

# [Sc nats1530m space agency: nasa (national aeronautics and space](https://assignbuster.com/scnats1530m-space-agency-nasa-national-aeronautics-and-space/)

SC/NATS1530M3. 0 Winter 2018Science ofSpace Flight & Exploration (Blended)MISSION REVIEWMISSION INFORMATIONSpace agency: NASA(National Aeronautics and Space Administration)Mission name: EuropaClipperTarget: One of Jupiter’s moons, EuropaProposed launch year: 2020’sMISSION SUMMARY (350-400words)The EuropaClipper mission plans to send a vessel carrying nine scientific instruments intoa wide orbit of the planet Jupiter in order to study one of Jupiter’s nine moons, Europa. In 2013, scientists observed what is thought to be water vapour plumingfrom the moon out into space, leading them to believe that this moon could becurrently geologically active.

1 The goal of the mission is toinvestigate whether these theories are true by performing close flybys ofEuropa, gathering and recording information on the far-off moon that is thoughtto have liquid water hidden beneath its icy shell. 1 The necessityfor these flybys (as opposed to orbiting the moon itself) comes from theradiation emanating from Jupiter that surrounds Europa. If the orbiter were toorbit Europa instead of Jupiter, it would get “ fried” by the high radiationlevels.

3 This flyby method will allow thevessel to gain large quantities of information over the course of severalyears. One of the goalsof the Europa Clipper is to attempt to fly the orbiter through the “ plumes” ofwater vapour that were observed from the Hubble Space Telescope, and to testthe properties of the particles it flies through. 3 The initial planis to perform forty to forty-five flybys of Europa, getting as close as 25kilometres and flying by as far as 2700 kilometres away from Europa’s surface.

2During these flybys, the Europa Clipper will take photos of the moon’s surfacewith high-resolution cameras, use an ice-penetrating radar to determine howthick the ice is on the surface and use instruments to determine the strengthand direction of Europa’s magnetic field. 2 The mission also plans tomeasure the gravity on Europa which will help scientists confirm definitively thatthere is a liquid water ocean underneath its icy shell. Measuring the strengthand direction of the magnetic field will help scientists know not only how deepthe ocean is but also how much salt is in it. 2 The variousinstruments will work in tandem to paint a clearer picture of Europa, greatlyhelping scientists consider future missions to Europa and providing them withimportant information about this possibly geologically active moon that has thepotential to be applied to missions outside of our solar system. MISSION JUSTIFICATION(300-350 words)The EuropaClipper mission is in line with our organization’s goals because it intends to investigatewhether Europa has the conditions necessary to support life and to find out whatnatural resources (potentially water) could be available to us in the future.

2Water is themain ingredient for life, whether that life is plant or animal; everythingneeds water to survive. 4 That’s why discovering whether Europa hasliquid water on it is so important, determining whether there is water on aplanetary body is absolutely necessary when looking at the potential forhabitability. With the help of the Europa Clipper, we will have a firmer graspof what’s on Jupiter’s moon and we will be able to apply what we learn up thereto what we know about earth and its beginnings.

2Investigatingthe atmosphere and gravity of this far-off moon will help us plan futuremissions to further understand Europa and its secrets. Knowing more about itsgravity and magnetosphere are important pieces in planning possible landermissions to Europa, which will give us even more information about thehabitability and natural resources of Europa. There is so much knowledge to begained from this mission, for example, by flying the Europa Clipper through theplumes of possible water vapour, we will be able to test the composition of theparticles and hypothesize with more accuracy what forms of life could be onEuropa or that could be there in the future. Europa could evenbe currently supporting life.

3 Previous missions in the area haveobserved shifts in the moon’s icy shell and water vapour being released intospace which leads us to believe that there is volcanic activity under the ice; volcanic activity that could be providing nutrients to tiny organisms right now. 3 This volcanicactivity paired with the immense amount of water that is believed to be beneaththe surface is a very good indicator that Europa has the potential to supportlife… whether that’s alien life or human life of the future remains to be seen. SOURCES “ Europa – In Depth | Planets.” Edited by Phillips Davis, NASA, NASA, Accessed 22 Jan. 2018, solarsystem. nasa. gov/planets/europa/indepth    “ Europa Clipper.” Edited by Jon Nelson, Europa Clipper, NASA, Accessed 22 Jan.

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