

SK (& Tibet AS) による 10TeV宇宙線強度の恒星時日周変動の観測

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- 観測結果
- 結果の示唆するもの
- 恒星時異方性の起源
- 残された問題点

(旅費:4+10万 松本-柏)

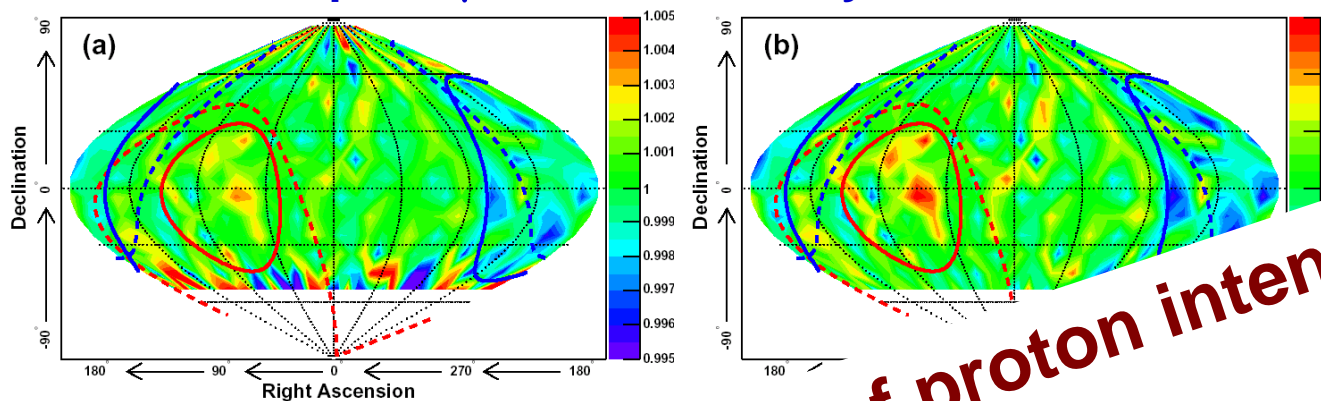
PRD, **75**, 2007

AIP Conf. Proc., **932**, 2007

Proc. 30th ICRC, 2007

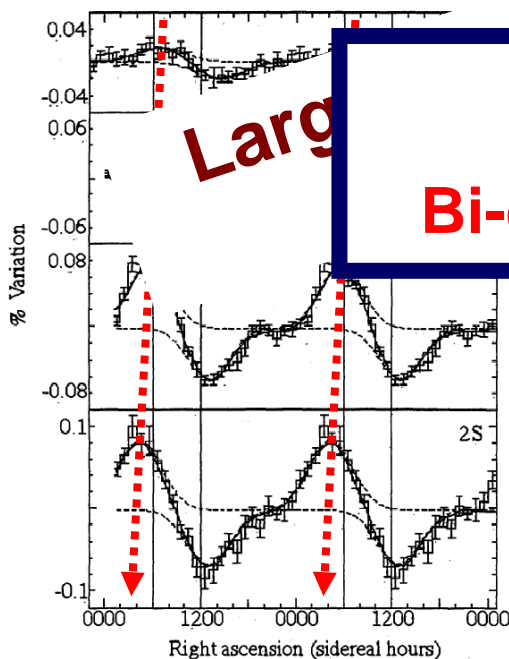
UG- μ & AS observations

Deep UG- μ observations by SK @~10 TeV



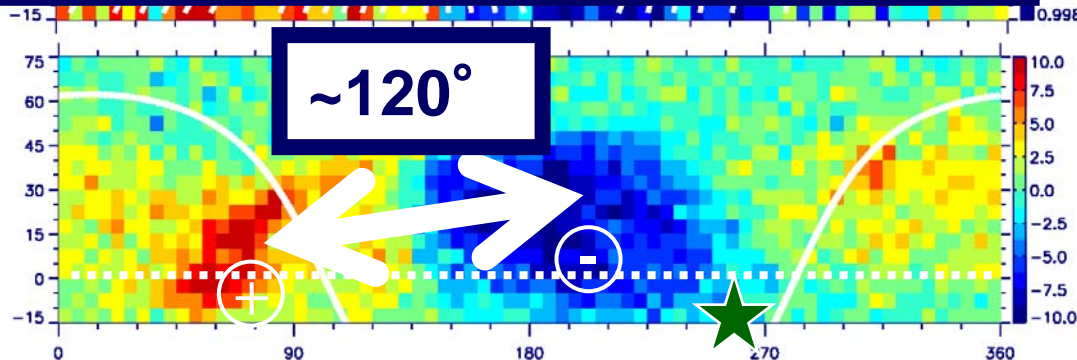
Two-hemisphere UG- μ observations @~0.5 TeV

et al., PRD, 75, 2007



Larg

90° < 120° < 180°
Bi-directional + Uni-directional



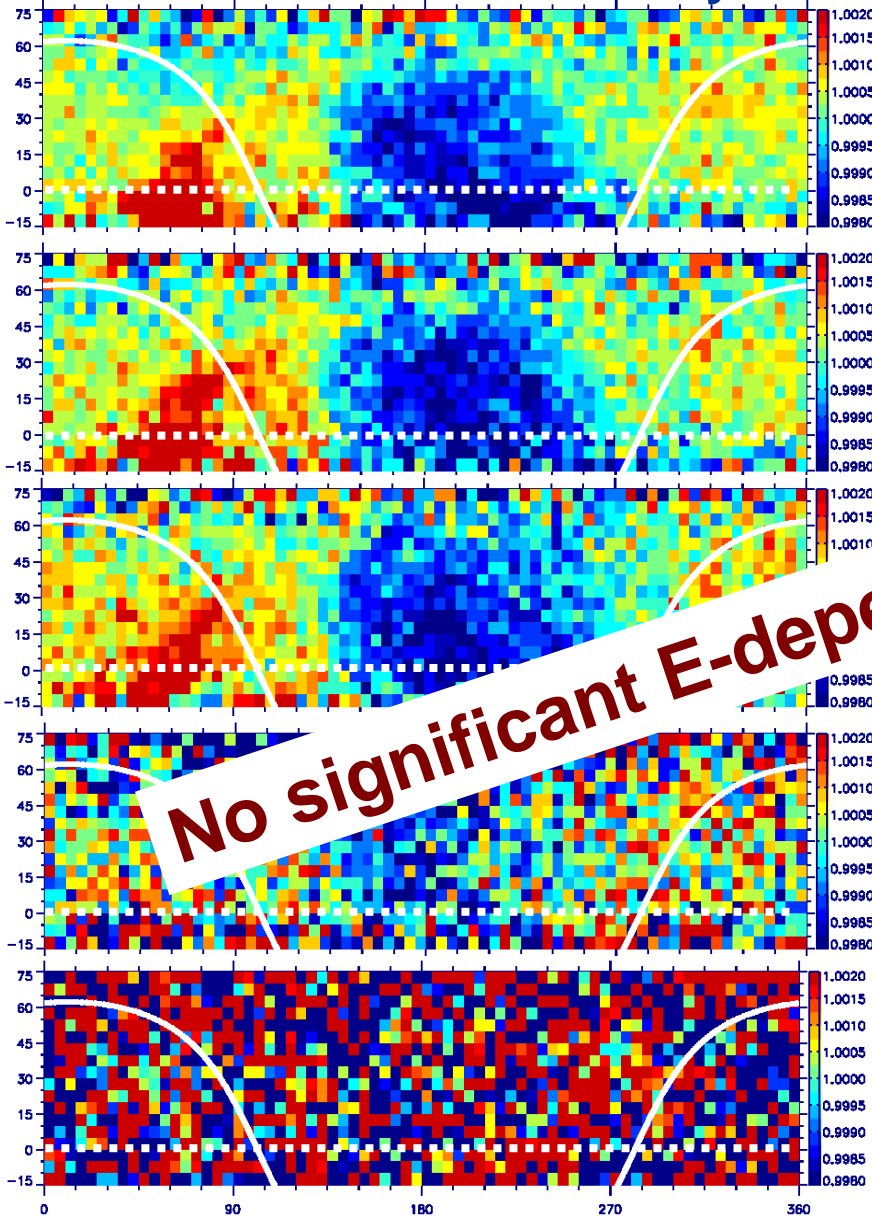
~120°

Amenomori et al., Science, 314, 2006

E dependence

“Normalized” intensity

Significance

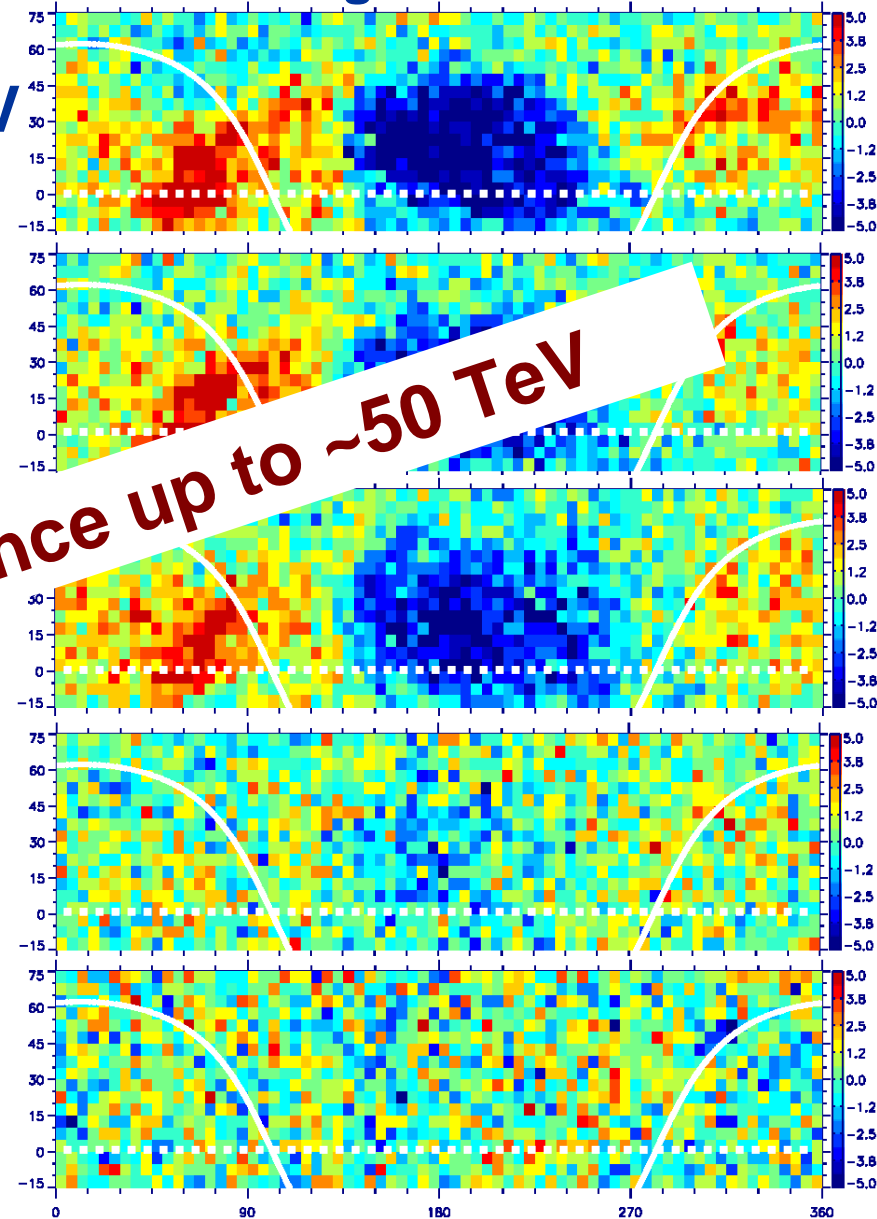


4 TeV

6

50

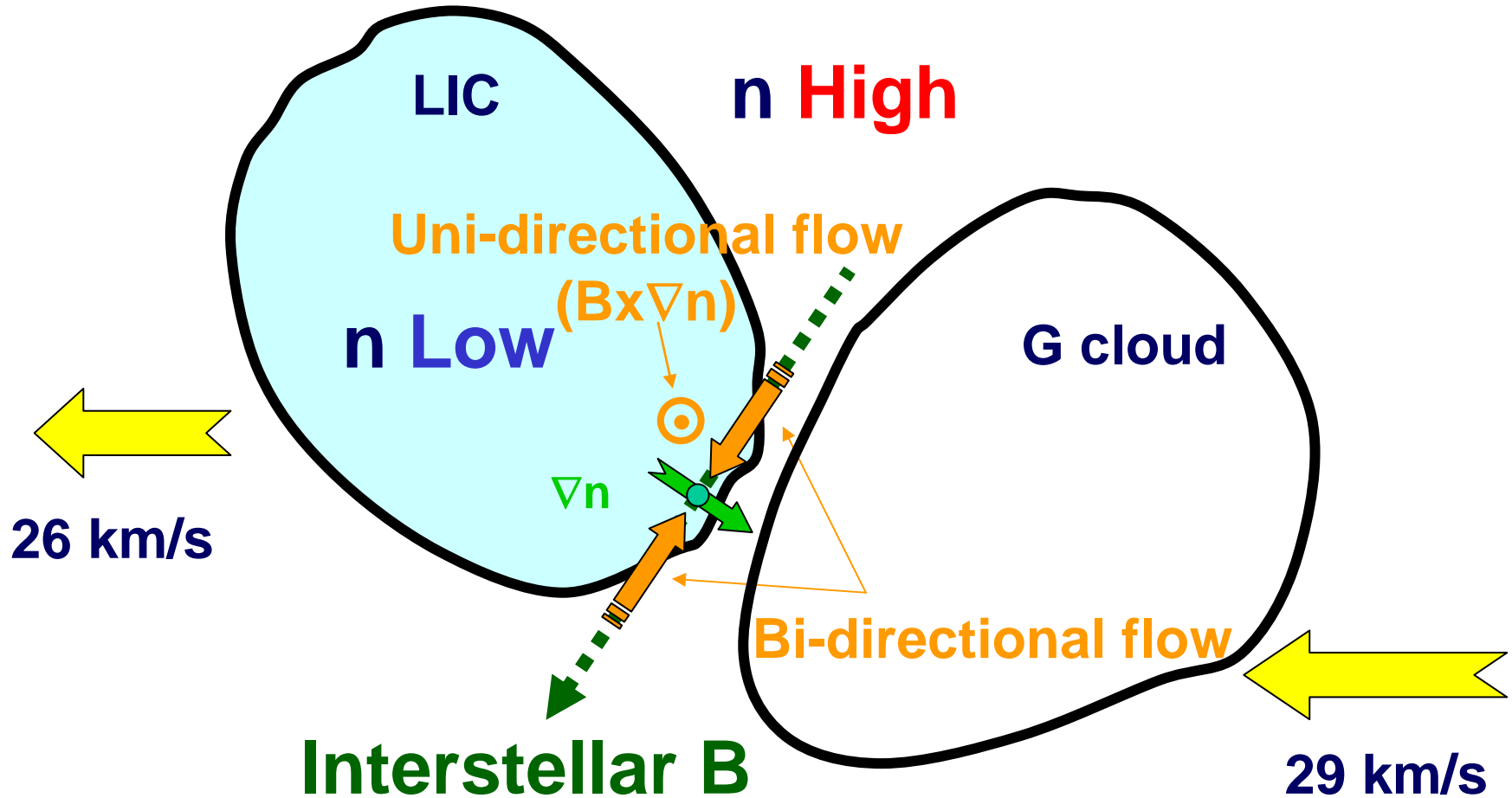
100



No significant E-dependence up to ~50 TeV

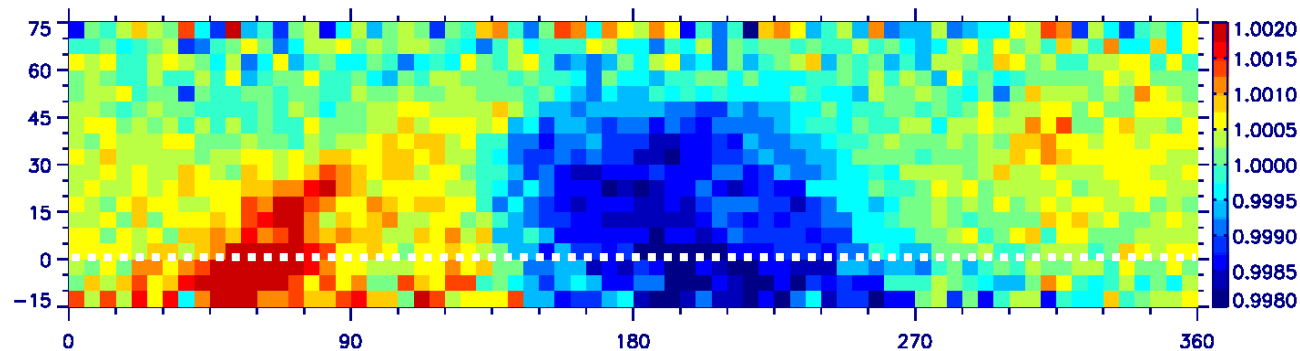
LIMC (Local Interstellar Magnetic Cloud) model

If cosmic ray density (n) is lower inside LIC than outside....

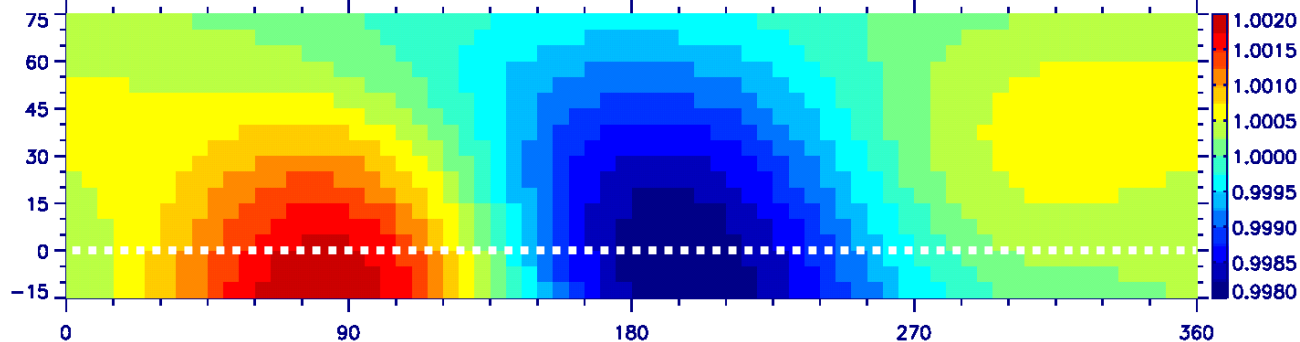


Best-fit performance

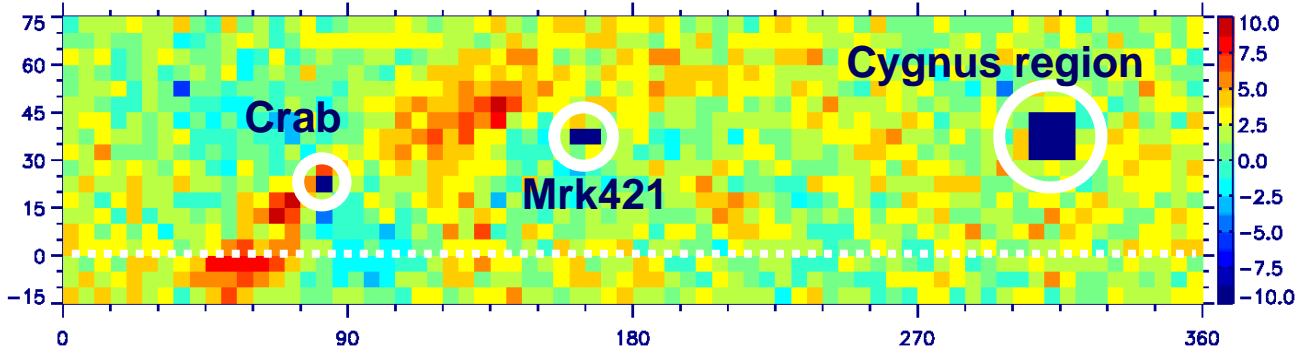
observation



model



residual
(obs.-model)/error



- **Large-scale feature is well reproduced.** $\Sigma\chi^2/\text{d.o.f.} = 2.493$
("Trough", "Peak" and broad enhancement around Cygnus region)
- **"Skewed" profile of "Peak" needs to be modeled further.**

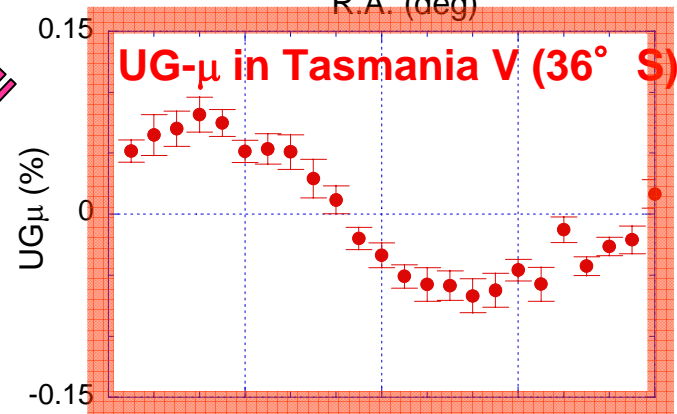
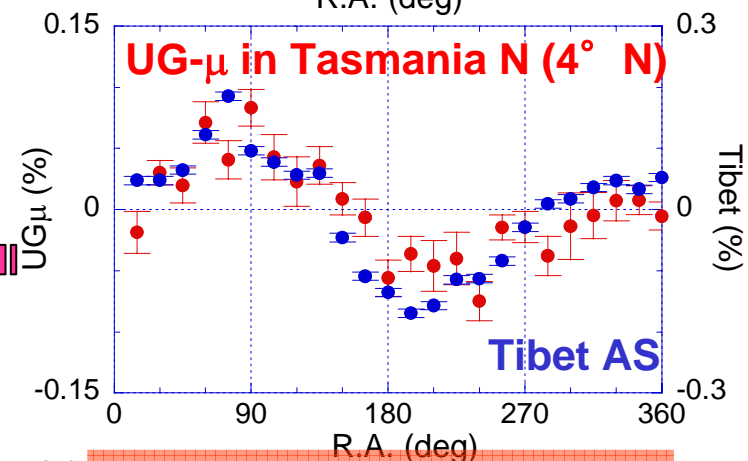
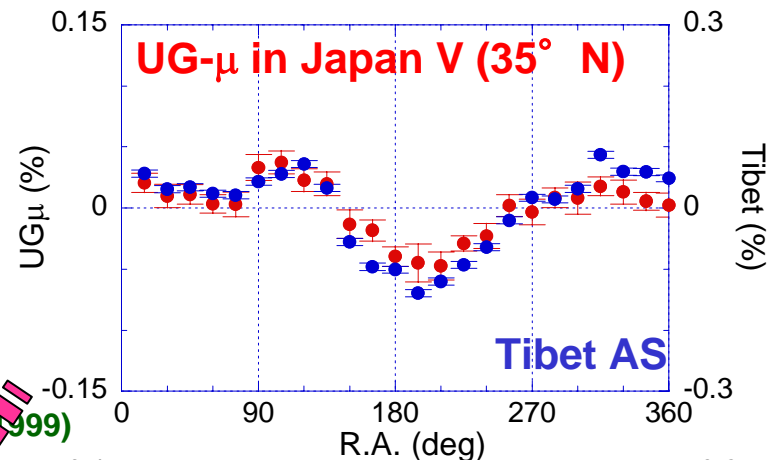
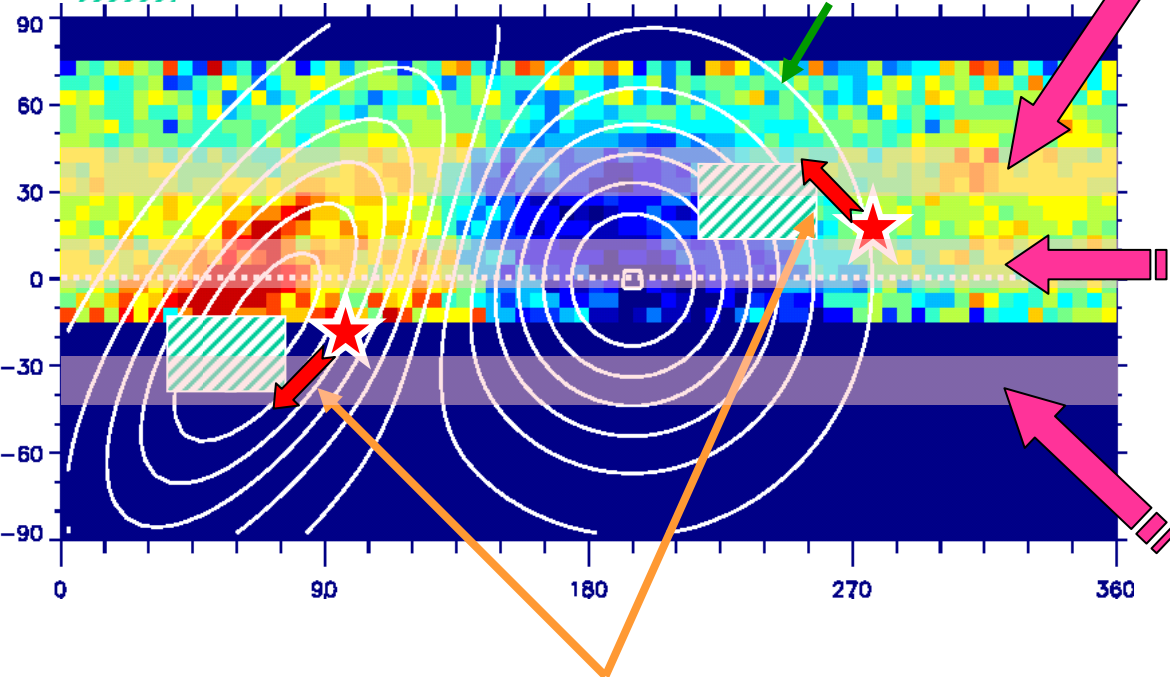
Comparison with UG- μ in two-hemispheres

Tibet AS experiment cannot observe southern hemisphere.

★ : LIMC model (Tibet AS)

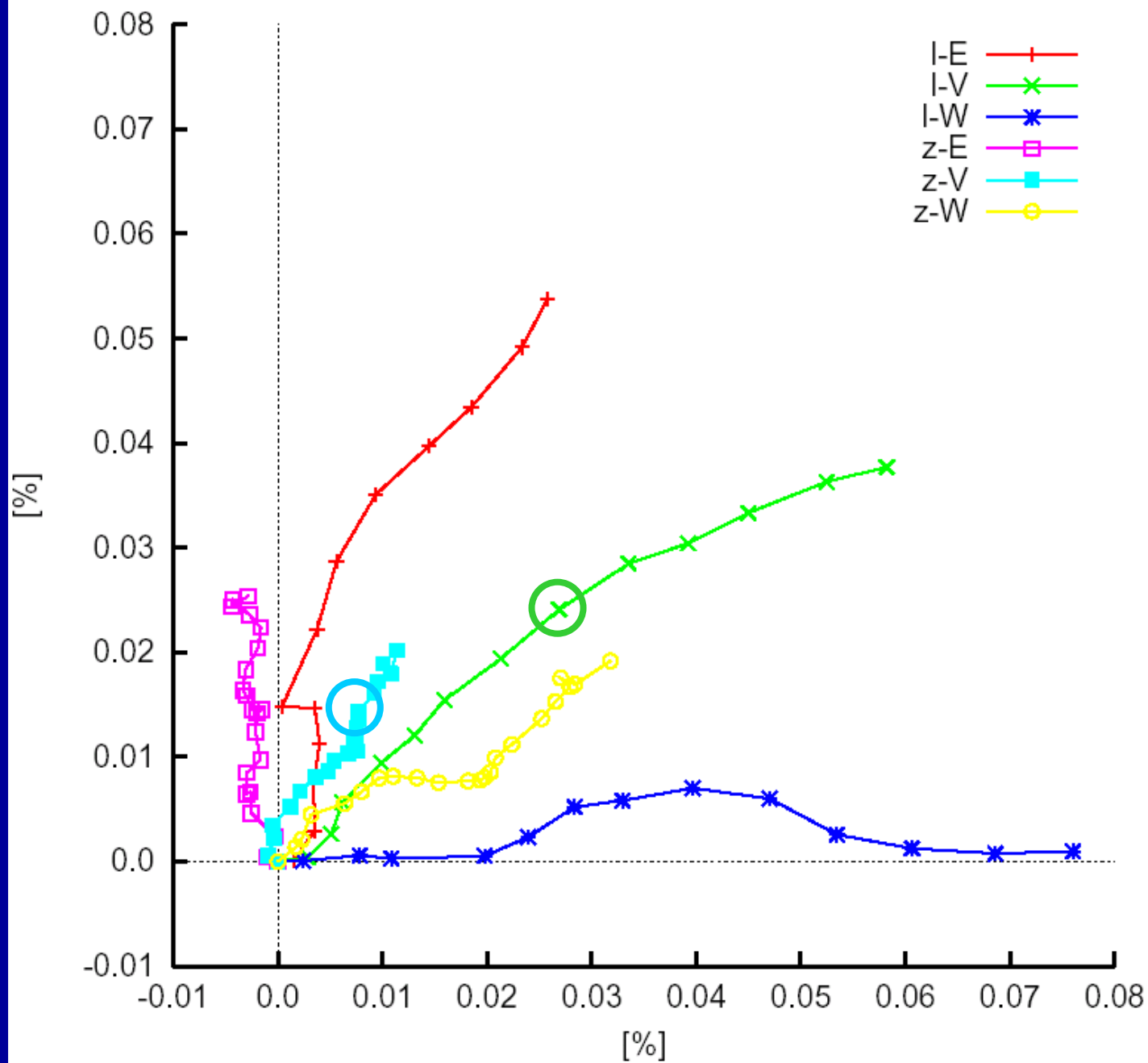
▨ : Lallement's B

UG- μ @0.5 TeV
Hall et al., JGR, 103, 1998 & 104 (1999)



Best-fit B direction may be different when unbiased, by properly taking account of the data in the southern hemisphere.

Liapootah(1993-2005) & Zohzan(1985-2005) SI



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