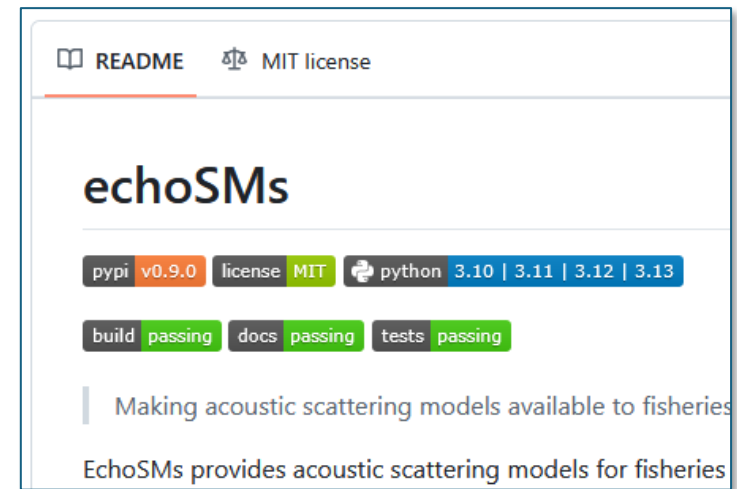# echoSMs Python package

pip install echosms

Consistent interface (API) on all models

Historical datasets

Extensive documentation

Tested against Jech et al. (2015) benchmarks
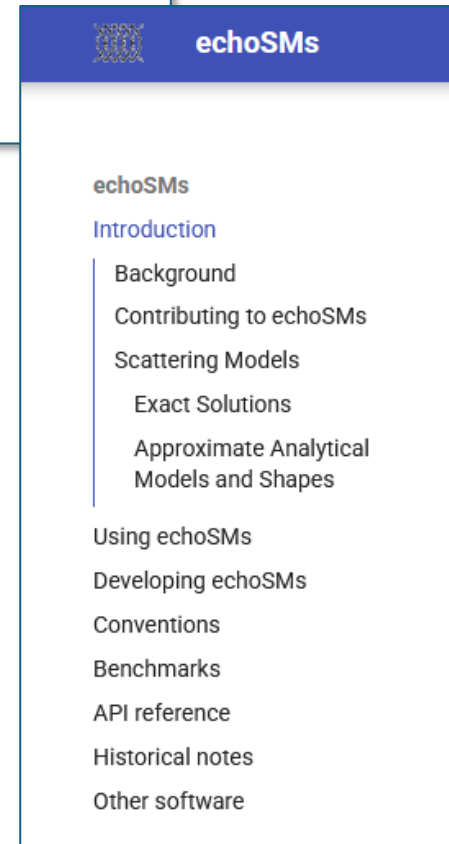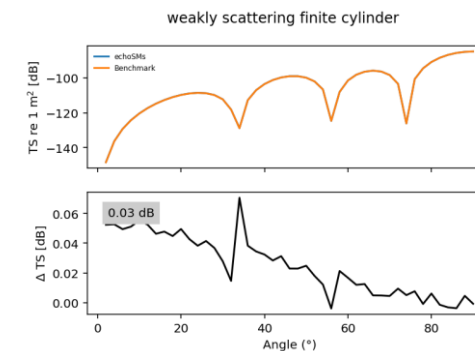
github.com/ices-tools-dev/echoSMs

echoSMs models

Model type
Deformed cylinder
Distorted-wave Born approximation (& stochastic)
*Elastic sphere
*High pass
Kirchhoff approximation
Kirchhoff ray mode
Model series solution
Prolate spheroidal model series
Phase-tracking distorted-wave Born approximation

Jech et al. models not currently in echoSMs:
FMM, FEM & BEM

* Models not in Jech et al.

Other echoSMs objectives

A place to list other model codes

ices-tools-dev.github.io/echoSMs/other_software/

A place to store model codes & data (if wanting a home)
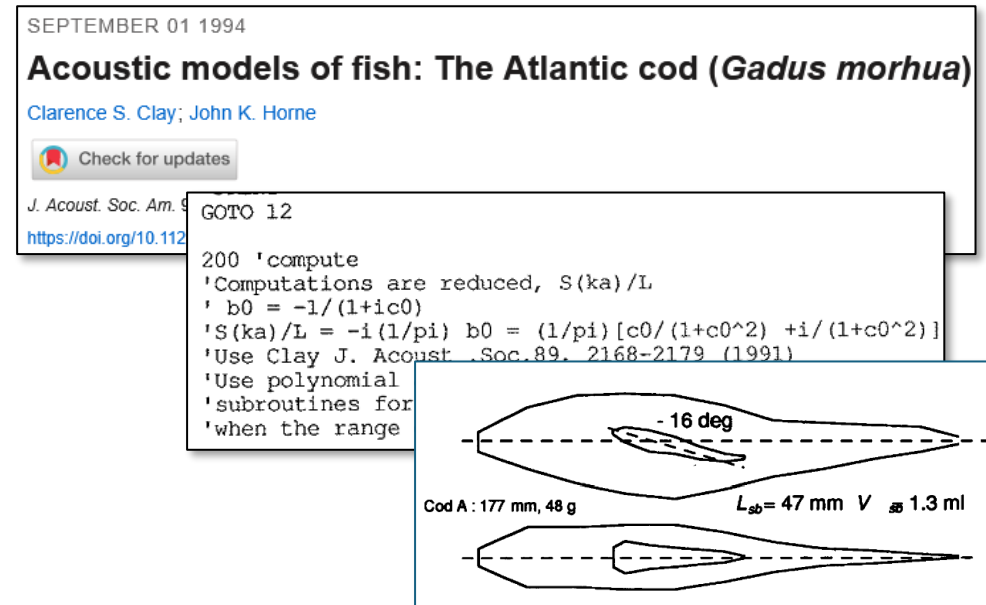
Clay & Horne KRM BASIC code & data

Krill DWBA shapes

We welcome other historical codes & data
in any language or format

Other software

Other software that provides source code fo...

- acousticTS: R code for calculating scatt...
  of calibration spheres.
- Coupled BEM acoustic: Julia code that ...
  swimbladder).
- FishAcoustics: Contains a Python modu...
- Hydrac: Contains Python code that impl...
  pass models. Hydrac is a package for c...
- KRM Model: A web page that uses the K...
  input parameters.

SEPTEMBER 01 1994

Acoustic models of fish: The Atlantic cod (*Gadus morhua*)

Clarence S. Clay; John K. Horne

Check for updates

J. Acoust. Soc. Am.

https://doi.org/10.112

```
GOTO 12

200 'compute
'Computations are reduced, S(ka)/L
' b0 = -1/(1+ic0)
'S(ka)/L = -i(1/pi) b0 = (1/pi)[c0/(1+c0^2) +i/(1+c0^2)]
'Use Clay J. Acoust .Soc.89. 2168-2179 (1991)
'Use polynomial
'subroutines for
'when the range
```

- 16 deg

Cod A : 177 mm, 48 g L_{sb}= 47 mm V_{sb} 1.3 ml

Documentation: https://ices-tools-dev.github.io/echoSMs

Demo: https://colab.research.google.com/github/ices-tools-dev/echoSMs/blob/main/docs/Workshop demo.ipynb