

## 4D b-Value Mapping for Japan

\*Yasushi Harada<sup>1</sup>, Yuichi Akamine<sup>1</sup>, Masayoshi Anzai<sup>1</sup>

1. School of Marine Science and Technology, Tokai University

b-value is considered as an index for seismicity, and smaller b-value means relatively more earthquakes of large magnitude, larger b-value means relatively less earthquakes of large magnitude. We tried to produce 4D b-value map for Japan to examine the difference of seismicity before and after the M9-class 2011 Tohoku quake. Dr. Kazuki Nanjo kindly provided us his code for calculating b-value and the standard deviation(SD). We created not only 4D b-value maps of Japan but also maps of the SD of b-value. Since large SD may mean a failure of Gutenberg–Richter law. Also from the map of b-value around Japan, we noticed a tendency of smaller b-value at distant area from the coastline. The tendency can be explained by the fact that seismometers cannot detect small distant earthquakes. Therefore we constructed a correction formula for b-values. With this formula, the most of the effect of smaller b-value around the M9-class 2011 Tohoku quake are disappeared. However the current formula is not good enough and it have to be improved in future studies.

Keywords: b-Value Mapping for Japan, 4D analysis, maps of SD of b-value, correction formula