IDRiM Virtual Workshop
for Interactive Discussions between
Senior and Early-Career Scientists
23-24 September 2020 | Online Workshop
FOR A SAFER WORLD

[Registration No.] 252
[Author] Hajime Tanaka
[E-mail] h-tanaka@spf.or.jp
[Co-Author] Michael C. Huang / Yoshioka Nagisa
[E-mail] michael-huang@spf.or.jp / n-yoshioka@spf.or.jp
[Abstract No.] 21081

[Abstract Title]

Compound Disaster Impact Assessment of Tsunami and COVID-19: An Approach of General Equilibrium for Mie Prefecture, Japan

[Abstract]

While Japan is highly exposed to multiple natural hazards such as earthquakes and tsunamis, the global pandemic of COVID-19 has caused greater vulnerability to its economic structure. The Mie Prefecture, located in central Japan, is not only famous for its scenic landscape but also the high value-add industries of aquaculture, food processing, and petroleum refining tanks, and so on are situated at-risk area. The study aims to generate impact assessments from disaster scenarios of a tsunami and the pandemic to identify the vulnerable industries with quantitative analysis to unfold their interdependence. For the disaster shock scenarios, we use GIS data to incorporate the tsunami hazard map and business entities at the street base to provide precise evidence-based damage estimates of capital and labor loss from the tsunami. As for the shocks triggered by the pandemic, we calibrate the indicators of medical service, commerce activity, and transportation capacity. By applying these settings, we employ a computable general equilibrium (CGE) model with the 21-sector aggregated input-output table of Mie Prefecture (2011 version) for simulations. The quantified results of output change, price change, external trade, and welfare analysis are expected to provide informative implications for ex-ante policymaking and risk financing.

[Keywords]

Compound disaster, GIS, CGE, Mie, Japan, COVID-19