



**EIANZ** SHAPING THE FUTURE  
OF THE ENVIRONMENT PROFESSION

ANNUAL CONFERENCE

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## PRESENTATION | OZIUS BIOME® – CONTINENTAL 3D VEGETATION FOR THE FOREST AND THE TREES FROM SPACE

### ABSTRACT

Ozius Biome® leverages space technology and is a game-changer for environmental professionals conducting projects across Australia's vast landscape. To quantify, grow and preserve Natural Capital, fit-for-purpose information on vegetation height, density, and habitat structural complexity across Australia will continue to be critical. Objective and transparent environmental decision-making needs reliable evidence to help meet environmental performance goals. Ozius Biome's products provide environmental professionals with high-fidelity datasets over all of Australia to enable accurate remote assessments of vegetation and habitats. Ozius has created a leading-edge suite of products within Ozius Biome, which accurately and consistently reconstructs biophysical and structural vegetation characteristics across Australia using artificial intelligence and space-borne remote sensing technologies. Leveraging optical, microwave, and lidar sensors, we optimise the modelling of sparse vegetation and limit saturation in dense vegetation at 20m pixel resolution (i.e., ground sample distance). Ozius Biome estimates key vegetation parameters including Foliage Projective Cover (FPC), Canopy Cover (CC), Plant Projective Cover (PPC), vegetation height, biomass, and a selection of local and international Forest Frameworks. Ozius Biome products were validated nationally against TERN's SLATS star-transect sites using 10-fold cross-validation for each biophysical product. Ozius Biome's FPC (RMSE 6.9%; MAE 1.6%), CC (RMSE 8.2%; MAE 1.3%), and PPC (RMSE 3.5%; MAE 0.9%) all estimated well when compared with TERN field sites across a variety of vegetation cover types. Ozius Biome is an emerging tool for environmental professionals and to date has been used by bushfire modelers to improve fuel load and canopy impact models, carbon market advisors to scout and compare property investment options, and utilities for inputs into regional models of vegetation in 3-dimensions in relation to high-value assets.

We will discuss how Ozius Biome can be utilised by Environmental professionals as a new tool for reliable remote assessments across a range of applications, with case studies provided.

### SPEAKER | ALISA STARKEY



Alisa Starkey is the Founder and Chief Scientist at Ozius, a Queensland-based Earth Observation analytics company that delivers critical environmental intelligence to organisations focused on sustainability, security, and community safety. Alisa is passionate about improving our knowledge of the natural environment. Alisa has a background in Environmental science and image processing and applies these to build innovative environmental intelligence solutions. Dr Peter Scarth is Chief Technologist at Ozius. Peter focuses on Artificial intelligence, environmental modelling and big data challenges. Peter works across science and technology disciplines to develop

rigorous and validated mathematical models that measure and map both major and more subtle changes in global vegetation systems using large earth observation data sets linked to field and social survey systems. Sam Gillingham is a Senior Software Engineer at Ozius. Sam wrangles large datasets to efficiently compute big data in cloud computing environments. Sam manages and maintains sophisticated open-source software packages for remote sensing applications. Ben Starkey is the Managing Director at Ozius. Ben has a background in Urban Planning and Development within both public and private sectors. Ben brings together his passions for stakeholder engagement, business improvement and Space technology to help organisations transform their decision-making and business processes.



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