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50 years of Earth observation: The contribution to sustainable development goals and plans for the future
(6)

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DROUGHT AND FOOD SECURITY PREDICTION FROM NOAA NEW GENERATION OF
OPERATIONAL SATELLITES AND 40-YEAR SERVICES

Abstract

Nearly a quarter of the world's population does not have enough food for normal living and nearly one billion people become hungry every year. One of the reasons for undernourishment and hunger is drought, which reduces agricultural production leading to food insecurity situation. In half of the years of the 21st century, drought was the main cause of shortage in world grain production compared to its consumption, creating problem with food security. In November 2017, a new generation of NOAA operational satellite, JPSS-1, with VIIRS instrument on board was launched. Regarding land cover monitoring, the system was designed to advance drought detection, and improve prediction of grain loss using the highest resolution vegetation health (VH) method. The VIIRS-based VH will detect drought early, monitor accurately at 0.5 km² resolution, provide drought intensity, duration and predict agricultural loss two months ahead of crop harvest. Such early estimates will predict food security situation. Examples in this paper prove high accuracy of vegetation health assessment, drought-triggered crop stress and the resulting grain production loss. These applications provide 2-4 months of advanced predictions of global food insecurity and early assessments of food assistance for the countries in need.