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# Challenges of Astronomy Outreach to Persons with Disabilities in the Caribbean

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**Abstract**

The authors formed a group "Caribbean Astronomy for Inclusion (CAI)" in January 2021. Their efforts are about engaging in Astronomy outreach with persons with disabilities across the spectrum inclusive of but not limited to persons who are neurodivergent, blind or deaf in the Caribbean region. We have met with limited success and this paper considers what are some the hurdles encountered, which includes lack of infrastructure and support for such efforts and too few persons engaged in this massive exercise. There are language and geographical barriers in the Caribbean region. Furthermore, in the Caribbean, persons with disabilities tend to operate in silos and remain isolated from the mainstream communities with limited activities that they engage in causing a severe communication and access gap. Almost all the astronomers in the group do not have any disabilities and we believe that this creates a disconnect in reaching out to the community with disabilities. There is definitely great interest and value among these communities for engaging in Astronomy and we report on our efforts and challenges.

**Keywords:** Astronomy outreach; Caribbean astronomy; Inclusive astronomy; Equity in education

**Abbreviations:** BVI: Blind/Visually Impaired ; CAI: Caribbean Astronomy for Inclusion; CSL: Caribbean Sign Language; LMIC: Lower Middle-Income Country

## Introduction

The idea of a group in the Caribbean dedicated to bringing Astronomy outreach to the persons with disabilities was originally a brainchild of co-author Prof. Wanda Merced who is a blind astronomer from Puerto Rico. She linked up several professional astronomers in the Caribbean region with an interest to promote astronomy among persons with disabilities and therefore, the independent group "Caribbean Astronomy for Inclusion (CAI)" was formed in January 2021 with a logo representing the history of the region and sensitive to persons with disabilities who may be neurodivergent. The authors comprise the CAI group at this present time with Prof. Breezy Ocana-Flaquer appointed as its president.

Simply the definition of the Caribbean itself is fraught with challenges [1]. It is an extremely diverse region in almost every context, such as language, history, geography and political affiliations. Whether a country or territory is part of the Caribbean or not depends on the defining feature being considered. Currently the membership of CAI represents Puerto Rico (part of the United States, yet geographically in the Caribbean), Dominican Republic (Spanish being the main language), Haiti (Creole language derived from French and several African languages), Honduras (generally considered as Central America but lying within the wider Caribbean region which stretches from the Gulf of Mexico to the French Guiana) and Trinidad and Tobago (English-speaking Caribbean island with its own creole version of English). In this tiny CAI group, we immediately evidence how varied and diverse the Caribbean region is. While diversity is excellent, it also becomes a challenge in forging ahead with our mission to introduce and engage persons with disabilities to Astronomy. Below, we highlight some of the challenges that we have experienced in the past year.

## Language

While English tends to be language of choice among a multilingual group, it is by no means the best way to reach people in marginalized communities who do not speak the language. A lot of our early discussions centred around developing documents for access by persons who spoke creole in the islands. We have not been successful in this venture to date, the reason being the diversity of the languages spoken in creole in the Caribbean region and the relative smallness of each region making them too numerous, with a lack of human resources to complete such an exercise. This makes the task monumental.

This has also been an issue when we arrange seminars on topics relevant to the mission of the group (e.g., https://youtu.be/Yblj622sU88). How do we handle the language barriers and reach as many persons with disabilities in our region as possible? We have noted that options for translations and effective use of social media will be useful. However, here again we run into the problem of resources. We are all primarily astronomers and scientists without the skill sets for effective social media management.

We are also in the process of compiling Astronomy terms in sign language. Naturally, and in keeping with the myriad of spoken languages there is no standard sign language that applies to the Caribbean region. Caribbean Sign Language (CSL) refers to mainly the English-speaking Caribbean [2]. Even in this case, the many "English-speaking" islands still have their own version of expressions. These are very serious challenges for our efforts. We are definitely stronger as a team and can do more together than individually. Yet our individual circumstances limit our abilities to reach far out and be inclusive of all persons in the region.

## Geographical realities

In a world that is greatly connected and globalized now, it would be expected that geographical separation should not be an issue. Certainly, the COVID-19 era has shown how we can easily overcome this with online modes of operation. However, here we are dealing with persons with disabilities. How many have the resources to be able to access such facilities in a suitable format for them? So, being able to work with them as a group in a physical setting is preferable. As an example, we recently had an activity with the blind community in the Dominican Republic where we created our own model for representing the distances in the solar system that the blind community were able to experience. However, working in face-to-face mode across so many islands and different geographical contexts is extremely prohibitive with cost and resources, especially if we take rural areas and indigenous communities into account. Currently five persons in this group are serving a region nearly 2.8 million square kilometers in size! This however is a huge improvement compared to in the past when only one professional astronomer member of CAI (SH) served the English-speaking region.

## The communication gap between professionals and the target audience

The membership of CAI at the moment is composed of professional astronomers. Except for Prof. Wanda Merced-Diaz and Dr. Rulx Narcisse who have disabilities of blindness and cognitive impairment respectively, all other members have no disabilities. As such, due to the fact that communities with disabilities are not fully integrated into the mainstream academic pursuit paths in the Caribbean, there is a major communication gap that exists between where we in CAI stand and where the persons we are working with are located metaphorically. Some of our members have reached level 1 and level 3 in expertise in sign language to help in closing this gap in their countries. It should be noted that the specific sign language in use varies from country to country making our enterprise more challenging. This however is a major chasm in our operations – where we as a team have a lot to learn to be sensitive to and understand the challenges precisely of the community, we want to bring the joys of astronomy to and importantly to be able to communicate with them in a mode that they can understand. We have to learn before we can teach.

At times this is extremely difficult because sometimes the words do not exist in the local sign language. Therefore, one of the main objectives is to identify the local deaf community and collaborate together, where we, as astronomers can explain the meaning of the astronomical terms and they can later discuss to find the culturally appropriate sign.

## Resources

This issue of course is common in all ventures and one of the key tools for carrying astronomy to the people in our case. For our scenario, we do have access to devices such as Orchestar and Lightsound which convert images into sound for the blind to experience astronomy [3]. There is also the CARDIS that has been developed to help align telescopes by blind persons [4] and software such as Afterglow which converts images to sound (https://idataproject.org/resources/). In the Caribbean, the region does not pay enough attention to science and its popularization as can be noted that the Gross Domestic Product (GDP) spent on Science is a minute fraction of that in the developed world. Haiti is the poorest nation in the Western hemisphere and Honduras is labelled as Lower Middle-Income Country (LMIC) by the world bank. So, while tools may be available, we do not have the financial resources to access them in numbers required. Even when resources are available, we have run into coordination and administrative challenges. For example, we had the situation where the CARDIS was sent to Dominican Republic, Haiti and Trinidad and Tobago from Puerto Rico utilizing the facility of free postal services for the blind. Yet in Trinidad and Tobago due to poor coordination, the item was never retrieved and was returned to sender.


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Having highlighted four major hurdles in our path to achieving our goals in bringing astronomy to the community in the Caribbean with disabilities, the question arises if these hurdles are unsurmountable? It is our firm belief the hurdles are not unsurmountable, else we would not have embarked on this venture and stuck with it as we all have. The ways these hurdles can be overcome are as follows:

a) Increase the membership of our group with greater diversity in skill sets such as social media management (not only astronomy).

b) Increase the geographical areas where our members are located to include many more islands in the Caribbean.

c) Include liaisons persons for example, for example those who are deaf, blind or neurodivergent who can act to bridge the gap between the astronomers and the communities we are working in.

d) Embark on fundraising ventures or engage the business communities to assist in these ventures to increase our resources.

## Conclusion

As has been highlighted in this opinion piece, the need for what our group CAI hopes to achieve is an area untapped and of tremendous need and value in the Caribbean for inclusion and equity in access to astronomy. The problems are unique to our region. However, the challenges are many and daunting but not unsurmountable to take astronomy to the communities with disabilities in the Caribbean.

## References

1. Haque S (2019) Destination: Caribbean – Sun, Sand and Skies. IAU Symposium 358: Astronomy for Equity, Diversity, and Inclusion - A Roadmap to Action Within the Framework of the IAU 100th Anniversary, Japan.
2. Braithwaite B (2018) Language contact and the history of sign language in Trinidad and Tobago. Sign Language Studies 19(1): 5-39.
3. Bieryla A, Hyman S, Garcia B, Diaz-Merced W, Troncoso Iribarren P, et al. (2020) Light Sound: The Sound of an Eclipse. CAP (Communicating Astronomy with the Public) 28: 38-42.
4. Ocaña Flaquer B, Diaz Merced WL, Haque S, Narcisse R, Mejuto J, Diaz, E, Vargas Domínguez S, Bieryla A, Eastwood K (2021) "Caribbean Astronomy for Inclusion (CAI): Transforming "Theory" on Inclusion into Concrete Actions." Proceedings of the 2nd Workshop on Astronomy Beyond the Common Senses for Accessibility and Inclusion (Virtual). Revista Mexicana de Astronomía y Astrofísica. Serie de conferencias 54: 84.


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