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#218 Summary

SUMMARY REVIEW

Submission

Authors	Patrizia Rossi
Title	Full paper publication to English digital Volume indexed through SCOPUS and WEB OF SCIENCE
Original file	None
Supp. files	None
Submitter	Patrizia Rossi
Date submitted	June 20, 2018 - 01:33 PM
Track	Remote sensing for sustainable forest management
Director	Enrico Borgogno Mondino (Track Director)

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Status

Status	Abstract In Review
Initiated	2018-06-20
Last modified	2018-06-20

Submission Metadata

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Authors

Name	Patrizia Rossi
Affiliation	unifi
Country	—
Bio statement	—
Principal contact for editorial correspondence.	



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#44 Summary

SUMMARY REVIEW

Submission

Authors	Francesca Giannetti, Davide Travaglini, Gherardo Chirici
Title	Use of UAV photogrammetric 3D data to predict forest structure indices
Original file	None
Supp. files	44-12-2-SP.DOCX 2018-07-08

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1 - 1 of 1 Items

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#44 Abstract Review

Submission To Be Reviewed

Title Use of UAV photogrammetric 3D data to predict forest structure indices
Conference Track Multiscale remote sensing retrieving forest attributes: results from the FRESH LIFE project
Abstract In the past twenty years, three-dimensional (3D) remote sensing (RS) data have become a fundamental source of information for estimating and mapping forest inventory variables. Modern digital photogrammetric data has drawn increasing attention in the last decade. Because of the lower acquisition costs and similar performances compared to alternative 3D remote sensing data (e.g., Airborne Laser Scanning - ALS), photogrammetric data have been increasingly being used to model forest biophysical variables. The present study presents a novel approach to use unmanned aerial vehicle (UAV) photogrammetric 3D data for the prediction of forest biophysical properties. The approach was developed in the framework of the FRESH LIFE project "Demonstrating Remote Sensing integration in sustainable forest management" to increase the potential areas of application of UAVs in forest inventory. The approach was tested in two different mixed forests. The following five forest structure indices were studied: basal area (m² ha⁻¹); mean DBH (cm); standard deviation of DBH (cm); Diameter Gini coefficient; standard deviation of H (m); dominant height; Lory's height (m) and growing stock volume (V). The models accuracy of UAV 3D photogrammetric data was compared with the ones obtained by models using ALS explanatory variables. Multiple Linear regression models were fitted using as response variable the structure complexity indices of interest and as explanatory the UAV 3D photogrammetric variables and ALS variables. We compared the accuracy of models, in terms of average root mean square errors as percentage of the mean (RMSE%). Our results highlighted that the use of UAV photogrammetric data can be used for forest inventories as an alternative to ALS data.

Submission Director Gherardo Chirici (Director)
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Review Schedule

Director's Request	2018-07-08
Your Response	—
Review Submitted	—
Review Due	2018-07-29

Review Steps

1. Notify the submission's director, Gherardo Chirici, as to whether you will undertake the review.
Response Will do the review Unable to do the review
2. Review the abstract provided with the submission.
Abstract


In the past twenty years, three-dimensional (3D) remote sensing (RS) data have become a fundamental source of information for estimating and mapping forest inventory variables. Modern digital photogrammetric data has drawn increasing attention in the last decade. Because of the lower acquisition costs and similar performances compared to alternative 3D remote sensing data (e.g., Airborne Laser Scanning - ALS), photogrammetric data have been increasingly being used to model forest biophysical variables. The present study presents a novel approach to use unmanned aerial vehicle (UAV) photogrammetric 3D data for the prediction of forest biophysical properties. The approach was developed in the framework of the FRESH LIFE project "Demonstrating Remote Sensing integration in sustainable forest management" to increase the potential areas of application of UAVs in forest inventory. The approach was tested in two different mixed forests. The following five forest structure indices were studied: basal area (m² ha⁻¹); mean DBH (cm); standard deviation of DBH (cm); Diameter Gini coefficient; standard deviation of H (m); dominant height; Lory's height (m) and growing stock volume (V). The models accuracy of UAV 3D photogrammetric data was compared with the ones obtained by models using ALS explanatory variables. Multiple Linear regression models were fitted using as response variable the structure complexity indices of interest and as explanatory the UAV 3D photogrammetric variables and ALS variables. We compared the accuracy of models, in terms of average root mean square errors as percentage of the mean (RMSE%). Our results highlighted that the use of UAV photogrammetric data can be used for forest inventories as an alternative to ALS data.

Supplementary File(s)

[44-12-1-SPDOC](#)

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Conference Track	Multiscale remote sensing retrieving forest attributes: results from the FRESH LIFE project
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Submission Director	Gherardo Chirici  (Director)
Submission Metadata	VIEW METADATA

Review Schedule

Director's Request	2018-07-08
Your Response	2018-07-08
Review Submitted	—
Review Due	2018-07-29


Review Steps


- Notify the submission's director, Gherardo Chirici, as to whether you will undertake the review.

Response Accepted
- Review the abstract provided with the submission.

Abstract

In the past twenty years, three-dimensional (3D) remote sensing (RS) data have become a fundamental source of information for estimating and mapping forest inventory variables. Modern digital photogrammetric data has drawn increasing attention in the last decade. Because of the lower acquisition costs and similar performances compared to alternative 3D remote sensing data (e.g., Airborne Laser Scanning - ALS), photogrammetric data have been increasingly being used to model forest biophysical variables. The present study presents a novel approach to use unmanned aerial vehicle (UAV) photogrammetric 3D data for the prediction of forest biophysical properties. The approach was developed in the framework of the FRESH LIFE project "Demonstrating Remote Sensing integration in sustainable forest management" to increase the potential areas of application of UAVs in forest inventory. The approach was tested in two different mixed forests. The following five forest structure indices were studied: basal area (m² ha⁻¹); mean DBH (cm); standard deviation of DBH (cm); Diameter Gini coefficient; standard deviation of H (m); dominant height; Lory's height (m) and growing stock volume (V). The models accuracy of UAV 3D photogrammetric data was compare with the ones obtained by models using ALS explanatory variables. Multiple Linear regression models were fitted using as response variable the structure complexity indices of interest and as explanatory the UAV 3D photogrammetric variables and ALS variables. We compared the accuracy of models, in terms of average root mean square errors as percentage of the mean (RMSE%). Our results highlighted that the use of UAV photogrammetric data can be used for forest inventories as an alternative to ALS data.

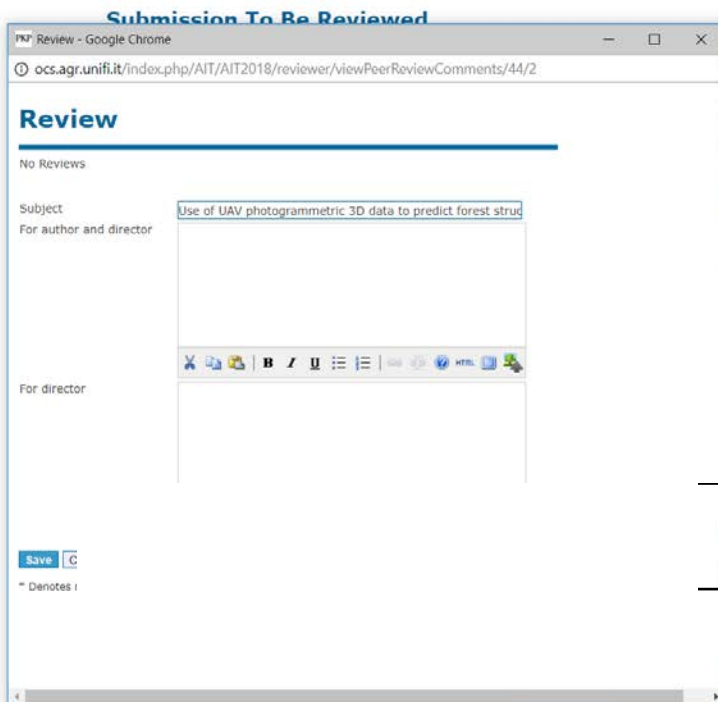
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Review Steps

1. Notify the submission's director, Gherardo Chirici, as to whether you will undertake the review.
Response Accepted

2. Review the abstract provided with the submission.
Abstract

In the past twenty years, three-dimensional (3D) remote sensing (RS) data have become a fundamental source of information for estimating and mapping forest inventory variables. Modern digital photogrammetric data has drawn increasing attention in the last decade. Because of the lower acquisition costs and similar performances compared to alternative 3D remote sensing data (e.g., Airborne Laser Scanning - ALS), photogrammetric data have been increasingly being used to model forest biophysical variables. The present study presents a novel approach to use unmanned aerial vehicle (UAV) photogrammetric 3D data for the prediction of forest biophysical properties. The approach was developed in the framework of the FRESH LIFE project "Demonstrating Remote Sensing integration in sustainable forest management" to increase the potential areas of application of UAVs in forest inventory. The approach was tested in two different mixed forests. The following five forest structure indices were studied: basal area (m² ha⁻¹); mean DBH (cm); standard deviation of DBH (cm); Diameter Gini coefficient; standard deviation of H (m); dominant height; Lory's height (m) and growing stock volume (V). The models accuracy of UAV 3D photogrammetric data was compared with the ones obtained by models using ALS explanatory variables. Multiple Linear regression models were fitted using as response variable the structure complexity indices of interest and as explanatory the UAV 3D photogrammetric variables and ALS variables. We compared the accuracy of models, in terms of average root mean square errors as percentage of the mean (RMSE%). Our results highlighted that the use of UAV photogrammetric data can be used for forest inventories as an alternative to ALS data.

Supplementary File(s)

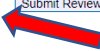
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Recommendation



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