

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Applications, Societal Challenges and Economic Benefits (5)

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REMOTE SENSING APPLICATIONS FOR RED TIDE MONITORING USED AS FEEDBACK FOR
IMPROVING NANO-SATELLITE CONCEPTUAL DESIGN, THE CASE OF RETI-SAT AT THE
UNIVERSITY OF COSTA RICA.

Abstract

The fields of remote sensing and earth observation provide great benefits to society specially in emerging countries. There are two main actors that intervene in the development of earth observation applications: the satellite or hardware designers and the application researchers. Both fields are extremely complex and require high level of technical specialization. From a system engineering point of view hardware development should develop specifications and conceptual design based in application development feedback, in the same way application development is restricted to the capacities of available sensors in space and data. In emerging space countries such as Costa Rica, the level of complexity of both field causes a disconnection due to the lack of professionals with sufficient knowledge in both disciplines to act as catalyst for the feedback loop between end users and designers. As a proof of concept, the Central America Association for aeronautics and Space (ACAE) with its experience developing the first Central American Satellite is aiming to fulfil the catalyst role. A team of students from mechanical engineering faculty of the University of Costa Rica are developing the design of a Nano-satellite called ReTi-Sat, the second Costa Rican satellite, with the objective of red tide bloom monitor and detection. On the other hand, researchers at the Geography School specialized in remote sensing at the same university are developing red tide algae bloom detection mechanisms and the relationship with the climate change, based in currently available free satellite platforms data such as ESAs Sentinel and NASAs Landsat and its correlation with spectral response and the chlorophyll (mg/m³) contents on harmful algal bloom. Through this initiative the experience in application development by the Earth observation Scientist will be used to improve the initial specifications being developed by team of Engineering researchers. Through the end user – designer interaction the first UCR satellite will be improved, resulting in a more robust design. Additionally, the experience will prove the role of NGOs such as ACAE need to play as catalyst in the development of researcher networks as way to boost new space development and applications, in small medium income countries.