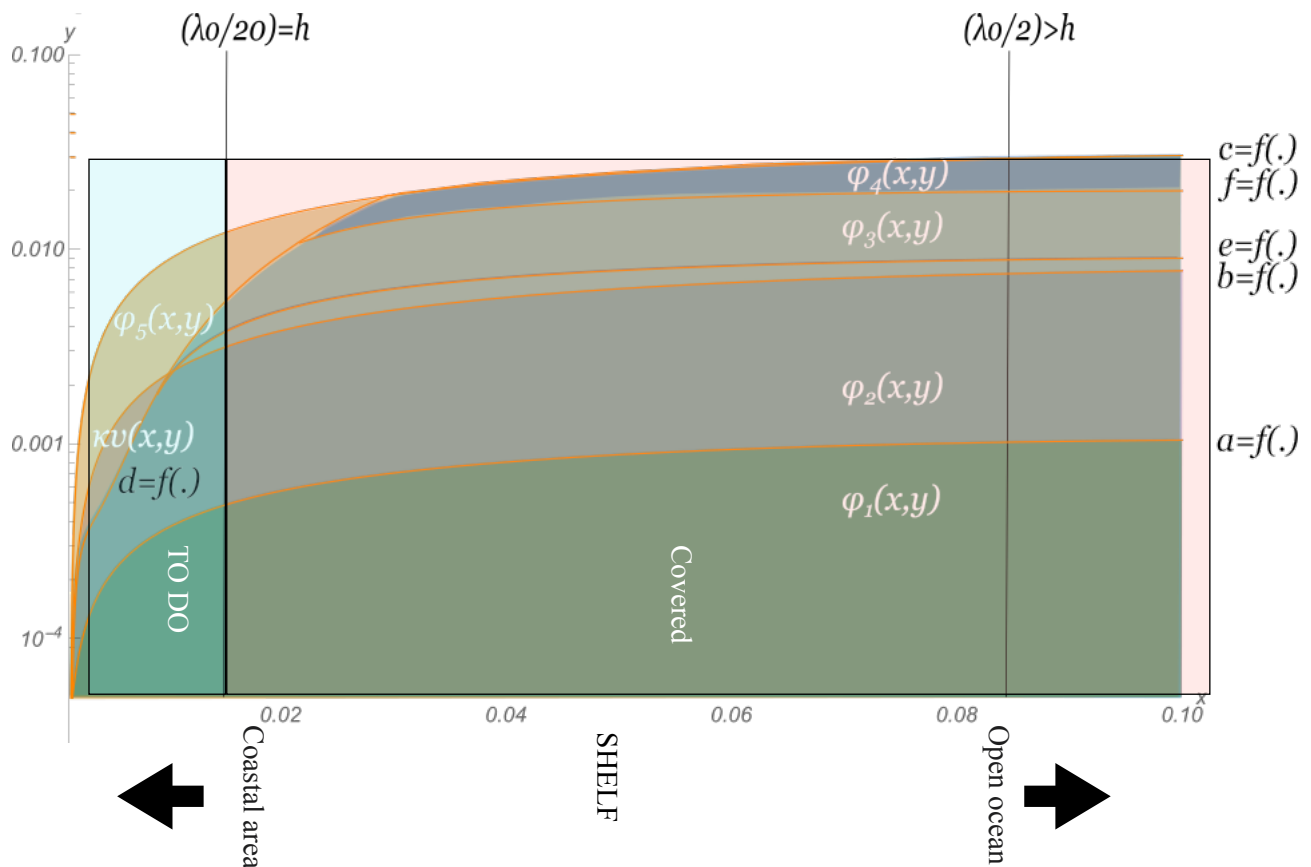


The ranges of the wave that can be models can be calculated can be seen in the image below:

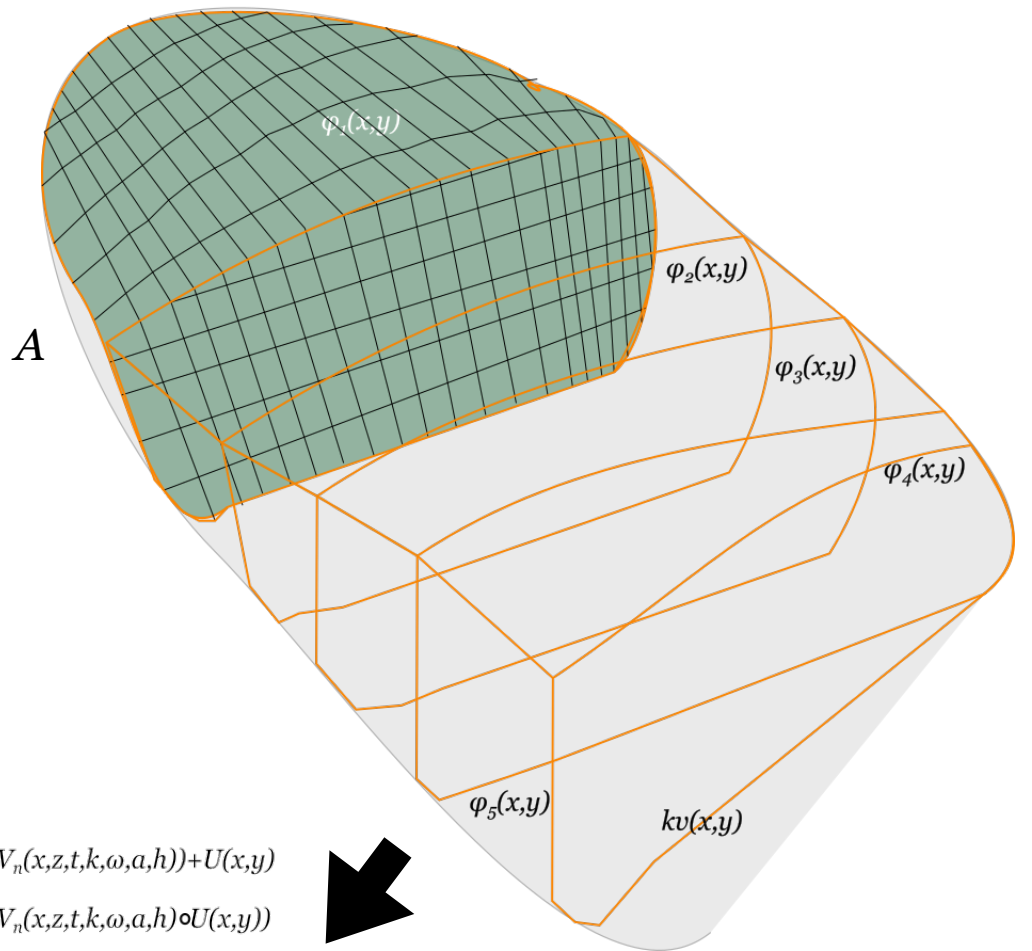


Here X and Y are variables of the wave period (T), the local gravity of the place (g), wave height (H) that is measured from crest to valley and the depth of the ocean (h). The wave theories that can be calculated are:

Symbol	Order	Theory	Regime
φ_1	Linear/1st	Airy	Deep and transitional waters
φ_2	2nd Order	Stokes 2nd order	Deep and transitional waters
φ_4	3rd Order	Stokes 3rd order	Deep and transitional waters
φ_4	4th Order	Jensen solutions	Deep and transitional waters
φ_5	5ft Order	Fenton solutions	Deep and transitional waters

Another form of solutions will be used for coastal waters that will be added soon too in the area close to the shore $h \geq 5m$. As the wave solutions do not include any current interactions this one will be added shortly, first as a linear function of the derivatives of the potentials + the flux and then afterwards a solution of a function composition of the two solutions given non-linear interactions. This will give a new distribution of the functions from the image below A to B.

$$\varphi_n=\sum_{n=1}^{n=5}G_n(x,z,t,k,\omega,a,h)$$



$$V\varphi_n=(\sum_{n=1}^{n=5}(V_n(x,z,t,k,\omega,a,h))+U(x,y)$$

$$V\varphi_n=(\sum_{n=1}^{n=5}(V_n(x,z,t,k,\omega,a,h)\circ U(x,y))$$

