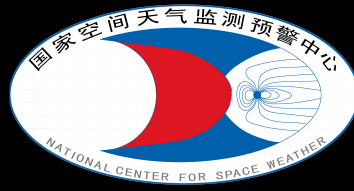


# CROSS COMPARISON OF ENERGETIC PARTICLE DATA BETWEEN FENGYUN AND NOAA SATELLITES

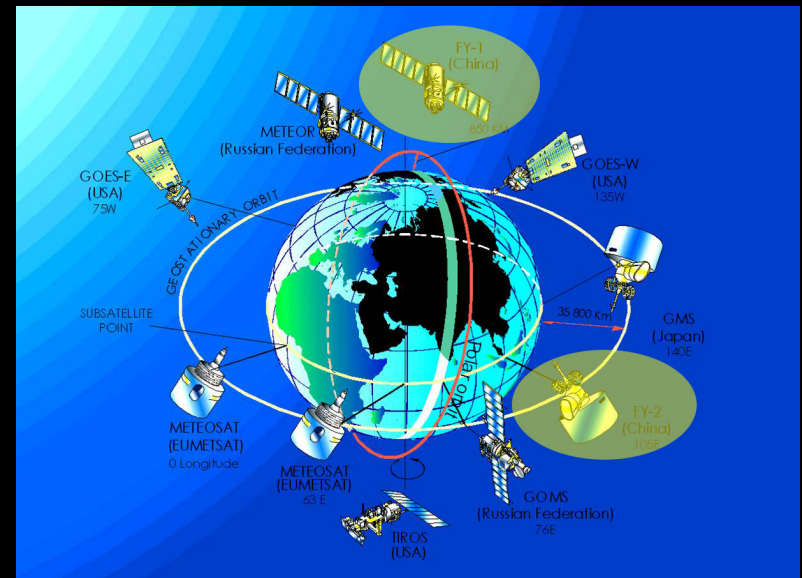
Jiawei Li, Cong Huang, Bingsen Xue,  
 Xiaoxin Zhang, & Tao Yu

National Center for Space Weather/  
 National Satellite Meteorological Center  
 China Meteorological Administration

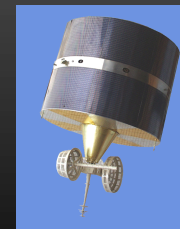


# INTRODUCTION

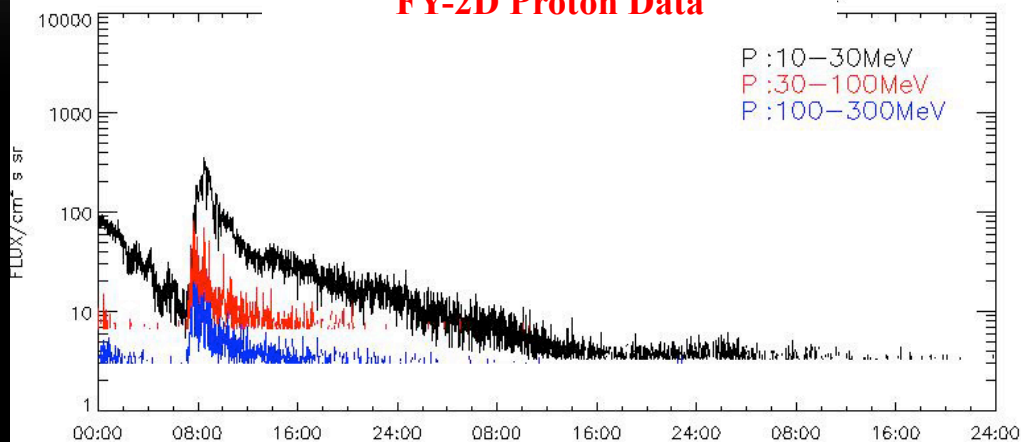
- The Fengyun Meteorological satellite has 2 series: polar orbit and geostationary
- All of the satellites carry Space Environment Monitor (SEM), can observe energetic electrons, protons, and heavy ions (He<sup>+</sup> etc.)



# FY-2 PROGRAM

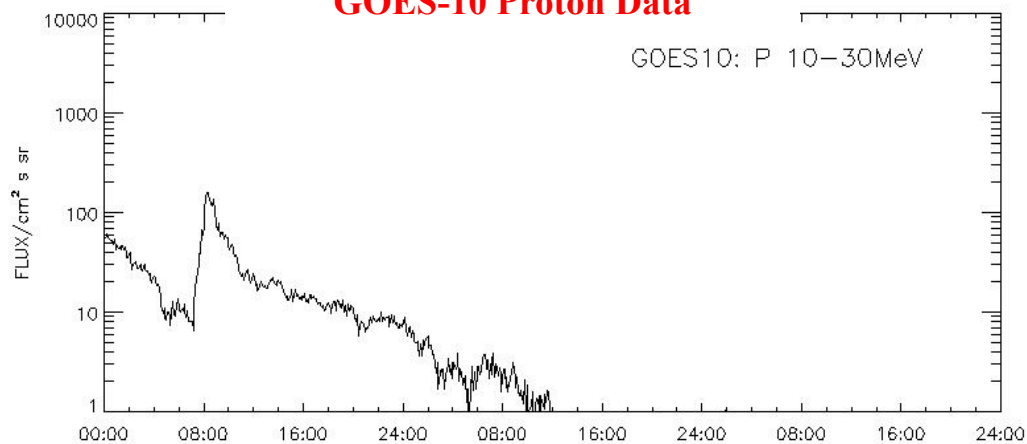


**FY-2D Proton Data**



**Beijing Time (2006.12.15-2006.12.17)**

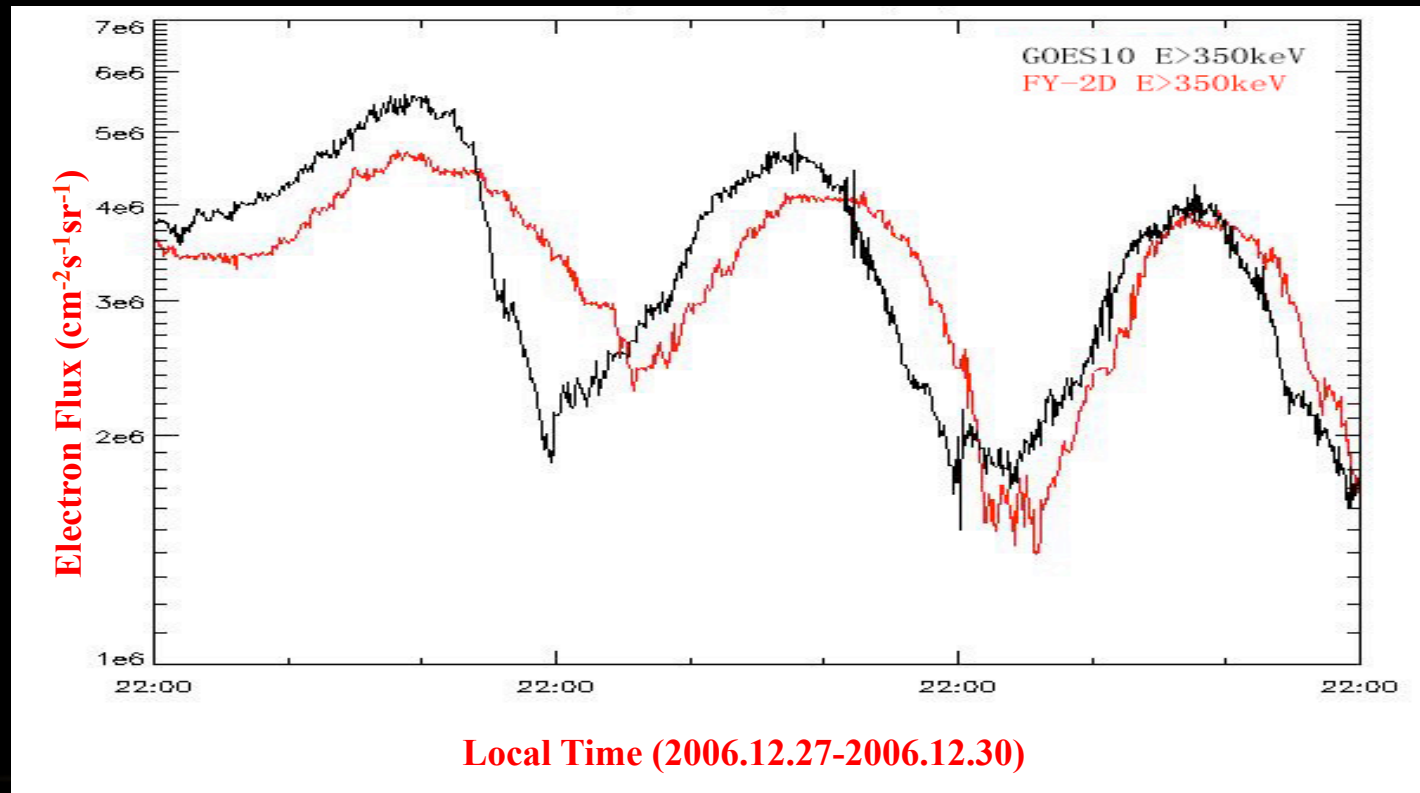
**GOES-10 Proton Data**



**Beijing Time (2006.12.15-2006.12.17)**

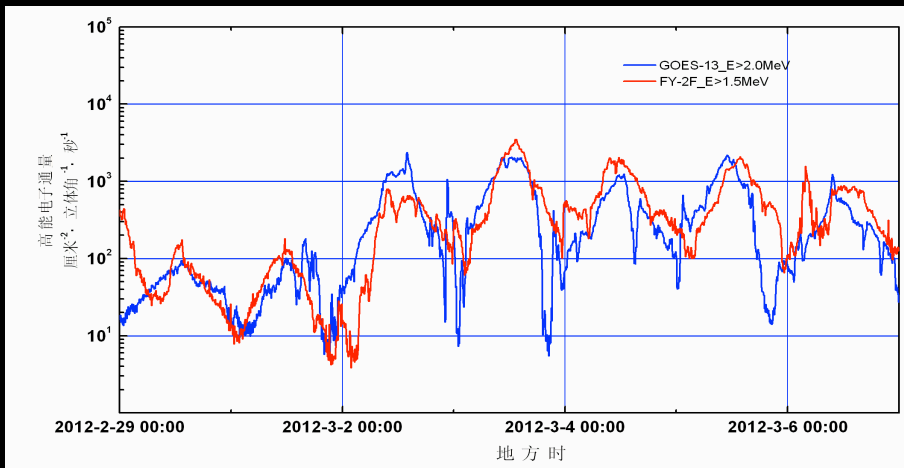
Solar proton event  
observed by FY-2D  
and GOES-10 during  
12.15-12.17, 2006.

# ELECTRON FLUX OBSERVATION BY FY-2D AND GOES-10

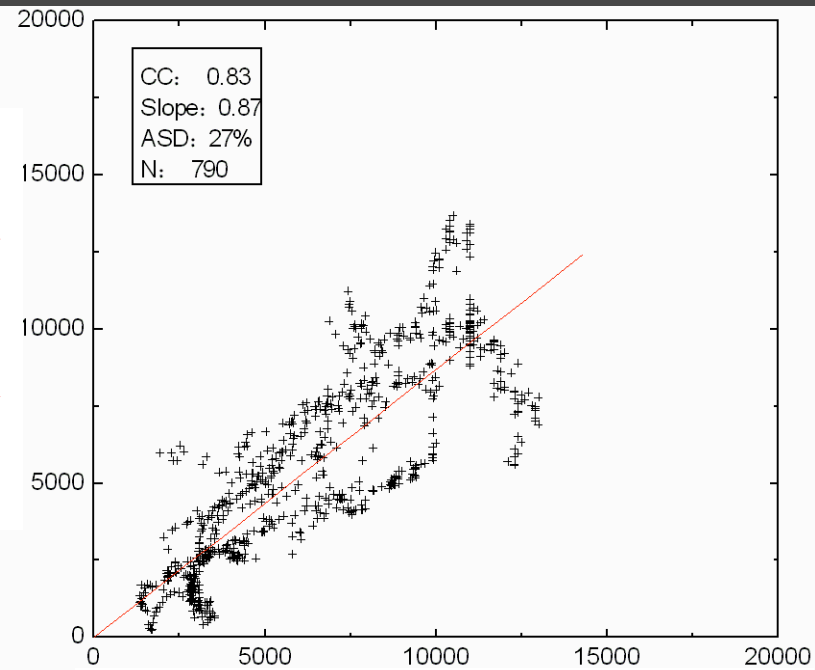


# ELECTRONS

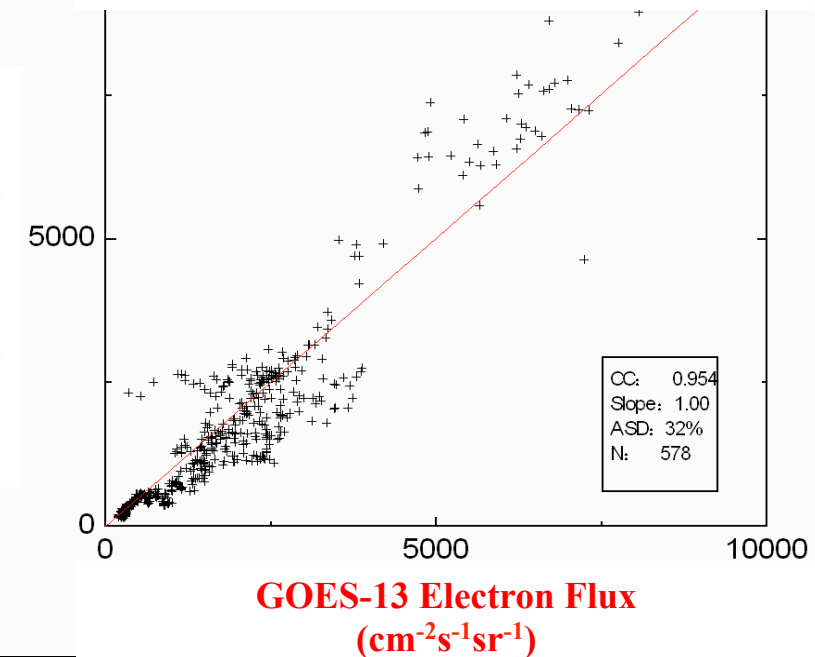
- Electron flux observed by FY-2F and GOES-13 (left)
- Cross comparison of the electron data between FY-2F and GOES-13 (right top:  $>0.8$  MeV, right bottom:  $>2.0$  MeV)



FY-2F Electron Flux  
(cm<sup>2</sup>·s<sup>-1</sup>·sr<sup>-1</sup>)

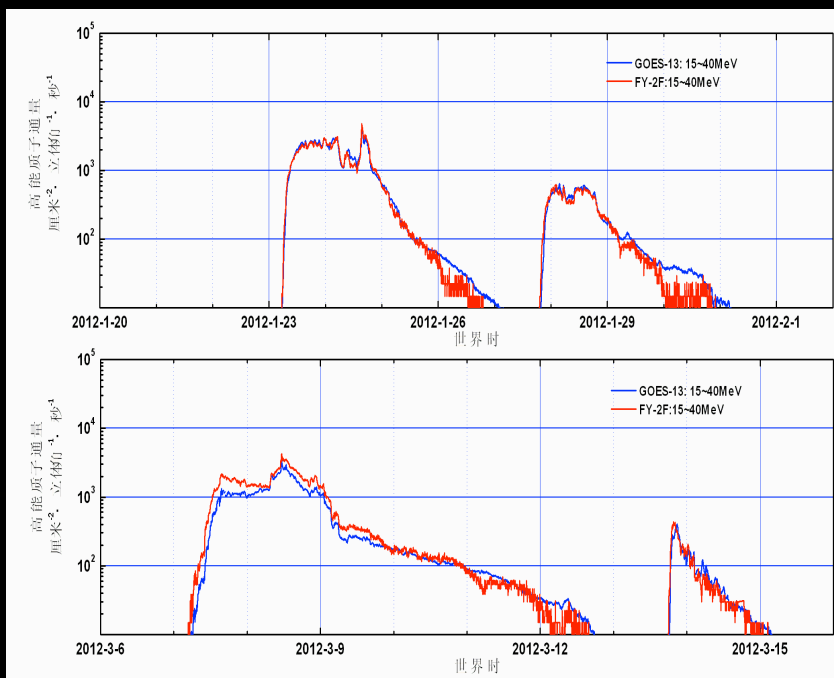


FY-2F Electron Flux  
(cm<sup>2</sup>·s<sup>-1</sup>·sr<sup>-1</sup>)

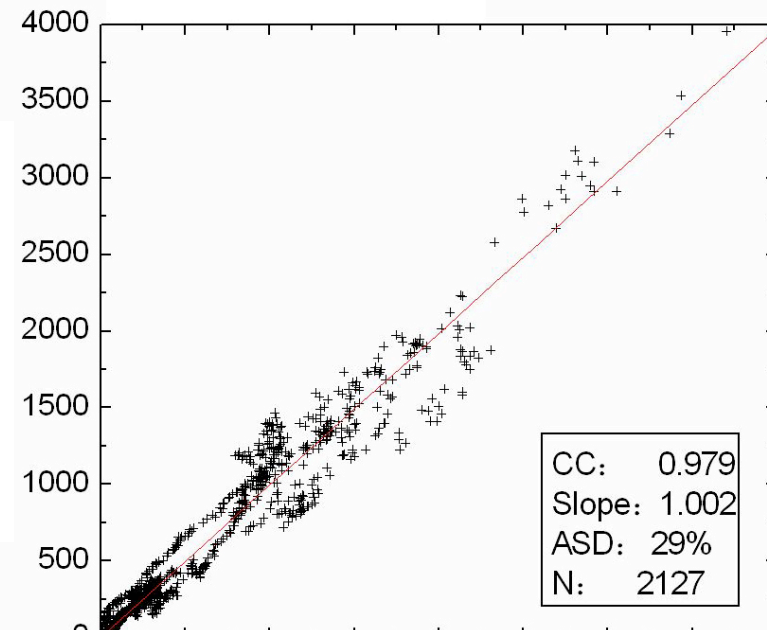


# PROTONS

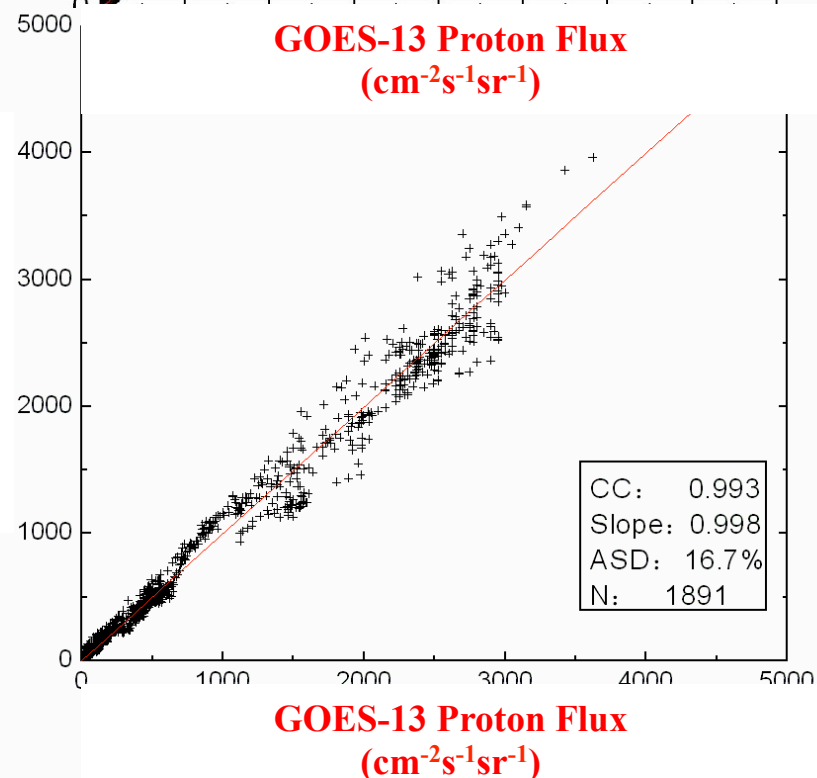
- Proton flux observed by FY-2F and GOES-13 (left)
- Cross comparison of the proton data between FY-2F and GOES-13 (right top: 9-15 MeV, right bottom: 15-40 MeV)



FY-2F Proton Flux  
( $\text{cm}^{-2}\text{s}^{-1}\text{sr}^{-1}$ )



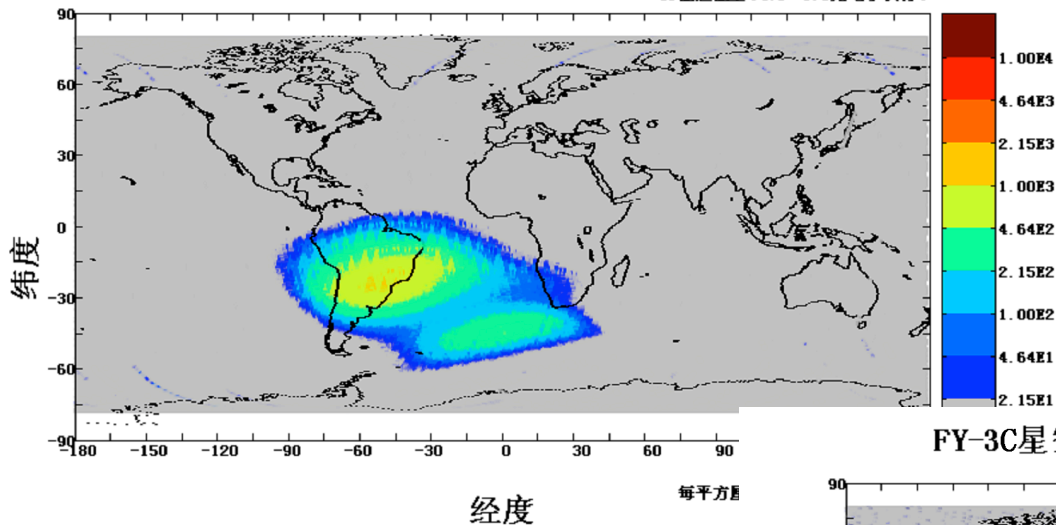
FY-2F Proton Flux  
( $\text{cm}^{-2}\text{s}^{-1}\text{sr}^{-1}$ )



# FY-3 PROGRAM

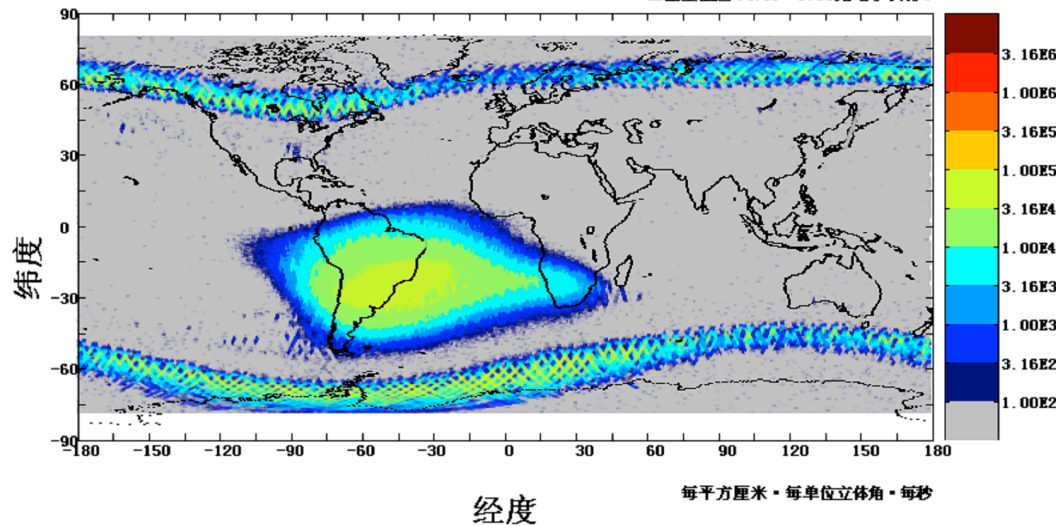


FY-3C星空间环境监测仪全球高能粒子分布图像  
P1能量能量(3.0—5.0兆电子伏特)



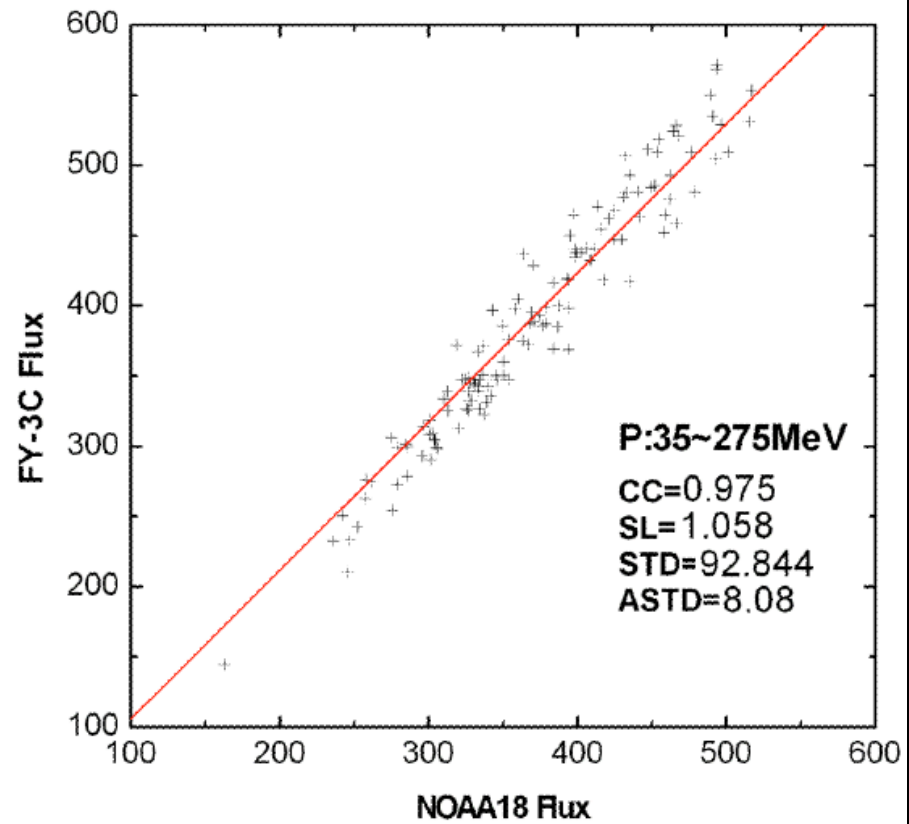
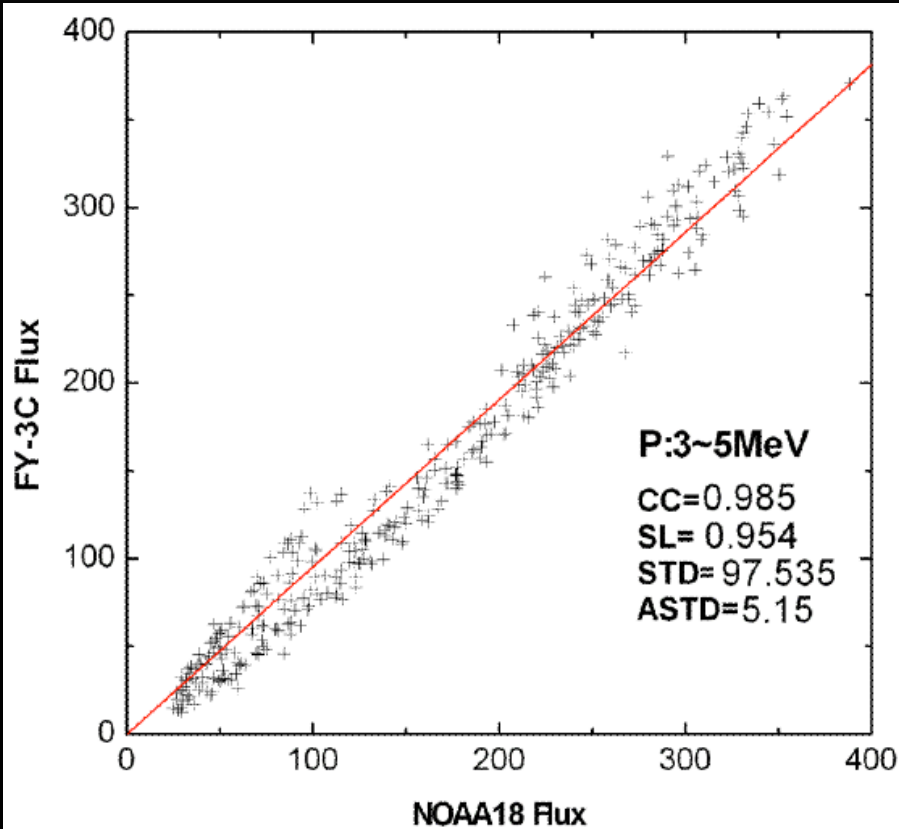
← Global distribution of 3-5 MeV protons observed by FY-3C during 2013.10.15-11.15

FY-3C星空间环境监测仪全球高能粒子分布图像  
P2能量能量(0.35—0.65兆电子伏特)



Global distribution of 0.35-0.65 MeV electrons observed by FY-3C during 2013.10.15-11.15 →

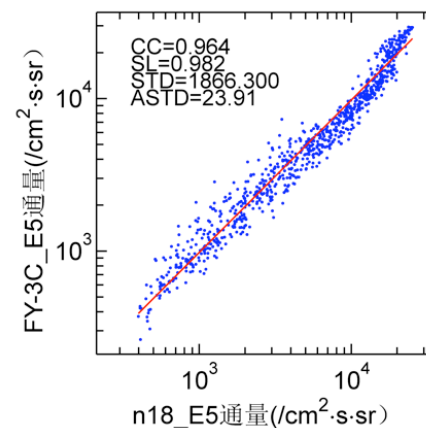
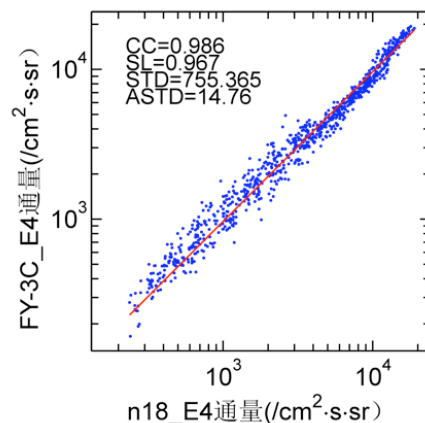
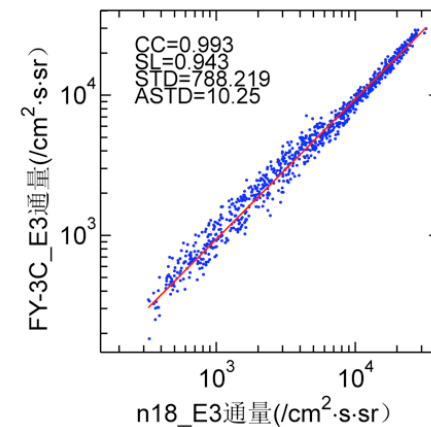
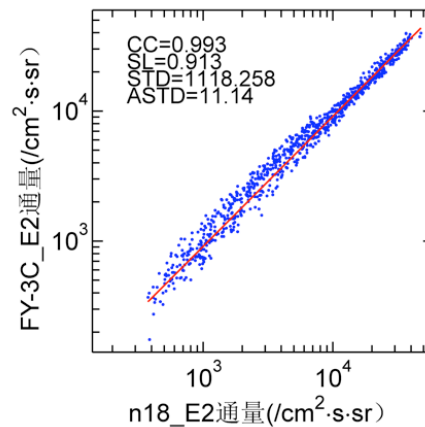
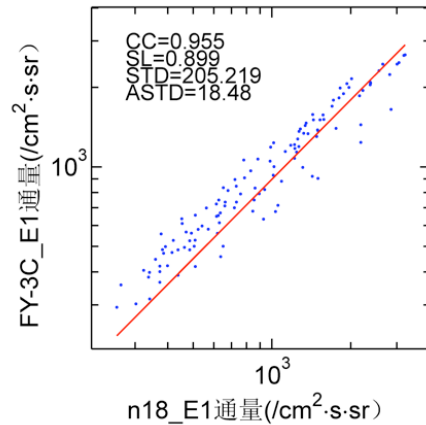
# CROSS COMPARISON OF THE PROTON DATA BETWEEN FY-3C AND NOAA-18



Unit ( $\text{cm}^{-2}\text{s}^{-1}\text{sr}^{-1}$ )

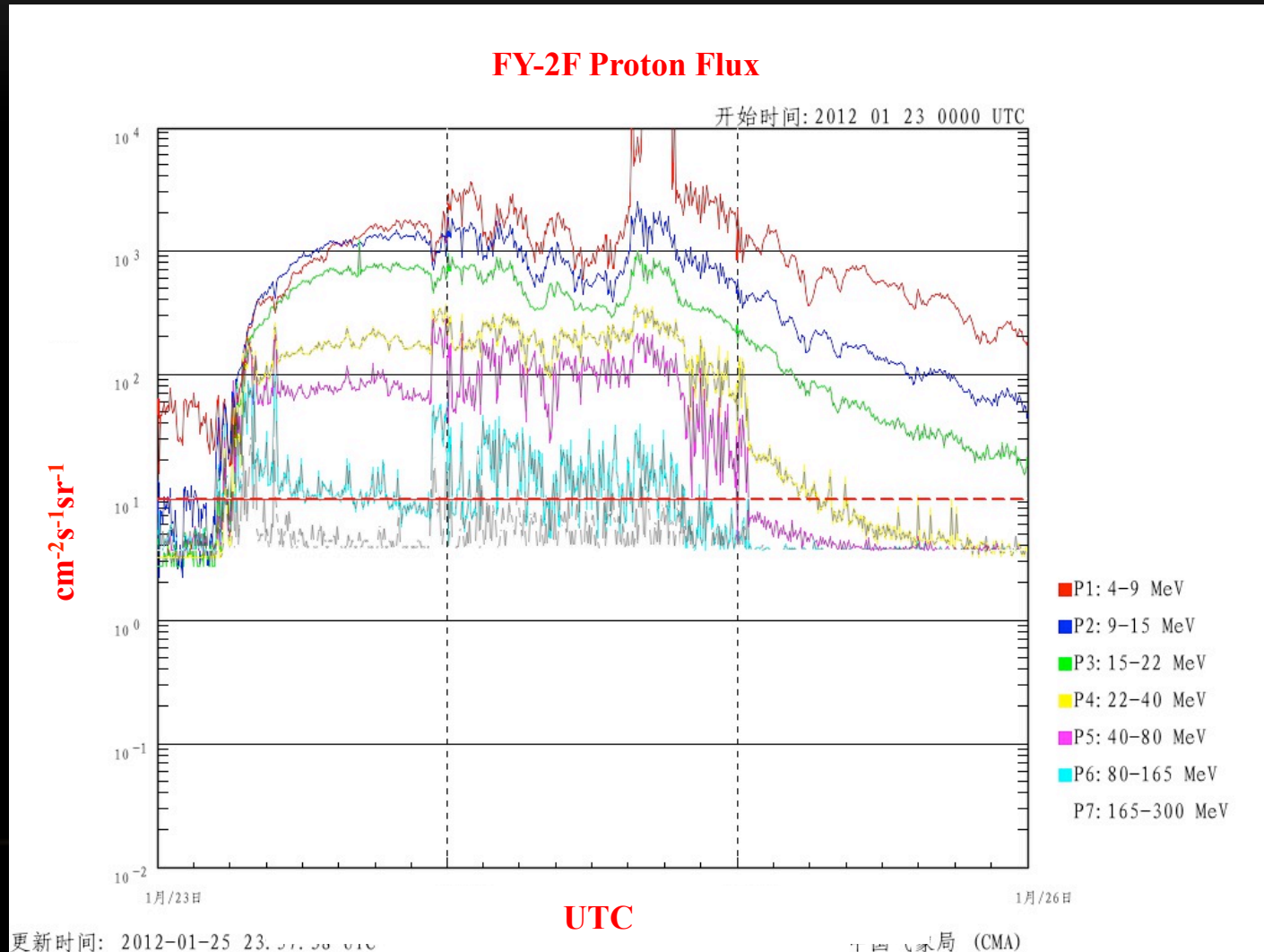


# CROSS COMPARISON OF THE ELECTRON DATA BETWEEN FY-3C AND NOAA-18

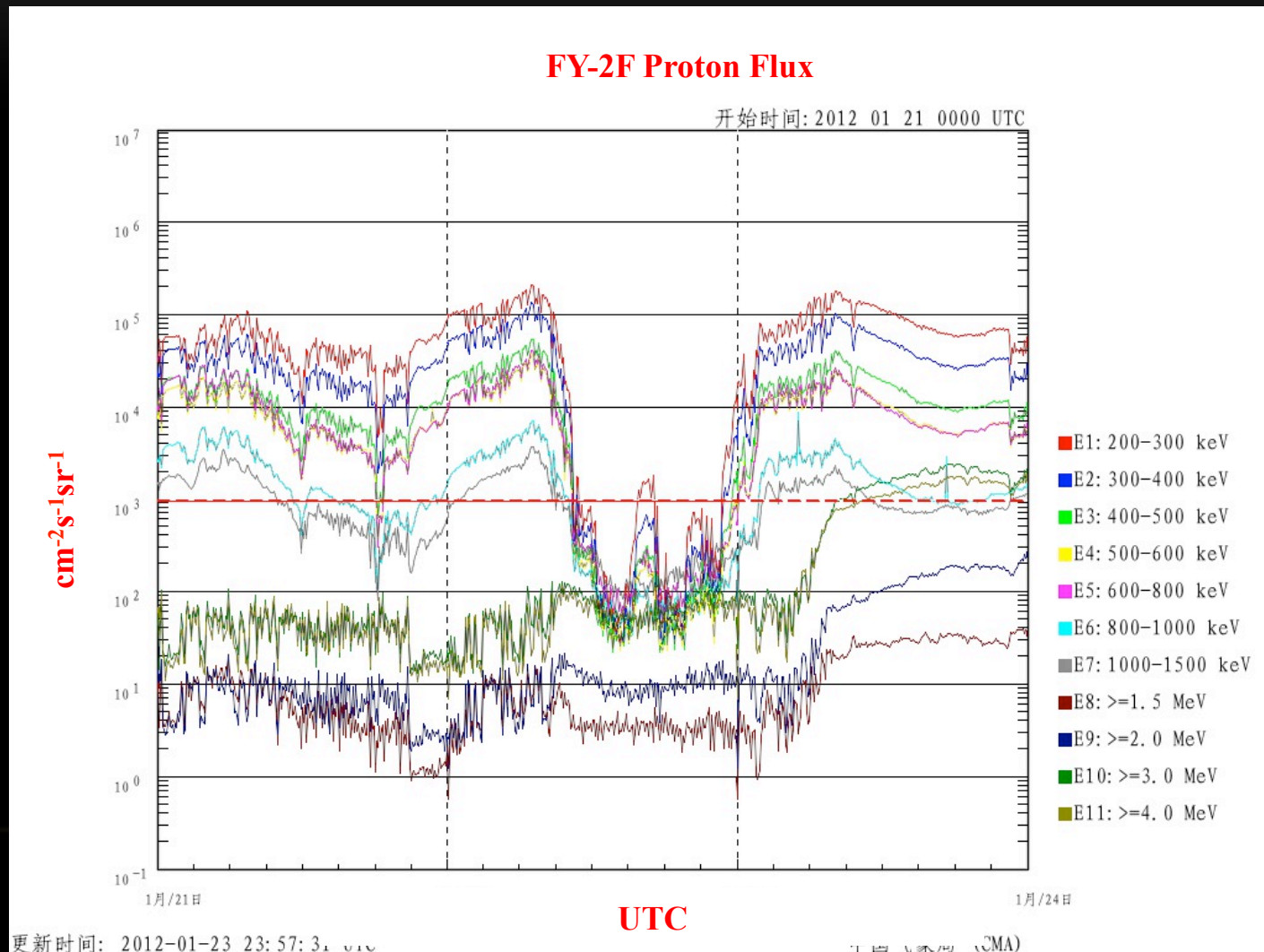


Unit ( $\text{cm}^2 \cdot \text{s}^{-1} \cdot \text{sr}^{-1}$ )

# SOLAR PROTON EVENT OBSERVED BY FY-2F DURING 01.23-01.25, 2012



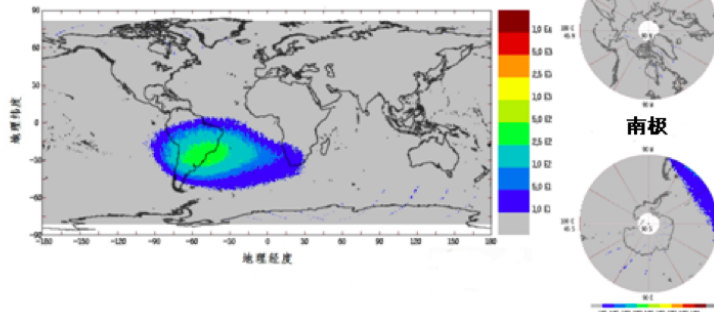
# ELECTRON DISTURBANCE OBSERVED BY FY-2F DURING 01.21-01.23, 2012



# SOLAR PROTON EVENT OBSERVED BY FY-3C DURING 01.07-10.11, 2014

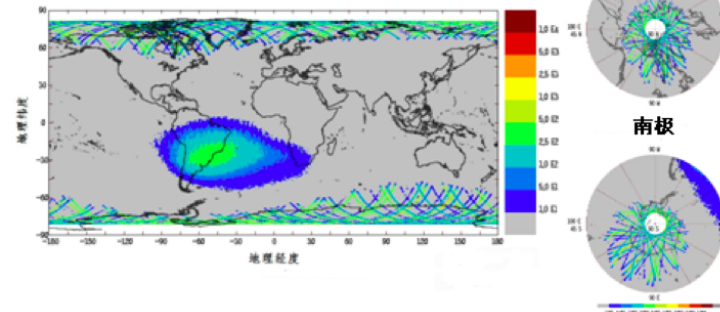
FY-3C 高能质子全球分布图

P3:10~26 MeV Date: 20131216-20140103



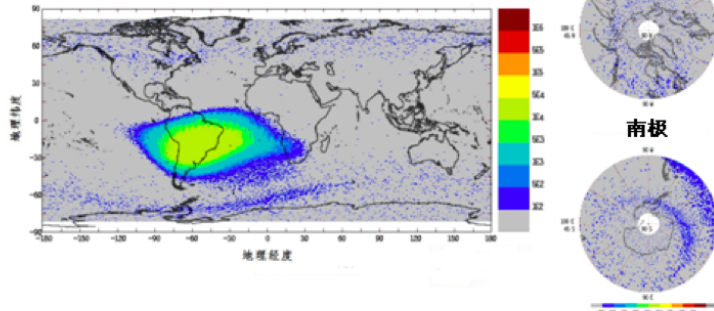
FY-3C 高能质子全球分布图

P3:10~26 MeV Date: 20131224-20140110



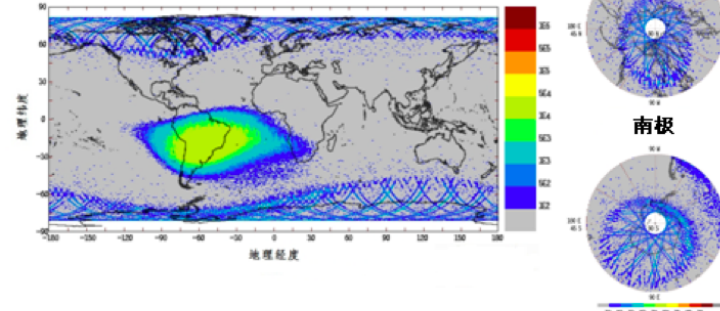
FY-3C 高能电子全球分布图

E5:2.0~5.7 MeV Date: 20131216-20140103



FY-3C 高能电子全球分布图

E5:2.0~5.7 MeV Date: 20131224-20140110



FY-3C 10-26 MeV proton (top) and electron (bottom) data before (left) and during the solar proton event

# SUMMARY

- We made some effort to the cross comparison of the particle data between Fengyun and NOAA satellites
  - The particle data of Fengyun and NOAA satellites fit well
  - The linear correlation parameters are fairly good
  - The samples are relatively scattered
-

THANK YOU!

A thin, horizontal, glowing orange line is positioned below the text, extending across the width of the slide.