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.

"Kerkennah Island Project"

1. **Name of the organization in Charge of Good Practice**

Institut National du Patrimoine/CNRS

2. **Type of Organization in Charge of Good Practice**

Joint Cultural Heritage-related public entity (Ministry, Tunisia) – French National Centre for Scientific Research

3. **Domain of Organization's Activities/Expertise**

Joint Cultural Heritage (Tunisian INP) and Research (all sciences but here archaeology)

4. **Contact Person (Full Name)**

Katia Schörle

5. **Contact Details**

5.1 Email Address

Katia.schorle@cnrs.fr

5.2 Telephone Number

+33 6 32 92 42 94

6. **Location of the Organisation**

6.1 Country

France

6.2 City

Aix-en-Provence

6.3 Address of the Organisation

5 Rue du Chateau de l'Horloge

7. Location where the Good Practice Took Place

7.1 Country, City and District

Tunisia

7.2 Google Maps link or GPS coordinates

34.710423N.11.15365E

7.3 Is this considered a sensitive area ? (protected, fragile, has restricted access, within a conflict zone, etc). Please elaborate further

Yes, it is a protected (fenced) area, has restricted access, and is located on islands considered as 'sensitive' due to being a departure point from Mediterranean migrant crossings.

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

Tunisian Institut National du Patrimoine

8. Date(s) or Period the Good Practice Took Place

Please insert below the period when the Good Practice was held. (e.g. 2019-2020, March 2020 – June 2021, etc.)

2020-2023 (possibly extended)

9. 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.

Pleiades data archives were accessed via the French National DINAMIS programme to access CNES satellite image databank; 2022 images were requested and programmed via the CNES –

DINAMIS-THEIA programme (https://www.theia-land.frZ/product/dinamis/)

10. Why is this considered a Good Practice for making satellite data beneficial for cultural heritage?

Initially designed to survey sea salt preservation and its use in the Tunisian islands of Kerkennah, the Kerkennah Islands Project discovered the urgent challenge of coastal erosion and heritage site preservation in the face of climate evolution while using satellite imagery meant to accurately georeferenced sites. Using high-resolution Pleiades satellite imagery (0.5m) and advanced remote sensing techniques, the project's PhDs students thus turned out to discover, monitor and quantify micro-local coastal erosion over a 10-year period (2012-2022).

The study assessed various automatic coastline extraction methods, comparing segmentation-based approaches and transformation-based techniques (MNF-Lapliacian filter) against manually digitized coastlines. Key shoreline change indicators – including the Shoreline Change Envelope (SCE), Net Shoreline Movement (NSM), and End Point Rate (EPR) – were calculated.

By integrating the most precise GIS methods using the Digital Shoreline Analysis System (DSAS) for each coastal type and aligning calculations with GIS sea-level rise protections, the research group estimates that by 2100, up to 1/3 of the site could be at risk of loss due to erosion. These findings highlight the urgent need for adaptive management strategies to mitigate the impact of climate change on cultural heritage, providing essential data to support sustainable costal conservation efforts, and seems to correlate with coastal heritage identified to be at risk worldwide.

11. Skills required to conduct a Good Practice

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

Technical and heritage-related

11.1 *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

11.2 If "Yes" 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.")

The French Space Agency (CNESI) and technicians assisted us and guided us towards tools needed.

12. 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.)

Archaeological recordings can proceed according to advanced knowledge of areas most at risk; coping strategies to protect the site can be put into place.

13. References available for the Good Practice

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

Publications are forthcoming.

14. Please upload 2-3 images that concern the Good Practice.

(2 pictures were uploaded)

15. Do you own the copyrights for these images?

Yes

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

Yes

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

1) *© CCJ, SFPT (AFRICA), Pléiades c) CNES (2022) Distribution AIRBUS DS – MNS, QGIS 2023*
2) *© L. Diatta, 2025*

16. 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.

There were several challenges:

- *It is important to realise that earth observation has two sides - one for the benefit of societies and the other for the* ***benefit of forces bent on war and dictatorship****. Satellite imagery can sometimes be seen as a* ***threat*** *(the collection of espionage data, especially when used outside of Europe, and in particular if a region is sensitive and one of the main migrant transit routes, such as the Kerkennah Islands).*
- *Archaeology is a conservative science and there are* ***colleagues who consider the use of satellite data unnecessary and not useful****.*
- *Co-operation with some geoinformation experts is difficult because they* ***do not consider the humanities, and therefore the preservation of cultural heritage, to be equal.*** *They perceive the interest of cultural heritage conservationists as* ***unjustified interference in their highly demanding field of research*** *and there is* ***little willingness to engage in interdisciplinary cooperation****.*
- *With a few exceptions, there is a* ***lack of experience in interdisciplinary cooperation****, i.e. there is a great need to first create trust between two very different fields of research.*

- *There are scientists in geoinformation who **do not want the transfer of their research results**. They feel that the transfer of their work results to cultural heritage protection is inappropriate and cannot accept the experts from cultural heritage protection and their requirements as equals.*
- *There is also a **gender dimension**, as it is predominantly women who work in cultural heritage protection, often in senior positions, whereas there are far fewer women in key positions in geoinformation science. Geoinformation science is a male-dominated field of research. The expertise of female cultural heritage experts is therefore often regarded as **not being equal** to that of geoinformation experts.*
- ***Competitive pressure**: Geoinformation scientists feel threatened by active and committed start-ups that can acquire considerable funding, while research funding tends to decrease. In other words, competition is very high due to an economic conjecture and therefore to attractive jobs and technical equipment.*

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

Absolutely; this form of work should be required, and the Kerkennah Project was designed in a way that it could be emulated as an example of best practice elsewhere.

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

N/A

Thank you very much for your contribution which is greatly appreciated. The SATCULT team will be back to you as soon as the analysis of the Good Practices has been completed and the type of publication has been agreed. If you have any questions, please contact us: satcult@media-k.eu .