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Southern African  
Institute of Forestry



FORESTRY SOUTH AFRICA



**Programme:**  
**Precision Forestry Symposium 2017**  
**Producing more from less: towards optimising**  
**value in the bio-economy from data driven**  
**decisions**

**Stellenbosch, South Africa**  
*28 February to 2 March 2017*



MTO | group



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## Monday 27 February 2017

**15:00 - 17:00 Icebreaker:**

**Department of Forest and Wood Science, Stellenbosch University, Bosman Street**

## Tuesday 28 February 2017

08:00 - 08:45 Registration at STIAS Wallenberg Research Centre

08:45 - 09:00 Welcome Pierre Ackerman,  
Danie Brink

*Session One: Precision measurements and modelling of quality and yield*

*Chair: Pierre Ackerman*

**09:00 - 09:45 Keynote: Rasmus Astrup  
Perspectives on improved forest information through emerging technologies and applications in knowledge-based management**

09:45 - 10:05 Forest pest and disease monitoring and ecological modelling for better management: case studies from South African forest plantations. Ilaria Germishuizen

10:05 - 10:25 Are sawmills getting what they want? A simulation approach to estimate the value of precise harvester measurements and minimised bucking splits Maria Nordström

10:25 - 10:45 Improving forest inventory by quantifying error propagation, DBH-height representivity, introducing new diameter height models and procedures for improved selection of height samples Gerard Lindner

**10:45 - 11:10 Tea**

*Session Two: Precision measurements and modelling of quality and yield*

*Chair: Bo Dahlin*

11:10 - 11:30 Automated volumetric measurement of truckloads through multi-view photogrammetry and 3D image processing software Mauricio Acuna

11:30 - 11:50 Updating stand level growing stock information using airborne LiDAR data André Wise

11:50 - 12:10 LiDAR forest inventories in pulpwood stands in Mondi, South Africa Heyns Kotze

12:10 - 12:30 Estimation of compartment-level mean wood density and stem diameter in Australian Radiata pine plantations using a hybrid modelling approach Dave Drew

12:30 - 12:50 Application and prospects of terrestrial LiDAR and drones for an improved forests inventory Erich Seifert

**12:50 - 13:40 Lunch and group photo**

***Session Three: Precision measurements and modelling of quality and yield***

***Chair: Bruce Talbot***

- |               |   |                   |
|---------------|---|-------------------|
| 13:40 - 14:00 | Implementation of computer vision algorithms for automated detection and diameter estimation of logs on trucks          | Mauricio Acuna    |
| 14:00 - 14:20 | Physiological tree growth model for future model-aided optimal thinning operations                                      | Peter Fransson    |
| 14:20 - 14:40 | Precise localisation and Mapping in forest with 6DOF SLAM   | Marek Pierzchala  |
| 14:40 - 15:00 | Inherent wood property mapping at the individual tree and landscape level for better utilisation of the forest resource | Matt Leitch       |
| 15:00 - 15:20 | A pedagogical interface for developing production management practices in Norwegian wood supply                         | Birger Vennesland |

**15:20 - 15:40 Tea**

***Session Four: Precision measurements and modelling of quality and yield***

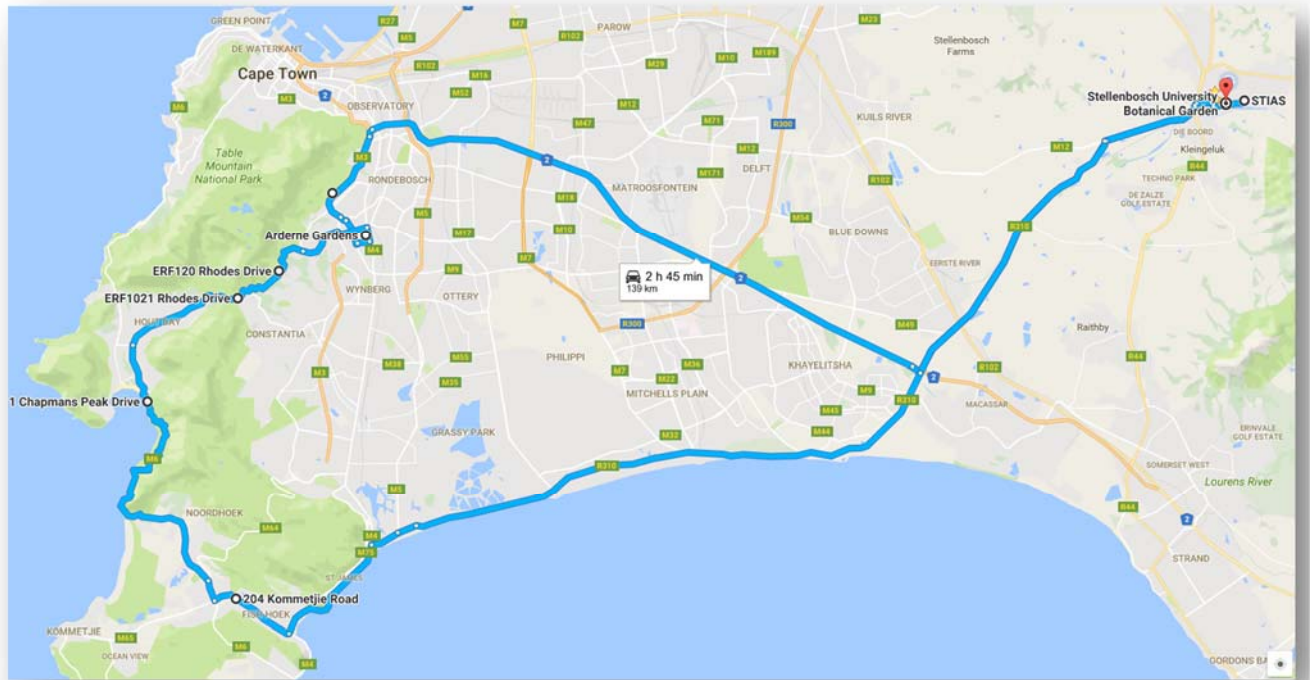
***Chair: Thomas Seifert***

- |               |  |                   |
|---------------|--|-------------------|
| 15:40 - 16:00 | New values to the bio-based industry by precision wood characterisation and delivery | Lars Wilhelmsson  |
| 16:00 - 16:20 | Sawing optimisation based on X-ray computed tomography of internal log attributes    | Isabelle Duchesne |
| 16:20 - 16:40 | Cable logging operation supported with sensor fusion                                 | Marek Pierzchala  |
| 16:40 - 17:00 | Mapping the South African pulpwood supply chain                                      | Simon Ackerman    |

**18:00 - 19:30 Cocktail function at STIAS**

Wednesday 1 March 2017

## Field day



### Route Description:

STIAS to Newlands Volunteer Wildfire Services via N2

Arderne Gardens

Stop 1: *Eucalyptus* show block

Stop 2: Orange Kloof

Chapmans Peak Drive

Kalk Bay via Kommetjie Road

Stellenbosch via Baden Powell

**17:00 - 20:00 Symposium Dinner: Die Stal**

## Thursday 2 March 2017

**Session Five: Utilising precision data for efficient forest management and operations**      **Chair: Dave Drew**

<b>08:30 - 09:15</b>	<b>Keynote:</b> <b>Modelling forest mortality risk: moving from landscape to forest management scale; moving from description to action</b>	<b>Michael Battaglia</b>
09:15 - 09:35	Time of arrival variations for short-sea shipping of roundwood and chips within the Baltic Sea	Bruce Talbot
09:35 - 09:55	Utilisation of high resolution harvester production data for improved forest operations and management	John Arlinger
09:55 - 10:15	Estimating thinning results based on standardised harvester data	Johan Möller
10:15 - 10:35	Striving for excellence - moving towards precision forestry in South African plantation forestry operations, the Mondi Forests approach	Dirk Längin
<b>10:35 - 11:00</b>	<b>Tea</b>	

**Session Six: Utilising precision data for efficient forest management and operations**      **Chair: Dirk Längin**

11:00 - 11:20	Variability in the precision of drone based surface models in a post-harvest survey	Bruce Talbot
11:20 - 11:40	A new moisture loss curve for <i>Eucalyptus dunii</i> using automated technology	Morries Chauke
11:40 - 12:00	Using Photogrammetric Point Cloud data to Modernise Stockpile measurements	Rob Woolley
12:00 - 12:20	Assessing the structure of degraded forest using UAV. Case study in Yungas cloud forest, North Argentina.	Fernando Rossi
12:20 - 12:40	BesTWay - Optimized logging trail planning under implementation in Swedish forestry	Patrik Flisberg
12:40 - 13:00	Data collection for precision forestry: the role of an automatic weather station programme	Mark Norris-Rogers
<b>13:00 - 14:00</b>	<b>Lunch</b>	

**Session Seven: Optimised logistics – from seed to product**      **Chair: Reino Pulkki**

14:00 - 14:20	Efficiency of high capacity trucks in forestry	Bo Dahlin
14:20 - 14:40	Benefits on supply chain performance of implementing a regional logistic centre	Luc LeBel
14:40 - 15:00	Forest biomass supply chain optimisation to produce bioenergy, biomaterials and biochemicals: a systematic literature review	Luana Dessbesell
15:00 - 15:20	Analytics and Big data in route selection	Patrik Flisberg

**15:20 - 15:40**      **Tea**

***Session Eight: Operations Research - optimisation, heuristics and simulation***

***Chair: Luc LeBel***

15:40 - 16:00	Solving problems and making decisions using discrete event simulation	Petrus Jönsson
16:00 - 16:20	Coordinated planning of harvest and roads at SCA	Victor Asmoarp
16:20 - 16:40	Prediction model for variations in harvester production	Aron Davidsson
16:40 - 17:00	Harvesting cost calculations on large raster	Nils Søvde

## **Posters:**

Evaluation of partial least squares and random forest hybrid algorithm for estimation of forest structural characteristics from airborne AISA eagle hyperspectral imaging data	Abdelmoneim Mohamed
An assessment of variation within valuation methodologies used in South Africa to estimate the value of pulpwood plantations	Carl Baptista
Modeling the effect of fleet management routines on mill delivery precision and truck utilization	Dag Fjeld
FOREST MOBILE APP: Development of an offline GIS incident capture system and pest and disease reference library	Jacqui Meyer
Modelling <i>Pinus patula</i> lumber stiffness from wood density and microfibril angle	Justin Erasmus
Modelling stem diameter variability in a multi-species stand: a new approach	Peter Adesoye

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