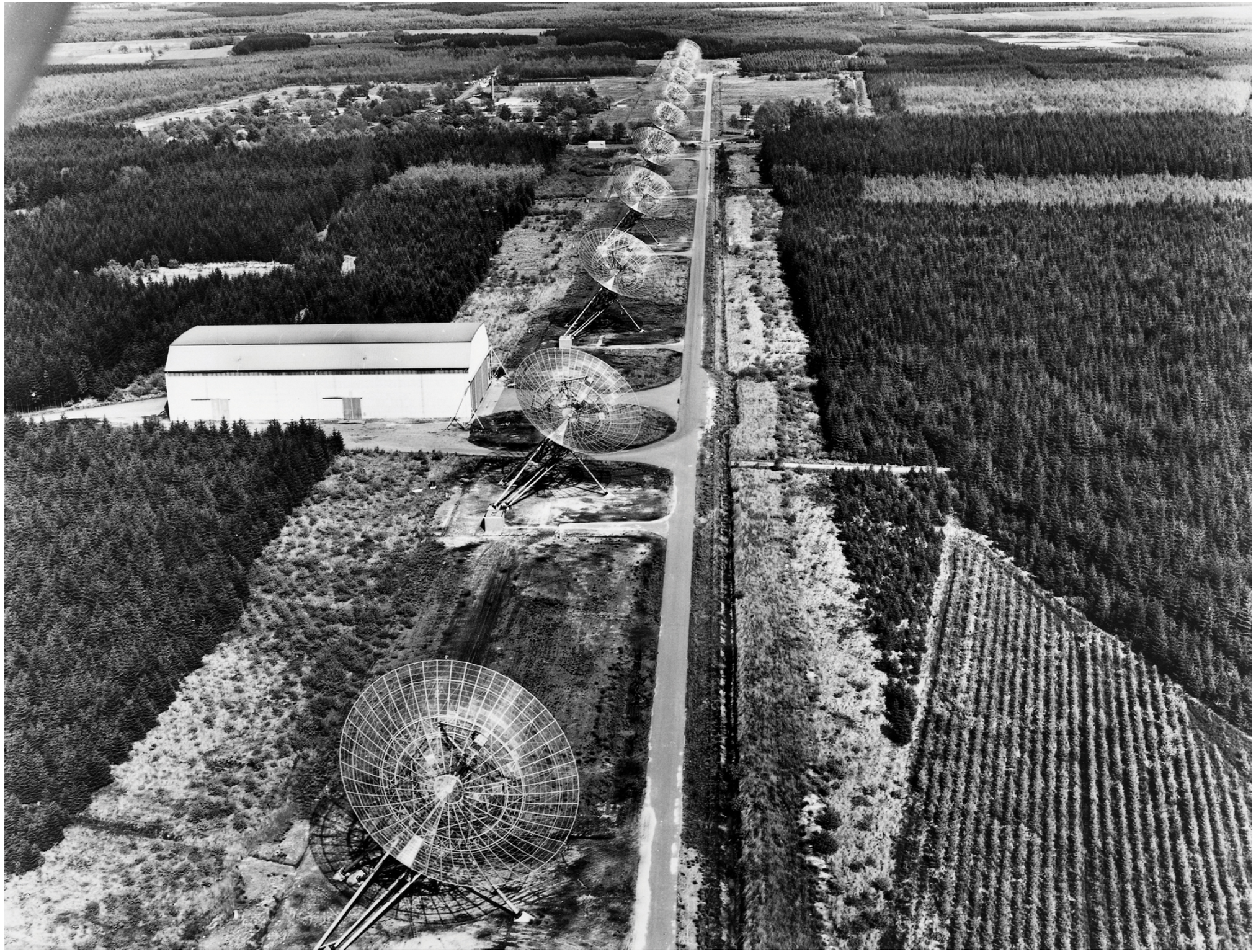
Interferometers

Can be done at any wavelength of light

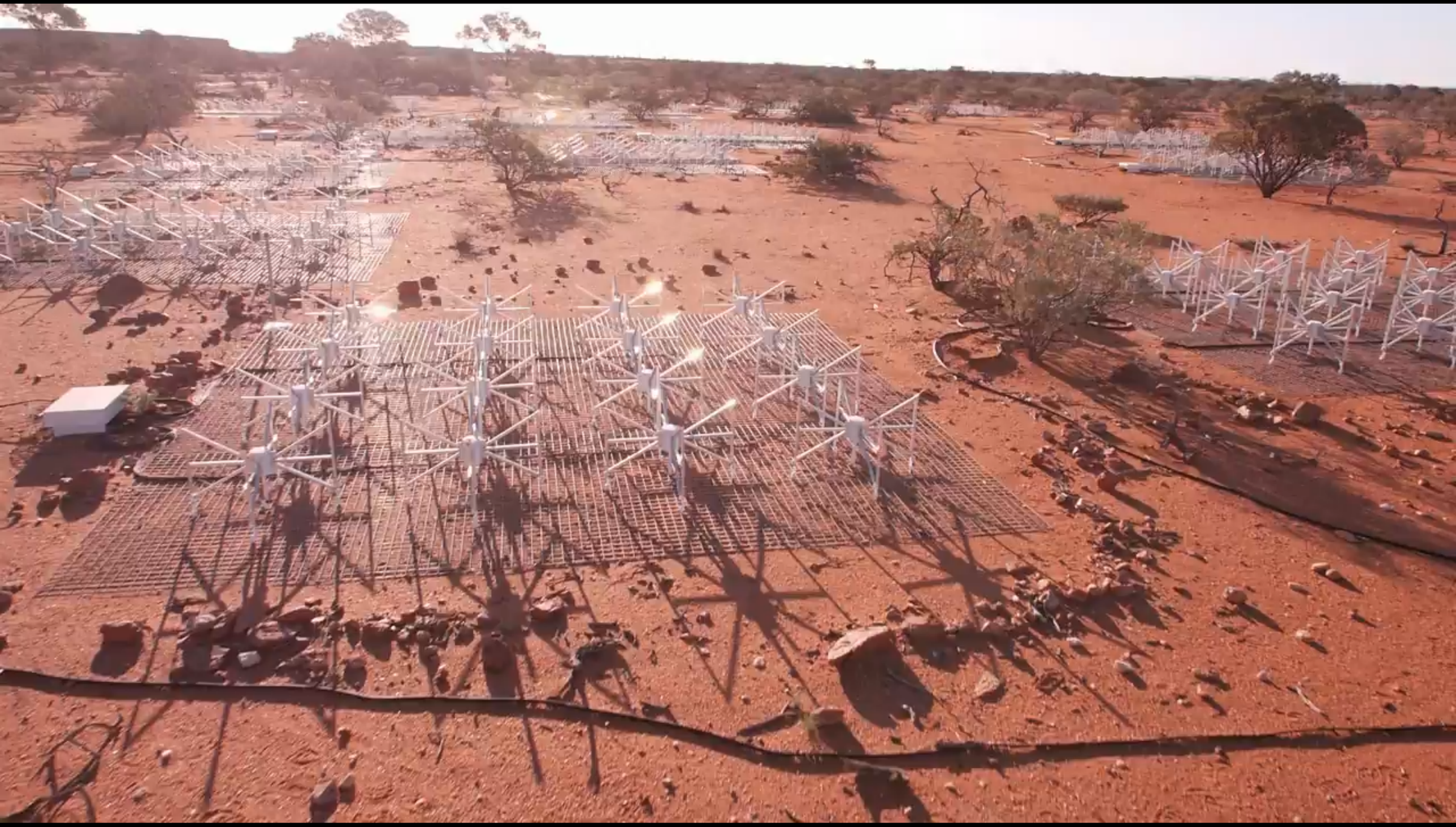
- Alignment must always be small fraction of a wavelength
- Easier to do at radio (long wavelength)
- Historically started in radio and has slowly moved to visible light

Westerbork radio telescope (1970)



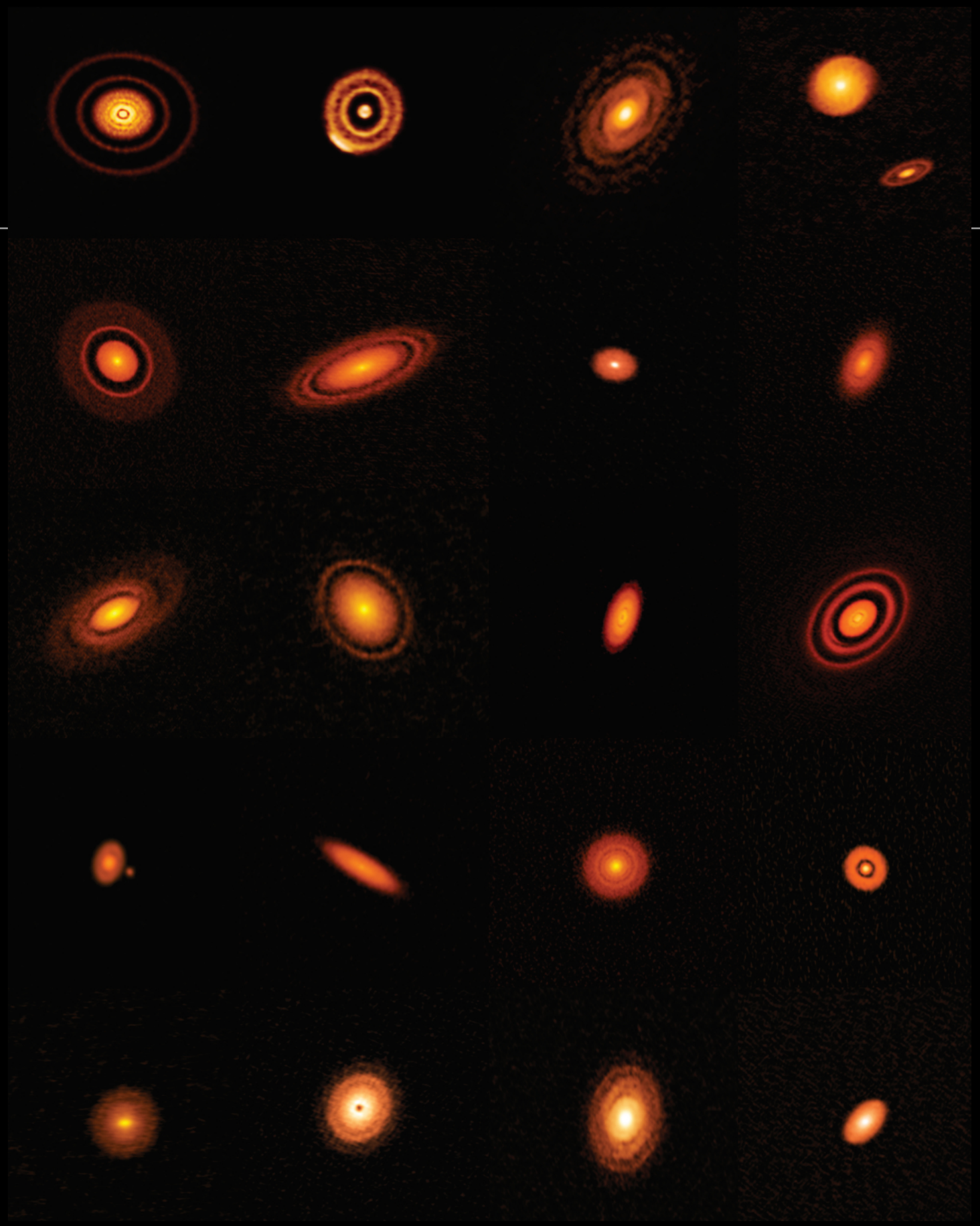
VLA (Very Large Array, 1980, recent upgrades)

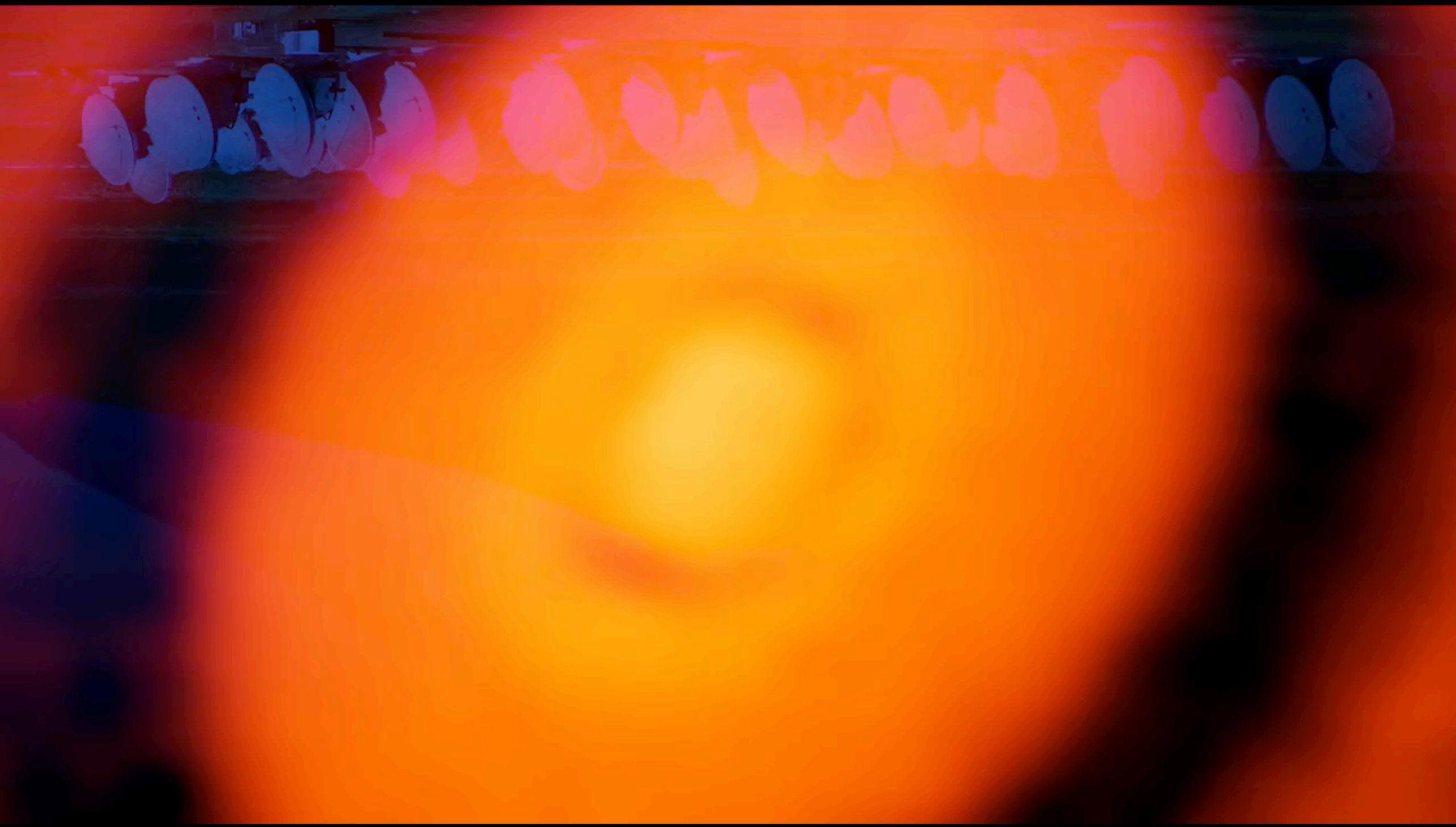
Murchison Widefield Array (MWA)



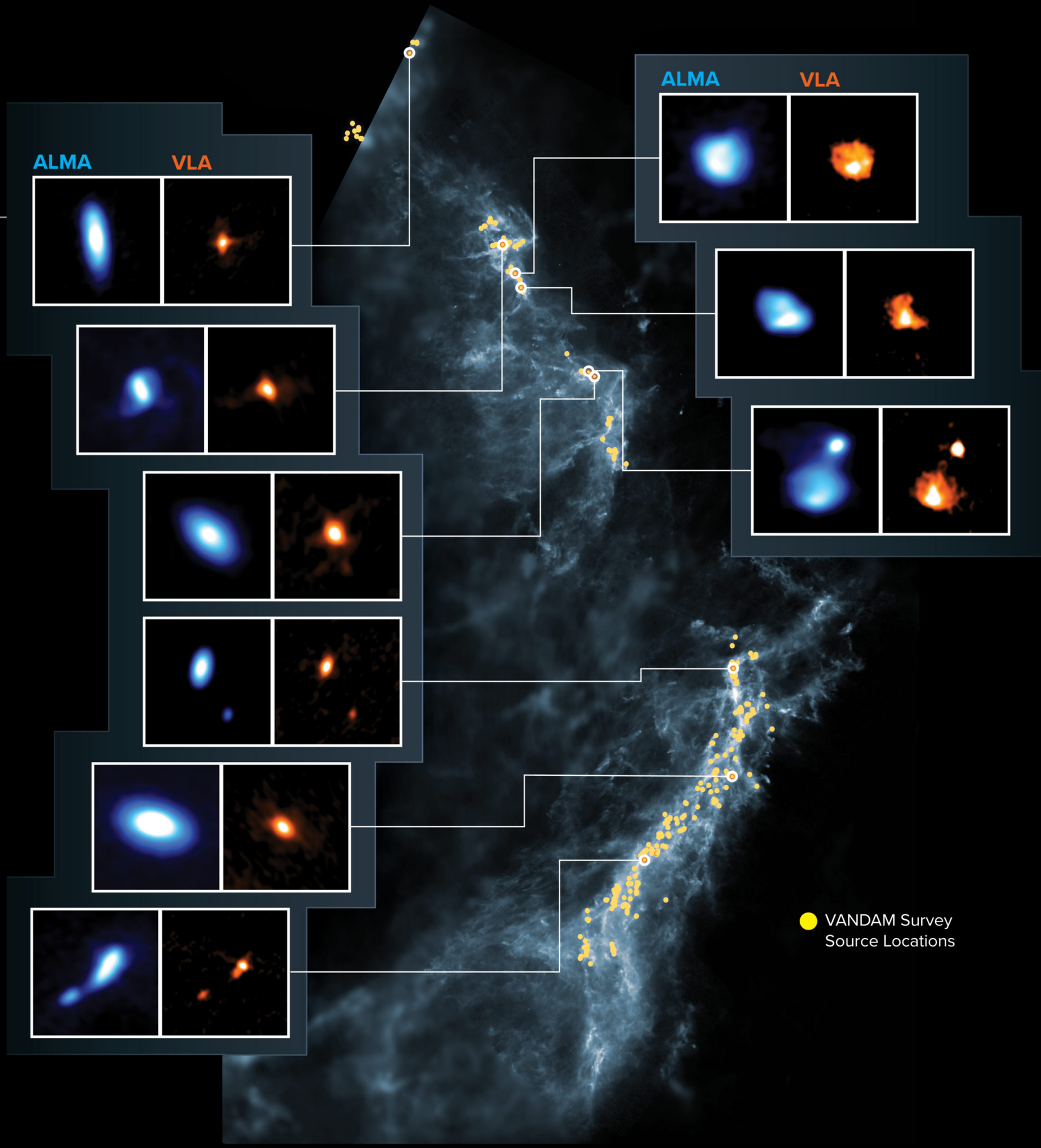
The Atacama Large Millimeter/submillimeter Array

Protoplanetary disks

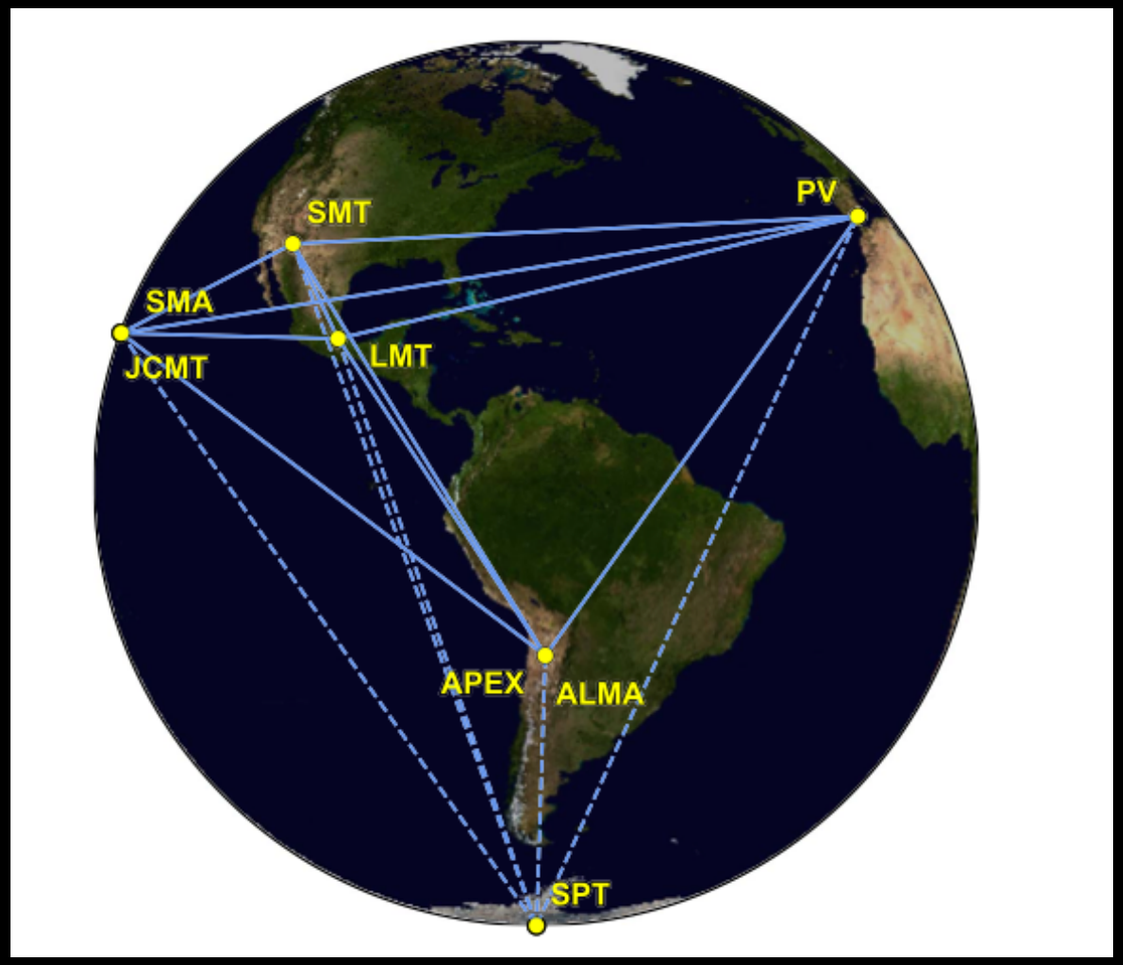


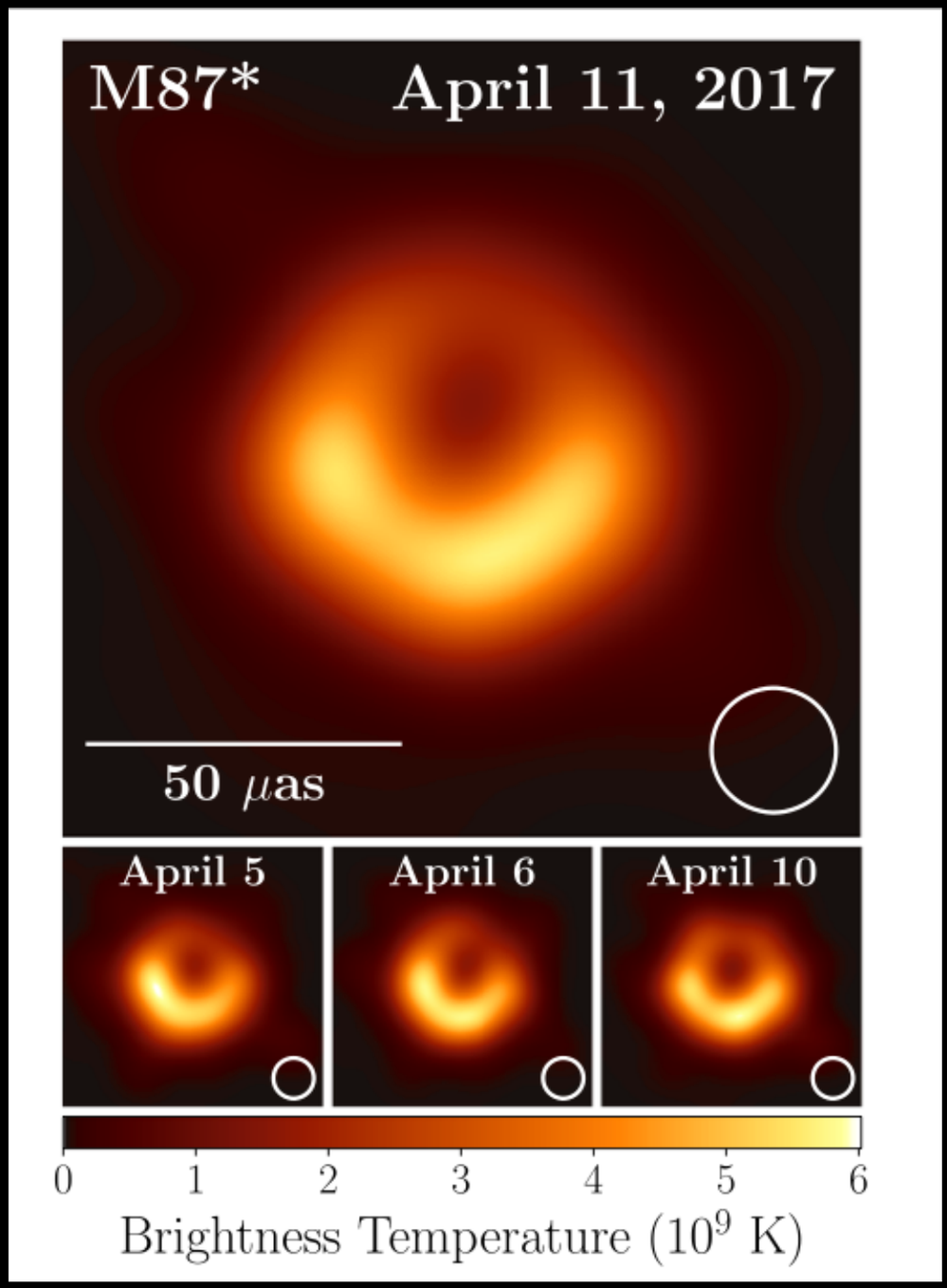


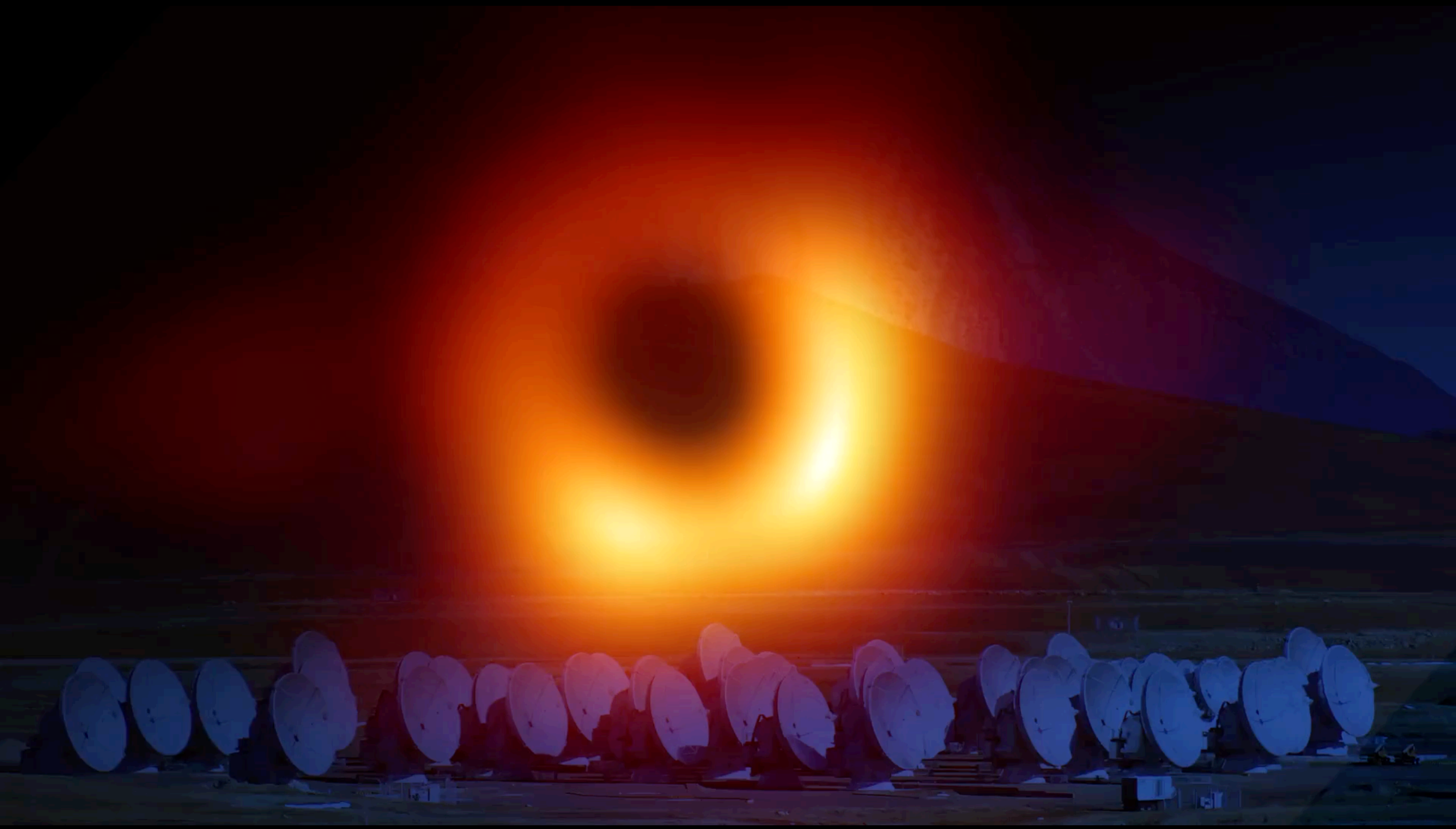
Birth of stars



Event Horizon Telescope





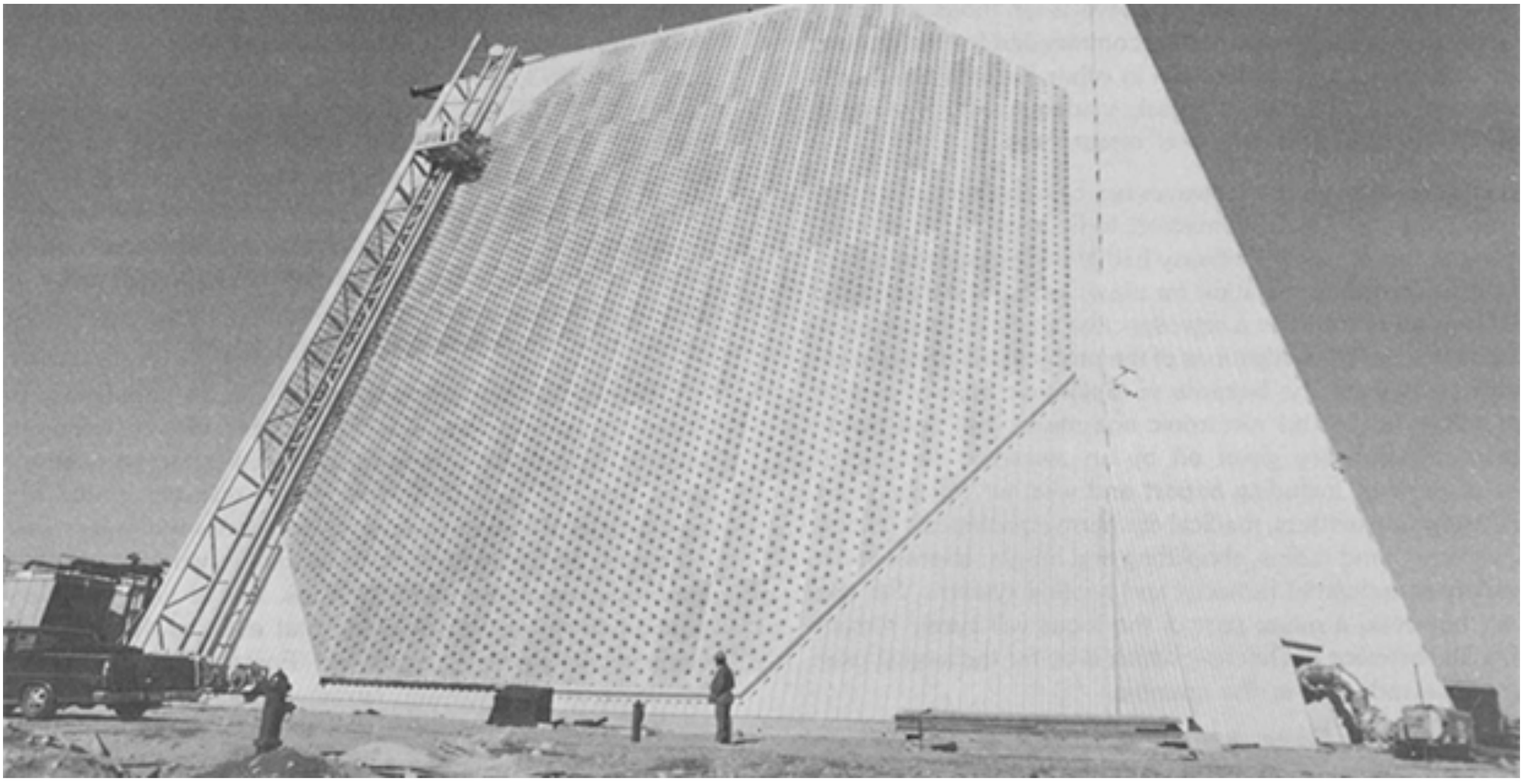


James Webb Space Telescope

Interferometers in everyday life

Cell phone towers

Military radar

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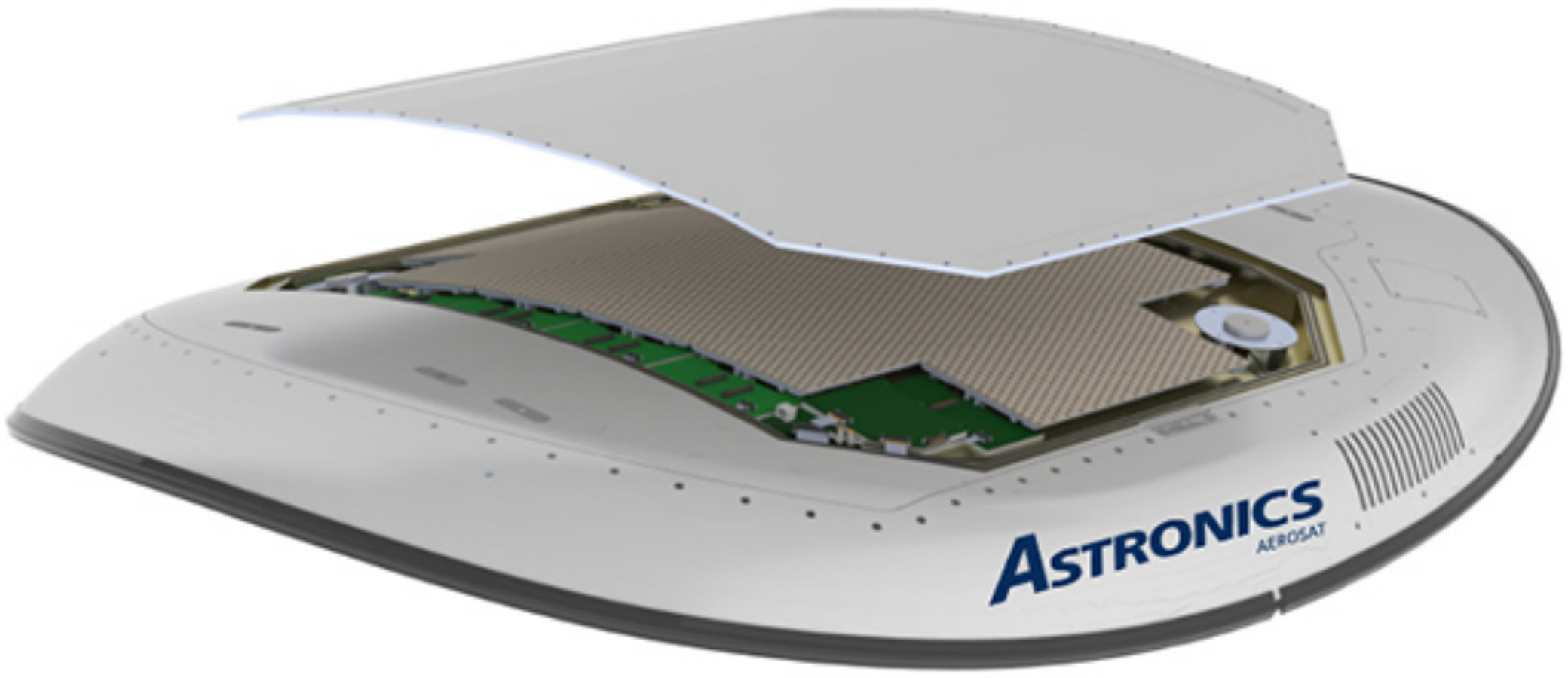
HEEEE


NO STEP
NO STEP
REMOVE BEFORE FLIGHT
REMOVE BEFORE FLIGHT
REMOVE BEFORE FLIG

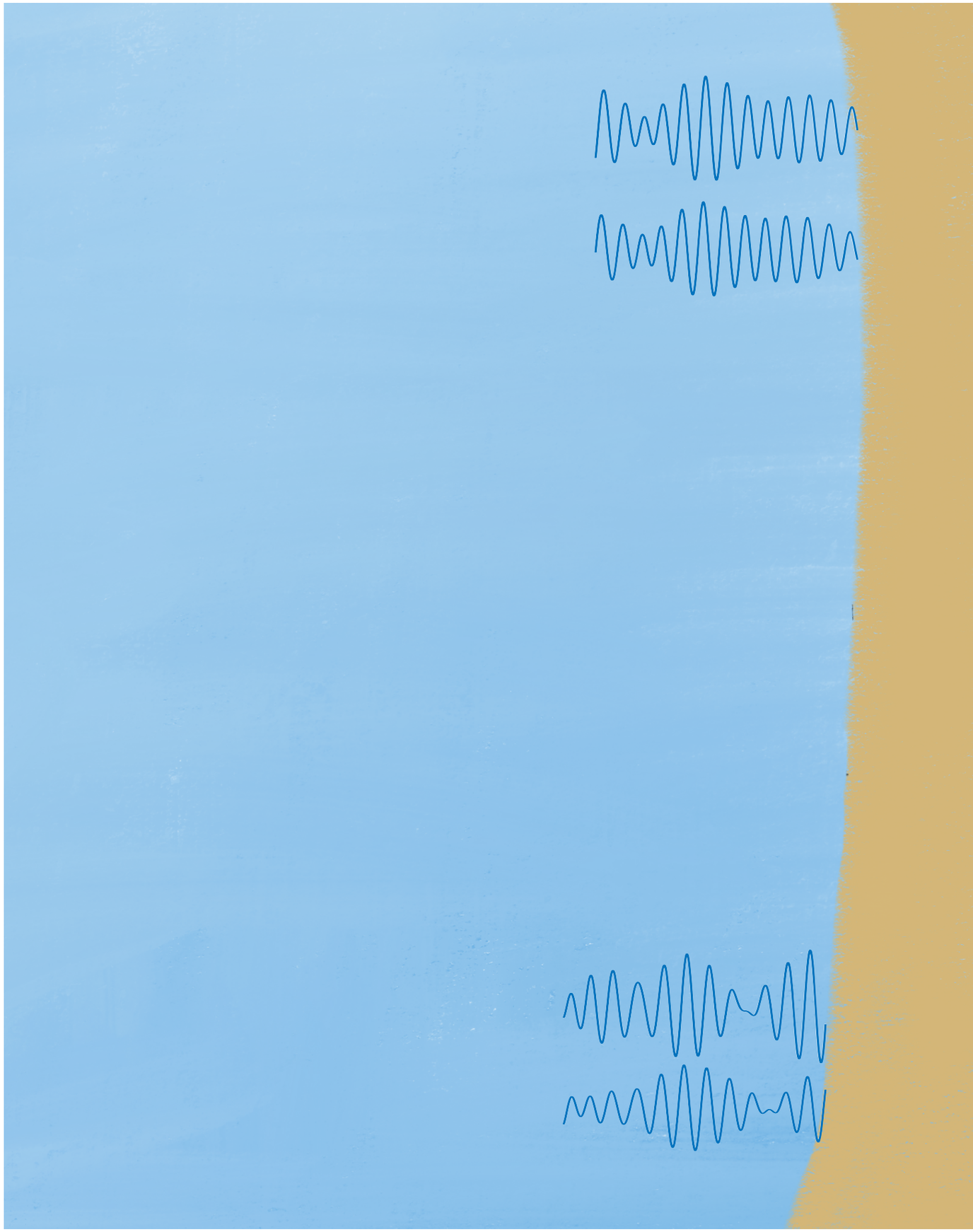
Aircraft antennas



Combined ripple

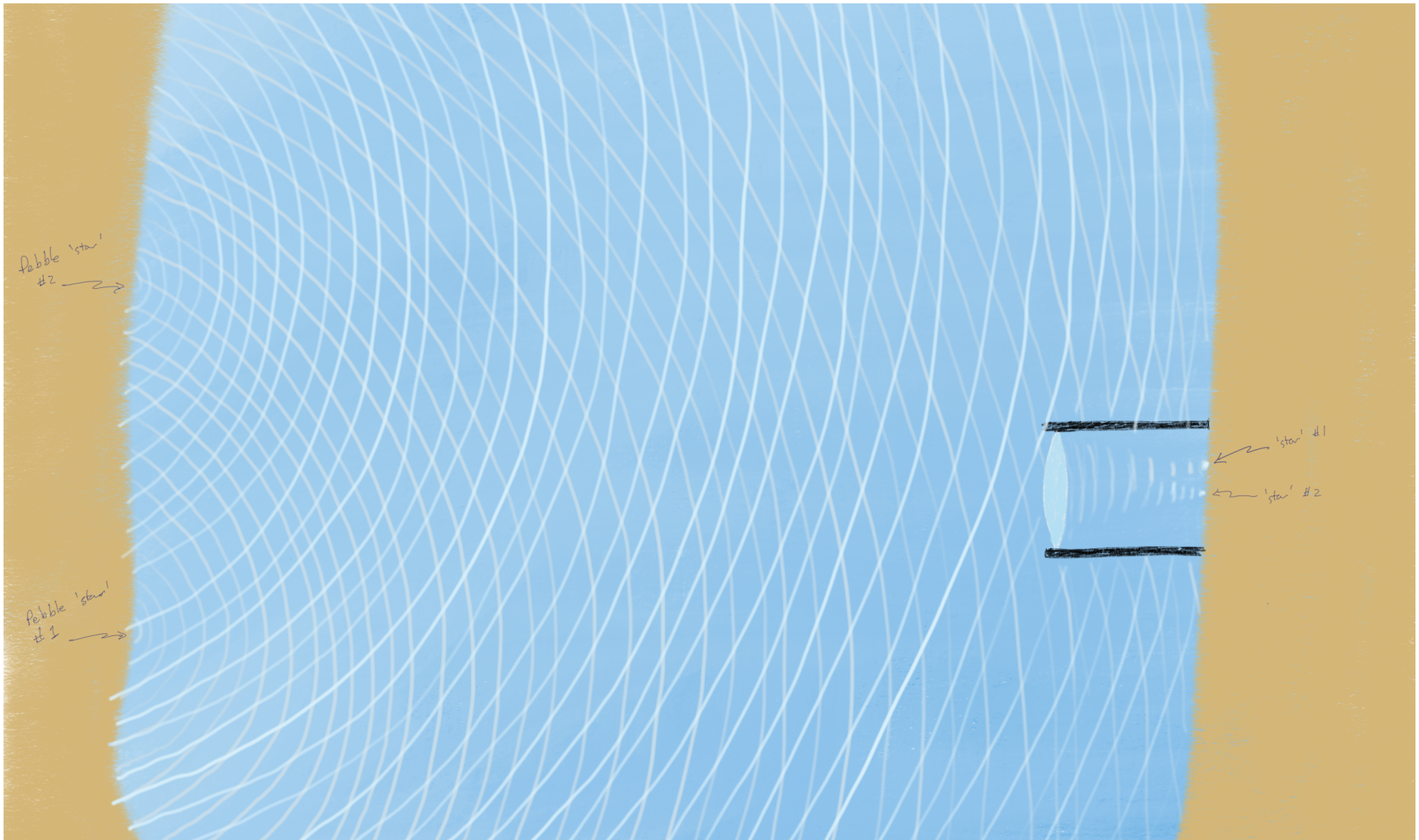
- If sources are close together, we need to walk a long way for the combined ripples to look different

- If sources are far apart, we don’t need to walk very far for the ripples to look different



Telescope resolution

- **If waves look different at different edges of the telescope, it can sort the light**
- **Bigger the telescope, the better the resolution (ability to sort)**



Interferometers