Integration of Earth science and Human activity in progressive Utilization of Digital Asia for safe and sustainable society.

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1.Research purpose

Recently, the research related to global environmental concerns around the global warming has progressed by means of the improvement of earth remote sensing technologies and the improvement of the numerical simulation technology, etc. Global environmental concerns are related to natural phenomenon and human activity also, so it is important that the entire earth system including the activity of human is captured for the problem solving.

This research has aimed to pursue effective information service for a safe and the sustainable society. Digital Asia is used to achieve such purposes and information on a natural science and information on the human activity are united on it. As for digital Asia, construction is being advanced by the Keio University Fukui laboratory.

2.Use of digital Asia and research policy

Digital Asia constructs the virtual digital spaces, integrating various distributed information, in use of the technology of clear-inghouse and the GIS.

Digital Asia has the ability that more multipurpose information service can be achieved by enhancing the input data source.

In this research, various view and various information services were designed.

In addition, the information service is classified from the viewpoint of the time axis into two categories.

One is service of the short time span. These services to pursue the Near-Real time contribute to prompt decision making support, such as disaster reduction support.

One is service of the long time span. These are services to aim to be going to contribute to the decision making of a long-term policy by the forecast by accumulating mid/long-term data, the trend analysis. The targets of these services are to contribute to the earth environment concerns and the energy supply and demand problem, etc.

3.Nia real-time information service to aim at disaster prevention

The enhancement of the information service to aim at disaster prevention is hoped for to defend the human society from various disasters, and to achieve a safe society. In this research, disaster prevention services were caught as an intelligence cycle, and the following phase division was done.

phase 1: disaster detection
phase 2: data collection
phase 3: data processing
phase 4: analysis and exploitation
phase 5: dissemination

And also, services were divided for the following disaster types:

Earthquakes, Volcanic eruption, Forest fire, Flood, Typhoon, Tsunami, Tornado.

Needed data and function of each disaster type of each phase at intelligence cycle were analyzed, and the service that had to be provided was designed.

In addition, it tempers with the viewpoint of risk management and the study of the information service is advanced.

4.Mid/long-term information service for environment and energy problems

As for the technology that should use it here, the archive technology, the GIS technology, the simulation technology, and the trend analysis technology, etc. are enumerated.

The earth observation data that centers on remote sensing of the temperature, the temperature of sea surface, and the ice sheets distribution, and the density of the green house gases are accumulated. On the other hand, data on the amount of presumption of the amount of the CO_2 exhaust according to the statistical data, and data on the amount of importing and exporting of the resources and energy are accumulated. Graphical view that combines these nature systems data and human activities data are researched, and effective services that makes the event on the earth visible is designed.

5.Summary

It was shown that the information service that united field of the Earth science field and the man activity crossed, by this research. The service enhancement as the decision support system is scheduled to be pursued in the future.