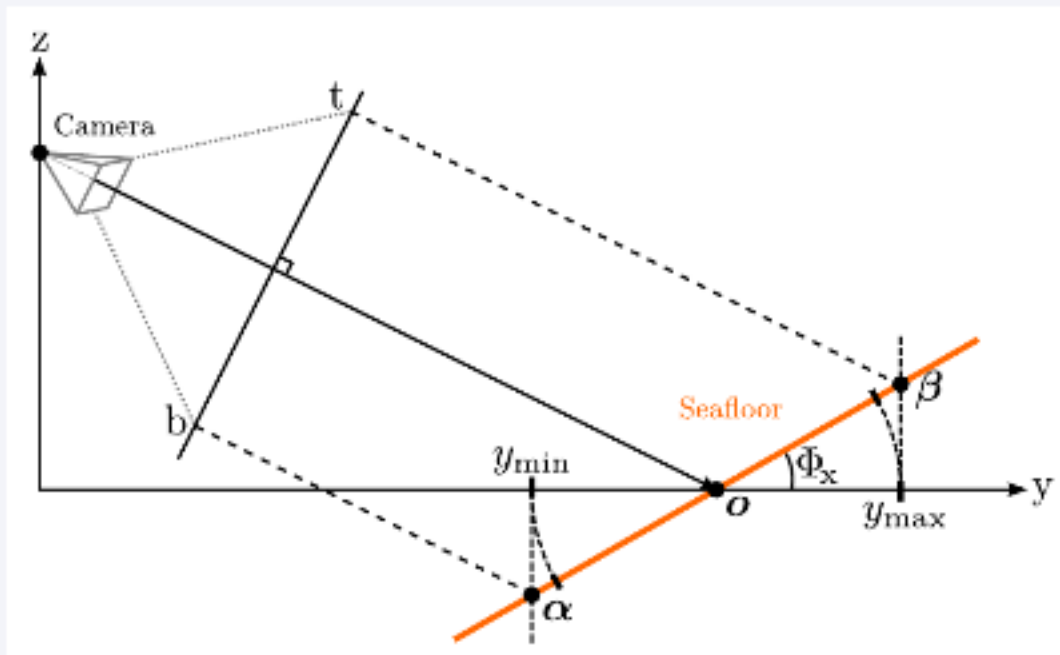


### Projection boundaries



P: Projection Matrix

$$P = \begin{pmatrix} \frac{2}{r-l} & 0 & 0 & -\frac{r+l}{r-l} \\ 0 & \frac{2}{t-b} & 0 & -\frac{t+b}{t-b} \\ 0 & 0 & \frac{-2}{f-n} & -\frac{f+n}{f-n} \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

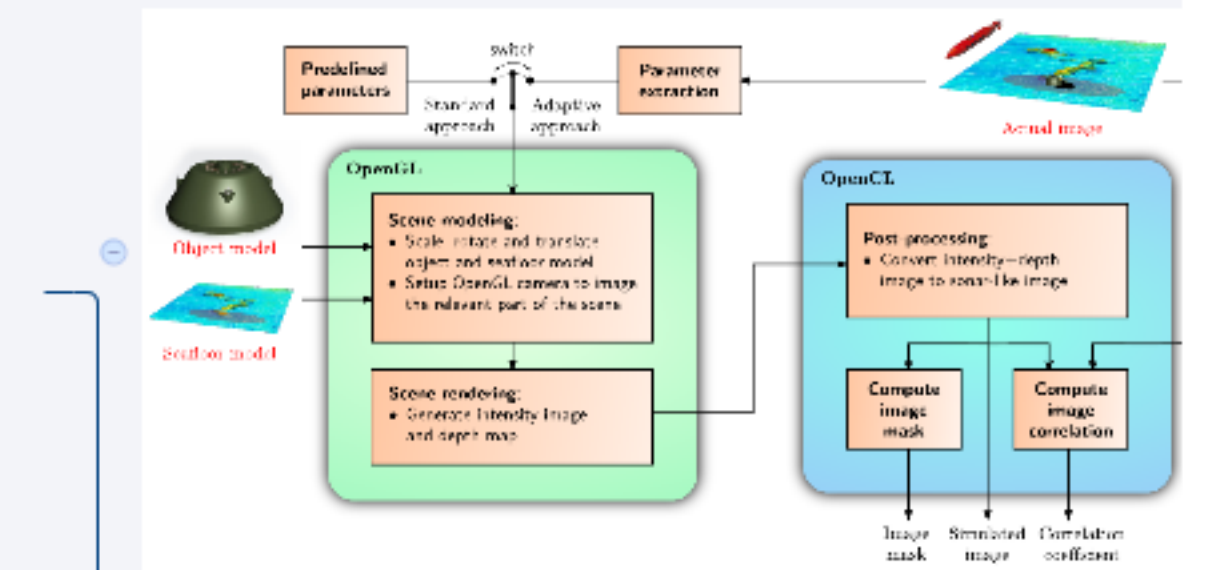
V: View Matrix

$$V = T(x_c, y_c, z_c) \cdot R_x(\phi_x, 0, 0) = \begin{bmatrix} 1 & 0 & 0 & x_c \\ 0 & 1 & 0 & y_c \\ 0 & 0 & 1 & z_c \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos \phi_x & -\sin \phi_x & 0 \\ 0 & \sin \phi_x & \cos \phi_x & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix},$$

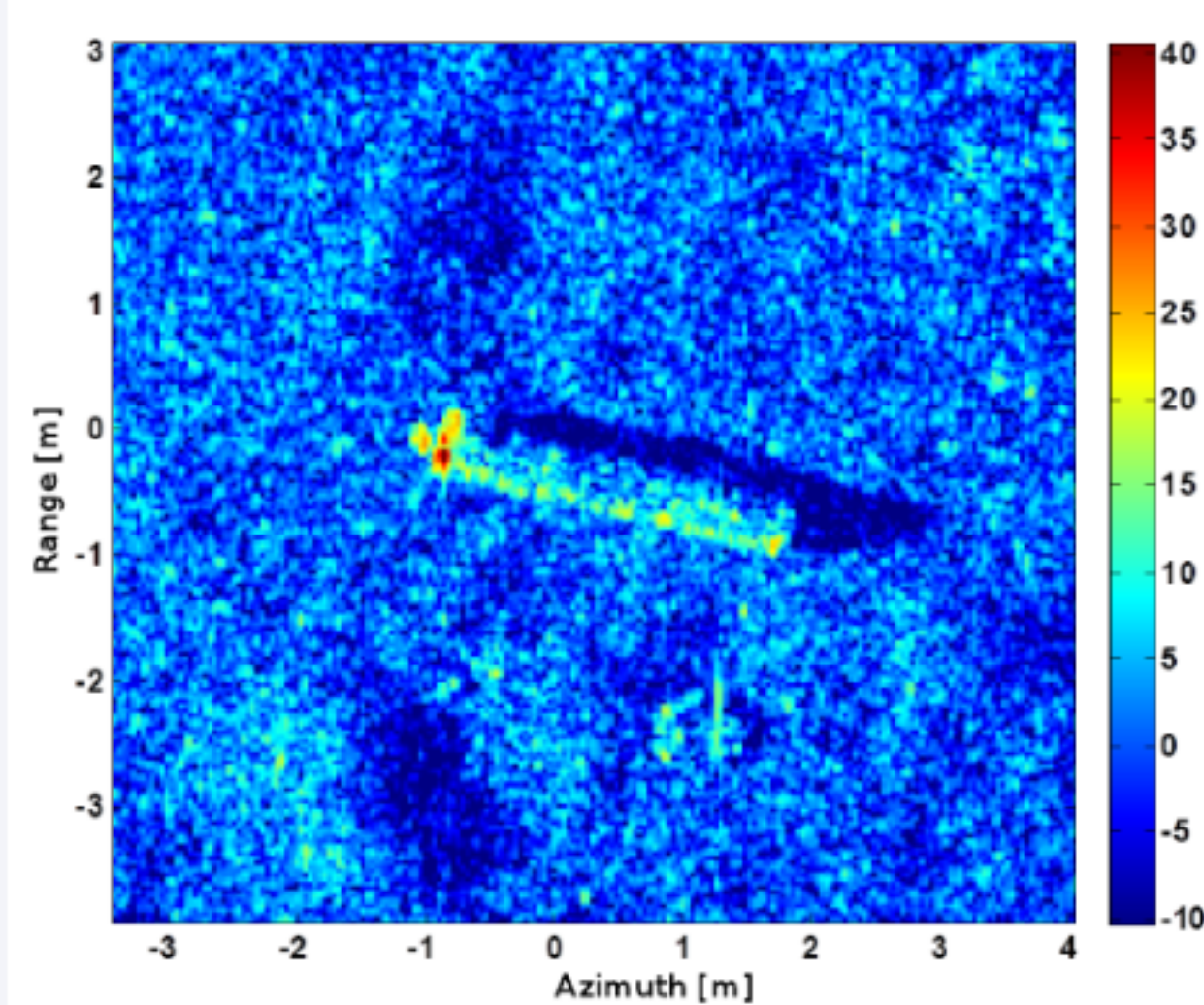
M: Model Matrix

$$\begin{bmatrix} x_t \\ y_t \\ z_t \\ w \end{bmatrix}_{\text{transformed model}} = T \cdot R \cdot S \begin{bmatrix} x \\ y \\ z \\ w \end{bmatrix}_{\text{mo}}$$

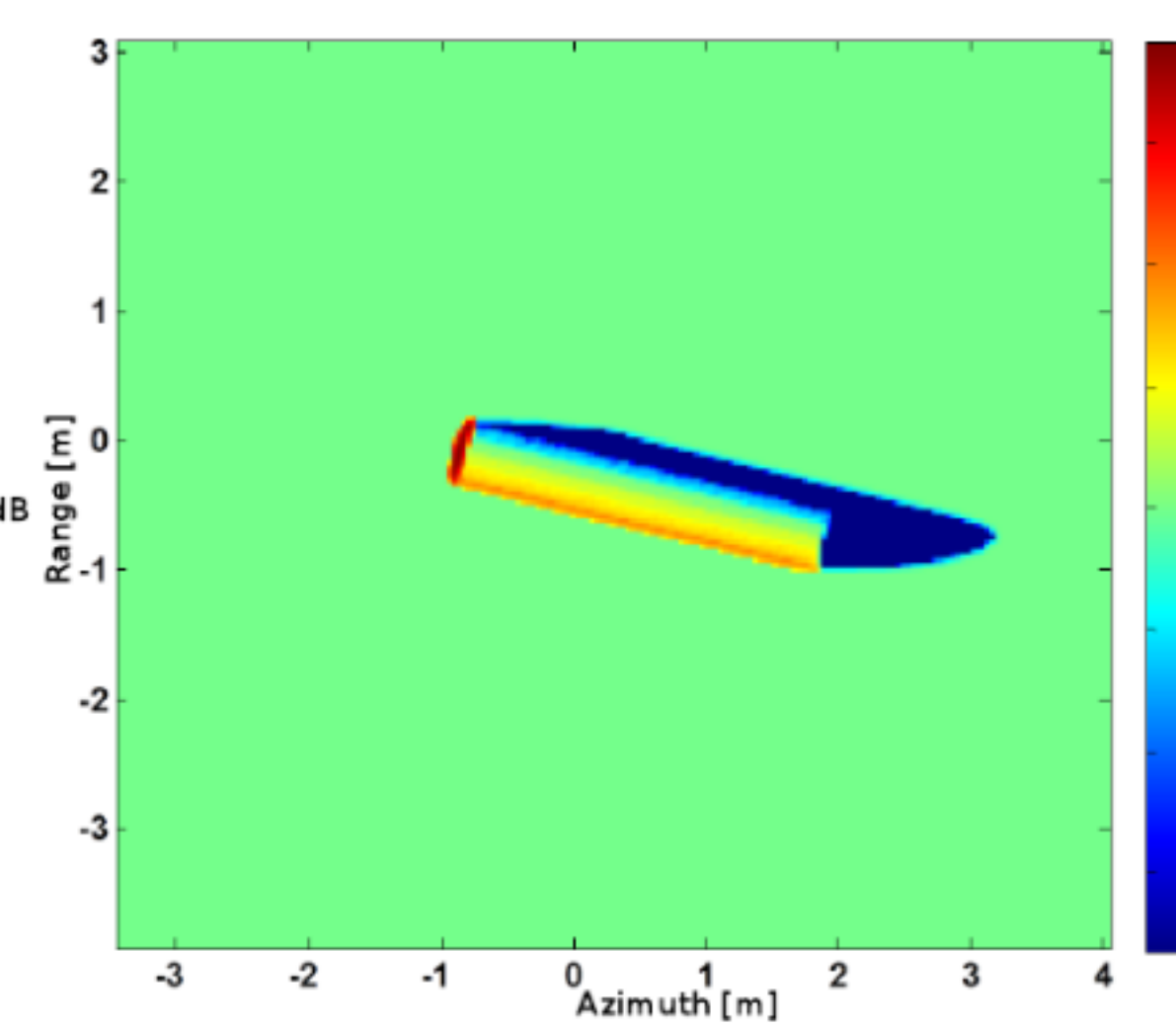
### Principle 2



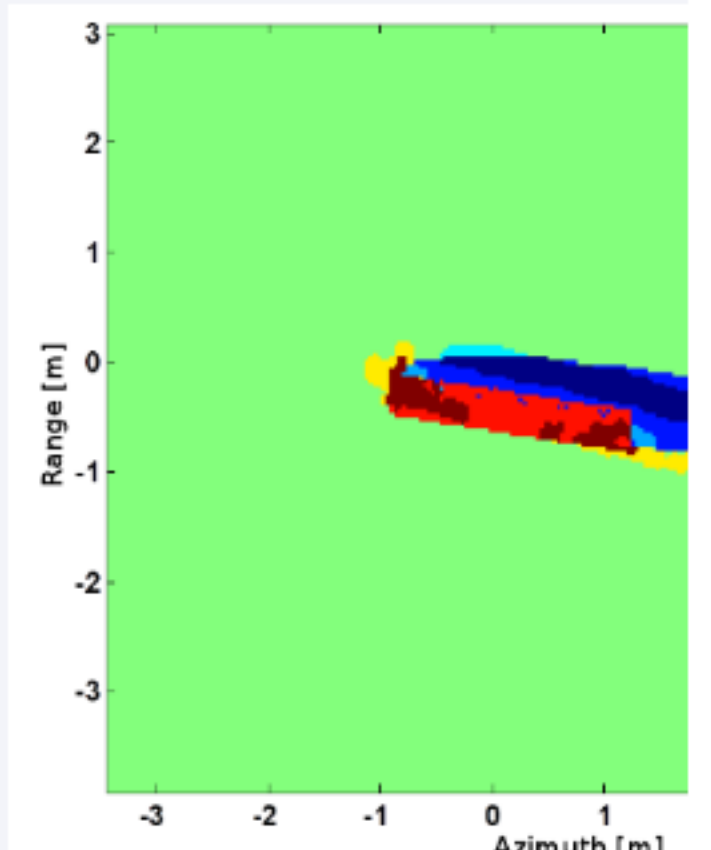
### Simulation results



(a) SAS image of a cylinder with 2.6 m length and 0.53 m radius.



(b) Cylinder simulation with parameters estimated from SAS image: Length



(a) Best template out of a predefined set. Inaccurate c and immersion depth. The segmented shadow and h aligned.

Fig. 5. Segmented simulation image o

Template highlight and i