

# SAIP2014



Contribution ID : 109

## **Ionospheric Tomography over South Africa: comparison of MIDAS, ionosondes and GPS measurements**

Tuesday 08 Jul 2014 at 11:30 (00h20')

### **Abstract :**

This paper aims to show the results of an ionospheric tomography algorithm called Multi-Instrument Data Analysis (MIDAS) system over the South African region. Recorded data from a network of around 53 Global Positioning System (GPS) receivers over the South African region was used as input for the inversion. The inversion was made for a few randomly selected days (12 April (autumn), 12 July (winter), 12 October (spring) and 12 December (summer)) representing different seasons of the year 2012. MIDAS reconstructions were validated by comparing NmF2 values predicted by MIDAS to those calculated from the four South African ionosonde stations. Good agreement was found between the two measurements with minimum and maximum root mean square errors (rmse) of 0.88 and 1.92 units respectively, and minimum and maximum coefficients of determination ( $r^2$ ) of 0.90 and 0.96 respectively. Also, MIDAS reconstruction had greatest accuracy during the winter and summer months compared to the other seasons.

### **Award :**

Yes

### **Level :**

MSc

### **Supervisor :**

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### **Paper :**

No

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