

Supporting Information

Prediction of methyl mercury uptake by rice plants (*Oryza sativa* L.) using the DGT technique

JINLING LIU^{†, ‡}, XINBIN FENG^{†, *}, GUANGLE QIU[†], CHRISTOPHER W. N.
ANDERSON[§], HENG YAO[†]

[†] State Key Laboratory of Environmental Geochemistry, Institute of Geochemistry, Chinese
Academy of Sciences, Guiyang 550002,

[‡] South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou, 510301,
P.R. China

[§]Soil and Earth Sciences Group, Institute of Natural Resources, Massey University, Palmerston
North, New Zealand

* Corresponding author: Xinbin Feng

Phone: +86-851-5891356

Fax: +86-851-5891609

E-mail: fengxinbin@vip.skleg.cn

6 pages in total, 1 Table, 3 Figures

1 **Detailed information concerning the Quality Control**

2 The method detection limits ($3\times\sigma$) were 0.002 ng g^{-1} for MeHg in tissues of rice
3 samples as well as in soil samples. The detection limit of the DGT method for MeHg
4 is 0.014 ng L^{-1} . The relative standard deviation for analysis of duplicate samples was
5 $\leq 10\%$ for MeHg. The field blank for DGT was $0.042 \pm 0.037\text{ ng L}^{-1}$ ($n=15$).
6 Recoveries for matrix spikes ranged from 80% to 116% for MeHg. Certified reference
7 materials, including the National Research Centre for Certified Reference Materials
8 rice standard GBW08508, the National Research Council of Canada Lobster
9 Hepatopancreas standard TORT-2, the Institute of Geophysical and Geochemical
10 Exploration, China, soil standard GBW 07405 and the International Atomic Energy
11 Agency sediment standard IAEA-356, were used for quality control of rice plant and
12 soil sample analysis. The corresponding analytical results for these reference
13 materials are described in supporting information Table S1.

14

1

2 **Table S1 List of Certified reference materials used in the present study and the**
 3 **results obtained.**

Producer	CRM	n	Hg speciation	Obtained value	Certified value
NRCCRM*	GBW08508	10	THg (mg kg ⁻¹)	0.036±0.002	0.038±0.003
NRCC**	TORT-2	10	THg (mg kg ⁻¹)	0.27±0.03	0.27±0.06
NRCC**	TORT-2	10	MeHg (mg kg ⁻¹)	0.15±0.002	0.152±0.013
IAEA***	IAEA-356	5	MeHg (mg kg ⁻¹)	0.0055±0.00016	0.0054±0.00089

4 *NRC CRM: National Research Centre for Certified Reference Materials;

5 **NRCC: National Research Council Canada;

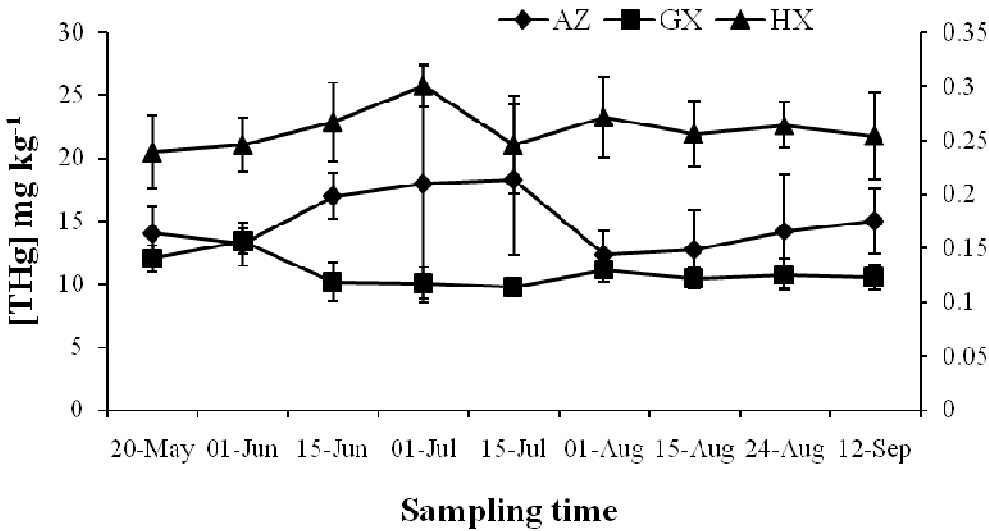
6 ***IAEA: International Atomic Energy Agency

7

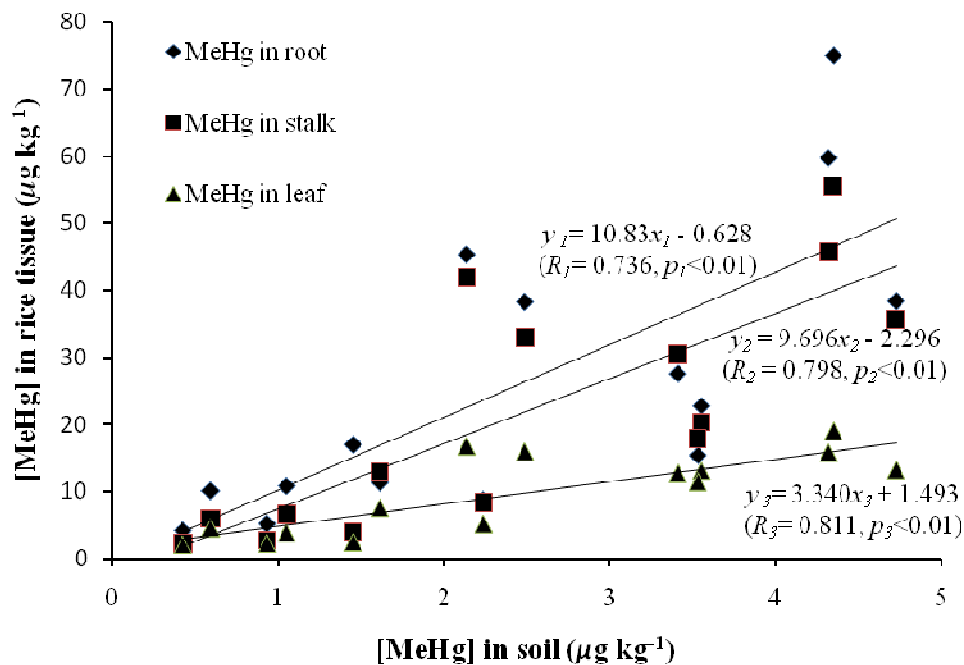
1
2
3
4
5

6
7

Figure S1. The temporal variation of total mercury (THg) concentration in paddy soil during the rice growing season



1 **Figure S2. Plots of MeHg concentration in rice plant tissues (root, stalk, leaf) as a**
 2 **function of the MeHg concentration in soil quantified using the**
 3 **KOH-methanol/solvent extraction technique**

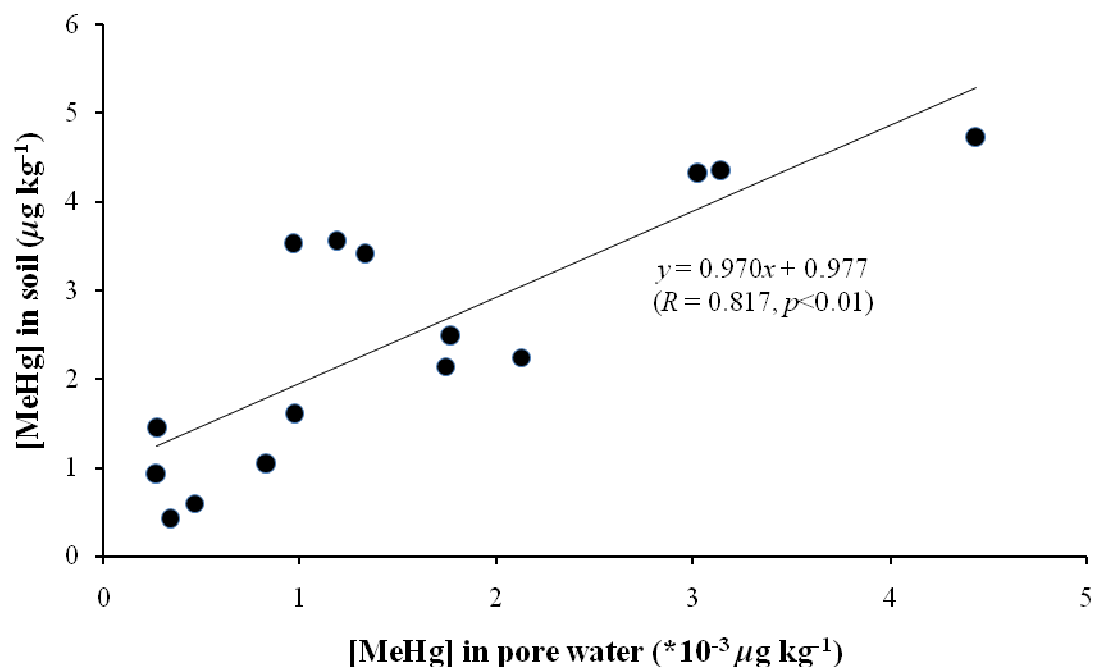


4

Figure S3.

- The linear regression fit for the correlation of the MeHg concentration in soil with that in pore water as measured by DGT (the bioavailable concentration)
- Plots of MeHg concentration in rice plant tissues (root, stalk, leaf) as a function of the MeHg concentration in pore water measured by DGT.

a.



b.

