



RTK Draft

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In this article I want to explore the possibility of using RTK GPS for the draft calculation. At first glance, it might sound like an expensive project but take into account that RTK is already there for other purposes and we can take advantage of its presence.

Additionally, we will assume that there is a reliable tide station connected to our hardware. We will also expect that there is no substantial pitch/roll involved in the project. (With significant pitch/roll conditions, it is difficult to define draft anyway).

Under such circumstances

$$\text{draft} = \text{antenna_offset} + \text{tide} + \text{msl} - \text{rtk_height} \quad (\text{EQ 1})$$

where:

antenna_offset is the distance from the antenna top to the vessel bottom (or any other significant level of your choice)

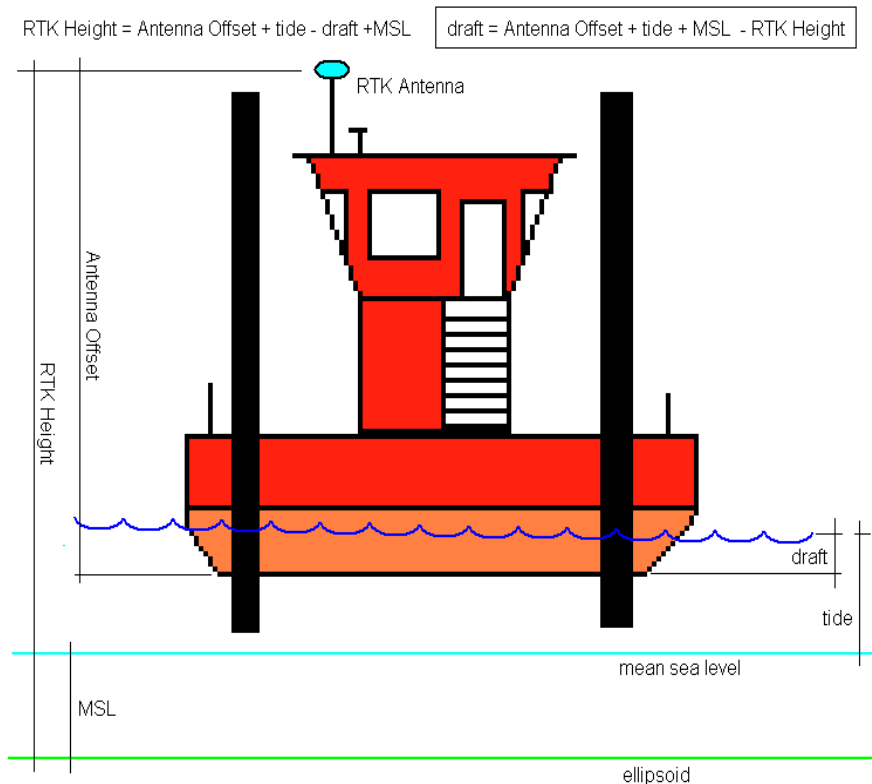
tide is the tide value coming from an external source (like tide station)

msl is mean sea level from geoid model associated with the project geodesy

rtk_height is the height from GGK message.

The draft value accuracy error is equal to the sum of the GPS and tide accuracies.

FIGURE 1. Calculating RTK Draft



It would be an interesting project to use two RTK GPS devices on a long vessel (like a hopper dredge) to calculate bow and stern draft. In such a case, we could detect pitch and take it into account for the draft calculation.

The proposed method is not yet implemented in any of the HYPACK® device drivers but we are ready to implement it as soon as someone shows an interest.