

Editor's Introduction for Volume 6, Issue 4

Risk, similar as a ghost, is a scene in the future associated with some adverse incident. If we can accurately predict the incident, it is called a pseudo risk. In this case, it is not a wandering ghost, but a familiar thing. For example, if a person falls to the ground from a plane in 500 meters high without parachute, he will die. There is not any suspense, it is a pseudo risk. Therefore, the most of risk analysts consider risk as some uncertainty and used to measure risk with probability. However, "probability" does not appear in the papers of this issue. It implies that the denotation of risk is larger than the denotation of probability.

This issue contains 6 papers. There are 3 contributions written in English and 3 contributions in Chinese with English abstracts. The papers can be divided into five topics: emerging risks related to new technologies and environment, risk issues in industrial systems, emergency management of natural disasters, emerging risks related to climate change and risk identification & management of natural disasters.

There are two papers in emerging risks related to new technologies and environment. the first paper "Risk Considerations in the Use of Unmanned Aerial Vehicles in the Construction Industry" by George Wang, Donna Hollar, Suan Sayger, et al is to provide construction professionals with timely and pertinent information on unmanned aerial vehicles use with a focus on risk management based on current industry practice, experience and literature review. The second paper "Monster Cows and the Doing of Modern Biotechnology in Sweden: An Intersectional Risk Analysis" by Anna Olofsson & Susanna Öhman is to analyze how the insemination of images of a cow is entangled with perceptions of gene technology through the 'doing' of risk, nature, periphery and gender in Sweden. Two types of data have been used; the 1996 Eurobarometer survey on public opinion and a corpus of articles from the Swedish daily press. The conclusion was that terms like gene technology are so abstract that people have problems in understanding the meaning of the concepts and then turn to easily accessible images for instance in the media.

There is one paper in risk issues in industrial systems. The paper "CFD Analysis of Oxygen and Carbon Dioxide Recovery during Ventilation in Municipal Confined Space" by Yan Liu, Cong Tan & Dongliang Liu, simulates ventilation process in municipal heating confine space by CFD (Computational fluid dynamics) numerical simulation method, and studies the distribution of temperature, oxygen and carbon dioxide fraction in municipal heating confined space during ventilation process. The simulation results show that the airflow and temperature are obviously stratified in vertical direction during the ventilation. The temperature is low and the airflow velocity is high at the bottom part of the tunnel. While the temperature is high and the airflow velocity is low at the top of the tunnel. By contrast, recovery of the oxygen and carbon dioxide content is relatively faster at the bottom than it at the top.

There is one paper in emergency management of natural disasters. The paper "Path Optimization in Dynamic Adverse Weathers", by Mingkong Zhang, Xiaobing Hu & Jianqin Liao, concerned with how to achieve optimal actual travelling trajectory by just a single offline optimization, given the dynamics of weather conditions is pre-known. To this end, the concept of co-evolutionary path optimization (CEPO) is introduced, where the weather condition in a single run of offline optimization is not static, but keeps changing during the single run of offline optimization. Existing DPO methods can hardly address CEPO, because they do not allow the weather condition to change in a single run of online optimization. To address the CEPO in dynamical adverse weathers, this paper proposes a ripple-spreading algorithm (RSA), which can achieve optimal actual travelling trajectory by a single offline calculation. The reported CEPO and RSA are then tested on a typhoon scenario in Hainan Province of China, and the advantages against traditional DPO methods are clearly demonstrated.

There is one paper in emerging risks related to climate change. The paper "The Response Characteristics of Xilingol Grassland to Uneven Distribution of Precipitation at Temporal and Spatial Scale" by Qiaofeng Zhang, Hongbo Yu, Guixiang Liu, and et al, uses Pearson correlation analysis to analysis the response characteristics of NDVI to precipitation at spatial and temporal scale based on the precipitation of 15 weather stations and MODIS MOD13A3 NDVI data. Results showed that from one month view, vegetation growth was the highest correlation with the precipitation of this month from May to July, but August and September were the highest correlation with the precipitation in July. Accumulated month view, the accumulated precipitation in the last three months was very important to the vegetation growth, and snowfall in the winter of previous year played an important role in May of next year. Spatially, from one month view, Erenhot and Sonid Youqi (desert steppe region) were the highest correlation with the precipitation in two months before, the others were the highest correlation with the precipitation in one month

before. Accumulated month view, Erenhot and Sonid Youqi were the highest correlation with the accumulated precipitation in the last four months, the others were the highest correlation with the accumulated precipitation in the last three months.

There is one paper in risk identification & management of natural disasters. The paper “Public Risk Perception and Risk Communication of Typhoon Disaste” by Zhihai Shang & Liping Li, constructs the theory model of 12 factors affecting risk perception from three dimensions by public individual characteristics, risk situational characteristics, risk communication efficiency, which influence the input, output and transmission of risk information. Then the theory was applied in typhoon disaster in Zhanjiang city, and it comes out that the theory is reliable. Finally, the contents of typhoon disaster risk perception capacity construction were given in this paper as risk communication capacity building, special platform construction and cultural environment of risk communication, which is the only way for effective risk communication.

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