



World distribution of uranium deposits: Creating a complex map that is simple to use.

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World Distribution of Uranium Deposits

Second Edition



Non-serial Publications

Subject Classification: 0401-Uranium geology, exploration and mining

English STI/PUB/1800; (ISBN:978-92-0-100118-4); € 20.00; Date Published: 2018

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“The aim was to create a complex map that is simple to use”



IAEA

International Atomic Energy Agency

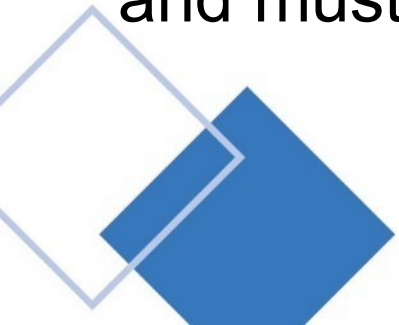


Department for Energy and Mining

The IAEA is the world's centre for cooperation in the nuclear field and seeks to promote the safe, secure, and peaceful use of nuclear technologies.

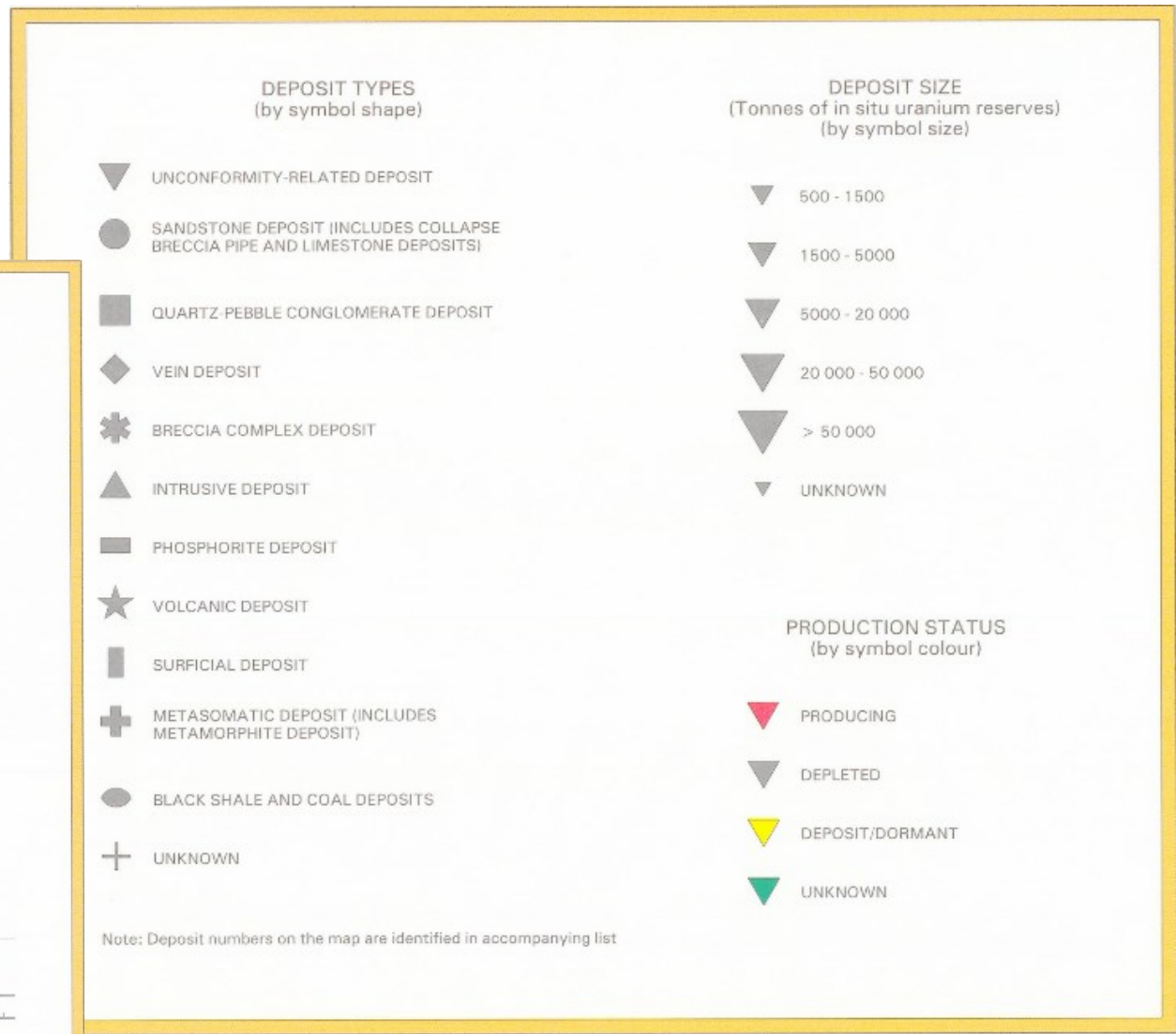


Uranium is the primary fuel for nuclear reactors and must be managed properly, in a safe and sustainable manner.



- 582 deposits listed with a 500 tU cutoff
- 14 parameters recorded
- 11 deposit types on map

DEPOSIT NUMBER	DEPOSIT NAME
1	ABANKOR
2	DAIRA
3	TAHAGGART
4	TIMGAOINE
5	TINEF
6	CERRO SOLO
7	DON OTTO
8	DR. BAULLES
9	HUEMUL
10	LA ESTELA
11	RODOLFO
12	SCHLAGINTWEIT
13	ANGELA
14	BEN LOMOND
15	BEVERLEY



- Increased insights
- New classification scheme by deposit type
- Additional new discoveries as well as disaggregation of previously known discoveries



IAEA Uranium Deposit Database (UDEPO)

IAEA 1995: (≥ 500 t U, ≥ 300 ppm)

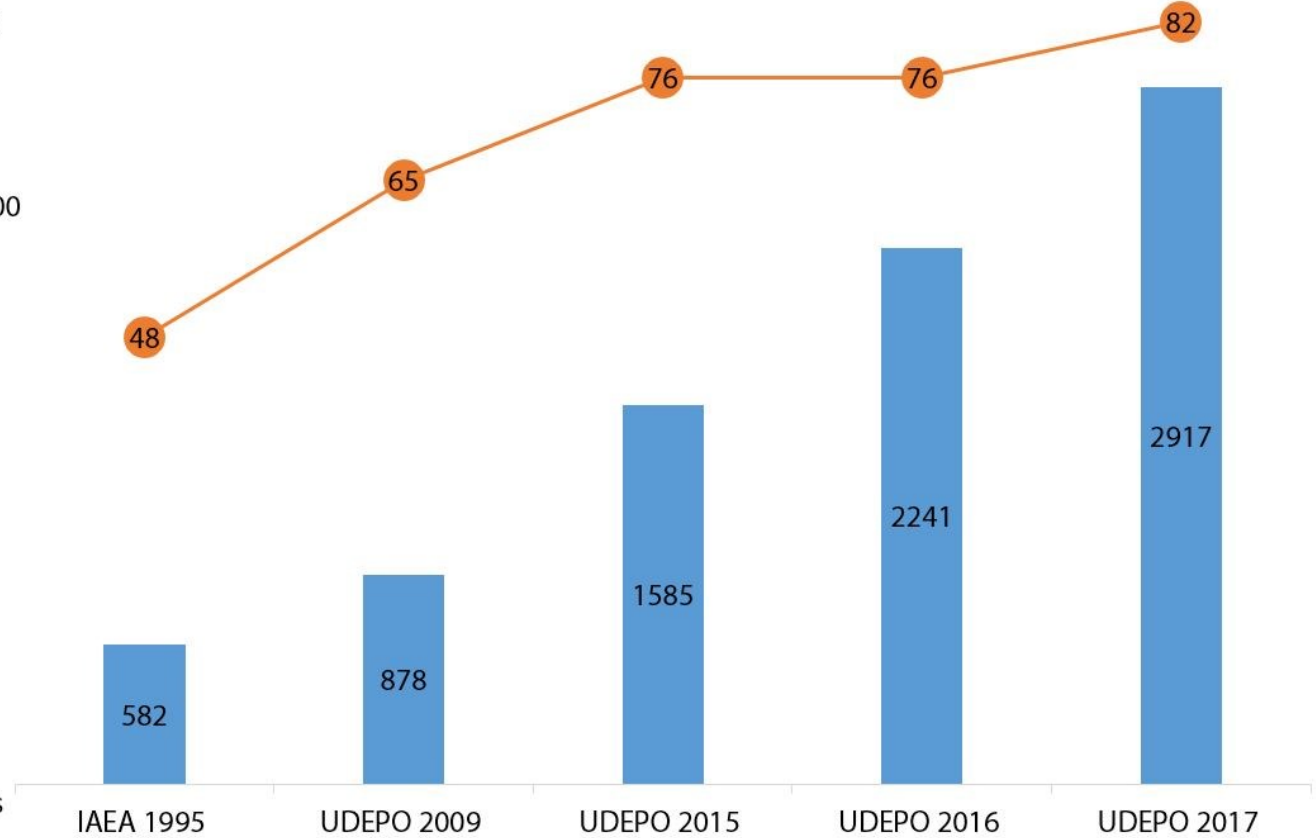
UDEPO 2009: ~

UDEPO 2015: (≥ 300 t U, no grade restriction)

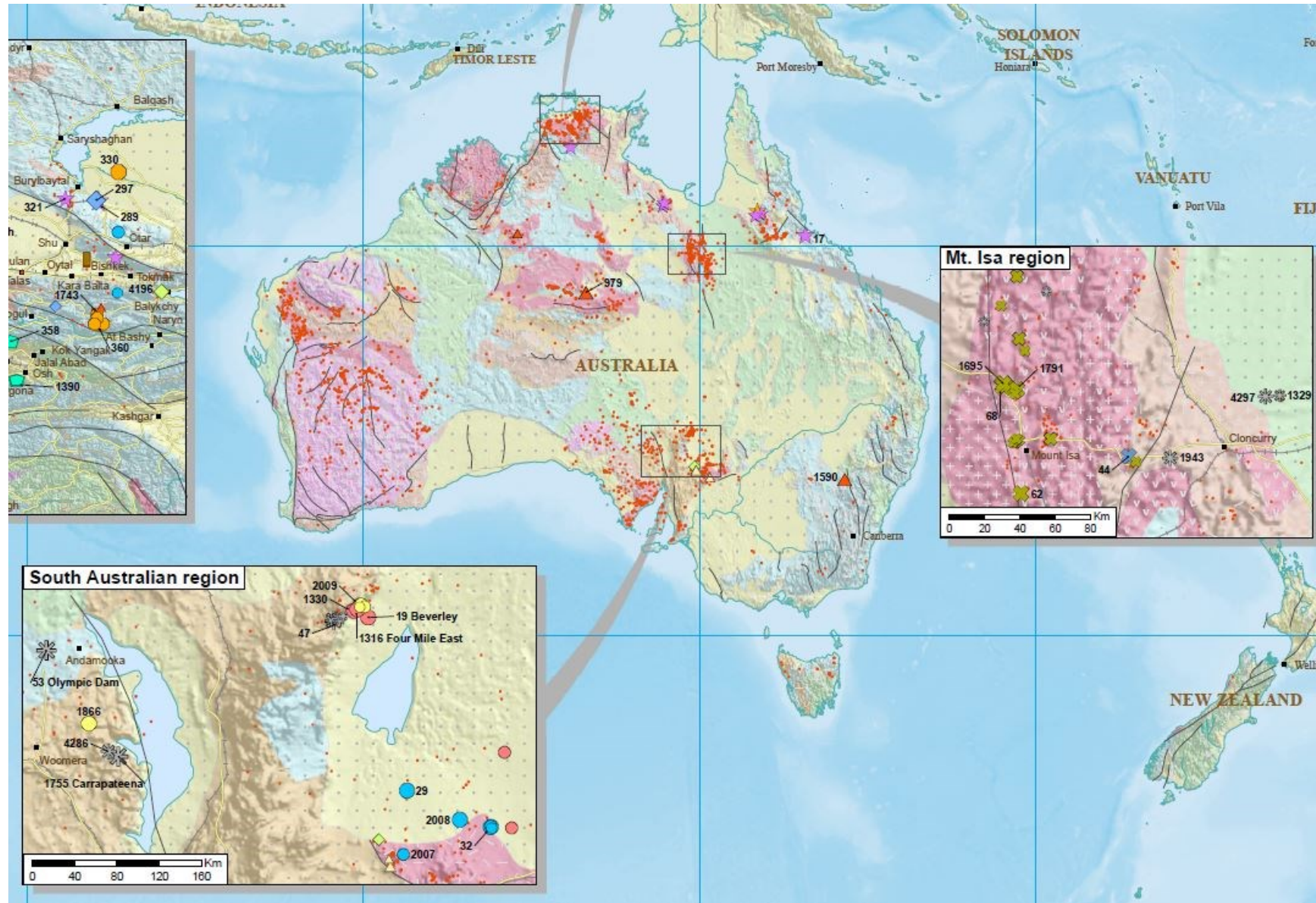
UDEPO 2016: (no grade or tonnage restriction)

UDEPO 2017: (~60 MtU, but less <10MtU conventional)

■ Deposits
● No. of Countries



The map data reflects original, not remaining resources.



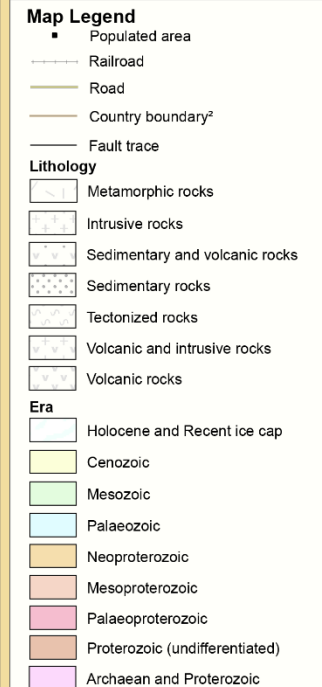
- New classification scheme by deposit type
- A broader range of deposit sizes
- A revised deposit classification system by deposit type



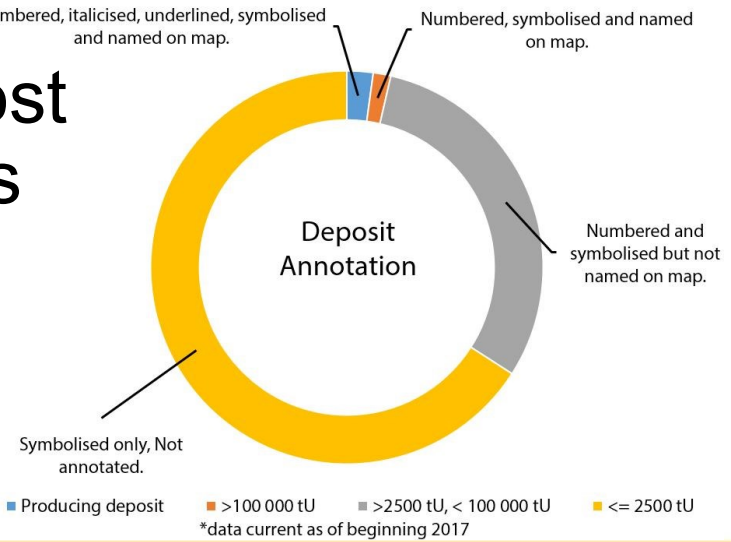
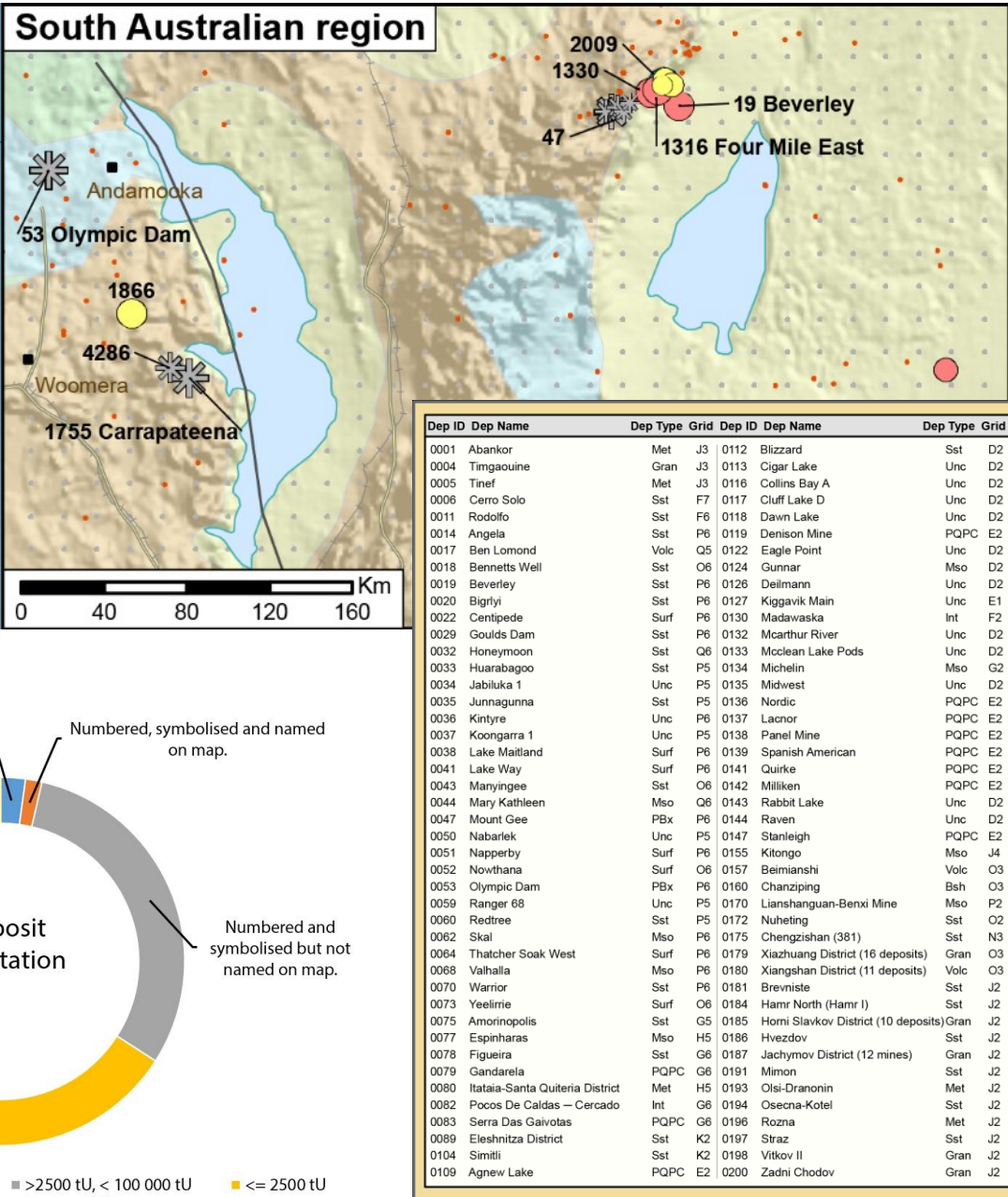
Deposit type	Deposit subtype	Deposit size (tU)				
		<1000	1001 – 5000	5001 – 25 000	25 001 – 100 000	>100 000
1. Intrusive (Int)	Anatectic	▲	▲	▲	▲	▲
	Plutonic ¹	▲	▲	▲	▲	▲
2. Granite-related (Gran)	Endogranitic	◆	◆	◆	◆	
	Perigranitic	◆	◆	◆	◆	
3. Polymetallic Fe oxide breccia complex ¹ (PBx)		✱	✱	✱	✱	✱
4. Volcanic-related (Volc)	Stratabound	★	★	★	★	★
	Structure-bound	☆	☆	☆	☆	
	Volcano-sedimentary	★	★	★	★	
5. Metasomatite (Mso)	Na-metasomatite	✱	✱	✱	✱	
	K-metasomatite	✱	✱	✱	✱	
	Skarn	✱	✱	✱	✱	
6. Metamorphite (Met)	Stratabound	✱	✱	✱	✱	
	Structure-bound	✱	✱	✱	✱	
	Marble-hosted	✱	✱	✱	✱	✱
7. Proterozoic unconformity (Unc)	Unconformity-contact	▼	▼	▼	▼	▼
	Basement-hosted	▼	▼	▼	▼	▼
	Stratiform fracture-controlled	▼	▼	▼	▼	▼
8. Collapse breccia pipe (CBx)		✱	✱	✱	✱	✱
9. Sandstone (Sst)	Basal channel	●	●	●	●	●
	Tabular	●	●	●	●	●
	Roll-front	●	●	●	●	●
	Tectonic-lithologic	●	●	●	●	●
	Mafic dykes/sills	●	●	●	●	●
10. Palaeo quartz-pebble conglomerate (PQPC)	U-dominant	■	■	■	■	■
	Au-dominant ¹	■	■	■	■	■
11. Surficial (Surf)	Peat-bog	■	■	■	■	■
	Fluvial valley	■	■	■	■	■
	Lacustrine-playa	■	■	■	■	■
	Pedogenic and fracture fill	■	■	■	■	■
	Stratiform	■	■	■	■	■
12. Lignite-coal ¹ (LigCo)	Fracture controlled	■	■	■	■	■
	Stratabound	■	■	■	■	■
	Cataclastic	■	■	■	■	■
13. Carbonate (Carb)	Paleokarst	■	■	■	■	■
	Organic phosphorite	■	■	■	■	■
	Microchemical phosphorite	■	■	■	■	■
14. Phosphate ¹ (Pho)	Continental phosphate	■	■	■	■	■
	Stratiform	■	■	■	■	■
	Stockwork	■	■	■	■	■
15. Black shale (BSH)		■	■	■	■	■

• Undifferentiated and unverified Uranium occurrence with no known resource estimation
 ▲ Undifferentiated Thorium deposit and occurrence from IAEA ThDEPO database

The 'Dep ID' number is a unique identification number corresponding to the UDEPO database record. A deposit is only included if it is known that a resource estimate has been undertaken. If the exact data is unknown, then a range is inferred by the IAEA. This is particularly the case with unconventional resources¹, where uranium is present at very low grades and/or only recoverable as a minor by-product requiring special processing techniques. Resources shown are not current in situ resources, but represent the maximum of either original geological resource, production or remaining resource at the lowest reported cut-off grade. These include historic examples which may not be compliant with contemporary reporting standards. If available, resources for discrete ore zones are shown and if not, aggregated resources are stated. No economic or financial inferences with respect to recoverability of uranium are intended and no estimates are endorsed by the IAEA. The list of deposits is not exhaustive. Of the 2831 deposits shown on the map, 102 deposits with resources greater than 100 000 tU, or those which are currently producing uranium, are named. A further 863 deposits with resources greater than 2500 tU are numbered and, along with larger or producing deposits, are listed. All other 1866 deposits less than 2500 tU are symbolised. These can be queried as described in <https://helpx.adobe.com/acrobat/using/geospatial-pdfs.html>



- Additional new deposits, as well as disaggregation of previously known districts into deposits
- Compilation of 2831 known deposits
- Index list of 968 named deposits
- New inset maps over the most productive Australian regions

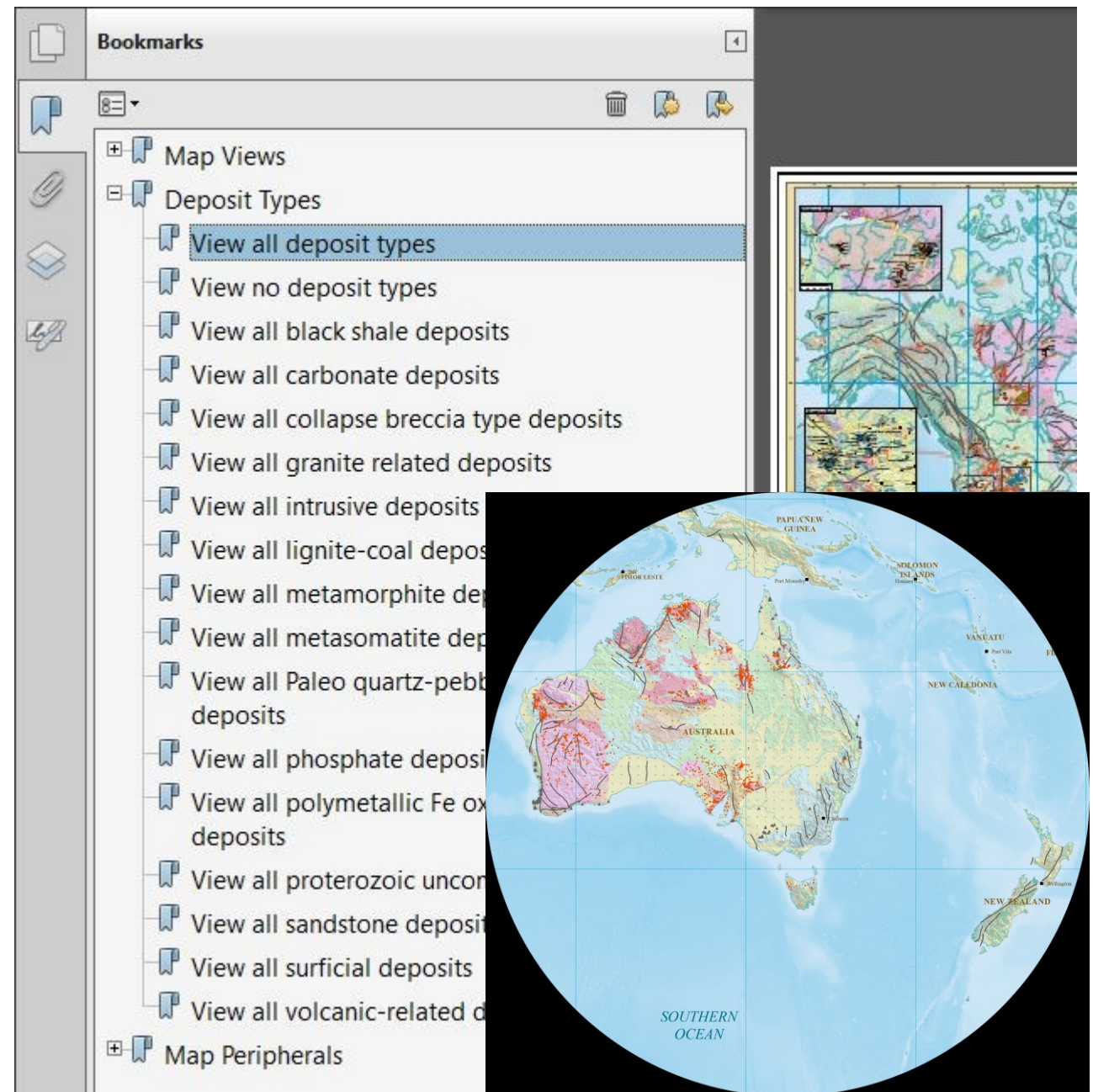


- Improved geological visualisation information
- Enhanced digital terrain shading
- Bathymetric tints over marine regions

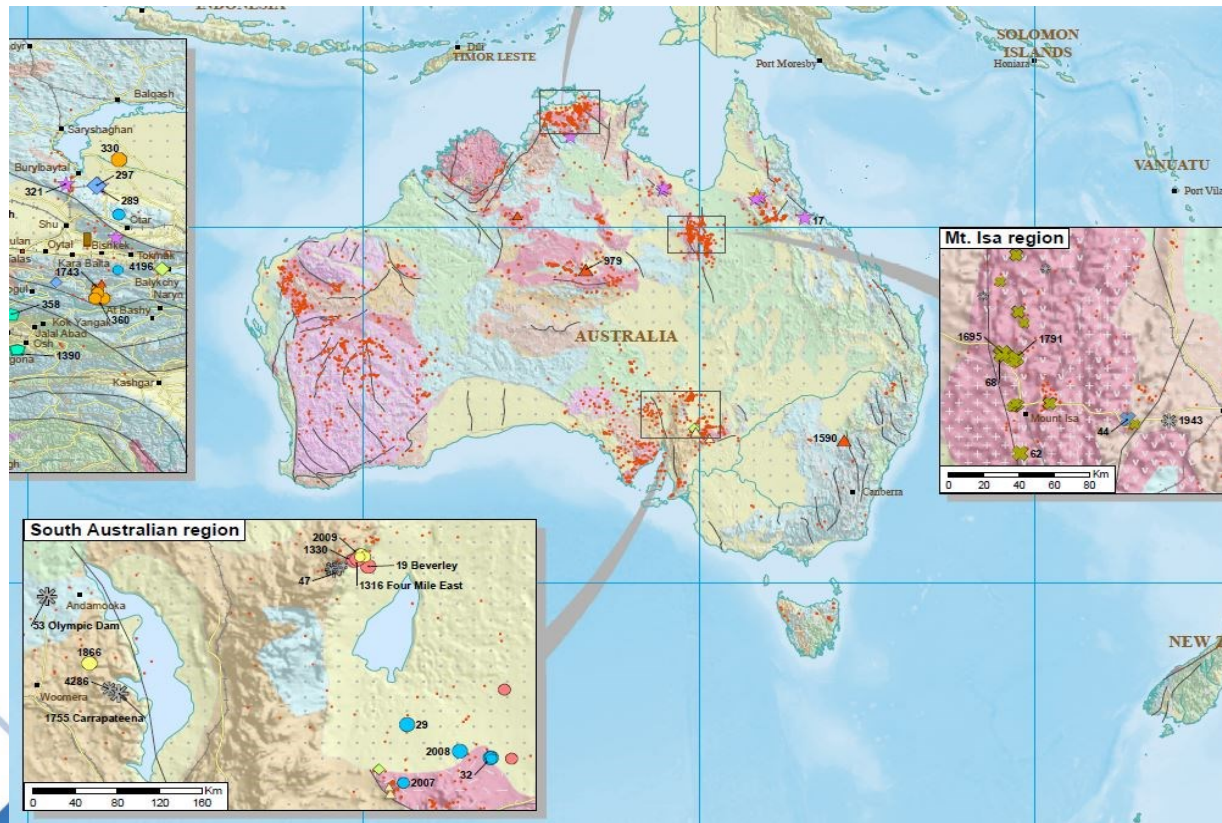


Enhanced Adobe pdf functionality:

- Custom views for each deposit type
- Custom views for areas of interest
- Structure bookmarks to aid map navigation



- Custom layers to allow any combination of deposit type
- Custom layers for areas of interest



Layers

4

World Map

World Intrusive deposits

World Granite-related deposits

World Polymetallic Fe oxide breccia complex deposits

World Volcanic-related deposits

World Metasomatite deposits

World Metamorphite deposits

World Proterozoic unconformity deposits

World Collapse breccia pipe deposits

World Sandstone deposits

World Paleo quartz-pebble conglomerate deposits

World Surficial deposits

World Lignite-coal deposits

World Carbonate deposits

World Phosphate deposits

World Black shale deposits

World Uranium occurrences

World Thorium occurrences

Gulf Coast region Inset Map

Athabasca Basin Inset Map

Central Europe region Inset Map

Central Ukraine region Inset Map

Pine Creek region Inset Map

Dornot Streltsovskia region Inset Map

South Australian region Inset Map

Mt. Isa region Inset Map













Central Asian region Inset Map

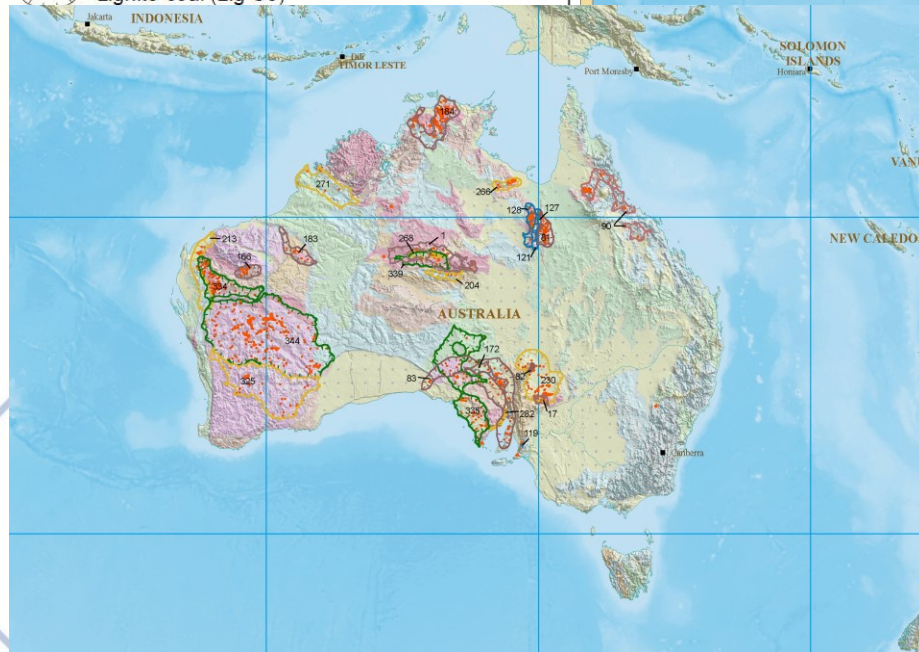
South Balkan region Inset Map

Witwatersrand Basin Inset Map

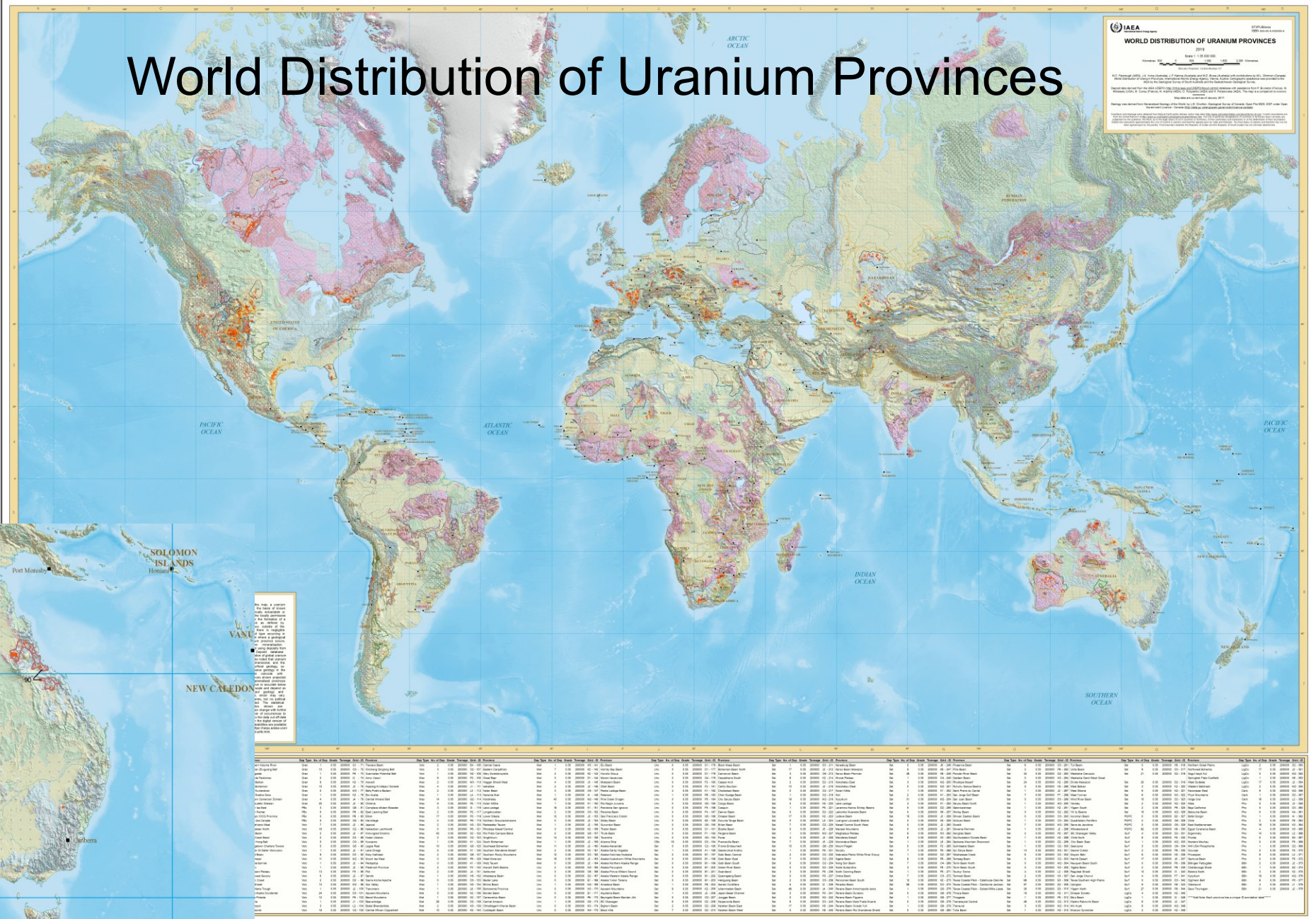
What's next?

Province Type

-  Intrusive (Int)
-  Granite-related (Gran)
-  Polymetallic Fe oxide breccia complex (PBx)
-  Volcanic-related (Volc)
-  Metasomatite (Mso)
-  Metamorphite (Met)
-  Proterozoic unconformity (Unc)
-  Collapse breccia pipe (CBx)
-  Sandstone (Sst)
-  Paleo-quartz-pebble conglomerate (PQPC)
-  Surficial (Surf)
-  Lignite-coal (Lig Co)



World Distribution of Uranium Provinces



Thank you

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Disclaimer

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