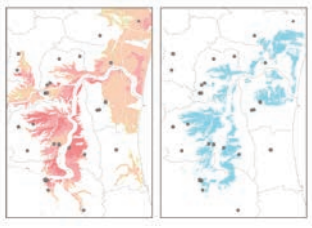
文化財防災に関する取り組み

Cultural Property Disaster Risk Management Initiatives

文化財GISの活用

Utilization of GIS for protection of cultural properties

GIS（Geographic Information System、地理情報システム）とは、位置に関する情報（空間情報）を持ったデータを空間情報に基づいて管理、分析、表示するための仕組みです。個々の文化財の産地、所在地といった空間情報は、その文化財と不可分です。また、ある場所で発生しうる自然災害は、その場所の地理的な条件から想定しうることから、GIS上で文化財の情報をデータベース化することで、個々の文化財の災害リスクを評価できます。宮城県内の阿武隈川流域の洪水ハザードマップと、令和元年東日本台風（台風19号）に伴う大雨の際の推定浸水域とを比べると、両者はよく一致し、災害発生前のリスク評価の有効性が分かります。



文化財の位置と洪水ハザードマップ（左）及び推定浸水域（右）（公開情報から作成）
The location of cultural properties on the flood hazard map (left) and the inferred inundation area (created based on public information) (right)

令和6年能登半島地震被害状況と文化財の位置（公開情報から作成）
Status of damage caused by the 2024 Noto Earthquake and the location of cultural properties (created based on public information)

また、地震など大規模な自然災害の発生直後には、普段は文化財保護の業務に携わる自治体職員や文化財の所有者への連絡や、現地への訪問ができないこともあります。そのようなときに、各地の震度や被害状況と文化財の位置を重ね合わせることで、個々の文化財の被害を推定し、支援活動に備えることができます。

このように、災害への備え、災害発生時の救援活動において、文化財情報のGIS化は不可欠です。

The Geographic Information System (GIS) is a system for managing, analyzing, and displaying data that hold location-related spatial information. The spatial information of the places where each individual cultural property was produced and is now located is an inseparable part of the characteristics of the cultural property. At the same time, disaster risks for each individual cultural property can be evaluated if the information of the property is mapped via GIS, because impacts of natural disaster can be estimated based on its geographical conditions. For example, when comparing a flood hazard map of a Abukuma basin in Miyagi Prefecture to an affected area of inundation by the heavy rain associated with Typhoon Hagibis (Typhoon No. 19 of 2019), the mappings are well overlapped. This fact shows the effectiveness of upfront risk evaluation performed by comparing cultural property GIS data to a hazard map before an actual disaster happens.

Just after the occurrence of a large natural disaster such as an earthquake, municipal government officials in charge of cultural property protection and/or owners of cultural properties often cannot be contacted. Furthermore, it is often not possible to visit the disaster-hit area for direct investigation of cultural properties. In a situation in which we cannot obtain direct information on cultural properties that might have been impacted by the disaster in a given area, we can estimate the damage to the properties based on visual comparison of the earthquake intensity data and the damage situation to the locational information of the cultural properties in the area, so that we can prepare for the following support activities on possibly damaged cultural properties.

Therefore, having GIS information available for each cultural property is essential for disaster risk management as well as support activities after a disaster.

被災した文化財の状態把握に関する調査研究

Investigations to ascertain the status of damaged cultural properties

文化財を災害から守るためには、被害の現状、またそこで生じた問題の原因を明らかにすることが不可欠であり、そこから防災の取り組みへ生かす情報が得られる場合があります。保存科学研究センターでは、被災した文化財の状態を正確に把握することを目的とした調査研究を進めています。被災した文化財からの揮発成分調査は、水害による被災文化財から確認される臭気を明らかにしようとする試みです。臭気の原因とその発生原因を調査し、文化財の修復現場において活用できる情報の収集を目的としています。また、文化財防災センターと協働し、災害復旧の現場対応を積極的に行い、被災地と研究所における情報共有と保存のための研究を進めています。

文書資料からの揮発成分調査
Investigations on volatile compounds emitted from document materials

To protect cultural properties from any future disasters, it is essential to understand the actual damage status and identify the causes of the problems regarding damage that occurred in previous disasters. Through these activities, useful information to prevent and/or mitigate future damage can be obtained. The Center for Conservation Science conducts investigations aiming to accurately ascertain the damage status. For example, investigation on volatile compounds that are emitted from damaged cultural properties can enable identification of the constituents of odors recognized on cultural properties damaged by flood, and why the odors occur. Based on such investigation, we collect information that can be used in the restoration of the properties. In addition, together with the Cultural Heritage Disaster Risk Management Center, Japan, we are actively working in the area of actual disaster recovery, sharing the information between affected areas and TOBUNKEN, and conducting research for conservation.

珠洲焼の災害対応と次世代継承への挑戦
―令和4（2022）年・令和5（2023）年の能登地方の地震による被災調査から

Dealing with Damage to Suzu Ware and Challenges for its Succession to the Next Generation – Based on Investigation of the Damage Caused by Earthquakes that Hit the Noto Region in 2022 and 2023

石川県能登地方では、令和4（2022）年6月19日と令和5（2023）年5月5日にそれぞれ震度6弱、震度6強の大きな揺れを観測した地震が発生しました。同県珠洲市の珠洲焼は、平安時代から室町時代にかけて能登半島先端で生産された「珠洲焼」を念頭に、昭和50年代に新たに生産が開始されたものです。2度の地震による珠洲焼制作への被害は、作品や薪窯の破損や制作活動継続への不安等、様々な部分に及びました。一方で、一部の陶工には次世代への継承を意識した新たな試みに着手する動きも見られました。

そうした最中、令和6（2024）年1月1日に「令和6年能登半島地震」が発生し、珠洲市は三度、震度6強の地震に見舞われる事態となりました。報道によれば、ほぼすべての窯元が被害を受け、制作が再開できる状況ではありません。同様の状況にある無形の文化財は多いと考えられます。この広範に甚大な被害をもたらした災害に対し、何ができるのか・何をするべきなのかを考え実行に移していくことが、今後の課題となりました。

珠洲焼祭の様子（令和5（2023）年10月）
Suzu Ware Festival, October, 2023

Major earthquakes hit the Noto region of Ishikawa Prefecture recently, with maximum intensity of nearly 6 on June 19, 2022, and over 6 on May 5, 2023. Suzu Ware was made in the edge area of the Noto Peninsula during the Heian and Muromachi periods (mid-12th century to the end of the 15th century). In 1979, new Suzu Ware production was started based on the old Suzu Ware. Damage to Suzu Ware production caused by these two earthquakes widely ranged from the physical damage to craftworks and wood-fired kilns to the concerns of craftspersons regarding the continuation of their work. However, some craftspersons started new attempts for the technical succession to the next generations.

While these new attempts were in progress, the 2024 Noto Peninsula Earthquake occurred on January 1, 2024. Suzu City was hit by an earthquake with intensity near 7, which was the third time that Suzu City was hit by earthquakes with intensity 6 or more. News reports stated that almost all pottery there was damaged and their production cannot be resumed. It is assumed that many intangible cultural properties suffered from similar situations. It is our challenge to dealing with the wide range of enormous damage caused by disaster by identifying what needs to be done and accomplishing what we are able to accomplish.

トルコにおける文化遺産防災体制構築に関する協力

Cooperation on the Establishment of a Disaster Management System for Cultural Heritage in the Republic of Türkiye

トルコ南東部で令和5（2023）年2月に発生した大地震では、世界的に重要な文化遺産にも大きな被害が生じ、その防災面での対策強化が急務となっています。同じ自然災害大国として文化財防災の体制整備を進めているわが国の経験と知見を海外と共有することは、相手国のみならずわが国にとっても有益と考えられます。そこで、ともに国立文化財機構に属する文化財防災センターと当研究所が共同で、トルコ共和国文化観光省文化遺産・博物館総局による文化遺産防災体制整備を支援することとなりました。

令和5年度は、博物館における動産文化遺産の保存を主な対象に、文化庁委託事業による現地派遣を実施しました。今次震災と直後に発生した洪水で被災した各館を訪れたほか、日本の文化財防災対策や今次震災時のトルコ側対応等について同局スタッフらと情報共有、意見交換する専門家会議を開催しました。

今後、日本国内での研修等も含めて、継続的な協力関係へとつなげていく予定です。

彫像作品の固定方法に関する意見交換（ガズィアンテプ考古学博物館）
Exchange of views on how to fix statues at Gaziantep Archaeology Museum

The massive earthquake that struck southeastern part of the Republic of Türkiye in February 2023 caused significant damage to cultural heritage that has global importance, and there is an urgent need to strengthen the related disaster management measures. Sharing the experience and knowledge of Japan, which is also a country prone to natural disasters and is promoting the development of systems for disaster risk management of cultural properties, will be beneficial not only to the counterpart country, but also to Japan. Therefore, the Cultural Heritage Disaster Risk Management Center, Japan and TOBUNKEN, both of which belong to the National Institutes for Cultural Heritage, have decided to jointly support the development of a cultural heritage disaster risk management system under the Directorate General for Cultural Heritage and Museums of the Ministry of Culture and Tourism, the Republic of Türkiye.

In FY2023, we mainly targeted the preservation of movable cultural heritage in museums, and dispatched an expert mission through a project commissioned by the Agency for Cultural Affairs, Japan. In addition to visiting museums affected by the earthquake and the flood that occurred shortly afterwards, the delegation also held an expert meeting to share information and exchange opinions on disaster management measures for cultural properties in Japan and the Turkish response to the earthquake with the bureau's staff.

We look forward to the development of a continuous cooperative relationship, including training sessions in Japan.