

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
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CASE STUDY: DESIGN OF A SPACEPORT IN SOUTHERN HEMISPHERE FOR SPACE TOURISM  
VIABILITY

**Abstract**

One of the most important criteria for advancement of space technologies is the involvement of the private sector in space related endeavors. With growth of companies such as SpaceX and with initiatives such as the Google LunarX Space Challenge, this is slowly becoming a reality. However, one of the most important criteria is the availability of spaceports across the world which can act as anchorage for development of space tourism. Many contemporary trend analysts agree that the development of global space tourism can motivate more spending in space technologies causing an exponential acceleration of contemporary technologies. Hence, in order to achieve this, it is essential to create affordable spaceports in different locations. However, there are several challenges associated with this problem and as such there are many difficulties that need to be overcome. Naturally, astrodynamics plays an important role and geographic location can depend on variety of factors such as longitude, latitude and elevation while taking into account factors such as accessibility, transportability, gravitational forces, regional atmospheric conditions, Coriolis Forces and others. Furthermore, ecological analysis will also need to be made of the surrounding region so that effects of a spaceport can be determined in the environment. In addition, the location should provide safety for the launch and it must have ample input of power available. This paper will discuss the necessary parameters for the design of a spaceport in order of their importance. As a case study, a location on an island in the Indian Ocean at the Southern Hemisphere will be taken as a case study for calculations.