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Space Weather Innovation Competition

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Malaysia's participation in the International Space Weather Initiative (ISWI) began in 2010 through the establishment of the ISWI National Committee. Through this initiative, Universiti Kebangsaan Malaysia (UKM) was provided a set of Super Sudden Ionospheric Disturbance (SID) ionospheric monitor by Stanford SOLAR Center of Stanford University, distributed in collaboration with the Society of Amateur Radio Astronomers (SARA).

Through this collaborative effort, the Space Weather Innovation Competition 2013 was held from May–September 2013 in Malaysia under the 2013 National Innovation Movement Program. This competition was organized by the National Space Agency (ANGKASA) and UKM through Institute of Space Science with the collaboration of the Ministry of Education (MoE). The aim of the competition was to promote awareness and better understanding of space weather among high school students in Malaysia, in addition to cultivating students' interest in research through the usage of the SuperSID ionospheric monitor.

The SuperSID monitor was originally built by Stanford SOLAR Center. However, for this competition, the schematic pre-amplifier circuit of the original SuperSID was modified to aid learning for high school students and thus renamed as the UKM-SID monitor. UKM-SID is a low cost monitor that is sensitive to sudden ionospheric disturbances and appropriate for student use such as solar flare. The SuperSID uses Very Low Frequency (VLF) technique in order to sense the disturbances.

The competition was opened to 16-17 year old students from high schools throughout the country. Schools were only allowed to send in one team consisting of 4 students and supervised by 2 teachers. A total of 43 high schools participated in the contest, including students from science, social science and arts. At the beginning of the competition, a set of UKM-SID kit was distributed to all the participating schools by the organizers at the headquarters of the National Space Agency of Malaysia. The main parts of UKM-SID system is composed of an antenna, pre-amplifier circuit and a computer with a sound card. Using the kit provided, each team was required to build an antenna, assemble the electronic components on to a printed circuit board (PCB) and conduct their observation to investigate the space weather phenomena using the SID monitor.

The competition involved two screening processes. For the first part of the screening process, the participating teams were selected based on the submission of research proposals, progressive reports on the construction of antenna and PCB, and data analysis and final reports. Out of the 43 participating schools, only 20 schools were successful in completing and submitting the reports within the time frame given. During the final screening process, the top 5 schools were selected for presentation round, which was held at the premise of the respective schools. The presentations were evaluated by UKM researchers as well as by representatives from ANGKASA and MoE. Monetary prizes were awarded to the top three presentations and all participants were given a token and certificate of participation.

In general, the Space Weather Innovation Competition program was a success in cultivating scientific interest among young students in Malaysia and thus deepens their understanding of the importance of space utilization.

Fig1: Distribution of UKM-SID kits to participating high schools

End of text – additional photos on the following pages.

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