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The cosmic spectacles set to light up Chile's skies in 2014

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Lunar eclipses, meteor showers and scientific breakthroughs promise to make 2014 an exciting year for astronomers, both amateur and professional.



The Geminids meteor shower in December last year. Photo courtesy of Yuri Beletsky

Not yet two weeks into the new year and Chile already boasts a new astronomy park and is looking forward to a year of celestial events and astronomical discoveries.

“There will be five meteor showers in 2014,” David Azocar, communications officer of the Center for Excellence in Astrophysics and Associated Technologies (CATA), told The Santiago Times. “The Aquarids in May, the Orionids in October, the Taurids in the second week of November, the Leonids in the third week of November and the Geminids in mid-December.”

It is not only meteor showers that space enthusiasts have to look forward to — two lunar eclipses, in April and October, are scheduled to shadow the astronomical calendar.

“The eclipse taking place on April 15 will be streamed live from Peru’s Machu Picchu, thanks to the [Global Robotic-telescopes Intelligent Array] GLORIA Telescope Project,” Azocar said.

For the scientific community, 2014 has already got off to a bright start, with Thursday’s inauguration of the Parque Astronómico Atacama — an 89,000 acre area of land set aside for new and existing observatories in the country’s far North.

Chile already boasts just under half of the world’s astronomy infrastructure of telescopes and this number is expected to increase to 70 percent by 2018. Azocar explained why the country has [the world’s most lauded skies](#) when it comes to astronomical development.

“In the North of Chile, which is where astronomical observatories are concentrated, there is a happy mixture of many clear nights and low humidity,” he said. “Both are factors which favor the work of scientific instruments. In addition, Chile has very good astronomers — many of them trained in the most prestigious universities in the world.”

Despite the exciting events on the horizon, 2014 will do well to better 2013 with regards to astral discoveries.

Building on a year of discoveries

The world's largest ground-based observatory, [the Atacama Large Millimeter/submillimeter Array \(ALMA\)](#), located in the mountains outside San Pedro, was unveiled only last year and has identified the most distant galaxies ever seen.

James Jenkins, an astronomer at the Universidad de Chile, helped unearth Tau Ceti — one of Earth's closest and most Sun-like stars. The star is believed to host five planets and astronomers estimate these planets to be six times larger than Earth. One of them, five times our planet's mass, resides within Tau Ceti's "habitable zone" — the distance from the star where an Earth-like planet could retain liquid water on its surface.

"We observed the star Tau Ceti with instruments in Chile and other locations around the world. After many years of observations we realized that this star has signals that agree with it having a system of at least five planets," Jenkins told The Santiago Times. "Tau Ceti is special in that it is the nearest single Sun-like star to ourselves and one, possibly two, of the signals we discovered would be low-mass planets that orbit in the habitable zone of Tau Ceti."

Jenkins explained how the discovery of the Tau Ceti planets adds credence to the theory that alien life may exist elsewhere in the universe.

"The main point is that if the nearest single Sun-like star to the Sun also has a small habitable planet orbiting it, then it is likely that low-mass planets in the habitable zones of Sun-like stars are very common — and hence the probability that alien life exists elsewhere in the Universe is much higher," he said.

Increasingly, however, Chile's skies are not only being taken advantage of by scientists, and as public interest grows so do the possibilities for amateur astronomers to witness many of the cosmological events occurring in 2014.

Where to watch the heavens

Aside from the observatories found in the Atacama Desert, visitors [are welcome at Antofagasta's Paranal Observatory](#) — the site of the world's largest optical telescope. A number of locations ideal for amateur observation can be found in and around Santiago, such as Cuesta la Dormida, a mountain located in Parque Nacional Campana to the north-west of the city, and Farellones, a village and ski resort 22 miles east of Santiago.

"The best places for viewing the heavens are anywhere away from an urban population, as these areas come with a lot of city lights that drown out the light from celestial objects," Jenkins said. "Luckily Chile has many mountainous regions, even within easy reach of the city — getting high up is always an advantage."

Astronomical interest is spreading in Chile, not only because of the projects underway in the Atacama Region, but also due to the work of experts such as José Maza, an astronomer at the Universidad de Chile. The scientist and his group visit colleges lacking resources and give workshops and hold astronomical observation days using high resolution telescopes. During the last two years more than 650 [students](#) have been reached from the Metropolitan area and the provinces of Los Andes and San Felipe de Aconcagua, to name but a few.

There are also other ways for aspiring astronomers to get involved, such as [visiting Santiago's recently refurbished planetarium](#).

"Several interesting books are available in national bookstores including 'Astronomía Contemporánea [Contemporary Astronomy]' by José Hub and 'Hijos de las Estrellas [Children of the Stars]' by María Teresa Ruiz," Azocar said. "Of [course](#), I cannot fail to mention the serie 'Cosmos: The Shores of the Cosmic Ocean' by Carl Sagan', which is [available for free on Youtube](#). Finally, a way of getting closer to the astronomy of Chile is to see the documentary '10 Años de Astronomía en Chile [10 Years of astronomy in Chile]' — also [available on Youtube](#)."

Azocar suggest that people becoming interested in astronomy should listen to the opening of Sargan's series:

"The cosmos is all that is, or ever was or ever will be. Our contemplations of the cosmos stir us. There is a tingling in the spine, a catch in the voice, a faint sensation as of a distant memory of falling from a great height. We know that we are approaching the grandest of all mysteries."

Information on scheduled astronomical events can be found on the [CATA Center for Astrophysics website](#) and [Facebook page](#).