Title: Use of Machine learning Classification techniques as pattern recognizer for TEC depletions

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Abstract:

Detection of TEC depletions are essential in understanding the errors occurring in the signals received from satellites. The Equatorial plasma bubbles cause most of the scintillations that appear at the low latitudes. These plasma bubbles are observed as TEC depletions. There have been many studies for such depletions and developing algorithms for detecting TEC depletions. With technological advancement, we now have tools like machine learning and neural networks that can reduce this cumbersome task. As space datasets are typically imbalanced due to complex ionospheric electrodynamics these machine learning techniques have advantages and limitations both.

In this talk, I would like to discuss on machine learning classification techniques, which can be used as pattern recognizer to detect the complete TEC depletion patches over (low latitude) Indian region for the equinoctial month of March,2014. The testing data set is further tested using the algorithm and inspected for actual TEC depletion using GPS dataset.

References-

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[2] Aleksei Zhukov, Denis Sidorov, Anna Mylnikova, *Yury* Yasyukevich (2018). Machine learning methodology for ionosphere total electron content nowcasting, International Journal of Artificial Intelligence, Volume16, Issue 1, Pages 144-157. http://www.ceser.in/ceserp/index.php/ijai/article/view/5449