

46th STUDENT CONFERENCE (E2)
Educational Pico and Nano Satellites (4)

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EXPERIMENTING WITH NANOSATS AND PICOSATS FOR CAPACITY BUILDING IN BRAZIL

Abstract

The engineering carriers in Brazil are currently facing a serious setback due to the lack of national investments in a state-driven research and development sector deeply affected by recession and corruption. In countries with an established space sector, its industry segment usually has an amplifying factor in the internal economy. In this scenario, this paper presents some initiatives, best practices, lessons-learned and results using nanosats and picosats for space education and outreach in Brazil ranging from teens to post-graduate students. The first one was the Tancredo-I picosatellite project development and successful launch from the Japanese ISS Kibo module in early 2017 followed by the formation of INPEs Space Engineering and Technology post-graduate CTEE group which aims at enabling hands-on space missions for students, build up future workforce developments and promoting various outreach activities. The CTEE group has setup some good practices to support the development of a series of nanosats with increasing complexity and mission capabilities. Some measures of critical assessment with very positive results for the Tancredo-I picosatellite in the Brazilian media and web access to project content are quite visible. A series of small cubesat workshop events targeting kids and the public in general are detailed with innovative approaches to the theme. All these activities are looking forward to reach competencies such as on Industry 4.0 driven by automation, big data, artificial intelligence, 3D printing, etc., that rely pretty much on engineering skills which Brazil needs to improve extensively. Future plans include a first time national nanosat competition named CubeDesign which 2018s edition is taking place and a laboratory dedicated to the development of nanosats, named CubeDevLab, and run by students, INPE staff and its collaborators.