

Correction

Correction: Perazzoni, F.; Bacelar-Nicolau, P.; Painho, M. Geointelligence against Illegal Deforestation and Timber Laundering in the Brazilian Amazon. *ISPRS Int. J. Geo-Inf.* 2020, 9, 398

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The authors have identified errors in the percentages and frequency of occurrences informed in the article. The percentages were supposed to be calculated as: (frequency of occurrences/total number of PMFS evaluated) × 100. This was caused by human error on updating a formula after inserting rows and columns at the edge of an existing formula range in Excel Spreadsheet. Consequently, the authors wish to make the following corrections to the paper [1]:

1. Changes to the Abstract

On page one, at the end of the “Abstract”, the sentences “Among these results, we highlight the following evidences: (i) inconsistencies related to total transport time and prices declared to the authorities (48% of PMFS); (ii) volumetric information incompatible with official forest inventories and/or not conforming with Benford’s law (37% of PMFS); (iii) signs of exploitation outside the authorized polygon limits (35% PMFS) and signs of clear-cutting (29% of PMFS); (iv) no signs of infrastructure compatible with licensed forestry (17% of PMFS); and (v) signs of exploitation prior to the licensing (13% of PMFS) and after the expiration of licensing (3%)” should be “Among these results, we highlight the following evidences: (i) inconsistencies related to total transport time and prices declared to the authorities (70% of PMFS); (ii) volumetric information incompatible with official forest inventories and/or not conforming with Benford’s law (54% of PMFS); (iii) signs of exploitation outside the authorized polygon limits (51% of PMFS) and signs of clear-cutting (43% of PMFS); (iv) no signs of infrastructure compatible with licensed forestry (24% of PMFS); and (v) signs of exploitation prior to the licensing (19% of PMFS) and after the expiration of licensing (5%).”

2. Changes to the Main Body Paragraphs

On page 15, at the Criterion 1.1, the sentence “83 MSA PMFS: 7% (8 PMFS) totally or partially inside National Forests (Figure 14)” should be “MSA PMFS: 10% (8 PMFS) totally or partially inside National Forests (Figure 14).”

On page 16, at the Criterion 1.2, the sentence “83 MSA PMFS: 20 PMFS (17% of the sample) had infrastructure incompatible with forest management practices, 10 referring to cases of no sign of yards and roads in the area and 10 referring to situations incompatible with PMFS and/or the volumes traded from these areas” should be “MSA PMFS: 20 PMFS (24% of the sample) had infrastructure incompatible with forest management practices, 10 referring to cases of no sign of yards and roads

in the area and 10 referring to situations incompatible with PMFS and/or the volumes traded from these areas.”

On page 18, at the Criterion 1.3, the sentence “**83 MSA PMFS**: 36 properties (29%) showed signs of clear-cutting in their interior, among which 23 presented deforestation that reached APPs” should be “**MSA PMFS**: 36 properties (43%) showed signs of clear-cutting in their interior, among which 23 presented deforestation that reached APPs.”

On page 18, at the Criterion 1.4, the sentence “**83 MSA PMFS**: 13% of the areas showed signs of exploitation prior to the licensing” should be “**83 MSA PMFS**: 19% of the areas showed signs of exploitation prior to the licensing.”

On page 18, at the Criterion 1.5, the sentence “**83 MSA PMFS**: 3% of the areas showed signs of exploitation after the last DOF issuing” should be “**83 MSA PMFS**: 5% of the areas showed signs of exploitation after the last DOF issuing.”

On page 20, at the Criterion 1.6, the sentence “**83 MSA PMFS**: 43 PMFS (35%) showed signs of exploitation (selective and/or clear cut) outside the authorized polygon limit” should be “**MSA PMFS**: 43 PMFS (52%) showed signs of exploitation (selective and/or clear cut) outside the authorized polygon limit.”

On page 20, at the Criterion 2.1, the sentence “**MSA 83 PMFS**: 12% of the areas issued DOFs received only later than the end of the document’s validity in a percentage greater than 5% of the total number of documents issued” should be “**MSA 83 PMFS**: 17% of the areas issued DOFs received only later than the end of the document’s validity in a percentage greater than 5% of the total number of documents issued.”

On page 20, at the Criterion 2.2, the sentence “**MSA 83 PMFS**: 14% of the areas had DOFs canceled at a level higher than 5% of the total volume sold” should be “**MSA 83 PMFS**: 20% of the areas had DOFs canceled at a level higher than 5% of the total volume sold.”

On page 20, at the Criterion 2.3, the sentence “**MSA 83 PMFS**: 17% of the areas had DOFs issued during the rainy season at a level higher than 15% of the total volume sold” should be “**MSA 83 PMFS**: 24% of the areas had DOFs issued during the rainy season at a level higher than 15% of the total volume sold.”

On page 21, at the Criterion 2.4, the sentence “**MSA 83 PMFS**: 36% of all areas had volumes of roundwood sold with no decimal places” should be “**MSA 83 PMFS**: 52% of all areas had volumes of roundwood sold with no decimal places.”

On page 21, at the Criterion 2.5, the sentence “**MSA 83 PMFS**: 56% of all properties had transactions in SisDOF registered with the same IP number, both for the transaction of issuing and receiving the cargo” should be “**MSA 83 PMFS**: 81% of all properties had transactions in SisDOF registered with the same IP number, both for the transaction of issuing and receiving the cargo.”

On page 21, at the Criterion 2.6, the sentence “**MSA 83 PMFS**: 48% of the areas recorded log sale prices under R\$66.00” should be “**MSA 83 PMFS**: 70% of the areas recorded log sale prices under R\$66.00.”

On page 22, at the Criterion 2.7, the sentence “**MSA 83 PMFS**: 2% of the properties declared volumes in DOFs of their issuance incompatible with the type of road transport informed” should be “**MSA 83 PMFS**: 4% of the properties declared volumes in DOFs of their issuance incompatible with the type of road transport informed.”

On page 22, at the Criterion 2.8, the sentence “**MSA 83 PMFS**: Three areas (2% of the sample) had logs sold to buyers located more than 200 km away (FIDs 1325, 2759 and 4034)” should be “**MSA 83 PMFS**: Three areas (4% of the sample) had logs sold to buyers located more than 200 km away (FIDs 1325, 2759 and 4034).”

On page 22, at the criterion 2.9, the sentence “**MSA 83 PMFS**: 48% of the PMFS had DOFs issued whose total transport time and distance, between the sender and the receiver, would have resulted in an average speed greater than 40 km/h” should be “**MSA 83 PMFS**: 70% of the PMFS had DOFs issued

whose total transport time and distance, between the sender and the receiver, would have resulted in an average speed greater than 40 km/h.”

On page 23, at the Criterion 2.10, the sentence “**MSA 83 PMFS:** 4% of properties had records of administrative infractions (fines) due to the finding of irregularities in the SisDOF” should be “**MSA 83 PMFS:** 6% of properties had records of administrative infractions (fines) due to the finding of irregularities in the SisDOF.”

On page 23, at the Criterion 2.11, the sentence “**MSA 83 PMFS:** 5% of the properties had records of administrative infractions (fines) for irregularities in the execution of PMFS” should be “**MSA 83 PMFS:** 7% of the properties had records of administrative infractions (fines) for irregularities in the execution of PMFS.”

On page 23, at the Criterion 2.12, the sentence “**MSA 83 PMFS:** 37% of the properties presented volumetric information incompatible with RADAM Project survey and/or not conforming with Benford’s Law” should be “**MSA 83 PMFS:** 54% of the properties presented volumetric information incompatible with RADAM Project survey and/or not conforming with Benford’s Law.”

On page 23, at the Criterion 2.13, the sentence “**MSA 83 PMFS:** 02 PMFS (less than 2% of the sample) had a total volume traded identical to the volume estimated in the forestry inventory (FIDs 4622 and 2087)” should be “**MSA 83 PMFS:** 02 PMFS (2% of the sample) had a total volume traded identical to the volume estimated in the forestry inventory (FIDs 4622 and 2087).”

On page 23, at the Criterion 2.15, the sentence “**MSA 83 PMFS:** 3% of the PMFS has a cutting intensity greater than 25 m³/ha, with emphasis on FID 4769, whose exploitation intensity reached 33.41 m³/ha (2014-18)” should be “**MSA 83 PMFS:** 5% of the PMFS has a cutting intensity greater than 25 m³/ha, with emphasis on FID 4769, whose exploitation intensity reached 33.41 m³/ha (2014-18).”

3. Changes in Tables 3 and 4

The authors wish to replace the Table 3 of this paper [1].

Table 3. Frequency (f) and percentage (%) of irregularities/signs of fraud.

1.Criteria For Spatial Data	f	%
1.1 Total or partial overlap of PMFS area with protected areas	8	7%
1.2 Lack of infrastructure compatible with PMFS (courtyard and roads)	20	17%
1.3 Clear cut inside PMFS or Areas of Permanent Preservation (APP)	36	29%
1.4 Forestry activities in the area prior to licensing	16	13%
1.5 Further forest exploitation after the last DOF issuing	4	3%
1.6 Exploitation held outside the polygon boundaries	42	34%
1.7 Exploitation in area previous embargoed by IBAMA	0	0%
2.Criteria For Non-Spatial Data	f	%
2.1 Product received after valid dates	14	12%
2.2 DOF Canceled	17	14%
2.3 DOF issued during rainy season	20	17%
2.4 Suspicious volume declared	43	33%
2.5 Identity of IP numbers	67	56%
2.6 Price under R\$66.00	58	48%
2.7 Volume declared is incompatible with vehicle	3	2%
2.8 Distance greater than 200 km	3	2%
2.9 Transport speed higher than 40 km/hour	58	48%
2.10 Fines for irregularities in the SisDOF	5	4%
2.11 Fines for irregularities in the PMFS	6	5%
2.12 Irregularities related to the forestry inventory	45	37%
2.13 Total volume traded identical to the authorized volume	3	2%
2.14 Fines for labor law violations	1	1%
2.15 Exploitation intensity over 25 m ³ /ha	4	3%

With

Table 3. Frequency (f) and percentage (%) of irregularities/signs of fraud.

1.Criteria For Spatial Data	f	%
1.1 Total or partial overlap of PMFS area with protected areas	8	10%
1.2 Lack of infrastructure compatible with PMFS (courtyard and roads)	20	24%
1.3 Clear cut inside PMFS or Areas of Permanent Preservation (APP)	36	43%
1.4 Forestry activities in the area prior to licensing	16	19%
1.5 Further forest exploitation after the last DOF issuing	4	5%
1.6 Exploitation held outside the polygon boundaries	42	51%
1.7 Exploitation in area previous embargoed by IBAMA	0	0%
2.Criteria For Non-Spatial Data	f	%
2.1 Product received after valid dates	14	17%
2.2 DOF Canceled	17	20%
2.3 DOF issued during rainy season	20	24%
2.4 Suspicious volume declared	43	52%
2.5 Identity of IP numbers	67	81%
2.6 Price under R\$66.00	58	70%
2.7 Volume declared is incompatible with vehicle	3	4%
2.8 Distance greater than 200 km	3	4%
2.9 Transport speed higher than 40 km/hour	58	70%
2.10 Fines for irregularities in the SisDOF	5	6%
2.11 Fines for irregularities in the PMFS	6	7%
2.12 Irregularities related to the forestry inventory	45	54%
2.13 Total volume traded identical to the authorized volume	2	2%
2.14 Fines for labor law violations	1	1%
2.15 Exploitation intensity over 25 m ³ /ha	4	5%

The authors wish to replace the Table 4 of this paper [1]:

Table 4. Frequency ranking by criteria.

Ranking	Criteria	f	%
1st	2.5 Identity of IP numbers	67	56%
2nd	2.6 Price under R\$66.00	58	48%
	2.9 Transport speed higher than 40 km/hour	58	48%
4th	2.12 Irregularities related to the forestry inventory	45	37%
5th	2.4 Suspicious volume declared	43	33%
6th	1.6 Exploitation held outside the polygon boundaries	42	32%
7th	1.3 Clear cut inside PMFS or Areas of Permanent Preservation (APP)	36	29%
8th	1.2 Lack of infrastructure compatible with PMFS (courtyard and roads)	20	17%
	2.3 DOF issued during rainy season	20	17%
10th	2.2 DOF Canceled	17	14%
11th	1.4 Forestry activities in the area prior to licensing	16	13%
12th	2.1 Product received after valid dates	14	12%
13th	1.1 Total or partial overlap of PMFS area with protected areas	8	7%
14th	2.11 Fines for irregularities in the PMFS	6	5%
15th	2.10 Fines for irregularities in the SisDOF	5	4%
16th	1.5 Further forest exploitation after the last DOF issuing	4	3%
	2.15 Exploitation intensity over 25 m ³ /ha	4	3%
18th	2.7 Volume declared is incompatible with vehicle	3	2%
	2.8 Distance greater than 200 km	3	2%
	2.13 Total volume traded identical to the authorized volume	3	2%
21st	2.14 Fines for labor law violations	1	1%
22nd	1.7 Exploitation in area previous embargoed by IBAMA	0	0%

With

Table 4. Frequency ranking by criteria.

Ranking	Criteria	f	%
1st	2.5 Identity of IP numbers	67	81%
2nd	2.6 Price under R\$66.00	58	70%
	2.9 Transport speed higher than 40 km/hour	58	70%
4th	2.12 Irregularities related to the forestry inventory	45	54%
5th	2.4 Suspicious volume declared	43	52%
6th	1.6 Exploitation held outside the polygon boundaries	42	51%
7th	1.3 Clear cut inside PMFS or Areas of Permanent Preservation (APP)	36	43%
8th	1.2 Lack of infrastructure compatible with PMFS (courtyard and roads)	20	24%
	2.3 DOF issued during rainy season	20	24%
10th	2.2 DOF Canceled	17	20%
11th	1.4 Forestry activities in the area prior to licensing	16	19%
12th	2.1 Product received after valid dates	14	17%
13th	1.1 Total or partial overlap of PMFS area with protected areas	8	10%
14th	2.11 Fines for irregularities in the PMFS	6	7%
15th	2.10 Fines for irregularities in the SisDOF	5	6%
16th	1.5 Further forest exploitation after the last DOF issuing	4	5%
	2.15 Exploitation intensity over 25 m ³ /ha	4	5%
18th	2.7 Volume declared is incompatible with vehicle	3	4%
	2.8 Distance greater than 200 km	3	4%
20th	2.13 Total volume traded identical to the authorized volume	2	2%
21st	2.14 Fines for labor law violations	1	1%
22nd	1.7 Exploitation in area previous embargoed by IBAMA	0	0%

4. Change in Affiliations

We also would like to change the authors' affiliations on Page one of paper [1] from:

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to the correct version is as follows:

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These changes have no material impact on the conclusions of our paper. The authors would like to apologize for any inconvenience caused to the readers by these changes. The manuscript will be updated, and the original will remain online on the article webpage, with a reference to this correction.

Reference

1. Perazzoni, F.; Bacelar-Nicolau, P.; Painho, M. Geointelligence against Illegal Deforestation and Timber Laundering in the Brazilian Amazon. *ISPRS Int. J. Geo-Inf.* **2020**, *9*, 398. [[CrossRef](#)]



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