore

A mat file contains the median- and mean-based long-term spectrograms.

Map tiles & Data by OpenStreetMap, under CC BY-SA.

Other Access

The information on this page (the dataset metadata) is also available in these formats:

</>JSON-API

RDF serializations based on DCAT 2: Beta

</>JSON-LD | </>Turtle | </>XML

via the CKAN API

Tags

Acoustic diversity | Acoustic habitat | Coral reef | Mesophotic corals | Noise | Ocean sound | Remote sensing | Underwater soundscape

Wikidata Keywords

soundscape | coral reef

Basic Information

Data Type	• Source code • Audiovisual data • Scientific and statistical data formats
Language	English (eng)

Spatio-temporal Information

Temporal Resolution	Daily
Start Time	2017-05
End Time	2018-07
Spatial Coverage	show more
X.min	127.8553390572779
X.max	127.88097380893306
Y.min	26.630362980584657
Y.max	26.68047930832328

Management Information

Author	Tzu-Hao Lin, Tomonari Akamatsu, Frederic Sinniger, Saki Harii
Contact Person	Tzu-Hao Lin

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其他存取方式

此頁面上的資訊 (資料集之後設資料) 也提供以下格式：

</>JSON-API

RDF 串列化輸出 (修改自 DCAT 2)： Beta

</>JSON-LD | </>Turtle | </>XML

經由 CKAN API

標籤

Acoustic diversity | Acoustic habitat | Coral reef | Mesophotic corals | Noise | Ocean sound | Remote sensing | Underwater soundscape

Wikidata 關鍵字

聲景 | 珊瑚礁

基本資訊

資料類型	• 原始碼 • 影音資料 • 科學與統計資料
語言	英文 (eng)

時空資訊

時間解析度	日
起始時間	2017-05
結束時間	2018-07
空間範圍	顯示更多
空間範圍.X.min	127.8553390572779
空間範圍.X.max	127.88097380893306
空間範圍.Y.min	26.630362980584657
空間範圍.Y.max	26.68047930832328

管理資訊

產製者	Tzu-Hao Lin, Tomonari Akamatsu, Frederic Sinniger, Saki Harii
聯絡人	Tzu-Hao Lin

Biological Conservation 253 (2021) 108901

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Exploring coral reef biodiversity via underwater soundscapes

Tzu-Hao Lin [a,*], Tomonari Akamatsu [b,**], Frederic Sinniger [c], Saki Harii [c]

[a] Biodiversity Research Center, Academia Sinica, Taiwan
[b] The Ocean Policy Research Institute, The Sasakawa Peace Foundation, Japan
[c] Tropical Biosphere Research Center, University of Ryukyus, Japan

ARTICLE INFO

Keywords:
Ocean sound
Mesophotic corals
Remote sensing
Noise
Acoustic habitat
Acoustic diversity

ABSTRACT

Information on biodiversity is essential to evaluate the ecological status of coral reefs. Sounds produced by reef-associated organisms have been used as a biodiversity indicator. However, the interference from abiotic sounds and the lack of a comprehensive audio library have impeded effective evaluation. This study investigated the application of underwater soundscapes as a remote-sensing method to detect biological and anthropogenic activities. Using techniques including the visualization of long-duration recordings, source separation, and clustering, soundscapes were separated into sounds of anthropogenic and biological sources. Our results revealed the dynamics of biological sounds among coral reefs off Sesoko Island, Okinawa, Japan. Biological sounds were much more prominent in shallow-water reefs than in upper-mesophotic reefs, but their spectral features and compositions differed. The shallow-water reefs were dominated by broadband sounds of crustaceans and low-frequency transient fish calls, whereas the upper-mesophotic reefs were characterized by a diverse array of fish choruses and transient sounds. We also discovered that shipping noise heavily interfered with the soundscapes from the upper-mesophotic reefs and represented an invisible threat to life in the low-light habitat. The applied techniques of soundscape information retrieval revealed the distinct ecological status of coral reefs and the behavior change of sound-producing organisms in high temporal resolution. Implementation of soundscape monitoring can generate ecological information on habitat quality, reef biodiversity, human activities, and their interactions. Global collaboration on underwater soundscapes will establish a data-informed platform and help stakeholders assess the resilience of coral reefs to environmental and anthropogenic stressors.

1. Introduction

Marine ecosystems provide irreplaceable services and currently face significant pressures due to climate change, human disturbance, and excessive use of marine resources. The United Nations has recognized these threats and placed the conservation of marine ecosystems as one of its sustainable development goals (UN General Assembly, 2015). Coral reefs support various social and economic activities, such as fisheries, coastal protection, and tourism, of many maritime tropical and subtropical nations (Moberg and Folke, 1999; Barbier, 2017; Spalding et al., 2017; Woodhead et al., 2019). These benefits rely on the abundant biodiversity in coral reefs. However, coral reefs have undergone recurrent high-frequency bleaching episodes over the past 20 years due to increased sea surface temperatures (Hughes et al., 2017, 2018). Therefore, detailed information on the spatiotemporal changing patterns of marine biodiversity and interactions with human activities is crucial for the conservation management of coral reefs.

Biodiversity monitoring in coral reefs remains challenging, partially due to the distinct reef environments and their unique fish assemblages (Pearman et al., 2018; Dumalagan et al., 2019). A comprehensive and long-term assessment of reef biodiversity, environmental characteristics, and human activities may not be feasible because of limited resources for observation and survey opportunities, especially for developing regions or remote reefs. An underwater sensing system capable of monitoring the changing patterns of marine biodiversity, with the ability to diagnose potential risks due to environmental and anthropogenic stressors, is required for establishing management strategies of coral reefs and for providing alerts to the early-warning signs of ecosystem changes (Schmeller et al., 2017; Obura et al., 2019).

A potential solution for such an underwater sensing platform is through monitoring ocean sounds. One autonomous recorder can store long-duration audio recordings, with improved time resolution of

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** Correspondence to: T. Akamatsu, The Ocean Policy Research Institute, The Sasakawa Peace Foundation, 1-15-16 Toranomon, Minato, Tokyo 105-8524, Japan.
E-mail addresses: lintzuhao@gate.sinica.edu.tw (T.-H. Lin), akamatsu.tom@gmail.com (T. Akamatsu).

https://doi.org/10.1016/j.biocon.2020.108901
Received 18 June 2020; Received in revised form 23 November 2020; Accepted 27 November 2020
Available online 10 December 2020
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With the recent development of underwater technology and audio information retrieval techniques, a soundscape monitoring network can generate numerous acoustic data that contain ecological information in multiple dimensions, including the quality of the acoustic habitat, community of sound-producing organisms, and potential effects due to human activities. The generated information will allow managers and stakeholders to conduct a more comprehensive assessment of ecosystem

fore, an underwater soundscape monitoring network would enable the integration of noise management into spatiotemporal planning and risk assessment of ecosystem-level consequences.

Data availability

The audio dataset used in preparing this paper are available from the corresponding authors on reasonable request. A dataset of the LTS is available on depositar (https://data.depositar.io/en/dataset/coral-reef-sesoko).

CRediT authorship contribution statement

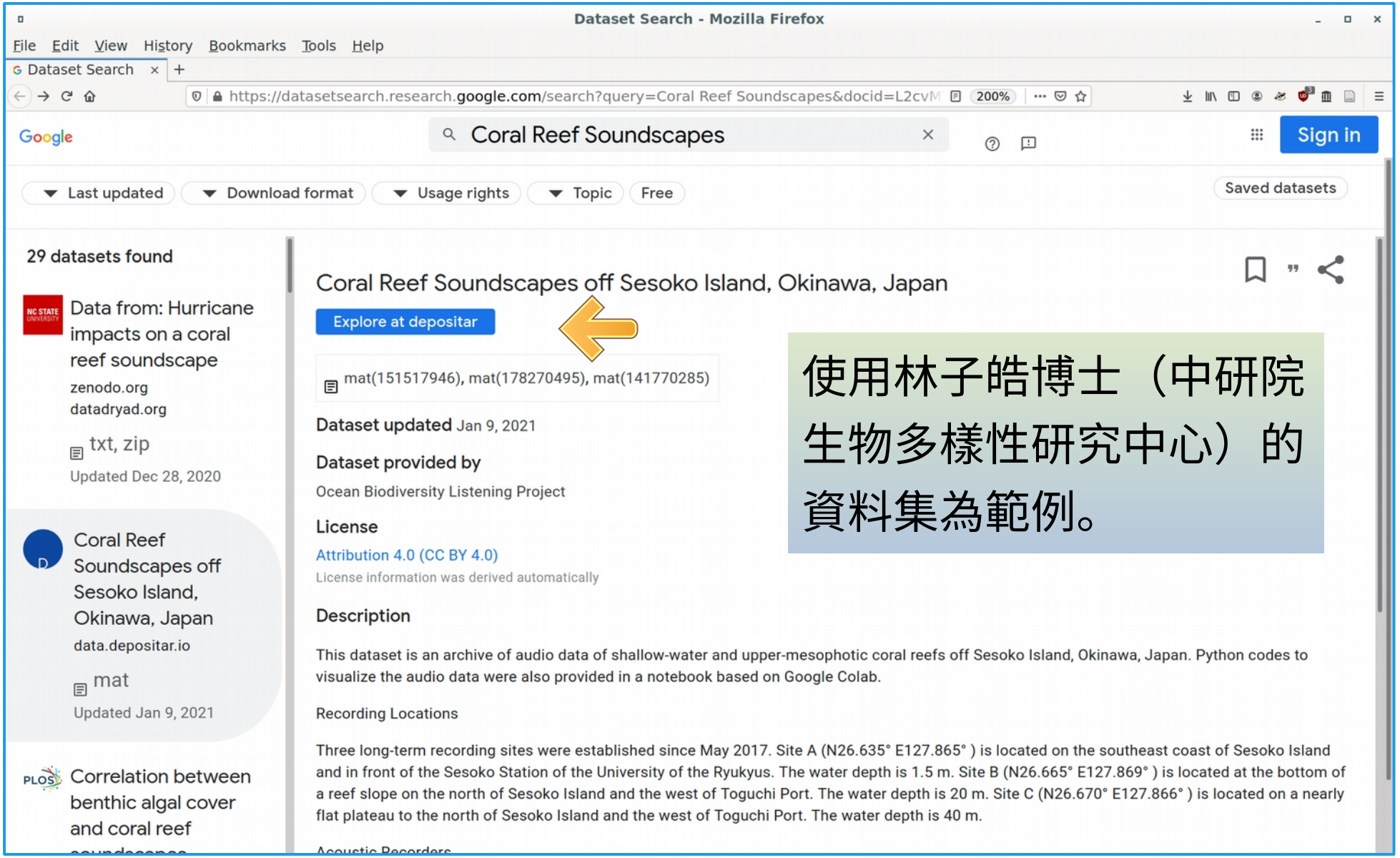
Tzu-Hao Lin: Conceptualization, Methodology, Software, Validation, Data curation, Formal analysis, Resources, Writing – original draft. **Tomonari Akamatsu**: Conceptualization, Methodology, Resources, Data curation, Writing – reviewing and editing, Funding acquisition. **Frederic Sinniger**: Conceptualization, Visualization, Investigation, Data curation, Writing – reviewing and editing. **Saki Harii**: Conceptualization, Investigation, Writing – reviewing and editing, Funding

Data availability

The audio dataset used in preparing this paper are available from the corresponding authors on reasonable request. A dataset of the LTS is available on depositar (https://data.depositar.io/en/dataset/coral-reef-sesoko).

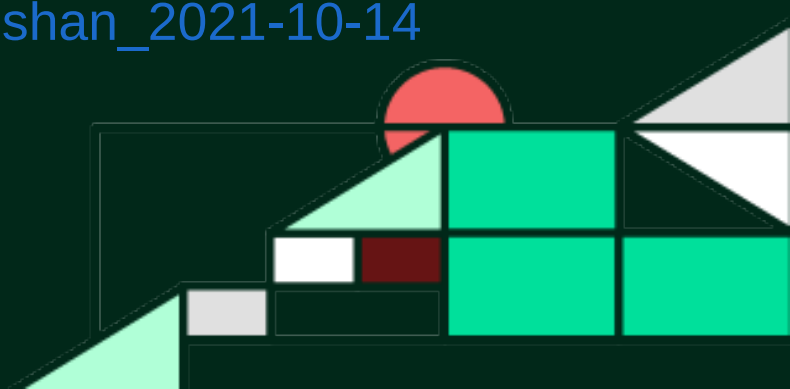
Data Discovery via Google Dataset Search

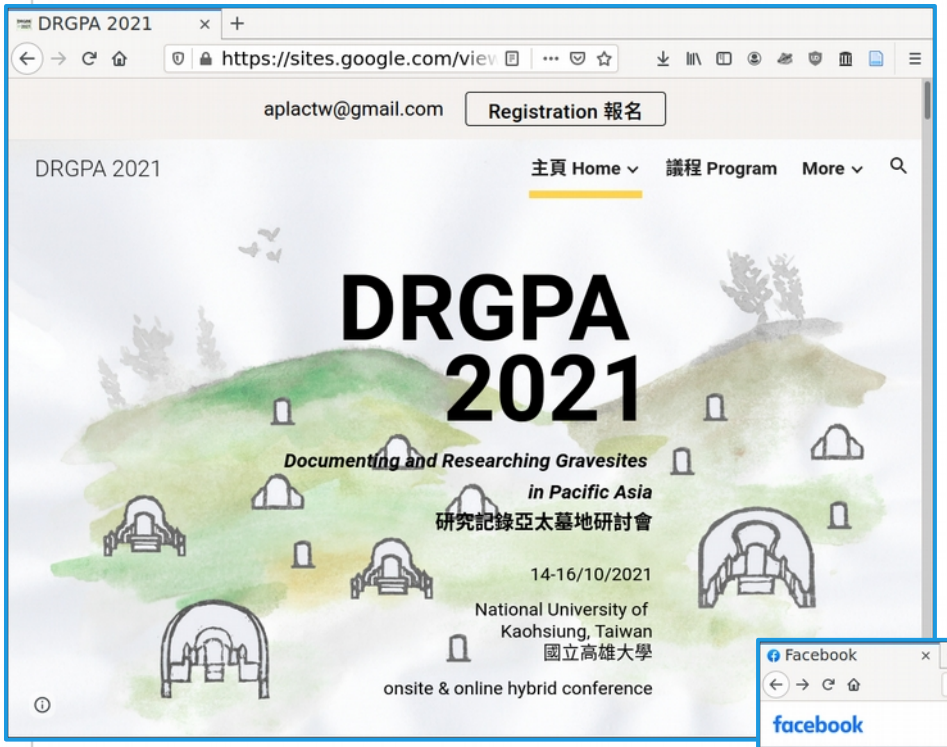
https://datasetsearch.research.google.com/search?query=Coral Reef Soundscapes



以 2021-10-14 南山墓地的導覽為範例

- 紀錄者眾，但所紀錄的媒材紛雜且散落各處
- 透過開放的儲存庫，可協力編寫紀錄（目錄）
  - 關於該導覽的背景文件
  - 於該導覽所紀錄的媒材（照片、影音等）
  - 事後關於該導覽的書寫
  - 事後對於該導覽的重建（e.g. Virtual Tour)
- https://data.depositar.io/en/organization/nanshan_2021-10-14

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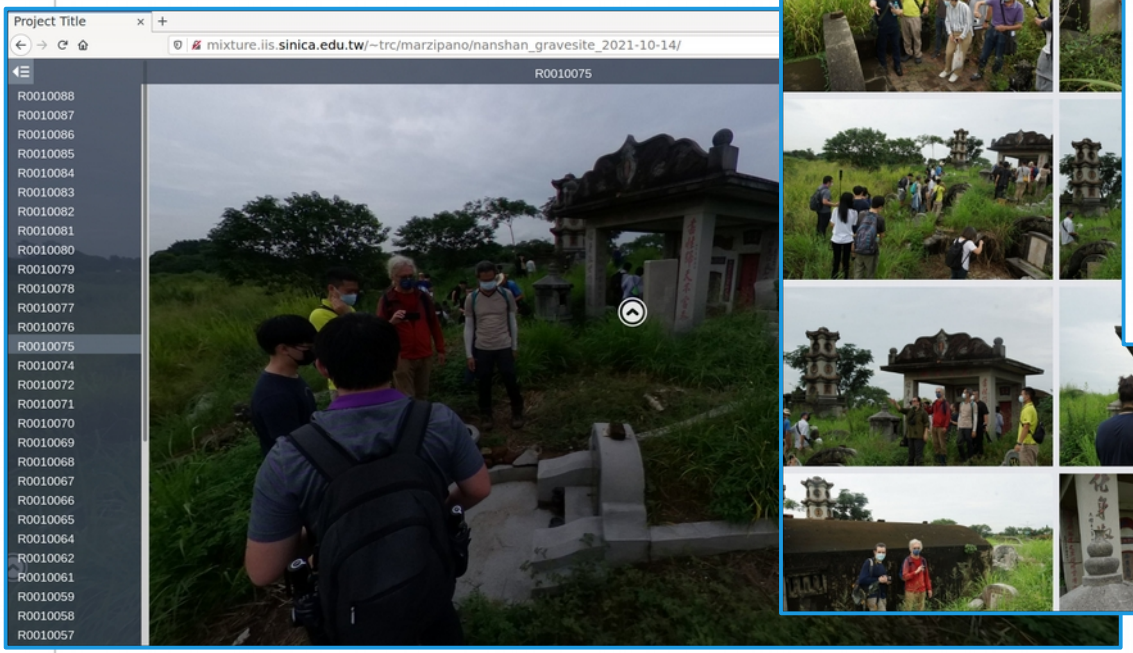
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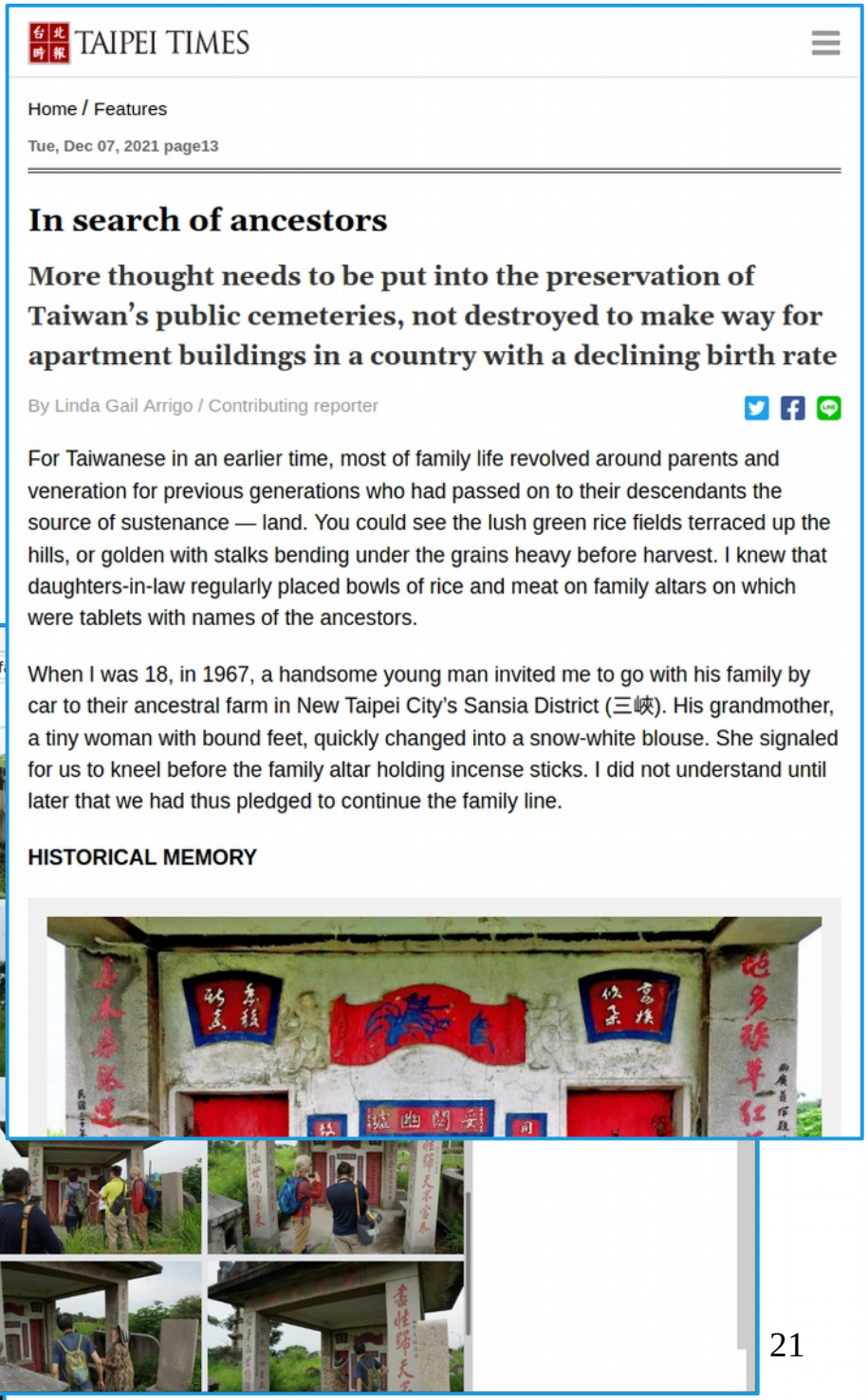
TAIPEI TIMES
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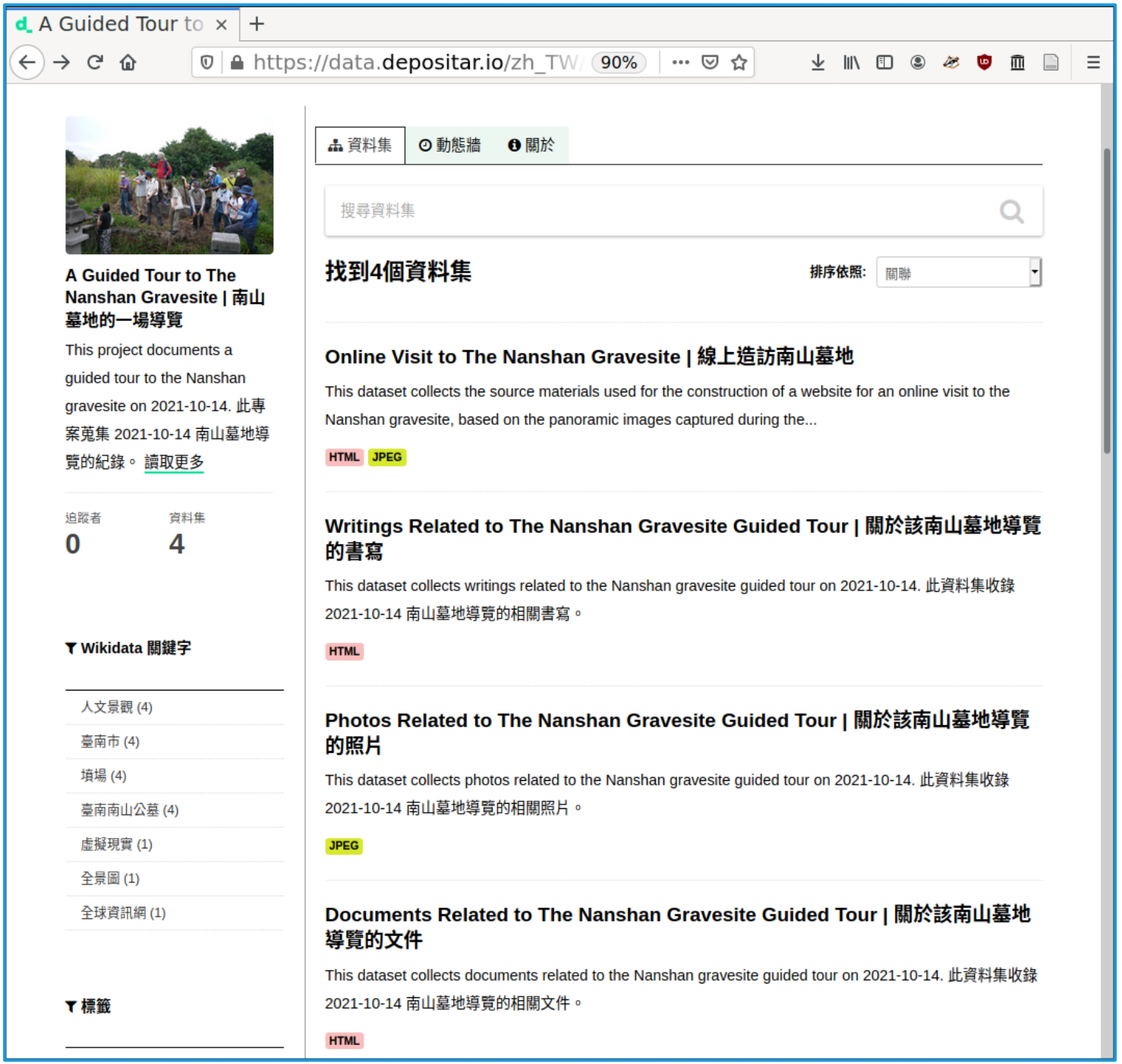
Tue, Dec 07, 2021 page13
In search of ancestors
More thought needs to be put into the preservation of Taiwan's public cemeteries, not destroyed to make way for apartment buildings in a country with a declining birth rate
By Linda Gail Arrigo / Contributing reporter
For Taiwanese in an earlier time, most of family life revolved around parents and veneration for previous generations who had passed on to their descendants the source of sustenance — land. You could see the lush green rice fields terraced up the hills, or golden with stalks bending under the grains heavy before harvest. I knew that daughters-in-law regularly placed bowls of rice and meat on family altars on which were tablets with names of the ancestors.
When I was 18, in 1967, a handsome young man invited me to go with his family by car to their ancestral farm in New Taipei City's Sansia District (三峽). His grandmother, a tiny woman with bound feet, quickly changed into a snow-white blouse. She signaled for us to kneel before the family altar holding incense sticks. I did not understand until later that we had thus pledged to continue the family line.
HISTORICAL MEMORY

https://data.depositar.io/en/organization/nanshan_2021-10-14



Online Visit to Th ×

https://data.depositar.io/en/dataset/nanshan

Online Visit to The Nanshan Gravesite | 線上造訪南山墓地

Followers

0

Project

A Guided Tour to The Nanshan Gravesite | 南山墓地的一場導覽

This project documents a guided tour to the Nanshan gravesite on 2021-10-14. 此專案蒐集 2021-10-14 南山墓地導覽的紀錄。 read more

Dataset | Topics | Activity Stream | History

Online Visit to The Nanshan Gravesite | 線上造訪南山墓地

This dataset collects the source materials used for the construction of a website for an online visit to the Nanshan gravesite, based on the panoramic images captured during the guided tour on 2021-10-14. The Marzipano tool is used to create a navigable 360° view of the gravesite.

此資料集收錄 2021-10-14 南山墓地導覽時所拍攝的全景影像，並用這些全景影像製作一個線上造訪南山墓地的網站。使用 Marzipano 工具以建立可走動的 360° 場景。

Data and Resources

Website: Visit to Nanshan Gravesite | 網站：造訪南山墓地 — Explore

A website for an online visit to the Nanshan gravesite, based on the...

Zipped File of The Website | 整個網站壓縮檔案 — Explore

The website, as a zipped file, for an online visit to the Nanshan gravesite,...

Panoramic Images of Nanshan Gravesite | 南山墓地的全景影像 — Explore

Panoramic images captured during the guided tour to the Nanshan gravesite on...

Marzipano Tool Video Tutorial | Marzipano 工具的影音教學 — Explore

A YouTube tutorial about the Marzipano Tool. Marzipano 工具 YouTube 教學。

Writings Related

https://data.depositar.io/en/dat 90%

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Datasets Topics Projects About Help

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Writings Related to The Nanshan Gravesite Guided Tour | 關於該南山墓地導覽的書寫

Followers

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Project

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Social

Dataset Topics Activity Stream History

Writings Related to The Nanshan Gravesite Guided Tour | 關於該南山墓地導覽的書寫

This dataset collects writings related to the Nanshan gravesite guided tour on 2021-10-14.

此資料集收錄 2021-10-14 南山墓地導覽的相關書寫。

Data and Resources

Burying Taiwan's History by Digging It Up — Explore

"Burying Taiwan's History by Digging It Up", by Brian Hioe. Published in No...

起掘了臺灣歷史，掩埋了臺灣歷史 — Explore

「地上台南」臉書頁面上由劉盈成編譯自丘琦欣的文章。原文出處： "Burying Taiwan's History by Digging It Up",...

In Search of Ancestors — Explore

"In Search of Ancestors", by Linda Gail Arrigo. Published in Taipei Times on...

追尋來時路 — Explore

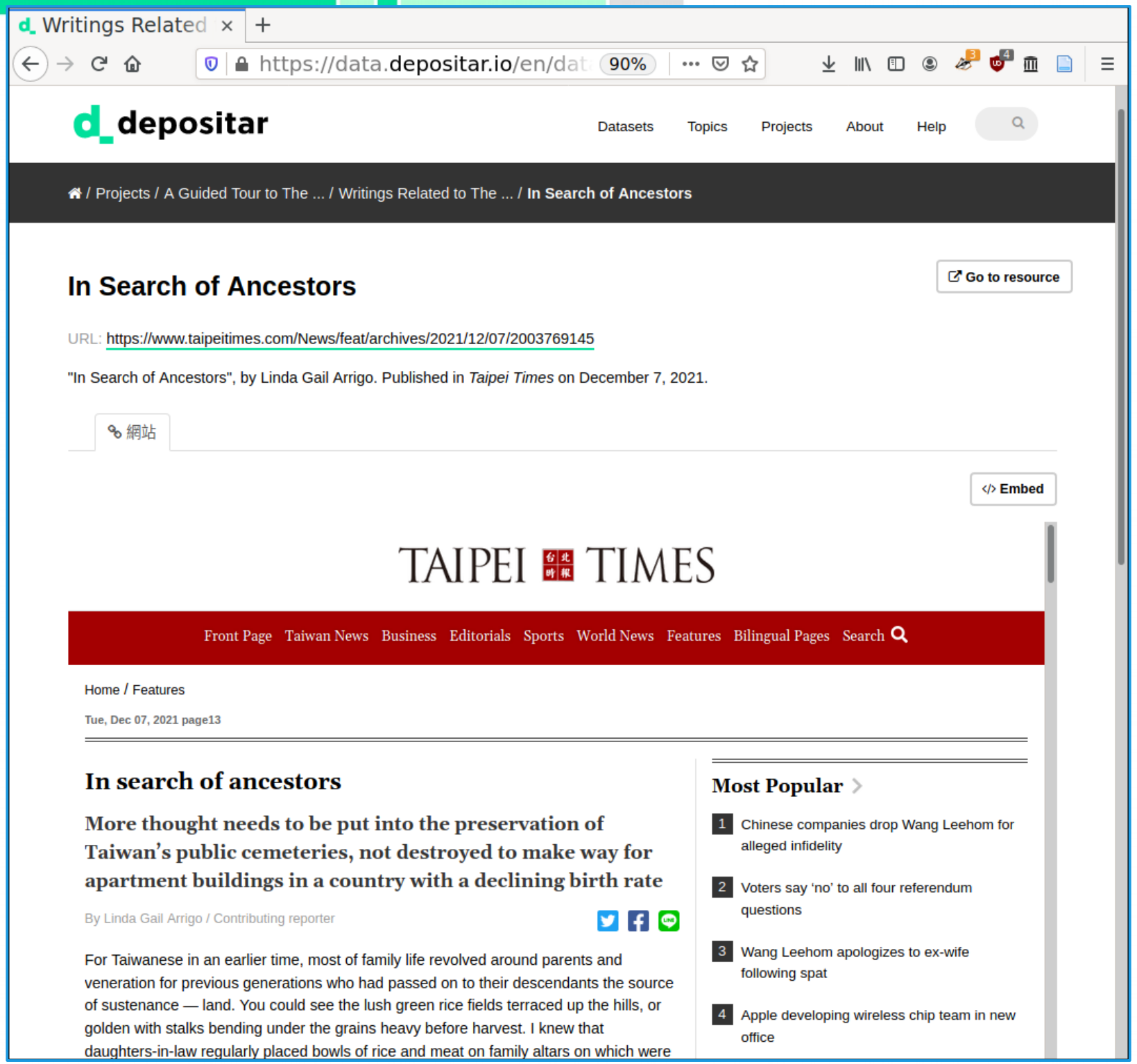
「地上台南」臉書頁面上由劉盈成編譯自艾琳達的文章。原文出處： "In Search of Ancestors", by Linda Gail...

Tags

DRGPA 2021 地上台南

Wikidata Keywords

cultural landscape Nanshan Public Cemetery, Tainan cemetery Tainan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"In Search of Ancestors", by Linda Gail Arrigo. Published in Taipei Times on December 7, 2021.
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Tue, Dec 07, 2021 page13
In search of ancestors
More thought needs to be put into the preservation of Taiwan's public cemeteries, not destroyed to make way for apartment buildings in a country with a declining birth rate
By Linda Gail Arrigo / Contributing reporter
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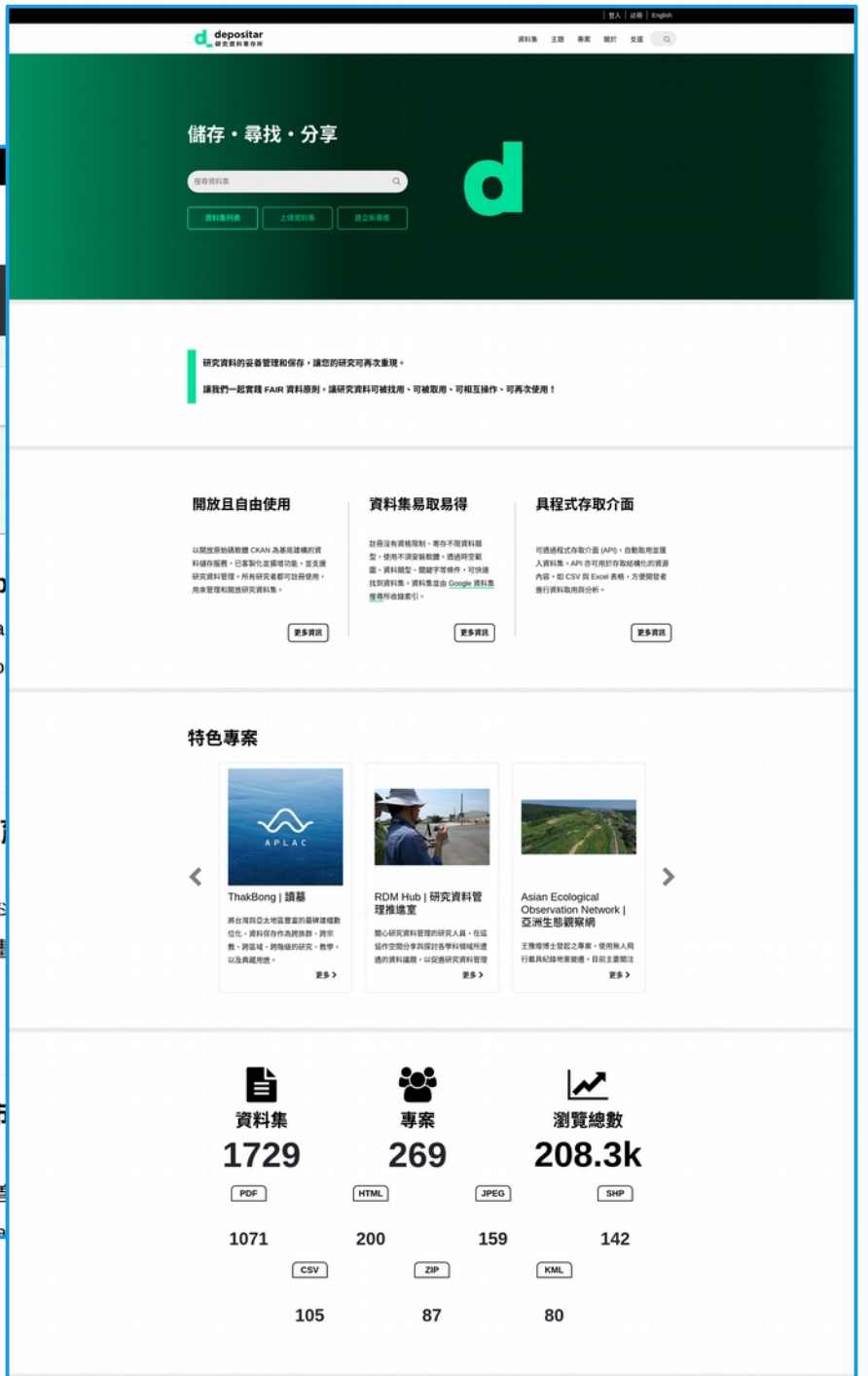

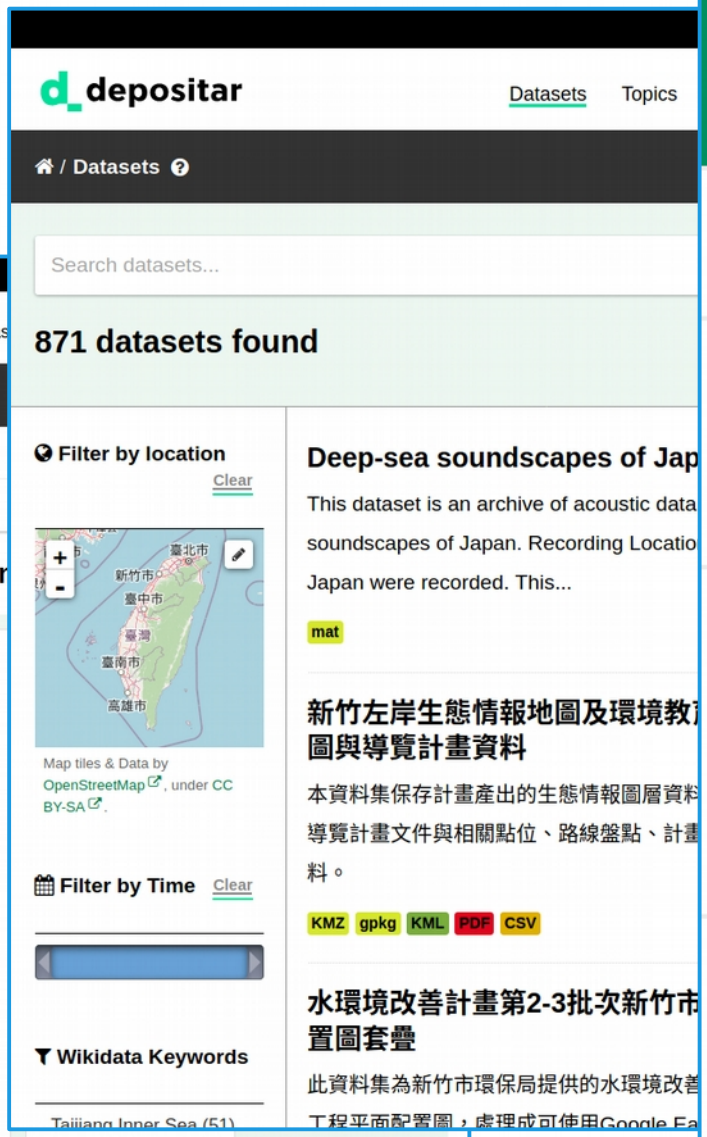

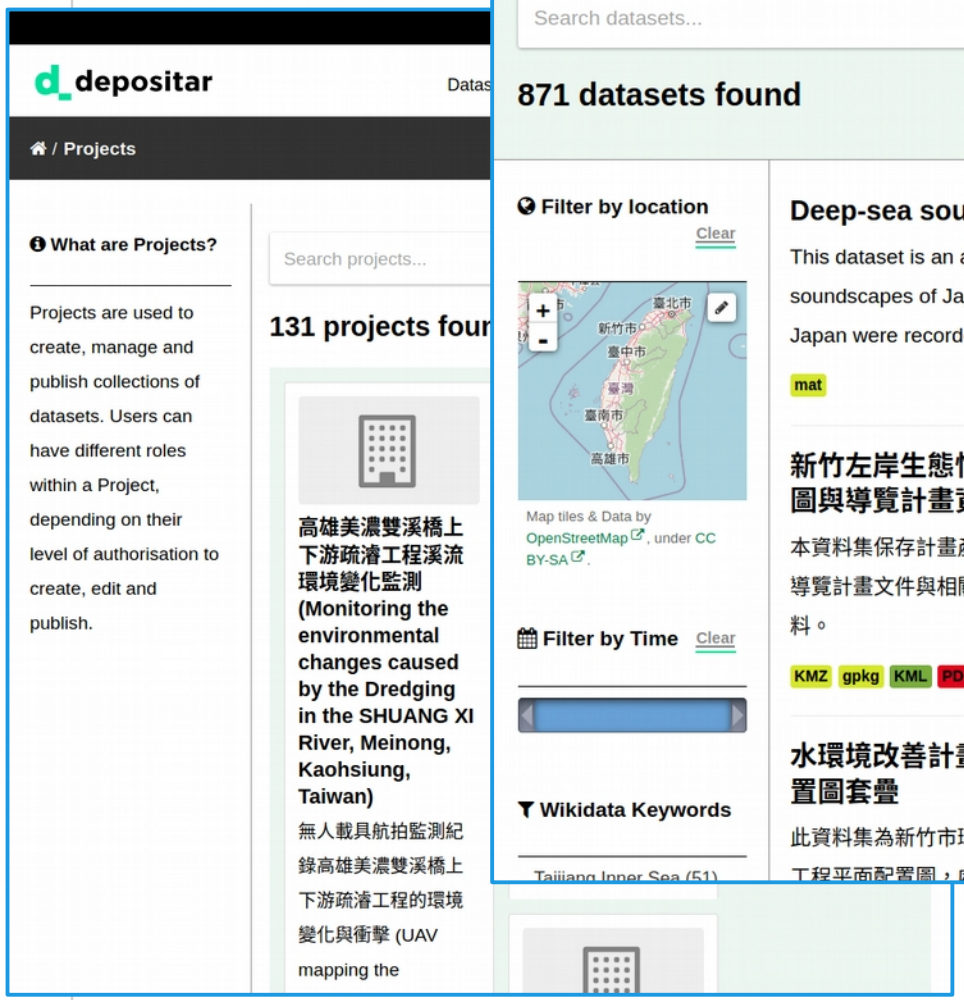

Collaborative Badlands | 惡地協作

作者

Collaborative Badlands

前往網站

展示案例包含的資料集

西南惡地點位資料庫

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Collaborative Badlands | 惡地協作

以台南左鎮為實驗場域，對外延伸至其他惡地形地區，包括台南龍崎、以及高雄田寮、內門等地區，建立地方研究、教學、服務等各項工作。由國立成功大學推動的協力計畫。

A collaborative project at the National Cheng Kung University on the rural regeneration and transdisciplinary research in the Southwestern Taiwan Badlands Region.

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惡地協作跨領域協作教學研究群 / Collaborative Badlands Project

惡地協作跨領域協作教學研究群為國立成功大學都市計劃學系與中央研究院人社中心地理資訊科學研究專題中心合作建立之社區地理資訊系統(Community...

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惡地協作跨領域協作教學研究群 / Collaborative Badlands Project

惡地協作跨領域協作教學研究群為國立成功大學都市計劃學系與中央研究院人社中心地理資訊科學研究專題中心合作建立之社區地理資訊系統(Community GIS)專案之一部分，主要目的以台南左鎮為實驗場域，對外延伸至其他惡地形地區，包括台南龍崎、以及高雄田寮、內門等地區，建立地方研究、教學、服務等各項工作之資料庫，希望整合既有的資訊、資源與技術，建立在地知識之整合平台，鏈結跨領域跨尺度之成員，促進在地協作交流創新之網絡。

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相關問題請洽: 國立成功大學惡地協作團隊 collaborativebadlands@gmail.com；國立成功大學都市計劃學系 張秀慈老師 hsiutzuchang@mail.ncku.edu.tw

本資料集建置經費部分由107年行政院農委會水土保持局農村再生創新研究計畫以及109-111年教育部大學社會責任實踐計畫補助

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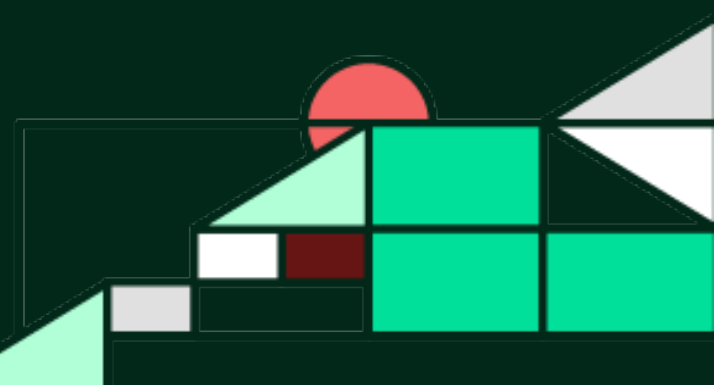

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Ref: "GLAMs and Open Access: The Smithsonian Institution as Case Study", Kelly Doyle & Andrew Lih @ Wikimania 2021.

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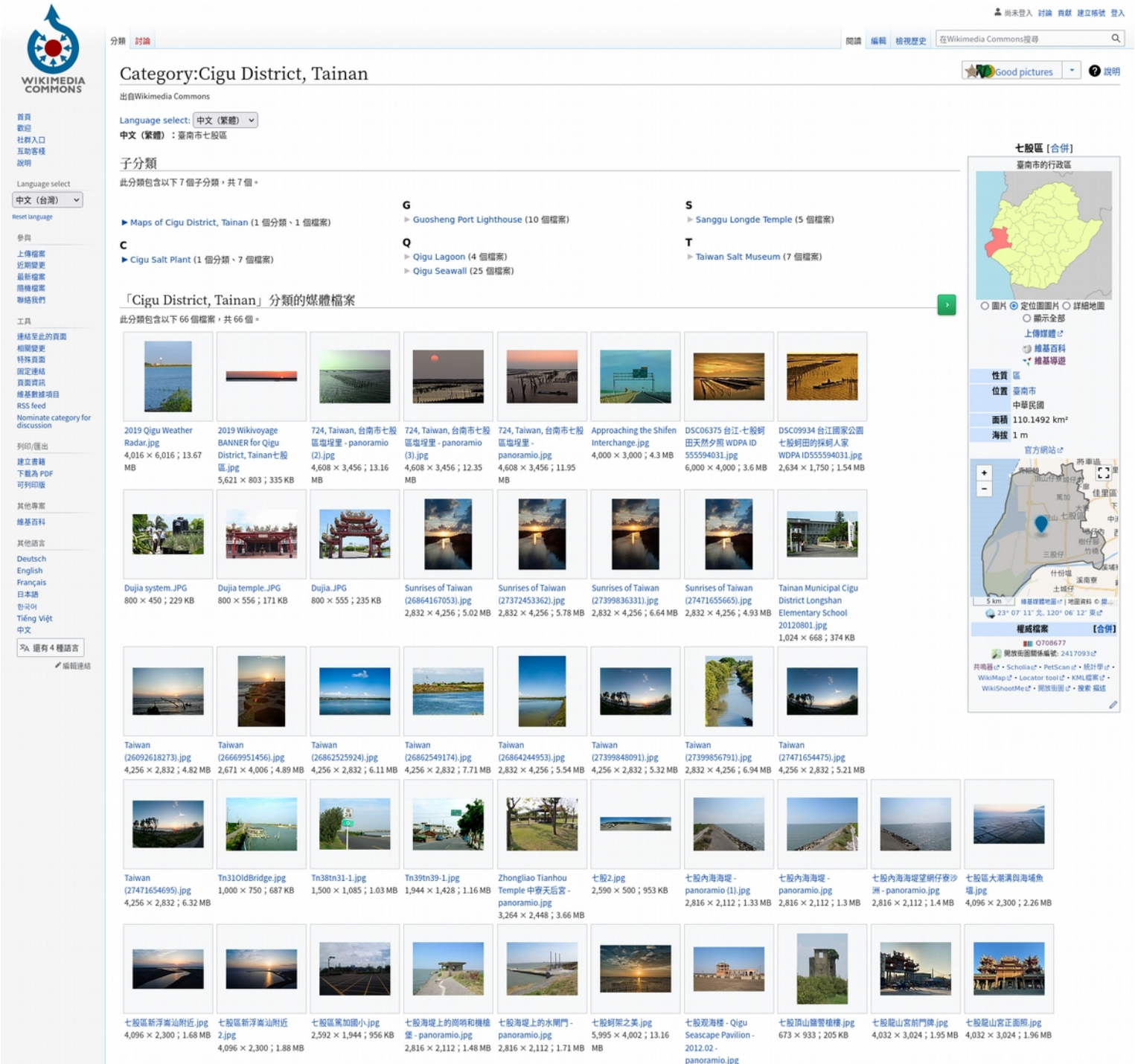

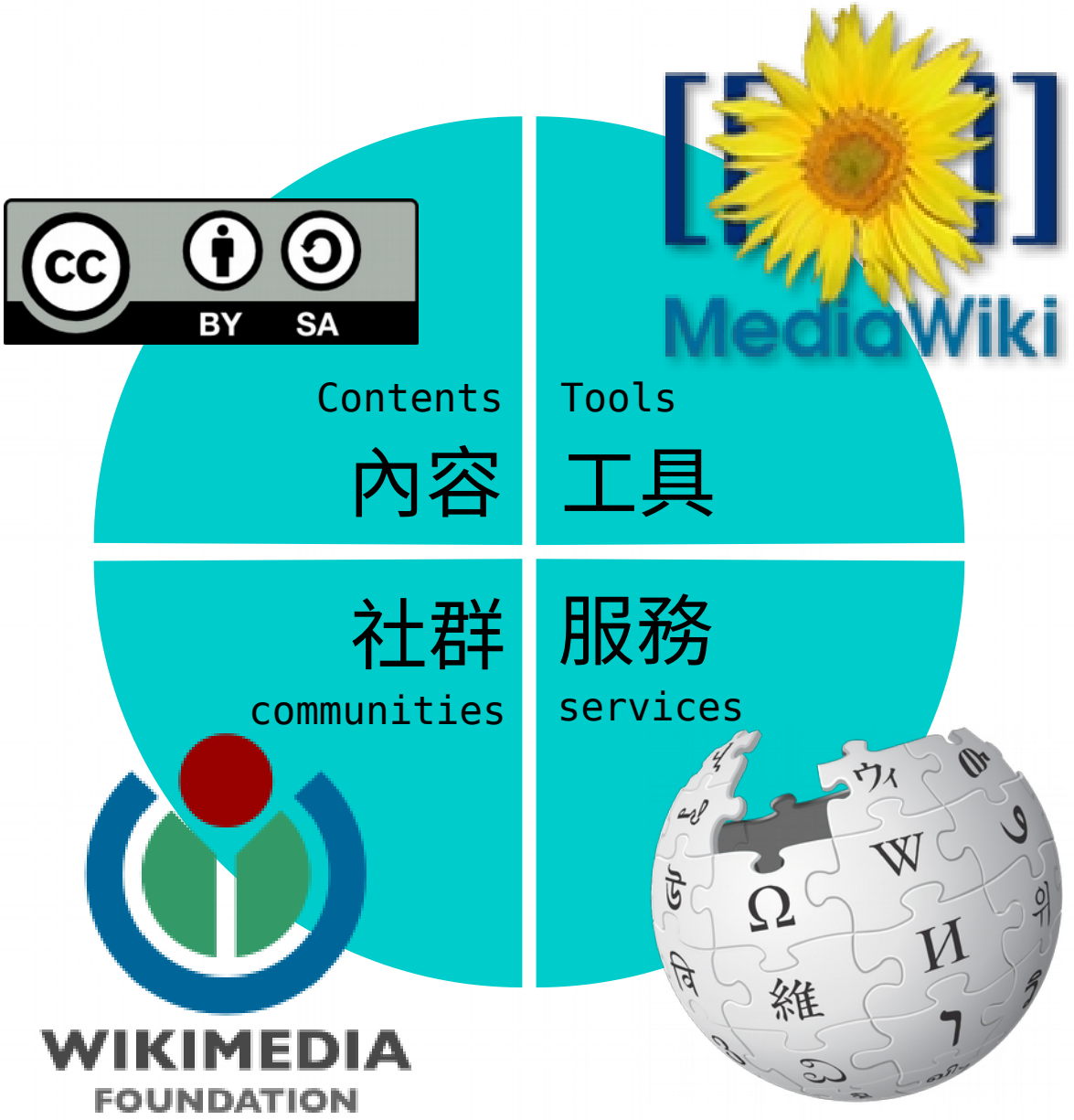
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謝謝！　Thank You!

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「研究資料寄存所」是中央研究院資訊科學研究所、資訊科技創新研究中心、人文社會科學研究中心（地理資訊科學研究專題中心）的協作專案，部份經費來自國家科學及技術委員會的專題研究計畫。
研究資料寄存所計畫成員：莊庭瑞、何明諠、李承鑫、王家薰。