



General Assembly

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Committee on the Peaceful Uses of Outer Space

International cooperation in the peaceful uses of outer space: activities of Member States

Note by the Secretariat

Addendum

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II. Replies received from Member States

Norway

1. Norway is a unique space nation. The country has long traditions as a space nation, thanks in particular to its northern latitude. Norway has leading scientists in several space-related fields, while in satellite communications, satellite navigation and Earth observation, Norway is a noteworthy user nation. It also has an active high-tech space industry.

2. The Norwegian Space Centre, an agency of the Ministry of Trade and Industry, coordinates and manages the country's involvement in space activities. Management of membership in the European Space Agency (ESA) is the foremost international commitment.

1. Space research

3. Norwegian space science activities are concentrated into relatively few areas. This concentration is necessary owing to limited resources, both in funding and personnel. The main scientific activities are in the areas of middle and upper atmospheric physics and solar physics. Cosmology has also been a growing field in recent years.

4. At the Andøya Rocket Range, scientific rockets are launched and the international Arctic Lidar Observatory for Middle Atmosphere Research (ALOMAR) facility uses light detection and ranging (lidars) to study the middle and upper atmosphere. At Tromsø and on Svalbard, European incoherent scatter (EISCAT) radars probe the nature of the magnetosphere.

5. Norwegian solar scientists are active in several international space projects and are deeply involved in the ongoing Solar and Heliospheric Observatory (SOHO) project of ESA and the National Aeronautics and Space Administration (NASA) of the United States of America, which will continue to 2007. In 2006, Solar B will be launched in a Japanese project with Norwegian participation. More than half of the Solar B data will be downloaded via a ground station on Svalbard and processed at a European data centre at the University of Oslo.

6. Scientists at the Norwegian Defence Research Establishment and the Universities of Oslo, Bergen and Tromsø are taking part in nearly 20 experiments on board spacecraft, to measure particle currents, electric fields, X-ray radiation and dust. This includes the Cluster mission—four satellites flying in formation around the Earth to provide a three-dimensional map of the magnetosphere. Other ongoing or planned missions that Norway participates in include Polar, Imager for Magnetopause-to-Aurora Global Exploration (IMAGE), the International Gamma-Ray Astrophysics Laboratory (INTEGRAL), the near infrared spectrometer (SIR)/Chandrayan mission, the Effects of Space Weather on Technology Infrastructure (ESPRIT) project and the Atmospheric Space Interactions Monitor (ASIM) for the International Space Station. Norway is also participating in the Planck and Rosetta missions of ESA.

7. The Norwegian Defence Research Establishment (FFI) is actively contributing to the International Earth Rotation Service through analysis of global positioning system (GPS) and very-long baseline interferometry (VLBI) measurements.

8. Norway is also involved in research into microgravity. The University of Tromsø conducts leading-edge research in dust formation in space and the upper atmosphere and will take part in an experiment to produce such dust on board the International Space Station. The Plant Biology Centre at the Norwegian University of Science and Technology (NTNU) has been selected to support users and serve as an operations centre for one of the key experiments on board the International Space Station.

2. Earth observation

9. Norway has for many years been focusing on Earth observation application development for marine and polar areas, which has made it essential to utilize radar data from space and build the necessary infrastructure to support this. National requirements have been the driving force. Cooperation with user organizations, research institutes and industry has made sure that this development is tailored to needed services.

10. Based on requirements from nature management organizations, mapping of the potential habitat for large animals has been developed. Habitat modelling based on satellite maps is now being implemented for selected species.

11. Kongsberg Satellite Services (KSAT) operates satellite stations at Svalbard, Tromsø and Grimstad, and is now in the process of installing an antenna at Troll in Antarctica. This ground segment supports both national and international near real-time services based on Earth observation data.

3. Industry

12. Norwegian companies are involved in developing and building the International Space Station, the Ariane 5 launchers, space telescopes, spacecraft for exploring other planets, Earth observation satellites, communication satellites and navigation satellites. Telenor, Nera, Tandberg Television, Norspace and the Kongsberg Group are the principal actors in the Norwegian space sector.

13. The space industry is a growth sector in Norway. The sector turnover was 5.4 billion Norway kroner in 2004, of which over 70 per cent was exported.

4. Communications

14. Telecommunications is the largest part of the space sector in Norway, generating two-thirds of the sector's annual turnover. Telenor and Nera are the principal companies, with services and products for mobile satellite communications (Inmarsat), television broadcasting and, increasingly, satellite systems for multimedia and broadband.

5. Satellite navigation

15. With a considerable extent of its land and territorial waters, low population density and sub-Arctic to Arctic weather, Norway benefits greatly from the (mainly) United States satellite navigation system, GPS.

16. Through its membership in ESA, Norway is now taking part in the European development of Galileo, the next generation global satellite navigation system.

6. Infrastructure

17. Norway, particularly northern Norway and Svalbard, has geographical advantages.
18. Scientists around the world are interested in phenomena related to Sun-Earth interactions, in particular the aurora. Rockets launched from the Andøya Rocket Range are well-suited to study these phenomena, as Andøya lies under the middle of the magnetic belt around the North Pole where auroral activity peaks.
19. Scientists wishing to study the interactions of the solar wind with the polar magnetic cusp near the magnetic north pole can use sounding rockets launched from Svalbard.
20. Northern Norway and Svalbard are well-suited locations for studies of the processes taking place in near-Earth space over the Arctic, processes that could be signs of global climate changes.
21. Polar orbiting satellites pass near the North and South Poles 14 times a day. For an owner of one of these satellites, the SvalSat ground station on Svalbard is ideal for spacecraft control and for downloading data, because the station can see all 14 daily orbits of the satellite.
22. Norway's high latitude is a resource in space activities.

Tajikistan

Starting in 2006, the Tajikkoinot Institute of Geophysics will participate in a programme of remote sounding of Earth from outer space in the interest of the national economy of Tajikistan.
