ARTICLE 76 of UNCLOS

Six hundred and seventeen words that redefine the “continental shelf” of a coastal state and provide a mechanism for the state to extend its sovereign rights over the resources of the “seabed and subsoil” of the continental shelf.

Data Required

- To establish an extended continental shelf a coastal state must demonstrate that region is “natural prolongation” of continental landmass - limits are then determined by:
  - depth and shape of the seafloor (FOS and 2500m contour)
  - the thickness of the underlying sediments (1% line)
  - distances from the territorial sea baselines (350 nm line)

Need to map the seafloor
Formulae Lines:
Foot of Slope + 60 nmi - bathy
Gardiner line - sediment thickness less than 1% of distance back to FOS - seismic and bathy

Limit Lines:
2500 m contour+100 nmi - bathy
350 nmi from baseline - distance

U.S. LoS Database
- 38641 tracks
- BED survey polygons
- millions of soundings
- site completions
Initial Analysis

8 Regions identified where there was a potential for an extended continental shelf.
For each area, determine key features required.

Assumed - based on existing seismic data very thick sediment

UNH CCOM-JHC U.S. Law-of-the-Sea Bathymetric Mapping to Date

Beringian Margin

> 1,800,000 km²
USS San Francisco (SSN 711) – in drydock after hitting uncharted seamount
**U.S. UNCLOS Gulf of Mexico bathymetric mapping**

- Sigsbee Escarpment
- ~12,000 km²

**2500-m isobath Florida Escarpment**

- 2500 m
- (18,500 km²)

**US ECS MAPPING in the Arctic**

- 2003, 2004
- 2007, 2008

**depositional lobe of Mississippi Fan**

- Bathymetry
- Acoustic backscatter

**Clarkchi plateau
Barrow margin**
Redefinition of the 2500 m contour

Healy Seamount looking S, ve=6x

3100 m high, summit at 900 m water depth
45 km long \times 15 \text{ km wide}

Healy Seamount Survey

Healy 03-02, 04-05, 07-03
The "Foot of the Slope"

(From Brumley, 2000)

Volcaniclastic sedimentary rock – "hyalotuff".
Vesiculation in glass and
Basalts that have been erupted through continental crust –
112-88 Ma
Rocks including, sheet and coarse sandstones inter-bedded with
fine-grained material – interpreted to be
metamorphosed gravity flow deposits fed by proximal syn-eprogenic continental sources –
at least 420 Ma (zircon ages). Also
112-88 Ma flood basalts emplaced in subaerial environment.

CCGS Louis S. St-Laurent

USCGC Healy

LSSL Monitor Records

AUV OPS Louis S. St. Laurent 2011

Central Chukchi Plateau pockmarks
ICE OBSERVATIONS and BUOYS - NIC

1. UpTempO buoy
2. AXIB’s
3. Surface Velocity Program Drifters

GeoCamera CCOM-UNH


UAS OPS on LSSL
U.S. Air Force
~6% of the Arctic Ocean has been mapped with Multibeam
~11% of the Arctic Ocean has been mapped with multibeam. There is still much more to discover!!!