National Vineyard Scan 2020

Summary Report

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National Vintage Scan 2020 (NVS2020)

This document summarizes the third National Vineyard Scan (NVS2020) performed for the 2020 Australian wine grape vintage. The previous two national scans were performed for the 2018 vintage (NVS2018) [1, 2] and the 2019 vintage (NVS2019) [3, 4]. The approach used provides detailed digital measurements of the production capacity of the Australian wine industry through the analysis of satellite imagery using state-of-the-art machine learning techniques. This approach produced results with higher accuracy and lower cost when compared to conventional manual survey methods. This report summarises the results of the NVS2020, while the full report is [5].

Results of NVS2020

GAIA scanned Australia on a state-by-state basis for NVS2020. In total, **11,043** areas of interest (AOIs) within **466** different satellite captures were passed through GAIA's machine learning infrastructure. The total area of the AOIs covered **~2.3 million hectares** of imagery from the current vintage growing season, representing **0.3%** land area of Australia.

After review, the total area of vineyards was found to be **151,780** hectares. This represents a slight increase from the value of **146,244** hectares reported for NVS2019. It shows an increase in the total area of vineyards for all states. Enhanced human review of GAIA's machine generated output has been performed to remove false positives from the data set. False positives are where GAIA has indicated that vineyards exist, but where no vineyards actually exist; for example, an orchard may have been identified as a vineyard. Thus, it should be emphasised that the values reported for NVS2020 accurately represent the on-ground reality (within error bounds specified in [5]). Identification of many of these false positives, and indeed general improvements to the scan results, are mainly contributed by the feedback from the users of the GAIA NVS2019 vineyard maps. GAIA Innovations thanks everyone that has provided feedback.

National Results

Table 1. Summary statistics of wine vineyard block area for each state and Australia.

State	Total area "scanned" (ha)	Total area of vineyards (ha)
WA	133,110	11,126
TAS	312,163	2,084
SA	691,842	78,321
VIC	586,323	22,445
NSW (incl ACT)	545,834	37,131
QLD	70,125	674
TOTAL	2,339,397	151,780

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Western Australia Results

Table 2. *Vineyard area for all Geographical Indications in WA.*

GI name	GI type	Total area of vineyards (ha)
Central Western Australia	Zone	44
Eastern Plains Inland and North	Zone	2
Greater Perth	Zone	1064
South West Australia	Zone	10016
Western Australia South East Coastal	Zone	0
Blackwood Valley	Region	310
Geographe	Region	792
Great Southern	Region	2545
Manjimup	Region	153
Margaret River	Region	5725
Peel	Region	57
Pemberton	Region	468
Perth Hills	Region	142
Swan District	Region	890
Albany	Subregion	85
Denmark	Subregion	90
Frankland River	Subregion	1354
Mount Barker	Subregion	895
Porongurup	Subregion	96
Swan Valley	Subregion	667

Tasmania Results

Table 3. *Vineyard area for all Geographical Indications in Tasmania.*

GI name	GI type	Total area of vineyards (ha)
Tasmania	Zone (state)	2084

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South Australia Results

Table 4. *Vineyard area for all Geographical Indications in SA.*

GI name	GI type	Total area of vineyards (ha)
Barossa	Zone	14040
Far North	Zone	176
Fleurieu	Zone	15554
Limestone Coast	Zone	16160
Lower Murray	Zone	22461
Mount Lofty Ranges	Zone	9855
The Peninsula	Zone	76
Adelaide Hills	Region	3957
Adelaide Plains	Region	567
Barossa Valley	Region	11609
Clare Valley	Region	5093
Coonawarra	Region	5784
Currency Creek	Region	1032
Eden Valley	Region	2169
Kangaroo Island	Region	144
Langhorne Creek	Region	6069
Mclaren Vale	Region	7438
Mount Benson	Region	541
Mount Gambier	Region	327
Padthaway	Region	4160
Riverland	Region	22032
Robe	Region	681
Southern Fleurieu	Region	510
Southern Flinders Ranges	Region	176
Wrattonbully	Region	2727
High Eden	Subregion	408
Lenswood	Subregion	266
Piccadilly Valley	Subregion	228

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Victoria Results

Table 5. *Vineyard area for all Geographical Indications in Victoria.*

GI name	GI type	Total area of vineyards (ha)
Central Victoria	Zone	4558
Gippsland	Zone	191
North East Victoria	Zone	2989
North West Victoria	Zone	8245
Port Phillip	Zone	4720
Western Victoria	Zone	1741
Alpine Valleys	Region	260
Beechworth	Region	134
Bendigo	Region	634
Geelong	Region	466
Glenrowan	Region	203
Goulburn Valley	Region	1263
Grampians	Region	651
Heathcote	Region	1836
Henty	Region	145
King Valley	Region	1535
Macedon Ranges	Region	245
Mornington Peninsula	Region	976
Murray Darling Vic	Region	6251
Pyrenees	Region	887
Rutherglen	Region	781
Strathbogie Ranges	Region	534
Sunbury	Region	102
Swan Hill Vic	Region	1994
Upper Goulburn	Region	267
Yarra Valley	Region	2837
Great Western	Subregion	473
Nagambie Lakes	Subregion	511

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New South Wales Results

Table 6. *Vineyard area for all Geographical Indications in NSW.*

GI name	GI type	Total area of vineyards (ha)
Big Rivers	Zone	27492
Central Ranges	Zone	4720
Hunter Valley	Zone	2605
Northern Rivers	Zone	148
Northern Slopes	Zone	115
South Coast	Zone	302
Southern New South Wales	Zone	1743
Western Plains	Zone	6
Canberra District	Region	329
Cowra	Region	999
Gundagai	Region	591
Hastings River	Region	13
Hilltops	Region	591
Hunter	Region	2605
Mudgee	Region	1899
Murray Darling Nsw	Region	6194
New England Australia	Region	77
Orange	Region	1075
Perricoota	Region	388
Riverina	Region	20113
Shoalhaven Coast	Region	38
Southern Highlands	Region	171
Swan Hill Nsw	Region	178
Tumbarumba	Region	214
Broke Fordwich	Subregion	510
Pokolbin	Subregion	1355
Upper Hunter Valley	Subregion	471

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Queensland Results

Table 7. *Vineyard area for all Geographical Indications in QLD.*

GI name	GI type	Total area of vineyards (ha)
Granite Belt	Region	305
South Burnett	Region	204

Producing NVS2020

The production of NVS2020 followed the same process as the NVS2019, which can be summarized as follows. A set of AOIs were selected to search for vineyards. The GAIA system searched for the best satellite imagery in these AOIs. The satellite imagery was processed by the machine learning algorithms to automatically generate polygons. The generated polygons were then collated into complete maps.

The **11,043** AOIs that were scanned to locate vineyards were refined from those used in NVS2019 in consultation with Wine Australia. The scanned AOIs for the NVS2020 totalled an area of **2,339,397** ha. Of these AOIs 42% overlapped with AOIs scanned in the NVS2019[1], while 9% of the AOIs were new to the NVS2020.

The technical details of the process of producing NVS2020 can be found in [5]. Information on the previous NVS2018 and NVS2019 can be found in [1-4].

Accessing the NVS2020 maps

The complete maps for the NVS2020 are available for viewing by Wine Australia levy payers[2] and Australian regional wine-grape associations without charge. Access is provided through the GAIA web-site. Visit gaia.ag to create an account and the map can be viewed.

The complete heat map of all vineyards in Australia for the NVS2020 is illustrated in purple in the GAIA web-app, see Figure 1. A large section of the vineyards maps for South Australia is shown in Figure 2. A zoomed-in section of a vineyard, comparing the NVS2019 and the NVS2020 maps, is shown in Figure 3.

[1] Some AOIs used in the NVS2019 were removed from NVS2020 due to improving search configuration, such as avoiding searching over water bodies.

[2] Grape-growers and winemakers that pay the Grape Research Levy or the Wine Grapes Levy.

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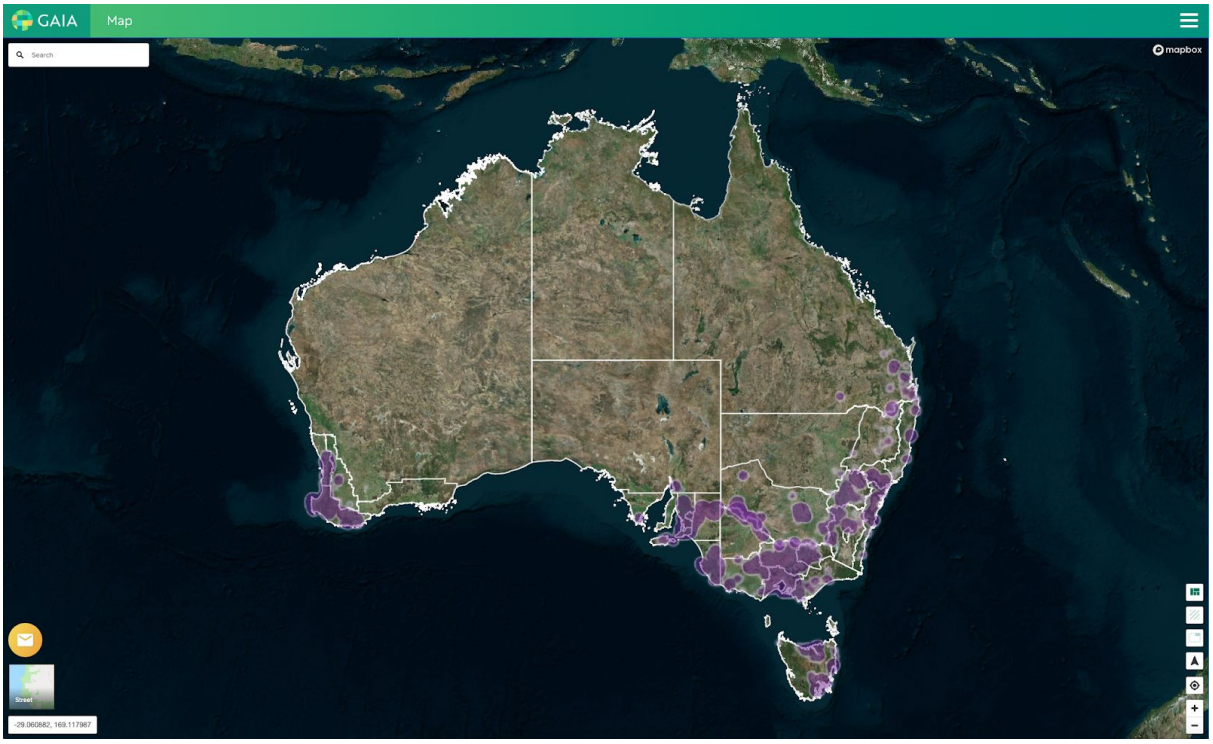


Figure 1. The complete NVS202 map. The location of vineyards in Australia are highlighted as a purple heatmap.

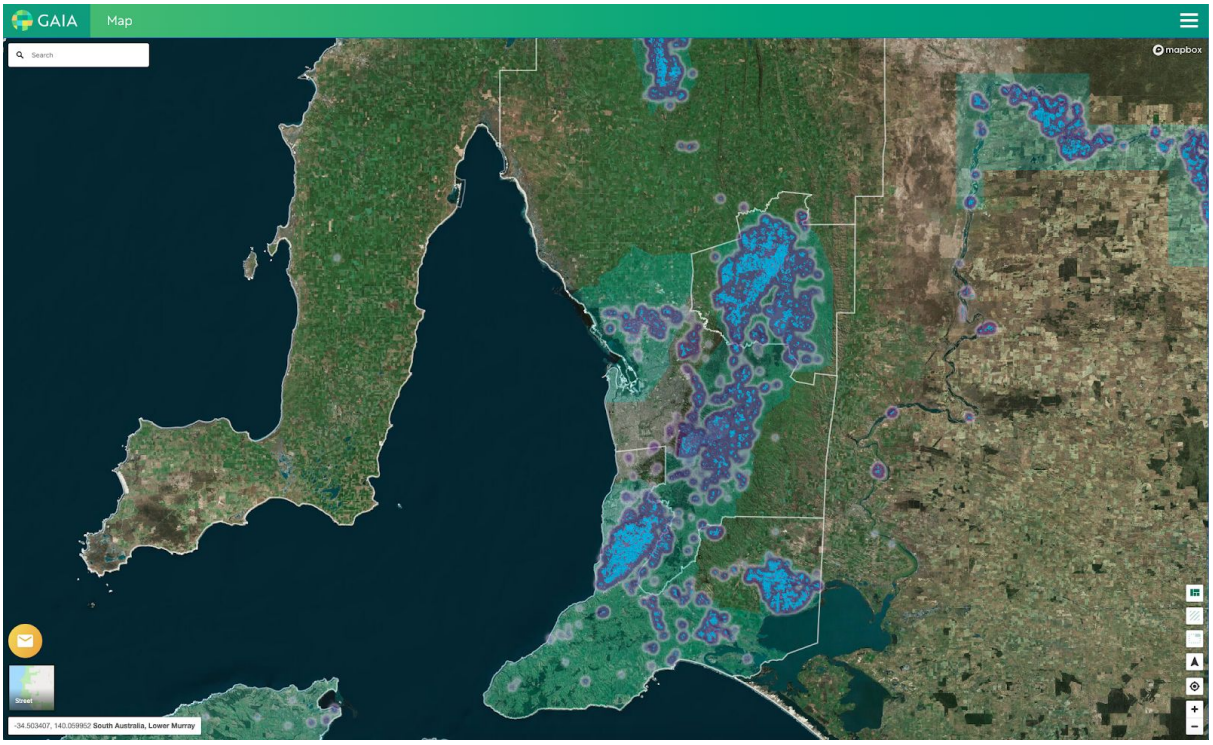


Figure 2. A section of the NVS2020 map of South Australia. The location of vineyards are highlighted as a purple heatmap, while individual vineyards are illustrated as blue polygons.

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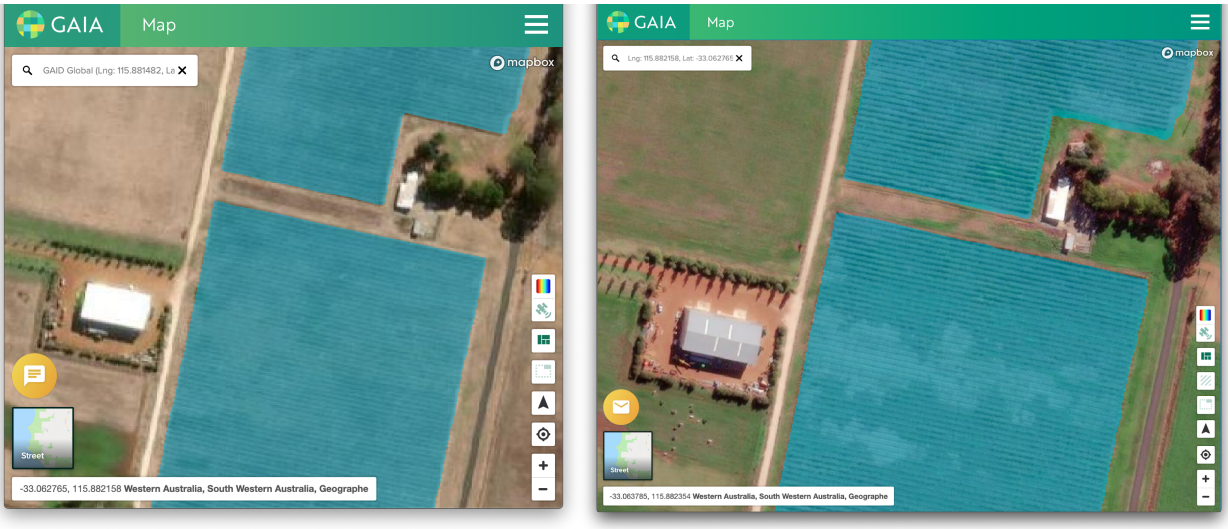


Figure 3. comparing results of A small section of maps produced for the NVS2019 (left) and the NVS2020 (right).

References

[1] Anthony Milton, Sebastien Wong & Sarah Hibbard (2019) "NATIONAL VINEYARD SCAN 2018 Summary Report" v1.0, 7th June 2019, CT-TR-2019-00029. Download from Wine Australia

[2] Anthony Milton, Joseph Sclauzero, Lucas Sargent, Adam Gatt & Sebastien Wong (2019) "NATIONAL SCAN OF VINEYARDS, MILESTONE REPORT Y1.8: National Scan 2018" v1.1, 23rd May 2019, CT-TR-2019-00027. Download from Wine Australia

[3] Anthony Milton, Sebastien Wong, Adam Gatt (2019) "National Vineyard Scan 2019 Summary Report" v1.1, 18th December 2019. CT-TR-2019-00037. Download from Wine Australia

[4] Anthony Miltion, Adam Gatt, Sebastien Wong, Travis Muirhead (2020) "National Scan of Vineyards of Australia 2019 - Milestone Report Y2.3" v1.0, 28th January 2020, CT-TR-2019-00041.

[5] Marnie Brice, Meera Deshpande, Adam Gatt, Saisai Ma, Frank Ouyang, Sebastien Wong, Travis Muirhead (2021) "National Scan of Vineyards of Australia 2020 - Milestone Report Y3.3" v1.1, 29 Janunary 2021, GAIA-2020-00003.

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