

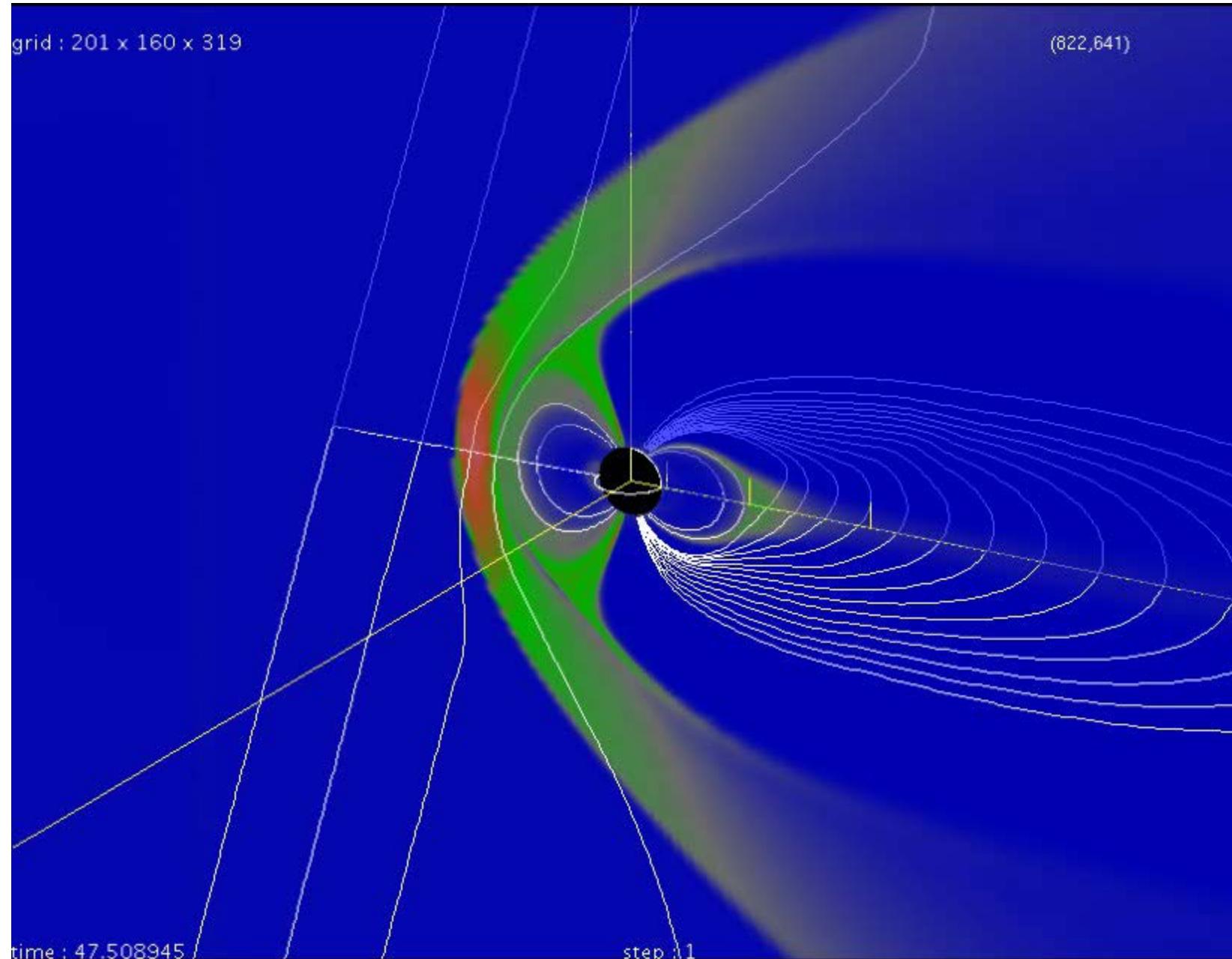
STE現象報告会、2015.3.4、福岡
STE event workshop, 2015.3.4, Fukuoka

MHDシミュレーションによる磁気圏変動の再現 M-I coupling simulation by REPPU code

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Magnetospheric response to the southward turning of the IMF

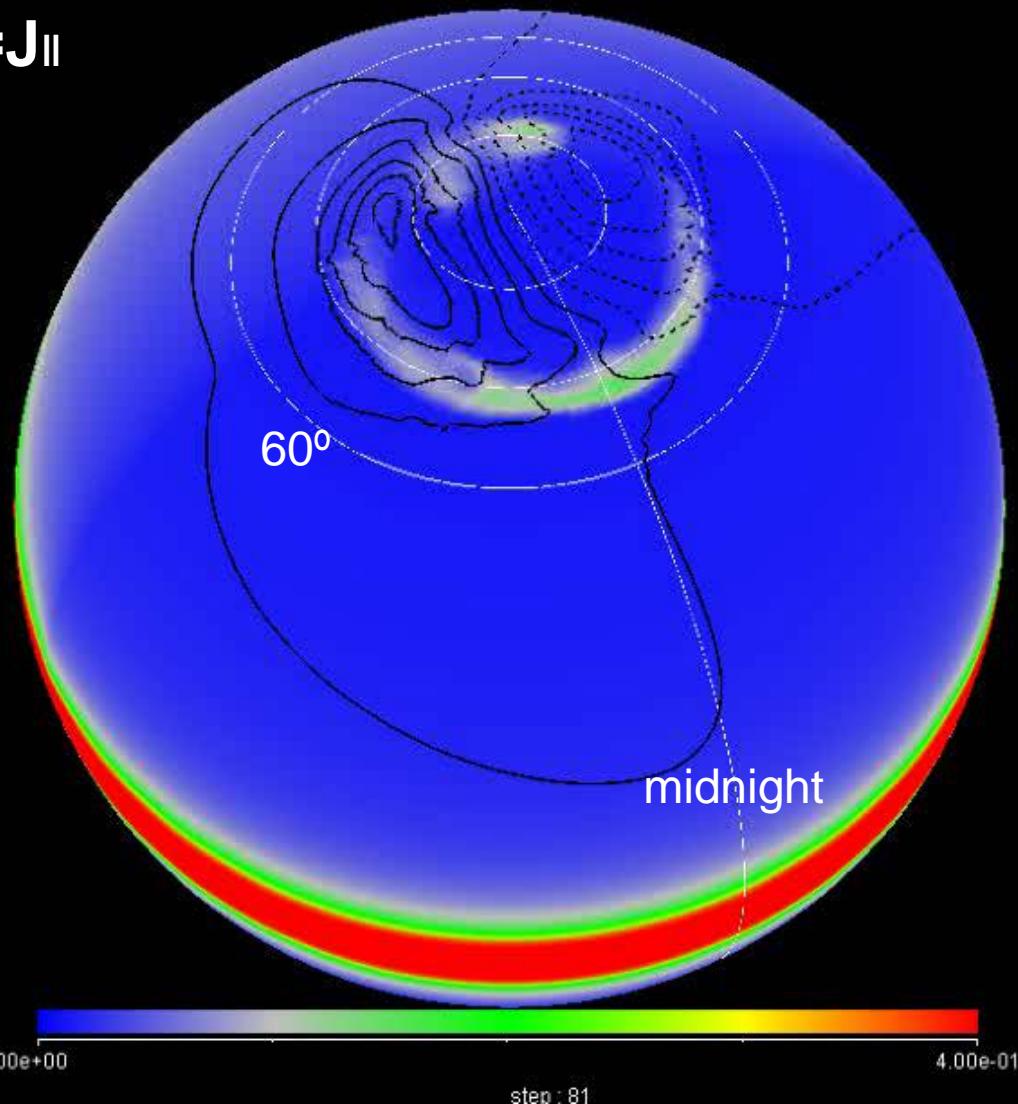


development of ionospheric convection

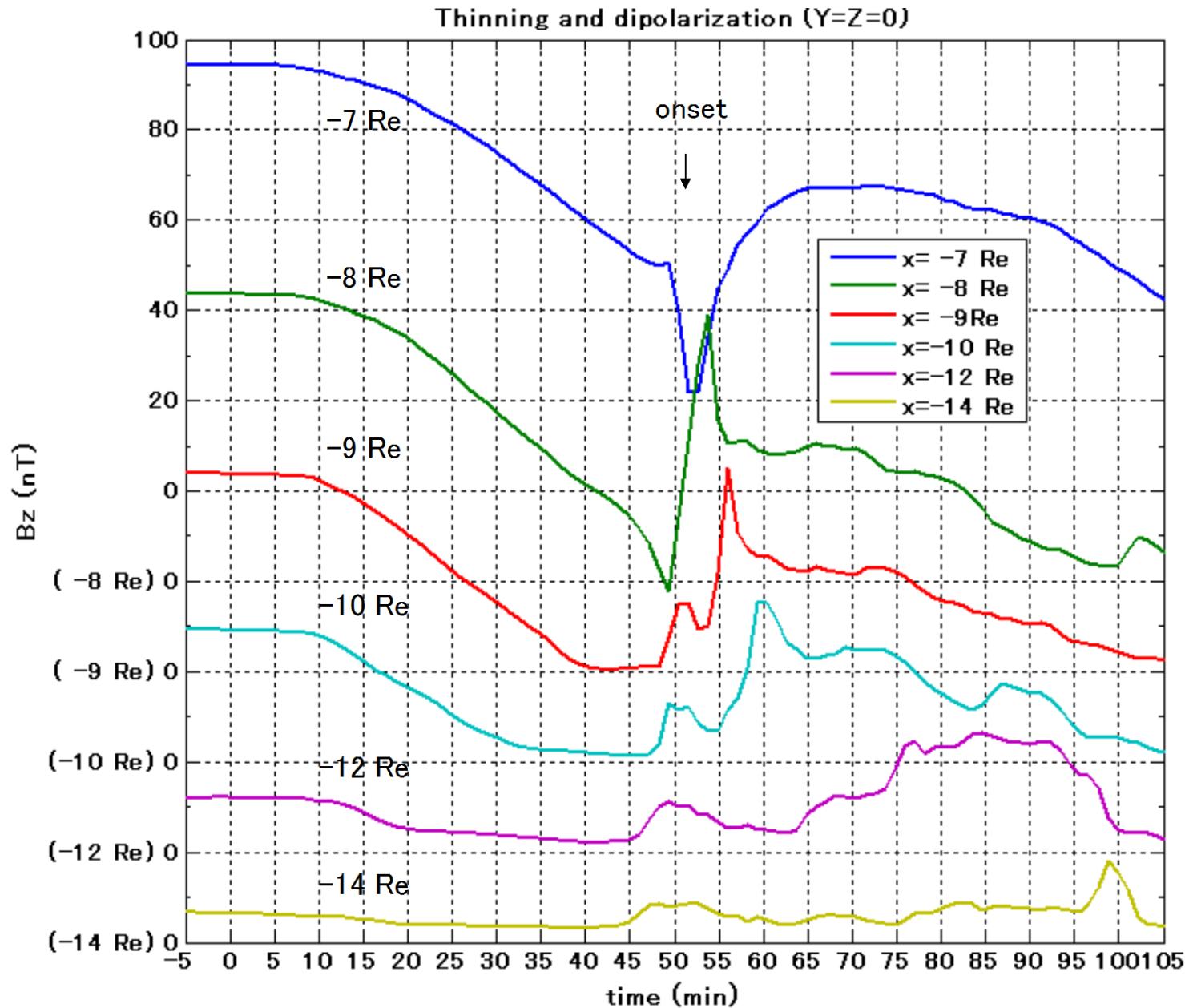
(shading: Σ_{xx} , solid contour: negative, dotted contour: positive potential)

(1362, 672)

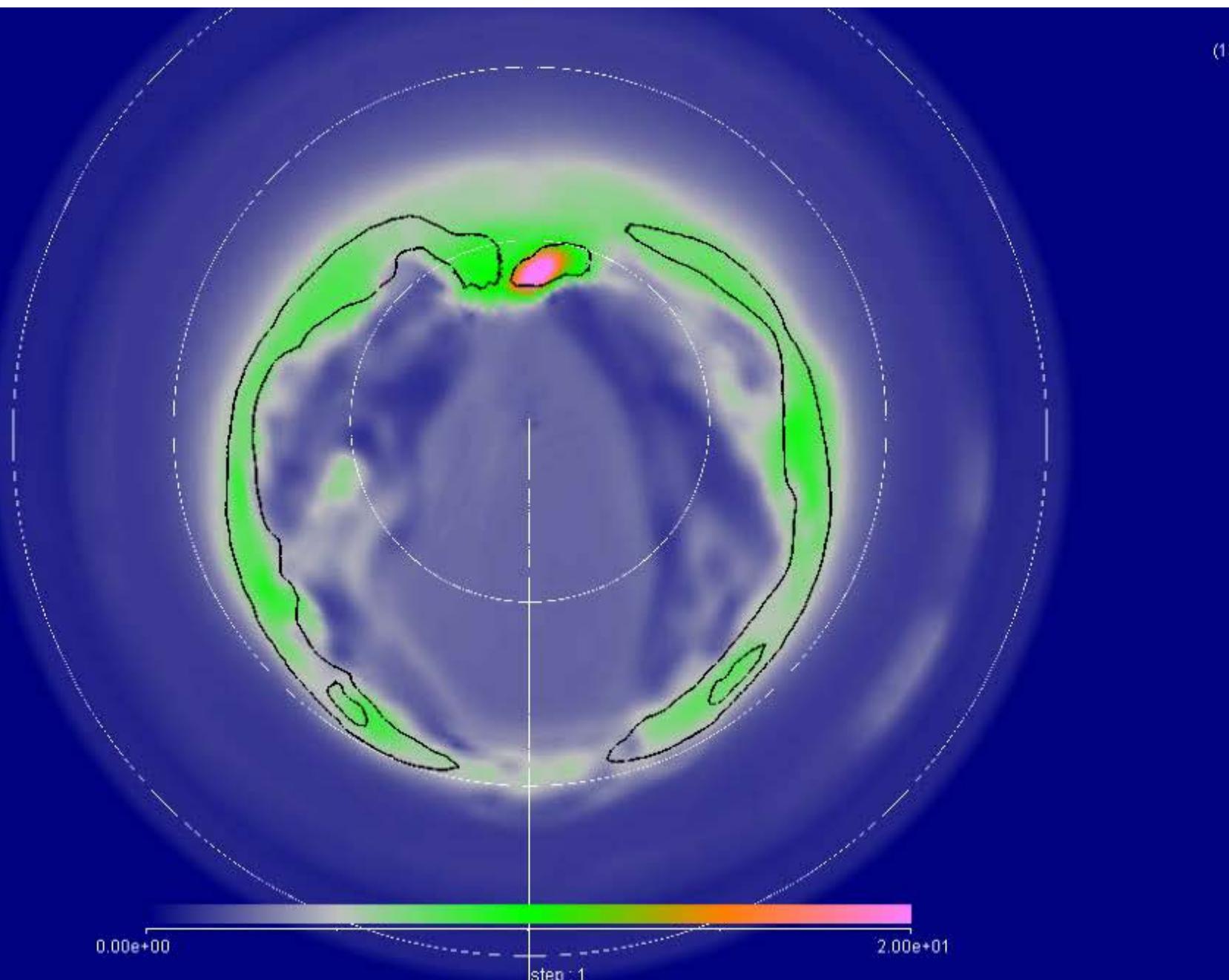
$$\operatorname{div} \Sigma \operatorname{grad} \Phi = J_{\parallel}$$



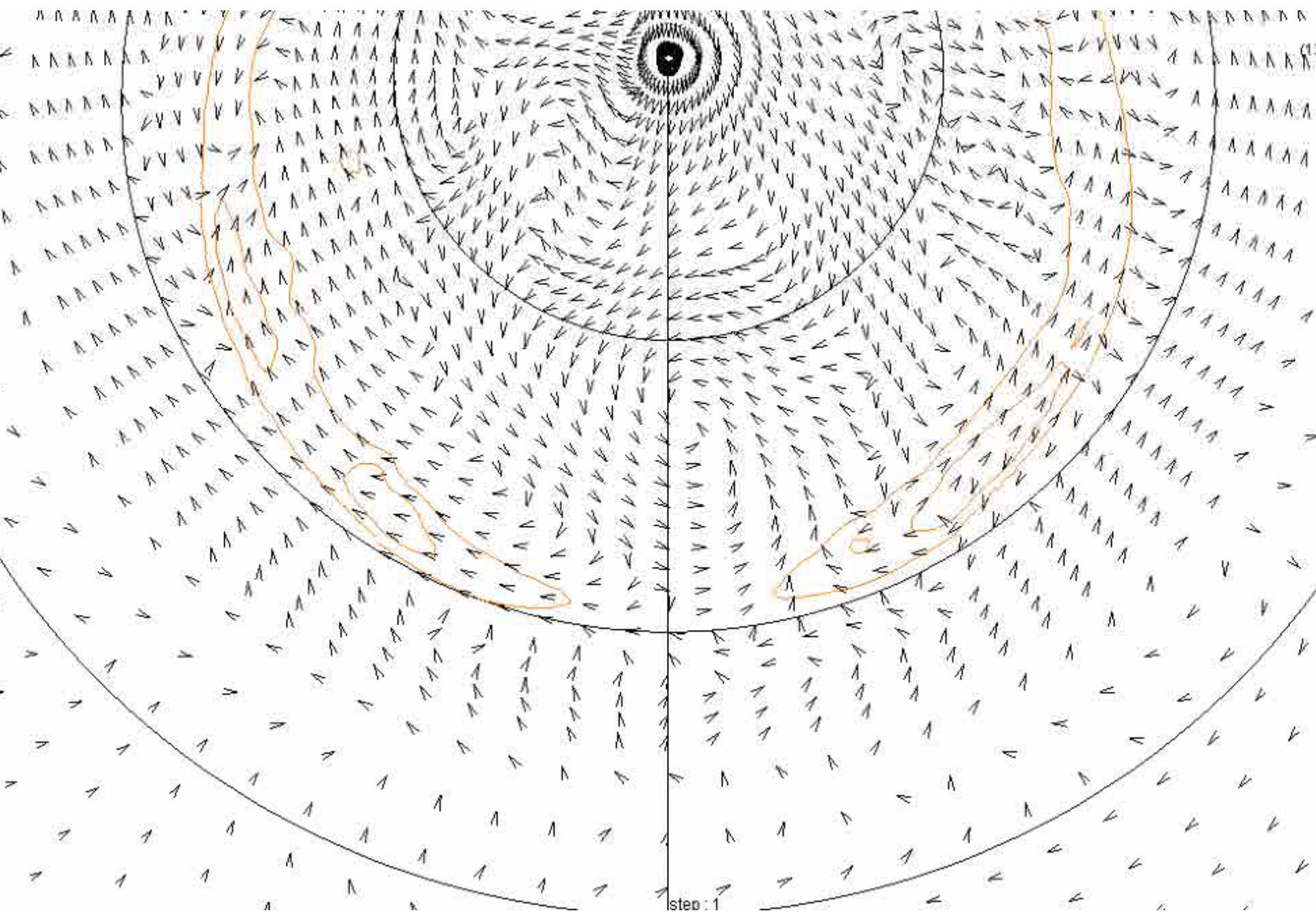
Substorm in the midtail region (simulated Bz) (dipolarization front and geosynchronous dipolarization)



Polar cap disturbances after the southward turning of the IMF

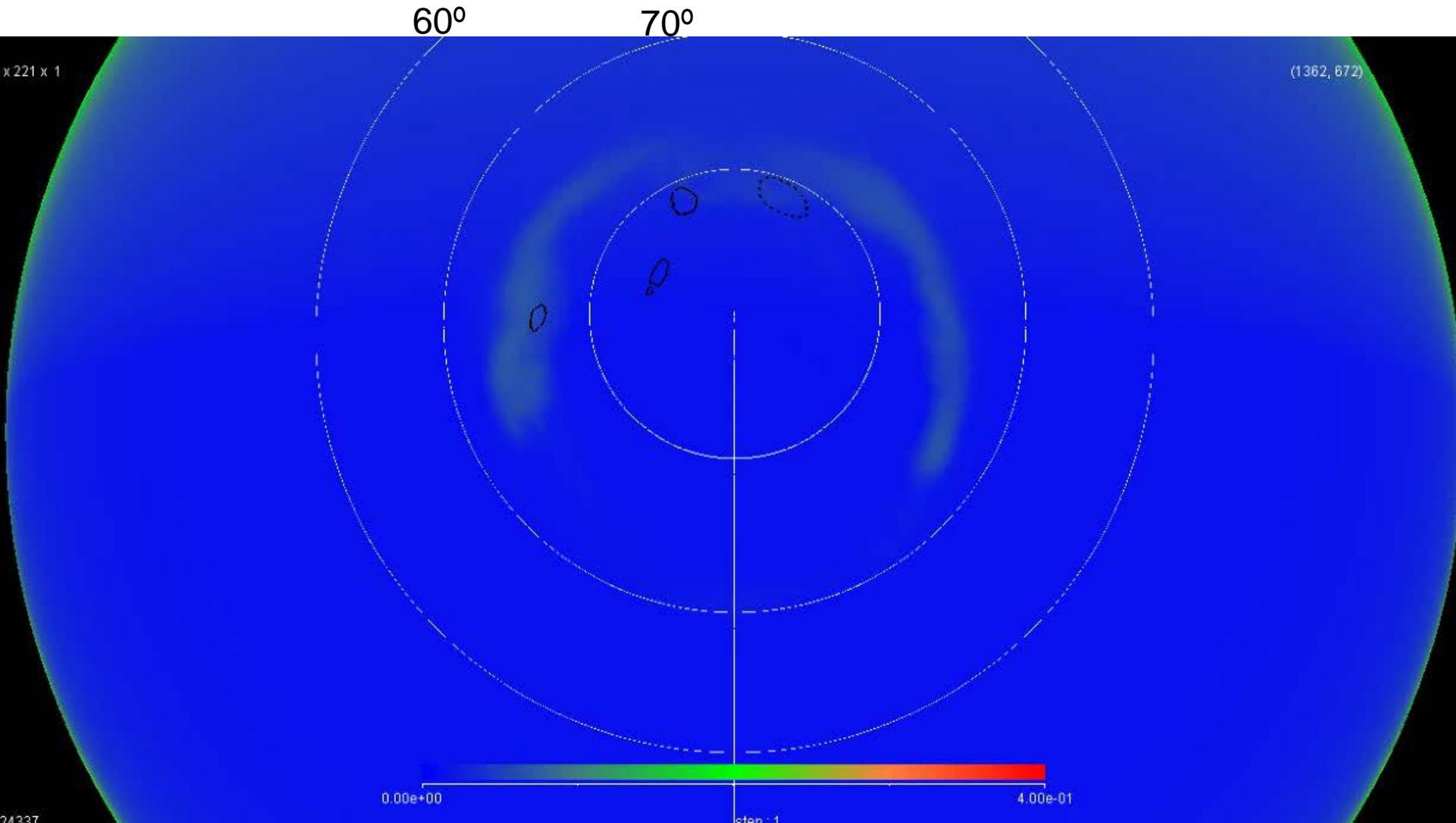


Ionospheric current system associated with the substorm



Ionospheric FAC during the substorm

(solid contour: downward FAC, dotted contour: upward FAC)

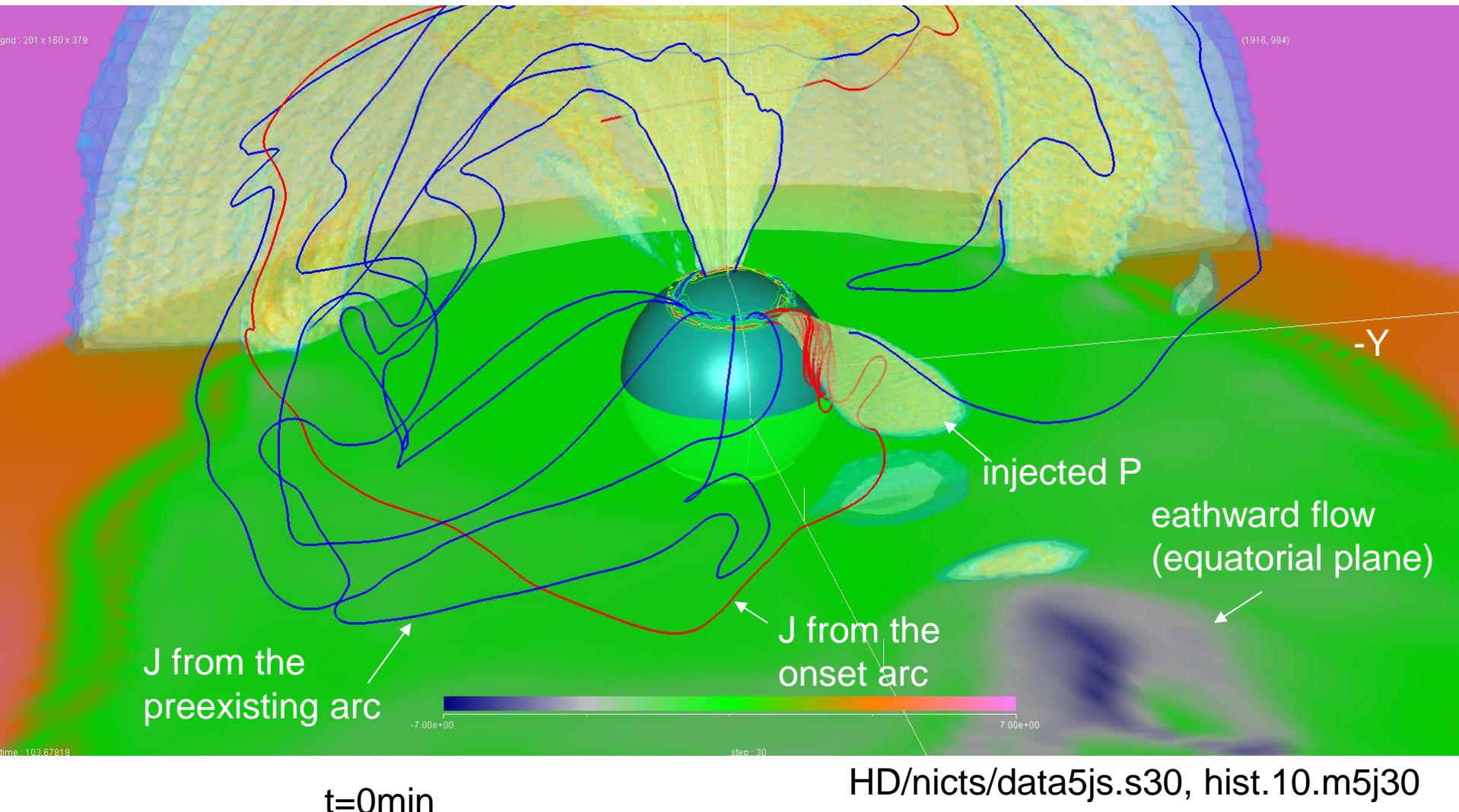


$\text{div} \Sigma \text{grad} \Phi = J_{\parallel}$

midnight

Administrator/login/nagoya/data6i.s2/hist.10.ic1,2
Home/tanaka/login/nagoya/data6i.s2/hist.10.ic1,2

Magnetospheric current system connected with the onset arc (shading; Vx, red lines; from onset arc, blue lines: preexisting arc)



Figure

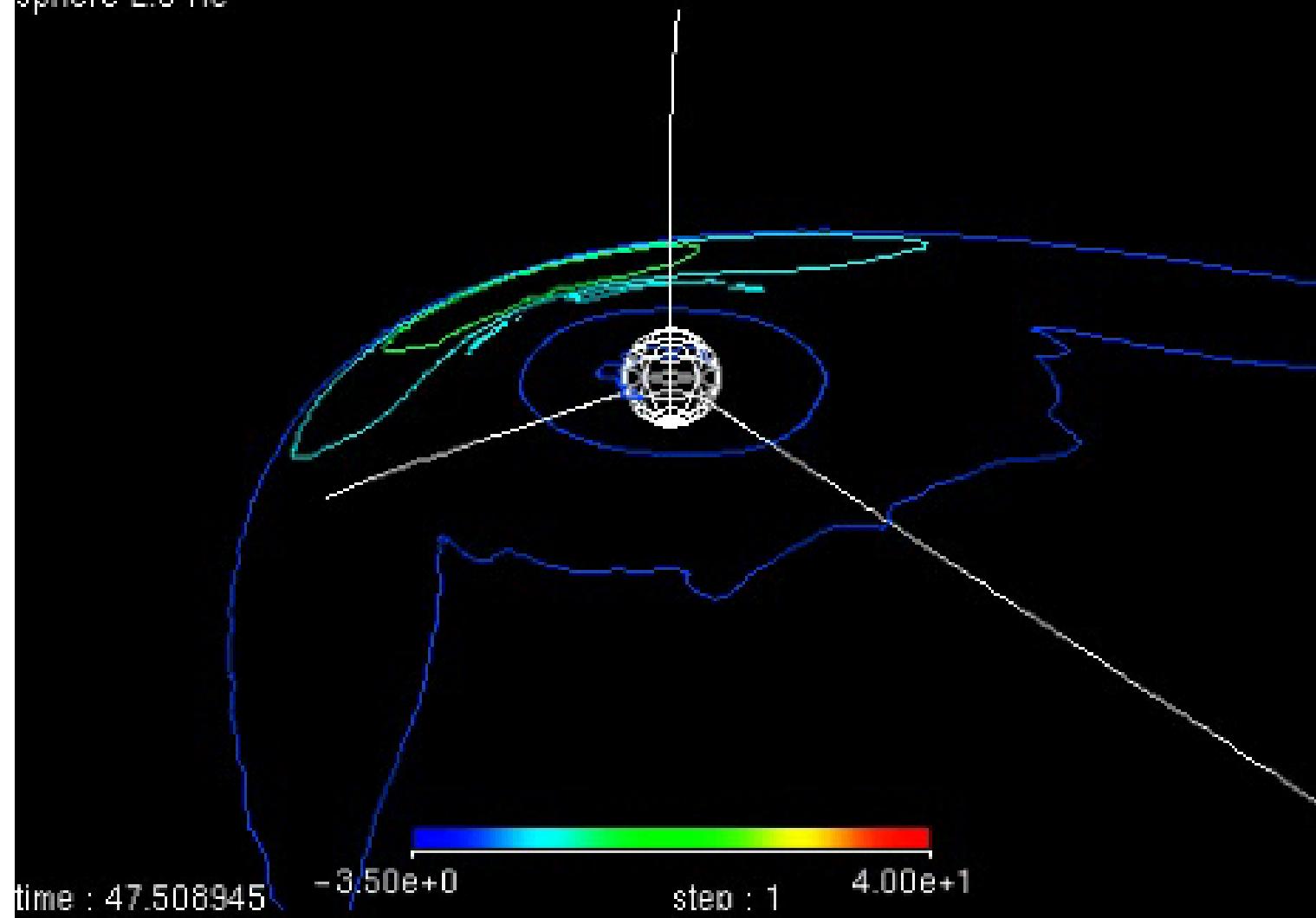
Transient plasma injection causing the Pi2 (contour; P in the equatorial plane, sphere; 2.6 Re)

grid : $201 \times 160 \times 319$

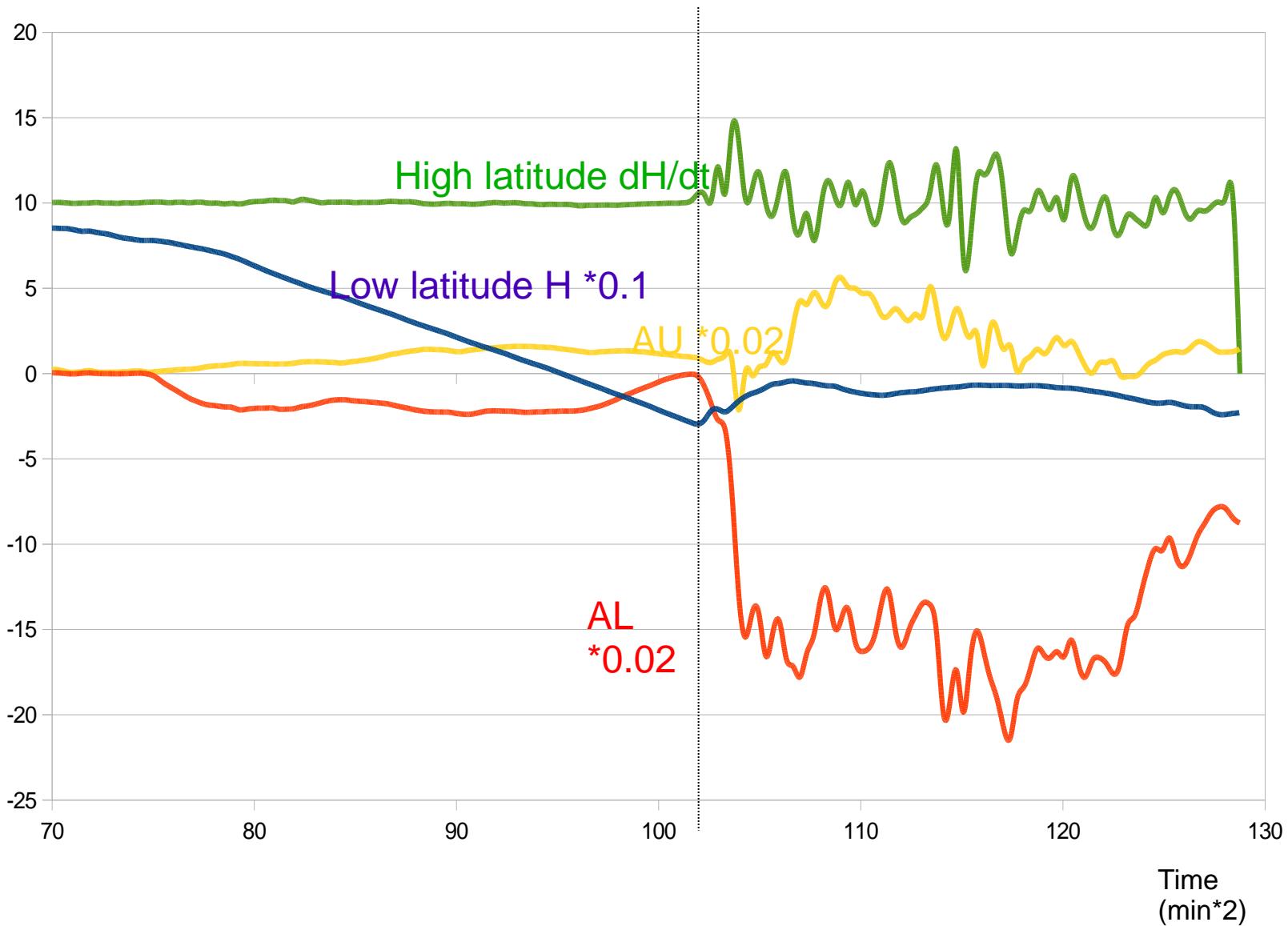
(480,389)

P on the equatorial plane

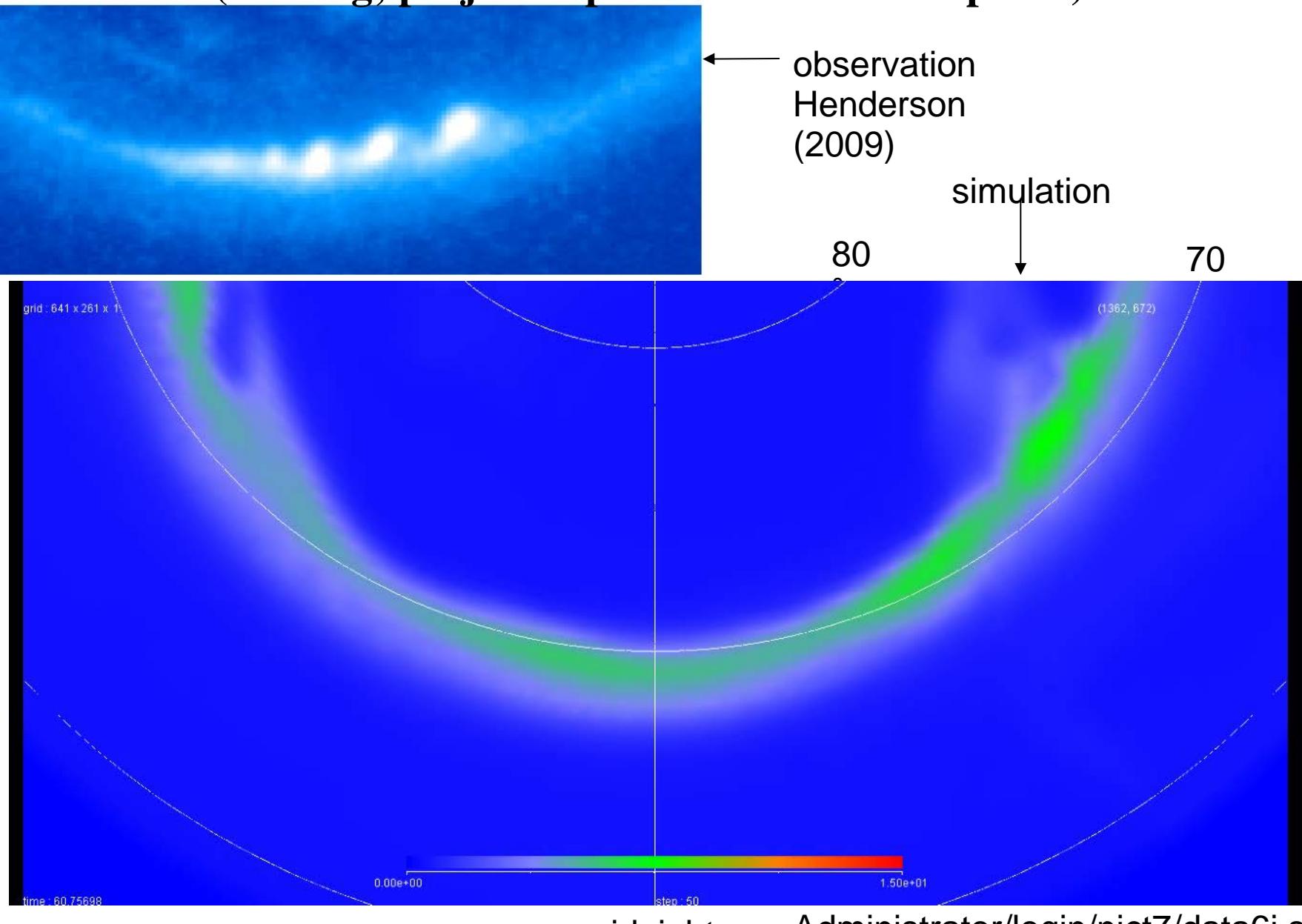
sphere 2.6 Re



Simulated magnetic field perturbations (AL, AU, Pi2, and positive bay)

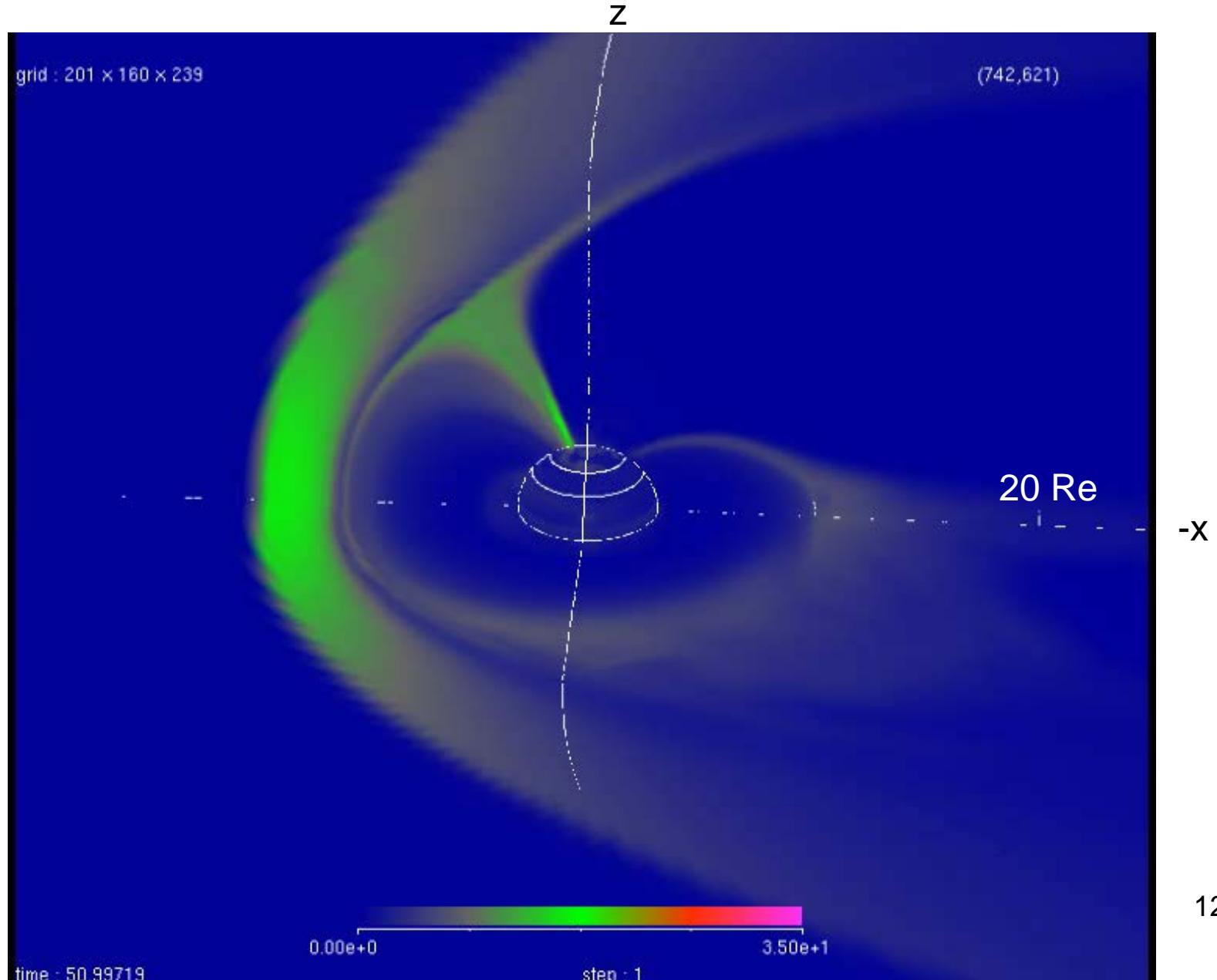


Misleading of the onset instability (shading; projected pressure in the ionosphere)



Ring current formation due to a deep injection and the loss cone

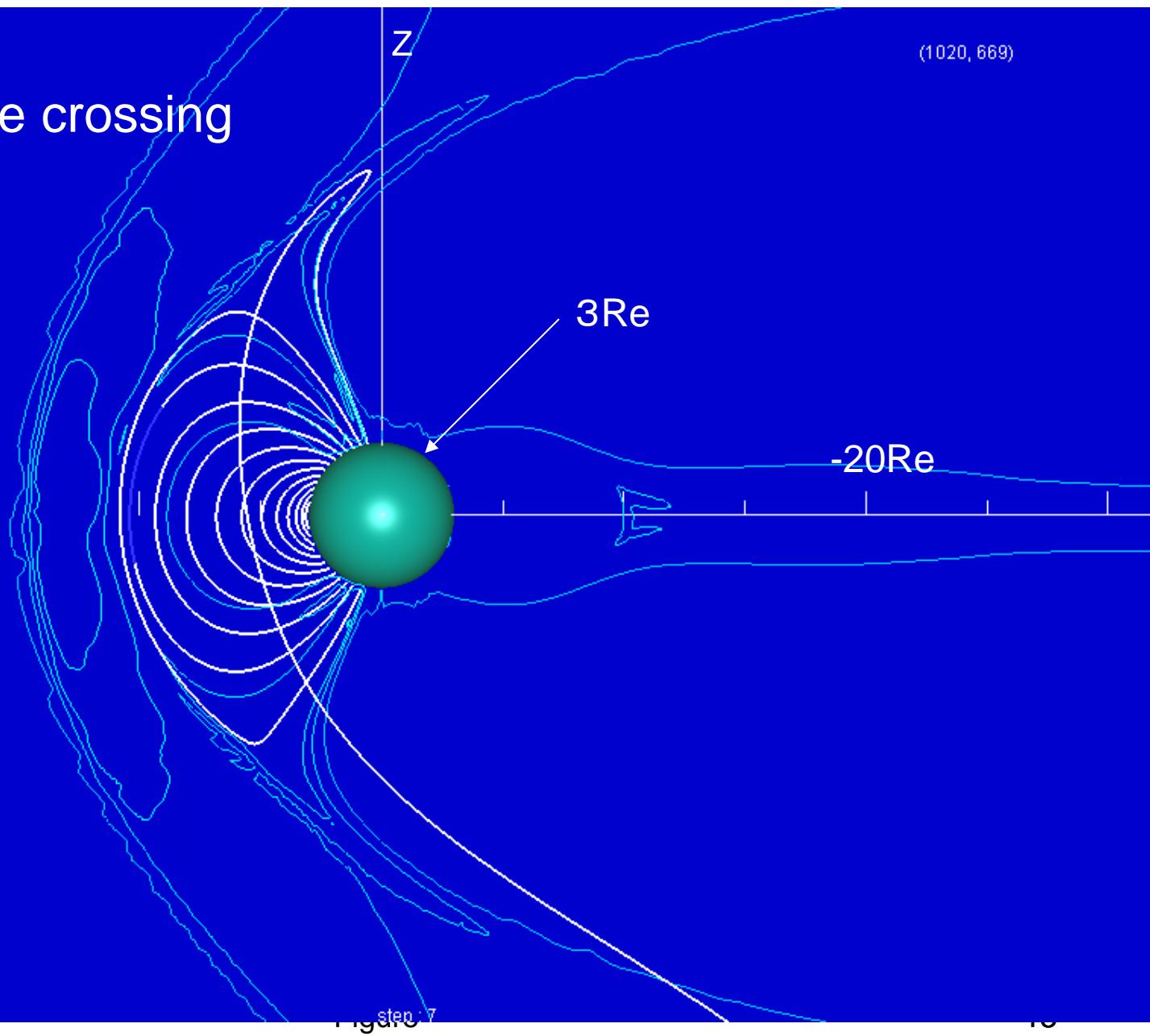
(shading: P, t<0 min Bz=4.5 nT, t=0 min Bz=-24.3nT, t=120 min Bz=5.5nT)



grid : 201 x 160 x 239

Magnetopause crossing

5/cc
350km/sec
4.3 nT



time : 0.00000

10

grid : 201 x 160 x 239

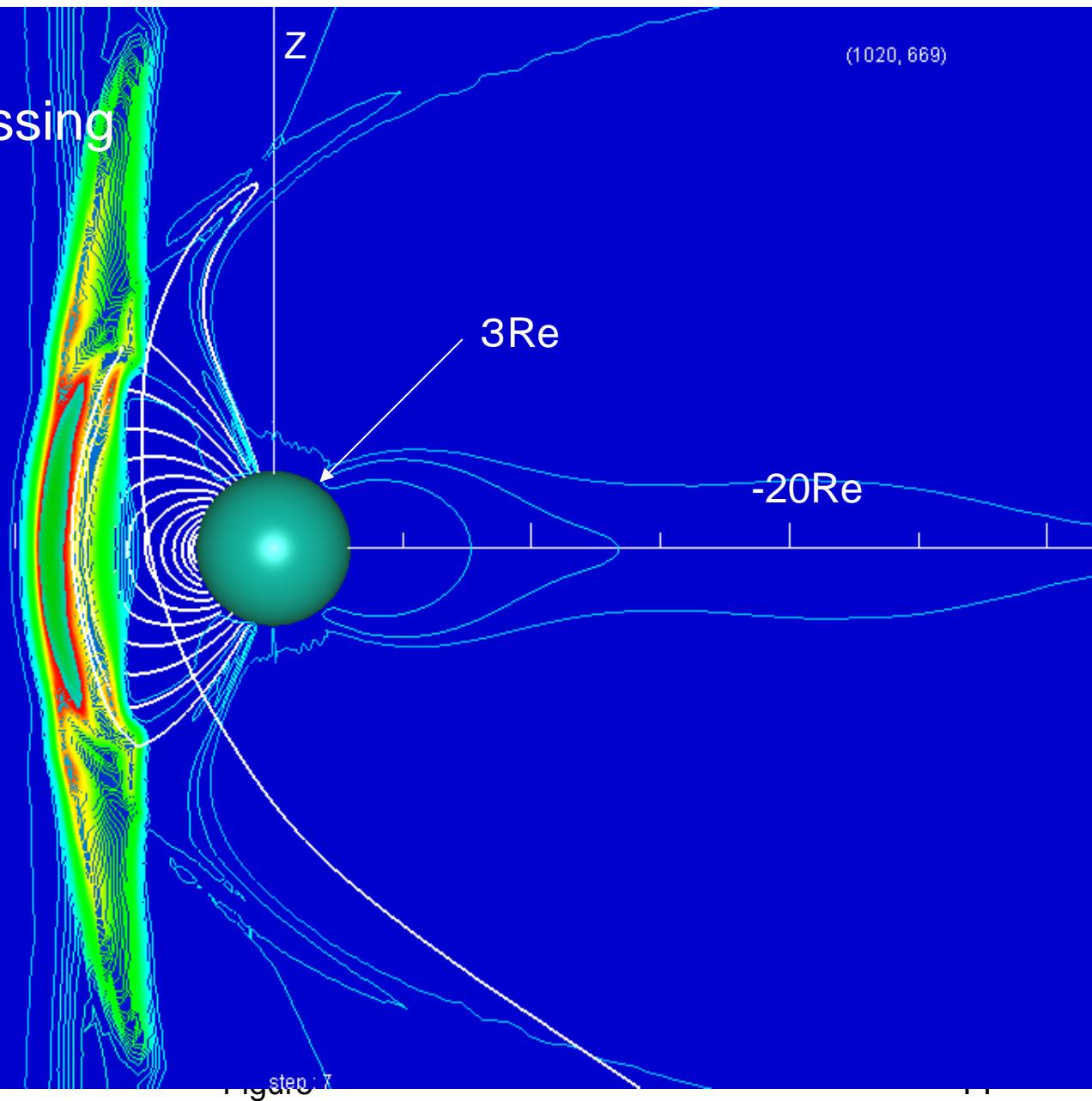
(1020, 669)

Magnetopause crossing

100/cc

700km/sec

-24.3 nT



grid : 201 x 160 x 239

(1020, 669)

Magnetopause crossing

100/cc

700km/sec

-24.3 nT

