

# Relation between Pressure Balance Structures and polar plumes from Ulysses high latitude observations

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23 2001; 23 2002; 1 2002; 21 2002.

1 ( ) 4

5

( )

## INDEX TERMS:

2109 ; 2169

; 7511

; 7524

Forsyth et al., 1996

## 1. Introduction

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2 5

et al., 1993 .

DeForest et al., 1997 .

Del Zanna et al., 1997 .

## 2. Observations and Analysis

Walker

6

Bame et al., 1992 , 1-

al., 1992 . / Balogh et

2-

Wang, 1998 .

( )

3

McComas et al. 1996

Thieme et al., 1988, 1990; McComas et al., 1996; Reisenfeld et al., 1999

Velli et al., 1994; Casalbuoni et al., 1999

Reisenfeld et al. 1999

Tsurutani and Smith, 1979 .

50°

18, 1994

21, 1994

3.73 1.63

7

(1)  $\beta_{avg}$   $\sigma$   $\beta_{avg}$ , (2)  $>6$

$P_{th}$  ( )  $P_{tot}$   $P_{mag}$

( )

Reisenfeld et al., 1999 .

Casalbuoni et al., 1999;

$P_{tot}$

McComas et al. 1996

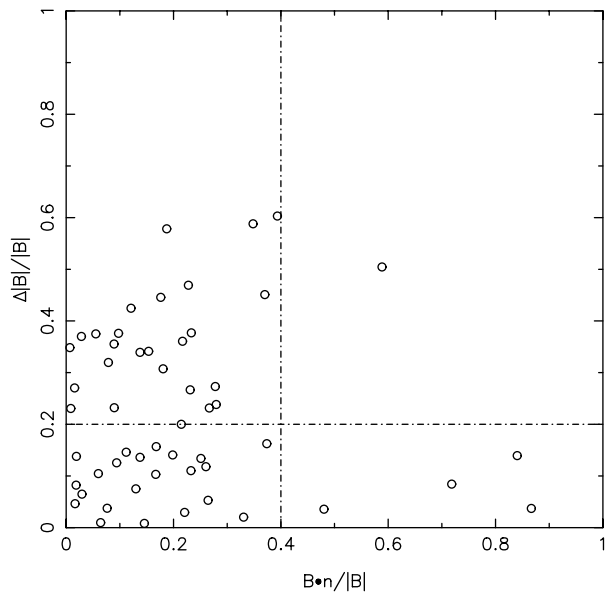
$$\begin{aligned}
P_{\text{tot}} &= P_{\text{th}} + P_{\text{mag}} \\
&= k(n_p T_p + n_\alpha T_\alpha + n_e T_e), \quad (n_p, n_\alpha, n_e) \quad (T_p, T_\alpha, T_e) \quad P_{\text{th}} \quad (\lambda_{\text{min}}, \lambda_{\text{int}}, \lambda_{\text{max}}) \quad (1), \quad \lambda_{\text{min}} < \lambda_{\text{int}} < \lambda_{\text{max}} \\
&\quad , \quad n_e = n_p + 2n_\alpha, \quad \lambda_{\text{int}}/\lambda_{\text{min}} < 2 \quad \mathbf{B} \cdot \mathbf{n}/\mathbf{B} \quad \Delta \quad n(n)001
\end{aligned}$$

$$\begin{aligned}
&\propto r^{-2}, \quad \mathbf{B}_t \quad \mathbf{B}_r, \mathbf{B}_t, \mathbf{B}_n \quad T_\alpha \propto r^{-0.83}, T_e \propto r^{-0.91} \quad \text{Scime et al., 1994}, \mathbf{B}_r \\
&\quad \mathbf{B}_n \propto r^{-1} \quad ( ) \quad \mathbf{n}
\end{aligned}$$

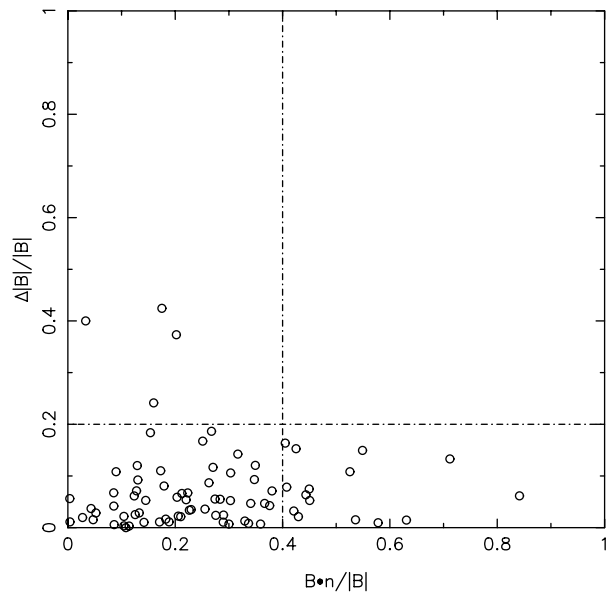
,  $\sigma$ ,  
Sonnerup and Cahill, 1967

$$\sigma^2 = \frac{1}{N} \sum_{i=1}^N [\mathbf{B}_i \cdot \mathbf{n} - \langle \mathbf{B} \rangle \cdot \mathbf{n}]^2, \quad (1)$$

$$\mathbf{B}_i \quad i- \quad \langle \mathbf{B} \rangle, \quad (1/N) \sum_{i=1}^N \mathbf{B}_i.$$



(a)



(b)

12 2 2 22%:5%:73%:0%.

1979 45.8 42.8 Tsurutani and Smith  
5 5 10  
1 ~2 3

Forsyth et al., 1996 .

3.73 1.63 , ≥10 .

13 8%:47%:43%:2% .

1 Neugebauer et al. 1984 Horbury et al.  
2001 . : : :  
61%:7%:30%:2% 57%:11%:26%:6% ,  
( ) .

99.5% .

Horbury et al.,

2001 .

14 , 100 -

$B_r$  2

39.5 38.6 ,

99.5%

Neugebauer et al.

1984 Horbury et al. 2001 .

$B_r$

4. Discussion

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1994.

$B_r$

$B_r$

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McComas et al., 1996; Reisenfeld et al., 1999 .

1998 .

Wang, 3,

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Hassler et al., 1999 .

Grall et al., 1996 .

[18] Acknowledgments.

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