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Kompleksowa analiza wylesiania w krajach tropikalnych - bezpośrednie czynniki wylesiania, emisje dwutlenku węgla i równowaga wartości usług ekosystemów

A comprehensive study on deforestation in the tropics - direct
deforestation drivers, carbon emissions and ecosystem service
value balance

Master's Thesis
on the course of - Forestry

Thesis written under the supervision of
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Research Domain II - Climate Climate Impacts & Vulnerabilities

Potsdam, 2018

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Zusammenfassung

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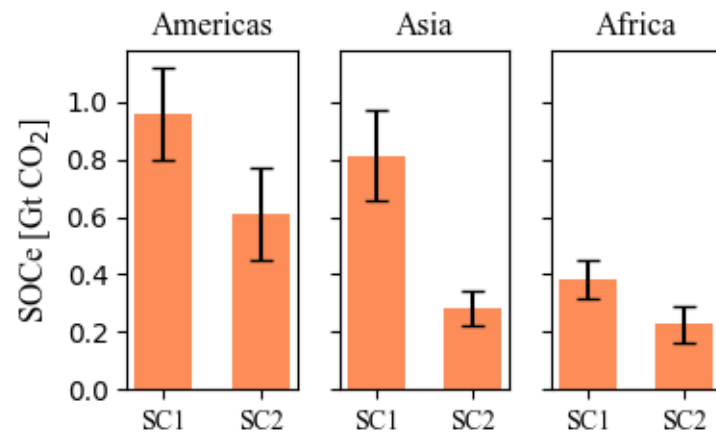


Figure 1: test

1 Introduction

1.1 Tropical forest

1.1.1 Current state

1.1.2 Contribution to climate

1.1.3 Forest definitions

1.2 Deforestation

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1.2.2 Drivers of deforestation

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2 Data and methods

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2.2.3.1 Above ground biomass

2.2.3.2 Soil organic carbon change

Table 1: Confusion matrix

| | | Reference | | | | | | | | | | | |
|------------|-----|-----------|------|------|------|-----|-----|-----|-----|-----|------|-----|-----|
| | Cls | 10 | 20 | 25 | 30 | 40 | 50 | 60 | 80 | 90 | Tot | UAc | Om |
| Prediction | 10 | 732 | 38 | 62 | 15 | 16 | 2 | 3 | 5 | 0 | 873 | .84 | .16 |
| | 20 | 42 | 751 | 57 | 189 | 31 | 12 | 0 | 17 | 4 | 1103 | .68 | .32 |
| | 25 | 29 | 202 | 1155 | 173 | 22 | 10 | 5 | 11 | 4 | 1611 | .72 | .28 |
| | 30 | 36 | 187 | 32 | 1466 | 73 | 21 | 0 | 17 | 0 | 1832 | .80 | .20 |
| | 40 | 14 | 21 | 4 | 41 | 352 | 1 | 1 | 2 | 1 | 437 | .81 | .19 |
| | 50 | 0 | 5 | 3 | 10 | 4 | 50 | 0 | 1 | 0 | 73 | .68 | .32 |
| | 60 | 2 | 1 | 0 | 3 | 0 | 2 | 18 | 2 | 0 | 28 | .64 | .36 |
| | 80 | 3 | 4 | 0 | 1 | 1 | 1 | 0 | 50 | 0 | 60 | .83 | .17 |
| | 90 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 5 | 9 | .56 | .44 |
| | Tot | 858 | 1209 | 1313 | 1899 | 499 | 99 | 27 | 108 | 14 | 6026 | | |
| | PAc | .85 | .62 | .88 | .77 | .71 | .51 | .67 | .46 | .36 | OvAc | | |
| | Com | .15 | .38 | .12 | .23 | .29 | .49 | .33 | .54 | .64 | .75 | | |

Table 2: Soil organic carbon emissions

| Region | SC1 | | | SC2 | | | SC3 | | |
|----------|-----------------------|------|------|-----------------------|------|------|-----------------------|------|------|
| | [Gt CO ₂] | | | [Gt CO ₂] | | | [Gt CO ₂] | | |
| | min | mean | max | min | mean | max | min | mean | max |
| Americas | 0.80 | 0.96 | 1.12 | 0.45 | 0.61 | 0.77 | 0.43 | 0.59 | 0.76 |
| Asia | 0.66 | 0.81 | 0.97 | 0.22 | 0.28 | 0.34 | 0.22 | 0.28 | 0.33 |
| Africa | 0.32 | 0.39 | 0.45 | 0.17 | 0.23 | 0.29 | 0.16 | 0.23 | 0.29 |

2.2.4 Ecosystem service values

2.2.4.1 Ecosystem service value loss

2.2.4.2 Ecosystem service value gain

2.2.5 Binning analysis

3 Results

3.1 Deforestation drivers

3.2 Deforestation emissions

3.3 Ecosystem service value balance

4 Discussion

5 Conclusion

Acknowledgements

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List of Abbreviations

| | |
|--------------|---|
| FAO | Food and Agriculture Organization of the United Nations |
| GFC | Global Forest Change |
| GIS | Geographic Information System |
| GLC30 | GlobeLand30 |
| GTiff | Geo-Tiff |
| IPCC | Intergovernmental Panel on Climate Change |
| LULC | Land Use/Land Cover |
| POK | Pixel-Object-Knowledge |
| R-PIN | Readiness Plan Idea Note |
| R-PP | Readiness Preparation Proposal |
| UTM | Universal Transverse Mercator |
| WGS84 | World Geodetic System 1984 |

Appendix

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