SATCULT Project: Good Practice Documentation Template

The application of satellite data in cultural heritage (CH) protection is still in its early stages, predominantly utilised by archaeologists. However, the SATCULT consortium has begun exploring its potential future uses in the wider CH area.

As part of an upcoming vocational training programme for CH practitioners , the SATCULT initiative gathers examples of Good Practices which show how satellite data can be used for the protection of CH including the benefits of accessing and utilising this data, and required skills for effective use. We are specifically interested in Good Practices from CH beyond archaeology.

The primary focus will be on desk research, collecting examples from European and international contexts with the assistance of Geoinformation and CH protection experts and practitioners. These examples will be analysed to determine the training needs of professionals and practitioners in CH protection and compiled into a compendium.

Please note filling this template requires knowledge to address properly the fields described throughout the survey. Although it is not long, it might take around 15 – 20 minutes to complete it thoroughly and properly.

A selected number of Good Practices, representing the working areas in cultural heritage, will be published in a European brochure and all Good Practices will be published on the SATCULT homepage and presented in the SATCULT LinkedIn group.

SATCULT:
Closing a knowledge gap by vocational training about satellite-based services in cultural heritage preservation

Erasmus+

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Name/Title of the Good Practice *

Heritage Monitoring in Post-Earthquake Türkiye: Integrating Citizen Science with Cutting-Edge Remote Sensing

Name of the organisation *

Ege and Akdeniz Universities (Türkiye)

Type of organisation in charge of the Good Practice *

- ○ Cultural Heritage organisation
- ○ Cultural Heritage site
- ○ Cultural Heritage -related public entity (Ministry, Prefecture, Municipality)
- ◉ University
- ○ Research Institute
- ○ Earth Observation -related organisation
- ○ Geo-Informatics (Geomatics) organisation/company
- ○ Private Company
- ○ Άλλο: _____

Domain of organisation's activities/expertise *

- ○ Cultural Heritage
- ○ Archaeology
- ○ Earth Observation
- ○ Geo-Informatics
- ◉ Άλλο: Archaeology and Earth observation

Contact Information and Organisation's Logistics

Respondent's contact details

Full name of the contact person *

Çiler Çilingiroğlu

Email address *

cilingirogluciler@hotmail.com

Telephone number *

00905363940601

Organisation's details

Country *

Türkiye

City *

Izmir

Address *

Ege University Faculty of Letters Archaeology Dept. Bornova-Izmir

Information about the Good Practice

Please name below the *Country*, *City* and *District* where the Good Practice took place *

Eleven cities in Türkiye: Hatay, Kahramanmaraş, Gaziantep, Adana, Osmaniye, Kilis, Şanlıurfa, Adıyaman, Malatya, Sivas, Diyarbakır

Please provide below a *Google Maps link* or *GPS coordinates* to the Good Practice's location *

https://maps.app.goo.gl/3sAjYaMkSmvE1Sa37

Is this considered a sensitive* area ? *
*(protected, fragile, has restricted access, or located within a conflict zone, etc.).

Please elaborate further.

It is a seismically active zone of Türkiye with active fault lines.

Who owns the cultural asset (ministry, other public body, private institution, none), on which the Good Practice was applied ? *

The Turkish state owns all cultural heritage in Türkiye.

Date(s) or period the Good Practice took place *

Please insert below the period when the good practice held. (eg. 2019-2020, March 2020 – June 2021, etc.)

February 2023-June 2023

Description of the Good Practice *

Please describe how the satellite data were collected (please mention the repositories or services where you acquired them); how they were used in your project; which were the aims of your study; and why these data were useful towards your research goals. (character limit: 1500)

In response to the devastating February 2023 Türkiye earthquakes, this study pioneered a rapid cultural heritage damage assessment by integrating citizen science with advanced remote sensing. Engaging over fifty volunteers and using simple social media platforms, we documented 1,532 heritage assets across eleven provinces which house UNESCO World Heritage sites like Göbekli Tepe, Arslantepe, Mound Nemrut and Diyarbakır. The approach combined ARIA damage proxy maps with ground-truth data, significantly enhancing assessment speed and accuracy. Results are published as an open-access GeoJSON online map. This effective fusion of community engagement and technological innovation offers a transformative framework for post-disaster cultural heritage preservation.

Why is this considered a Good Practice for making satellite data beneficial for Cultural Heritage ? (character limit: 1500) *

Devastating earthquakes in 2023 in Türkiye have cost over 50,000 lives, millions of displaced people and collapsed cities. We organized immediately following the EQs to address the level of damage come to the cultural heritage. This region has four UNESCO-listed sites and nine assets on the tentative list of UNESCO. This study demonstrates the effectiveness of combining citizen science approaches with advanced remote sensing technologies for rapid cultural heritage damage assessment. The volunteer-based data collection methodology, which engaged over fifty contributors from diverse backgrounds including archaeology, architecture, and earth sciences, successfully documented 1,532 cultural heritage assets across eleven provinces within weeks of the February 2023 earthquakes. This approach aligns with previous research emphasizing the importance of community engagement in heritage preservation and builds upon successful collaborative efforts using social media platforms for earthquake damage assessment.

Required skills section

Skills required to conduct the Good Practice *

Please reflect here which skills – e.g. technical, technological, social, heritage-related – are/were needed for the successful implementation of this Good Practice.

Understanding of significant cultural heritage, social media collaboration, collection of geographic coordinates, data sharing, integration and cleaning, projection of geo-spatial to digital maps, international collaboration for high quality radar satellite data.

Are/were there any technical skills required for this Good Practice that were not initially available within your organisation and had to be acquired or outsourced? *

- ( ) Yes
- (•) No

Please list the specific skills acquired or outsourced and describe their purpose (e.g. “I learned Python to automate the downloading and preprocessing of collected satellite data.”) *

Evidence of success *

Please describe the benefits they provide to the cultural heritage asset (e.g. a site can be protected from a hailstorm, looters can be deterred from illegal excavation, damage can be recorded online through international cooperation, etc.). (character limit: 1500)

This project achieved the rapid documentation and damage assessment of 1,532 cultural heritage assets across twelve earthquake-stricken provinces, creating the first comprehensive dataset of its kind. This initiative contributed to heritage preservation by several aspects. First, it creates an invaluable, publicly accessible digital record of heritage sites, some now damaged or beyond repair, safeguarding their memory for future generations. Secondly, it launched an open-access dataset for researchers, historians, and conservationists to study disaster impact on different historical periods and construction techniques. Last but not least, our initiative acted as a trauma relief tool for all volunteers involved and beyond. Through this spontaneous action, it became possible to empower a traumatized community by channelling collective grief into kind action, fostering solidarity, and providing transparent information about their cultural patrimony.

Available references for the Good Practice *

Please mention below if there are any derived publications, media reports or any other content that refers to the described Good Practice. Please include also a web link if available.

(character limit: 1500)

Demir, N., Çilingiroglu, Ç., Assessing the Impact of the Türkiye February 2023 Earthquakes on Cultural Heritage Sites: A Multi-Disciplinary Approach Utilizing ARIA Maps and Social Media Collaboration. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XLVIII-1: 117-122.

Please upload 2-3 images that concern the Good Practice. *
(each image cannot exceed the size limit of the 100 MB)

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1_Collapsed olde...
3_Collapsed Ant...
4_Nusret Demir ...
WhatsApp Image...

Προσθήκη αρχείου

Do you own the copyrights for these images ? *

- (●) Yes
- ( ) No

Should any form of media or outreach material will be created in the future, can we use them * to advertise your organization and the CH asset with proper acknowledgement?

- (●) Yes
- ( ) No

Please provide below the credits for the picture(s): *

Çiler Çilingiroğlu

Did you encounter any technical and/or technological challenges or issues associated with the implementation of this Good Practice? E.g. missing knowledge, doubts of colleagues, financial issues. *

The primary challenge was trying to focus in the immediate, traumatizing aftermath of the 7.8 and 7.5 magnitude earthquakes, which caused unbearable pain and feeling of loss. While our team worked remotely for safety, the psychological impact was profound, hampering focus and morale. Logistically, we faced the complete absence of official damage data and the urgent need to coordinate a large, dispersed volunteer group efficiently. Friends and colleagues, who were on the ground for rescue work, shared with us pictures and information on cultural heritage sites whenever possible. News outlets and especially local ones were our second most reliable source. We kept updating our database and collected all the links and sources of information in a file.

Solutions were born from solidarity mostly. We leveraged social media to quickly assemble over fifty volunteers, primarily students and professionals from relevant fields, whose shared purpose fostered a supportive community that provided mutual hope and resilience. To manage data collection without a physical presence, we implemented a structured digital workflow using WhatsApp for real-time coordination and Google Workspace for centralized data management. This allowed us to systematically gather and validate reliable information from afar, turning a dispersed network into a cohesive force for documentation.

Is there any potential for transferring this Good Practice to other cultural heritage organisations ? If so, please share more details. *

Yes. This initiative is highly transferable and scalable due to its low-cost, open-source, and technology-driven methodology. The model can be directly applied to any disaster-prone region globally where cultural heritage is at risk, requiring only access to satellite data (like the EU's Copernicus programme) and a digital platform to mobilize volunteers.

Additional Information. Please include below any other information or experience you wish to share.

This project was coordinated by Nusret Demir (Akdeniz University) and Çiler Çilingiroğlu (Ege University) with the help of these volunteers:
CEMİLE KARACA
BERFİN ÇETİN
BERAT KARADENİZ
SERKAN BULUT
RAHMİ SERHAT KEMER
MELAHAT GÜLÜMHAN TUNGER
YASEMİN İYİTÜRK
SEVDA AYBÜKE KIZILTUNÇ
İZGEN LEYLA TANCUAY
GİZEM YEŞİLOĞLU
CENGİZ GÜRBIYIK
ÖZDEN SOYDAŞ
BAŞAK AKAN
İNCİ DENİZ ÖZDEMİR
BÜŞRA KAYIK
YASEMİN ÇALIŞ
BUKET ÇAVUŞ
PINAR NİMETOĞLU
EZGİ SAYIN
MEHTAP MELEK AKDOĞAN
HAKAN YILDIZ
EKMEL NUR DOĞAN
BİRCE GÖKSEL
GÖKÇE ORUÇ
RÜYA ATAN
SEDA KURUM
ELİF KOPARAL
AYBÜKE DOĞA AYDIN
SELİN GÜR
KIYMET KARACA
GÜLŞEN TORUN

The information provided will be used exclusively for the activities of the SATCULT project and within the rules and obligations defined by the GDPR rules. The EU General Data Protection Regulation (GDPR) regulates how personal data of individuals in the EU may be processed and transferred. *

- (●) I have taken note of this information and agree to the use of my responses within the SATCULT project.