

The evaluation of fuzzy uncertainties in geographical information

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Recently, multimodal geographical information are distributed and published worldwide. However, geographical information inherently have nature of uncertainties, which are caused by various reasons related to manufacturing process and could be categorized in two types, *errors* and *fuzziness*. An example which represents the category *errors* is mistake produced by the machine analysis process. The second category, *fuzziness* are produced in case of incompatible definition of categorization. Those uncertainties would reduce the accuracy and the confidence of various GIS applications.

In this research, in order to improve reliability of geographical information corresponding to the result of various GIS applications, uncertainties in geographical information were evaluated. The attention will be focused on the *fuzziness* category, especially fuzzy definitions of categorization and human errors. Uncertainties such as *error* will not be considered here. The term of human error is used with the meaning of uncertain inaccuracy occurring from human judgment lied in manufacturing process of geographical information (e.g. landuse map).

To clarify the inaccuracy of geographic information containing such fuzziness, the data of two different types will be compared: the reliability data, which have concrete data source and those not having a concrete data source, which the interpretation of characteristic laid in manufacturing process. The degree of incompatibility in the latter data can be obtained evaluated according to accuracy of the former data.

The evaluation of those uncertainties highlights the importance of increasing the reliability of GIS applications. Future development of this research are the introduction of new method to reduce those uncertainties.