

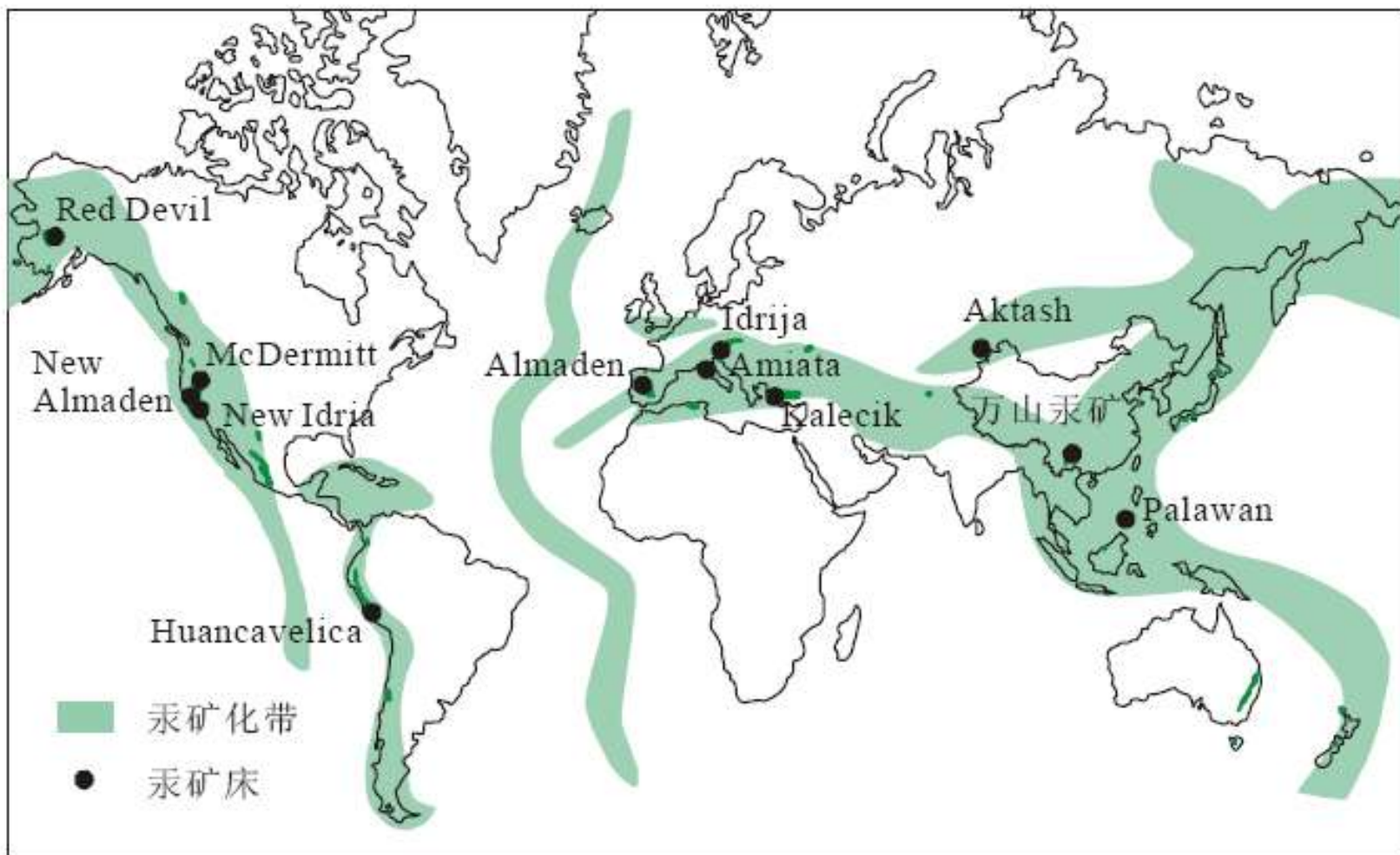
Mercury emission, pollution and human  
exposure in artisanal mercury mining area,  
Guizhou Province, southwestern China

Ping Li, Xinbin Feng

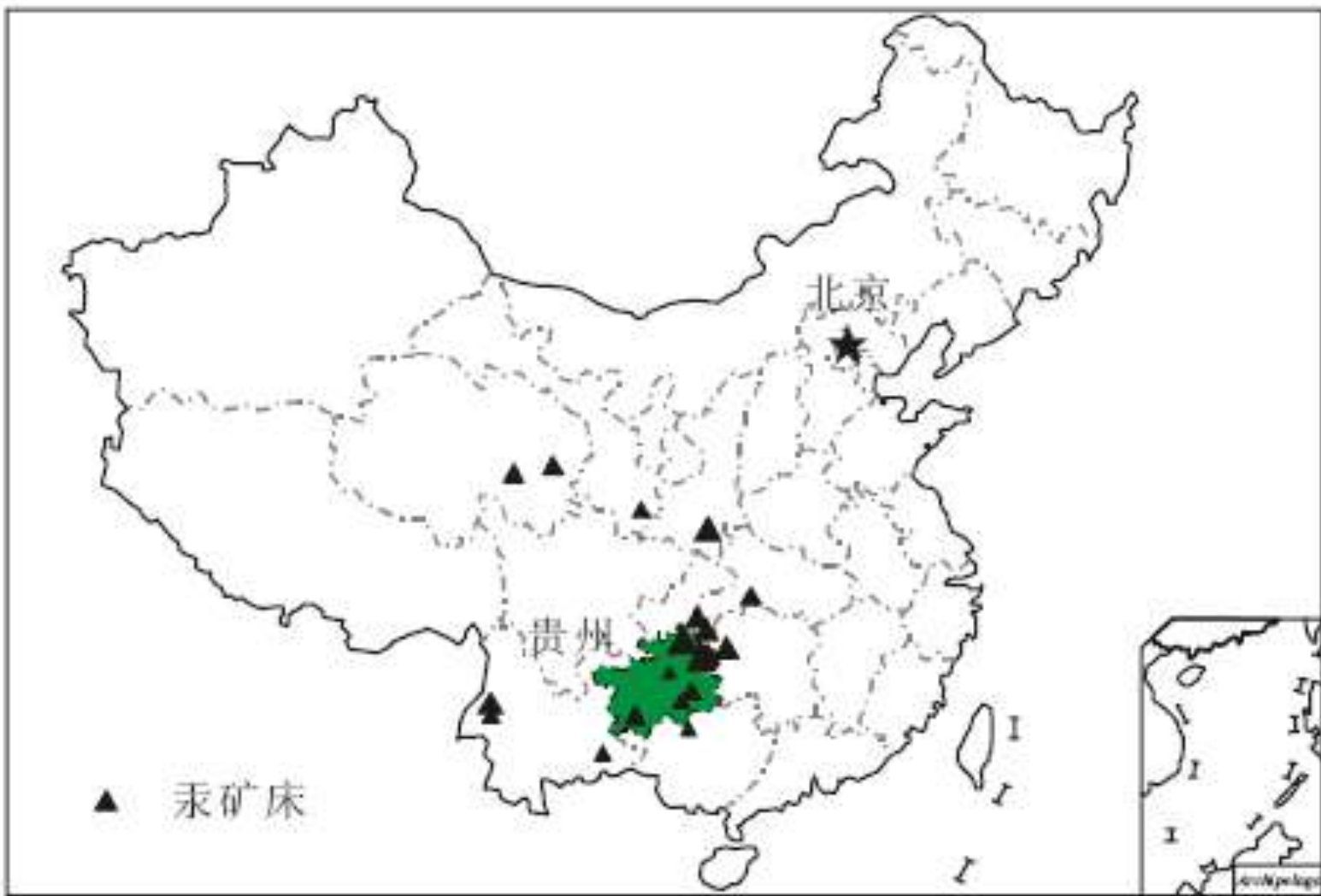
Institute of Geochemistry  
Chinese Academy of Sciences

2009, 8-14 September, Maputo

**ping\_ligyig@163.com**



Global Hg mineralized belt and Hg mine



Mercury mines in China

0 70km

● Mercury mine



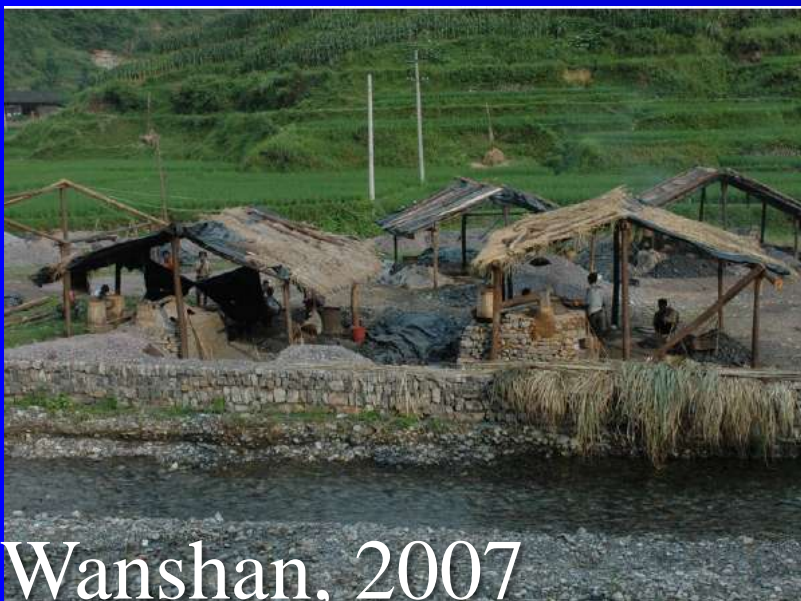
Wanshan Hg mine

Third biggest over the world

Historical production: 30,000 metric tons



# Artisanal mercury mining



Wanshan, 2007

# Process



Comparison of Hg emission factors and annual Hg emission between different studies.

Emission source	Period	Emission factor	Atmospheric Hg emissions metric tons	Reference
China anthropogenic activity			400–600/year	Pacyna et al. (2003); Feng (2004); Streets et al. (2005)
China Hg mining	1999	4.5%	8.78	Streets et al. (2005)
Guizhou anthropogenic activity	1999		39.0	Streets et al. (2005)
Almadén Hg mine	Operation period	0.5–1%	10/year	Ferrara et al. (1998)
Idrija Hg mine	1960–1995	0.61%	1.7/year	Kotnik et al. (2005)
Five main Hg mines in Guizhou Province	1983	1.69%	11	Tan et al. (1997)
Wuchuan Hg mine	2000	1.69%	0.4	Qu (2004)
AMM in WMMA	2004	18.2% (6.9–32.1%)	3.7–9.6	This study
AMM in GX	2006	9.8% (6.6–14.5%)	1.3–2.7	This study

Hg emission for artisanal Hg mining in Guizhou, Li et al., 2009, AE



# Serious Hg pollution to local environment

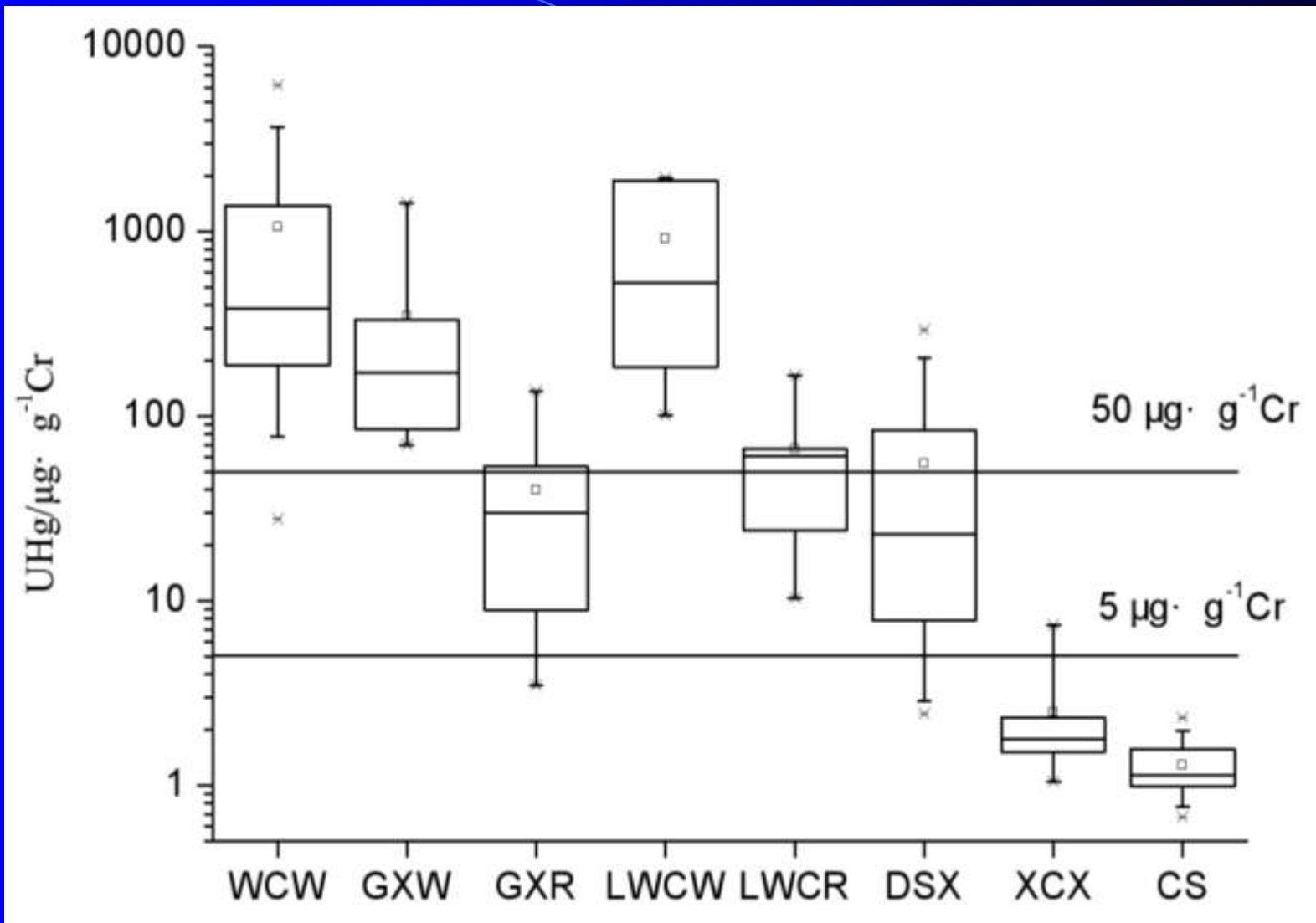
Air

Stream water

Soil

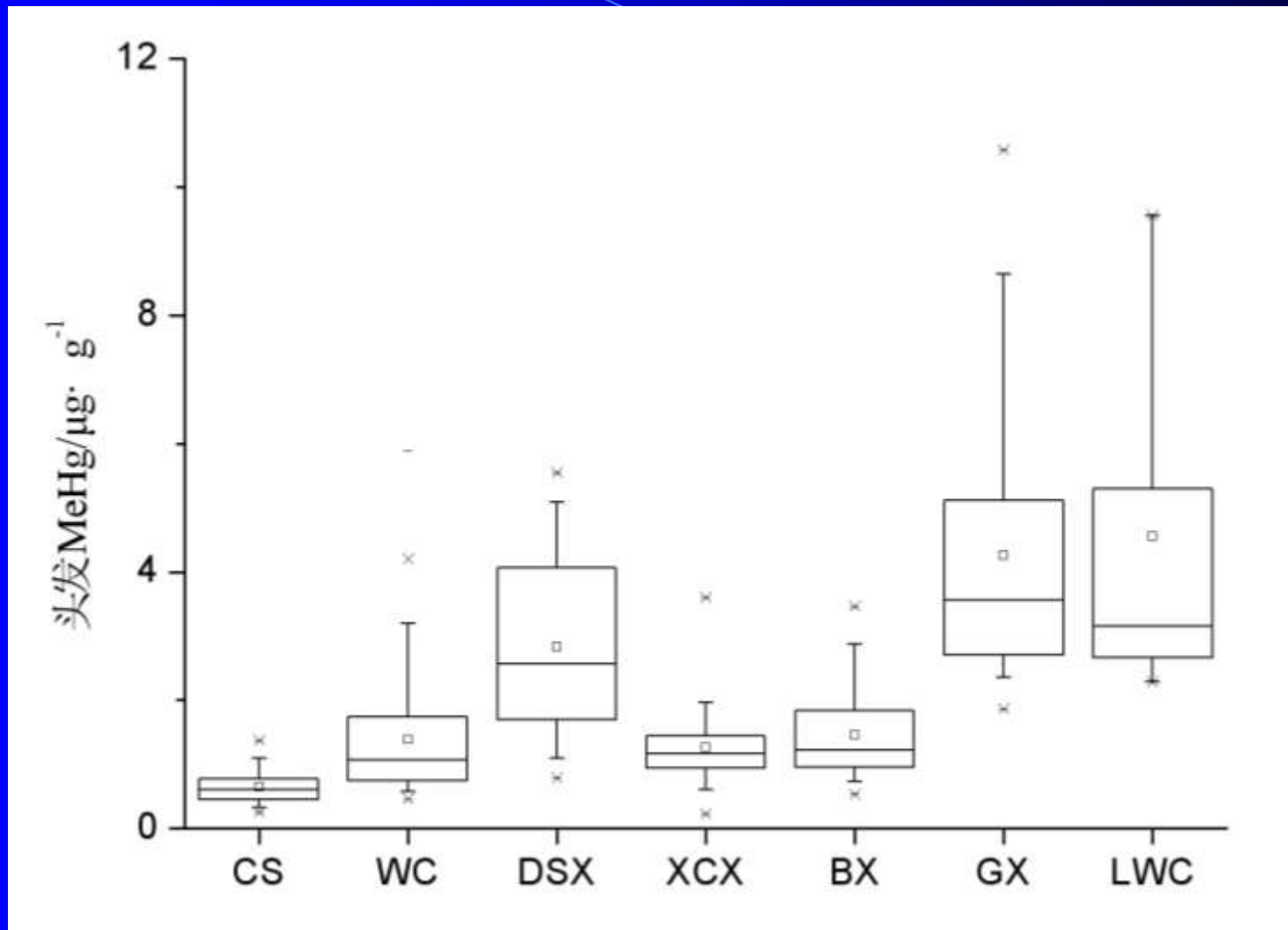
Qiu et al., 2005, AP, 2006a, EP, 2006b,  
SCOTEN; Li et al., 2008

# Human mercury vapor exposure

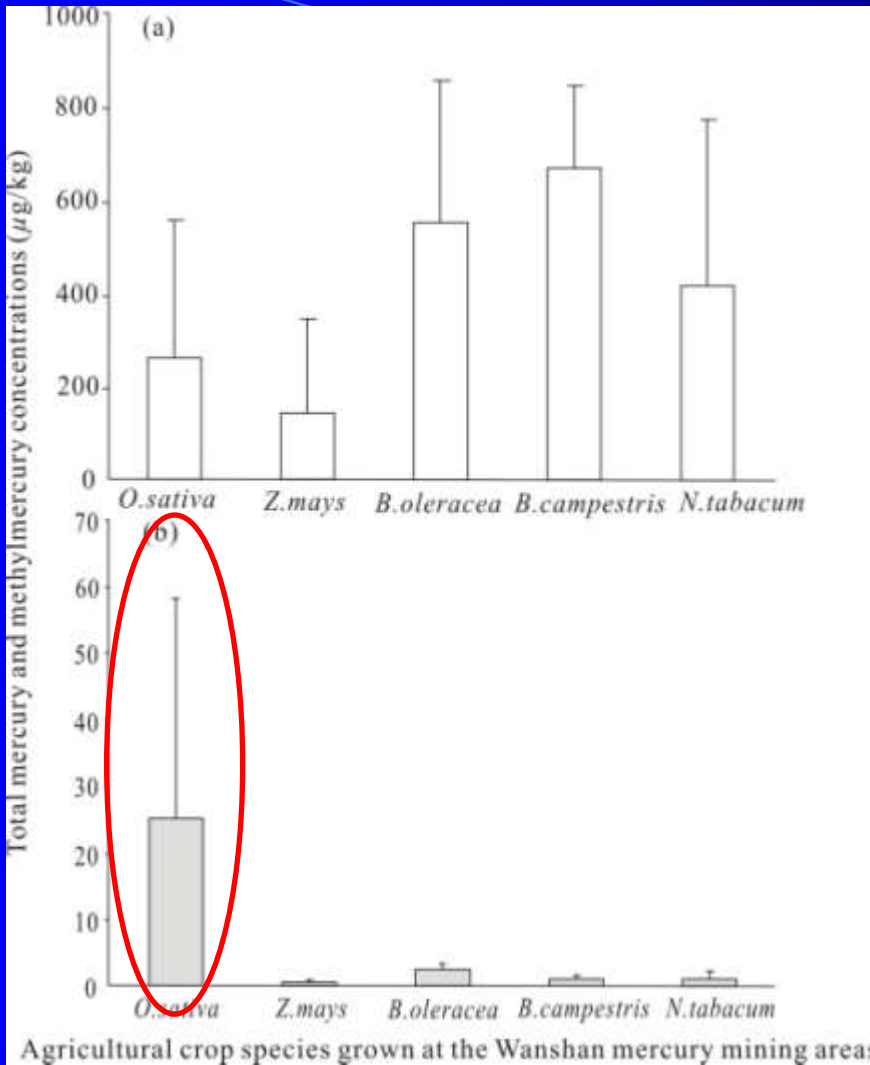


Li et al., 2008, ER; Feng et al., 2008, ES&T

# Human methylmercury exposure - hair



Li et al., 2008, STOEN; Feng et al., 2008, ES&T

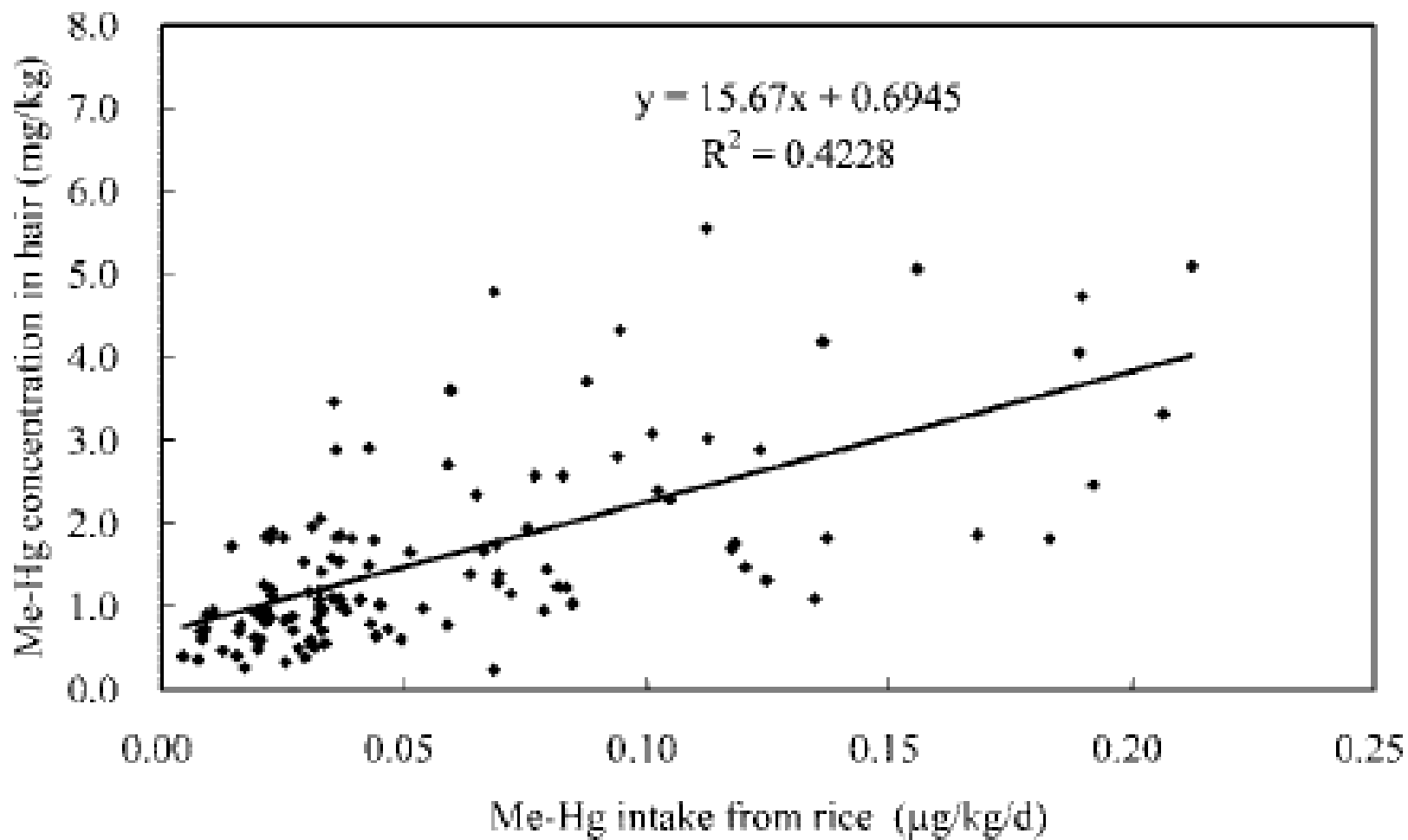


T-Hg

Me-Hg

Qiu et al., 2008

Methylmercury accumulation in rice



Me-Hg exposure through rice (Feng et al., 2008, ES&T)  
Generally through fish consumption

# 9<sup>th</sup> ICMGP, Guiyang, China, 7-12, June 2009



[www.mercury2009.org](http://www.mercury2009.org)

Thank you!

The background is a solid blue color. A thin, light blue curved line starts from the top left and arcs across the top of the page. On the right side, there is a light blue, semi-transparent shape that looks like a quarter of a circle or a similar curved form, extending from the top right towards the bottom right.