Partnerships between Professional and Amatuer Astronomers: A Shift in Research Paradigm

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Abstract:
"Citizen Astronomy" can be thought of as the paradigm shift transforming the nature of observational astronomy. The night sky, with all its delights and mysteries, entrhalls professional and amateur astronomers, and students who will form the next generation of scientists and engineers. These students are matriculating in an era of reduced funding for core competencies such as science, technology, mathematics and engineering (STEM) sciences and an ongoing general decline in these sciences. How then do we re-generate their interest and engage students while we perform cutting-edge planetary science in a fiscally constrained environment? One promising solution is to promote the emerging partnerships between professional and dedicated amateur astronomers, that rely on creating a niche for long timeline of multispectral remote sensing. In the past decade, it is the collective observations and their analyses by the ever-increasing global network of amateur astronomers that has discovered interesting phenomena and provided the reference backdrop for observations by professional ground-based professional astronomers and spacecraft missions. We shall focus on our collaboration or "Citizen Astronomy: Jupiter and Saturn" for the past five years and illustrate the strong synergy between the two groups that has produced new scientific results. With the active inclusion and use of emerging social media (Facebook, Twitter, etc.), the near daily communication and updates (via email, Skype, Facebook) between the two groups is becoming a powerful tool for ground-based

remote sensing. However, what is sorely lacking in this paradigm is the inclusion of teachers and students and, therefore, its inclusion in the secondary and tertiary classrooms. We will provide various scenarios to address this issue, and emphasize the various aspects of STEM learning/teaching that is necessary for students and teachers - all that can be performed at low cost; and showcase some of our contributors and current science investigations.
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