Research on Information Design to Promote Climate Change Adaptation

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[Abstract]

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To promote the adaptation of the climate change in the local area, we examined the information design of the climate change through the exchange of opinions with various stakeholders. And, a guide of the information making for climate change adaptation was created.

We tried to unify the quality control and statistical processing methods of meteorological data observed by different organizations, and to create a database in a user-friendly format. Also, the meta information of each observation point was generated as KML-file so that the positional relationships between them can be visually confirmed on Google Earth.

We aimed to organize past abnormal weather information, to analyze the mechanism of occurrence of extreme events with a numerical model, and to visualize them as a climate change area map. Numerical model elucidated the mechanism of record breaking heavy rain and heat wave in Nagano prefecture based on sensitivity simulations. The model and high density weather observations expressed the detail spatial distributions of decadal heavy rain events after 1980s.

The impact of climate change on slope failure is considered in terms not only rainfall but also snowmelt. A slope failure risk model has already been developed for heavy rainfall. In this study, the model is evolved to be applicable to snowmelt by using RoS (Rain on Snow). A database of risk for sediment disaster prone area was developed using the outputs of the multi-seasonal slope failure risk model. The information in the developed database is shared with model municipalities and improved into information that can be used for slope failure adaptation measures.

Frost occurrence was estimated with use of a vegetation heat-balance model. It was shown that the most important meteorological factor to predict frost was down-ward long-wave radiation. Samples for stochastic early warning was produced from one-week ensemble forecasts.

When managing a school, heat stroke must be prevented because children spend a lot of time there. However, it is difficult for teachers to judge the thermal environment based on their subjective judgment, because teachers and children have different thermal senses and the thermal environment in classrooms and schoolyards is distributed in the space. In order for teachers to predict the risk of heat stroke, it is desirable to measure the thermal environment and make judgments based on the data.

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