

## Accepted Manuscript

Comparative study of COSMIC/FORMOSAT-3, Irkutsk incoherent scatter radar, Irkutsk Digisonde and IRI model electron density vertical profiles

K.G. Ratovsky, A.V. Dmitriev, A.V. Suvorova, A.A. Shcherbakov, S.S. Alsatkin, A.V. Oinats

PII: S0273-1177(16)30748-7

DOI: <http://dx.doi.org/10.1016/j.asr.2016.12.026>

Reference: JASR 13025

To appear in: *Advances in Space Research*

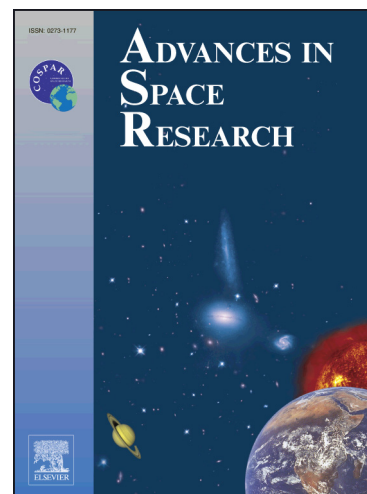
Received Date: 13 May 2016

Revised Date: 13 December 2016

Accepted Date: 17 December 2016

Please cite this article as: Ratovsky, K.G., Dmitriev, A.V., Suvorova, A.V., Shcherbakov, A.A., Alsatkin, S.S., Oinats, A.V., Comparative study of COSMIC/FORMOSAT-3, Irkutsk incoherent scatter radar, Irkutsk Digisonde and IRI model electron density vertical profiles, *Advances in Space Research* (2016), doi: <http://dx.doi.org/10.1016/j.asr.2016.12.026>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Comparative study of COSMIC/FORMOSAT-3, Irkutsk incoherent scatter radar, Irkutsk Digisonde and IRI model electron density vertical profiles

K.G. Ratovsky<sup>a</sup>, A.V. Dmitriev<sup>b</sup>, A.V. Suvorova<sup>c</sup>, A.A. Shcherbakov<sup>d</sup>, S.S. Alsatkin<sup>e</sup>, A.V. Oinats<sup>f</sup>

<sup>a</sup>*Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences, Irkutsk, 664033, Russia, tel: +7 3952 564539, fax: +7 3952 425557, ratovsky@iszf.irk.ru*

<sup>b</sup>*National Central University, Jhongli District, Taoyuan City 32001, Taiwan; Scobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow, 119991, Russia, dalex@jupiter.ss.ncu.edu.tw*

<sup>c</sup>*National Central University, Jhongli District, Taoyuan City 32001, Taiwan; Scobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow, 119991, Russia, suvorova\_alla@yahoo.com*

<sup>d</sup>*Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences, Irkutsk, 664033, Russia, scherbakov@iszf.irk.ru*

<sup>e</sup>*Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences, Irkutsk, 664033, Russia, alss@iszf.irk.ru*

<sup>f</sup>*Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences, Irkutsk, 664033, Russia, oinats@iszf.irk.ru*

## Abstract

The long-duration continuous Irkutsk incoherent scatter radar observations allowed us to collect 337 electron density vertical profiles obtained almost simultaneously with the radar and the COSMIC in the radar vicinity. The COSMIC electron density profiles were compared with those from the radar, Digisonde, and the IRI model. The comparison included 4 seasons and 2 solar activity levels (low and moderate). The number of simultaneous cases was ~10 times more than in the previous incoherent scatter radar comparisons. In the case of the bottomside characteristics (peak density and bottomside electron content), the deviations between the COSMIC and the ground-based facilities data may be interpreted as the COSMIC measurement errors without significant systematic biases and with root-mean-square values that are ~1.4-1.6 times smaller those that from the IRI model prediction. In the case of the topside characteristics (topside electron content and ionospheric electron content), the IRI model overestimates

Download English Version:

<https://daneshyari.com/en/article/5486176>

Download Persian Version:

<https://daneshyari.com/article/5486176>

[Daneshyari.com](https://daneshyari.com)