



**Key words:** ALMA, Cold Interstellar Clouds

<p><b>ESOCast 139: Why Astronomers Want to Use ALMA – ALMA and the Cold Interstellar Clouds</b></p>	
<p><b>00:00</b> <b>[Visuals start]</b></p>	<p><b>00:00</b> <b>[Visuals start]</b></p>
<p><b>00:10</b> <b>[Narrator]</b> 1. Your home and the Universe have at least one thing in common: they can be very dusty places! When you get back after a very long vacation, it may happen that the windows in your home are so full of dust that you can't see through them anymore. Surprisingly, astronomers have a similar problem!</p>	
<p><b>00:25</b> <b>[Narrator]</b> 2. When using optical telescopes – telescopes that can see the same light we do - they are not able to see through the dustiest places in the Universe, as they appear like dark walls blocking the view.</p>	
<p><b>00:35</b> <b>[Narrator]</b> 3. And just like you may miss lots of interesting things happening outside because of the dusty glass, some of the most important events on the Universe occur within vast clouds of cold dust and gas. Stars and planets, for example, are born within those clouds, which are dark to most telescopes.</p>	

<p><b>00:50</b> <b>[Narrator]</b> 4. Astronomers want to understand how these births happen as both stars and their planets are essential for life: you need a planet to live on and a star to provide the energy that allows you to survive. So, there are two options: either find a way to clean the dust or get some special goggles that see through it. For you, the first option would be easier, but astronomers have no choice: they can't clean the dust out of space; they need to build something special that can see through dust.</p>	
<p><b>01:15</b> <b>[Narrator]</b> 5. With the help of engineers, they created radio telescopes, and ALMA is one of them. These are telescopes that see a kind of light – called radio light – that is not blocked by dust. Moreover, some things in the Universe are so cold, that they don't produce enough energy to be seen in visible light. However, they happen to emit radio light, because this kind of light is produced by less energetic processes.</p>	
<p><b>01:36</b> <b>[Narrator]</b> 6. Therefore, even though you can see our Sun and other stars through their childhood, teenage years and adulthood, only radio telescopes are able to see stars that are just being born and aren't producing enough energy yet. Only radio telescopes, as well, can look at the planets forming in the dusty disks around those newborn stars.</p>	
<p><b>01:54</b> <b>[Narrator]</b> 7. So why are there some stars that get to be so much larger than others? How do planets form around newborn stars? Why are some star systems so different from our own? Well, these are questions ALMA will help unravel.</p>	

<b>02:12</b> <b>[Outro]</b>	
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