

```

In [1]: import arlpy.uwapm as pm
import arlpy.plot as plt
import numpy as np
import pandas as pd

#bathyNS=pd.read_csv(r"C:\Users\ULrich\AnacondaProjects\Acoustics_Toolbox\Starga
##bathyNS
#dep=bathyNS["Depth"].tolist()
#cum_dist=bathyNS["Cum_Dist"].tolist()
#bty=zip(cum_dist,dep)
##List(bty)
#bathy=[list(i) for i in bty]
#bathy
bathy=[]
bathy = [[ 0. , 405],
          [10000, 300],
          [21350, 200]
          ]

#ssp must be monotonic in depth - otherwise errors result
ssp=[]
#sspNom=pd.read_csv(r"C:\Users\ULrich\AnacondaProjects\Acoustics_Toolbox\CFMETRN
##bathyNS
#dep=sspNom["Depth2"].tolist()
#ssp_val=sspNom["SSP2"].tolist()
#sspNomzip=zip(dep, ssp_val)
##List(bty)
#ssp=[list(i) for i in sspNomzip]
#ssp
ssp = [
    [ 0, 1540], # 1540 m/s at the surface
    [90, 1530], # 1530 m/s at 10 m depth
    [200, 1532], # 1532 m/s at 20 m depth
    [300, 1533], # 1533 m/s at 25 m depth
    [450, 1535] # 1535 m/s at the seabed
]

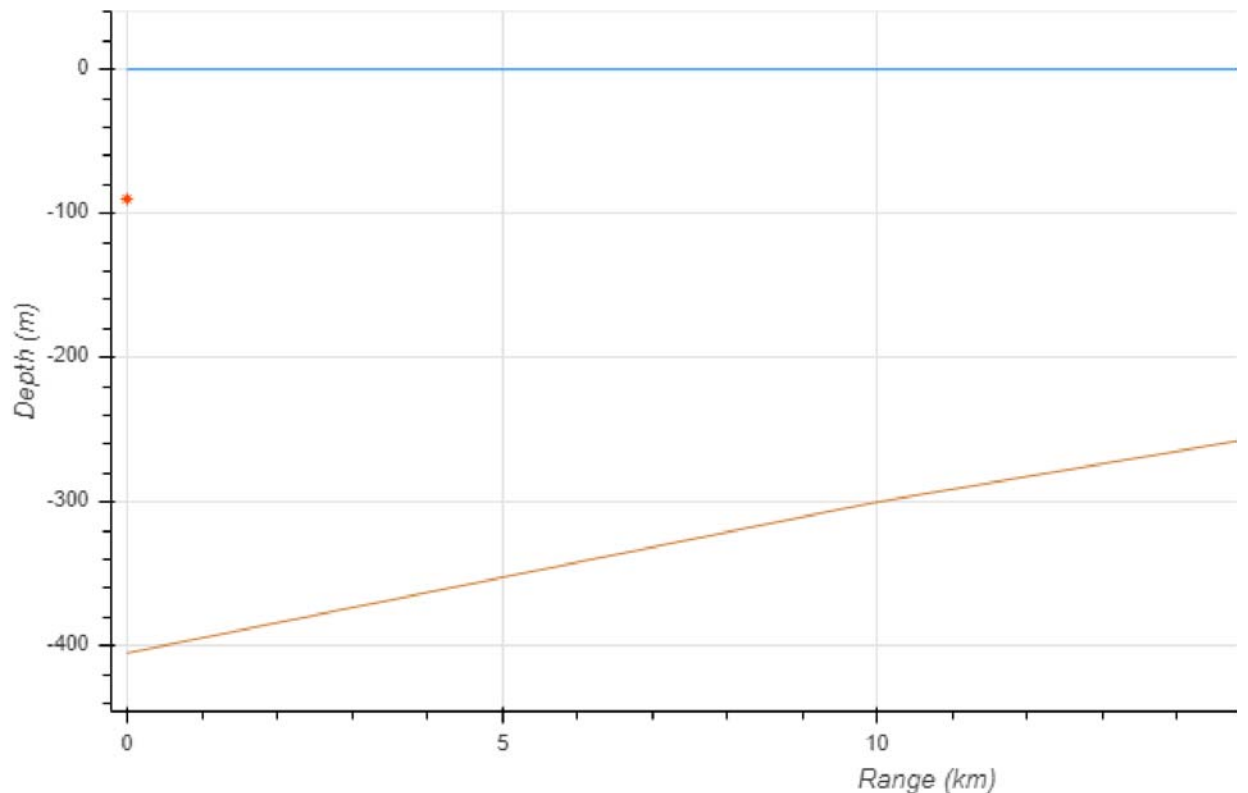
env = pm.create_env2d(
    soundspeed_interp = 'spline',# 'linear',
    frequency = 600,
    depth=bathy,
    soundspeed=ssp,
    bottom_soundspeed=1450,
    bottom_density=1200,
    bottom_absorption=1.0,
    tx_depth=90,
    rx_depth = 90,
    rx_range = 21300
)

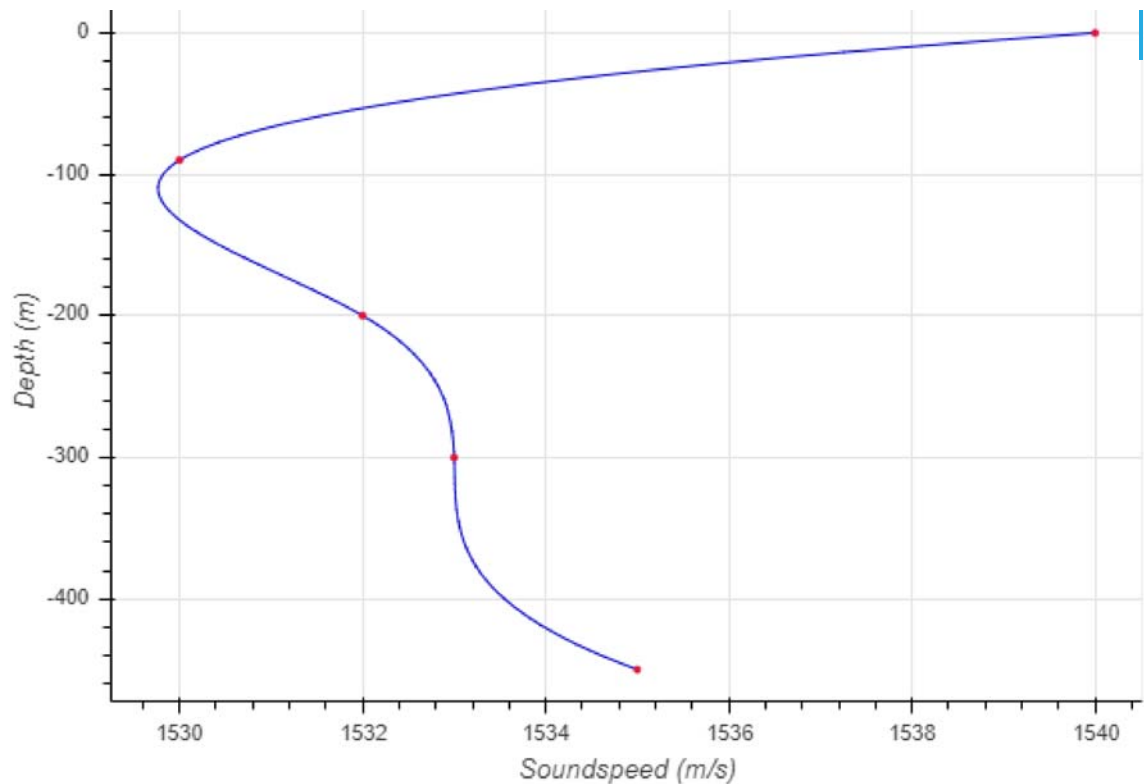
```

```
In [2]: pm.print_env(env)
pm.plot_env(env, width=900)
pm.plot_ssp(env)
```

```

name : ar1py
bottom_absorption : 1.0
  bottom_density : 1200
  bottom_roughness : 0
bottom_soundspeed : 1450
  depth : [[ 0. 405.]
           [10000. 300.]
           [21350. 200.]]
depth_interp : linear
frequency : 600
max_angle : 80
min_angle : -80
nbeams : 0
rx_depth : 90
rx_range : 21300
soundspeed : [[ 0. 1540.]
              [ 90. 1530.]
              [ 200. 1532.]
              [ 300. 1533.]
              [ 450. 1535.]]
soundspeed_interp : spline
surface : None
surface_interp : linear
tx_depth : 90
tx_directionality : None
type : 2D
```





```
In [3]: print(pm.check_env2d(env))
        print(env)
```

```
None
{'name': 'ar1py', 'type': '2D', 'frequency': 600, 'soundspeed': array([[ 0.,
 1540.],
 [ 90., 1530.],
 [ 200., 1532.],
 [ 300., 1533.],
 [ 450., 1535.])), 'soundspeed_interp': 'spline', 'bottom_soundspeed': 14
50, 'bottom_density': 1200, 'bottom_absorption': 1.0, 'bottom_roughness': 0, 's
urface': None, 'surface_interp': 'linear', 'tx_depth': 90, 'tx_directionality':
None, 'rx_depth': 90, 'rx_range': 21300, 'depth': array([[ 0., 405.],
 [10000., 300.],
 [21350., 200.])), 'depth_interp': 'linear', 'min_angle': -80, 'max_ang
le': 80, 'nbeams': 0}
```

```
In [4]: rays = pm.compute_eigenrays(env, model='bellhop', debug=True)
        #pm.plot_rays(rays, env=env, width=900)
```

```
[DEBUG] Model: bellhop
```

```
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FileNotFoundError                                Traceback (most recent call last)
<ipython-input-4-6d9f3e600a50> in <module>
----> 1 rays = pm.compute_eigenrays(env, model='bellhop', debug=True)
      2 #pm.plot_rays(rays, env=env, width=900)

~\AppData\Local\conda\conda\envs\arlpj\lib\site-packages\arlpj\uwapm.py in compute_eigenrays(env, tx_depth_ndx, rx_depth_ndx, rx_range_ndx, model, debug)
    322     if debug:
    323         print('[DEBUG] Model: '+model_name)
--> 324     return model.run(env, eigenrays, debug)
    325
    326 def compute_rays(env, tx_depth_ndx=0, model=None, debug=False):

~\AppData\Local\conda\conda\envs\arlpj\lib\site-packages\arlpj\uwapm.py in run(self, env, task, debug)
    569     fname_base = self._create_env_file(env, taskmap[task][0])
    570     if self._bellhop(fname_base):
--> 571         results = taskmap[task][1](fname_base)
    572     else:
    573         results = None

~\AppData\Local\conda\conda\envs\arlpj\lib\site-packages\arlpj\uwapm.py in _load_rays(self, fname_base)
    726
    727     def _load_rays(self, fname_base):
--> 728         with open(fname_base+'.ray', 'rt') as f:
    729             f.readline()
    730             f.readline()

FileNotFoundError: [Errno 2] No such file or directory: 'C:\\Users\\Ulrich\\App
Data\\Local\\Temp\\tmp7eo9rsid.ray'
```

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In [ ]:
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