

神遊世界最小的洲 最大的島

香港大學澳洲校友會

2023 地學旅遊講座之澳洲地學旅遊

吳振揚 (YOUNG NG)

澳洲地球科學委員會

全國地學旅遊策略 - 國際事務及推廣小組主席

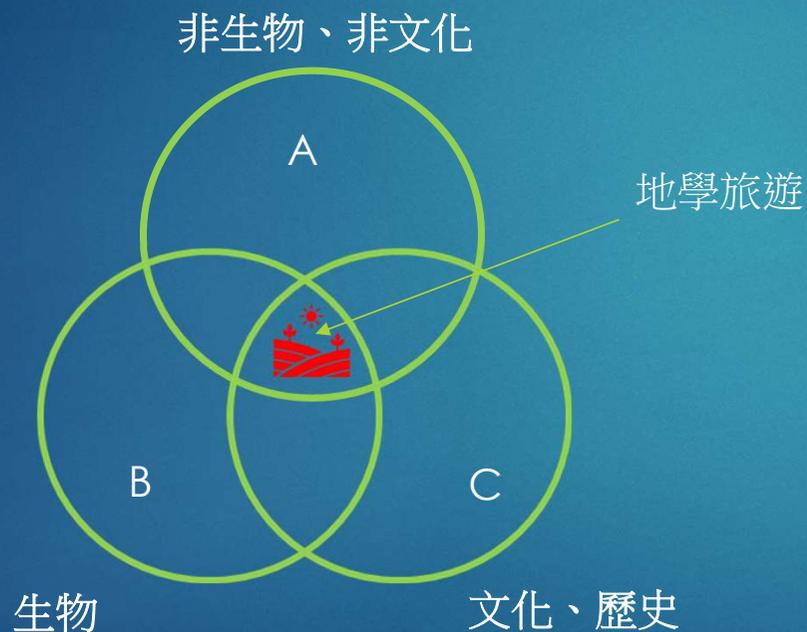
大綱

1. 什麼是地學旅遊 (Geotourism)?
2. 澳洲: 理想的地學旅遊勝地
3. 設計適合自己的地學旅遊路線
4. 地學旅遊方式神遊澳洲、及注意事項
5. 20 個推介的澳洲神遊景點
6. 總結



1. 什麼是地學旅遊 (Geotourism)?

地球環境元素 (ABC)



- ▶ 天文、地理、地球、地質、地貌、河流、泥土、氣候等地球環境非生物、非文化元素 (A=Abiotic) 為基礎, 及
- ▶ 附帶其有直接關係的生物, 包括動植物、生態環境 (B=Biotic) 及人類文化、歷史 (C= Cultural) 的旅遊方式及活動



例一

Uluru (烏魯魯、艾爾斯岩)

- ▶ 土著怎看?
- ▶ 現在澳洲人怎看?
- ▶ 一般遊客怎看?
- ▶ 您又怎看?

例二 Jenolan Cave 傑諾倫洞

- 3.4 億歲, 全球最老的天然石灰岩洞
- 鐘乳石生長速度:
每100 年1 cm



例三 Stromatolite 疊層石



Hamelin Pool, Shark Bay, WA



a world 'abse' wan' high like cover...



Darling River Region



Nothing can compare with the beauty of the Outback. It cannot be described, but it can be experienced. See your own program to meet the challenge. The same program can be used in many parts of the world. It is a challenge to the imagination.



Water...pulse of life in the Outback.



Water...pulse of life in the Outback.

Outback Touring

Outback touring is a unique experience in Australia. It offers a chance to see the most beautiful scenery in the world. The Outback is a vast, open landscape with rolling hills, red earth, and a few scattered buildings. It is a place where you can see the most beautiful scenery in the world.



George Lake



Fruitflies, Frogs, Fertilizers...



every day a new discovery...



OUTBACK
Central and South Australia



Selected Mammals

Selected Mammals
The Outback is home to many unique mammals. Some of the most interesting include the kangaroo, wallaby, and emu. These animals have adapted to the harsh conditions of the Outback and are a major attraction for tourists.



Fruitflies, Frogs, Fertilizers...
The Outback is a place of many firsts. It is the first place where you can see a kangaroo, wallaby, or emu. It is also the first place where you can see a crocodile, a dingo, or a snake. The Outback is a place of many firsts and is a must-see for anyone visiting Australia.



Emu...the largest bird in the world. It is a native of Australia and is found in the Outback. It is a very hardy bird and can survive in the most difficult conditions. It is a very interesting bird and is a major attraction for tourists.



Selected Mammals
The Outback is home to many unique mammals. Some of the most interesting include the kangaroo, wallaby, and emu. These animals have adapted to the harsh conditions of the Outback and are a major attraction for tourists.

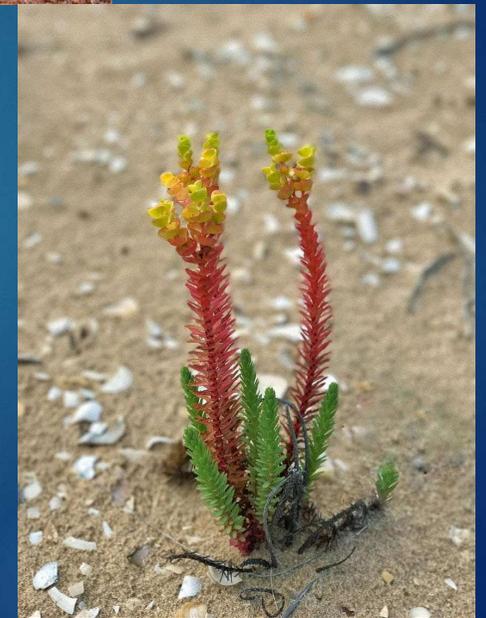
B = Biotic 生物元素

- ▶ 澳洲獨地理環境, 擁有170種有袋動物 佔世界70%









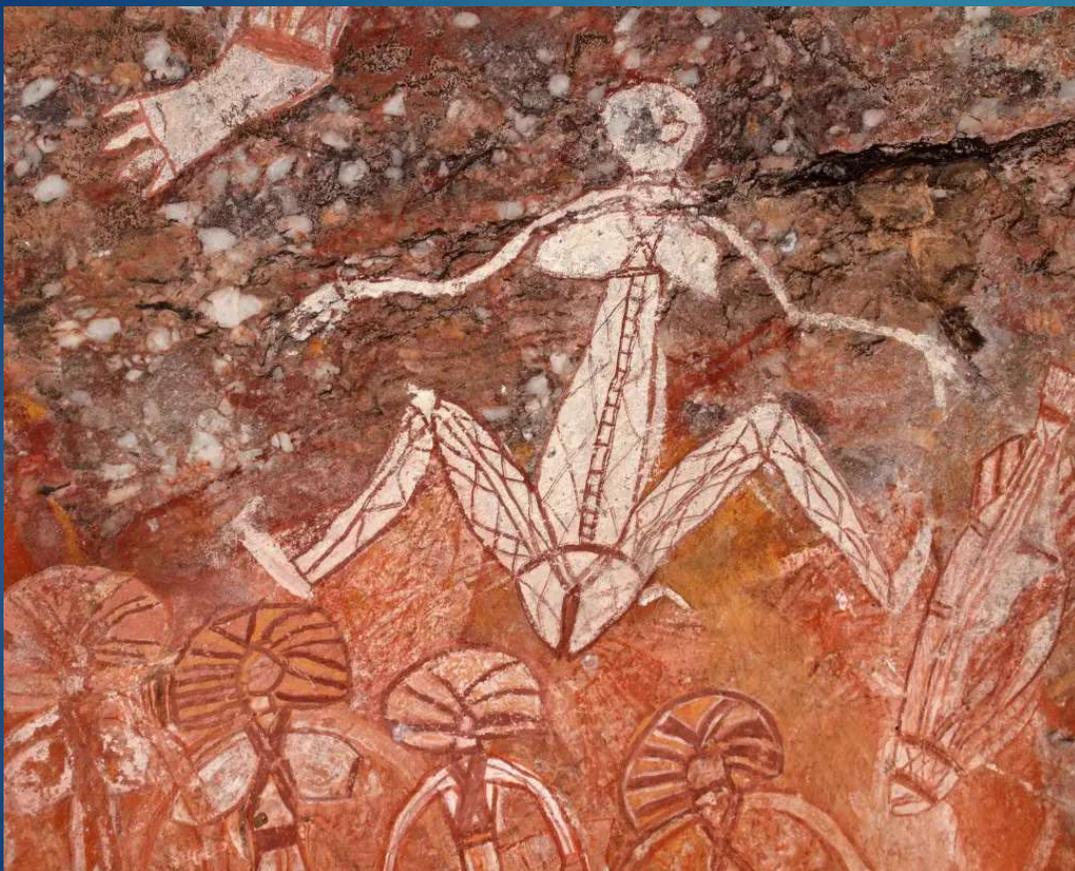
Hermès

InstaMag



 EISPHOTOGRAPHY

C = Cultural 文化元素



- ▶ 澳洲土著文化－畫、壁畫雕刻、傳說、神話
- ▶ 與山石、泥土有著千絲萬縷的關係



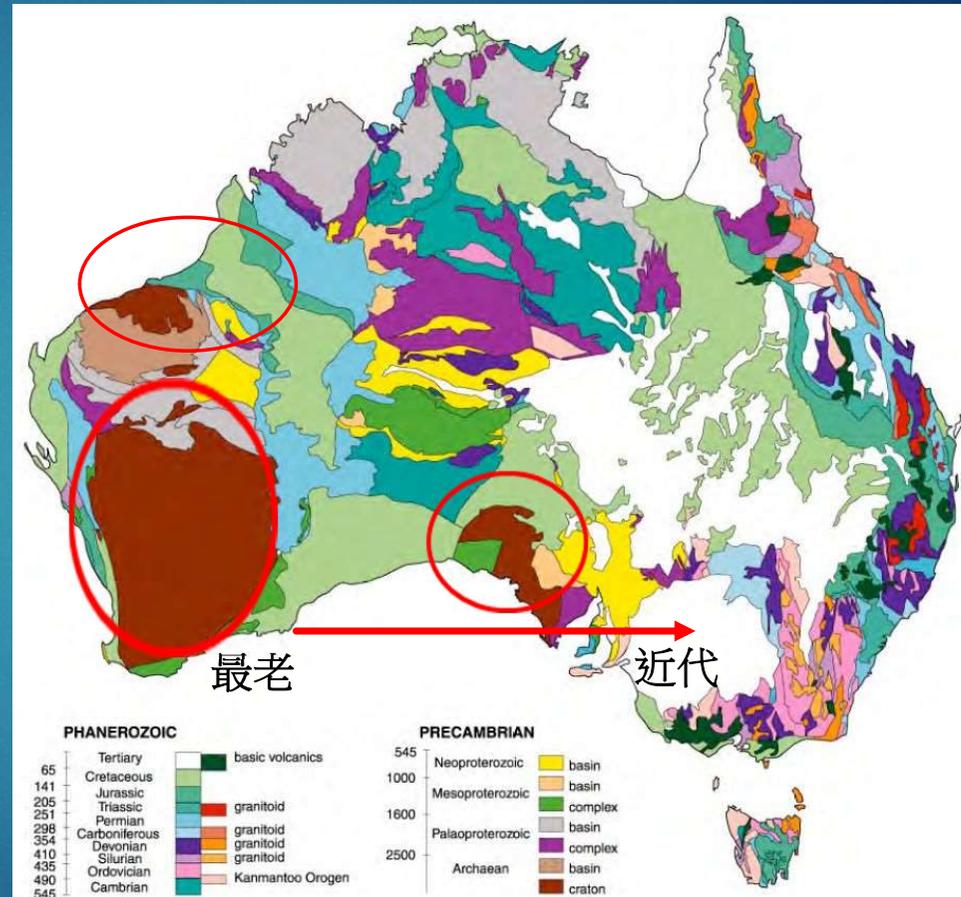
2. 為何澳洲是理想的地學旅遊勝地?

- ▶ 地質地貌多樣性
- ▶ 氣候適宜
- ▶ 居民友善
- ▶ 安全 (大自然/人類構成之風險)
- ▶ 完善交通系統
- ▶ 優質電訊網絡系統
- ▶ 健康/Medicare
- ▶ 充裕時間



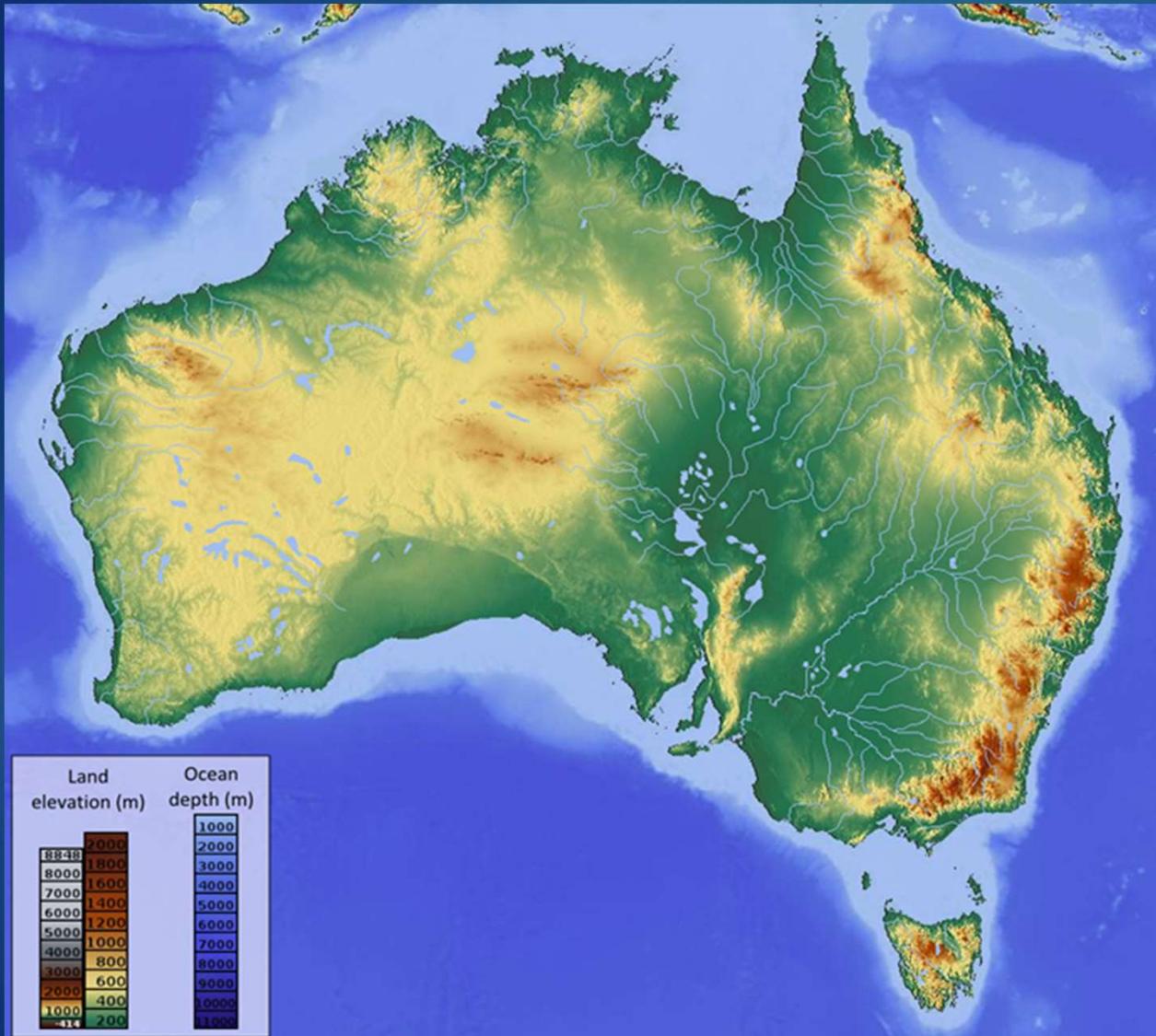
地質地貌多樣性

- ▶ 地質歷史悠久
- ▶ 地質地貌變化多端
- ▶ 地貌種類繁多



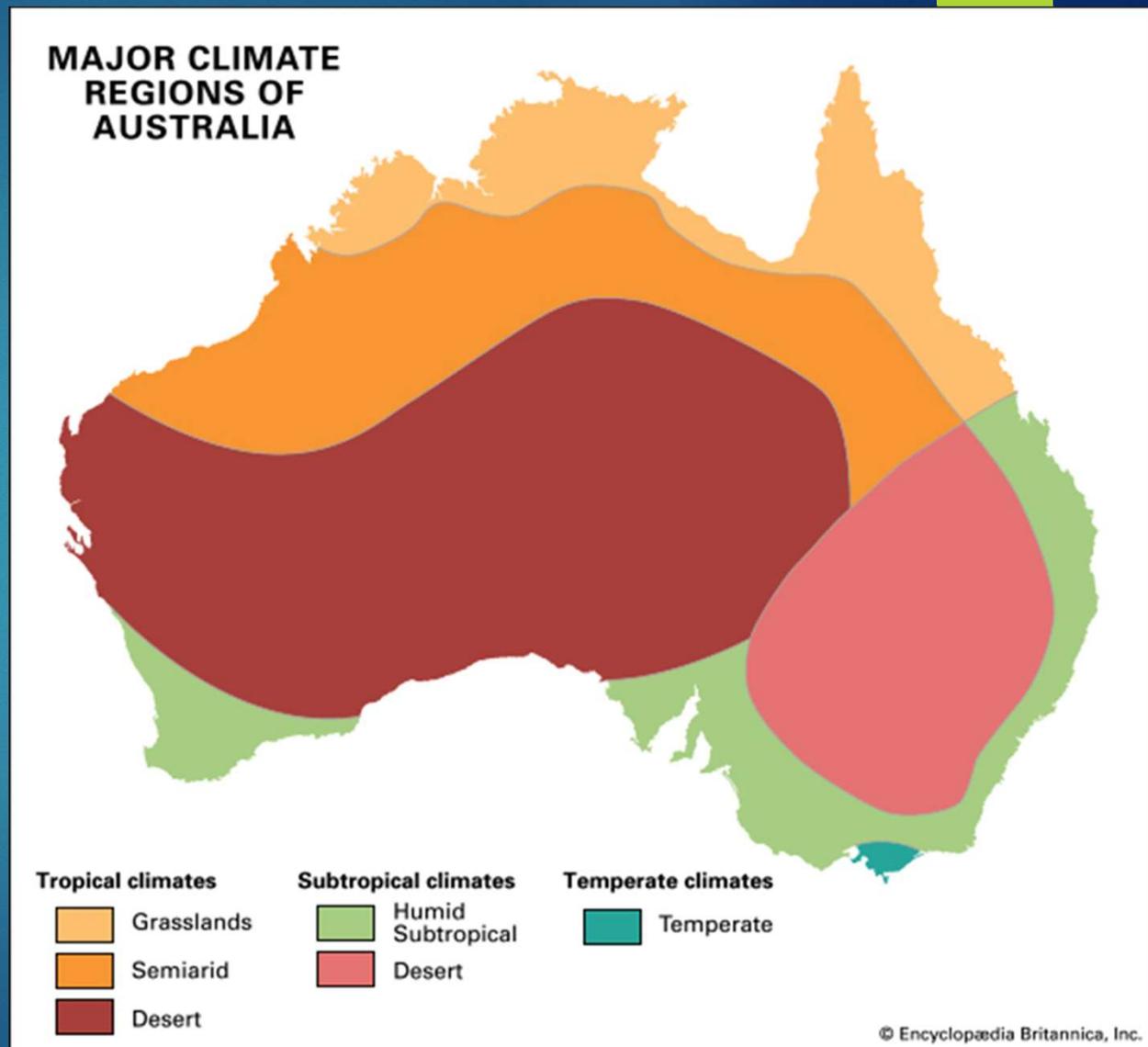
基本資訊

- 總面積 7.68 百萬平方公里
- 海岸綫总长34,000平方公里 (中国14,500)
- 十大沙漠 18% 陸地面積
- 地形 - 四個地貌区
- 平均 330米
- 6% 土地 >600米
- 本土最高点 2,228 米 (科西阿斯科山)
- 最低点 -15米 (艾尔湖)



氣候適宜

- 春 9 - 11月、夏 12 - 2月、秋 3 - 5月、冬 6 - 8月
- 東、西、南、北、中, 各自精彩
- 全國平均 419 毫米
- 80% < 600 毫米 (香港: 2,200)
- 天災: 乾旱、河水泛濫、沙塵暴、雷暴、季候風、森林大火



民眾友善

- ▶ 多種族願意接受不同文化
- ▶ 安全 (大自然/人類構成之風險)





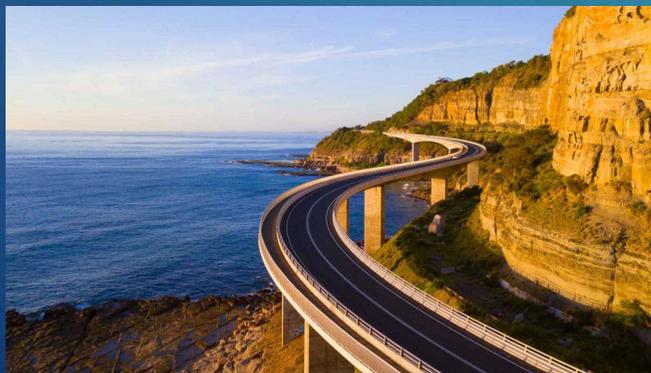


Mildura RSL

完善交通系統

全國公路長度90萬km

平均每人34 m, 世界排行14位



醫療保障



充裕時間



3. 如何設計適合自己的地學旅遊路線？

- ▶ 我打算用幾多時間？
- ▶ 我能否可以靈活利用時間？
- ▶ 我體質、體能狀態如何？
- ▶ 我想看什麼、想體驗什麼？
- ▶ 天氣、路面程況將會如何？
- ▶ 什麼季節去什麼地方？
- ▶ 我用什麼交通工具？
- ▶ 實例: 10月份去澳洲中部, Uluru + Kata Tjuta 為終極目的



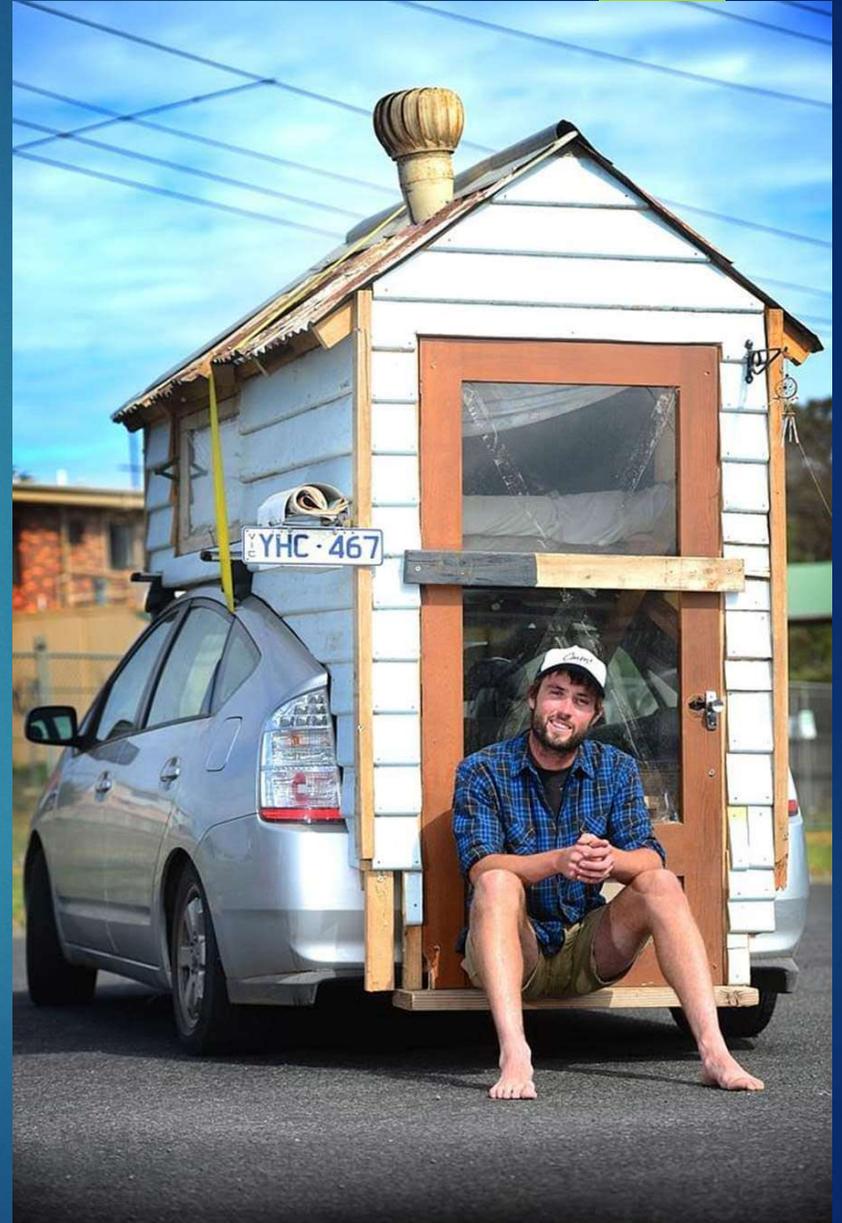
- ▶ Uluru + Kata Tjuta 28天遊
- ▶ 悉尼家出發西走, 經南澳、北領域、昆士蘭州, 再返回悉尼
- ▶ 全程 8,900 km





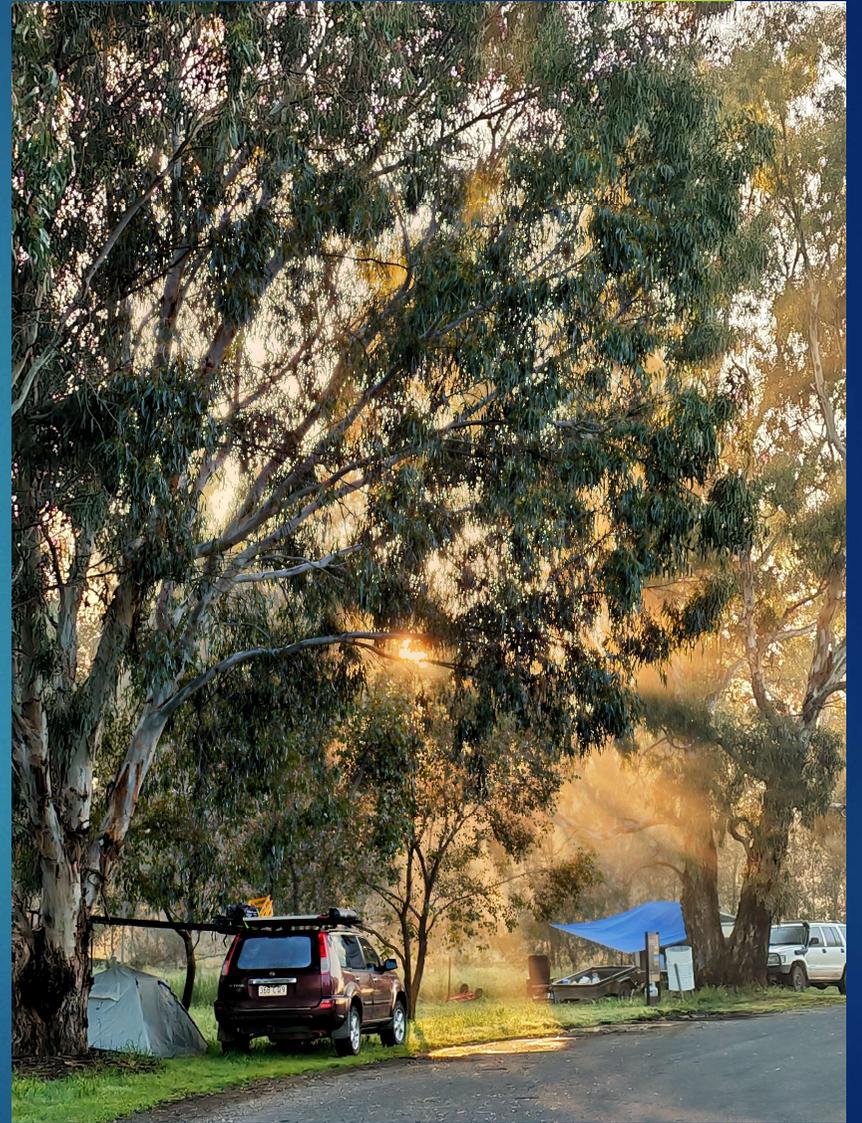
4. 如何以地學旅遊方式神遊澳洲？

- ▶ 定清目標
- ▶ 積極備戰 (Google: geology of xxx; 有用網頁: Geoscience Australia, GSA, NPWS, 旅遊網, Wikipedia, 朋友推介)
- ▶ 個人用品準備 (衣服、雨衣、拖鞋、帽、太陽鏡、防嗮油、急救袋、
- ▶ 戰車準備 (檢查、換油、加水、換輪呔、spare tyre、維修、氣泵、lifting jack)
- ▶ 食物、食水準備 (輕便簡單為主、蒸漏水)
- ▶ 露營物品準備: 帳幕食具、廚具、生火工具了、水筒
- ▶ 戶外活動用品: 獨木舟、行山鞋、涉水鞋、戶外燈、電筒、泳衣、魚具
- ▶ 通訊設備 (手機、Sim Card、walkie talkie, satellite phone, 緊急求救設備)
- ▶ 旅行記錄 (Travel apps、電腦、紙筆)

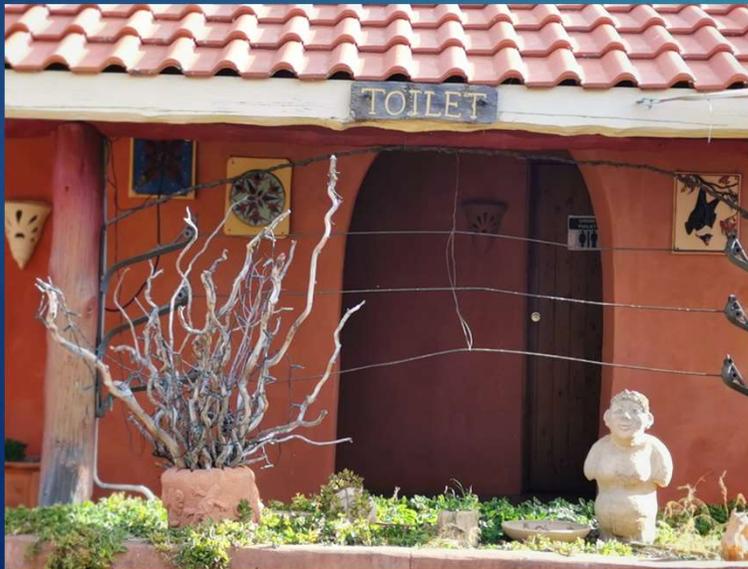
















5. 有什麼需注意事項?

- ▶ 天氣及路面變化
- ▶ 不同州不同法例
- ▶ 水災、風災、山火災難消息及報告
- ▶ 避免 unsealed 路、選擇主要公路
- ▶ 開長途車每兩小時休一休
- ▶ 緊急電話要知道
- ▶ 入夜不開車、黃昏前安頓
- ▶ 常check 油缸、輪呔、機器



1 Tab

Tab Groups

- Untitled

Collected Links

- Bookmarks
- Reading List



Plan your journey ▾

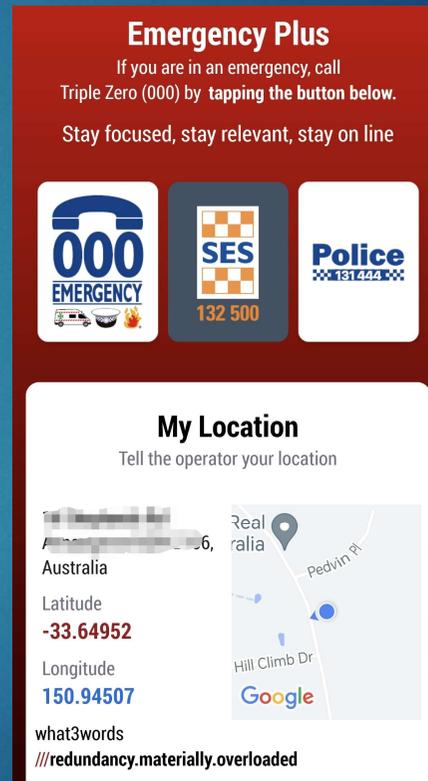
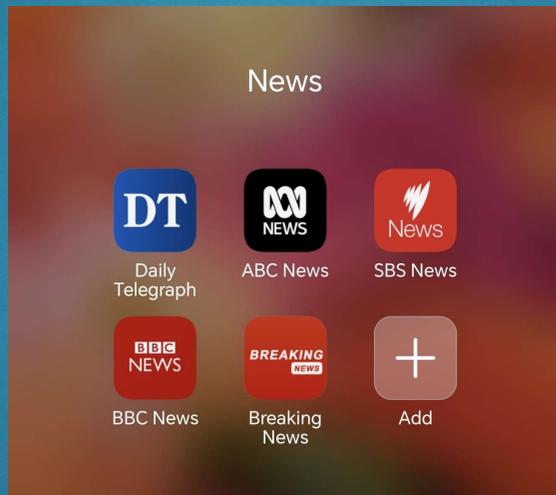
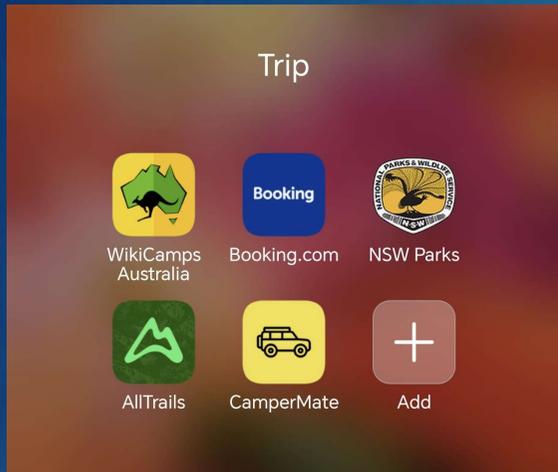
10 of Australia's best camping apps

1. [Wikicamps Australia](#): Camping Destinations and Information
2. [Recfishwest](#): WA Fishing Rules and Identifier
3. [Fuel Map Australia](#): Fuel locations and Prices
4. [Willy Weather](#): Detailed Weather Information
5. [Camping Checklist](#): Packing Guide
6. [Travellers Autobarn](#): Camping Locations and Reviews
7. [GoSkyWatch](#): Stargazing App
8. [Roadtrippers](#): Road Trip Planner
9. [PictureThis](#): Plant Identifier
10. [AllTrails](#): Trail Locations and Detailed Information

1. Wikicamps Australia

Feedback



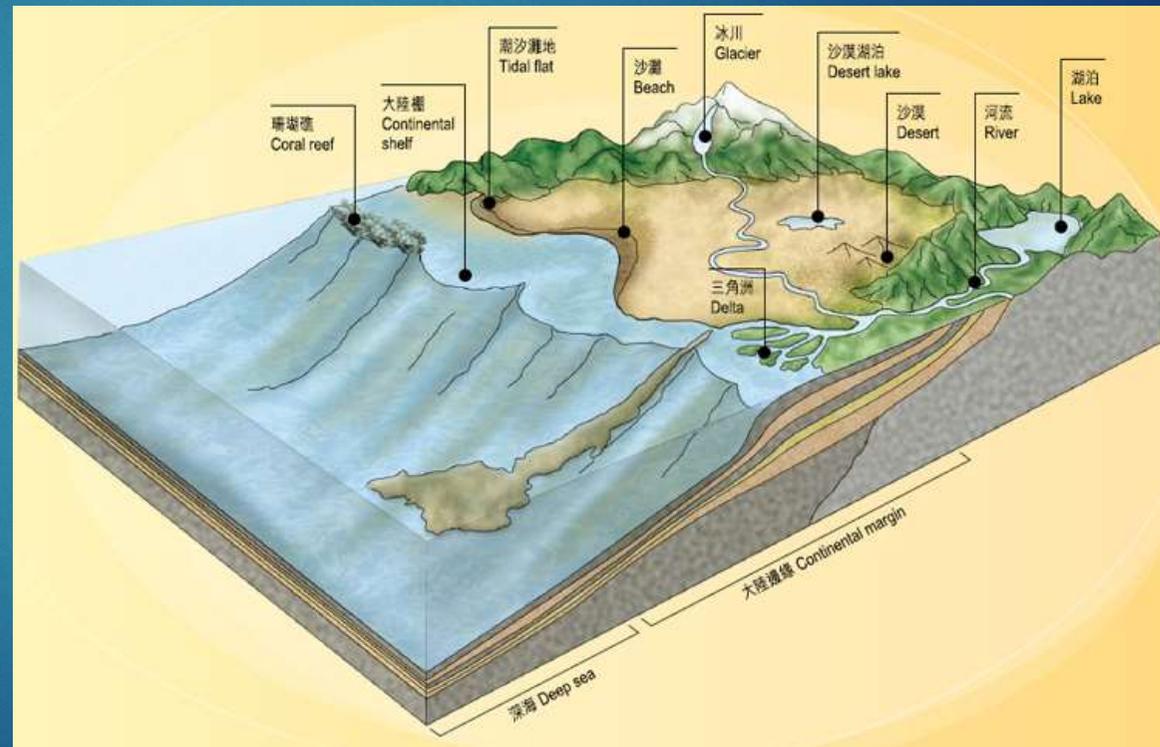




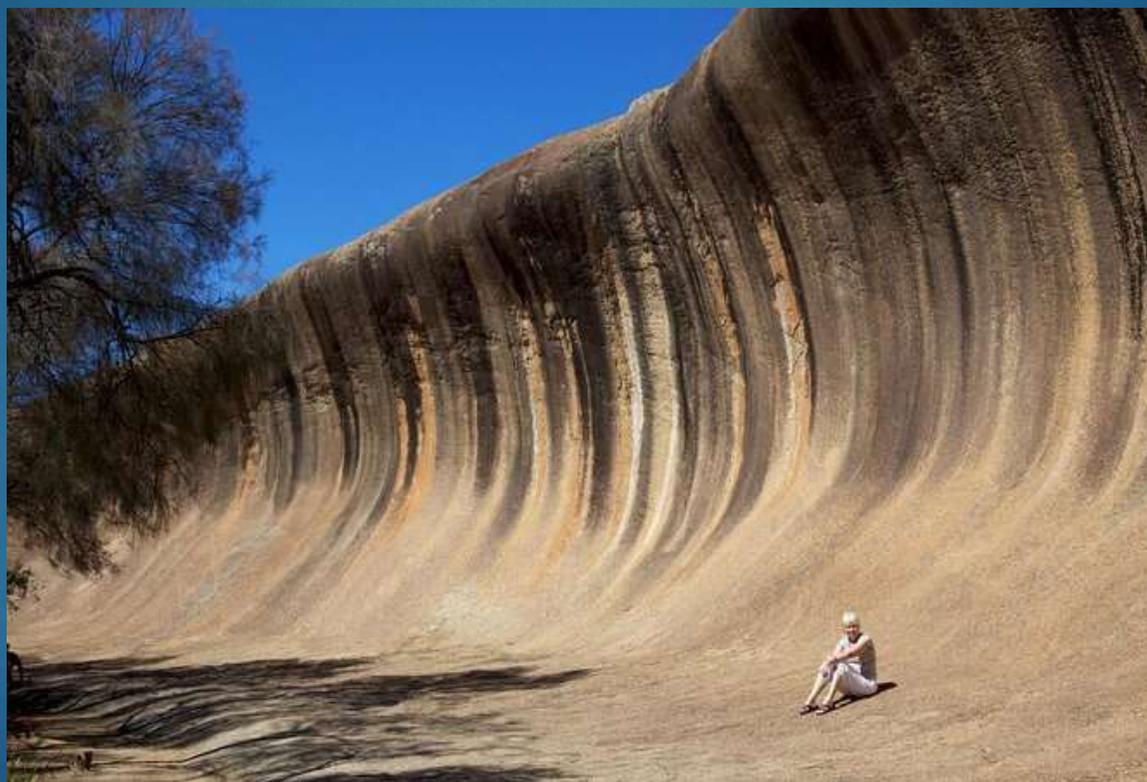


6. 有那些澳洲神遊景色及景點?

- ▶ 海岸
- ▶ 沙漠
- ▶ 雪山
- ▶ 山脈
- ▶ 山谷
- ▶ 湖泊
- ▶ 河溪
- ▶ 洞穴
- ▶ 火山
- ▶ 森林
- ▶ 平原
- ▶ 礦區



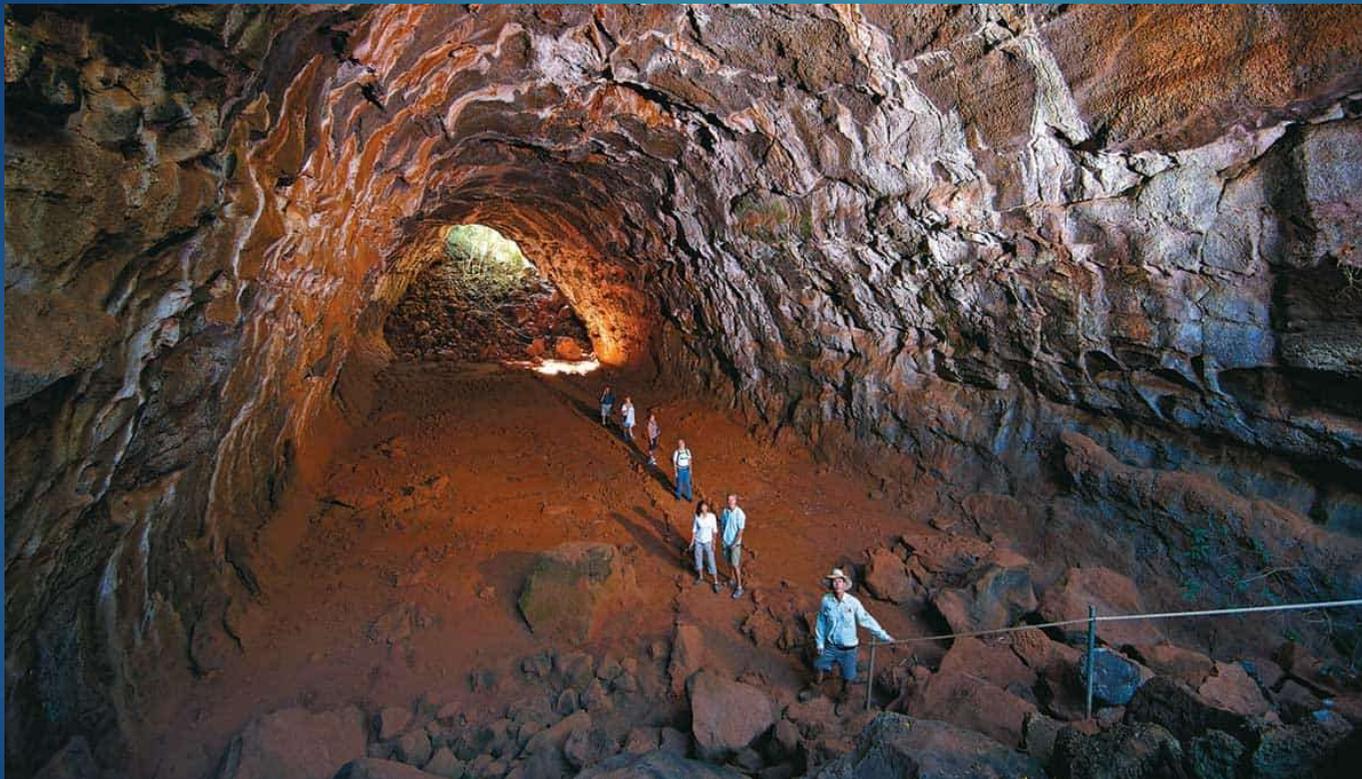
Wave Rock 巨浪石



Wave Rock, Hyden

- 高15 m、長110 m
- 27 億年
- 花崗岩
- 流水侵蝕

Lava tube 溶岩隧道



Lava Tubes, Undara

- Cairns 西南 275 km
- 最長160 km
- 平均19 萬年前形成

Meteorite Crater 隕石坑



Meteorite Crater, Wolfe Creek, WA



- 離 Darwin 800 km, Hall Creek 150
- 直徑 875 m
- 深 60 m
- 12萬年前形成

Pink lakes 粉红湖

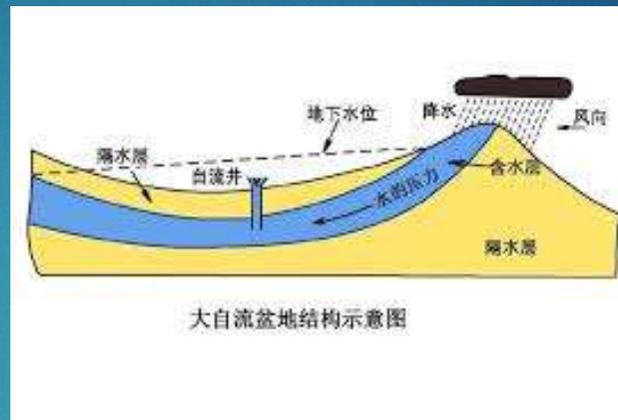
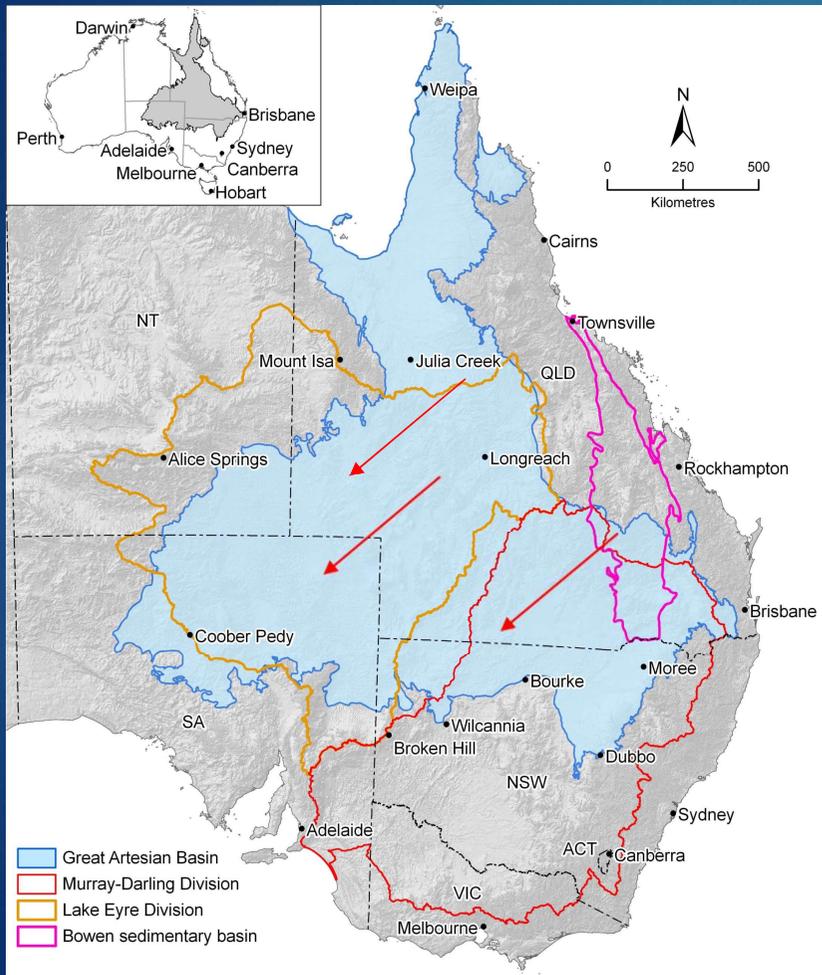


Hutt Lagoon, WA

- 全澳十多個
- 杜氏盐藻 (*Dunaliella salina*)
- 能在>30%氯化钠濃度環境生存



The Great Artesian Basin 大自流泉盆地



大自流盆地结构示意图



- 1.7 百萬 km²
- 22% 澳洲本土陸地面積
- 全球最大地下水庫 (儲水量64,900 km³ - 裏海78,200 km³)
- 流速 每年 1-5米



Great Barrier Reef 大堡礁



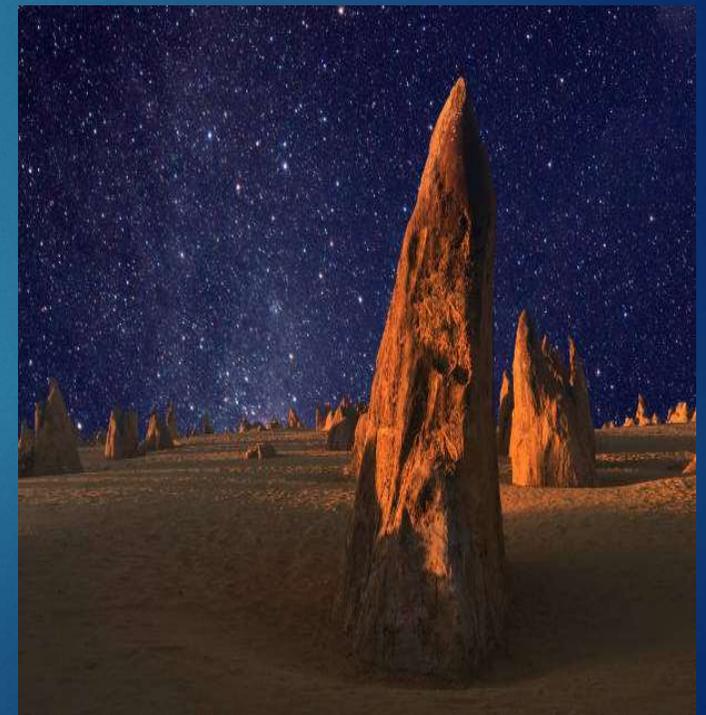
Heart Reef at Hardys Reef, Great Barrier Reef

- 1981世界自然遺產
- 3,000個獨立珊瑚礁、900個島
- 長2,400公里, 闊 60 - 250公里
- 世界最大珊瑚礁群, 佔10%
- 軟硬珊瑚 > 400 種
- 軟體動物 >4,000 種
- 魚類 >1,500 種
- 鳥類 > 240 種

The Pinnacles 尖峰石陣



- 柏斯以北200 km
- 3-2萬年前形成之石灰岩尖柱
- 海水退後留下大量貝殼珊瑚加後期樹枝



Bungle Bungles (Purnululu NP)



- 波奴鲁鲁国家公园内
- 4億年前泥盆纪砂岩形成
- 深色水平纹為藍綠菌

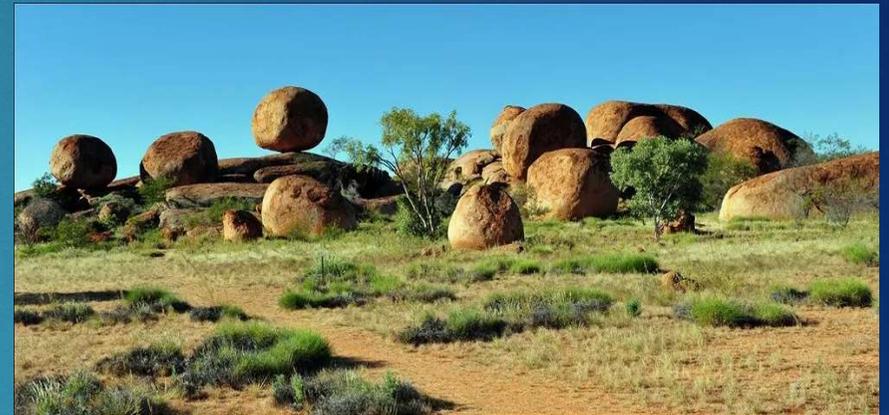


Devil's Marbles 魔鬼大理石

- 15億年老花崗岩風化後的結果
- Alice Spring 以北400公里



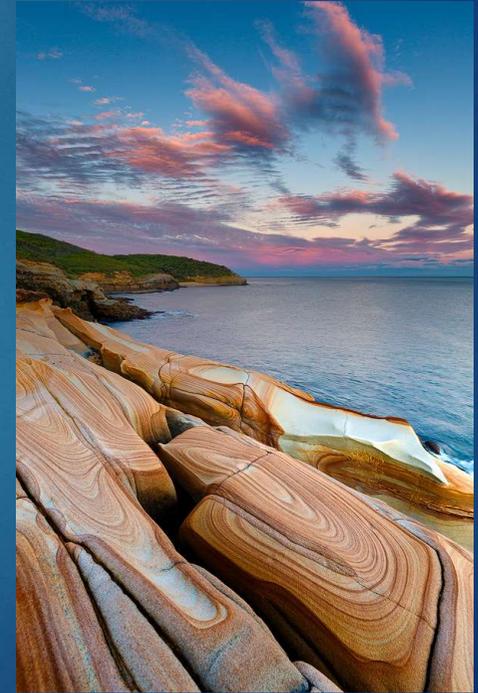
Devil's Marbles in Warumungu, NT



Bouddi NP 波蒂國家公園



- Leisegang rings 利澤岡環
- 大自然的壁畫



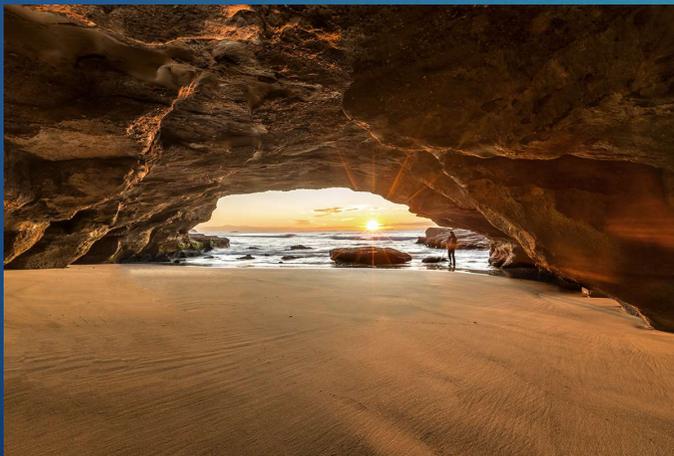
Petrified Forest (Swansea Heads)



- 2.5 億年樹化石
- 樹干東西排列
- 舌羊齒樹 (岡瓦納樹, *Glossopteris*)
- 煤層
- 火山東移 Newcastle 以東250 km



Cave Beach

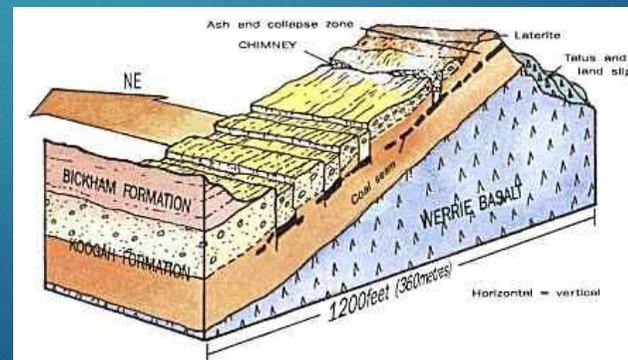


Cave Beach, Swansea Heads

- 6,500 年前冰期完結開始形成
- 海蝕洞、水池暢遊
- 植物化石與岡瓦納古陸時、期連在一起的南極洲、非洲南美洲、印度相同



Burning Mountain (Mount Wingen)



Burning Mountain, Wingen, NSW

- 悉尼以北 230 km
- 全球最古老的煤層自然火災
- 地下 30 m 深處
- 每年向南移 1 m
- 已燃燒 > 5,000 年

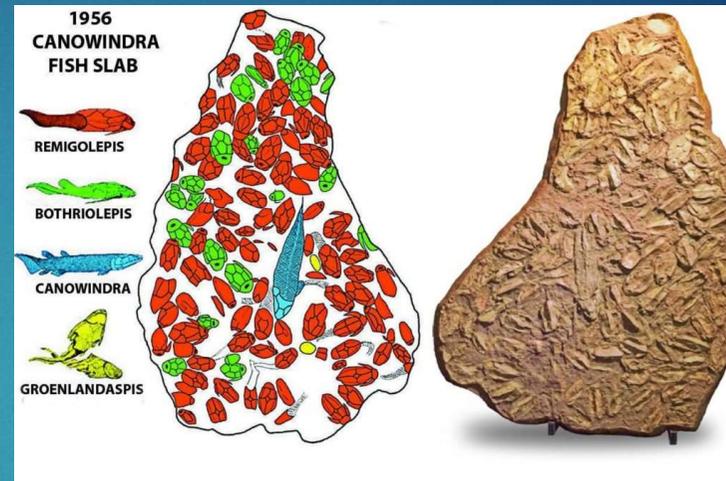
Sandstone Cave



Sandstone Cave, Pilliga, NSW



Fish Museum, Canowindra

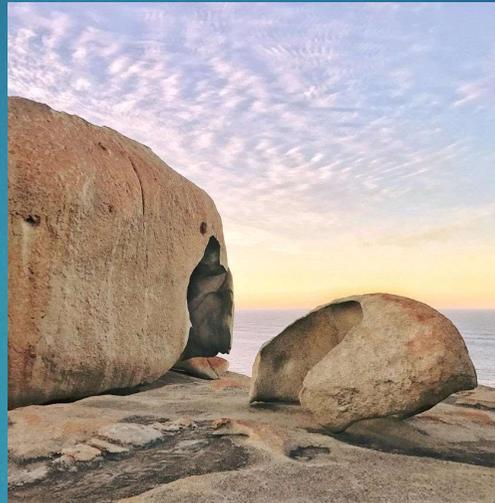


- 3.6億年前泥盆紀
- 3,000種魚
- 香港地質公園

Dinosaur Trail 恐龍棧道



Remarkable Rocks 非凡石



Remarkable Rocks, Kangaroo Island

5 億年前花崗岩風
化侵蝕地貌



Ediacaran biota 埃迪卡拉生物群

- 地球最早的複雜多細胞生物, 最古老的動物
- 寒武紀末期 5.8 – 5.4 億年前 (冰期完結)
- 生物大爆發：盤狀、管狀、葉狀、袋狀生物



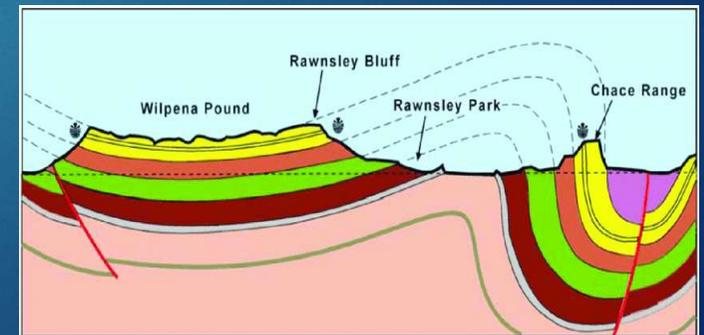
Ediacara Hills, SA



Wilpena Pound



Wilpena Pound, Flinders Range



Mungo NP 芒戈國家公園



Mungo NP, Willandra Lake, NSW

- 世界遺產地 (1981)
- 悉尼以西 550 km
- 古干涸湖泊
- 史前腳印 (2萬年前)、遺骨
- 4.2 萬年前Mungo Lady, Mungo Man 遺骨, 非洲外最老



Underground living 地下生活



White Cliffs, NSW



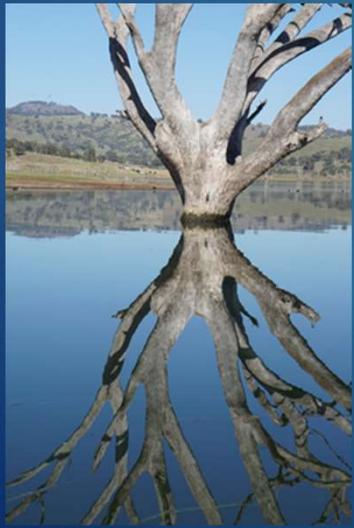


Coober Pedy, SA



Fairyland 仙境





7. 總結

- ▶ 澳洲擁有無數自然美景
- ▶ A (Abiotic 非生物) 元素包括地質地貌 無處不在是
- ▶ 地學旅遊是鼓勵完整地、全面地欣賞景點, 並包括簡單了解景點的非生物元素
- ▶ 以ABC 方式實行地學旅遊令旅途更豐富難忘
- ▶ 鼓勵自駕遊澳洲, 親身感受真正的澳洲生活
- ▶ 美景近在咫尺, 就在我們腳下
- ▶ 適合退休人仕, 有充裕時間, 靈活安排行程



參考

- ▶ <https://www.ga.gov.au/> (Gescience Australia)
- ▶ <https://www.gsa.org.au/> (Geological Society of Australia)
- ▶ <https://www.agc.org.au/> (Australian Geoscience Council)
- ▶ <http://www.geomaps.com.au> (Geological Sites of NSW)
- ▶ <https://www.nationalparks.nsw.gov.au/> (National Parks & Wildlife Services, NSW and other states)



A photograph of Uluru, a large red sandstone monolith in Australia, under a dramatic sky with golden and blue clouds. The foreground shows sparse desert vegetation.

多謝!

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