

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](#):

- **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](#)?
- 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/override (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/override** 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/>