Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

G02-01 Room:202 Time:May 19 09:30-09:45

Learning about disasters in excursion to Kyoto, 1

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In this presentation, we discuss possibilities that we could use excursions to Kyoto as opportunities to learn about earthquake disasters.

In the last few years, we have become increasingly aware that it is important to learn about natural disaster and disaster mitigation. Disaster is a composite subject that includes human, social and scientific aspect, and should be taught as an integrated subject. Each disaster is different, and is a local phenomenon, and in learning about the past disasters we should also learn what kind of local factors are behind them. This means we are obliged to prepare programs for disaster education at each occasion separately.

We argue that school excursions to Kyoto can be utilized to learn about disaster and disaster mitigation. Kyoto is one of the most popular destinations for excursions. In her long history, Kyoto has experienced many disasters. Adding some education materials to the commonly used sightseeing guides, we can make excursions to Kyoto another occasions to learn about natural disasters. There are several popular tourist attractions in Kyoto that are also popular among the students and sightseers, and some of these attractions are also the sites of past disaster. We discuss how excursion to Kyoto can serve as opportunities to learn about disaster at these sites.

Keywords: disaster education

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G02-02 Room:202 Time:May 19 09:45-10:00

Some practices of teaching Basic Earth and Planetary Science through ”Experimental workbook of Geoscience and Astronomy”

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In 2012 a new course of study at high school was launched. Since then the class of the new subject titled ”Basic Earth and Planetary Science” has begun. Dealing with history, constitution of the universe and the earth, this subject are expected to take as few classes as possible. It needed the necessity of some ingenuities to save time when teachers use ”Experimental workbook of Geoscience and Astronomy” from Saitama in class. This paper reports on some practices of teaching ”Basic Earth and Planetary Science” at Fukaya dai-ichi high school last year.

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G02-P01 Room:Convention Hall Time:May 19 18:15-19:30

Class room excercises using the JMA-59 type seismograph records.

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The JMA-59 type electromagnetic seismograph was a standard seismograph in Japan. We tried to develop some educational tools for earthquake study in mid to high-school class room using waveform data recorded by the JMA -59 type electromagnetic seismograph.

The main purposes of this tools are 1) reading features of wave records 2) measuring the S-P time 3) estimation of hypocentral distance with the Omori's distance formula 4)hypocebter determination using S-P times of surrounding several stations 5) calculation of magnitude using the Tsuboi's magnitude formula.

Advantages using the JMA-59 type wave records are 1) displacement records are easy to compare with real ground motion 2)the records drawn in ink are easy to realize an analog image of seismograph for students 3) 100 times amplitude and 1mm/sec time scale are easy to convert other scale.

We investigated and choose some seismograms for class room exercises among many wave records stocked in our library as following rules; 1) shallow earthquakes which are able to calculate magnitude using the Tsuboi's magnitude formula 2) wave records are not saturated 3) easy to read S-P time and maximum amplitude 4) easy to determinate hypocenter using these wave records.

In the conference, we will present our preliminary trial of this project.

Keywords: the JMA-59 type seismograph, seismograms, hypocenter determination, magnitude calculation, educational tool, class room exercise

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G02-P02 Room:Convention Hall Time:May 19 18:15-19:30

An attempt to develop a new teaching material for high school students observing sprites

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Sprites are one of the Transient Luminouos Events (TLEs) and are excited above a thunderstorm with strong positive flashes. The phenomena are observed all over the world and would be produced by the removal of large amount of positive charge from the thunderstorm (cloud-to-ground discharge). In Japan, sprites are observed by many high school students by means of high sensitivity CCD cameras. They have revealed the optical characteristics of sprites (e.g. morphology and 3-dimintional location). Although sprites are produced by the removal of charges from the thunderstorm, they do not have equipments to observe electrical phenomena causative of sprites. So, we developed a material in order to provide an observation method of sprite-producing thunderstorms and their electrical properties. The equipment is a low cost field mill data acquisition system observing the surface electric field change. If they can deploy more than four field mills in short distance at most 10 km, they can estimate an amount of positive charge removed associated with sprite-producing discharge under a simple assumption. We will present the observational and analytic concepts, and the developed low cost field mill data acquisition system.

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Keywords: teaching material, sprite, lightning, surface electiric field observation, estimation of charge removed by lighitnig