R006-08
A 会場 ：9/25　PM2 （15:45-18:15）
16:00〜16:15

SC 研究の今後の課題

#荒木　徹 [1)]
(1 京大理

Future Problems of SC research

#Tohru Araki[1)]
(1Formerly Graduate School of Science Kyoto University

There is a model that divides the SC disturbance field Dsc into DL + DPpi + DPmi, but this is related to the interpretation of the waveform distribution on the ground, and does not give the full picture of the SC phenomenon. The SC observed on the whole earth and in the whole magnetosphere shows different faces depending on the latitude, altitude, LT of the observation point. By analyzing each of the faces we can know the complex reactions of the system composed of the magnetosphere, ionosphere and conducting earth. The current issues for this analysis are summarized below.

1. SC as a nonlinear phenomenon: large amp litude SC.
1a: Instantaneous formation of radiation belts,
1b: Presence of large and short pulses in the magnetosphere,
1c: Response of the magnetosphere and ionosphere.
2. SC in the polar cap.
2a: Observation of the new polar cap current system proposed by Fujita et al.(2021),
2b: IMF dependence of polar cap SCs,
2c: Polarization of SCs.
3. SC in middle and lower latitudes.
3a: Relationship between equatorial enhancement and polar electric field,
3b: SC D/Y component behavior,
4. Solar wind shock/discontinuity of the pre-satellite era.

These issues are discussed with examples.

Many Japanese have contributed to SC research since Prof. Aikitsu Tanakadate, who was the coordinator of the SC committee at IGGU-STME（the predecessor of the current IUGG-IAGA）. The number of citations of papers seems to be the highest among Japanese. I hope that many people will join SC research and that this tradition will be preserved.

SC 擾乱場 Dsc を，DL+DPpi+Dmi　と分けるモデルがあるが，これは，SC 地上波形分布の解釈に関するもので，これで SC 現象の全貌が判る訳ではない．全地上・全磁気圏で観測される SC は，観測点の緯度・高度・LT・季節・太陽活動度などに依存して異なる顔を見せるから，その注意深い解析から，太陽風動圧急変化に対する磁気圏-電離層-導体地球系の複雑な反応が判ってくる．以下に，この解析のための現段階の課題を纏める．

１．非線形現象としての SC:　大振幅 SC
1a：放射線帯の瞬時形成
1b：磁気圏内大短パルスの起源と伝搬
１ c：磁気圏・電離層の反応
２．極冠内 SC
2a：新極冠電流系（計算機実験：Fujita et al., 2021）に対応する観測
2b：極冠内 SC の IMF 依存性
2c：SC の偏波
３．中低位緯度の SC
3a：equatorial enhancement と極電場の関係
3b：SC の D/Y 成分の振舞い
４．飛翔体観測以前の太陽風衝撃波/不連続面

これらの課題について，例を示しながら述べる．

現在の IUGG-IAGA の前身である IGGU-STME で，SC 調査委員会のまとめ役をされた田中館愛橘先生以来，SC 研究には多くの日本人が貢献してきた．論文の引用数も，日本人のものが最も多いと思われる．多くの方々が SC 研究に入り，この伝統が守られることを期待したい．