

Doppler Velocity Log

U.V 5.7 –PREDICTOR

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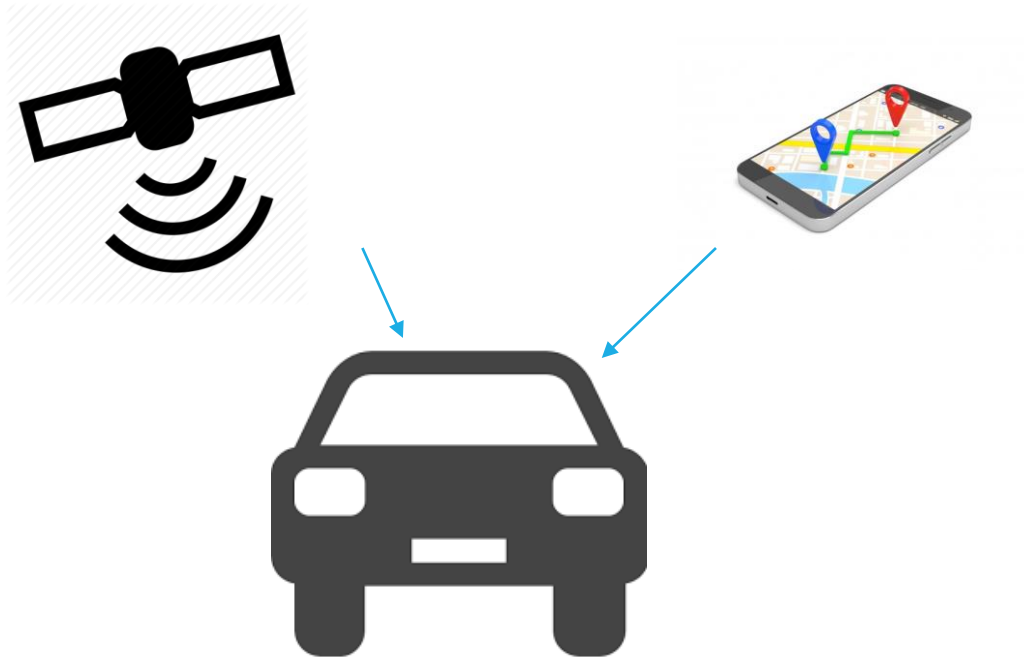
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1. Navigation
 2. Navigation Sous-Marine
 3. Le positionnement Acoustique
 4. Le DVL et son fonctionnement
 5. La fusion DVL/INS



Navigation

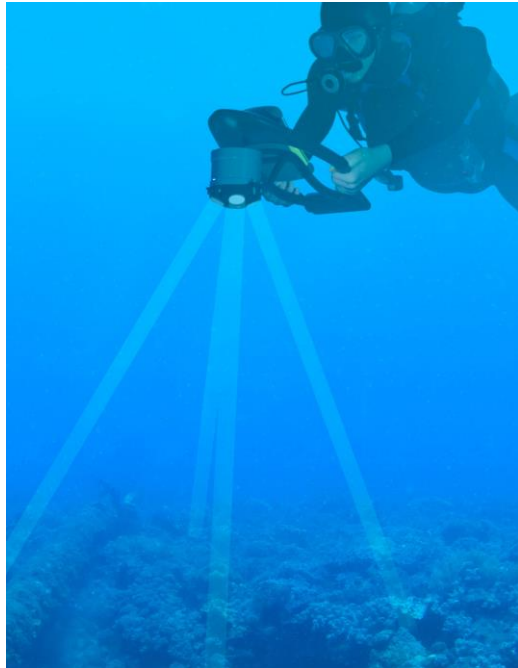
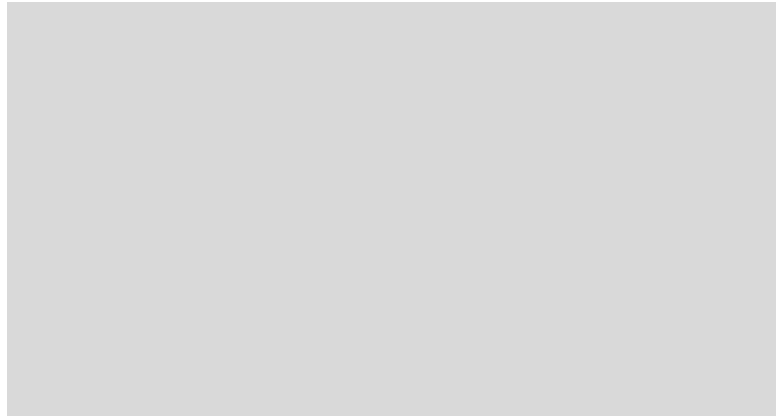
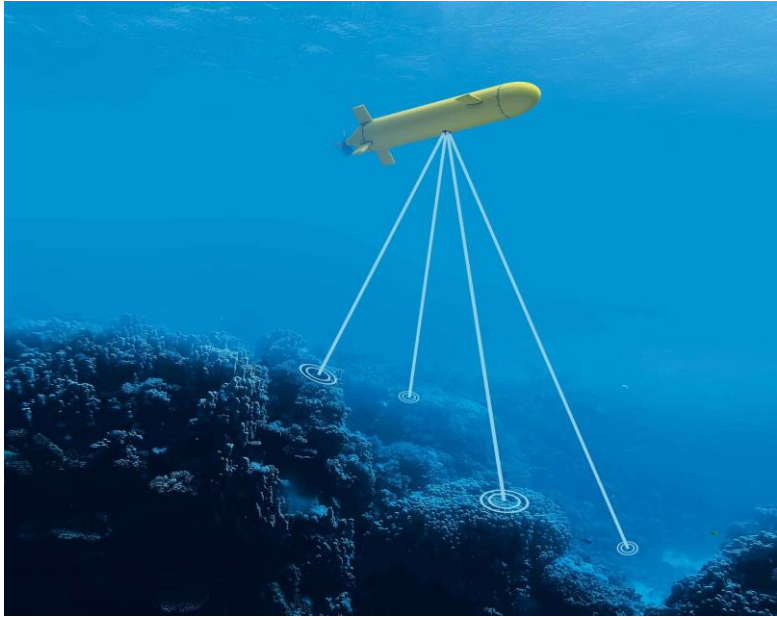
Navigation

Terrestre



Sous-Marine



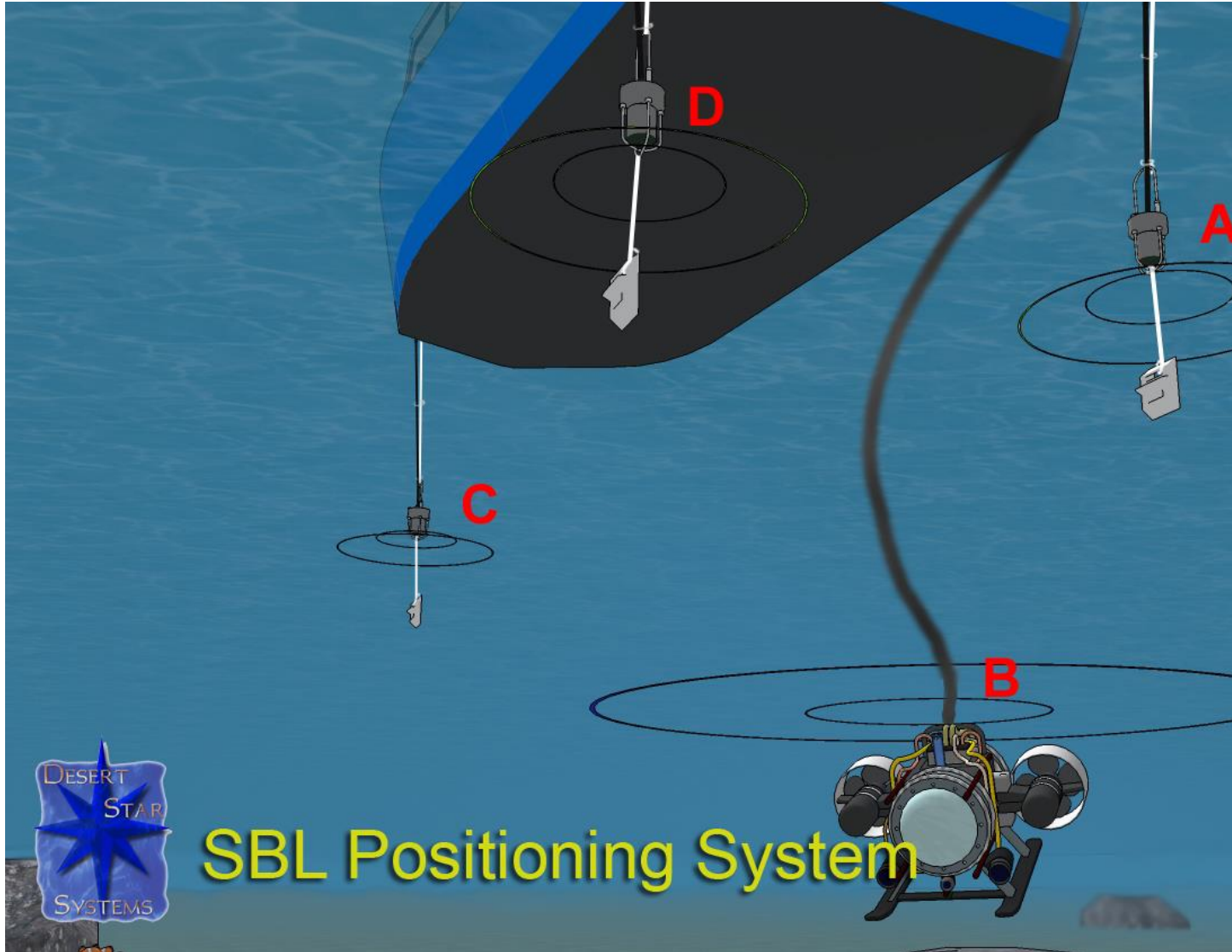


Positionnement Acoustique

Long Baseline – Système Acoustique



Short Baseline – Système Acoustique



Ultrashort Baseline – Système Acoustique



Doppler
Velocity Log -
DVL

$$f = \left(\frac{c \pm v_o}{c \pm v_s} \right) f_o$$

Sign depends if the observer & source are moving away or towards each other

Doppler Velocity Log

Fonctionnement – L'Effet Doppler

f = Apparent Frequency

c = Speed of sound

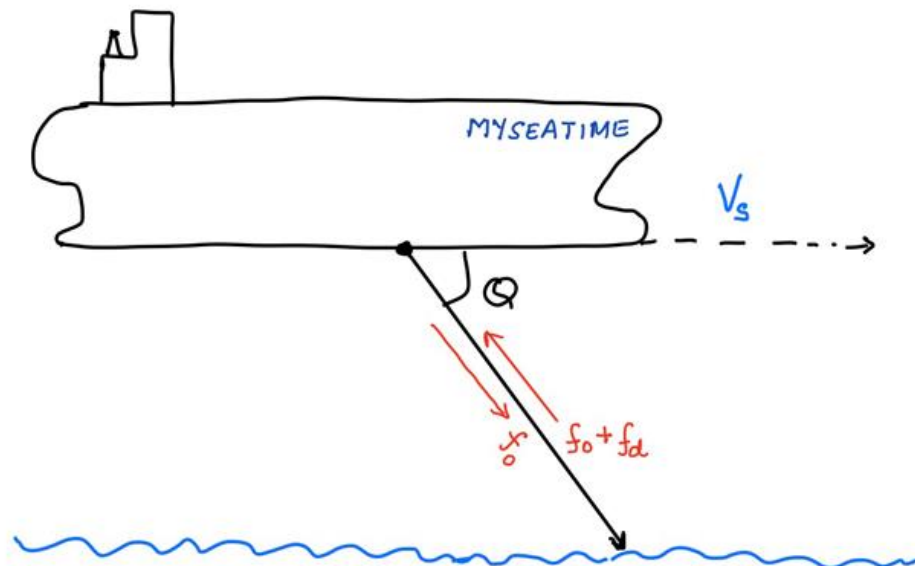
v_o = Speed of observer

v_s = Speed of source

f_o = Actual Frequency from source

Doppler Velocity Log

Fonctionnement



$$f(d) = \frac{2V f(o)}{C}$$

$f(d)$ = Doppler Frequency Shift

$f(o)$ = Original transmitted frequency

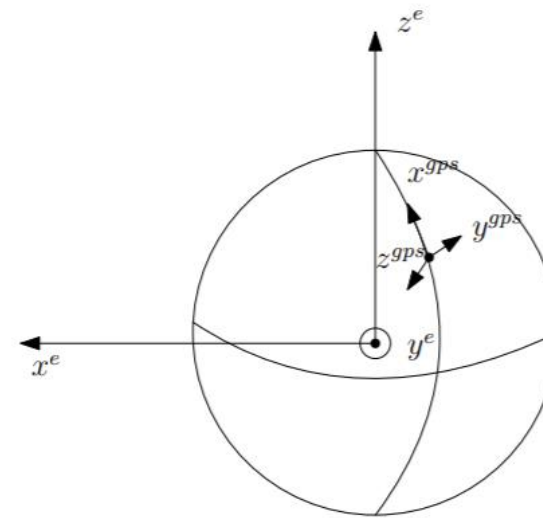
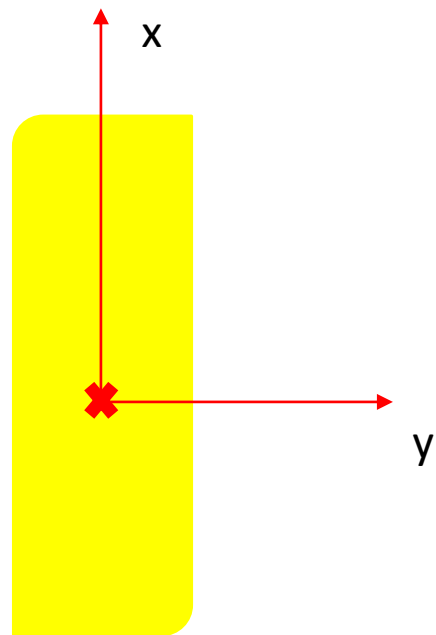
C = Sound wave velocity in water

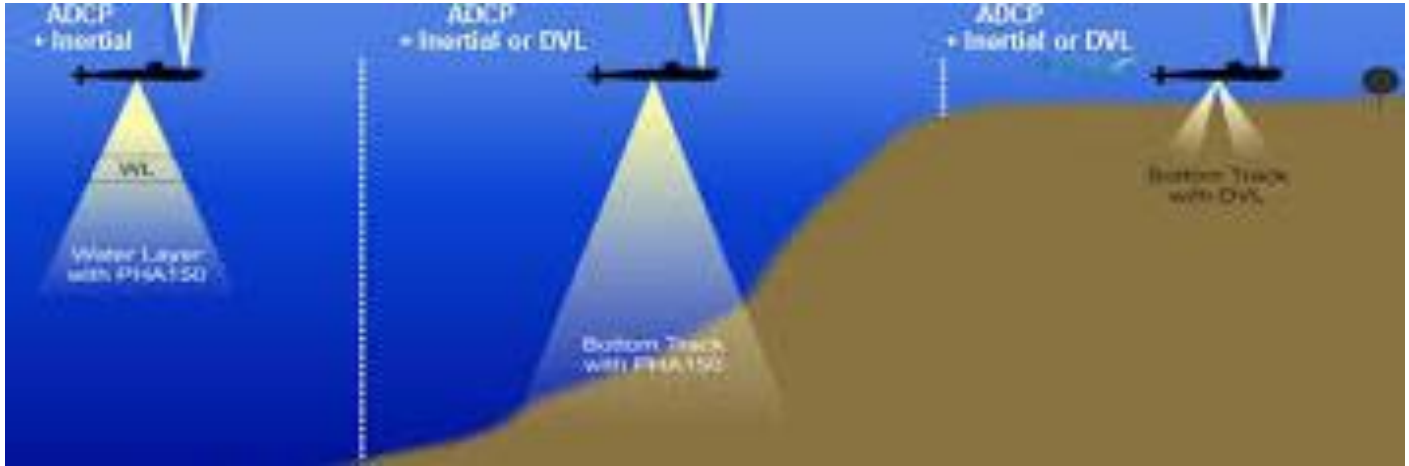
V = Relative speed in direction of transmitted sound wave

Doppler Velocity Log



Fusion DVL/INS





Vitesse relative au sol ou à une couche d'eau?

Les Points Positifs et Négatifs

Points Positifs

- Précision

Points Négatifs

- Taille
- Coût
- Installation

Bibliographie

Images : <https://www.myseatime.com/blog/detail/here-is-all-you-need-to-know-about-doppler-log>