Remote Sensing: Understanding the Earth for a Safer World
IGARSS 2015
July 26-31, 2015 • Milan, Italy

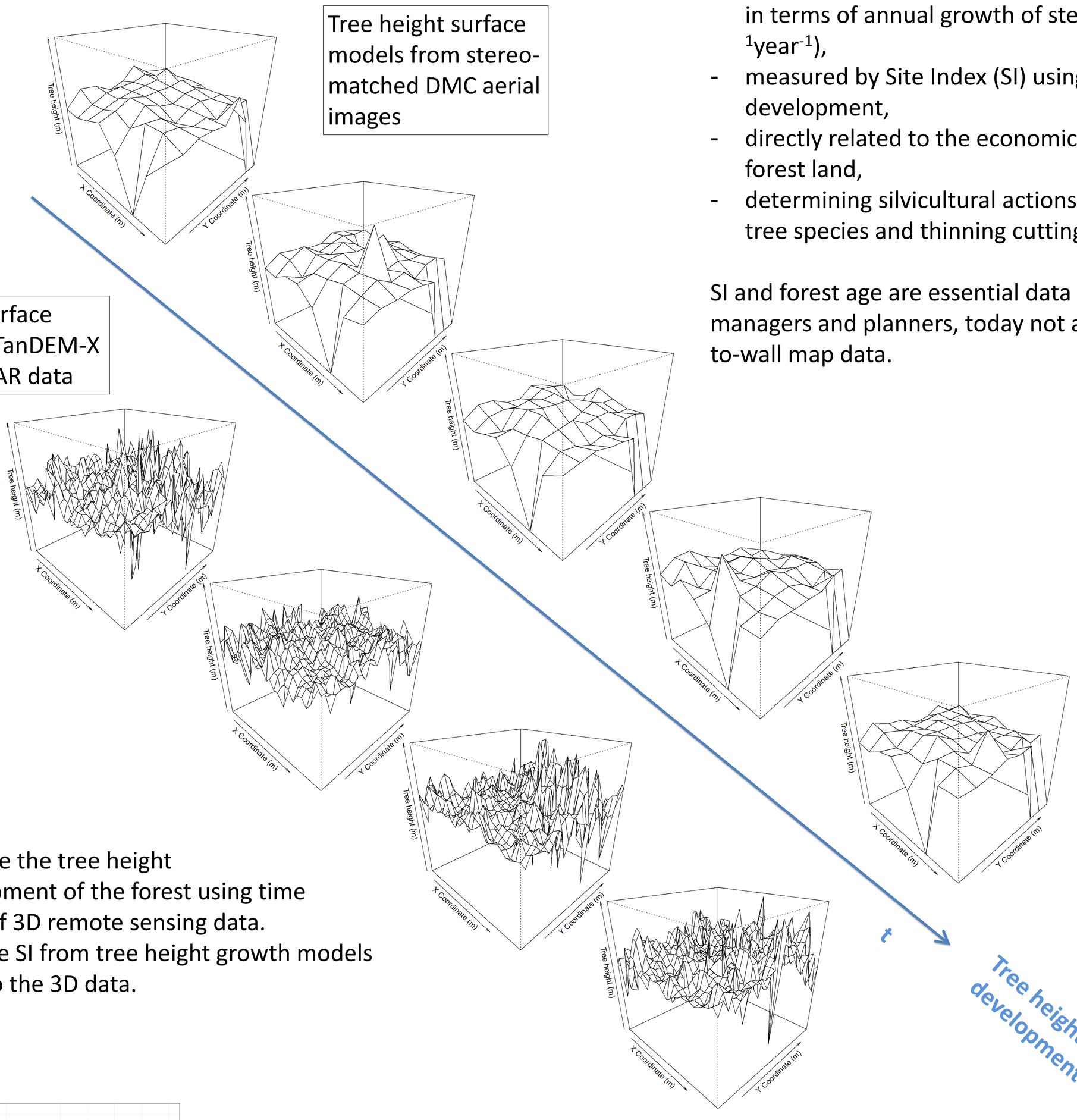
ESTIMATING FOREST AGE AND SITE PRODUCTIVITY USING TIME SERIES OF 3D REMOTE SENSING DATA

Jörgen Wallerman[1], Kenneth Nyström[1], Jonas Bohlin[1], Henrik J. Persson[1], Maciej J. Soja[2] and Johan E. S. Fransson[1]

[1]Swedish University of Agricultural Sciences, Department of Forest Resource Management, Umeå, Sweden
[2]Chalmers University of Technology, Department of Earth and Space Sciences, Gothenburg, Sweden

Tree height surface models from stereo-matched DMC aerial images

Tree height surface models from TanDEM-X spaceborne SAR data



Forest site productivity is:

- the inherent production capacity of the forest land in terms of annual growth of stem volume ($m^3ha^{-1}year^{-1}$),
- measured by Site Index (SI) using the tree height development,
- directly related to the economic value of the forest land,
- determining silvicultural actions, such as choice of tree species and thinning cuttings.

SI and forest age are essential data for forest managers and planners, today not available as wall-to-wall map data.

Solution:

- Measure the tree height development of the forest using time series of 3D remote sensing data.
- Estimate SI from tree height growth models fitted to the 3D data.