VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

ERRATA & CLARIFICATIONS

VM0015 Methodology for Avoided Unplanned Deforestation, v1.1

Errata and Clarifications

This document provides errata and clarifications applicable to *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1*. Such errata and clarifications are effective on their issuance date. Project proponents and validation/verification bodies shall apply and interpret *VM0015, v1.1* consistent with the errata and clarifications set out in this document.

These errata and clarifications will be incorporated into the next issued version of *VM0015*.

List of Errata and Clarifications (ordered by issuance date)

1 ERRATUM: Appendix 2, Error propagation analysis omitted (13 Dec. 2014)

Background:

Appendix 2 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1* provides guidance with respect to the quantification of emission reductions and removals. An example related to the error propagation analysis was inadvertently omitted from Appendix 2 of the methodology.

Erratum:

Box 2 below is now included after Box 1 in Appendix 2 of the methodology.

Box 2: Example of simple error propagation analysis (Tier I method)

(Taken from Brown *et al.* 2007)

Carbon pool	Average carbon stock t C ha^{-1}	95% CL t C ha^{-1}
Above-ground biomass	113	11
Dead wood	18	3
Litter	7	2

Therefore, the total stock is 138 t C/ha and the uncertainty = $\sqrt{11^2 + 3^2 + 2^2}$ = 11.6 t C/ha

	Mean	95% CL	Uncertainty %
Are (ha)	8564	1158	14
Carbon stock (t C ha^{-1})	138	11.6	8

Therefore, the total carbon stock over the stratum = $8564 * 138$ = 1,181,832 tC and the uncertainty = $\sqrt{14^2 + 8^2}$ = 15.9%. 15.9% of 1,181,832 = 188,165 t C.

2 CLARIFICATION: Section 6.1, Post-deforestation carbon stock increase (03 Nov. 2017)

Background:

Section 6.1.2 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1* provides guidance with respect to the calculation of carbon stock change factors. Section 6.1.3 of *VM0015 Methodology for Avoided Unplanned Deforestation, v1.1* provides guidance with respect to the calculation of baseline carbon stock changes.

The language in section 6.1.2 is not clear with respect to when post-deforestation classes should begin to increase. Tables 20.a, 20.b and 20.c in section 6.1.3 are equally unclear as they suggest that post-deforestation classes should begin increasing the same year as the deforestation event, which is inconsistent with language in section 6.1.2.

Clarification:

The text in sections 6.1.2 (a), (c) and (e) regarding the initial forest classes that are assumed to release 100% of their carbon stocks in the same year as the deforestation event shall read as follows (with text in strikethrough deleted and text in red added):

> "Initial forest classes (icl): immediate release of 100% of the carbon stock (as estimated in Table 15.b) is assumed to happen ~~at the end of~~ during year t = t* (= year in which deforestation occurs)."

The text in sections 6.1.2 (a), (b), (c) and (d) regarding the increase of post-deforestation classes shall read as follows (with text in strikethrough deleted and text in red added):

> "Post-deforestation classes (fcl) (or their area weighted average per zone z): linear increase from 0 tCO2-e/ha in year t = t* to 100% of the long-term (20-years) average carbon stock (as estimated in Table 17) in year t = t*+~~9~~10 is assumed to happen in the 10 years period following deforestation (i.e. 1/10th of the final carbon stock is accumulated each year)."

Tables 20.a, 20.b and 20.c below shall read as follows to indicate that t* takes place zero years after deforestation and carbon stock increases begin one year after deforestation (t*+1).

Table 20.a

Year after deforestation		$\Delta Cab_{z,t}$	$\Delta Cbb_{z,t}$	$\Delta Cdw_{z,t}$	$\Delta Cl_{z,t}$	$\Delta Csoc_{z,t}$	$\Delta Cwp_{z,t}$		
							short-lived	medium-lived	long-lived
0	t*	$-Cab_{icl,t}$	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	$-Cl_{icl,t}$	use method 2	$-Cwp_{icl,t=t*}$	$-1/20*Cwp_{icl,t=t*}$	0
1	t*+1	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
2	t*+2	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
3	t*+3	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
4	t*+4	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
5	t*+5	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
6	t*+6	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
7	t*+7	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
8	t*+8	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
9	t*+9	0	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
10	t*+10	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
11	t*+11	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
12	t*+12	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
13	t*+13	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
14	t*+14	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
15	t*+15	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
16	t*+16	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
17	t*+17	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
18	t*+18	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
19	t*+19	0	0	0	0	use method 2	0	$-1/20*Cwp_{icl,t=t*}$	0
20-T	t*+20,…	0	0	0	0	0	0	0	0

Table 20.b

Year after deforestation		$\Delta Cab_{z,t}$	$\Delta Cbb_{z,t}$	$\Delta Cdw_{z,t}$	$\Delta Cl_{z,t}$	$\Delta Csoc_{z,t}$	$\Delta Cwp_{z,t}$		
							short-lived	medium-lived	long-lived
0	t*	0	0	0	0	use method 2	0	0	0
1	t*+1	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
2	t*+2	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
3	t*+3	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
4	t*+4	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
5	t*+5	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
6	t*+6	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
7	t*+7	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
8	t*+8	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
9	t*+9	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
10	t*+10	$+1/10*Cab_z$	$+1/10*Cbb_z$	$+1/10*Cdw_z$	$+1/10*Cl_z$	use method 2	0	0	0
11	t*+11	0	0	0	0	use method 2	0	0	0
12	t*+12	0	0	0	0	use method 2	0	0	0
13	t*+13	0	0	0	0	use method 2	0	0	0
14	t*+14	0	0	0	0	use method 2	0	0	0
15	t*+15	0	0	0	0	use method 2	0	0	0
16	t*+16	0	0	0	0	use method 2	0	0	0
17	t*+17	0	0	0	0	use method 2	0	0	0
18	t*+18	0	0	0	0	use method 2	0	0	0
19	t*+19	0	0	0	0	use method 2	0	0	0
20-T	t*+20,…	0	0	0	0	0	0	0	0

Table 20.c

Year after deforestation		$\Delta Cab_{ctz,t}$	$\Delta Cbb_{ctz,t}$	$\Delta Cdw_{ctz,t}$	$\Delta Cl_{ctz,t}$	$\Delta Csoc_{ctz,t}$	$\Delta Cwp_{ctz,t}$		
							short-lived	medium-lived	long-lived
0	t*	$-Cab_{icl,t}$	$-1/10*Cbb_{icl,t=t*}$	$-1/10*Cdw_{icl,t=t*}$	$-Cl_{icl,t}$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	$-Cwp_{icl,t=t*}$	$-1/20*Cwp_{icl,t=t*}$	0
1	t*+1	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
2	t*+2	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
3	t*+3	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
4	t*+4	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
5	t*+5	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
6	t*+6	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
7	t*+7	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
8	t*+8	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
9	t*+9	$+1/10*Cab_z$	$-1/10*Cbb_{icl,t=t*}+1/10*Cbb_z$	$-1/10*Cdw_{icl,t=t*}+1/10*Cdw_z$	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
10	t*+10	$+1/10*Cab_z$	+1/10*Cbbz	+1/10*Cdwz	$+1/10*Cl_z$	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
11	t*+11	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
12	t*+12	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
13	t*+13	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
14	t*+14	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
15	t*+15	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
16	t*+16	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
17	t*+17	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
18	t*+18	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
19	t*+19	0	0	0	0	$1/20*(Csoc_{icl,t*}-Csoc_z)$	0	$-1/20*Cwp_{icl,t=t*}$	0
20-T	t*+20,…	0	0	0	0	0	0	0	0