

A compendium of Australian impact structures, possible impact structures, and ejecta occurrences¹

Compiled by A.Y. Glikson²

1. Meteorite craters and astroblemes

<i>Structure and site</i>	<i>Lat./long.</i>	<i>Diameter (km)</i>	<i>Impact criteria*</i>	<i>Age (Ma)</i>	<i>References</i>
1. Dalgara, Yalgoo, WA	27°40'S 117°17'E	0.024	abm	<0.003?	Bevan (this issue); Nishiizumi et al. (unpublished); E.M. Shoemaker personal communication 1995)
2. Snelling, Kimberley, WA	19°21'S 127°46'E	0.029 × 0.022	ab	<0.005?	Shoemaker & Shoemaker (unpublished)
3. Veevers, Canning Basin, WA	22°58'S 125°22'E	0.070	abm	≤0.02	Yeates et al. (1976); Bevan (this issue); Nishiizumi et al. (unpublished); E.M. Shoemaker personal communication 1995)
4. Henbury, central Australia, NT	24°35'S 133°10'E	13 or 14 craters; 0.006-0.18	abesm	0.0042 ± 0.0019	Bevan (this issue); Attrep et al. (1991)
5. Boxhole, NT	22°37'S 135°12'E	0.17	am	0.03	Bevan (this issue); Shoemaker et al. (1988); Shoemaker et al. (1990)
6. Wolfe Creek, Kimberley, WA	19°10'S 127°46'E	0.88	aems	0.3	Bevan (this issue); Attrep et al. (1991); E.M. Shoemaker (personal communication 1995)
7. Mount Darwin, Tas. west coast	42°18'S 145°40'E	1.0	aeg	0.74 ± 0.04	Fudali & Ford (1979); Shoemaker & Shoemaker (1988)
8. Mount Toondina, Oodnadatta area, SA	27°57'S 132°22'E	4	agx	<35	Plescia et al. (1994); Shoemaker & Shoemaker (unpublished)
9. Goat Paddock, Kimberley, WA	18°20'S 126°40'E	5	abe	~55	Shoemaker & Shoemaker (1988)
10. Connolly Basin, Gibson desert, WA	23°32'S 124°45'E	9	abg	<60	Shoemaker & Shoemaker (1989); Shoemaker et al. (1989)
11. Yallalie Basin, west Yilgarn, WA	30°27'S 115°46'E	13	bgu	~90	Dentith et al. (1992); E.M. Shoemaker (personal communication 1995)
12. Tookoonooka, Eromanga Basin, Qld	27°20'S 142°49'E	~55	begu	128 ± 5	Gorter et al. (1989)
13. Talundilly, Eromanga Basin, Qld	24°44'S 144°37'E	~30	gu	128 ± 5	Longley (1989)
14. Liverpool, Arnhem Land, NT	12°24'S 134°03'E	~3?	ab	>140?	Shoemaker & Shoemaker (1988)
15. Gosses Bluff, Amadeus Basin, NT	23°49'S 132°18'E	24	abegx	142.5 ± 0.8	Milton et al. (this issue)
16. Piccaninny, Kimberley, WA	17°25'S 128°25'E	7	ab	<360	Beere (1983); Shoemaker & Shoemaker (1988); E.M. Shoemaker (personal communication 1995)
17. Kelly West, Tennant Creek region, NT	19°56'S 133°57'E	8–20	abx	Neo-proterozoic	Shoemaker & Shoemaker (this issue)

¹ Based principally on updated information kindly provided by E.M. Shoemaker and C.S. Shoemaker, papers included in this issue, and comments by A.W.R. Bevan and G.E. Williams. The structures and distal meteoritic occurrences are listed in an approximate age or maximum age sequence. Only the more recent references, including papers in the present issue, are listed here. For original and other references for each occurrence consult reference lists in papers in this issue.

² Division of Regional Geology & Minerals, Australian Geological Survey Organisation, P.O. Box 378, Canberra, ACT 2601.

1. Meteorite craters and astroblemes

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18. Acraman, Gawler craton, SA	32°01'S 135°27'E	85–90	abefgx	~590	Williams et al. (this issue)
19. Spider, Kimberley, WA	16°44'S 126°05'E	13 × 11	ax	>700	Shoemaker & Shoemaker (this issue)
20. Strangways, Arnhem Land, NT	15°12'S 133°35'E	>26	abesx	1000?	Shoemaker & Shoemaker (this issue)
21. Goyder, Arnhem Land, NT	13°28'S 135°02'E	7-25	as	<1400	Haines (this issue)
22. Lawn Hill, NW Qld	18°41'S 138°39'E	20	abex	<1670; pre-Middle Cambrian	Shoemaker & Shoemaker (this issue)
23. Teague Ring, Wiluna region, WA	25°52'S 120°53'E	30	abgx	1630 ± 5	Shoemaker & Shoemaker (this issue)

2. Some circular structures, including buried structures, whose potential impact origin requires testing

<i>Structure and site</i>	<i>Lat./long.</i>	<i>Diameter (km)</i>	<i>Impact criteria</i>	<i>Age (Ma)</i>	<i>References</i>
Dirranbandi, Qld	28°35'S 148°10'E		multiple craters		Binns (1967)
Spring Range, Barrow Creek, NT	21°52'S 134°18'E	0.3	(type of planar deformation feature [PDF] requires confirmation)		Haines (1989)
Mulkarra, west Eromanga Basin, SA	27°50'S 138°55'E	17	gu	105 ± 3	Flynn (1989)
Camooweal, NW Qld	19°15'S 138°07'E	~30	gu (requires confirmation through drilling)	>550	Glikson (unpublished)

3. Spherule/ejecta units and siderophile-element anomalies of demonstrated and possible impact origin

<i>Age/stratigraphy</i>	<i>Location</i>	<i>Lithology/texture/impact criteria</i>	<i>Reference</i>
Frasnian–Famennian (Late Devonian)	north Canning Basin, WA	iridium anomaly; extensive extinctions; interpreted in terms of biogenic concentrations of siderophiles	Hurley & Van der Voo (1990)
~0.59 Ga ejecta unit within shale; Bunyerroo Formation	Flinders Ranges, SA	fragmental ejecta (including shatter-coned fragments); spherules; siderophile-element anomalies; shock lamellae in quartz	Wallace et al. (this issue)
~2.5 Ga Dales Gorge Member, Brockman Iron Formation	Hamersley Basin, WA	spherules mixed with volcanoclastics	Simonson (1992)
~2.6 Ga Carawine Dolomite	Hamersley Basin, WA	a spherule component within dolomixtite	Simonson (1992)
~2.6 Ga upper Wittenoom Formation	Hamersley Basin, WA	12–130-cm-thick spherule-bearing unit in turbidite; pronounced iridium anomaly	Simonson (1992); B.M. Simonson (personal communication 1995)
~3.45 Ga upper Warrawoona Group	Miralga Creek, north Pilbara Block, WA	0.1–0.75-mm-diameter spherules in 15–50-cm-thick current-bedded arenite within chert intercalated with mafic volcanics	Lowe & Byerly (1986)

***Impact criteria**

- a geologic structure
- b impact breccia (including distal ejecta) and/or shock metamorphism (cf. shock lamellae in quartz)
- e impact melt
- f siderophile elements in fallout layer
- g geophysical evidence
- m associated meteorites
- s siderophile elements in impact melt
- u buried structure
- x shatter cones

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