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Presenting the Bushfire Data Commons Dashboard

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The Bushfire Data Commons

- Objective
 - to develop and support a front-end use-oriented interface and associated data access and integration platform for the BDC portfolio of projects*
- Partners and Stakeholders
 - University of Melbourne
 - All BDC projects*
 - Data providers
 - DELWP, EPA, ABS, ...
- Challenges
 - Data Heterogeneity
 - Vector, *Raster*, ...



* where appropriate!

Project Partners

- **Projects**

- Aggregated and harmonised burnt extent fire history data on a national scale
- Aggregated and harmonised fuel data on a national scale
- A fire behaviour modelling platform
- Framework for sharing bushfire data and tools between jurisdictional agencies
- **Bushfire Research Data Management Plans**
- **Assessing the Impact of Bushfire Smoke on Health**
- Curated biodiversity data for rapid assessment of bushfire impacts
- Establishing an Australian Reference Genome Atlas and a Leadership Application in Bushfire Data
- Development of a traits database and vulnerability assessment framework to assess fire susceptibility of Australian invertebrate species

Software Development



<https://sudo.eresearch.unimelb.edu.au>

(All changes saved) Logged in as Richard Sinnott Project BDC-29June2022 Project ▾

VIC DELWP - History Records of Fires on Public Land (Polygons)

Download as CSV Download as JSON Download as SHP Title Name

CFA ID	Accuracy	Area (ha)	Creation Date	Fire Cover Type	Firekey	Fire Number	Fire Severity	Fire Type	Method
UNKNOWN	UNKNOWN	123.610	0-9	W196911999	999	BURNT_UNK...	BUSHFIRE	Unknown	Unknown
UNKNOWN	UNKNOWN	45.865	UNKNOWN	W197311999	999	BURNT_UNK...	BUSHFIRE	Unknown	Unknown
UNKNOWN	UNKNOWN	5485.083	UNKNOWN	W198111026	026	BURNT_UNK...	BUSHFIRE	Unknown	Unknown
UNKNOWN	UNKNOWN	49.881	30-49		999	BURNT_3	BURN	Unknown	Unknown
UNKNOWN	UNKNOWN	16.085	UNKNOWN	W198211012	012	BURNT_UNK...	BUSHFIRE	Unknown	Unknown
UNKNOWN	UNKNOWN	299.592	UNKNOWN	W198311999	999	BURNT_UNK...	BUSHFIRE	Unknown	Unknown
UNKNOWN	UNKNOWN	35.884	50-69		999	BURNT_UNK...	BURN	Unknown	Unknown
UNKNOWN	UNKNOWN	20.655	0-9		999	BURNT_UNK...	BURN	Unknown	Unknown
UNKNOWN	UNKNOWN	5.209	0-9		999	BURNT_UNK...	BURN	Unknown	Unknown

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Total Usual Resident Population 2016 - 2

- (class 1) 19-151 (2)
- (class 2) 151-211 (3)
- (class 3) 211-255 (3)
- (class 4) 255-306 (5)
- (class 5) 306-368 (4)
- (class 6) 368-457 (5)

- VIC DELWP - Vicmap Vegetation - Tree Density - Medium 1:25,000 (Polygons) - GeoJSON
- VIC DELWP - History Records of Fires on Public Land (Polygons) - GeoJSON

Area

Area Selection
20502108516 (sa1_2016/20502108516)

Bounding-box Selection
[]

Data

Browse Import Draw

- SAI Aggregated Population & Dwelling C...
Orbost (sa2_2016/205021085)
- VIC DELWP - Vicmap Transport - Local Ro...
[149.3409,-37.7780,149.9763,-37.2969]
- VIC DELWP - History Records of Fires on P...
[147.8914,-37.8577,149.9763,-36.8193]
- VIC DELWP - History Records of Fires on P...
[148.3210,-37.7640,148.5940,-37.5470]
- VIC DELWP - Vicmap Vegetation - Tree De...
[148.3210,-37.7640,148.5940,-37.5470]

Visualise

Base Map Take Screenshot Maps & Charts

- Total Usual Resident Population 2016 - 2
- VIC DELWP - History Records of Fires on Publi...
- VIC DELWP - Vicmap Vegetation - Tree Density...

Analyse

Tools

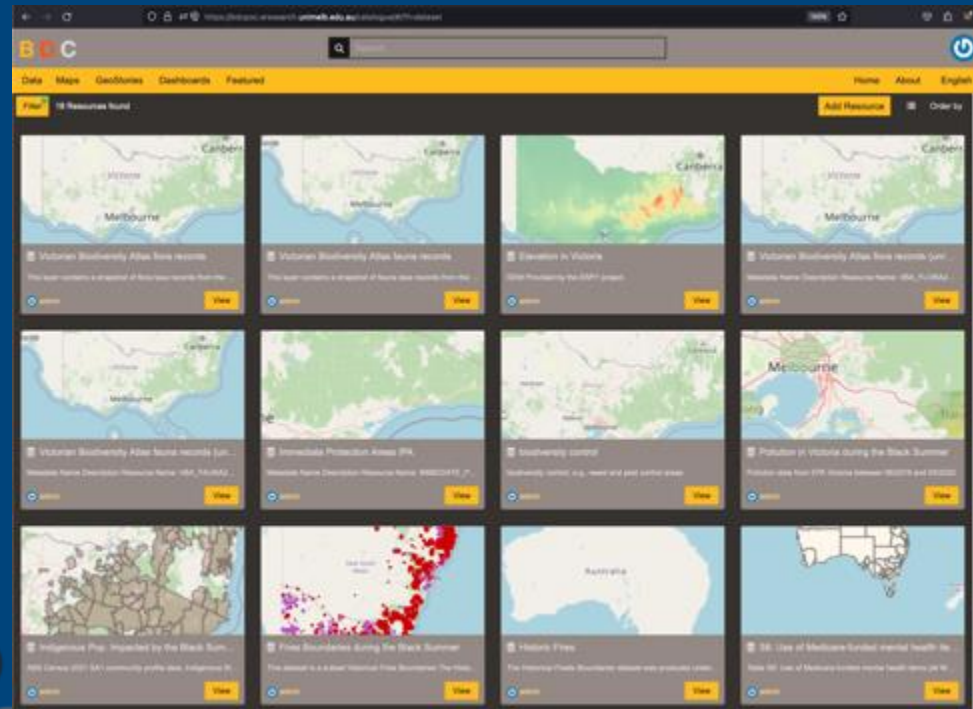
Raster?

FIRETYPE	BUSHFIRE
SEASON	2020
NAME	SNOWY 16 - SNOWY COMPLEX -
FIRE_COVER	90-100
UPDATE_DATE	2020-03-12T00:00:00.026+0000
FIREKEY	W202045016
ACCURACY	UNKNOWN
START_DATE_INT	20200106
START_DATE	2020-01-06T22:00:00.026+0000
AREA_HA	226577
FIRE_NO	16
METHOD	Satellite Image Interpretation
CREATE_DATE	2020-03-09T00:00:00.026+0000
CFA_ID	null
TREATMENT_TYPE	FIRE
FIRE_SEVERITY	BURNT_UNKNOWN

96012,-37.76422 20 km

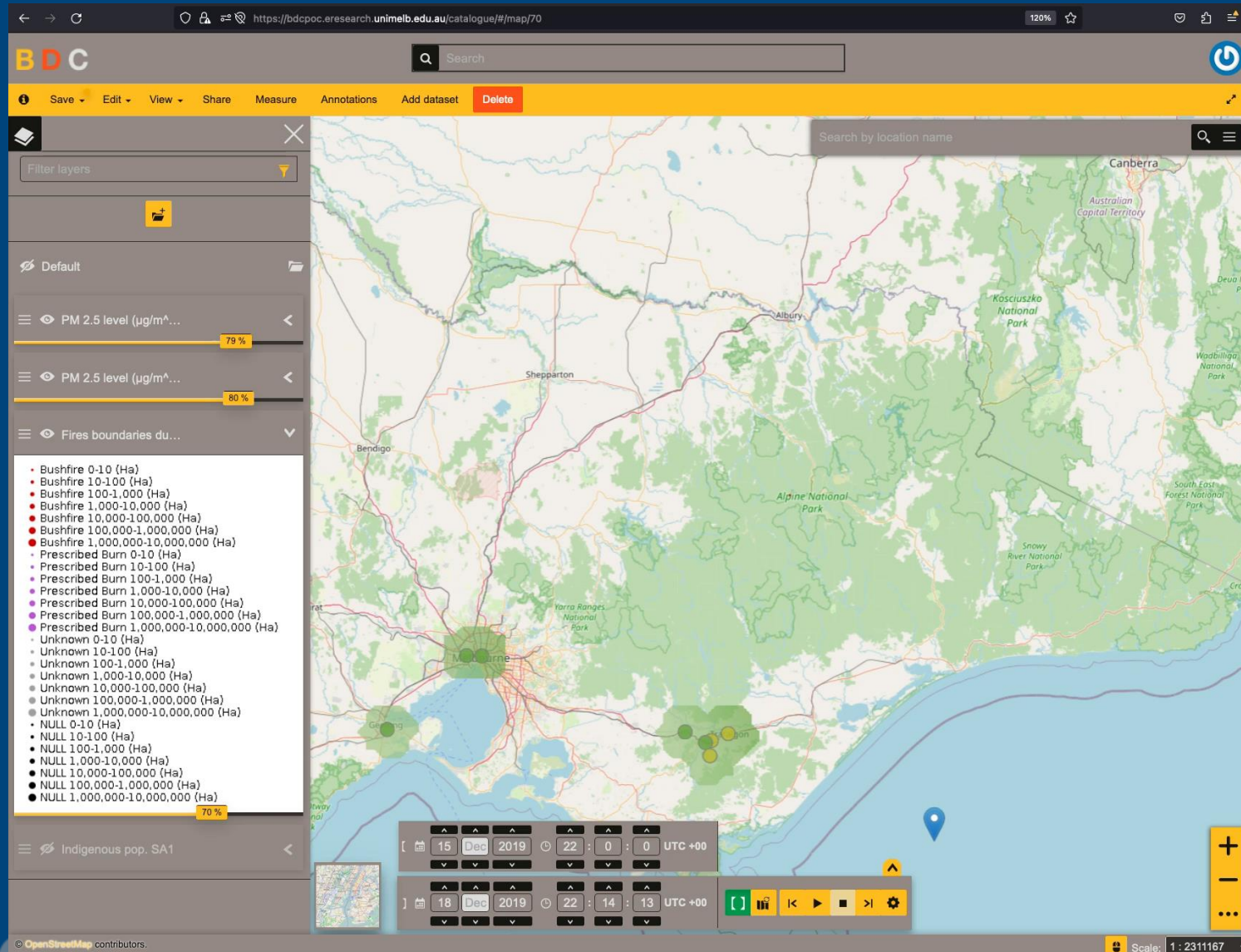
Software Development

- Adoption of GeoNode (<https://geonode.org/>)
 - Web-based platform for developing GIS systems
- Data
 - Raster
 - Sentinel satellite (multiple bands)
 - ...but not focus now
 - Vector
 - Key data sets
- Tools
 - Visualisation
 - maps/time series
 - Deeper analytics
 - Jupyter notebooks

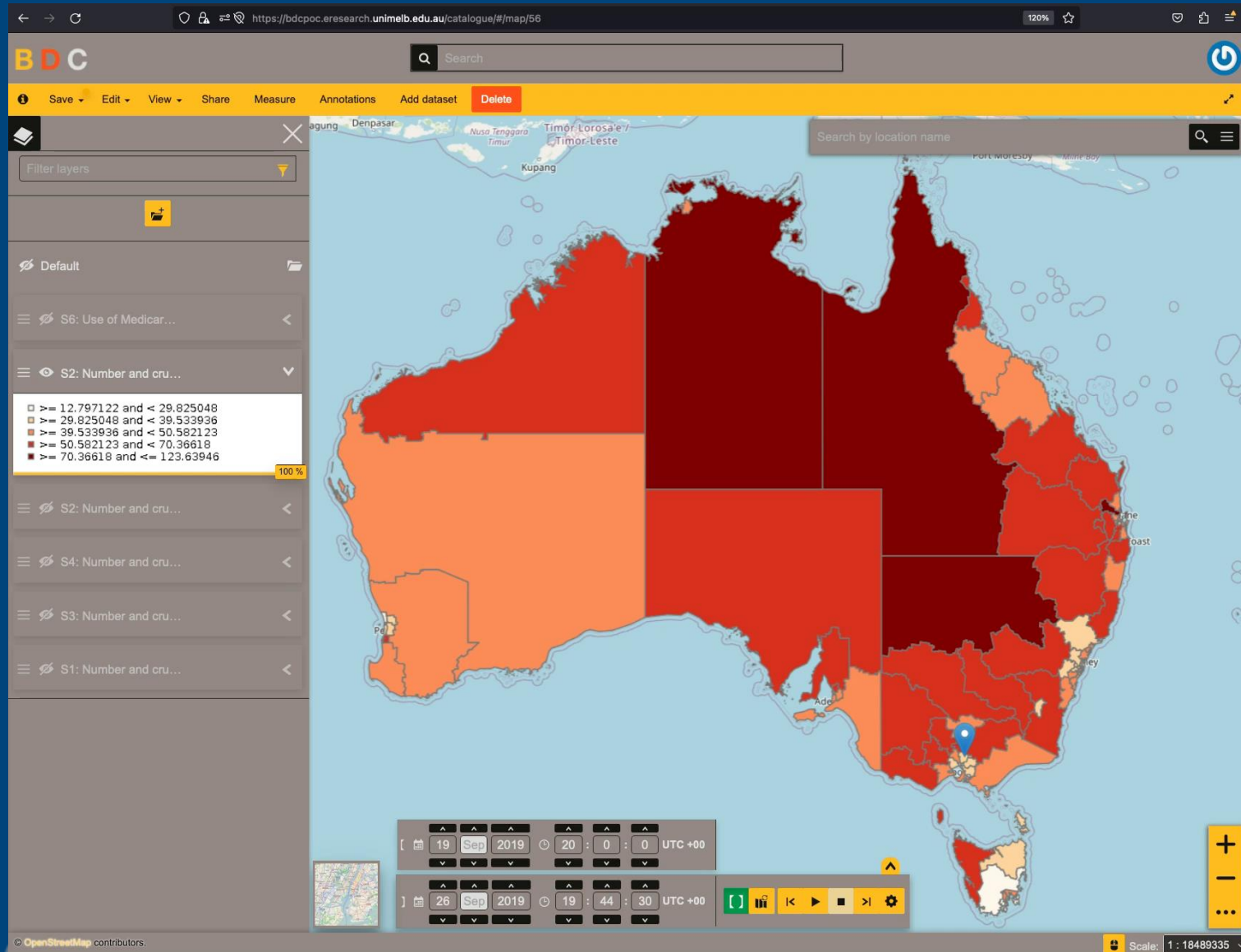


Demonstration

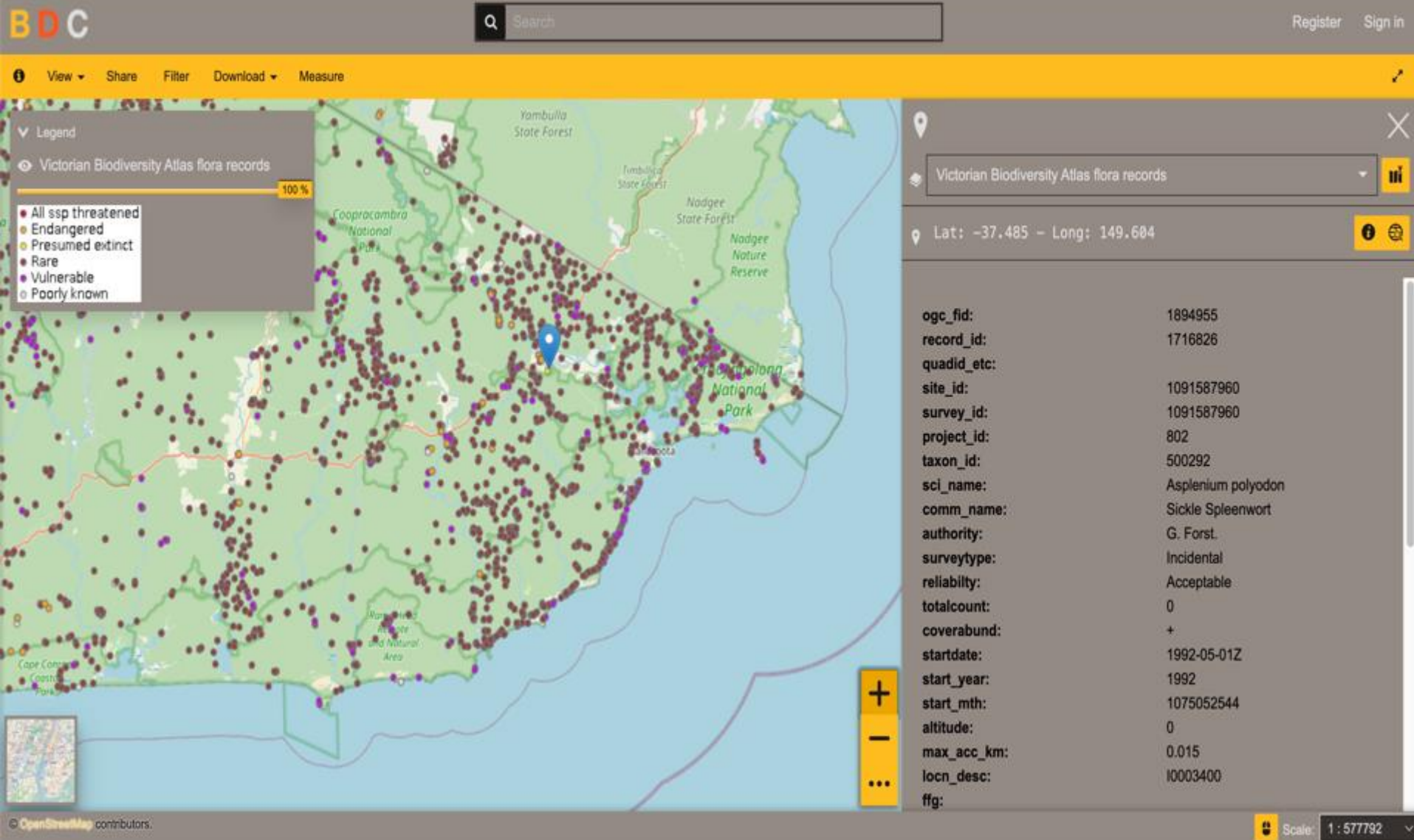
(Black Summer 2019/20 – Air Quality)



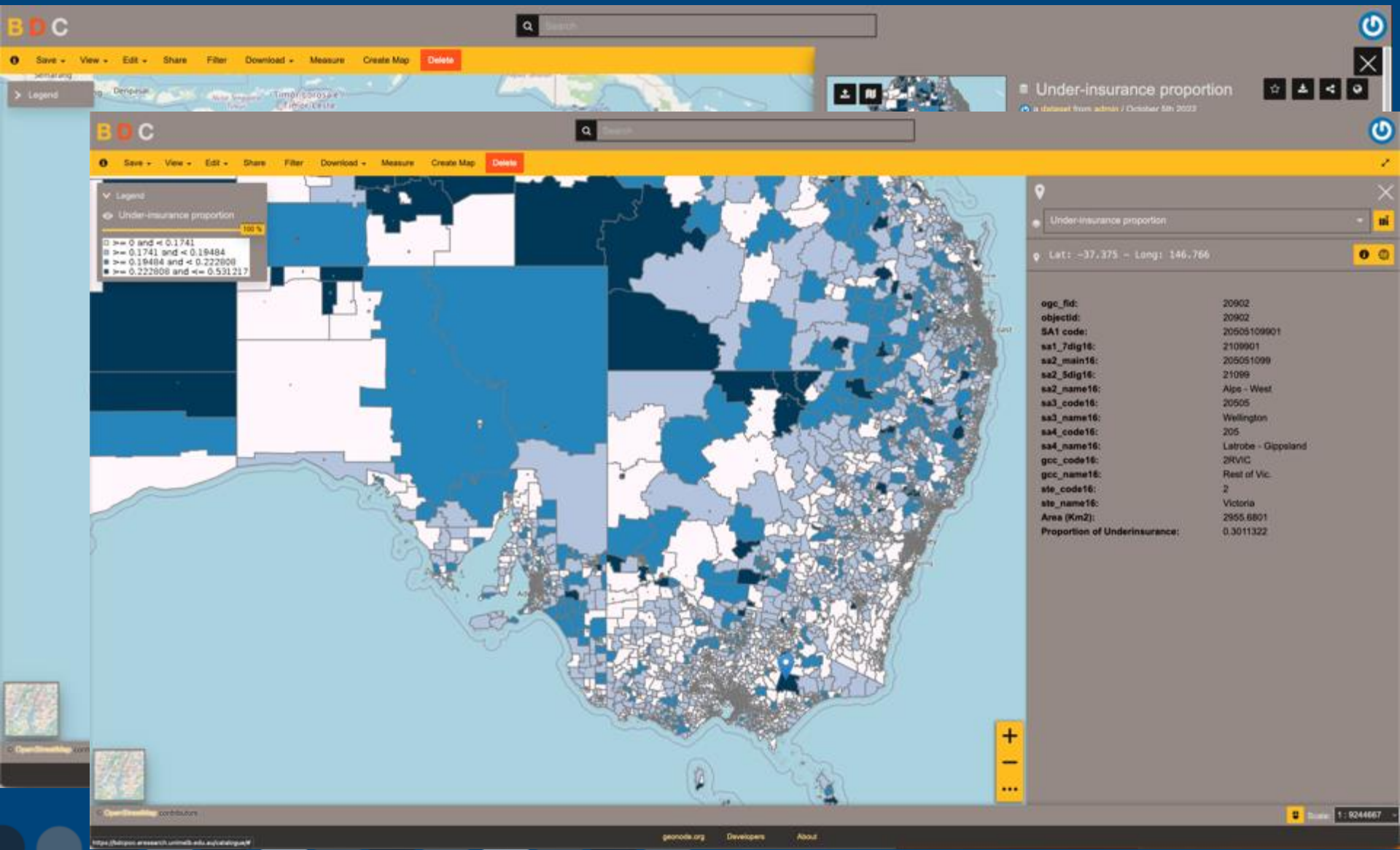
Demonstration (Hospital Admissions)



Demonstration (Rare and Threatened Species)



Demonstration (Underinsured Properties)



Deeper Analytics

(Jupyter Notebooks & BDC API & ARDC BinderHub Service)

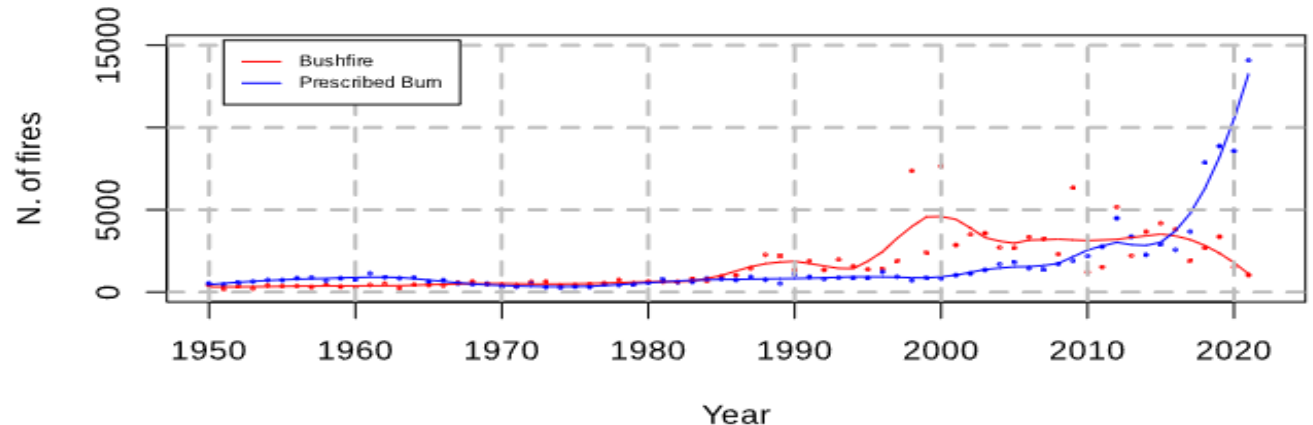
File Edit View Run Kernel Tabs Settings Help

Filter files by name

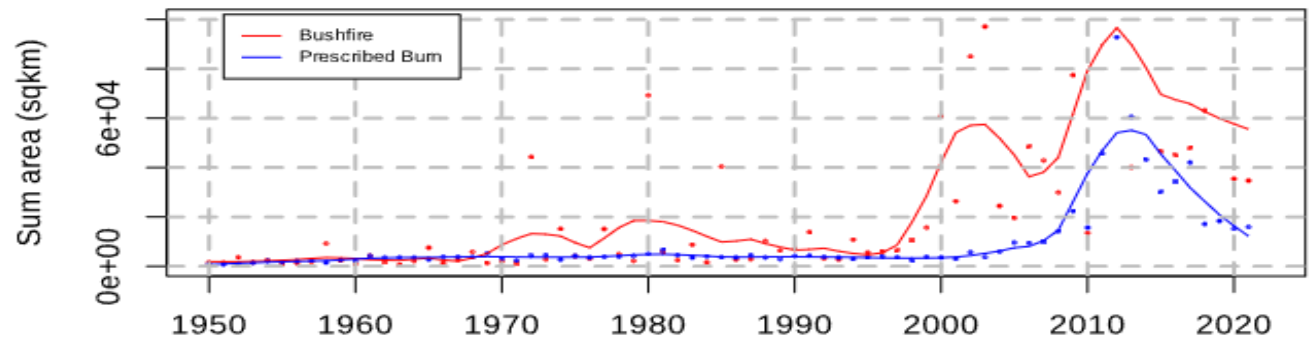
Name	Last Modified
data	7 days ago
airquality.i...	7 days ago
historic_fir...	7 days ago
hospitaliza...	7 days ago
indigenou...	7 days ago
README.md	7 days ago
vba.ipynb	7 days ago

Launcher historic_fires.ipynb README.md

Number of individual fires

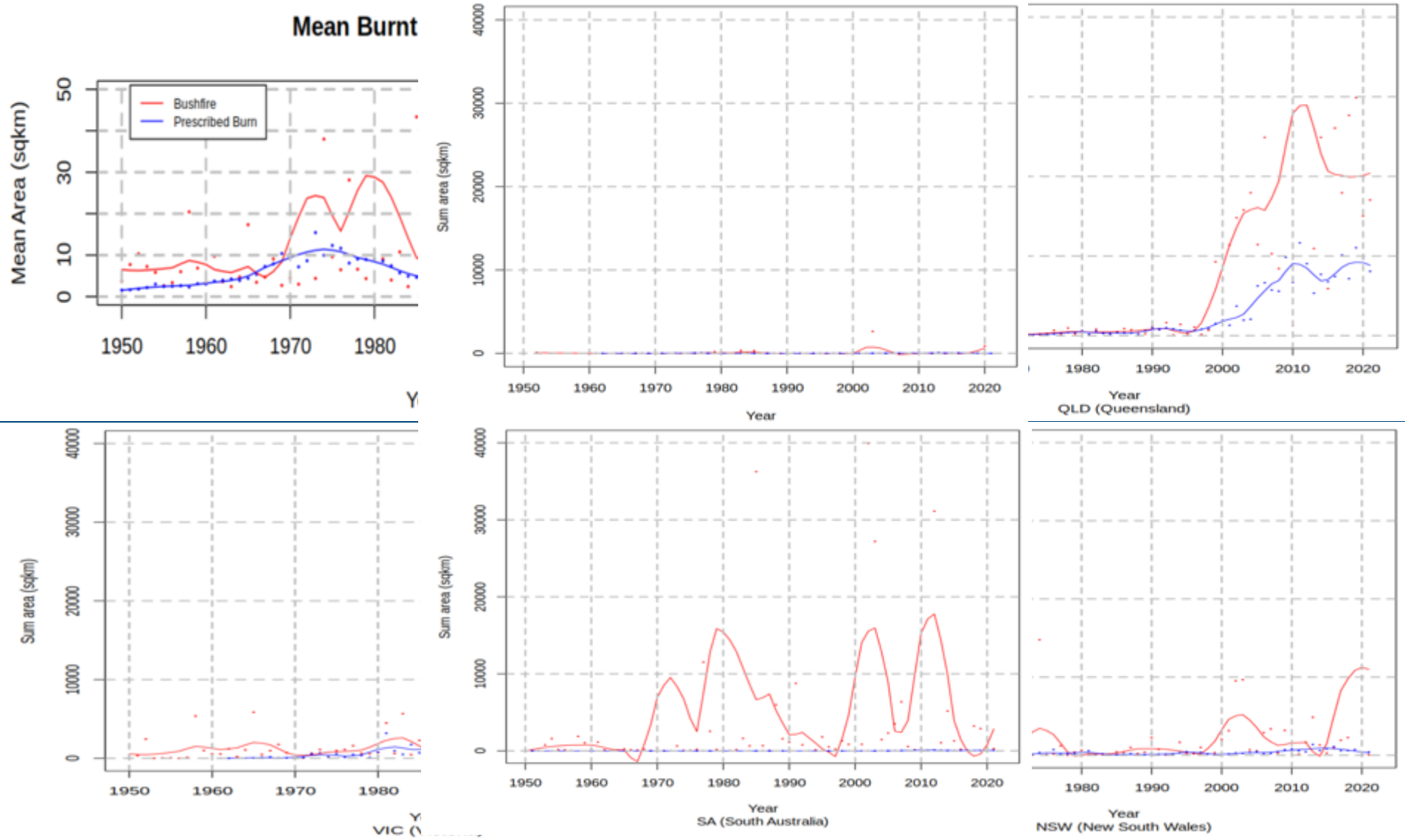


Total Burnt Area



Deeper Analytics

(Jupyter Notebooks & BDC API & ARDC BinderHub Service)



Also...



chat-search-ui 0.3.3

Question:

select datasets about respiratory illness in the south-eastern corner of australia in the five years prior to the black summer bushfire season

Submit Question

Time:

begin:["2014-12-01" TO "2019-11-30"] AND end:["2014-12-01" TO "2019-11-30"]

Space:

west:[0 TO 153.569] AND east:[140.999 TO 180] AND south:[-90 TO -33.764] AND north:[-43.7405 TO 0]

Topic:

abstract:"pneumonia" OR abstract:"asthma" OR abstract:"COPD" OR abstract:"bronchitis" OR abstract:"emphysema" OR abstract:"tuberculosis" OR abstract:"lung cancer"~4 OR abstract:"respiratory infection"~4 OR abstract:"COVID-19" OR abstract:"pulmonary disease"~4



2000	2001	2002	2003	2004	2005	2006
2007	2008	2009	2010	2011	2012	2013
2014	2015	2016	2017	2018	2019	2020
2021	2022	2023				

Query result

Found 3 datasets

Title	Geo-level	Begin	End
PHDU - Prevalence of Chronic Diseases (LGA) 2017-2018	lga2016	2017-07-01	2018-06-30
PHDU - Prevalence of Chronic Diseases (PHA) 2017-2018	pha2016	2017-07-01	2018-06-30
PHDU - Prevalence of Chronic Diseases (PHN) 2017-2018	phn2017	2017-07-01	2018-06-30

Conclusions

- Platform supported longer term
 - Data continually collected for national air quality
- Shibboleth access now supported
 - Requires Sign Up approval
- Deep learning satellite analytics ongoing
 - Fire development/progression
 - Day by day
 - Areas at most risk
 - Carbon/fuel & hydrometry

