

## 16. Improvement of Social Disaster Environment of Developing Countries Arising from Model Reference Adaptive Theory

モデル規範適応理論に基づく開発途上国の社会災害環境の改善

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**ABSTRACT:** At present, the world population of developing countries is increasing rapidly and the resident space is approaching a disaster critical section. Therefore, the help from the both sides of the thing and person is indispensable for the scientific analysis of the natural disaster environment and the improvement of the social disaster environment in the developing country by the United Nations and the various help organization. The present study investigated the features of sustainable disaster environment and future prospects for adaptation policies on the four models such as the parallel, series, parallel-series and series-parallel models arising from Model Reference Adaptive Theory. When thinking of adaptation policies by these models, it is important to note that the actual disaster environment is to be become the effective circulation by the disaster environment criteria based on the disaster recognition of real disaster environment and the schematic representation of disaster crisis.

**KEYWORDS:** Model reference adaptive theory, Sustainable disaster environment, Natural disaster environment, Social disaster environment

### 1. Introduction

The gravity of the environmental deterioration will be increased manifold by population explosion that is likely to take countries in the near future. Asian and African continents especially are likely to be flooded with high level of population influx. In the developing countries, poverty causes a widespread and steady degradation of the productive capacity of woodlands, range lands and agricultural soils, caused by inappropriate deforestation, overstocking of pastures, over harvesting of cropland and woodland as well as overexploitation of fragile and other marginal lands.

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At present, the world population is increasing rapidly and the resident space is approaching a disaster critical region (Yamamura, 1996b).

The disaster occurs in the area which the natural disaster environment and the social disaster environment overlap. Therefore, it forgets a disaster when the time passes and it lives in the natural disaster environment. Also, the disaster becomes reeled back and set for the serious damage to occur. Not to reel such a disaster back, the natural disaster environment must be correctly grasped.

## **2. Model Reference Adaptive Disaster Model**

There are an earthquake, a volcano eruption, a typhoon, a flood, and a drought when breaking up a disaster mainly. That each disaster has a characteristic and to grasp damage data in the past sufficiently are important. The human being tends to forget the experience of the disaster. Therefore, to take over the experience of the disaster in the past to the following generation is important.

At present, the scientific investigation of the disaster improves and the estimate about some degree becomes possible. The earthquake gets for the dynamic analysis of the plate in the continent and the grasping of an active fault to be possible. The eruption of the volcano gets for the forecast to be possible with the utilization of the minute seismography, GIS and GPS. The typhoon gets for the estimate about the passage and the damage with some degree to be possible with the satellite observation and the locality observation. The heavy rain and the drought get for the estimate about some degree to be possible with the satellite observation and the atmosphere observation. If sucking social disaster environment appropriately in the correspondence except the disaster which doesn't have estimate, the reducing of the disaster becomes possible.

At present, hazard mapping to the various disaster is made. As for the problem, it forgets disaster expression in the past and it is that a disaster is moreover repeated by administration's and habitant's neglecting the service of the social disaster environment. At present, the technique of the geological feature and the crust investigation improves and the disaster expression in the considerable past, becomes able to be grasped.

Therefore, it is possible for the disaster to reduce when grasping natural disaster environment sufficiently by the scientific observation of the disaster and the investigation and making social disaster environment be adaptable.

As for the concepts mentioned above, this model takes the sustainable disaster environment that is based on the harmonic disaster value criteria between natural disaster environment and social disaster environment as a reference model, and the

actual disaster environment as a adjustable model (Yamamura,1983,1984, 1965, 1986, 1989a, 1991a, 1991b, 1992,1993, 1999a, 1999b, 2000a, 2000b, Yamamura and Miyata 1989b).

According to the comparison of these disaster environments, these are four models of adaptation of the actual disaster environment to the sustainable disaster environment. To be looked for by the sustainable disaster environment is harmony of natural disaster environment and social disaster environment.

The primary model is a parallel model. This model considers the adaptation policy how which is adaptable to the sustainable disaster environment into the actual disaster environment by direct comparison between these two disaster environment.

The second model is a series model. This model introduces a sustainable disaster environment standard into the actual disaster environment straightway, and in this model, considers the adaptation how which is adaptable to the harmonic disaster criteria into the actual disaster environment straightway. This model is applied to the region or country destroyed by huge drastic disaster crisis.

The third model is a parallel-series model. This model is based on the correction of adaptation policy with the harmonization between natural disaster environment and social disaster environment by harmonic disaster criteria. Moreover, this model is in the case of adaptation' s being possible to the sustainable disaster environment into the actual disaster environment with either adaptation policy with natural disaster criteria or social disaster criteria.

The fourth model is a series-parallel model. In this model, both adaptation policies with natural disaster environment and social disaster environment are defined as unstable. Moreover, this model is in the case of adaptation' s being possible to sustainable disaster environment into the actual disaster environment with both adaptation policies with natural disaster criteria and social disaster criteria. The harmonic disaster criteria is to harmonize the activities of all disaster bodies by homeostasis maintenance.

### **3. Framework of Model Reference Adaptive Disaster Policy**

At present, the investigation and the analysis of the dynamic circulation of the atmosphere and the ocean move ahead and the grasping of natural disaster environment with some degree becomes possible. The social custom and ignorance aren't developing the service and the improvement of the social disaster environment readily compared with it.

In the past, there was a big earthquake and enormous human life and fortune were lost. It builds the house of the similar day drawing-off brick and also enormous

human life and fortune are repeatedly lost (Yamamura, 1996a).

As for the passage of the typhoon, the considerable degree passage becomes able to be grasped with the weather satellite and the wind velocity and the rainfall become able to be grasped. Therefore, that the habitant in the typhoon arrival area grasps these information sufficiently and the urgency avoidance and to improve dangerous social disaster environment are important. If there is a river GIS of the upper stream and rainfall in case of the flood, the flood area can be grasped. However, that an integrated GIS is always utilized for a road, a railway, a residential district and various facilities to be inputted to the flood area which could be grasped as the layer, and that to be important can do the blocking off of a road and a railway and the shelter of the habitant in case of the flood is important (Yamamura and Jothimani, 1997, Yamamura and Yasutomo, 1999c).

At present, the hazard mapping is clear in the distribution to the habitant every various disaster. It is important that hazard mapping is always utilized for the habitant. For its purpose, with the hazard mapping, it is important to be displayed not only the disaster information but also the contents which a habitant is daily utilized for.

In any disaster, the monitoring is important. The omen of the disaster becomes able to be grasped by always observing. When investigating a disaster in the past, the various omen sometimes becomes clear. Also, the various omen becomes clear with various data's being gotten by the observation among long-range and analyzing it.

Only in the taking charge organization, the disaster can not be prevented. The disaster researcher, the relation organization and the resident in addition to taking charge organization compose a partnership and must correspond to the disaster. For its purpose, at the normal time in addition to the disaster training, it is necessary that the organization of the partnership of disaster is active vividly..

Moreover, to grasp what crisis situation it is in correctly is important. When the crisis of the country, the area, company and resident By the disaster becomes clear, it often becomes a serious situation,. It is necessary to consider to grasp crisis situation.

The disaster environment system has two major cyclical systems namely, the accumulation system and adaptation system. The development of crisis scenarios is introduced by these systems.

The firth set of crisis represents the disaster environment problems such as an earthquake, a volcano eruption, a typhoon, a flood, and a drought so on. Natural disaster environment and social disaster environment also undergo change to cope with the extended perturbation of the first crisis. If the extended perturbations arising out of the first crisis lead to smaller damage, the disaster environment systems return back to the stable condition by the cyclical recovery process.

On the contrary if the disaster environment systems are not able to recover to the stable condition by the cyclical recovery process, the disaster environment systems are faced with the second set of crisis. It is therefore highly necessary to recover the disaster environment condition by gradual evolution of adaptation system through successive mitigation of minor crises.

If however, the disaster environment systems are not able to recover to the stable conditions through the process of the adaptation system, the disaster environment systems are faced with the third set of crisis. It becomes highly necessary to recover the disaster environment systems back to the stable conditions by the gradual evolution of accumulation system through successive mitigation of minor crises.

If on the contrary the disaster environment systems cannot be recovered to the stable condition by the accumulation system, the disaster environment systems are faced with the fourth set of crisis. At the stages, it becomes imperative to recovery the disaster systems by the fuller application of both the systems through the successive mitigation of major crises. It is extremely important to check up the levels of the disaster environment problems.

#### 4. Conclusion

The earth environment and the disaster environment in the present world become a critical situation with the world scale. At present, the world population is increasing rapidly and the resident space is approaching a disaster critical section. Therefore, the opportunity for the human being to encounter to the disaster is increased.

The disaster occurs in the area which the natural disaster environment and the social disaster environment overlap. In this paper, it is one that aimed to harmonize the natural disaster environment and social disaster environment based on Model Reference Adaptive Theory.

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