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<p><b>Video Podcast</b> <b>Episode 6: A battle of giants — telescopes in space and on the ground</b></p> <p><b>FOR IMMEDIATE RELEASE 15:00 (CET)/9:00 AM EST 25 June, 2007</b></p>		
<p><b>00:00</b> <b>[Visual starts]</b></p> <p><b>[Narrator]</b> Have you ever wondered why some telescopes are launched into space while others are built on remote mountain tops? What is actually the best for astronomy? Here we provide a ringside view of the fight for the elusive photons from deep space – is it a battle of the telescope giants?</p> <p><b>00:18</b></p> <p><b>00:35</b> <b>[Woman]</b> This is the Hubblecast!</p> <p>News and Images from the NASA/ESA Hubble Space Telescope.</p> <p>Travelling through time and space with our host Doctor J a.k.a. Dr. Joe Liske.</p> <p><b>00:48</b> <b>[Dr. J, intimate voice]</b> Welcome to the Hubblecast!</p> <p>When I was a kid, I often used to stare at the night sky and wondered what it was all about. Back then, I usually only used my eyes, or at most a pair of binoculars.</p> <p>But astronomers have telescopes that are much more powerful than the naked eye, and which can be used to uncover the faintest and most distant objects in the Universe.</p>		<p>Ground to space zoom</p> <p>Image explosion</p> <p>Hubblecast Logo + web site</p> <p>Presented by ESA and NASA</p> <p>TITLE Slide: Episode 6: A battle of giants - telescopes in space and on the ground</p> <p>Virtual studio. Dr J on camera under the stars</p> <p>Nametag</p> <p>HD image of HST</p>

<p>In today's Hubblecast we will take a small detour from our usual flow of amazing discoveries and images from the NASA/ESA Hubble Space Telescope and look at the most fundamental tool used by astronomers – the telescope.</p> <p>It all began nearly 400 years ago when Galileo Galilei for the first time looked at the Universe through a small telescope. This momentous occasion will actually be celebrated in 2009, which has been declared the International Year of Astronomy.</p> <p><b>01:50</b>  <b>[Narrator]</b>  Today we have telescopes of many different sizes and shapes. Some are on the ground — like ESO's Very Large Telescope located on a remote 2600 meter high mountain in the Atacama desert in Chile - it's seen here in one of the most sophisticated computer models ever made ...</p> <p>[music]...</p> <p>Some telescopes are in space, like the Hubble Space Telescope in orbit around Earth almost 600 kilometres further up.</p> <p>[music]...</p> <p><b>03:07</b>  <b>[Dr. J]</b>  So how does a telescope work? Well, common to almost all telescopes, regardless of size or purpose, is that they have a mirror, some instruments and a few supporting systems.</p> <p>The main function of the mirror is to collect as much light as possible from distant stars and galaxies – it is not to magnify anything as many people think. Then, there are a number of secondary mirrors that send the light to the instruments.</p> <p>There are two main types of instruments. First, there are cameras, which essentially do what any normal digital camera does – they take images. And then, there are the spectrographs that spread the incoming light into its constituent colours, like a rainbow, which can tell a lot about the physics of distant objects.</p> <p><b>03:55</b>  <b>[Narrator]</b>  Ingenuous engineers and imaginative astronomers around the world compete in a scientific battle of how to unveil the secrets of the Universe.</p> <p>So who is winning? Are the ground-based telescopes better because they are larger and collect more light from faint stars and galaxies?</p> <p>Or are the space-based telescopes winning the race as they</p>	<p>Galileo and the telescope</p> <p>Ground to space Animation</p> <p>Virtual studio: Dr J on camera</p> <p>HST as a model telescope, showing mirrors and camera</p> <p>Telescope parade VLT, Spitzer, HST</p> <p>HST in space</p>
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<p>can make sharper images above the clouds and the disturbing atmosphere?</p> <p>On that count, ground-based astronomy is fast catching up. Advanced techniques such as adaptive optics have been developed to correct for the atmospheric blurring and twinkling.</p> <p>On the other hand, the atmosphere blocks certain wavelengths of light. Only space telescopes, like Hubble, that fly above the atmosphere can access the ultraviolet and infrared parts of the spectrum which are invisible from the ground.</p> <p>Ground-based telescopes on the other hand can observe larger portions of the sky in one go, and also usually have more specialised instruments that are easier to change when new techniques are developed.</p> <p><b>04:57</b> <b>[Dr. J]</b> It would of course make for a much more exciting Hubblecast episode if we could show you a bloody battle between furious ground-based and space-based astronomers. But in reality there is no battle between ground-based and space-based telescopes. Observing teams often use combinations of different telescopes on the ground and in space to solve the riddles of the Universe.</p> <p>So the bottom line is: it's not a competition. It is the synergy and complementarity between the different kinds of telescopes that matter, whether they are small or large, in the Southern or Northern hemisphere, on the ground or in space. What matters is that they are all working towards a common cause: discovering the secrets of the world around us.</p> <p>This is Dr. J signing off for the Hubblecast, which, by the way, from today onwards will be available in High-Definition from <a href="http://www.spacetelescope.org">www.spacetelescope.org</a>.</p> <p><b>05:54</b> <b>[Outro]</b> Hubblecast is produced by ESA/Hubble at the European Southern Observatory in Germany. The Hubble mission is a project of international cooperation between NASA and the European Space Agency.</p> <p>Thanks to: ESO, Spitzer Space Observatory, Keck Observatory, Gemini Observatory, Subaru Observatory.</p> <p><b>06:16 END</b></p>	<p>Blurring illustration</p> <p>Space: UV and IR Atmosphere graph Dr J walking on it?</p> <p>Area comparison</p> <p>Virtual studio: Dr J on camera</p> <p>Telescope parade - A huge variety of different telescopes, small, large, different purposes flies by</p>
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