

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
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## OCEAN LAUNCH SOLUTION FOR EXPERIMENTAL ROCKETS

**Abstract**

There are only a few opportunities to launch academic rocket in Japan, although the demand for launch opportunity is significantly increasing. To resolve this issue, ASTROCEAN Co., Ltd. (ASTROCEAN) is providing ocean launch solution. As a beginning of this project, Planetary Exploration Research Center from Chiba Institute of Technology (PERC/CIT) and ASTROCEAN had signed a contract to launch sounding rocket from the ocean in 2020. Problems are as follows. Academic rocket and experimental rocket, such as a demo rocket for startups, have limited launch opportunity due to Japanese regulation and geographic condition. Those rocketeers launch their vehicle from restricted location. Furthermore, a launch should be within a limited window permitted by existing stakeholders such as locals, farmers, fishers, planes and ships. Owning a private launch site is even more difficult, therefore, innovation is delayed. The ocean launch will become one of the solutions to resolve this issue. To evaluate the influence of waves on floating launcher, first experimental launch had accomplished with PERC on 2nd March 2019 at 500 meters away from the coast of Onjuku town, Chiba prefecture in Japan. 1.7m height hybrid rocket launched from the floating launcher, and it reached about 250m apogee. As a result, it has been proved that low-cost floating launcher can launch rockets, however, ocean waves significantly influence launcher. Therefore, either float or launcher structure should be rigid to stand for wave influence. In addition, the project had been covered in reputable Japanese media. Our business model is as follows. To lease floating launcher to the users who cannot find launch opportunity. Sponsorship by brands as we proved ocean launch would be covered by media with quite huge influence to broadcast them in Japanese space industries.