

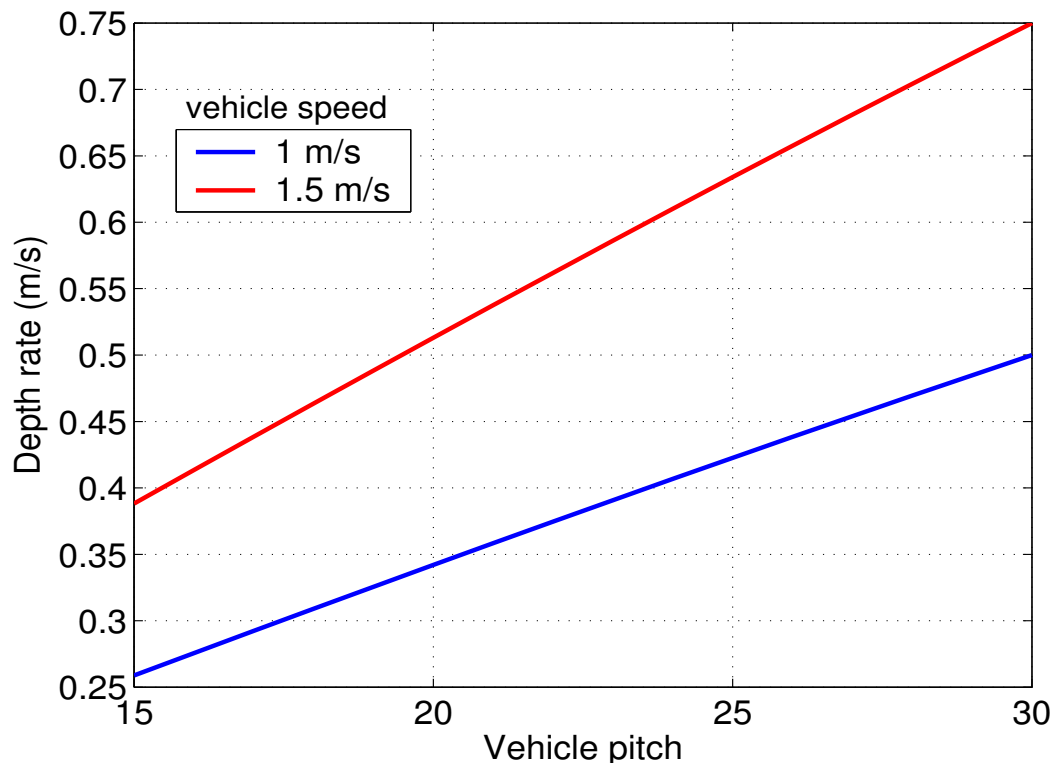
AUV Gulper sample acquisition time constraint estimates

John Ryan, January 7 2005

Purpose: Assuming we will maintain the normal AUV survey pattern (sawtooth vertical section), without slowing down or changing vehicle pitch for sample acquisition, estimate the time constraints for sample acquisition that permit multiple samples within a specified depth range.

Considering typical ranges for pitch and vehicle speed (Figure) and a goal of acquiring a sample from within a 1-m depth range, we can estimate:

- a) Typical 30° pitch: 1.3 to 2 seconds acquisition time
- b) Shallow 15° pitch (as may be used in layer studies): 2.5 to 4 seconds acquisition time.



So, reasonable numbers to consider for consideration of sample system design are:

- a) 2 seconds for sample container flushing to capture a sample from a 1-m depth range.
- b) 6 seconds to index between samples and capture 3 samples at [1 5 10] m within a 10-m depth range.