

# 40 Years Strong

## Long-Time Geoscience Australia, U.S. Geological Survey (USGS) Partnership Benefits both Agencies and the World

### When the Partnership Began

In 1979, the Australian Government chose the city of Alice Springs to host a Landsat Ground Station because of its location in central Australia. This location enables satellite coverage of the entire Australian continent. Its antennas have played a key role in supporting international satellite programs over more than 40 years.



### What the Partnership Involves

The Geoscience Australia Alice Springs satellite ground station includes:

- Two 9-meter antennas
- A 2.4-meter antenna
- Associated infrastructure

The ground station is one of three international partners with the global Landsat Ground Network that downlink satellite telemetry and science data and can also uplink commands to the satellites.



**Geoscience Australia Chief Executive Officer James Johnson (left) and USGS Director James Reilly hold gifts they exchanged during a 40th anniversary celebration of their agencies' remote-sensing partnership in November 2019 at Alice Springs, Australia.**

### Benefits to Australia

The Alice Springs antennas collect data from Landsat 7 and 8, as well as from other Earth monitoring satellites. These data are used to inform planning and decision making by government agencies, educational and research institutions, industry, and communities to:

- Monitor land use
- Support agriculture
- Discover new mineral and energy resources
- Ensure water security
- Monitor and manage urban growth, and forest resources, and ecosystem health
- Respond to natural disasters such as bushfires, cyclones, and floods

Geoscience Australia's Digital Earth Australia (DEA) big data platform relies heavily upon Landsat data. DEA stacks consistent, time-stamped observations to detect and explain changes to the Australian environment.

### Benefits to USGS

Should Landsat 8's on-board data recorder ever fail or lose capacity, the direct reception capability of Geoscience Australia's ground station would help prevent a gap in Landsat coverage. The USGS also realized increased efficiencies when the Alice Springs ground station was integrated into the Landsat 8 International Ground Network. Using a higher performing electronic data transfer method, S-band (telemetry) and X-band (imagery) data could be transferred from Alice Springs to the USGS Earth Resources Observation and Science (EROS) Center in Sioux Falls, South Dakota, at much higher speed and in a more direct route than previously was possible. It also improved the data transfer for Landsat 7.





**Artwork from Arrernte Aboriginal artist Roseanne Kemarre Ellis (right foreground) and Lakota Sioux Native American artist Rosaline (Little Eagle) Oren now adorns two satellite dishes at Geoscience Australia's Alice Springs ground station.**



**Photograph of a satellite antenna at Australia's Alice Springs Satellite ground station.**

## Serving the Greater Good

In collaboration with their USGS counterparts, Geoscience Australia engineers have supported increased ground station capacity and local observations over Australia, its surrounding region, and the world.

The partnership has also led to:

- The participation of Geoscience Australia software engineers and scientists with the National Aeronautics and Space Administration-USGS Landsat Science Team to aid in the development of technologies and software that will take greater advantage of Geoscience Australia's innovative, time-series "Data Cube" development efforts.
- Important Australian input on USGS Analysis Ready Data (ARD) and future ARD products that reduce the need for costly custom processing by Geoscience Australia and others, resulting in products that are directly usable in various Earth science applications.

## A Partnership Captured in Art

In November 2019, Geoscience Australia officials commissioned artwork created by Lakota Sioux artist Rosaline (Little Eagle) Oren from South Dakota that now adorns the reflector surface of the newest Landsat satellite antenna at Alice Springs. Another antenna at Alice Springs already features artwork based on an Australian Aboriginal painting by Roseanne Kemarre Ellis, that recognizes the role of the Arrernte Aboriginal people in Central Australia as custodians of the land where the ground station is located. The use of this artwork recognizes the ancestral stewards of lands in Central Australia and in South Dakota, where the USGS also operates Landsat antennas, and showcases the indigenous connections between the two agencies.



**Geoscience Australia's Alice Springs Datron antenna has been painted with indigenous artwork to recognize the Arrernte people as the traditional owners of the land.**

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**Australian Government**

**Geoscience Australia**