Welcome to the latest version of the Brink and Chapman Coastal (and other) Trapped Wave programs. The following files represent the current versions of the programs as of July, 2007.

Straight Coasts:

Barotropic coastal-trapped waves.
Compatible with DOS, with output for Matlab graphics, allows a mean flow

BTCSWD2.FOR	The basic code	http://www.whoi.edu/cms/files/BTCSWD2_60203.FOR
TESTBTCW.IN	Sample input file for BTCSWD2	http://www.whoi.edu/cms/files/TESTBTCW_26112.pdf

Baroclinic coastal trapped waves.
Compatible with DOS, with output for Matlab graphics, more modern coding style

BIGLOAD4.FOR	The basic code	http://www.whoi.edu/cms/files/BIGLOAD4_26113.FOR
TESTBIGC.INS	Sample input file for BIGLOAD4	http://www.whoi.edu/cms/files/TESTBIGC_26114.pdf
cctwplt.m	Matlab code to contour outputs from BIGLOAD4	http://www.whoi.edu/cms/files/CCTWPLT_26115.M
pctwplt.m	Matlab code to do color plots of outputs from BIGLOAD4	http://www.whoi.edu/cms/files/PCTWPLT_26116.M

Locate the point where baroclinic wave modes reach the inertial frequency.
Compatible with DOS, more modern coding style

CROSSD2.FOR	The basic code	http://www.whoi.edu/cms/files/CROSSD2_30223.FOR
TESTCROS.pdf	Sample input file for CROSSD2	http://www.whoi.edu/cms/files/TESTCROS_30283.pdf

Islands:

Barotropic island-trapped waves.
Compatible with DOS, allows a mean flow

BTITW.FOR	The basic code	http://www.whoi.edu/cms/files/BTITW_30225.FOR

Stratified island-trapped waves.
DOS-compatible

IGISL.FOR	The basic code	http://www.whoi.edu/cms/files/BIGISL_30226.FOR

citwplt.m	Matlab code to contour outputs from BIGISL.FOR	http://www.whoi.edu/cms/files/CITWPLT_30227.M
pitwplt.m	Matlab code to do color plots of outputs from BIGISL.FOR	http://www.whoi.edu/cms/files/PITWPLT_30228.M

Seamounts:

Barotropic seamount-trapped waves
DOS-compatible, allows a mean flow

BTSTW.FOR	The basic code	http://www.whoi.edu/cms/files/BTSTW_30229.FOR

Stratified seamount-trapped Waves.
DOS compatible

IGSMPD.FOR	The basic code	http://www.whoi.edu/cms/files/BIGSMPD_30230.FOR
BIGSMP.pdf	Documentation for seamount-trapped wave program	http://www.whoi.edu/cms/files/BIGSMP_30284.pdf
cstwplt.m	Matlab code to contour outputs from Bigsmpd.for	http://www.whoi.edu/cms/files/CSTWPLT_30232.M
pstwplt.m	Matlab code to do color plots of outputs from Bigsmpd.for	http://www.whoi.edu/cms/files/PSTWPLT_30233.M

The Matlab files (All requiring 4.0 or better, although program files that begin with the letter p work better with 5.0 or better):

Other programs in this series exist, but are not currently maintained.

Notes:

Some changes have been made in the programs since the second edition of the Brink and Chapman Report came out http://www.whoi.edu/cms/files/WHOI-87-24-Programs_for_Computing_text_25484.pdf. They can be summarized as follows:

1) The long-wave normalizations in BTCSWD2 and BIGLOAD4 have been changed to the energy-conserving form (see Brink, K.H., Energy conservation in coastal-trapped wave calculations", *J. Phys. Oceanogr.*, 1989, 19, 1011-1016).

2) Estimates for frictional damping for general frequency and wavenumber are now included in BTCSWD2, and BIGLOAD4. (see Brink, K.H., On the damping of free coastal-trapped waves, *J. Phys. Oceanogr.*, 1990, 20, 1219-1225). Similar estimates come with the island and seamount programs.

3) The dimensions of the grid in BIGLOAD4 have been put into a PARAMETER statement to make it easier to change the grid size if you want to. (NN= number of offshore grid points, and MM= number of vertical grid points). Also, the numbers of the input (INPF), output (IOPF) and graphics output (IGPF) units are assigned in the PARAMETER statement to make them also easy to change. Note that these PARAMETER statements appear at the beginning of each

subroutine. If you change one, you have to change them all.

4) A new line of input has been added to BIGLOAD4. This is between the old second and third lines of the input file. The new variable is IGGG. For IGGG= 0 , no output is written to the graphics output file. For IGGG not zero, outputs can be written to the graphics output file. You will be prompted for each variable as to whether you want to plot it or not. Results can be plotted with Matlab files cctwplt.m or pctwplt.m. See the headers in the FORTRAN file for more information.

5) BIGLOAD4 no longer uses IMSL to do the computations. A band Gaussian elimination subroutine is now included in the program.

6) BIGSMPD is for calculating the free subinertial seamount-trapped wave modes over a seamount in a stratified ocean. It is very similar in concept to BIGLOAD. No formal documentation exists for this one at present, but understanding BIGLOAD, and inspecting the insides of BIGSMPD should be enough to get things going. The program assumes that the isobaths of the seamount form perfect circles. (see Brink, K.H., The effect of stratification on seamount-trapped waves, *Deep-Sea Research*, 1989, 36, 825-844). Preliminary documentation is given in file BIGSMP.DOC. BIGISL.FOR (Island-trapped waves) is similar to BIGSMPD.FOR, except that the format for reading depths differs slightly.

7) In BTCSWD2, the friction weight functions, WFR(I), are no longer a nondimensional shape function, but are now taken to be dimensional (cm/sec) values of the bottom resistance parameter. The procedure for reading is the same as ever.

8) BIGLOAD4 is a slightly updated version of BIGLOAD. The main difference is a slightly more accurate formulation of the x = 0 boundary condition. In all cases tested against the old program, differences are much less than 1%. For example, in running the example for this program in the Brink and Chapman report, the new phase speed is 312.40 cm/sec, compared to 312.49 cm/sec the old way. Using the program is identical to using BIGLOAD. Also, BIGLOAD4 is arranged to be compatible with DOS. That is, input and output files are now handled by "open" statements, rather than assigning the files before running. Now, simply run the program, and it will ask for the names of the input and output files.

9) BTSTW is very much like BTCSWD2, although there are differences in how information is read in. The program is heavily commented, so it should be easy to use. BTITW is also similar.

10) A comment based on experience. Very rarely, the resonant peak for a mode can become so narrow that it is hard to find. This seems to mean that there is too much grid resolution in a direction where it is not needed, and that there is not enough resolution in the other direction. Going to coarser resolution in the over-resolved direction or increasing resolution in the other direction will help.

11) Programs BTSTW and BTITW were corrected on 4/5/2002 to remove errors in computing u and v.

12) All of these programs are to be run from a command window, since there is some degree of interactivity (asking file names and options).

13) In program BTCSWD2.FOR, the input “IMDM” has been removed, so that the first line of input now only calls for one item, NN. This means that, for each run of the program, you can compute no more than one dispersion curve.

14) In program BIGLOAD4, the ICCM variable has been deleted from line 2 of the input file. This means that only one dispersion curve can be done per model run. Line 2 now consists only of NCALM, NITM, ISD.

As usual, we have to point out that, although we have made every effort to make the programs as accurate as possible, we can not guarantee their perfection.

Ken Brink