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Integrated Applications End-to-End Solutions (2)

Author: Ms. Veronica Chigoziri Obodozie
International Space University, Nigeria

Dr. Su-Yin Tan
University of Waterloo, Canada
Mr. Scott Schneider
Australia
Dr. Farhan M. Asrar
University of Toronto, Canada

MITIGATING THE IMPACTS OF PANDEMICS ON THE SUPPLY CHAIN USING EARTH OBSERVATION DATA.

Abstract

With sudden changes in demand for certain goods, strict border control, and movement restrictions, pandemics can cause an immense disruption of the supply chain especially as it pertains to sustenance goods and job security. The most important recommendations on how this disruption can be mitigated by applying Remote Sensing have been outlined. Earth Observation (EO) and ground data can be used to mitigate the effects of pandemics on the interconnected global and local supply chain; with the COVID-19 pandemic as a case study. The scope of effects by COVID-19 includes issues in the supply chain, operational logistics, and goods production. EO data can be used to track goods like foods, medical kits, hand sanitizers, etc. which in turn aids the reallocation of high-demand goods to areas with limited supply. Satellite-based communication channels will be useful for more remote areas. The supply chain deals with adequate production, the food security issues faced by a significant part of the world's population, can be tackled with an integrated approach. An integrated application of Remote Sensing, (IoT), and Machine Learning is proposed for food security. EO data can be used for agricultural monitoring coupled with available tools to assess and predict produce status. This is useful in disaster management during restrictions of pandemics; machine learning models can be deployed in conjunction with IoT systems to help with farm monitoring watering of crops using weather data, environment monitoring and fertilizer requirement reminders, and triggering of risk management protocols during disasters. These solutions also contribute towards the United Nations (UN) Sustainable Development Goals (UN's SDGs), (2) Zero Hunger, (9) Industry Innovation and Infrastructure, (11) Sustainable Cities and Communities, and (12) Responsible consumption and production. The recommendations are based on re-implementing existing technologies and systems making it a feasible mitigation effort.