Scene 1	
00:10	The ingenuity of the human mind is astounding.
00:18	Its capacity for both creation and destruction is equally terrifying and fascinating at the same time.
00:32	Even more so, when we realize how these two opposite sides of a coin can flip, with just the flick of a finger.
00:46	As a species, we truly have a bad habit of misusing our inventions.
00:58	The V2 rocket was a marvel of engineering, alas designed to bring nothing but destruction.
01:07	A deadly machine from a war finally brought to an end, never to be aimed at anyone ever again.
01:18	And yet… We are here today, on the 24th of October, 1946, ready to launch it one more time.
02:05	Unbeknownst to us, this launch would mark the beginning of a new era.
02:17	But this time, the rocket has been repurposed for something else.
02:25	Something never done before…
02:31	It carries a small camera on board, with the goal to bring back the first ever picture of the Earth taken from space.
02:53	This single image changed forever how we would perceive our planet…

Scene 2	
03:18	It's no secret we live in an age of overwhelming environmental challenges.
03:27	Overpopulation and overconsumption have driven us into a state where in order to survive we not only have to change the way we think, but also change the way we look at the world around us.
03:42	Luckily, we are becoming more and more aware of its complexity and fragility.
03:50	We closely study the effects of our actions, past and present.
03:58	We examine the processes that hide within the ecosystem and monitor all the changes around us, with the hope of learning how to preserve the Earth for the generations to come.
04:17	We are driven by the need to discover how best to manage the use and consumption of our planet's natural resources, whilst protecting the ecosystem.
04:33	And even though the current environmental challenges may appear to be far removed from our everyday lives, they affect us more than we dare to admit.

Scene 3	
04:57	As a species, we are unimaginably dependent on agriculture and its efficiency.
05:07	Every farmer needs to have good knowledge of the health of their crops, the state of the soil, issues with irrigation systems...
05:17	Basically, anything that affects their efforts.
05:26	However, observations shouldn't stop at immediate and local conditions.
05:32	Recognizing larger patterns and distant developments gives farmers a crucial advantage.
05:40	Whether facing droughts, sudden floods or other environmental changes, being prepared can greatly reduce potential losses.
05:53	Even more so, ongoing monitoring helps detect issues like crop disease early, minimizing the need for extensive intervention.
06:10	Knowing more than you can just see at any given moment can be a game changer, especially in large scale farming.
06:19	When managing hundreds of fields, having access to comprehensive information is invaluable for the sustainability of food production, which we rely on more than we can comprehend.
06:34	The good news is that such information is becoming more and more available.
06:40	It is just a matter of doing our best to utilize it.

Scene 4	
07:04	Sometimes it's enough to get just a few dozen meters above the ground in order to be provided with a priceless overview.
07:19	Recently, remotely operated drones are playing an important role in these efforts, and are becoming indispensable in real-time, targeted aerial observations.
07:42	Their unparalleled agility together with a unique blend of precision and coverage allow for precise agricultural interventions.
08:02	Maneuvering with ease close to the ground, they capture detailed imagery that highlights specific issues such as irregular growth, water stress, or pest activity within crops.
08:37	In contrast, airplanes allow coverage of much larger areas.
08:43	They enable the tracking of larger scale phenomena, like seasonal changes, or crop rotation patterns.
08:55	But even airplanes have their limits.
08:59	Although vast, the area covered is still limited by the time they can remain airborne.
09:08	In order to obtain a more global view, to see the whole Earth, we need to continue going higher.

Scene 5	
09:25	And so, we return to 1946...
09:31	Although just a ballistic missile, the V2 brought us a view of the earth never seen before.
09:44	Determined to better understand our planet, we kept pushing the limits of technologies, advancing space exploration at an incredible pace.
09:59	Who could have guessed that very soon, the orbit around our planet would be teeming with artificial satellites.
10:17	Today, there are several thousands of them, inaudibly flying above our heads.
10:31	And a large number, launched by both national agencies as well as private companies, were designed solely for the purpose of Earth observation.
10:50	Some satellites operate as far as 36 000 kilometers above the earth's surface,
10:58	while some orbit only a few hundred kilometers above it.
11:04	Every altitude brings its pros and cons and is used for different reasons.
11:13	But all of them serve a well needed purpose - to provide us with a valuable overview.
11:55	With these Earth Observation satellites in orbit, we have the whole planet available for exploration, not just our closest neighborhood.
12:10	We can now easily study regions that would normally be too remote for any long-term conventional reconnaissance.

Scene 6	
12:40	However, seeing a large area of remote land was just the beginning...
12:48	In reality, we have been provided with a completely new set of eyes, which go far beyond the limits of our own.
12:59	Powerful instruments aboard the satellites have the potential to reveal much that is hidden from our sight.
13:09	For example, shifting the imaging towards the infrared part of the spectrum highlights the effects of photosynthesis.
13:17	This brings about the opportunity to study the status of crops and forests.
13:26	Suddenly, it becomes easy to obtain a general image of the health and volume of vegetation.
13:36	Or, if we use different instruments, to monitor and identify air pollution.
13:45	The options are limitless.
13:49	Early warning signs of dangerous algae blooms can be obtained by monitoring biomass over large areas of water.
14:00	Scanning the surface with radar allows us to identify ground deformation caused by earthquakes, landslides, extensive mining, or subsidence.
14:12	Moisture maps created from satellite data help farmers manage irrigation even in the driest desert regions, allowing them to use water more efficiently.
14:24	And monitoring global ship traffic helps ensure maritime safety, track commercial shipping routes and even detect illegal activities at sea.
14:37	With every new piece of information, we learn something new.
14:45	Our Earth is opening up to us as a complex system as we observe the unseen worlds hidden within.

Scene 7	
15:03	But a single satellite observing our planet from up close slightly shifts its position after each orbit as the Earth rotates underneath it.
15:14	So it takes a few days to revisit the same area.
15:20	There are plenty of situations when a longer time period is not a problem.
15:26	Crops take some time to mature,
15:30	even forests do not grow in a day...
15:34	But there are situations, when every hour matters...
16:30	Special satellite constellations, consisting of a group of satellites with identical instruments, can, one after the other, scan the targeted area, and in this way provide us with a very steady flow of updates.
16:45	The most efficient constellations can do up to an unbelievable 12 revisits a day!
16:53	Such Earth observation data has proven to be a valuable source of information during crisis handling, like oil spills threatening marine wildlife.
17:04	Similarly, flood monitoring helps authorities quickly assess rising waters, plan evacuations and minimize damage to lives and infrastructure.
17:16	Or, with a correct combination of the imaging capabilities, fire monitoring is possible even through thick smoke and clouds.
17:30	With the effects of climate change growing stronger every year; with more frequent droughts, fires, floods and extreme weather changes; having access to this kind of information can save lives.
17:46	And it's not only about handling a crisis once it's happening.
17:52	Careful observations of even the smallest changes and understanding of the processes behind them can help us respond early enough. And in the best case scenario, prevent these crises from occurring at all.

Scene 8	
18:13	Now, with so many satellites supplying us with information at any given moment, the amount of data being handled is very difficult to grasp.
18:23	Even a very rough estimate of several hundreds of terabytes being transferred every day is not easy to imagine.
18:34	If we were to compare the amount to an average, high definition movie, it would take over 15 years to watch it, 24 hours a day.
18:45	And we get a new, updated movie, on a daily basis...
18:52	But the data is not streamed directly from a satellite to our screens.
19:00	The images need to be processed using special algorithms that correct it for errors, determine exact position and orientation and then extract what is needed.
19:12	Using the correct approach to get as much information out of the available data is a science field on its own.
19:23	This need for information extraction led to the emergence of many different companies, who specialize in processing data from Earth observation satellites.
19:43	Another challenge to tackle is having sufficient storage capacities.
19:49	The data is saved in long term archives and most of it needs to be accessible easily at any moment for a very long time in order to serve its intended purpose.

Scene 9	
20:14	The thing is… climate change does not happen overnight…
20:21	The changes in our environment are very slow and gradual.
20:28	So slow that it is very easy not to notice them at first.
20:34	Or even not to believe anything is happening at all.
20:49	That is why we need long-term continuous observations.
20:54	With reliable data from missions spanning years, or even decades, we can evaluate processes that would otherwise remain hidden from our daily lives.
21:07	In places like the European Space Agency's Main Control Room, every satellite movement is tracked, and decades of Earth observation are transformed into valuable knowledge.
21:22	And with it, we have solid evidence that the density of the Arctic ice pack keeps diminishing by a small amount year by year.
21:35	Data driven simulations of patterns in large-scale air movements that shape weather and climate can reveal tight links to the ocean currents.
21:47	Together they form a system that moves heat and energy around the planet.
21:53	By tracking them, we gain a clearer understanding of how Earth functions — and how it responds to change.
22:01	Such data helps us monitor long-term trends and detect early signs of global transformation.
22:09	But these observations are not only about planet size phenomena.
22:15	They can also be applied to past small-scale local actions and we can discover their effects on areas beyond their near vicinity.
22:27	This for example allows for better planning in terms of urbanization.

22:34	We can predict how a new water dam will affect its surroundings
22:40	or avoid the negative consequences of extensive deforestation.
22:49	We are slowly learning to responsibly apply all of this knowledge.
22:54	Both on large and on small scales.
22:58	And it nicely demonstrates that if we know enough about a problem, we are capable of working together towards a brighter tomorrow.

Scene 10	
23:14	And many of the Earth observation missions are, as a matter of fact, a result of international cooperations.
23:24	Countries often put together their resources and their best minds in order to support this endeavour.
23:38	One of the most outstanding examples, if not the best, is the Copernicus Program.
23:45	Established in 1998, the program aims to create an unprecedented system for continuous, high-quality and wide range Earth observation, available to everyone.
24:00	But it is more than "just another space mission". It is a vital tool for understanding and addressing the challenges we face on all scales.
24:17	It provides scientists with invaluable detailed data spanning years...
24:23	Fast and reliable observations save lives during dangerous crises...
24:29	Policy makers and engineers have means to aid them in their daily decisions...
24:35	Even you have access to all of it, for free, forever...
24:40	And that is the heart of the Copernicus program: to measure the pulse of our planet, transforming endless raw data into a deep understanding of Earth's story.
24:52	With this knowledge, we can predict what lies ahead, make informed decisions, and take bold actions to protect the only home we have.

Scene 11	
25:15	We have come a long way since we saw the Earth from space for the very first time.
25:25	It is incredible how much we have learnt,
25:30	how much technology has advanced in just a single lifetime.
25:41	But the advancement does not only apply to our technological progress.
25:50	It undeniably changed us, humans, as well.
26:09	One of the most iconic images of our planet in modern history taken by the crew of Apollo 17,
26:17	the Blue Marble,
26:20	not only captivated the world but also ignited many powerful environmental movements.
26:29	This image reminded us that all life on our planet is interconnected and how urgent is the need to protect it.
26:40	The Earth Observation missions have opened our eyes even more to the complexity of our environment, and to the consequences of our actions.
26:52	Who dares to imagine what the future holds?
26:56	What will space exploration bring in the next 50 or 100 years?
27:02	How much more will we learn about our world, about ourselves?
27:07	One thing is certain.
27:10	In our hands, we now have a tool that can serve us well.
27:16	Let’s make the best of it.
27:18	Let’s make the future a place we want to live in.