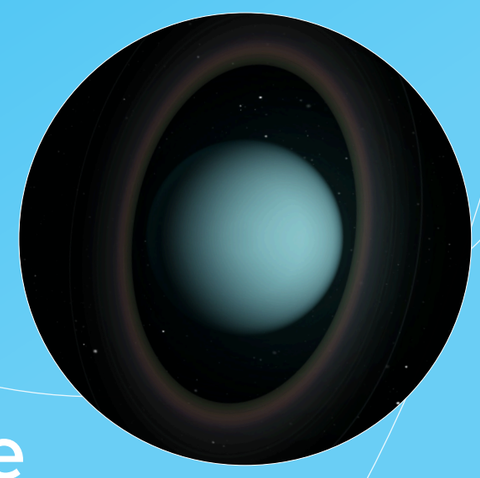
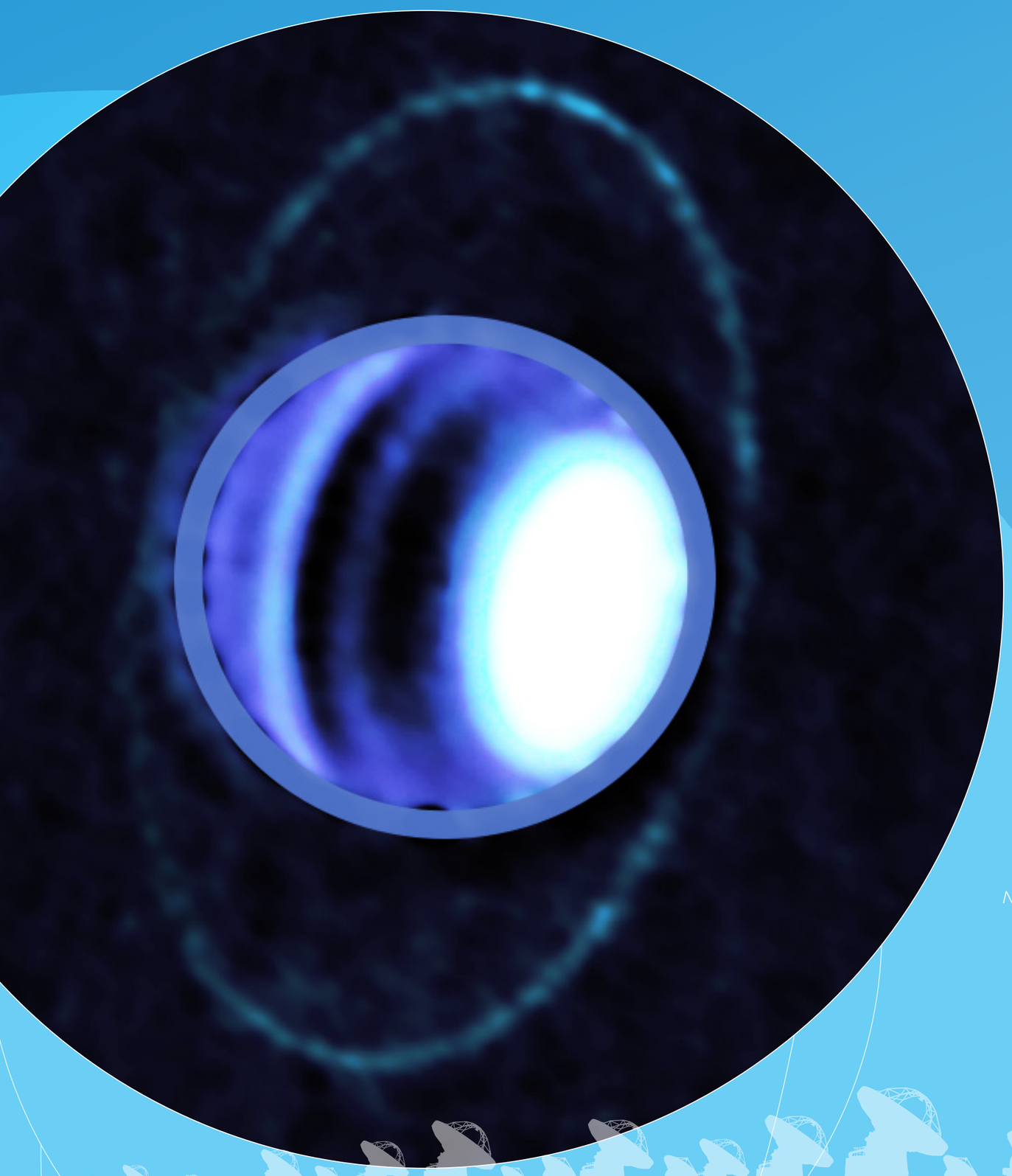
PLANETARY RINGS OF URANUS 'GLOW' IN COLD LIGHT

Using both ALMA and the VLT, astronomers have imaged the cold, rock-strewn rings encircling the planet Uranus. Rather than observing the reflected sunlight from these rings, ALMA and the VLT imaged the millimeter and mid-infrared "glow" naturally emitted by the frigidly cold particles of the rings themselves.





LEFT: Composite image of Uranus's atmosphere and rings at radio wavelengths, taken with the Atacama Large Millimeter/submillimeter Array (ALMA) in December 2017. The image shows thermal emission, or heat, from the rings of Uranus for the first time, enabling scientists to precisely measure their temperature – a frigid 77 K (-320° F). Dark bands in Uranus's atmosphere at these wavelengths show the presence of radiolight-absorbing molecules, in particular hydrogen sulfide (H2S) gas, whereas bright regions like the north polar spot contain very few of these molecules.

ABOVE: Artist impression of the planet Uranus and its dark ring system. Rather than observing the reflected sunlight from these rings, astronomers have imaged the millimeter and mid-infrared "glow" naturally emitted by the frigidly cold particles of the rings themselves.

Credit: ALMA (ESO/NAOJ/NRAO); Edward M. Molter and Imke de Pater), NRAO/AUI/NSF; S. Dagnello

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