ComputeBoundaryInput   is a tool for constructing boundary input into a target area given *lon × lat × time* dataset of sea states in a surrounding larger area. The dataset of the sea states comprises three netcdf files containing sea level displacement (h-file) and two velocity components (u, v) respectively, adhered to the MOST/Cliffs structure and naming convention. Specifically, the names of the three files in the dataset should differ by a single letter at the end of the name (h, u, or v) indicating the state variable.

   The resulting boundary input can be used with Cliffs, to drive a tsunami simulation in the target area. Presumably, the dataset of the sea states in a surrounding area was previously generated by Cliffs or MOST, and was saved with a sufficient resolution in space and time (e.g., NOAA/PMEL propagation computations are saved with 16 arc-min spacing, at 1 min time interval). In particular, the tool is intended for modelers using NOAA/PMEL propagation database to force region-scale simulations.

The command line   to run the executable has four parameter fields as follows:

   ./ComputeBoundaryInput <full path to h-file> <full path to target grid> <output dir/casetitle> <units (m/cm)>

- *<full path to h-file>* shows directory path and a name of a sea state dataset containing surface elevation

- *<full path to target grid>* shows directory path and a name of a bathymetry file (in Cliffs-compatible netcdf format) for a target area

- *<output dir/casetitle>* shows an output dir and a prefix for boundary input. The program will generate four files named *casetitle_TargetName_(west/east/south/north).nc*

- *<units (m/cm)>* should be either *m* or *cm*, and describes units used in the sea state dataset (please note, that NOAA/PMEL propagation database might use cm and cm/sec).

   When started, the program will also ask for a surface displacement threshold (typically, 0.001 m). The boundary input is generated from the moment when an absolute surface displacement anywhere in the target area exceeds the threshold. When it's desirable to start the boundary input from the dataset starting time regardless of a signal level, the threshold should be set to zero or a negative value.

   The command line example:

   ./ComputeBoundaryInput   Adir/OK30_sea_h.nc   Bdir/OK10_ssl.nc   Adir/oku30   m

   The program reads a trio of files *OK30_sea_(h/u/v).nc* in *Adir*, and outputs four files (also in *Adir*) named *oku30_OK10_ssl_(west/east/south/north).nc* containing boundary input along a perimeter of *OK10_ssl.nc* grid.
   The simulations in the latter grid can be continued with a command:

   ./Cliffs   Adir/OK10   Adir/   oku30   OK30_sea   Bdir/paramsOK10s.txt

   which would provide boundary input into the target area from the above call to
ComputeBoundaryInput, and initialize the target area using a screenshot (on the start of the boundary input) from the dataset *OK30_sea_(h/u/v).nc* (if the wave is entering a initially still target area, then an area prefix can be 0), *Adir* being a directory with the simulation results, *Bdir* being a directory containing grids and corresponding parameter files.