IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)
National space law and security – an update (5)

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SPACE TECHNOLOGIES FOR THE ENVIRONMENT MONITORING: EXPERIENCE OF UKRAINE: STATE WITHOUT OWN SATELLITES

Abstract

Great Ukrainian space history remains in the past with soviet technologies and laws based on harsh state regulation. Rejection of the cooperation with the Russian Federation and sluggish cooperation with the ESA in complex with internal financial and bureaucratic problems and lose access to some signal reception stations in Crimea, pushed the Ukrainian space industry faraway out of international Earth observation (EO) systems and leave Ukrainian society without own remote sensing satellites. These consequences make Ukraine look like the emerging space nations that are described according to such key categories: space launch capacity, the maturity of the industry, capacity building for human capital or industries, level of established governance, and existence/success of national space programs. On the other hand, the disturbing environmental situation caused by technogenic threats in the East of the State and floods in the West due to illegal large-scale deforestation requires finding ways to use space technology to monitor the environment without data from its own satellites. This study dedicated to the evaluation of the technical mechanisms of the receiving EO data from various sources, their transformation according to needs of state and private customers, sketching legal framework for the state environmental monitoring system consisting with procedures of the quick data exchange in the cases of emergency as an eloquent example for the emerging space nations. The study focuses on the analysis of the three sources of the obtaining EO data: 1) international initiatives, namely UN-SPIDER, Space4Water, the International Charter on "Space and Major Disasters" etc; 2) public procurements with different legal models for the aim of data protection; 3) utilization the ground station capabilities, for instance, Ukrainian Space situation control and analysis systems. The state of the market for remote sensing data processing services will also be described. The authors reveal the main obstacles for the adoption of the legislation in the sphere of EO services, peculiarities of the procedures on the organization of information exchange in the field of emergency prevention and response, and of the current and prospective development of the model of the national system of monitoring of the environment. Thus, the study offers a comprehensive picture of the most recent stage of technological development of EO services in the State that hasn't own EO satellites, i.e., in Ukraine.