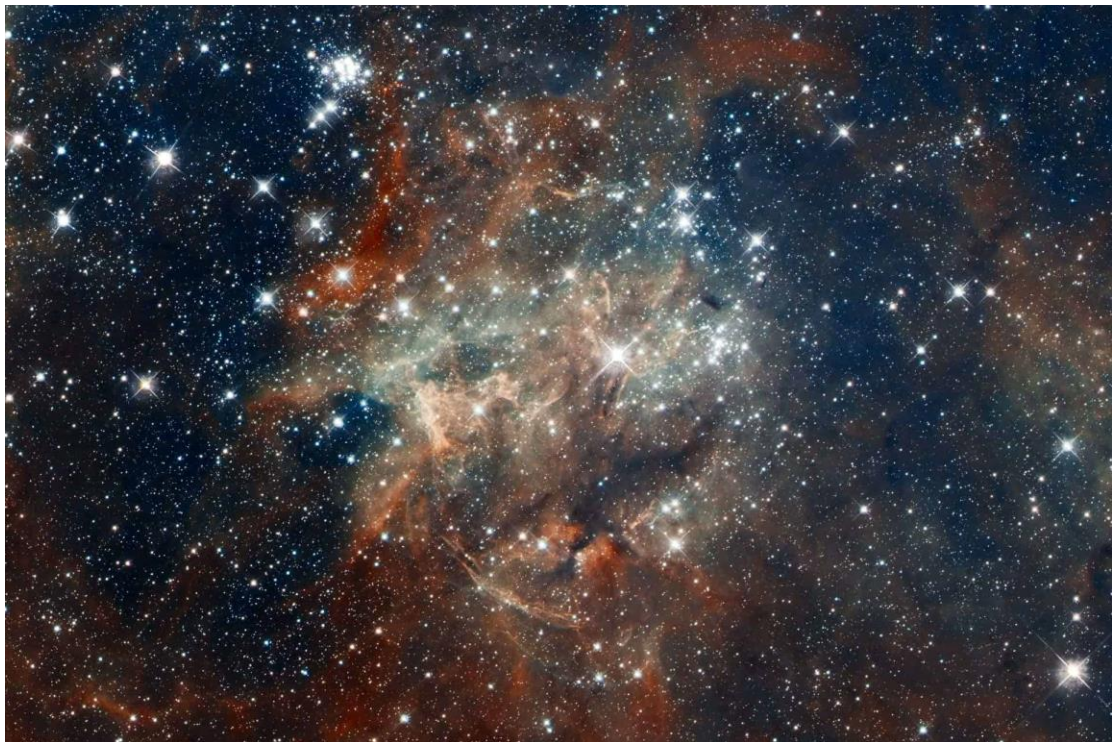


The impact of astronomy

Today, astronomy is seen foremost as a scientific endeavour and the foundation of modern science. Explaining the structure and phenomena observed in the sky inspired Newton and Einstein to make their fundamental discoveries whose universality changed our understanding of nature.



Throughout History humans have looked to the sky to navigate the vast oceans, to decide when to plant their crops and to answer questions of where we came from and how we got there.

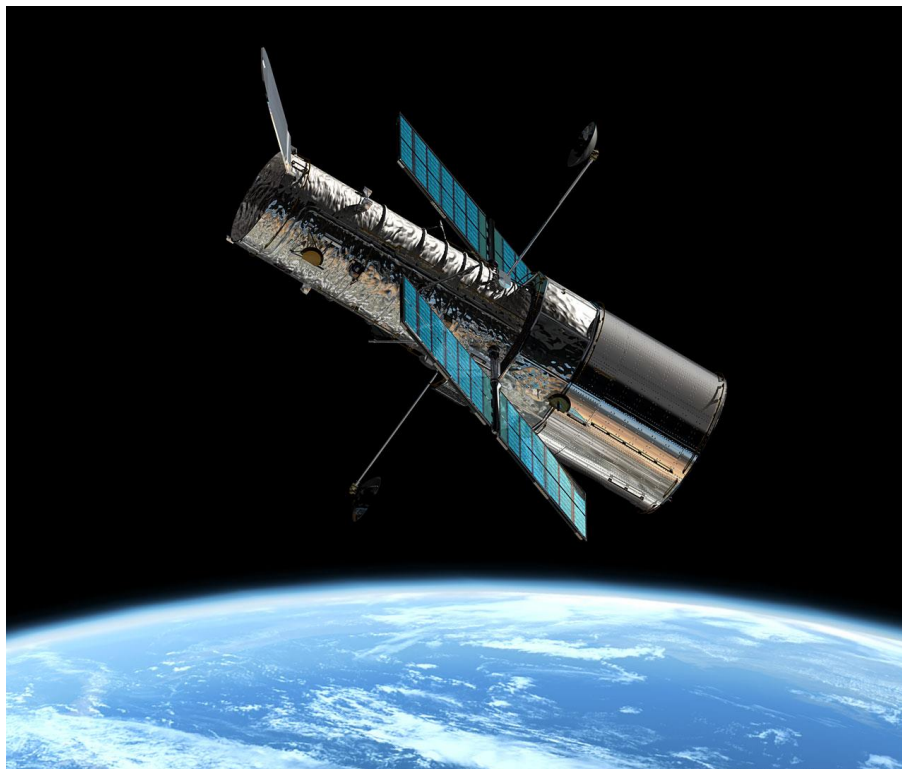
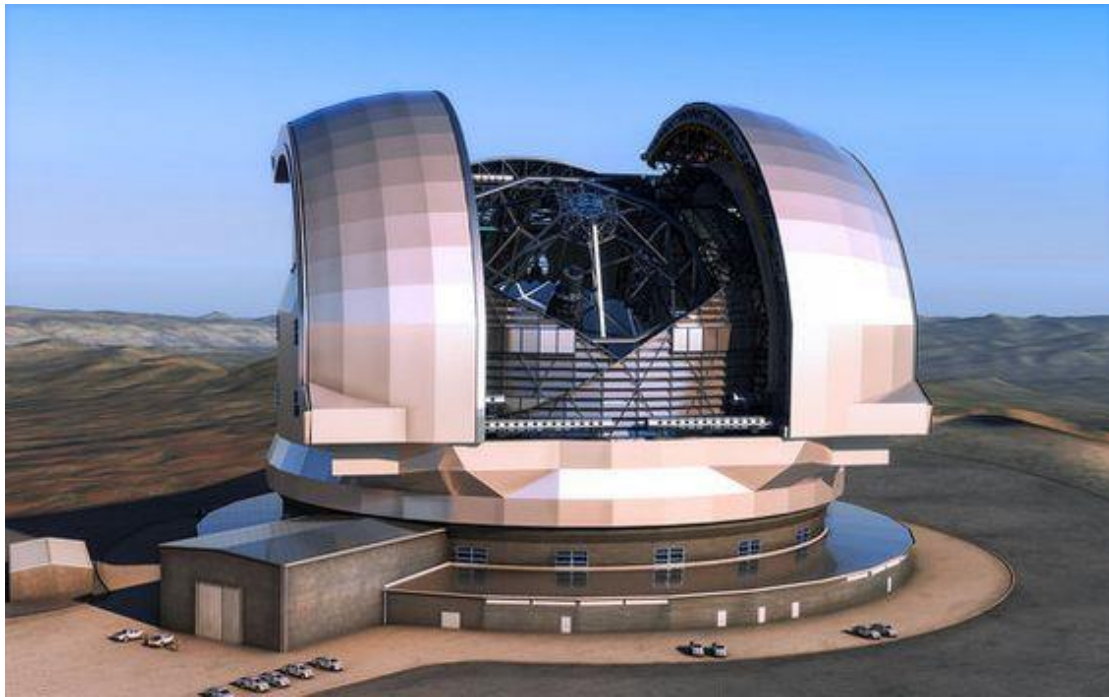
Early cultures identified celestial objects with the gods and took their movements across the sky as prophecies of what was to come.

The traditional subject of Astronomy was the determination of the positions and motions of the celestial bodies. This information gathering had practical applications for human activities, such as orientation, navigation, agriculture, timekeeping and calendar formation and keeping.

Time was measured with sundials. The stellar periods were the building stones for the first calendars, necessary for the social occupations and religious celebrations. From the era humans created calendars, knowing the annual succession of the seasons, of the periods of seeding and harvest, they ceased to be nomads; they built cities and settled there.



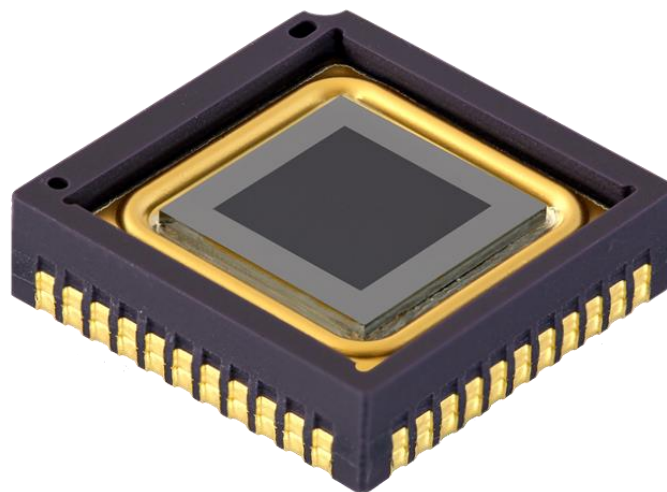
Astronomy stimulated science in societies. The discoveries pushed the borders of scientific knowledge. Alongside this are the engineering and technology challenges of producing ever more versatile and accurate instrumentation and detectors, building ever larger and more precise telescope structures both on the ground and orbiting in space to receive radiation from the furthest and faintest objects in the sky, and devising ever more sophisticated means of computational analysis and modelling.



Active optics technology and ultra-sensitive detectors over the whole electromagnetic spectrum are two areas where astronomy has led the development of more widely applicable techniques.

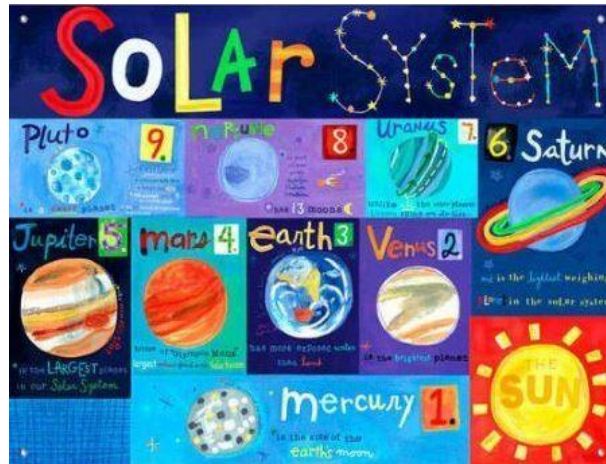


A film called Kodak Technical Pan is used extensively by medical and industrial spectroscopists, industrial photographers, and artists, and was originally created so that solar astronomers could record the changes in the surface structure of the Sun.



The sensors for image capture known as CCDs, were first used in astronomy in 1976. Within a very few years they had replaced film not only on telescopes, but also in many people's personal cameras, webcams and mobile phones.

On a more pressing level, astronomy helps us study how to prolong the survival of our species. For example, it is critical to study the Sun's influence on Earth's climate and how it will affect weather, water levels etc. Only the study of the Sun and other stars can help us to understand these processes in their entirety. In addition, mapping the movement of all the objects in our Solar System, allows us to predict the potential threats to our planet from space.



On a personal level, teaching astronomy to our youth is also of great value. It has been proven that pupils who engage in astronomy-related educational activities at a primary or secondary school are more likely to pursue careers in science and technology, and to keep up to date with scientific discoveries (National Research Council, 1991). This does not just benefit the field of astronomy, but reaches across other scientific disciplines.

