**Attempt to simulate a BlueBoat with ROS noetic using SITL (not fully tested)**

Download **ardurover** SITL built for Linux x86\_64:

<https://firmware.ardupilot.org/Rover/stable-4.5.7/SITL_x86_64_linux_gnu/>

In a terminal tab in the **Downloads** folder:

**chmod +x ./ardurover**

**./ardurover --home 48.199,-3.015,122,0 --model rover-skid --speedup 1**

Then connect to it in TCP (e.g. 127.0.0.1, port 5760) with Mission Planner or QGroundControl and set ArduRover [parameters](https://www.ensta-bretagne.fr/lebars/Share/fake_blueboat.param):

* **BRD\_SAFETY\_DEFLT** to **0** (**BRD\_SAFETYENABLE** in ArduRover < V4.4.0).
* **ARMING\_CHECK** to **0**.
* **FRAME\_CLASS** to **2** (means it is a boat).
* **SERVO1\_FUNCTION** to **73** and **SERVO3\_FUNCTION** to **74** since the BlueBoat is as described on <https://ardupilot.org/rover/docs/rover-motor-and-servo-connections.html#skid-steering>. Possibly swap **SERVO1\_FUNCTION** and **SERVO3\_FUNCTION**, toggle **SERVO1\_REVERSED** and/or **SERVO3\_REVERSED** if the simulated boat is turning/moving forward in the wrong direction compared to the real one.
* **PILOT\_STEER\_TYPE** to **3**? Other [parameters](https://www.ensta-bretagne.fr/lebars/Share/closer_to_real_blueboat.param)?
* Maybe **SYSID\_MYGCS** to **255**, to check its value on the real BlueBoat and change the corresponding mavros **apm2.launch** parameters **tcp://127.0.0.1:5762/?ids=255,240** if needed (otherwise mavros sends by default to sysid 1, compid 1 as sysid 1, compid 240…).

In another tab:

**sudo apt-get install ros-noetic-mavros ros-noetic-mavros-extras**

**sudo /opt/ros/noetic/lib/mavros/install\_geographiclib\_datasets.sh**

**roslaunch mavros apm2.launch fcu\_url:="tcp://127.0.0.1:5762/?ids=255,240" tgt\_system:=1 tgt\_component:=1**

In another tab:

**rqt**

In **Plugins\Topics\Message Publisher**, add and then enable at 1 Hz:

**/mavros/rc/overrride** (with e.g. channel[0]=1400, channel[2]=1750).

Ensure the simulated boat is armed and in **Manual** mode e.g. using Mission Planner or QGroundControl buttons and ensure their joystick is disabled (they may conflict since Mission Planner and QGroundControl might have the same sysid as mavros).

Alternatively, **/mavros/setpoint\_velocity/cmd\_vel** can be used instead of **/mavros/rc/overrride** if it is in **Guided** mode.

The simulated boat should move in Mission Planner or QGroundControl view, this can be also checked by showing the values of e.g. **/mavros/global\_position/compass\_hdg** and **/mavros/global\_position/global** in rqt **Plugins\Topics\Topic Monitor**.

Then you can use your own ROS nodes to send/receive those ROS messages in place of rqt, those nodes should be compatible with both the real BlueBoat and the simulated one **(to be checked with a real BlueBoat)**.

See also:

<https://firmware.ardupilot.org/Rover>

<http://wiki.ros.org/mavros>

<https://ardupilot.org/rover/docs/parameters.html>

<https://github.com/bluerobotics/Blueos-Parameter-Repository/blob/master/params/ardupilot/ArduRover/4.5/Navigator/BlueBoat120.params>

<https://mavlink.io/en/guide/routing.html>

<https://ardupilot.org/dev/docs/using-sitl-for-ardupilot-testing.html>

<https://www.ensta-bretagne.fr/lebars/tutorials/TD_robots_sensors_actuators.pdf>

<https://bluerobotics.com/learn/blueboat-software-setup/>