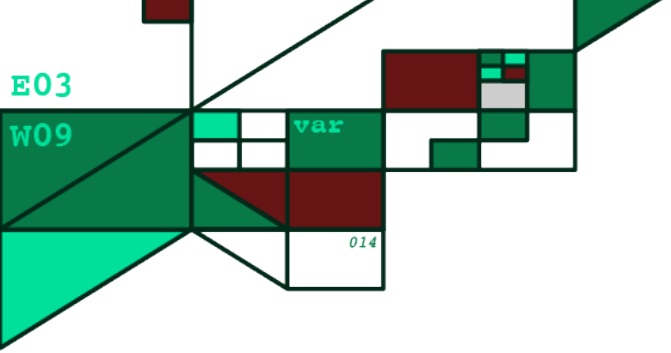

depositar
研究資料寄存所

研究資料寄存所簡介
1/3

2021-11-16
技術研究小組 @ 行政院農業委員會水土保持局

莊庭瑞 @ 中央研究院
trc@iis.sinica.edu.tw

地理資訊科學研究專題中心
Center for GIS, RCHSS, Academia Sinica

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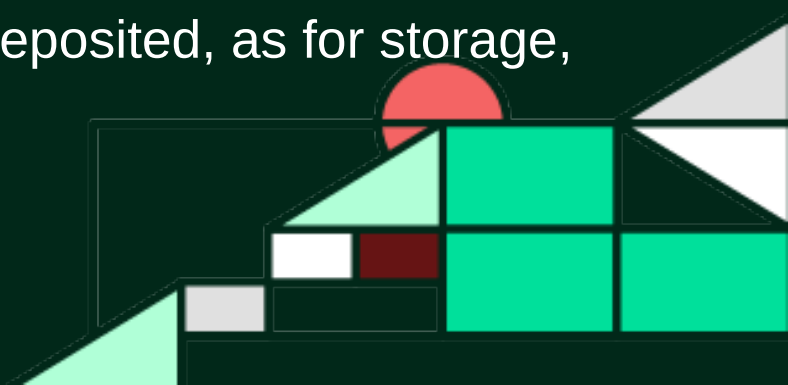
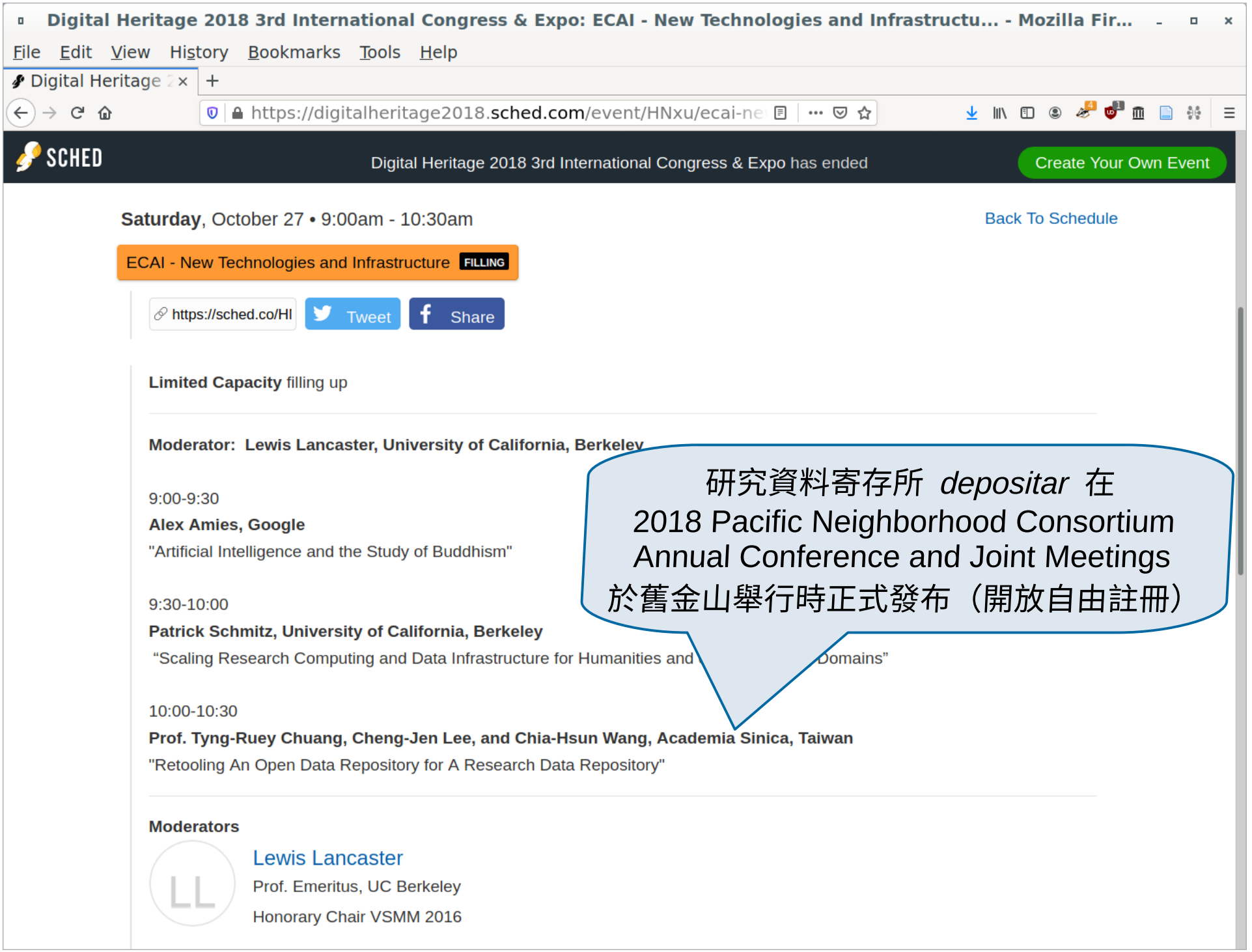
研究資料寄所 *depositar*

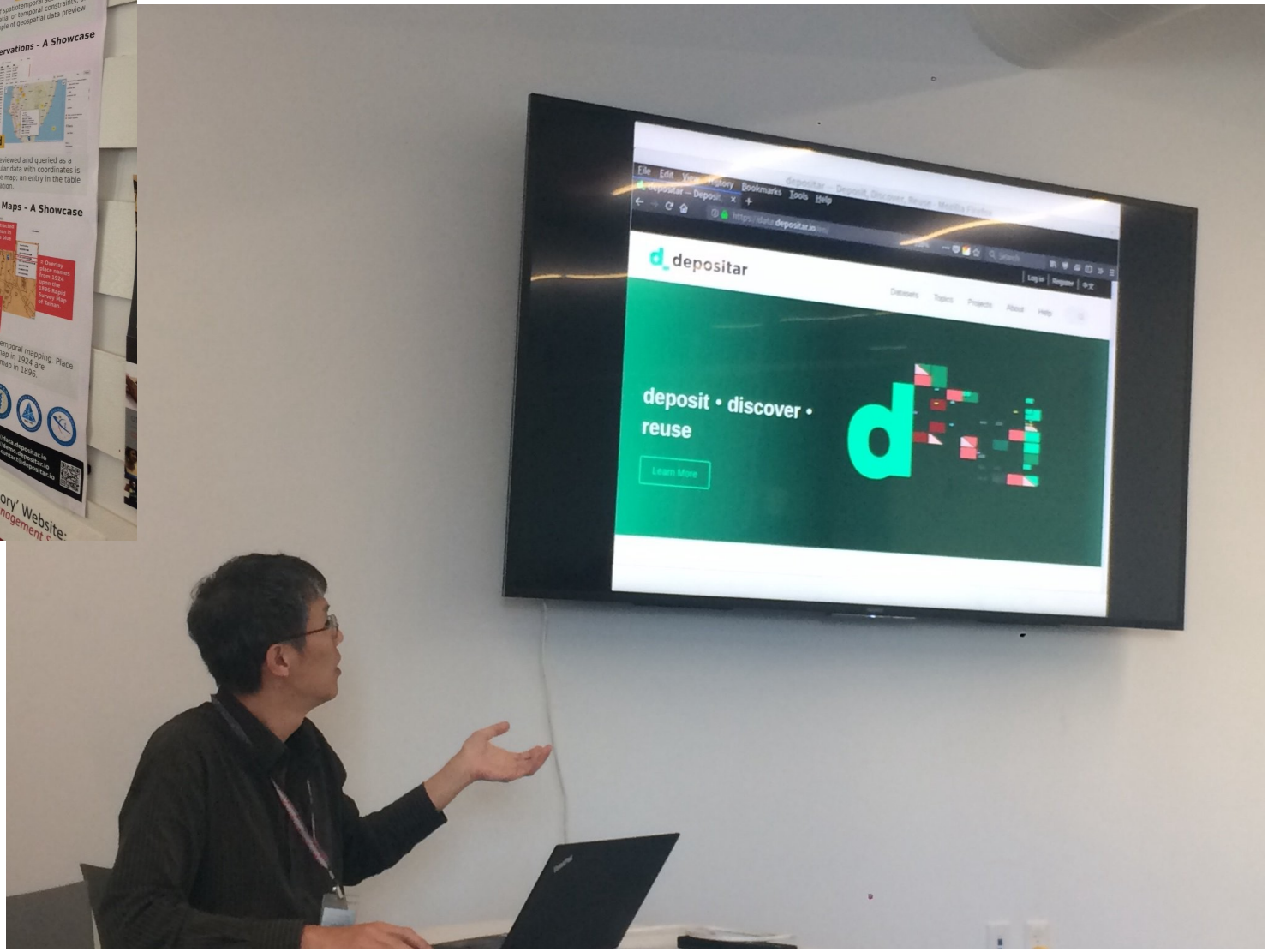
– 對所有人開放的「資料儲存庫」 (data repository)

- 建基於 CKAN 開放源碼套件，但新增多項功能
  - 新增程式碼已貢獻到 CKAN 開發上游 (upstream)
- 可自由使用的軟體、可自由註冊的服務、可自由取用的內容
  - FAIR Data: “Findable, Accessible, Interoperable, Reusable”
  - 「公義」資料：可被找到、可被取用、可相互操作、可再次使用
- 是受託者 (depository) 而不是出版者 (publisher)
  - publisher: engage in “acquisition, copy editing, production, (e-)printing, marketing and distribution”
  - depository: “a place where something is deposited, as for storage, safekeeping or preservation”




Digital Heritage 2018 3rd International Congress & Expo: ECAI - New Technologies and Infrastructu... - Mozilla Fir...
File Edit View History Bookmarks Tools Help
Digital Heritage
https://digitalheritage2018.sched.com/event/HNxu/ecai-ne
SCHED
Digital Heritage 2018 3rd International Congress & Expo has ended
Create Your Own Event
Saturday, October 27 • 9:00am - 10:30am
Back To Schedule
ECAI - New Technologies and Infrastructure FILLING
https://sched.co/HI
Tweet
Share
Limited Capacity filling up
Moderator: Lewis Lancaster, University of California, Berkeley
9:00-9:30
Alex Amies, Google
"Artificial Intelligence and the Study of Buddhism"
9:30-10:00
Patrick Schmitz, University of California, Berkeley
"Scaling Research Computing and Data Infrastructure for Humanities and Domains"
10:00-10:30
Prof. Tyng-Ruey Chuang, Cheng-Jen Lee, and Chia-Hsun Wang, Academia Sinica, Taiwan
"Retooling An Open Data Repository for A Research Data Repository"
Moderators
LL
Lewis Lancaster
Prof. Emeritus, UC Berkeley
Honorary Chair VSMM 2016
研究資料寄存所 depositar 在
2018 Pacific Neighborhood Consortium
Annual Conference and Joint Meetings
於舊金山舉行時正式發布（開放自由註冊）

Deposit, Discover, and Reuse Research Data with depositar
What is depositar ?
For Your Datasets
For Your Projects
It's Open and Free!
Data Discovery and Preview
Roadkill Observations - A Showcase
Place Names & Maps - A Showcase
Construction of a Global Sharable 'National Memory' Website:
Case Study of Taiwan Memory Online Exhibition and Management

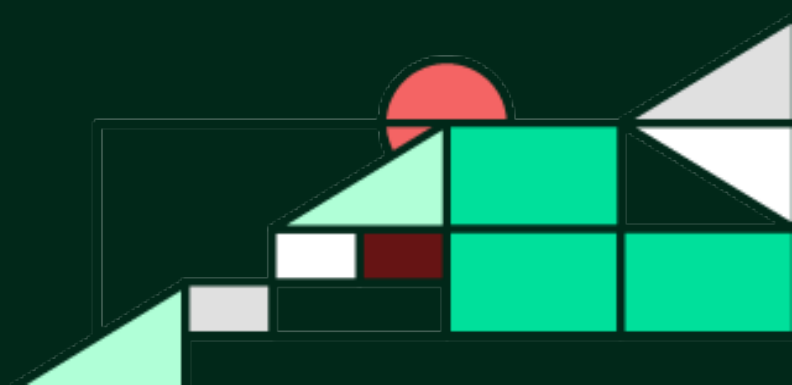

depositar
deposit • discover • reuse
Learn More

p. 22, “Retooling An Open Data Repository For A Research Data Repository” slideset for the ECAI Workshop in PNC 2018.

Infrastructure from below

- Research data management is infrastructure work
  - basic but not sexy; mismatch in needs and resources
  - culture of collaboration; priority in coordination
  - need to be a community of practices
- Infrastructure with small pieces from below
  - common licenses, vocabularies, formats, protocols, etc.
  - reusable tools (e.g. CKAN) and references (Wikidata)
  - resource pooling: people, CPU, storage, bandwidth, etc.
  - engaging in communication: code, data, experience, etc.

研究資料寄存所 *depositar* 導覽



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

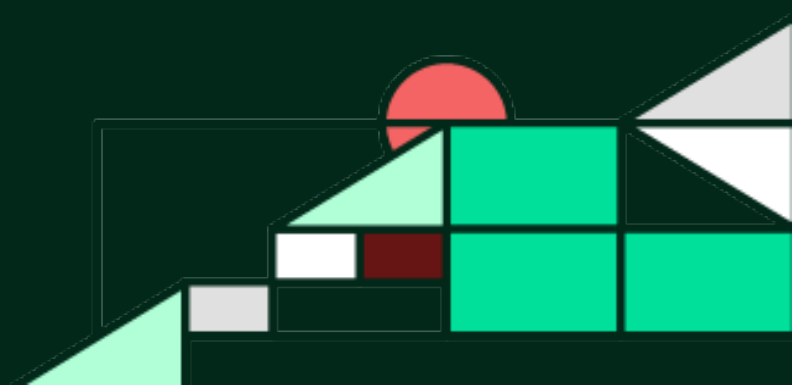
時間解析度	日
起始時間	2017-05
結束時間	2018-07
空間範圍	顯示更多
空間範圍.X.min	127.8553390572779
空間範圍.X.max	127.88097380893306
空間範圍.Y.min	26.630362980584657
空間範圍.Y.max	26.68047930832328

管理資訊

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

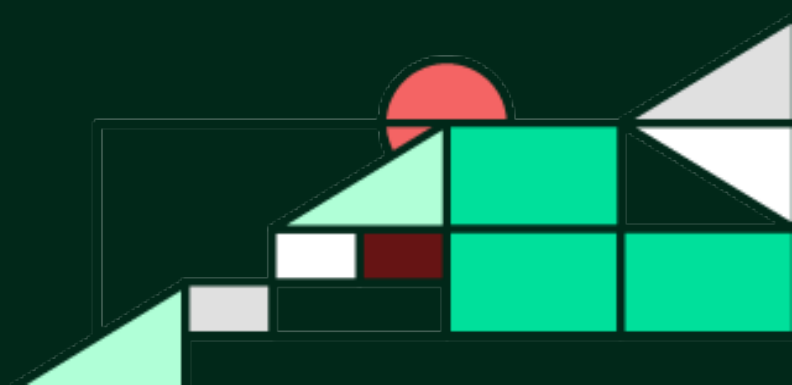
研究資料寄存所的新進展 （ 2018 之後）

- 資料集可被 Google Dataset Search 找到
  - 其實我們沒特別作什麼； 標準的後設資料欄位（及欄位值）有幫忙到!
- 使用者社群
  - 研究者、公民團體、學校師生、政府機構
- 中英文〈使用條款〉跟〈隱私政策〉
- 大家一起來練習研究資料管理吧!
  - 科技部永續學門專題研究計畫 (2019 – 2022)
  - 研究資料管理工作坊 (2018 & 2021)； 「研究資料管理推進室」網站
- @_depositar – 我們有推特了!



資料儲存庫用於學術性通訊以及參與性研究實例

Data Repositories for Scholarly Communication and Participatory Research



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).

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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 health at scale.

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

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Cut to clipboard

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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

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

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

Long-term spectrogram of Site B — Explore

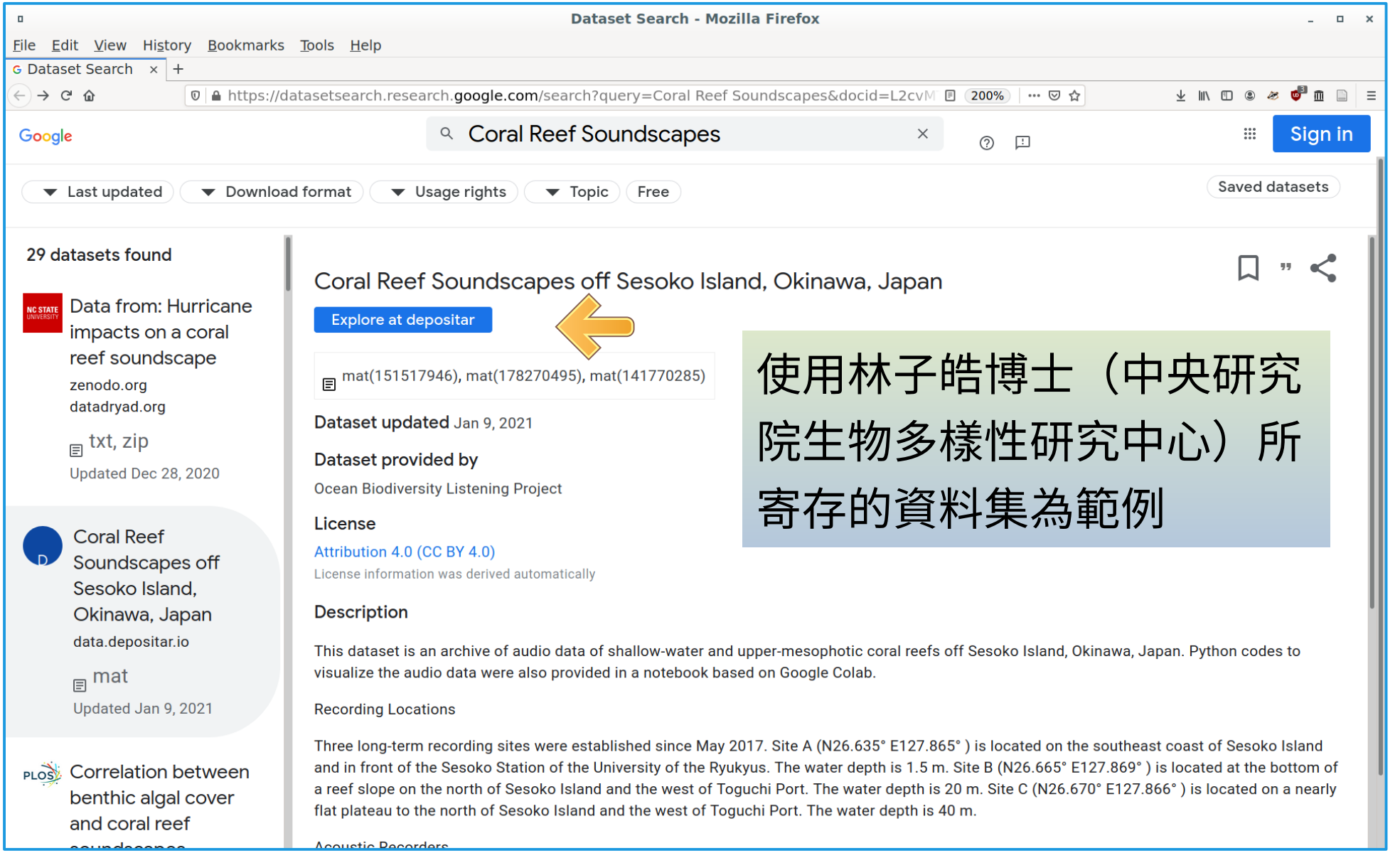
A mat file contains the median- and mean-based long-term spectrograms.

Long-term spectrogram of Site C — Explore

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

用 Google Dataset Search 找資料

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



用 Google Dataset Search 找中文資料

https://datasetsearch.research.google.com/search?query=劉厝溪

https://data.depositar.io/dataset/6ac93

資料與資源

航拍規劃中心線

規劃航線中心線KML檔

探索

OAM正射影像連結 (Link to OpenAerialMap)

發布於OAM的正射影像連結 (Link to accessing the ortho-mosaics published on the...

探索

2021-04-13 正射影像Google圖磚 (Google Earth tiles)

Google圖磚壓縮檔。解壓縮後，點選開啟資料夾中的kml檔，即可使用Google Earth...

探索

2021-04-13 台中市南屯區鎮平溪－劉厝溪航攝影像

中央研究院網格計算中心WebODM計算成果下載連結；建議使用Firefox瀏覽器開啟連結，瀏覽影像2D、3D影像資料。

探索

空中360影像

空中360影像Google Street View連結。

探索

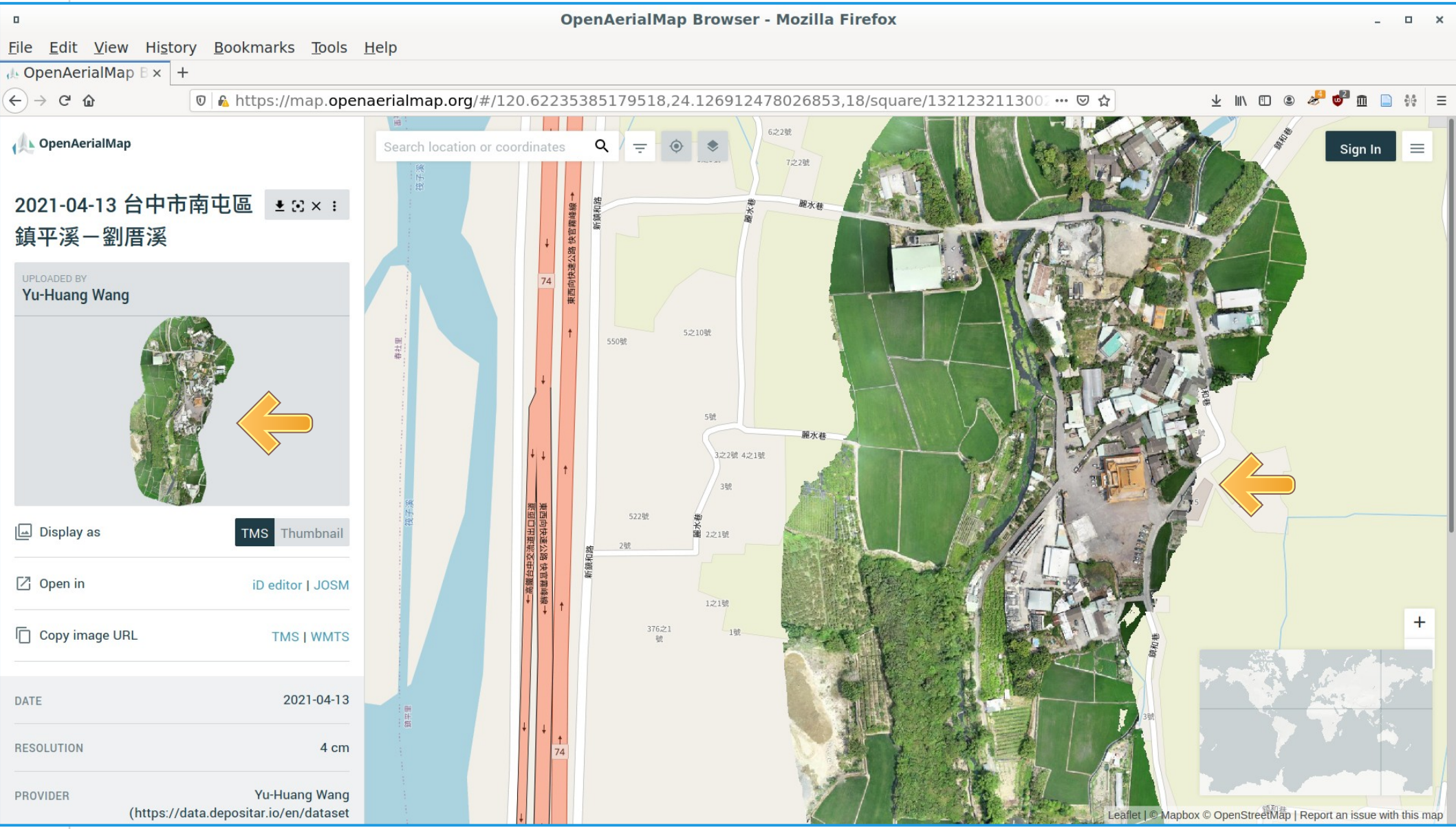
標籤

南屯區　台中市　地景變遷　筏子溪　都市重劃

Wikidata 關鍵字

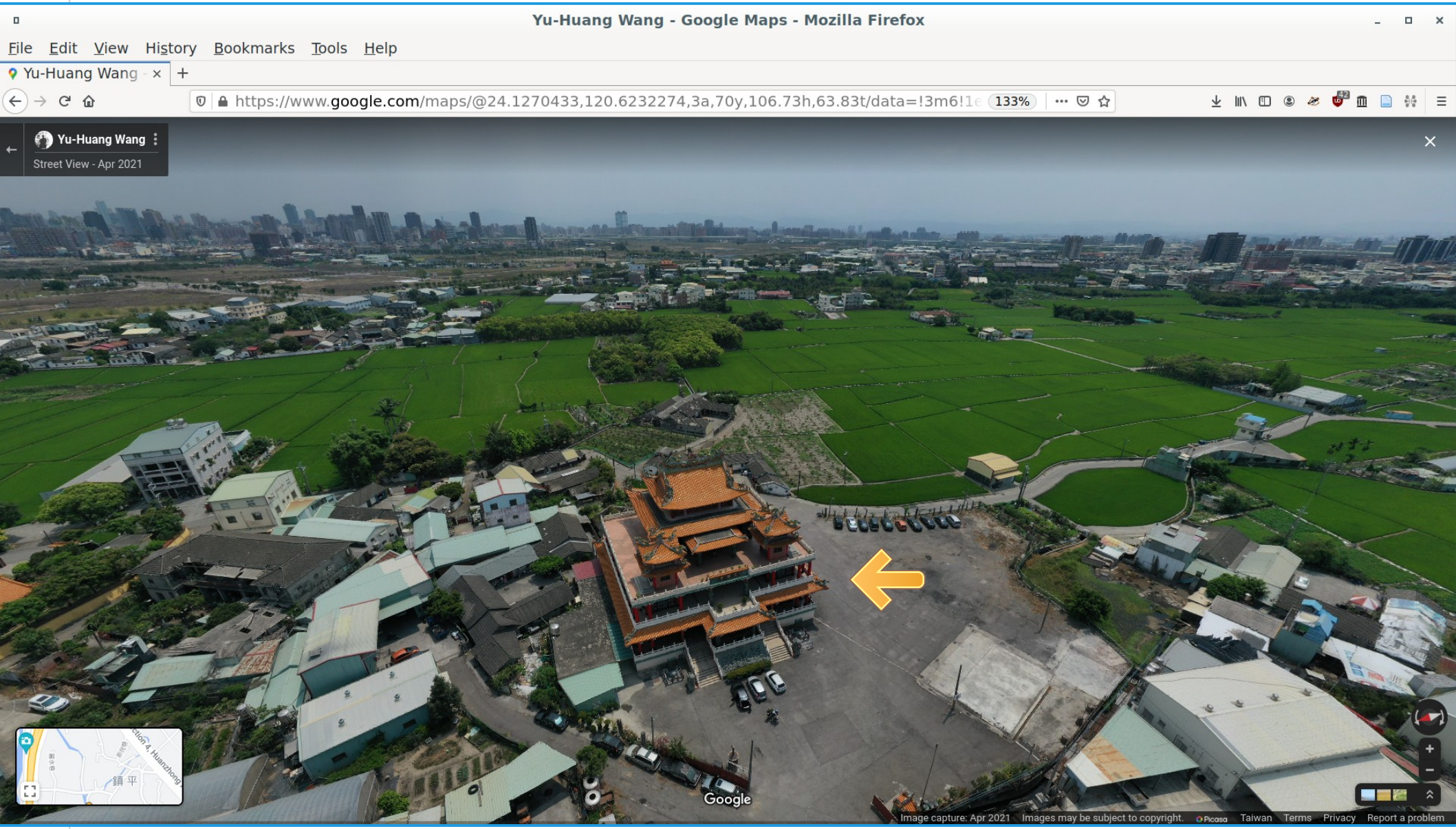
正射影像　riverscape　筏子溪　光球　南屯區　無人航空載具　臺中市

正射影像拼圖（連結到 Open Aerial Map）



https://map.openaerialmap.org/#/120.62299489974974,24.127955278046894,15/square/13212321130023323/607c4f45bfb5350008e665a2

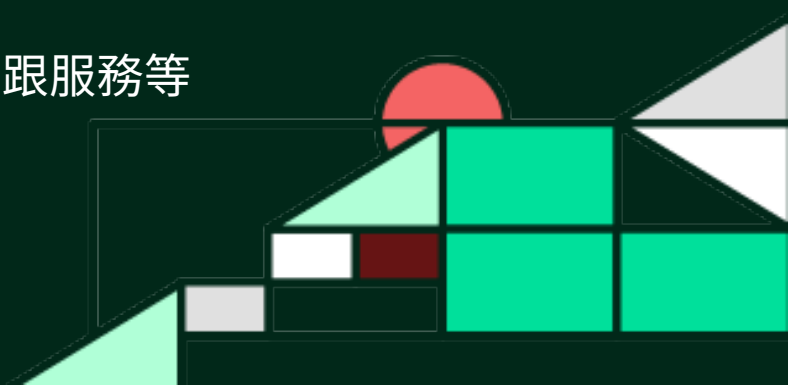
空中 360° 環景漫步（連結到 Google Map 服務）



https://goo.gl/maps/zZZwQ3PkstQzrXYN7

一些觀察與看法

- 「開放科學」目前來說，（至少在台灣）尚屬「倡議」而非「政策」
  - 由上而下？由下而上？您會採取何種作法？
  - 需要大家一起來滋潤開放的文化
  - 坐而言不如起而行；有資源就服務
- 真的要自己作資料儲存庫嗎？
  - 瞭解並服務本地群體
    - 文化與語言的可親近性；本地群體的共同需求
  - 自己做才會知道（技術與非技術的）細節；學會的技能可再傳遞下去
- 要如何自己作資料儲存庫呢？
  - 盡可能再次使用已有的程式碼、共通語彙、標準跟服務等
- 自己作的資料儲存庫可撐得下去？



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研究資料寄存所

謝謝！　Thank You!

https://data.depositar.io/

data.contact@depositar.io

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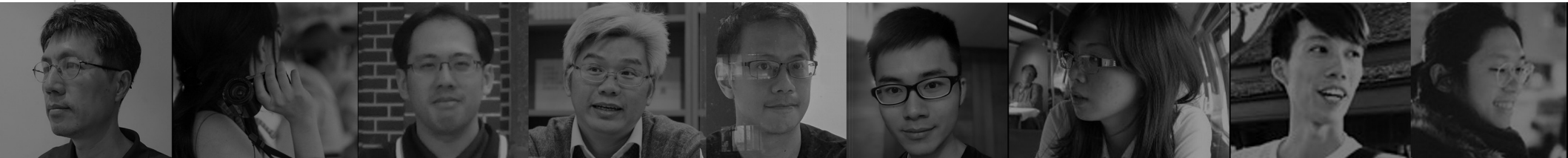
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