

Super Sound Cone

Hear tiny sounds with a Super Sound Cone!

<https://spaceplace.nasa.gov/sound-cone/en/>

Supplies

1. A big piece of poster board, about 18 x 24 inches
2. Watercolors and/or crayons
3. Scotch tape

What to do:

1. Paint or color the poster board any way you want.
2. When paint is dry, roll the poster board into a cone shape, leaving a small hole (about 1/2 to 1 inch across) at the pointed end. Make the big end as wide as you can.
3. Then tape the edge into position.
4. Take your cone outside and put the small end up to your ear.
5. Point the cone in different directions and listen carefully. Notice how different the world sounds with and without the cone to aid your hearing.
6. Have a photo taken of you using your sound cone and post it on our Facebook page!



The cone is a funnel for waves

Like waves in the ocean, sound makes waves in the air. Air jostles back and forth as the sound energy waves pass.

If you put something like paper in the path of the sound wave, it will also vibrate quite a lot. If you give this paper surface the right shape, the sound waves will be funneled to a point. So your super sound cone is a sound funnel!



The same sort of idea makes NASA's giant dish antennas work. These antennas listen for signals from the planetary spacecraft now exploring space far from Earth.

We can't just build a spacecraft, tell it to phone home once in a while, then launch it to Mars or Jupiter! We must have a way to hear its tiny voice and talk to it when it is very far away.

Of course, no spacecraft actually communicates by sound. Messages wouldn't get very far, since sound waves can't travel in the vacuum of space! But the spacecraft do send out radio waves, which can travel practically forever. The trouble is, the radio waves spread out and get weaker and weaker the farther they travel.

So NASA's radio wave "ears" must be very big indeed!

The antenna dish in this picture is about 230 feet across. This antenna is in Australia. See how tiny the cars [bottom right] look by comparison?