

## Distribution of wave-cut bench and its formation factors in the coastal area of the Shimane Peninsula

\*Hiroshi Hayata<sup>1</sup>, Masaaki Tanaka<sup>1</sup>, Masaru Nakamura<sup>1</sup>, Yuichi Shimizu<sup>1</sup>, Shimpei Miyamoto<sup>2</sup>, Shuji Shincho<sup>2</sup>, Norihisa Goto<sup>3</sup>

1. The Chugoku Electric Power Co., Inc., 2. Chuden Engineering Consultants Co., Ltd., 3. Hanshin Consultants Co., Ltd.

(Outline)

The Shimane Peninsula was formed by Miocene formation, and it is thought that it received remarkable crustal deformation in north-south compression stress field during middle to late Miocene by Itoh and Arato (1999) and so on. The coastal area of the Shimane Peninsula facing the Sea of Japan (hereinafter referred to as “the northern coastal area of the Shimane Peninsula”) is composed of the rocky coast mainly, and recognized wave-cut bench (hereinafter referred to as “bench”) in the intertidal zone and above that.

A purpose of this study is to reveal the formation factors of the bench at the northern coastal area of the Shimane Peninsula. Therefore we classified the coastal landform by interpretation of aerial photograph and extracted benches and other geomorphic features.

(Distribution situation of the benches)

The result of interpretation of aerial photograph, the benches were classified into developed in the intertidal zone and above that. The benches did not develop throughout the northern coast of the Shimane Peninsula, and recognized regional deflection of their distribution. And the width of the benches is mostly around several meters to dozens of meters. The benches which developed above the intertidal zone located in various altitudes below 2.5m, and the distribution of its altitude showed that the constancy and the regularity are not recognized.

We considered the formation factors of the benches which developed above the intertidal zone about correlation with seismotectonics. As a result of multi-channel seismic profiling conducted at the northern coastal area of the Shimane Peninsula, it is not recognized any faults uplifting the coastal area. It is considered that tendency of the crustal movement is stable or slightly subsidence after the late Pleistocene in this region by Koike and Machida ed. (2001), Fujiwara et al. (2005) and so on, because of it has not been recognized the late Pleistocene formation and so on. So, it is considered that the formation factors of the benches developed above the intertidal zone are not formed by seismotectonics.

(Formation factors of the benches)

We acquired DSM and orthophoto by aerial photogrammetry using UAV where the benches are relatively wide distributed and made a highly precise orthochromatic contour map to consider the formation factors of the benches from a geological point of view. Furthermore, we conducted a geological field survey to confirm features of lithology and lithofacies.

In this study, we introduce an example of the Coast of Susumi in Matsue City. 1) At eastern side of the bay: The benches are composed of intrusive rock, and they are generally higher altitude than at inner part and western side of the bay. 2) At inner part of the bay: The benches are composed of alternated sandstone and mudstone, and they are widely developed. At this area, on the surface of the benches, washboard-like relief is observed. Mudstone submerged beneath the surface of the sea. Sandstone had a resistance against erosion is formed slightly higher planation surface protrude from the surface of the sea. 3) At cape of western side of the bay: The benches are composed of alternated sandstone and mudstone, and they distributed predominant sandstone are higher altitude and widely extend toward offshore.

From the above results, we concluded that the benches developing various altitude was formed reflecting

a difference of the resistance against erosion about lithology and lithofacies at the northern coastal area of the Shimane Peninsula.

Keywords: the Shimane Peninsula, Coast of Susumi, wave-cut bench, interpretation aerial photograph, Digital Surface Model

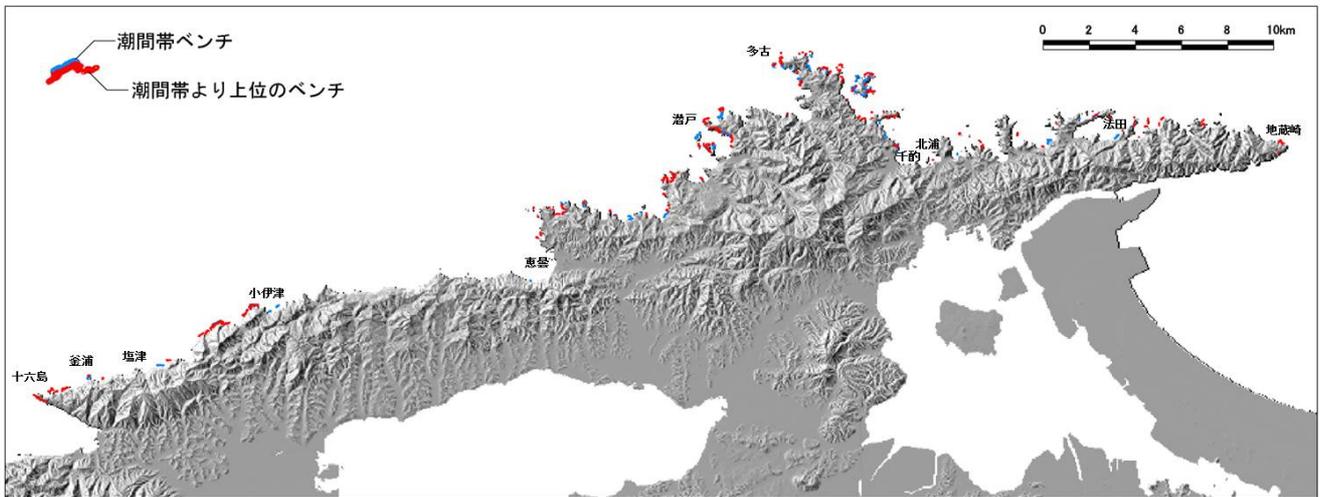


図 島根半島沿岸のベンチの発達状況

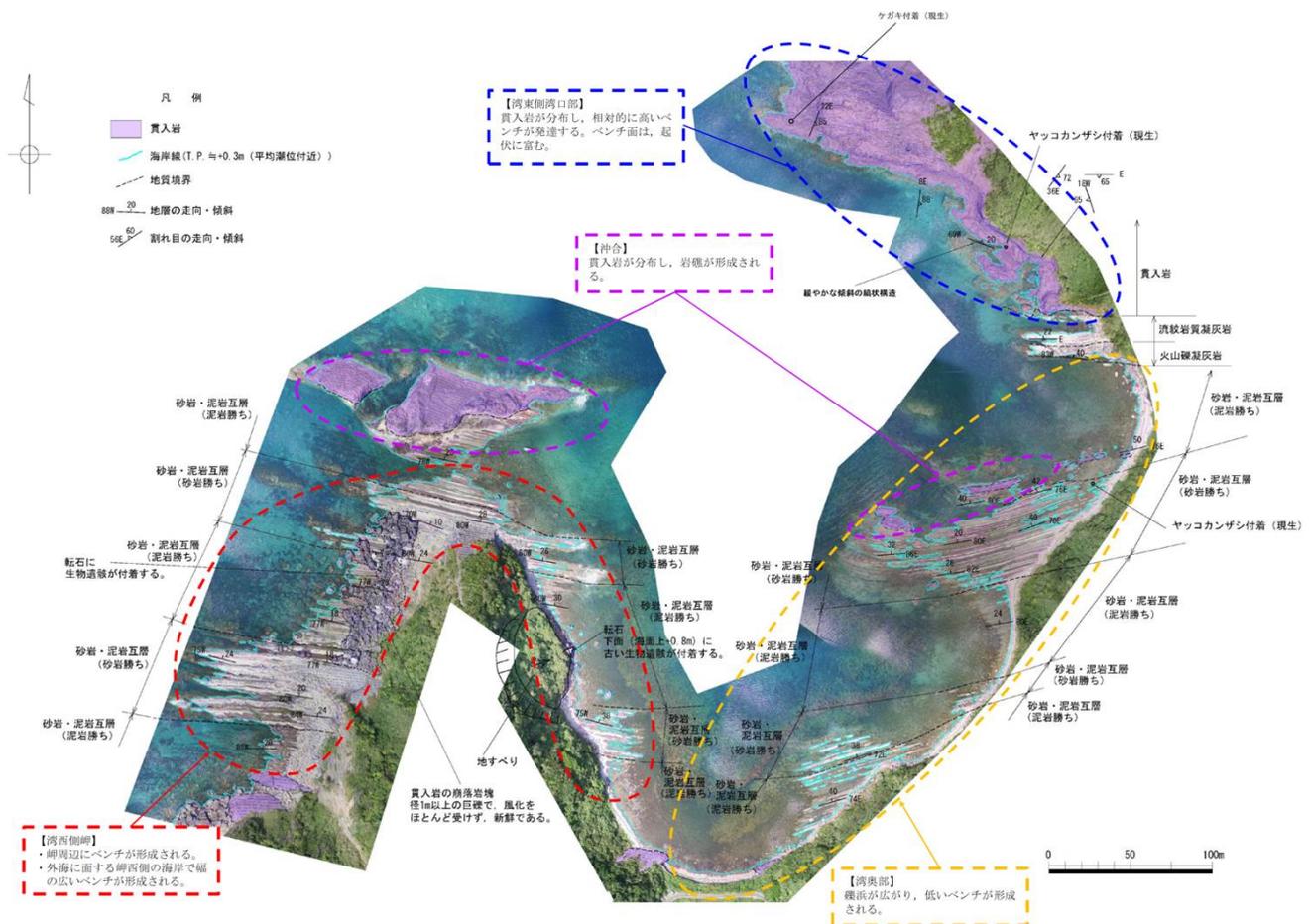


図 松江市島根町須々海海岸のオルソ等高線図 (地表地質踏査結果を付記)