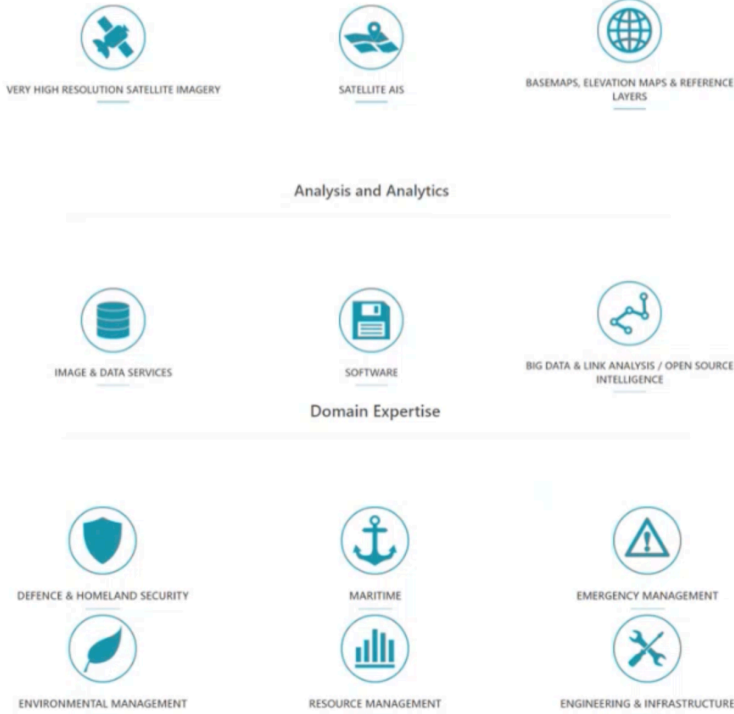## Who we are

- Founded in 2002, 100% Australian owned and staffed
- Head office in Canberra
- Recently opened UK office
- We are a leading Australian re-seller and user of very high resolution optical and radar satellite imagery



Cheltenham, UK

Perth, WA

Brisbane, QLD

Adelaide, SA

Sydney, NSW

Canberra, ACT

**GEOSPATIAL INTELLIGENCE**

# Our Domains



VERY HIGH RESOLUTION SATELLITE IMAGERY

SATELLITE AIS

BASEMAPS, ELEVATION MAPS & REFERENCE LAYERS

Analysis and Analytics

IMAGE & DATA SERVICES

SOFTWARE

BIG DATA & LINK ANALYSIS / OPEN SOURCE INTELLIGENCE

Domain Expertise

DEFENCE & HOMELAND SECURITY

MARITIME

EMERGENCY MANAGEMENT

ENVIRONMENTAL MANAGEMENT

RESOURCE MANAGEMENT

ENGINEERING & INFRASTRUCTURE

GEOSPATIAL INTELLIGENCE

# The data we use

- Primarily high-very high resolution 1.5-0.3m GSD

- Even though we specialise in high resolution data and solutions, when approaching projects at a large spatial or temporal scale, we use open-source lower resolution data sources.

- Decisions around data sources are influenced by customer requirements, eg
    - spatial accuracy
    - tasking speed
    - reliability
    - budget

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# How we incorporate Sentinel-1 and -2 ARD data

- GI is an Australian leader in machine learning and artificial intelligence through our OSPREY product
  - Vast amounts of open-source satellite data are captured daily, covering most of the world's surface
  - AI-ML approaches allow us to ingest and analyse this data on a massive scale
  - Open source Sentinel-1 and Sentinel-2 data is used to identify hotspots of:
    - Deforestation
    - Native vegetation changes
    - Urban changes
  - Used to tip and cue investigation with high resolution data

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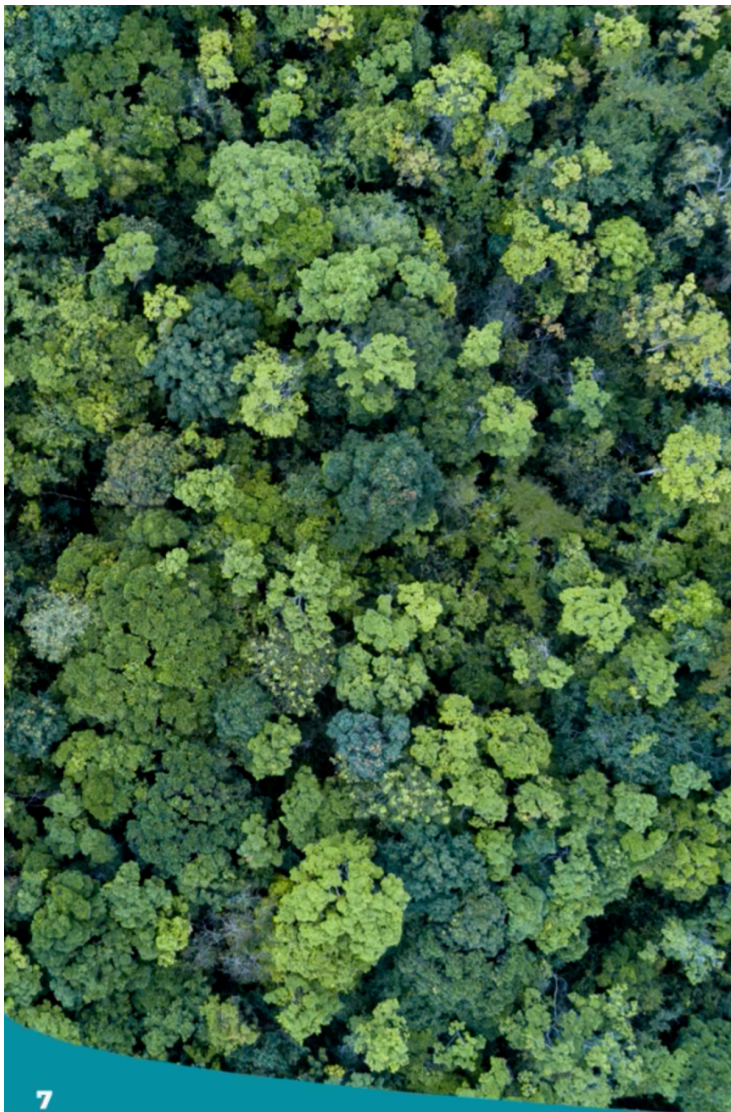
# Case Study – Australia-Wide Deforestation Monitoring

- We developed an AI-ML algorithm to detect deforestation Australia-wide from Sentinel-2 ARD data from Geoscience Australia
  - Identified natural changes using open source datasets (e.g. MODIS fire scars)
  - Used remaining change hotspots to tip and cue analysis with very high resolution imagery, to validate human-induced deforestation
  - Clients provided with validated deforestation risk maps to assist in reducing supply chain exposure
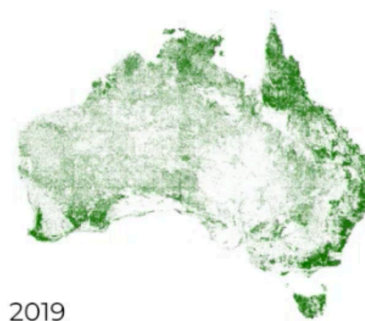


2019        2020        2019-2020 change
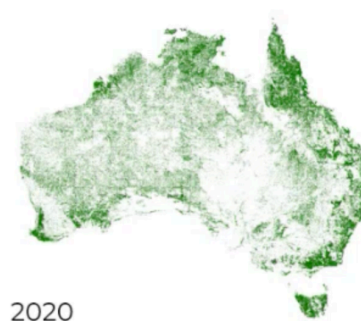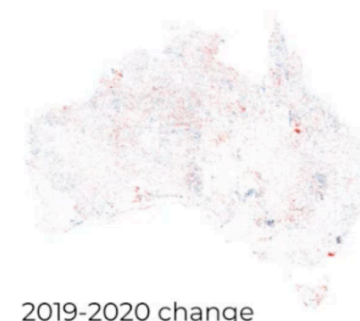
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# Case Study – Viticultural Monitoring in Tuscany, Italy



- A European client engaged GI to develop strategies for monitoring and detecting frost damage in their vineyards
  - Late season frosts pose significant financial risks to vineyards

- Sentinel-2 data used for monitoring

- Late frost events followed up with 0.3m Pleiades Neo data
  - Reduces impacts of spectral mixing with surrounding ground cover

**GEOSPATIAL INTELLIGENCE**
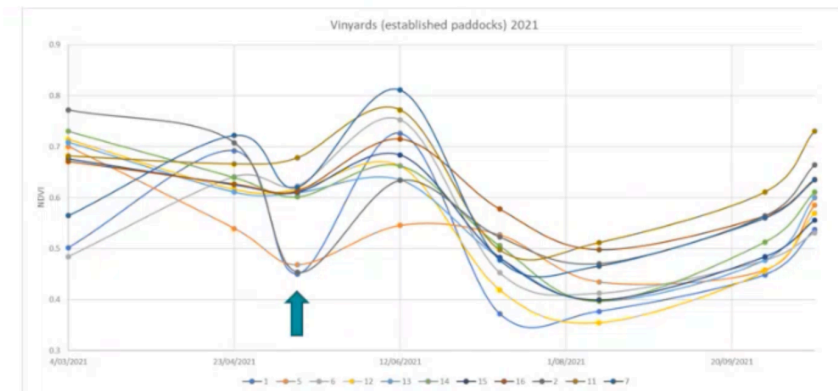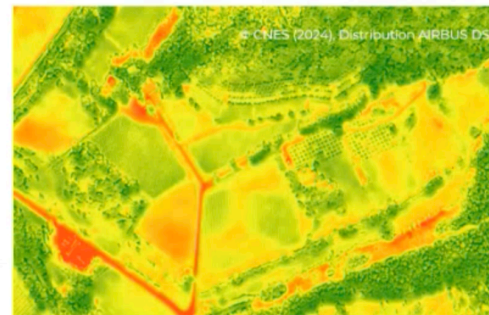
# Perspectives on CEOS ARD

- Our clients predominately rely upon larger satellite missions with high resolutions and a high degree of relative and absolute accuracy
  - Open-source ARD is important for large-scale projects and ongoing monitoring, but work best in combination with high resolution data
- There is a role for existing satellite infrastructure to be used to satellite calibration and validation
  - In a recent project, GI found existing SAR reflector infrastructure in northeast Australia to be suitable for high resolution optical satellite calibration and validation.
  - Existing very-high resolution sensors with high accuracy could play a role in calibrating and validating other satellite datasets.
- Uptake and usage of open source satellite data by industry is limited by:
  - Frequency of collection
  - Resolution constraints

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