[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG36]Satellite Earth Environment Observation

convener:Riko Oki(Japan Aerospace Exploration Agency), Yoshiaki HONDA(Center for Environmental Remote Sensing, Chiba University), Yukari Takayabu(東京大学 大気海洋研究所, 共同), Tsuneo Matsunaga(Center for Global Environmental Research and Satellite Observation Center, National Institute for Environmental Studies)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) In recent years, we cannot avoid facing issues on global environmental changes that occur in various spatiotemporal scales. The earth environmental observation data by satellites became the necessary basic data to tackle and solve those issues. Due to the recent advancement in the observation sensor technique and the data processing technique, the satellite observation has been showing rapid progress, and the time is changing from examining the accuracy of the observation sensor data to the advancement of the data application, leading to broaden potential users. In these days application became synergetic, so we comprehensively pick

up this topic in the Atmospheric and Hydrospheric Sciences Session of this Union Meeting that enables to comprise the atmospheric, oceanic and land sciences; by combining the intelligence and the knowledge of the party, we propose a session that aims to prompt further studies towards the issues on earth environmental change, the advancement in the data application and future plans of Earth Observation missions.

[ACG36-P06]An Artificial Intelligence Approach for Situation-Aware Prediction of Air Quality, based on MODIS and MISR Big Data Time Series

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Keywords:Artificial Intelligence, Air Quality Index (AQI), Situation-Aware, Big Data, Time Series

The continuously deteriorating air quality in major developing nations is a challenge for sustainability of healthy human race. One of the worst recent toxic smog formations was in the National Capital Territory of Delhi (NCT) in India during November-December 2017. Finding the multidimensional causality aspects of this dangerously hazardous situation is an important direction of research before finding any practical recommendations; henceforth any resilient solution. This research presents a porotype model for utilization of heterogeneous Satellite and ground-based sensor data sets comprising Air Quality Index (AQI), Satellite retrievals of aerosol optical depth (AOD) and surface reflectance in various bands, to identify the causality patterns(particularly the effect of kharif crop shoot burning in neighboring states of Delhi (NCT) viz. Punjab, Haryana and Uttar Pradesh). The approach comprises Artificial Intelligence (AI) techniques for logical representation of heterogeneous satellite Big Data and data from in-situ ground-based sensor, learning causality relation weights supplemented with inference and prediction capabilities. We have utilized Satellite retrievals of aerosol optical depth (AOD) from MODIS and MISR (Multi-angle Imaging Spectroradiometer) Satellites along with New Delhi Historical data of Air Quality Index (AQI) from AirNow(Environment Protection Agency, USA) and data from Central Pollution Control Board, Government of India. This prototype approach of AI derived process pipeline can be easily replicated for other locations with capabilities such as timely forecast/warning issue and other longterm recommendations.