

Engagement of Copernicus Data for Weather, Ecosystem Services, and Natural Hazards using Remote Sensing Techniques

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The Copernicus program is a partnership program of members of the European Union. It has a series of satellites named Sentinel 1, 2, 3, and 5P with other satellites to be launched in future. Its observations can be used to monitor land, ocean, and atmosphere at a global scale with high temporal resolution. In this regard, new indices, Normalized Difference Latent Heat Index (NDLI) and Temperature-Soil Moisture Dryness Index (TMDI) are introduced for soil moisture assessment. These indices have shown their edge over other conventional indices and can also be used in drought assessment. Using remote sensing analysis, the eco-environmental vulnerability issues are addressed and the vulnerability maps to signify the changes in eco-environment worldwide due to human and natural disturbances are produced. Natural hazards like Typhoons may cause major impacts on infrastructure and human life. The impact assessment of typhoons on urban greenspace of Taiwan is carried out using remote sensing data from Copernicus Programme. Furthermore, Sentinel 5P data is used for the air quality analysis during typhoons and dust storms. The extension program of major cities is affecting the green cover and the altered air quality may directly affect human health. Hence, it is necessary to access these changes in time to mitigate the human health risks. The altering urban greenspace patterns may be investigated using Sentinel-2 MSI data to highlight the impact of change in the urban greenspace over the heat mitigation process. The abovementioned technological achievements are useful in the management of various earth and environmental issues with low cost and better coverage.

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