

UNLOCKING ANTARCTICA: BUILDING AN OPEN ACCESS, ACCESSIBLE SATELLITE DATA PLATFORM

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Abstract:

Digital Earth Antarctica is an exciting new platform that is being developed by Geoscience Australia. The platform, based on Open Data Cube technology, will enable access to corrected continental scale satellite data for all of Antarctica and its surrounding areas of sea ice. Time-series data that has been corrected and validated for Antarctic conditions will be openly accessible to users for the first time, providing a vast resource of data spanning decades. The need for monitoring and understanding change across Antarctica has never been greater with rapid changes in sea ice, ice sheets and the oceans now observed and forecast to increase over coming decades with far-reaching consequences for global climate, sea level rise, ocean circulation and dependent ecosystems. Continued satellite monitoring, and the development of infrastructure that ensures data discovery and analysis, is critical for supporting our Antarctic science capability and providing a robust basis for decision makers.

Our ability to observe Antarctica systematically at a continental scale has been constrained by difficulties accessing, storing and pre-processing satellite imagery prior to analysis. Factors such as cloud masking, reflectivity, prolonged periods of darkness, changes in atmospheric water vapour, aerosols and signal scattering mean that corrections applied to satellite data in other regions and in existing global products aren't fully applicable to Antarctic conditions. *Digital Earth Antarctica* will focus on providing analysis ready optical data from Landsat and Sentinel-2 collections, as well as Sentinel-1 for synthetic aperture radar backscatter and interferometric data. Synthetic aperture radar (SAR) data over Antarctica is crucial for overcoming the challenges of sustained observing during periods of cloudiness and darkness.

This presentation will provide an overview of *Digital Earth Antarctica's* planned processing pipelines to produce analysis ready optical and SAR data and the wealth of opportunities that will be unlocked to observe, monitor and understand Antarctic systems.