

	A	B	C
1	INPUTS		
2	Percent of thawed permafrost	10%	
3	Potency of Methane vs. CO2 (generally not debated)	80	times
4	Methane decays after 20 years (seems undisputed, after 20 years unclear decay period)		
5	Quantity of Arctic Methane +/- Gts (web says hundreds, seen 1,400 cited also) chosen 200	200	Gt
6	Negated CO2 from renewables Gts	2.6	Gt
7	Total area of permafrost km2 (21-23 million per web)	22,000,000	km2
8	Area of thawed permafrost km2 B2 x B7	2,200,000	km2
9	CALCULATIONS		
10	Amount of Methane to cancel renewables B6 ÷ B3 Gts	0.0325	Gt
11	Methane Gt from thawed area B2 x B5	20	Gt
12	B10 fraction of B11 B10 ÷ B11	0.001625	
13	Percent of thawed Arctic methane to cancel out renewables B12x100	0.1625	%
14	Assume 20 year constant buildup : B13÷20 MARGIN OF ERROR OF PREDICTIONS	0.00813	%
15	Scientists tend to discount this, as they say most methane is subsurface, but this is very small		
16	GROUND LEVEL MEASUREMENT IMPLICATIONS		
17	Methane to cancel renewables over 20 years B10÷20x 1,000,000 (converting to kilotons)	1625.00	kt/yr
18	Amount spread out over thawed permafrost area B17÷B8x1,000 (converting to tons)	0.74	t/yr/km2
19	B18 ABOVE: CONSERVATIVE ALARM LEVEL OF AVG. GROUND MEASUREMENT		
20	COMMENT: Studies by Russian Scientists show 1t/yr methaane from a bog (area unknown)		
21	See the studies of M Glagolev et al 2011 Environ. Res. Lett. 6 045214		
22	https://iopscience.iop.org/article/10.1088/1748-9326/6/4/045214		
23	** Their work showed an 18% emissions increase over 10 years which would mean B18 ÷ 1.36	0.54	t/yr/km2
24	CONCLUSION: ARCTIC METHANE CRITICAL TIPPING POINT		
25	And note: other factors such as sea shelf and ocean methane release could lower this number		
26	This number drops with each added percentage of thaw e.g. at 12% it is .45 etc.		
27	Likely it's just a question of time before this tiiping point arrives		
28	COP HAS NO FAIL-SAFE PLAN FOR ARCTIC METHANE, THIS GOING ON FOR 30 YEARS...		
29	It is imperative that methane ground source data from the entire thawed permafrost area be collected ASAP and updated yearly at least. And drop the peer reviewed time lag on that data. CMIP scientists need to gather yearly. We need to know where we stand and how this is progressing.		
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