Yong Je Kim

Ph.D. Student, Civil Engineering
University of Central Florida
Sinkhole Conference paper: *A Comparative Study of Karst Sinkhole Hazard Mapping Using Frequency Ratio and Artificial Neural Network for East Central Florida*

Predicting Sinkhole Susceptibility to Enhance Public Safety

Yong Je Kim is originally from Jeju Island, a basaltic island of South Korea. He earned his Bachelor's and Master's degrees in Civil Engineering at the University of Illinois at Urbana-Champaign. Always curious and fascinated about geology, when sinkholes recently became a serious hazard in South Korea, he decided to pursue his Ph.D. in geotechnical engineering, especially in sinkhole hazard assessment to fill the gap between geoscience and geoengineering. As a member of the Florida Sinkhole Research Institute at the University of Central Florida (UCF), he has been involved in probabilistic/statistical sinkhole hazard modeling and mapping. He has gained expert research skills in frequency ratios, logistic regressions, decision trees, and artificial neutral networks. Mr. Kim is also involved in a joint international project between the South Korean government and UCF looking at environmental emergency and disaster management systems. He aspires to continue his research and teaching upon graduation, including the study of sinkhole hazards from deteriorating sewer pipes. Mr. Kim has presented his research at several American Society of Civil Engineering conferences and has published a peer-reviewed journal article in *Environmental Earth Sciences*, with several manuscripts in progress.

Yong Je Kim Beck Scholar Statement:

Predicting Sinkhole Susceptibility to Enhance Public Safety

Yong Je Kim is a Ph.D. student in Civil, Environmental, and Construction Engineering at the University of Central Florida (UCF). He studied the same subjects at the University of Illinois at Urbana-Champaign (UIUC) and earned his Bachelor and Master's degrees. Originally grew up in Jeju Island in South Korea, a small volcanic island made of basalt, Yong Je was always curious and fascinated about geology. It was when the sinkholes became a serious hazard in South Korea from 2010s, Yong Je decided to pursue his Ph.D. degree in geotechnical engineering, especially in the sinkhole hazard assessment to fill the gap between geoscience and geoengineering.

As a member of the Florida Sinkhole Research Institute (FSRI) at UCF, Yong Je has been involved in studies related to sinkhole hazard modeling and mapping. He has gained expert research skills in probabilistic/statistical methods such as frequency ratio, logistic regression, decision tree, and artificial neutral network. Yong Je has presented his projects at several ASCE geotechnical engineering conferences including Geotechnical Frontiers and Geo-risk. He also

published a peer-reviewed journal article at the Environmental Earth Sciences and currently has several in progress manuscripts.

Yong Je's main research is estimating the sinkhole hazards in Central Florida. Florida is one of the most sinkhole prone states in the United States due to its hydrogeology, geomorphologic characteristics, climate conditions, and human activities (e.g. groundwater pumping for drinking water and irrigation). By using probabilistic/statistical models, his project is 1) developing a methodology of assessing the sinkhole hazard for Central Florida within a geographic information system (GIS), and 2) comparing and verifying sinkhole hazard maps generated by the probabilistic/statistical model with existing data and site investigation.

Yong Je is also involved in other projects related to environmental hazards. He has been working on a joint international project between South Korean government and UCF. Since 2016, this project has been looking at the emergency and disaster management systems in the U.S. The given project is an interdisciplinary work between engineering and public administration. Yong Je is hoping to apply the knowledge and skills that he is gaining from this project in the future work related to sinkholes and public safety.

After obtaining his Ph.D. degree in civil engineering, Yong Je aspires to continue his research and teaching as a scholar. Yong Je's future research trajectories will be related to analysis of geological environment in terms of engineering geology and geotechnical engineering. He will also work on evaluation/application of engineering-geological conditions in land use planning. Yong Je will keep collaborating with other scholars, various government agencies such as Florida Department of Transportation (FDOT), Florida Geological Survey (FGS), and other community agencies through his research projects. Yong Je's another goal is to conduct a joint, international research project with South Korea in order to improve the situation with sinkhole hazards caused by deteriorating sewer pipes. As a faculty member, cultivating future generation of civil engineers and mentoring graduate students will be his passion as well.