

S1 Table. *In silico* evaluation (percent matched 16S rRNA gene sequences)^a of primer pairs, used to quantify the abundance of *Thaumarchaeota*.

Taxa	No. of sequences used for evaluation	PCR primer pair used in this study (THAUM-494-ARC917R) ^b			Previously used PCR primer pairs for quantifying <i>Thaumarchaeota</i>					
					Primer pair 771F-957R			Primer pair MCGI391f-MCGI554r		
		Primer pair	THAUM-494 ^c	ARC917R ^d	Primer pair	771F ^e	957R ^e	Primer pair	MCGI391f ^f (MGI391)	MCGI554r ^f (Cren537)
<i>Crenarchaeota</i>	872	0.9	0.9	76.3	1.0	10.9	0.6			
<i>Euryarchaeota</i>	6,072			91.8	≈0		≈0			
<i>Korarchaeota</i>	88									
<i>Nanoarchaeota</i>	3									
<i>Thaumarchaeota</i> ^g	1,549	89.3	92.9 ^a	96.1	21.9	94.6	22.4	33.7	35.8	65.5
FSCG	17			100		76.5				
HWCG-III	25	32.0	36.0	92.0	76.0	100				
MG-I	1,100	92.9	96.6	96.0	0.2	95.2	0.1	47.5	50.4	92.3
RC	7			100	57.1	85.7				
SAGMCG-I	40	97.5	100	97.5		7.5	87.5			
SCG	355	87.6	90.7	96.3	87.3	94.1	96.1			
UT-I	2	50.0	100	50.0	100.0	100	50.0			
UT-II	1	100.0	100	100		100				
UT-III	2	100.0	100	100		100				
DSAG ^h	326			93.3						
THSCG ^h	50			68.0						
MCG ^h	483			93.2		28.0	0.2			
UG ^h	12			91.7						
Unclassified <i>Archaea</i>	272			78.3	36.4	41.2	0.4			
Domain <i>Bacteria</i>	667,899									

^a Estimated by Hong *et al.* (Hong *et al.*, 2014)

^b Forward primer, THAUM-494; reverse primer, ARC917R

^c *Thaumarchaeota*-directed primer (3'-GAATAAGGGGTGGGCAAGT-5', Hong *et al.*, 2014)

^d Archaeal universal primer (3'-GAATTGGCGGGGAGCAC-5', Loy *et al.*, 2002)

^e Developed by Ochsenreiter *et al.* (Ochsenreiter *et al.*, 2003)

^f Developed by Auguet *et al.* (Auguet *et al.*, 2012)

^g Thaumarchaeotal subgroup sequences classified by Hong *et al.* (Hong *et al.*, 2014). FSCG, Forest Soil Crenarchaeotic Group; HWCG-III, Hot Water Crenarchaeotic Group III; MG-I, Marine Group I; RC, Rice Cluster; SAGMCG-I, South African Gold Mine Crenarchaeotic Group I; SCG, Soil Crenarchaeotic Group; UT-I, -II, and -III, Unclassified Thaumarchaeota-I, -II, and -III.

^h Environmental archaeal groups classified by Hong *et al.* (Hong *et al.* 2014). DSAG, Deep Sea Archaeal Group; THSCG, Terrestrial Hot Spring Crenarchaeotic Group; MCG, Miscellaneous Crenarchaeotic Group; UG, Unclassified Group.