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

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A FRAMEWORK FOR MAPPING EARTH OBSERVATION CAPABILITIES TO THE OHCHR INDICATORS

Abstract

Satellite imagery is advantageously situated to monitor human activities and environmental changes, particularly if the target is remote and across large spatial areas. In some instances in-situ data collection is not possible, this is for example if the target is isolated or the political stance of the country prevents ground access. Human rights research can faces these obstacles when trying to collect and use traditional in-situ data methods. This paper focuses on the human rights and security sector, by presenting a systematic framework developed and used to understand and explore the applicability of satellite imagery to human rights monitoring. An extensive literature review of research papers and development projects was conducted to identify all the capabilities of Earth Observation (EO), by also suggesting relevant missions, supplementary data products, algorithms and analytical processes. An outline of the review is presented in the paper through a taxonomy of all relevant satellite applications that meet the Office of the United Nations High Commissioner for Human Rights (OHCHR) framework on human rights indicators. Overall, this research aims to ensure that this data source is maximized for its full potential in the field, to ensure that effective human rights studies are conducted. This form of research has already been conducted extensively for the UN's Sustainable Development Goals (SDG) (Andries, 2019) (Ferreira, 2020) and so the purpose of this paper is to advance this research even further, but with particular emphasis on human rights monitoring and corresponding indicators. Some of the OHCHR indicators do not have overlap with the SDGs, such as for example 'Proportion of households living in or near hazardous conditions rehabilitated' in 'Right to Adequate Housing'. Hence this research draws particular focus onto these indicators and wants to fill an existing gap on EO capabilities mapping. The vast scope of EO data applications is made clear through this paper, however future developments in space technology and future planned missions are also discussed to understand which human rights insights can be met in the future with more frequent and higher spatial and spectral resolution information. Despite the essential need for EO data in the sector and the advancement of the Space industry, it also comes with its own limitations, which are discussed in detail in the paper.