PathPlanner Plugin for QGIS

Installing Plugin

Current version of the PathPlannar plugin is developed (still in development) on Python 3.8 and was tested on QGIS 3.32.1. To install the plugin to QGIS, copy the folder “PathPlanner” to “(HOME_DIR)/AppData\Roaming\QGIS\QGIS3\profiles\default\python\plugins”. (HOME_DIR) is usually defined as “C:\Users\(username).

Under Plugins-Menu the PathPlanner plugin is now available and an icon for the plugin is also to see as shown in Figure 1.

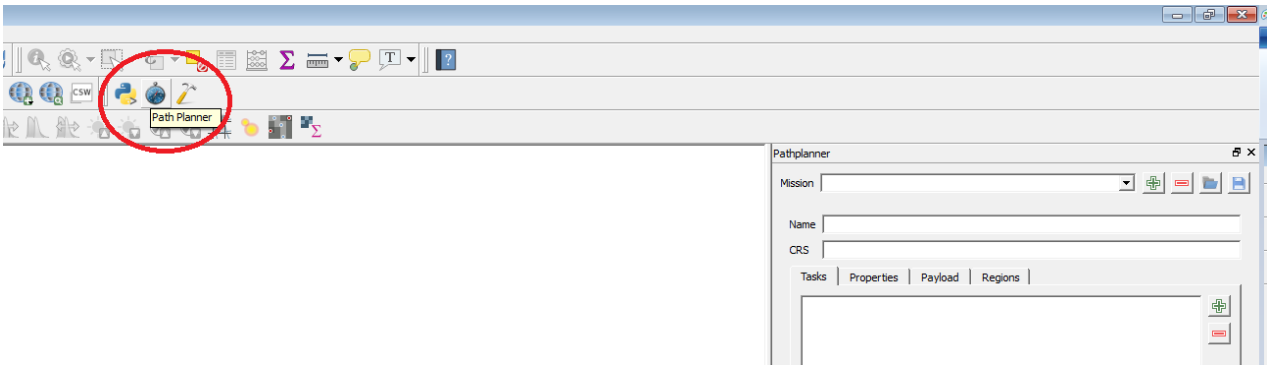

Figure 1: PathPlanner icon on QGIS

For more information for the plugin installation see following link:

http://docs.qgis.org/testing/en/docs/pyqgis_developer_cookbook/plugins.html

Adding Mission

Main window of the PathPlanner plugin is shown in Figure 2. Using the  button in “Mission” section, can be the mission added. Each mission contain its own tasks, properties, regions (restriction areas) and payloads.

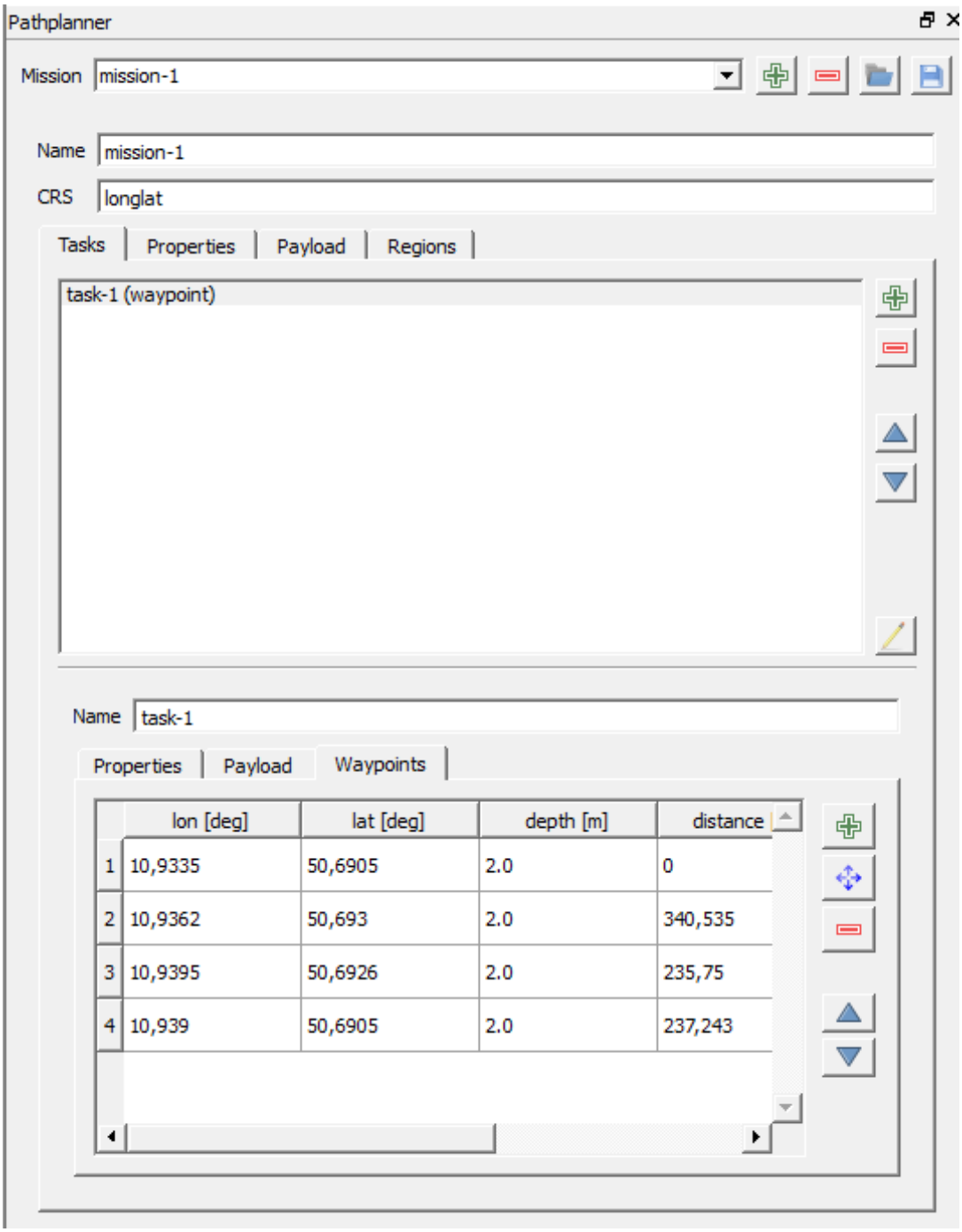

Figure 2: Main window PathPlanner

Add Tasks

Using “add” button on “Tasks” tab can be the task added into the current mission. Currently are 3 different tasks available: “Waypoints”, “Survey” and “Circle”.

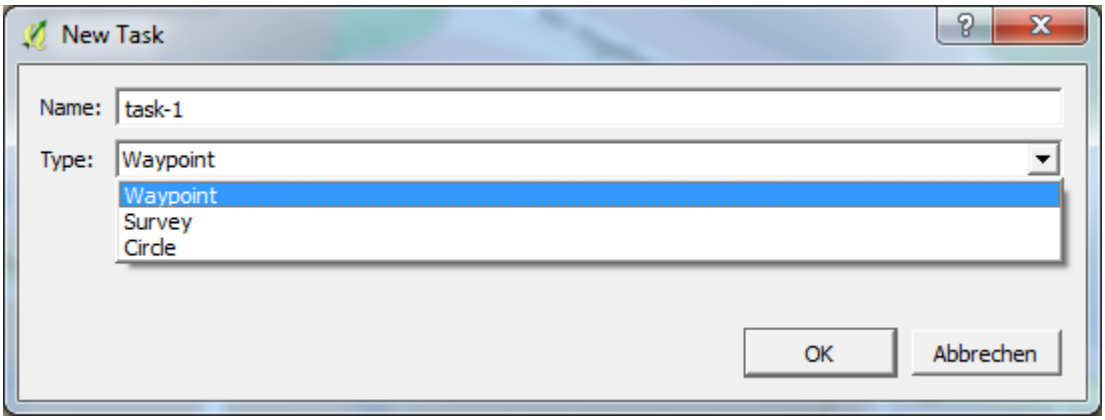

Figure 3: New Task window

Waypoints Task

Waypoints allow to set various routes for the mission. In this case, each point has its own depth information, which allows controlling of the depths along the waypoint. To edit points and its depth can be the points-table used. This table is under “Waypoints” tab in task section (see Figure 4). Please note that the different depth information can be meaningful if only the “DepthControllerMode” in Properties tab selected as “Waypoints” (see Figure 5).

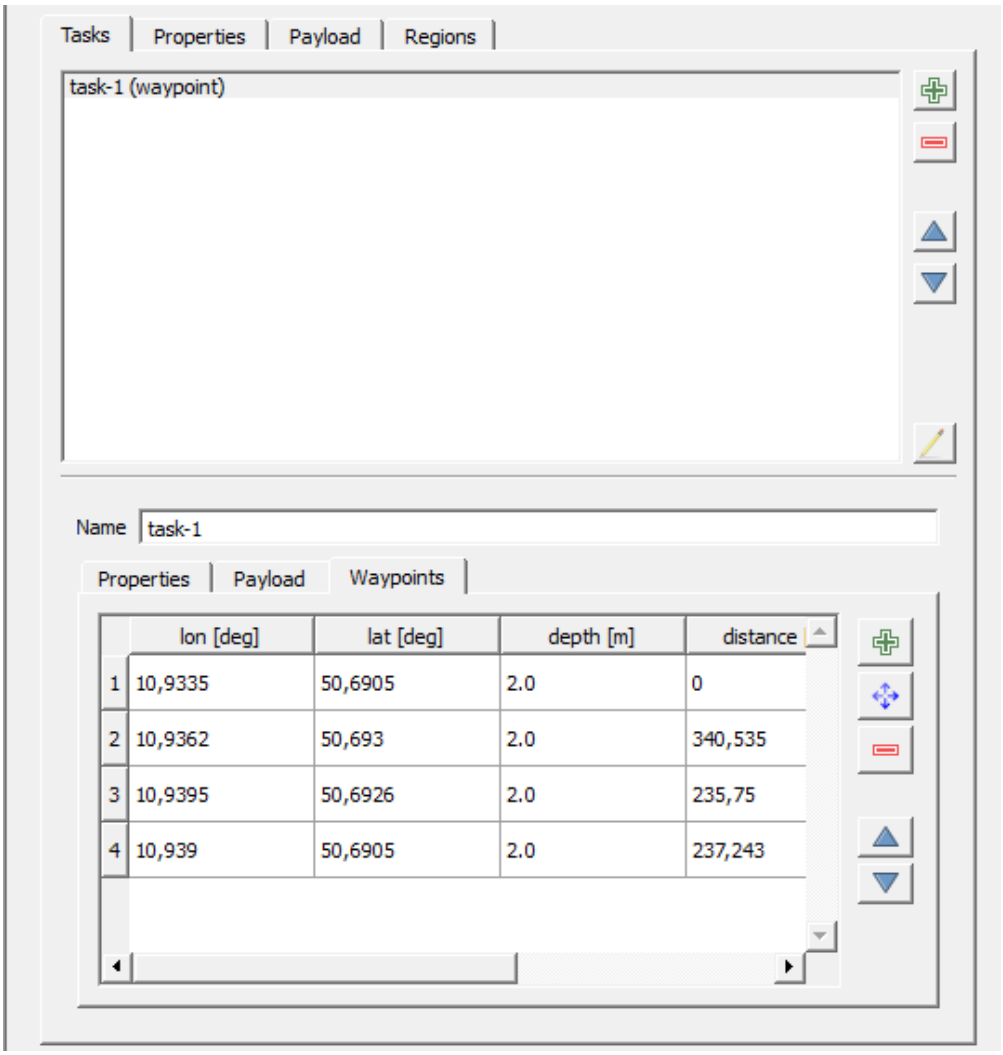

Figure 4: Waypoints task

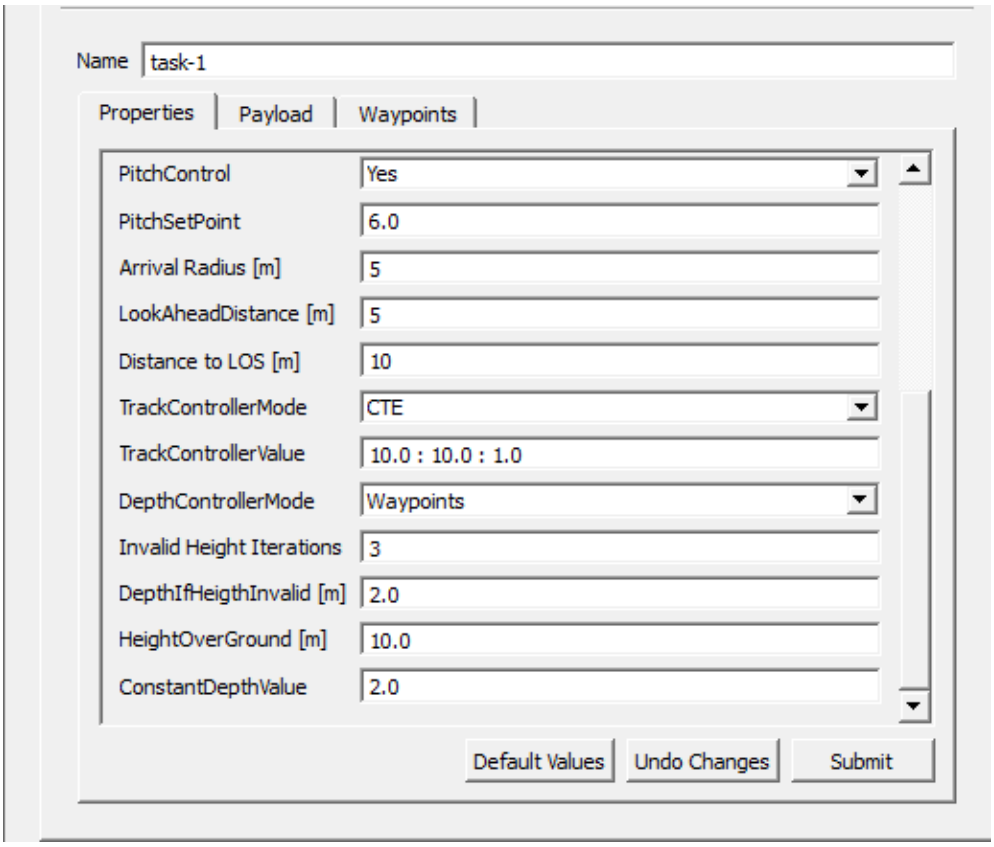

Figure 5: Waypoints properties

Another option for "DepthControllerMode" is the ConstantDepth mode, which makes drive the vehicle on given Depth. This depth is set under "ConstantDepthValue" as seen on Figure 5. The third option is the "HeightOverGround" which allows to keep constant HoG. Desired Height over Ground value is given also in Properties tab in "HeightOverGround [m]" field.

Survey Task

Survey task draws a meander with given width (east-west-extent), height (north-south-extent) of the bounding rectangle and swath width as seen on Figure 6.

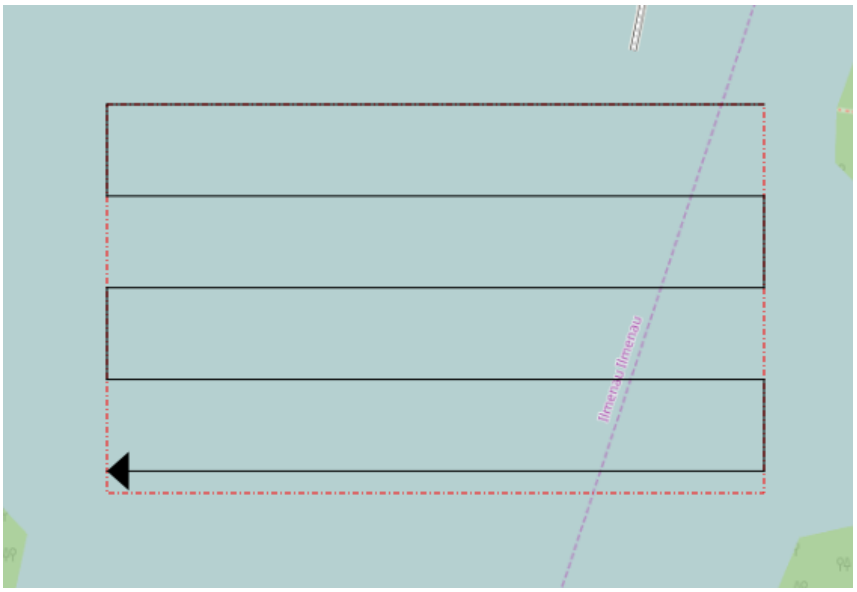

Figure 6: Survey Task – Meander

Survey position, depth, rotation and size can be edited on “Survey” tab under task section (see Figure 7) and the swath width and start position can be selected in Properties tab.

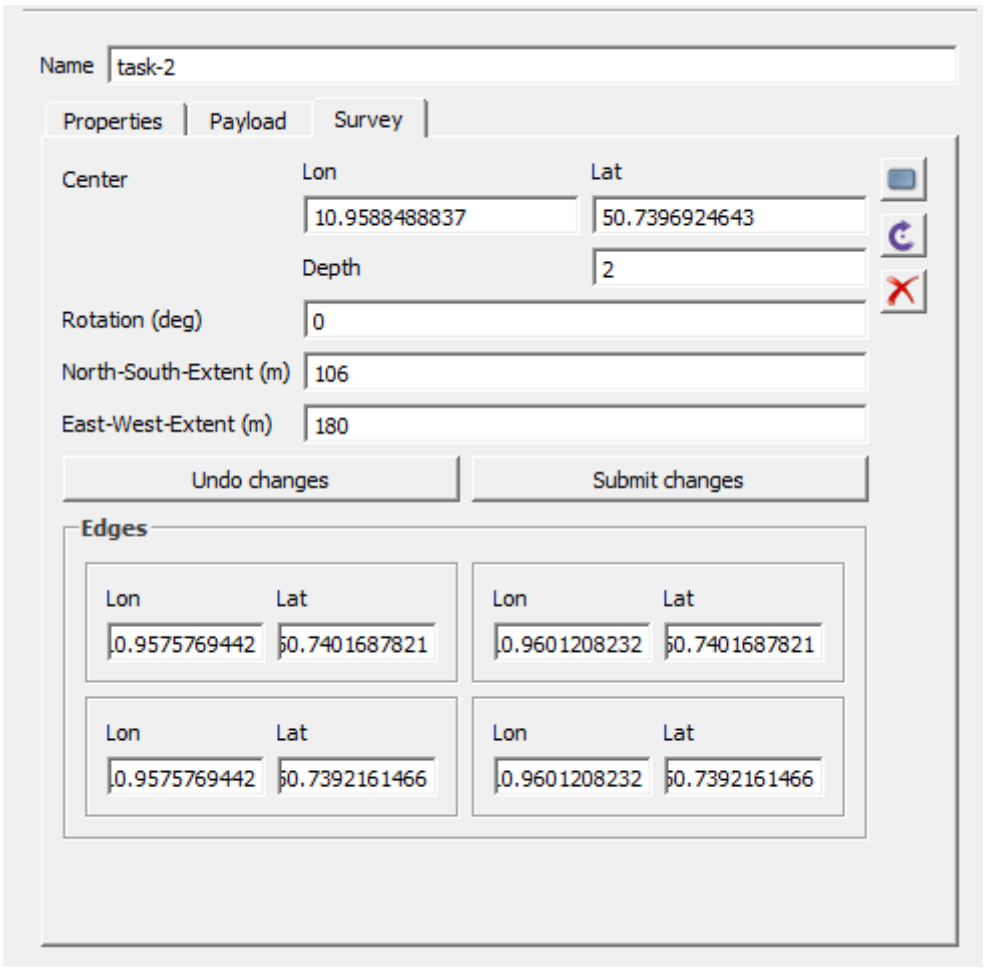

Figure 7: Survey Task

Circle Task

Circle task adds circle into a mission. Circle properties can be edited at “Circle” tab under task section (Figure 8).

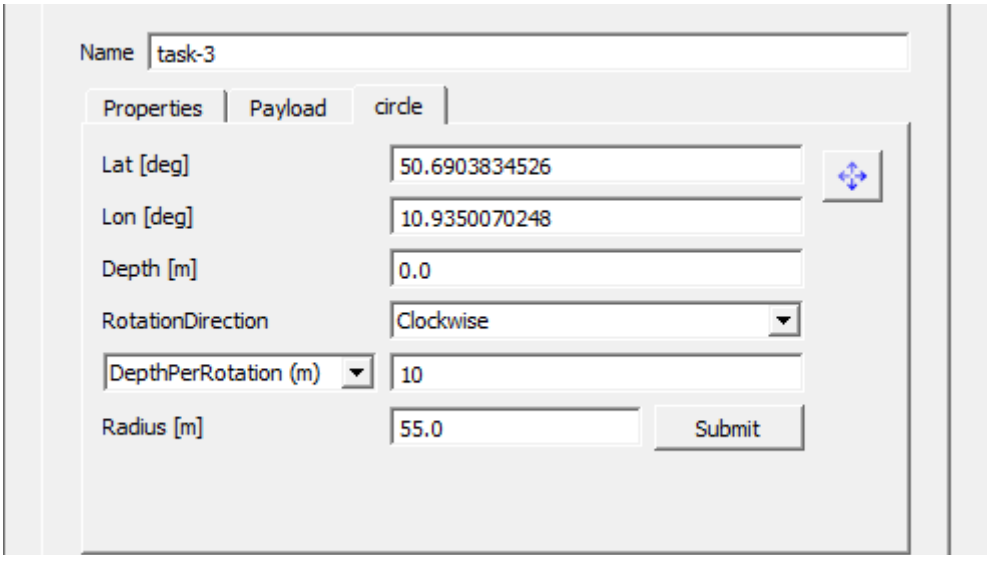

Figure 8: Circle Task

A circle task can contain only one circle and the “add circle” button can be used to move the current circle to desired position.

Payload menu

Each mission can be “equipped” with its payload items, which can be activated and deactivated in different tasks. The payload names should be known to the vehicle control system. In this example was the vehicle equipped with Reson-T20 and minSAS-6000 systems. According to this information the payload list was updated (see Figure 9).

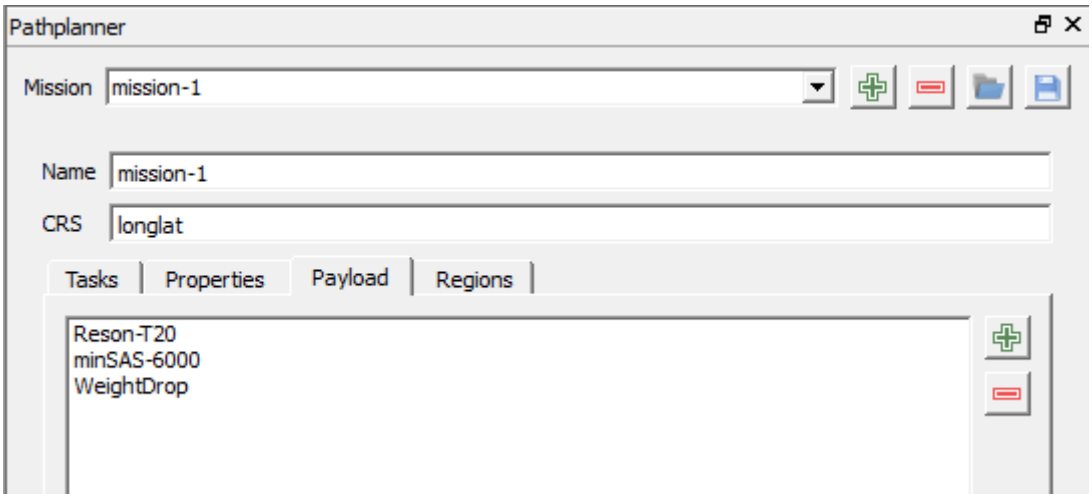

Figure 9: Payload List

This list will be updated to the Payload tab under the task menu. To set the chosen payload activated use “activate payload” button () and to set deactivated use “deactivate payload” button (). To set “no action” use the corresponding button ().

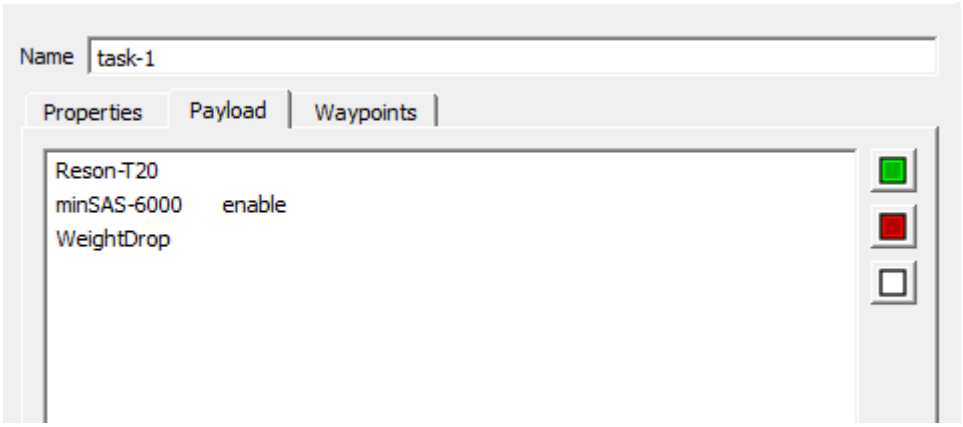

Figure 10: Payload Control

Properties

Mission properties can be seen under the Properties tab. Here are the total distance and duration of the mission displayed. Each task has its own properties as it is shown in Figure 5. Here can be changed various settings for current task.

Regions

Regions function allows to restrict or set mission area. Using Restriction-Are button  can be a restricted area set. In this area is the mission restricted and every task will be canceled. To limit allowed mission area is the Mission-Region button  used.

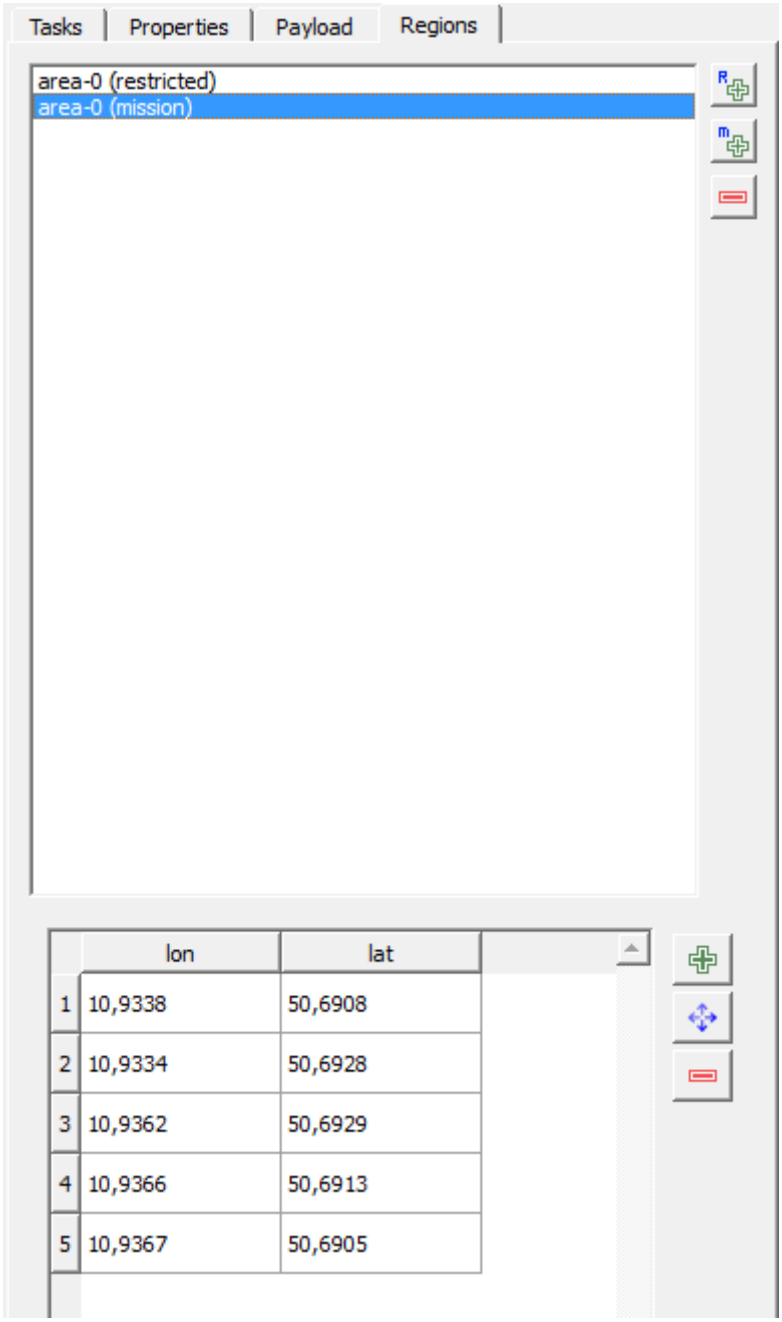

Figure 11: Region

Save Mission file

The created mission can be saved as xml or miss file (). Xml files can be loaded as well to the pathplanner plugin for further edit.