Identifying Sunspots.

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Abstract

Our project titled "Identifying Sunspots," involved the observation and the attempt to collect extensive data on sunspots. In our project, we created a detailed summary of what sun spots are, how they form, how to identify them, and why they are important to us. The in-class presentation served as an opportunity for us to collaborate as a group to learn something on our own, collect data, and to share what we discovered with our classmates.

1. Research question

The ultimate goal in this experiment was to determine whether or not we could detect sunspots from Earth using basic technology. Our group also did research on what sunspots are and how they form. We also tried to see if sunspots were of their highest visibility in the morning or in the afternoon. Our information on what sunspots are.

2. Apparattus

The apparatuses that were used throughout this prodecure included a pair of optic 1050 binoculars, a clear, white 22 by 28 inch premium poster board, an iPhone 4S with an 8 megapixel camera, and of course, a clear view of the Sun.

3. Procedure.

First, we had to wait for a day with clear sunlight. Then, we went to an area that provided the most amount of sunlight. We then laid down the poster board on a flat surface and used the lens from the binoculars to reflect a clear image of the Sun onto the poster

board. After that, we took several pictures of the reflected sun using the cameras on our iPhones so that we could check for any signs of sunspots. Then we searched online for sunspot images taken by the TESIS on that same day. Finally, we used both the images we took and the images we found and looked for similarities.

4. Data

Since we encountered unfavorable weather conditions over the past week, our presence of data is somewhat limited. The only data we were able to accumulate for this project were photographs. One photograph we used was the image taken by ouselves on Saturday, May 3, 2014, figure **??**. The other was a more clear and advanced photograph taken by the TESIS on the same day. Aside from that, the only other set of information we could provide involved the description of sunspots how and why they occur, how to detect them, and how they can affect our planet. THe picture titled figure 1. is an image obtained by an HMI instrument SDO space craft. The picture used in figure was a picture taken on 5/3/14, which is the same day we took our picture which is figure 2. Figure 2 is our group's attempt to capture sunspots.

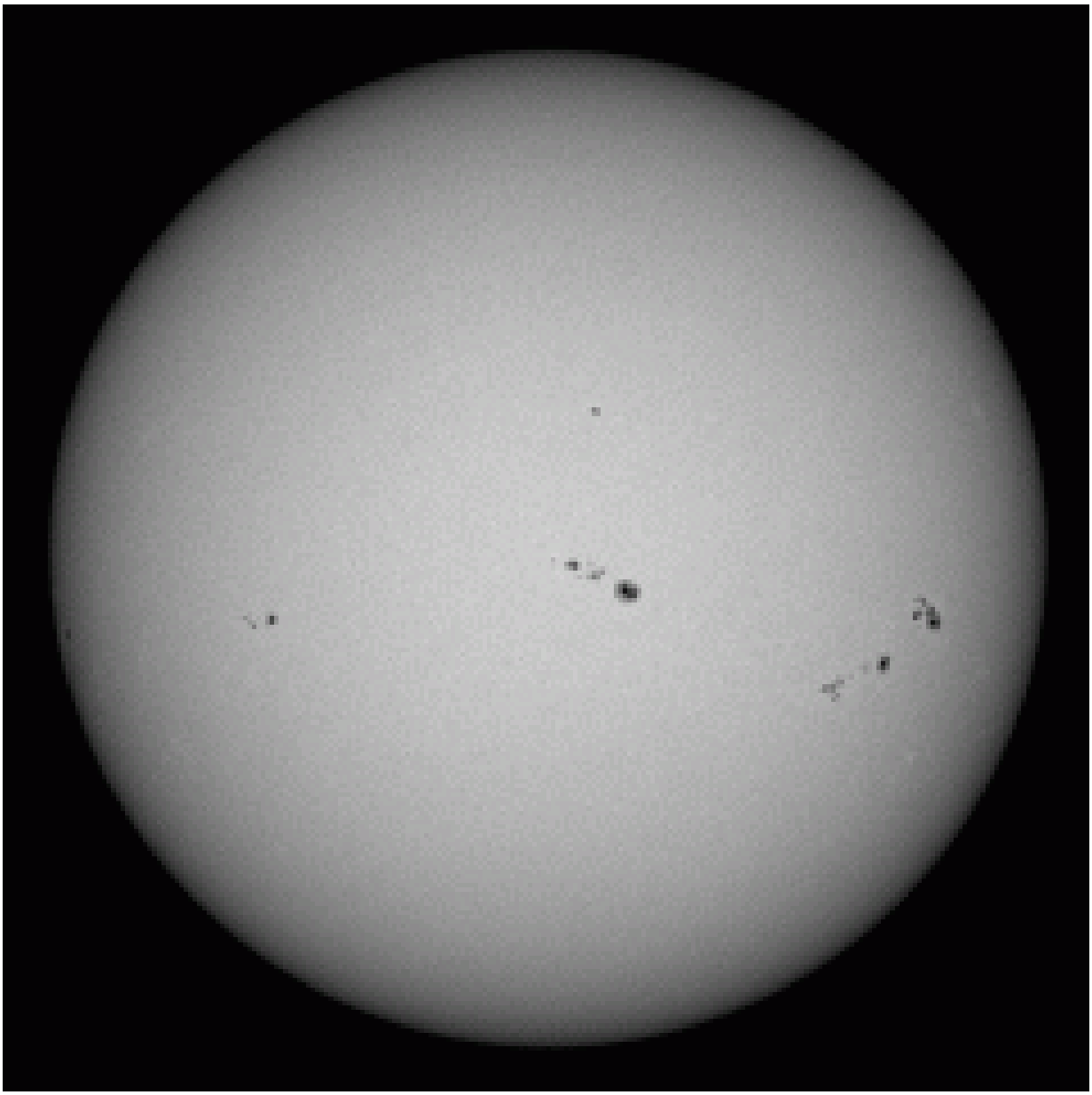

Fig. 1.— TESIS image, which is a clear picture of the sun, as found in Tesis (2014)

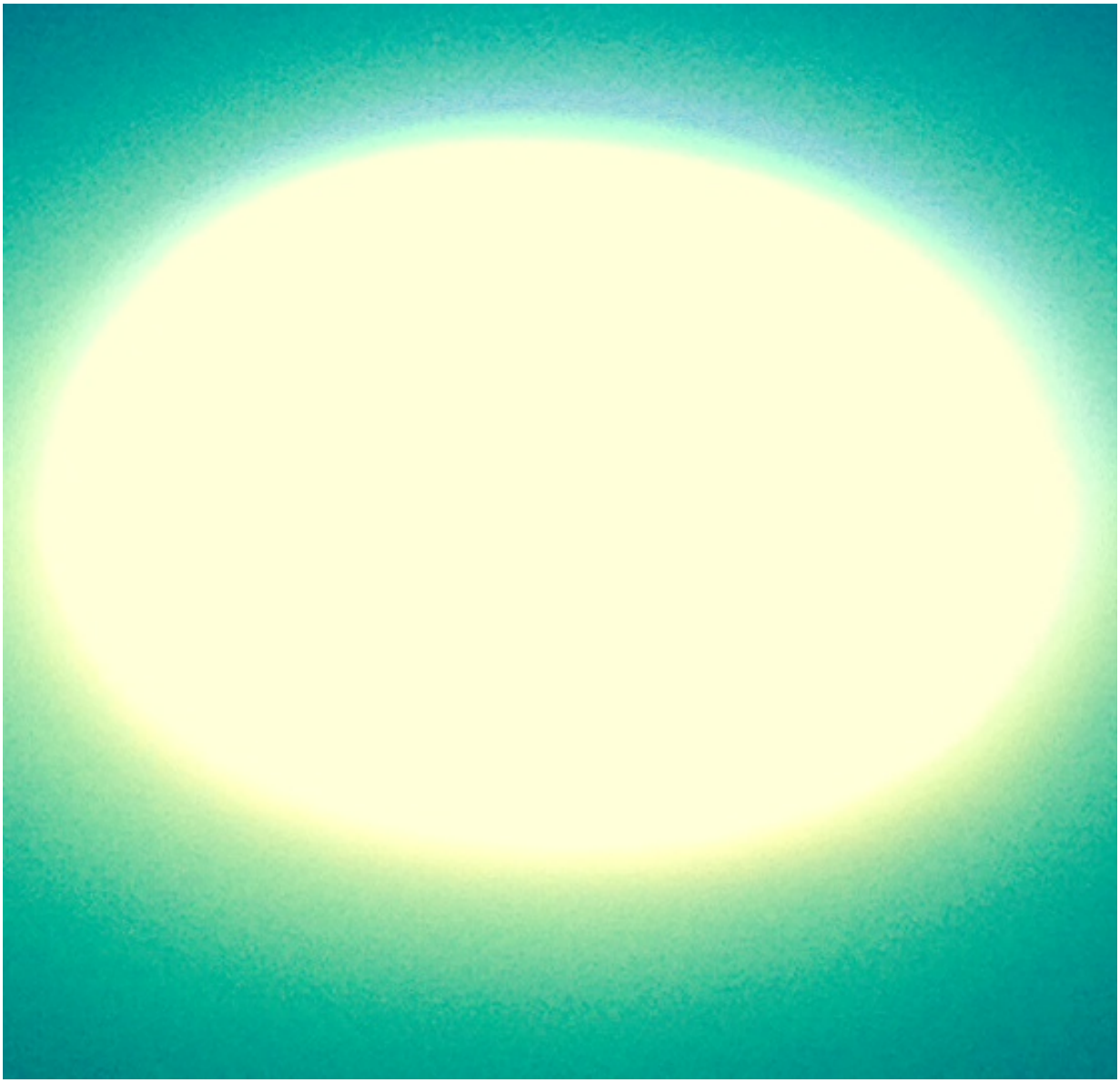

Fig. 2.— our image

5. Conclusion

In conclusion, my teammates and I have established that it *is* fairly possible to distinguish sunspots from Earth without using advanced technology. One thing I learned is that sunspots, even though they are sometimes viewed as annoying and useless to the general population, are of importance to astronomers and to people who work in the space industry. They can help us in the things that matter the most, like satellites and GPS systems. There is no need to be either rich or have the most advanced technologies just to observe space. An example is how ancient civilizations were great astronomers with ancient technologies. In figure 1, you can see the exact location of the sunspots and how many there is, this image, which is taken from NASA, is a great example of how modern techonologies allows us to capture in something as beautiful as the sun. Figure 1 is interestingly enough a pictured of the suns photosphere. Figure 2 is a picture that we took on 5/3/14 using binoculars and an 8 megapixel camera. Obviously, humans like us lack the resources and money to be experts in astronomy. Our group image showcases that. That doesn't mean we should be discouraged from doing it. We tried our best to do with limited resources, but we made it. This project has also helped me to learn how group work really is, how teaming up with someone is better for work than being alone. I was able to learn that I could do a report without using Microsoft Word, which is the only thing I have used. I guess making a poster is simpler than thought. All it takes is creativity. Finally, I would like to point out that this is the first type of experiment I have taken part in that relates to not only Astronomy, just science in general. Despite the many hitches we came across, I found this project to be worth it and somewhat amusing at the same time. I feel now that Astronomy is reliable for my life

REFERENCES

Tesis, et al. 2014 http://www.tesis.lebedev.ru/en/sun_pictures.html

This manuscript was prepared with the AAS LaTeX macros v5.2.