

Outreach activities in anticipation of the 2016 solar eclipse in Sorong

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Abstract. Sorong is located outside the narrow path of total solar eclipse on March 9th, 2016. The predicted obscuration of the sun was 94.2%. The public outreach to anticipate the solar eclipse was intended to educate students in junior and senior high school in Sorong Regency. Some of them are located in the remote area where the educational materials are difficult to find. The public outreach is unique, since it was run by the local person who is student of physics education. The student has both the ability to explain the solar eclipse phenomenon and able to adapt to knowledge level of students. The materials that were given to the schools are brochure and the eclipse glasses. Beside solar eclipse lectures in class, the pinhole workshop and observation practice were held. The limited materials and resources were faced during the public outreach. However, the enthusiasm was shown by the students and teachers. At least one of the schools held the solar eclipse observation on the day of the eclipse.

1. Introduction

1.1. Sorong Regency

Sorong is regency in the province of West Papua, Indonesia. The capital of the regency is located in Aimas. This regency is one of the main oil producers in Indonesia. Sorong regency has an area of 18.170 km². The population in Sorong Regency is 76669 people which consist of local Papuans and migrants from other regions in Indonesia. [1]

Regency location is far from the center of the national government. Hence, several educational facilities in the regency are still minimal. There are still many schools that are not connected to the internet. This condition generates problems of slow information propagation, including the solar eclipse. This should be a special concern of all parties in supporting the distribution of education in Indonesia. One that can be done is to do the public outreach. [1]

1.2. Partial Solar Eclipse in Sorong Regency

Sorong is located outside the narrow path of total solar eclipse on March 9th, 2016 as shown in figure 1. The predicted obscuration of the sun was 94.2%. The eclipse took place starting at 8:59:36 am local time and reached the maximum eclipse at 9:58:51 am local time. The eclipse finished at 11:28:35 am local time. [2]





Figure 1. Path of total solar eclipse. Credits: NASA

1.3. Public Outreach

Education and public outreach by amateur astronomers in both formal and informal settings have been acknowledged as a critical focus for increasing the public's astronomical interest and scientific literacy [3]. Without amateur astronomers committing their time to education and public outreach efforts, much of the education and public outreach currently taking place would not exist. Storksdieck and Berendsen [4] estimate that 10,000 amateur astronomers engage in some level of education and public outreach. It is therefore critical to have an understanding of how amateur astronomer involvement in education and public outreach, as well as their level of involvement in education and public outreach, can be promoted and increased [4].

2. Methods

There were several approaches to perform public outreach to increase the public awareness in Sorong: mini lecture, workshop, and observation at school. These approaches ensured students and teachers get the hands-on experience learning astronomy especially on the solar eclipse. The physics education student in university level was the instructor for the public outreach.

2.1. Mini Lecture

The first approach in this public outreach is mini lecture in the class. The material consists of 3 sections which discussed the eclipse, the eclipse myths, and techniques of observation. Students were given the material on how the eclipses occur and how students should react to it. It also provided education about the myths so that the students will get the right concept of the eclipse.

2.2. Pinhole Workshop

The second approach in this public outreach is a pinhole workshop as shown figure 2. The students were given an explanation of the pinhole making as a safe tool for the observing the solar eclipse. The materials needed in the workshop were cardboard box, aluminum foil, needle, and glue.



Figure 2. Pinhole workshop at MTs Negeri Mariai.

2.3. Observation

The third approach in this public outreach is observation. Students were given the challenge of sun observations using a pinhole and eclipse glasses as shown in figure 3. Observation was held in the grounds of the school in the morning and afternoon. After the observation was completed, the school was given materials to educate students. The materials that were given to the schools are the brochure of solar eclipse and the eclipse glasses.



Figure 3. Observation at MTs Muhammadiyah Salawati.

3. Activities

The public outreach took place in five schools in Sorong. They are in the junior high school and senior high school. Some schools are public schools, the rest are private schools. Hence, the target schools are diverse in term of educational level and school managements. The schools were targeted since the students and teachers are potential agents to disseminate information and knowledge about the solar eclipse.

3.1. MTs Negeri Mariai

The school is located in the Mariai village, not far from the center of city. This school is one of the top schools in Sorong Regency who rely on religious education. It is a junior high school. Activities held on 1st of February 2016 with a sample of 70 students.

3.2. SMP IT Nurul Yaqin

The school is located in a boarding school that is quite far from the center of city. However, this junior high school has a good reputation in the Sorong Regency. There were 60 students joined the activities that were held on 2nd of February 2016.

3.3. MTs Muhammadiyah 1 Salawati

The school is located in the Makbalim village. It took one hour from the center of city to reach the school because its location is far. Activities held on 3rd of February 2016 with participation of 20 students.

3.4. SMA Negeri 7 Sorong

The school is located in the remote area where educational materials are difficult to find. Total participating students in this senior high school are 17 students mostly from local Papuans. Activities held on 4th of February 2016.

3.5. SMA Negeri 2 Sorong

The school is located in the center of city and is the top schools in the Sorong Regency. There were 70 students joined the activities that held on 5th of February 2016.

4. Conclusion

The enthusiasm was shown by the students and teachers. Some of them have low awareness about the solar eclipse in Sorong Regency. The public outreach did not only increase the knowledge of the students and teacher but also gave the opportunity for the physics education student to start practicing his knowledge in teaching. MTs Negeri Mariai held the solar eclipse observation on the day of the eclipse.

Acknowledgment

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