The Great East Japan Earthquak’s Impact on Human Society as Described in Haiku of 2012 and 2013

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1. Introduction

The magnitude 9.0 earthquake occurred on March 11, 2011, had severe impact on human society by the destruction of huge mass of living areas and taking away many lives. The psychological effects resulting from this disaster are still ongoing. The destruction of coastal settlements in Kesennuma has lost not only people but also their psychological support by the community. Before the earthquake, people made their living with rich bounty of sea and nature, the earthquake and tsunami left a deep sorrow and ineffable pain (Aoki, Fujita and Kumagai 2014). Even one or two years after, many people are yet suffering with serious injuries. When cherry blossom bloomed on damage trees fired, when the fish were landed in reconstructed fish markets, when volunteers and victims deepened their ties, people found their hope and were continuing to move forward, although still irritated in slow progress of reconstruction in the disaster areas. A great deal of reconstruction has already begun, but it will take longer time to complete it (photo). The current bustle of the city is caused by the activities of the migrant construction workers and their vehicles. A large amount of capital has been invested, but no one knows how long this will continue. After this investment end, people should resume daily life with a focus on tourism and fisheries.

In order to record this impact of disaster, poets conducted a haiku meeting in Kesennuma Ocean on July 29, 2012 in the affected areas Kesennuma, and collected 1752 haiku from inland and abroad (Kesennuma Haiku Association 2012). And the July 28, 2013, they collected 1734 haiku. Many volunteers and donation promoted this haiku meeting (Kesennuma Haiku Association 2013). Here, we describe the impact left in the haiku.

2. Method of Study

Generally, understanding of haiku will be differed by the knowledge of the disaster and the taste of haiku selection. So, we employed two types of respondents, e.g. respondents of the disaster area and respondents of other areas. They read the haiku and counted the number of disaster haiku.

3. Results

In 2012, respondents of disaster area selected 642 haiku (Table 1) by more than one person. But 98 of these haiku were not selected by the respondents of other areas. On the other hand, other areas selected 680 haiku by more than one person, but 136 of those haiku were not selected by disaster area. So the selection of disaster haiku was different by the area. This showed the different knowledge among areas on the disaster. And there are many haiku selected by only one respondent (Table 2). This showed the difference among individual knowledge on the disaster. In 2013, the disaster area selected 370 haiku by more than one person, other areas selected 494. Since total numbers of haiku in two years has no big difference, the disaster haiku was reduced within a year. Selected haiku mostly showed the tragic events, but some showed pleasure of landing of bonito.

4. Statistical analysis

From 2012 to 2013, the percentage of haiku composed by the disaster was decreased at the statistical significance level of 0.01 in all respondents (Table 3). Haiku recognized as to be composed by the disaster was decreased in all level (Table 4).

5. Detailed comparison of appreciation among respondents

Generally, variety of the appreciation on haiku was formed by their experiences of disaster and their taste of haiku. Although some variety will exist, more than 10 persons selected the same haiku. In 2012, they selected 157 haiku and 45 in 2013. So we can say disaster haiku was found in this experiment. Those haiku were listed in table 5 and 6.

6. Conclusion

6.1 Haiku has memorized the disaster areas by 157 in 2012 haiku data and 45 in 2013.

6.2 The appreciation of haiku was affected by the respondents' knowledge of disaster area and their taste of haiku.

6.3 We recognized haiku that can give empathy on many people and those haiku were listed.

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Reference

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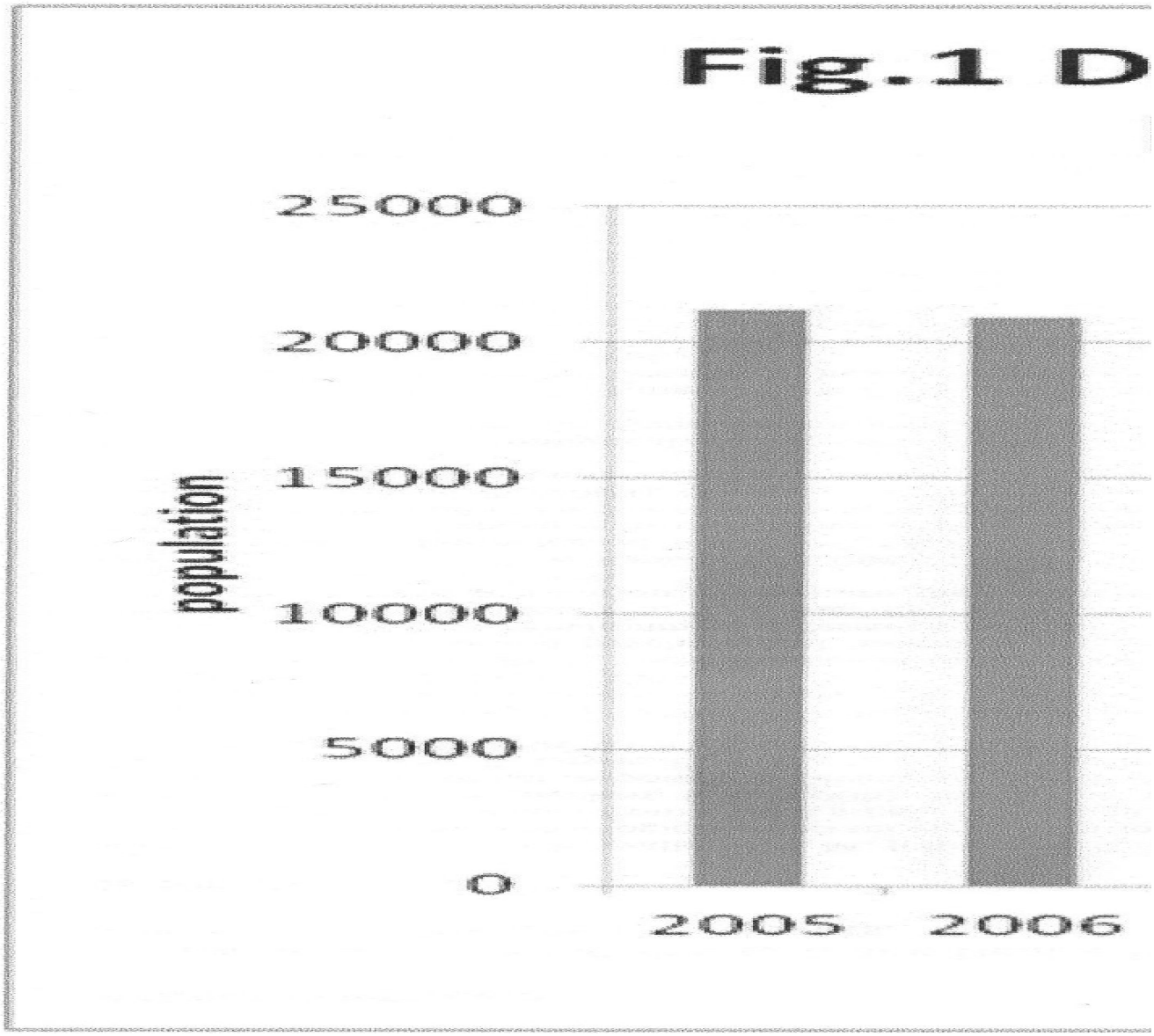
Haiku Association of Kesennuma District (2013) Praying restoration 25th Haiku Contest of Kesennuma Sea, Book of haiku advaced collection, 1734 verses.

Keywords: The Great East Japan Eathquak, haiku, 2012-2013

Fig.1 D



CHANGING PROPERTIES OF ARCHITECTURE BY MAJOR EARTHQUAKES THE FATIH MOSQUE, ISTANBUL, TURKEY

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Fatih Mosque was built (1462 –1470) Fatih Sultan Mehmet (Mehmet II) by the chief architect Atik Sinan. It is understood from the historical knowledge that; Fatih Mosque, one of the oldest and most important religious monuments of Istanbul, had to be renewed many times due to natural events like storms and hurricanes or manmade incidents such as fire. At the earthquake that happened in May 22, 1766, the main dome entirely collapsed, the walls heavily damaged, Imaret (soup kitchen) and the madrasas were ruined.The mosque was evaluated as irreparable and was decided to be rebuilt at the same place with a different plan and was started to be built in 1767. Fatih Mosque continued being affected by earthquakes and following the earthquake in July 10, 1894, the last impact was the earthquakes Kocaeli and Duzce in 1999. The major physical damages were cracks at the domes, minarets, tombs and the fountain yard and dislocation of the stones at other buildings of the complex. Fatih Mosque was renewed and consolidated. Maintenance was barely finished in 2013 and the mosque was reopened. Nowadays, the amendments at old madrasas and the walls that include the fountain are still in progress. In this study, in light of all information (references, pictures, etc.), the differences between the first and the last plan of the mosque and the negative or positive relations between the main structure and other additional parts will be evaluated. Furthermore, other geological and tectonic factors that cause Istanbul's important historical monument to be affected this much by earthquakes will be discussed. After all, the important fact is that; both the rebuilding and repairs supported by serious scientific studies done in recent years, provided a major contribution for this great monument in reaching to present with all its glory.

Keywords: Fatih Mosque , Istanbul, Massive Earthquakes

CFD Modelling of the Local Effects of Caldera, Crater Walls and Windfield Variations on Trapping Potentially Harmful Volcanic Gases

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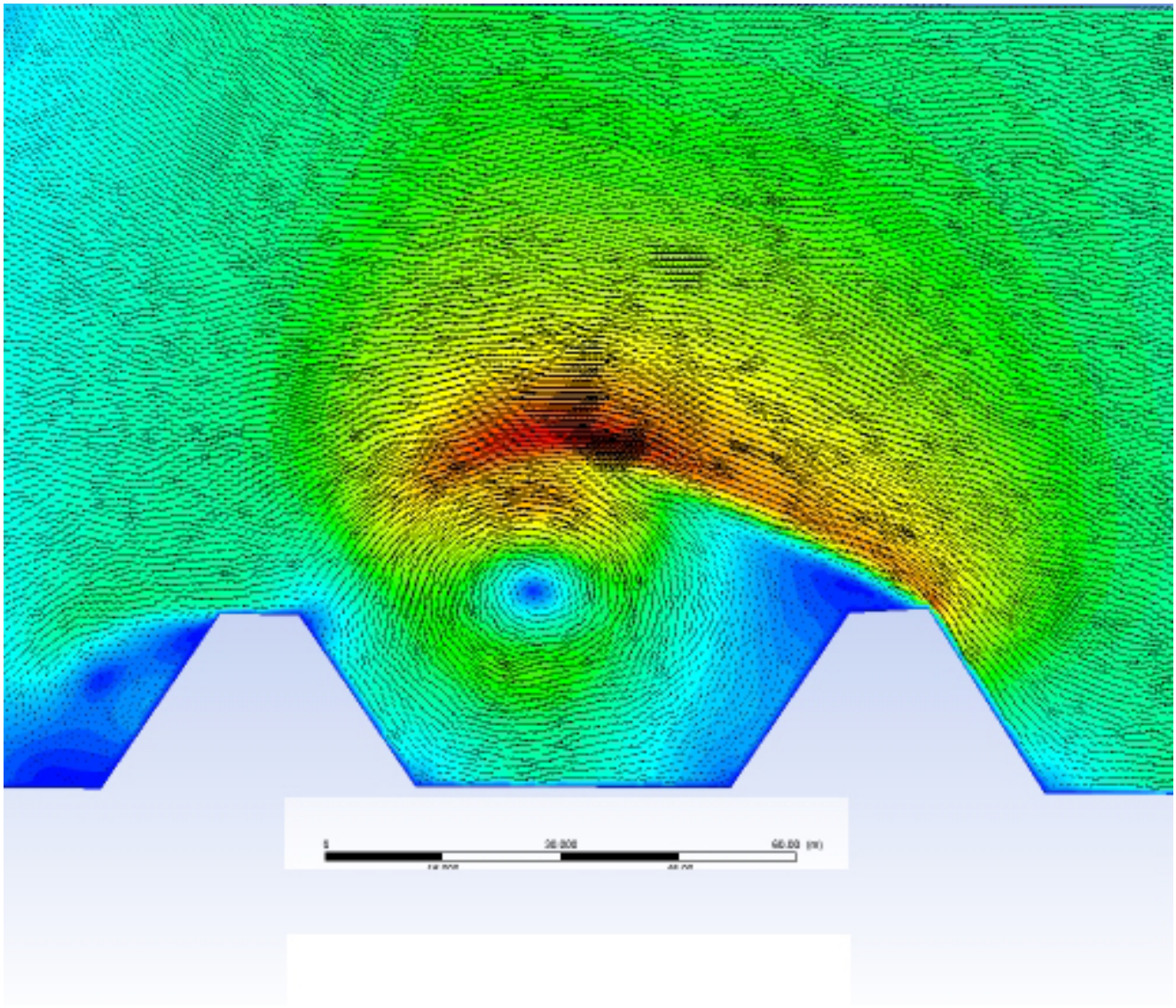
In the recent decades, progress in affordable computing capacity and the development of reliable computational fluid dynamics (CFD) solutions to solve high-resolution engineering issues have opened the possibilities to simulate environmental micro- to meso-scale fluids and solid-fluid processes with ease at an ever decreasing cost.
In the present contribution, the author assesses the role of volcanic crater morphometry on different windfields, in order to better understand the hazards that gases pose to local inhabitants and tourists. Indeed, eco-tourism and adventure tourism is bringing an ever increasing number of non-locals to various volcanoes, which aren't always sufficiently instrumented (i.e. the Kelut or Semeru and Tengger Caldera in Java, Indonesia).
The method uses the fluid dynamic solution FLUENT, recognized as one of the best and most reliable engineering software for CFD computing. The computation domain is a 2D 100 m length x 100 m height with the boundary conditions being the ground using consolidated ash material, the "outlets" controlled by pressure variation and the inlet controlled through a velocity field. The ground represents the caldera walls, which have been grown and reduced from 5 m height to 50 m height in order to experiment the effects of a change in the caldera/crater floor. The velocity field was also experimented with velocities from 10 m.s-1 to 30 m.s-1.
The results have shown that the velocity field variation and the size of the caldera/crater have a direct incidence on the formation of dynamic eddies inside and outside the crater/caldera. Flow separation is most likely to occur at higher wind-speeds and deeper caldera/craters also create pool effects where rotating eddies can trap volcanic gases.
This simulation does not take into account the temperature inversions that often occur in topographic depressions, creating pools of cold air trapped in the topographic low. The air is considered to be at a constant temperature with a limited effect of ground heating from radiation.

Keywords: volcanic gases, hazards, computational fluid dynamics, volcanic vent, caldera, crater



Evolution Mechanism of Karst Sinkhole in Wuhan City, China

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Based on analyzing of 29 karst sinkholes in Wuhan City, China, their system structure was determined from three elements, i.e. karst, cover and groundwater. The sinkholes mechanism of rainfall, drilling and pile constructing importing karst system was discussed by field monitoring and numerical simulating. The results are as follows:(i) the geological conditions developing sinkhole include of three aspects, cover structure is upper clay and lower sand, shallow karst is developed, and hydraulic connection between pore water - karst water is good; (ii) In natural environment, the cave in cover soil has two developing stage that is from hydraulic corrosion to stress failure;(iii) Drilling and pile constructing often trigger sinkhole that is from two aspects of structure changing, i.e. the covering soil has high hydraulic gradient at the moment of drill connecting pore water and karst water, the head difference of two groundwater is more than 15m during pile constructing.

Keywords: Covered karst, Sinkhole mechanism, Natural environment, Human activity

Kamchatka and North Kurile Volcano Explosive Eruptions in 2016 and Danger to Aviation

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There are 36 active volcanoes in the Kamchatka and North Kurile, and several of them are continuously active. In 2016, five of the Kamchatkan volcanoes (Sheveluch, Klyuchevskoy, Bezymianny, Karymsky and Zhupanovsky) and three volcanoes of North Kurile (Alaid, Ebeko and Chikurachki) had strong and moderate explosive eruptions. Moderate gas-steam activity was observing of Kizimen, Avachinsky, Koryaksky, Gorely, Mutnovsky and other volcanoes.
Strong explosive eruptions of volcanoes are the most dangerous for aircraft because they can produce in a few hours or days to the atmosphere and the stratosphere till several cubic kilometers of volcanic ash and aerosols. Ash plumes and the clouds, depending on the power of the eruption, the strength and wind speed, can travel thousands of kilometers from the volcano for several days, remaining hazardous to aircraft, as the melting temperature of small particles of ash below the operating temperature of jet engines.
The eruptive activity of Sheveluch volcano began since 1980 (growth of the lava dome) and is continuing at present. Strong explosive events of the volcano occurred in 2016: on 10, and 29 January, 18, and 27 February, 23 March, 02 April, 02 May, 18 September, 09 and 19 December: ash plumes rose up to 10-12 km a.s.l. and extended more 2000 km to the different directions of the volcano. Strong and moderate hot avalanches from the lava dome were observing all year. Activity of the volcano was dangerous to international and local aviation.
Explosive-effusive eruption of Klyuchevskoy volcano lasted from 03 April till 06 November. Strombolian explosive volcanic activity began from 03 April, and on 23-24 April a lava flow began to effusing along the Apakhonchich chute on the southeastern flank of the volcano. Vulcanian activity of the volcano began from 02 May. Ash plumes rose up to 7-8 km a.s.l. and extended more 600 km to the different directions of the volcano. Activity of the volcano was dangerous to international and local aviation.
Extrusive-explosive-effusive eruption of Bezymianny volcano began from 05 December (extrusive phase) and probably continues (effusive phase). A moderate explosive phase probably occurred on 15 December –gas-steam plume containing some amount of ash drifted for about 118 km to the west of the volcano. Activity of the volcano was dangerous to local aviation.
Karymsky volcano has been in a state of explosive eruption since 1996, and this eruption finished on 10 October 2016. Ash plumes rose up to 4-5 km a.s.l. and extended more 300 km mainly to the eastern directions of the volcano in January-February. Activity of the volcano was dangerous to local aviation.
Explosive eruption of Zhupanovsky volcano began on 06 June, 2014, and finished 20 November, 2016. Explosions sent ash up to 8-10 km a.s.l. on 19, 21, and 24 January; 05, 07, 09, and 12 February; 24 March, and 20 November. Ash plumes extended for about 550 km mainly to the eastern directions of the volcano. Activity of the volcano was dangerous to international and local aviation.
Explosive-effusive eruption of Alaid volcano occurred from 01 October, 2015, till 10 August 2016. Ash plumes extended for about 260 km from the volcano in February-April. Lava flow effused on the south-western flank of the volcano (for about 400 m). Activity of the volcano was dangerous to local aviation.
The moderate explosive events at the Ebeko volcano with burst of ash up to 2.6 km a.s.l. occurred on 19-20 October, 08, 11-17, 19-20 and 28-30 November, 8-10, and 12-14, 17, 19-27 and 31 December.

Activity of the volcano was dangerous to local aviation.
The eruptive activity of Chikurachki volcano occurred on 28-31 March; 27 July; 17-19, and 30 August. Explosions sent ash up to 4 km a.s.l., and ash plumes drifted to the different directions from the volcano. Activity of the volcano was dangerous to local aviation.

Keywords: volcano, eruption, Kamchatka and Kurile

