

Public outreach and education during the 2016 total solar eclipse in Palu and Malang

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Abstract. MAGIC (Ma Chung Galactic Club) of Ma Chung University, Malang, is one of the amateur astronomers club who did public outreach and education during the Total Solar Eclipse March 9, 2016. The motivation for doing this was the bad experience during Total Solar Eclipse 1983. At that time the Indonesian government forbid the people to observe the Total Solar Eclipse in a way to avoid blindness. We try to fix this misunderstanding by educating people the safe way to enjoy the partial and total solar eclipse. MAGIC team was divided into two teams, one team went to Palu and did the solar eclipse related education in six high schools before and during the eclipse. The other team did the observation on Ma Chung University campus, Malang, to accompany people who want to see the partial solar eclipse through filtered telescopes. The sky during the solar eclipse was clear both in Malang and Palu. People were very excited and satisfied with the solar eclipse, and their interest to astronomy is increased.

1. Background

Amateur astronomy is a hobby where participants enjoy watching the sky and the abundance of objects as seen with the naked eye, binoculars, or telescopes. Even though scientific research is not the main goal, generally many amateur astronomers could still make a contribution to astronomy.

MAGIC (Ma Chung Galactic Club) is one of the amateur astronomer clubs in Malang founded since September 2015. The purpose of this club is not just to provide an experience as a hobby but also, in part, for education. There are approximately 50 members in this club, many of whom are students of Ma Chung University. MAGIC sometimes partners with MAC (Malang Astronomy Club) and works in collaborations in some projects and observations. There were many activities held collaboratively such as moon observation during the International Observe the Moon night, planet observation, stargaze, scientific discussions, Galaxy Forum and the most significant one is the Total Solar Eclipse. The information of the eclipse is available on NASA website [1].

The Total Solar Eclipse observation was done in Malang (East Java) and Palu (Central Sulawesi). It was a great opportunity to do a public outreach for astronomy, to raise the general awareness about the universe. We learned that during the Total Solar Eclipse of 1983, many locals were exposed to incorrect information



based on traditional mysticism and incomplete education of the solar eclipse, afraid of blindness *et cetera*, making them afraid of observing this remarkable event. Many printed source are available regarding this, for example [3].

In 2016, we wanted to work together with the astronomers from LAPAN, ITB, Planetarium and other astronomy clubs to reach out to as many people as possible to give them more correct information on the Total Solar Eclipse, in the hope that many could then enjoy the Solar Eclipse moments in the correct and safe way. There are many references connected to the learning of safe observation and practices during the Solar Eclipse, see for example [2].

2. Total solar eclipse

The total solar eclipse took place on 9 March 2016 [1]. Indonesia was the only country which was traversed by the totality, so that it is a great opportunity to do public education in astronomy and science for Indonesian people. The total eclipse was expected to be obviously visible in many parts of Indonesia, including Palembang, Bangka Belitung, Palu and Ternate. As the solar eclipse arched across the skies of Indonesia, millions gazed upwards hoping for a glimpse of the rare natural phenomenon. Unfortunately, observers in Malang, like most of the other regions of Indonesia, could only enjoy a partial eclipse, and not in its totality.

3. Eclipse related activities



Figure 1. Students in Palu tried the telescope



Figure 2. Preparation in Malang

Before the many planned Solar Eclipse events, several meetings and observational trials were executed by MAGIC in collaboration with MAC. During the 2016 event, the MAGIC team was divided into two – one team went to Palu and did a series of solar eclipse-related education seminars, a week prior to the eclipse day, and a mass eclipse observation together. The other team did the observation in Ma Chung University, Malang, to accompany those who had wanted to see the partial solar eclipse through filtered telescopes.

In Palu our team visited 6 high schools a week before the eclipse. We delivered interactive lectures on astronomy, and also invited students and teachers for a solar observation through a telescope equipped with a solar filter. We informed students on how to observe the solar eclipse safely and invoked more interest in astronomy especially during the precious moment of Total Solar Eclipse. Most of the students were very enthusiastic, because it was their first experience to see the Sun through a telescope.

On 9th March, from 07.27 a.m WITA to 10.00 a.m WITA, we observed the Total Solar Eclipse together with about 100 observers from all walks of life in a private villa in Donggala Kodi, half way up a mountain,

west of Palu City. Although the main purpose of the observation was public outreach, we also did eclipse astro-photography. See the result in figure 6. All the visitors could see the sun through our telescope, mostly with solar filter attached, or through the eclipse glasses particularly before the first until the fourth contact. During the first until the second contact, the sky slowly became darker, as the temperature dropped. The Sun was totally covered by the Moon for 2 minutes, from 08.37 to 08.39.

Between the second and third contact, the solar disk was totally obscured by the Moon. The solar filter was removed from the telescope and everyone could take off their eclipse glasses so they could see the total eclipse directly. However, a few people were lucky enough to see the totality through our telescope, because the totality was so brief, only about two minutes. At that moment, the sky was dark enough to make Venus reappear in the sky. Most of the people were not aware of this, until it was announced that Venus had appeared.



Figure 3. Give instruction to public



Figure 4. The atmosphere during the The Solar Eclipse in Palu

In Malang, the observation was held at the plaza of Student Center of Ma Chung University. Observation preparation started from 05.30. Guests and reporters came as early as around 06.00 a.m. because they did not want to miss the moment. A total of approximately 100 visitors, including foreigners, and 10 reporters from different media came. Although it was not a total eclipse in Malang, everyone could still feel the brightness of the morning sky dimmed and a little drop in temperature and they were very satisfied in watching the partial eclipse through the telescope or using eclipse glasses, which lasted more than 2 hours, from 06.20 to 08.40. This is a good opportunity to spread common astronomical knowledge and more importantly, to correct some common misconception among the locals.

The enthusiasm of Total Solar Eclipse had inevitably increased the interest in astronomy, worldwide. We know this from the large number of news articles and open discussion circulated in newspapers, television, websites, and social media. Hopefully, it will increase the interest of studying astronomy among young people.



Figure 5. The atmosphere in Ma Chung University, Malang



Figure 6. The solar eclipse.

4. Conclusion

The public outreach activities before the eclipse day were very effective in educating people about the solar eclipse, and avoid wrong understanding of Total Solar Eclipse. All of the eclipse observers were very amazed with the exotic moment of Total Solar Eclipse and expressed their admiration in their comments spontaneously. From the activities in Palu and Malang we found that most of the people have no experience with astronomical observation using telescope. The eclipse observation event became their first experience in using telescope to observe the Sun. Before the activity, most locals also did not know how to enjoy solar eclipse in a safe way, therefore most of them felt very happy to get new knowledge and experience through our team. The Total Solar Eclipse event has definitely increased the interest in astronomy among the people.

References

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