IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Show Us Space: Demonstration of Hands On Education and Outreach (8)

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THE BRAZILIAN EXPERIENCE IN THE GLOBE PROGRAM: ENVIRONMENTAL CITIZEN SCIENCE AS A GATEWAY TO SPACE SCIENCE AND OTHER FIELDS.

Abstract

This publication focuses on the premise that Environmental Citizen Science be the gateway to other fields of endeavor, such as Space Science, with attention to the tailoring of programs to the landscape of the Brazilian education system. To this end, the Brazilian Space Agency's (AEB) experience with the GLOBE Program will be presented as a study case of regional and national impacts. GLOBE is an international citizen scientist program that promotes scientific research on the environment. The program was established by NASA in 1995 and has more than 125 participating countries. Brazil joined the program in 2015, with AEB as the national coordinator.

In the past 9 years, 35 workshops have been held, with 987 educators trained and 524 Brazilian schools registered in the program. There have been over 83 thousand environmental data entries, mostly registered by students. Overall, the program has gathered over 5 thousands Brazilian citizen scientists, who participate through the mobile application named GLOBE Observer. Through the program, teachers are trained in workshops to use environmental parameters in specific protocols. This knowledge is applied to the development of scientific research in the classroom, utilizing adapted procedures for the collection and analysis of data, following a scientific methodology. The environmental science learned is then correlated with satellite data, and utilized to bring literacy on remote sensing techniques and to raise awareness on the importance of space technologies.

In this study, secondary teachers were trained in four main protocols: Mosquito Habitats, Clouds, Land Cover and Trees. They also received an introduction to scientific methodology and how satellite data can contribute to the study of the environment. Teachers then chose protocols that best met the class needs, such as subject, student age or the social context. In each workshop, teachers answered a workshop perception questionnaire where they evaluated the training and how it can contribute to their performance in the classroom. Then, teachers guided their students, conducting research based on at least one of the GLOBE protocols. As a result, teachers reported conclusions on what was learned and how it was applied during school activities, often indicating gains in the improvement of student performance in many subjects such as science, mathematics and geography. Furthermore, teachers have widely reported that, due to the contact with these protocols, students have shown more overall interest and participation in class and in scientific projects, many engaging in knowledge Olympics and other extracurricular scientific activities.