

CanCoast: a tool for national coastal mapping and The Coastal Information System: it's detail- oriented older cousin

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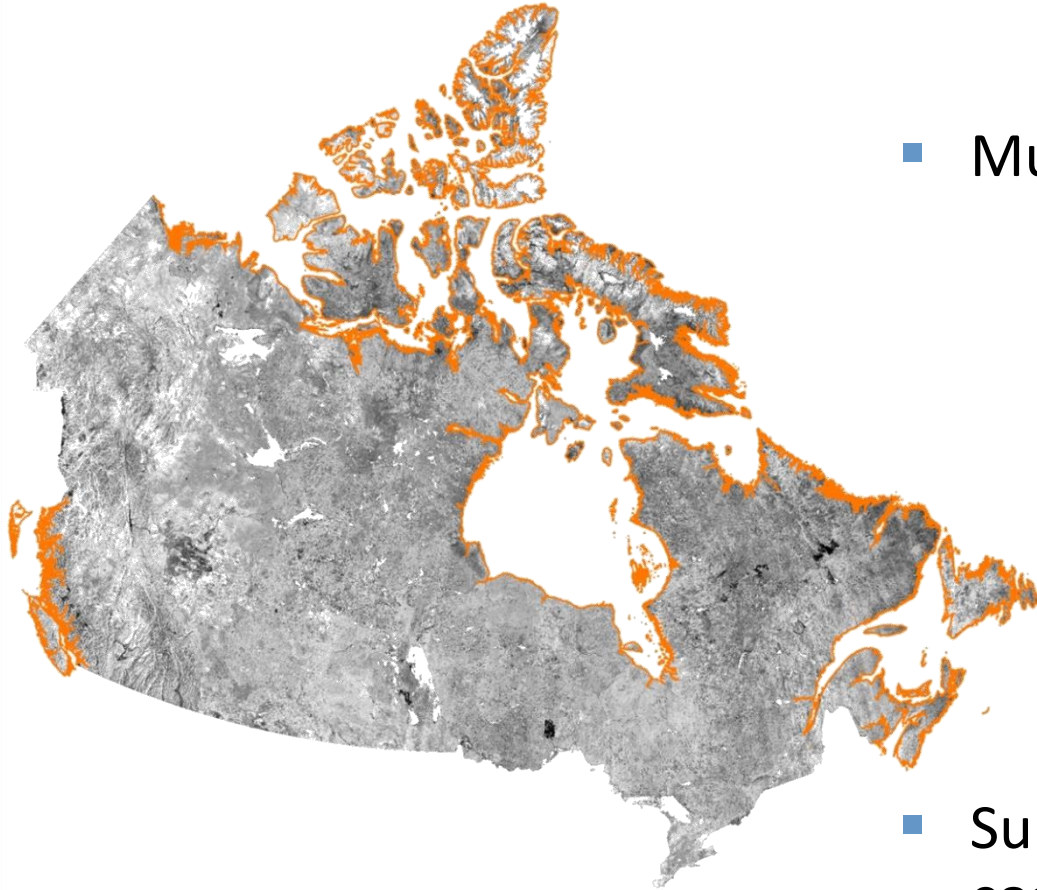


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CanCoast



- National scale digital geodatabase
- Contains digital coastal data
 - Shoreline
 - Thematic attribute layers
- Multi-purpose
 - Assist in climate change adaptation planning
 - Improve knowledge of shoreline variability and change
 - Identify coastal information and data gaps
 - Contribute to sustainable development of marine coasts
 - Potential for access to stakeholders
 - Support coastal modeling research
- Supports other local/regional coastal classification
 - e.g. Coastal Information System

CanCoast geodatabase

- ArcGIS 9 – FGDC metadata
- Flexible, updatable, queryable
- FREE!

So far...

- Developed shoreline
- Attributed new shoreline with Shaw variables
- Re-calculated sensitivity to sea level change
- Updating layers, including new layers



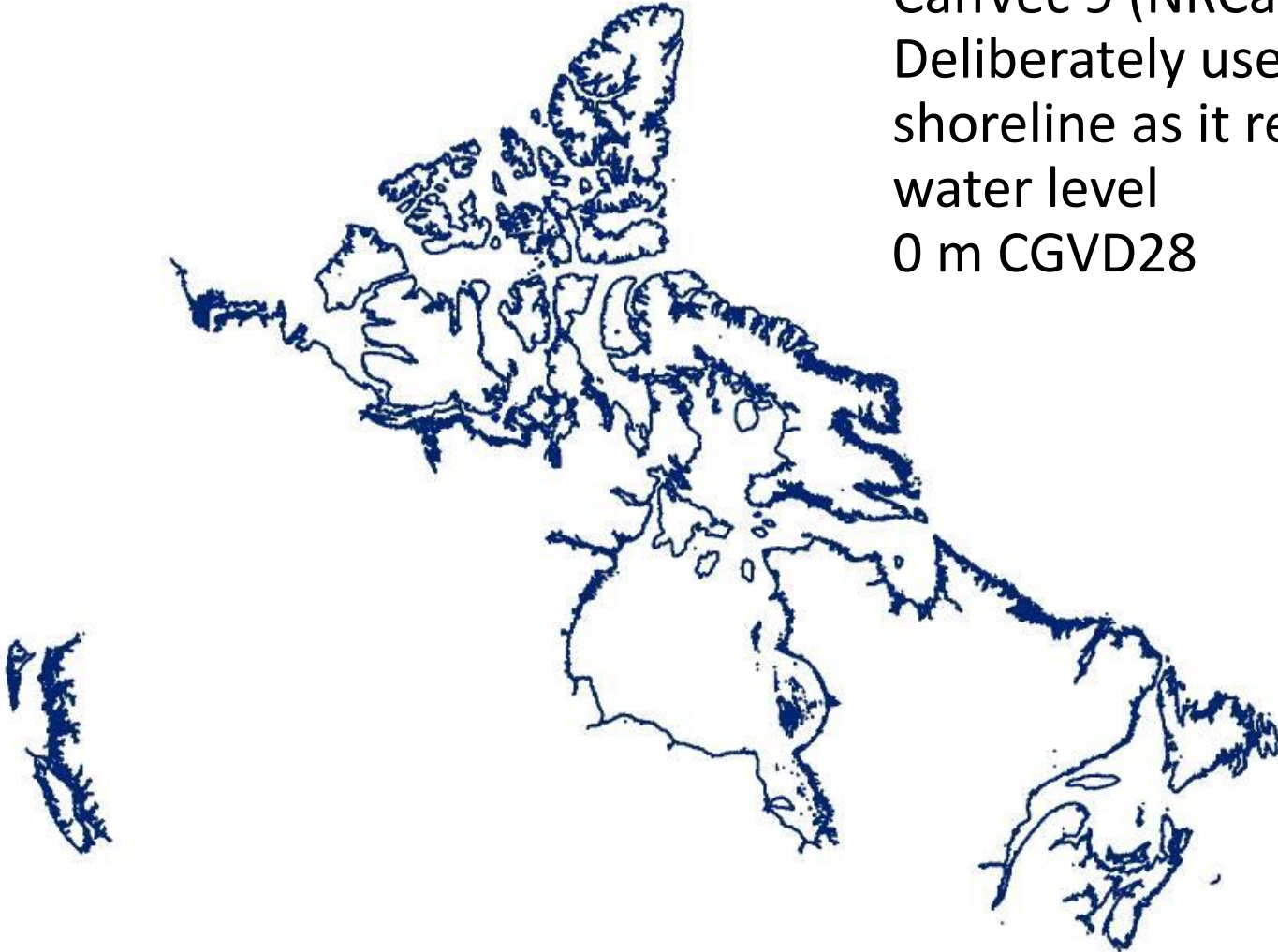
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The CanCoast shoreline

- CanVec 9 (NRCan)
Deliberately use the term shoreline as it represents mean water level
0 m CGVD28



Thematic layers

- Thematic layers can be raster or vector (point, line, polygon)
- Existing (from Shaw et al., 1998)
 - Relief, Rock Type, Landform, Sea Level Change, Shoreline Displacement, Tidal Range, Wave Heights, Sensitivity to Sea-Level Rise
- Updated or replaced
 - Relief from 1:50K topo \Rightarrow CDED DEM analysis
 - Rock Type from various \Rightarrow 1:5M Bedrock Geology (Wheeler et al.) and Surficial Geology (Fulton et al.)
 - Tidal Range \Rightarrow updated raster Tidal Range
 - Sea-level rise \Rightarrow updated with modelled data
- Planned updates/replacements
 - Relief \Rightarrow DEM analysis
 - Wave heights \Rightarrow modelled including sea ice
 - Sensitivity to Sea-Level Rise \Rightarrow Sensitivity to Climate Change (or other)
- Planned new thematic layers
 - Permafrost
 - Socio-economic data (population)



Nesting Thematic Layers

- CanCoast can accommodate new thematic layers at any scale/level of detail
- Attributes from the new layer are mapped to the CanCoast shoreline
- So far we have been bringing generalised data (e.g. attributes from 1:50K map sheets, or attributes from 1:5M data) into CanCoast
- General strategy is to resegment the CanCoast shoreline to the more general segments and assign attributes
- Now we're trying to work with data at fine resolution (e.g. segments less than 100 m)
- Strategy is the same but the philosophy is different
- Rather than building a nationally consistent thematic layer, where we have better data, nest that within the nationally consistent layer



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Coastal Information System (CIS)

- Contains coastal form and material information for 3 cross shore zones (Backshore, Foreshore, Nearshore).

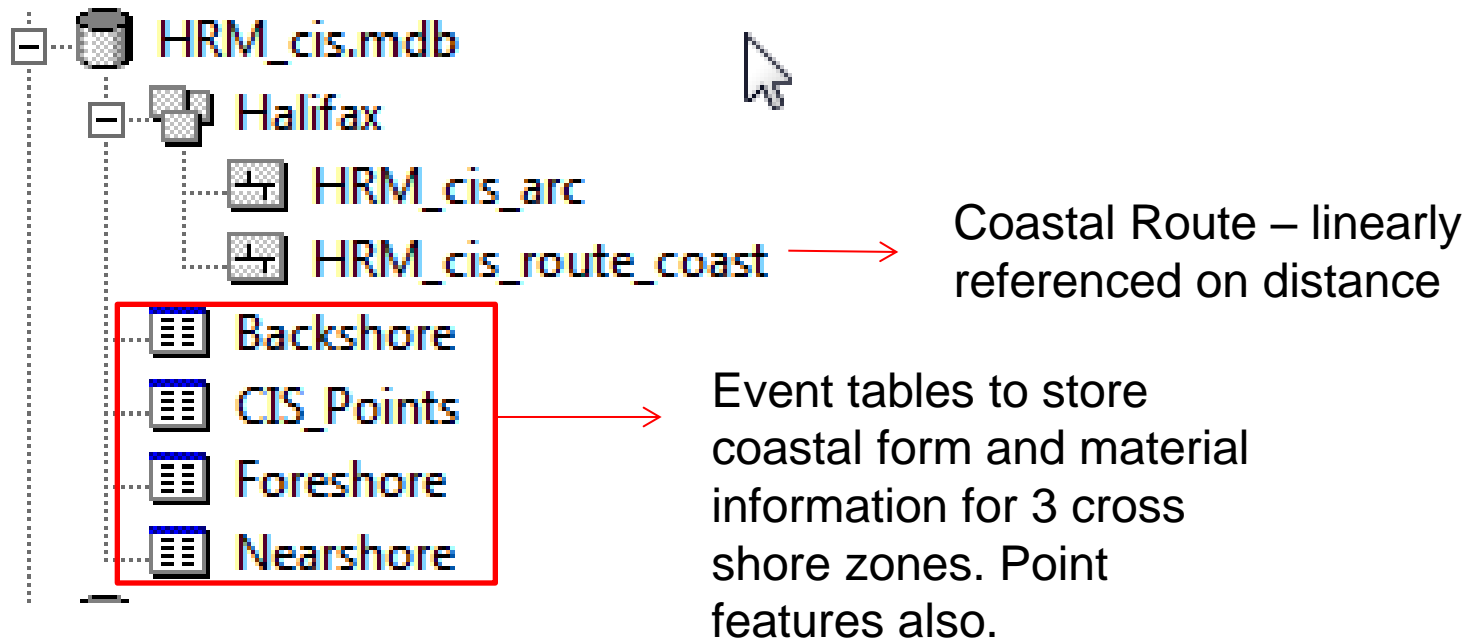
- Classification system is hierarchical.
 - Form Supertype – e.g. Unlithified or Solid
 - Form Type – e.g. beach, slope, flat, cliff, dune, etc.
 - Form Subtype – Steep, Ramping, fringing, barrier, etc.
 - Material information is also hierarchical.

| Field Name | Data Type |
|------------------|--------------|
| SOURCE_DATA | Long Integer |
| B_FORM_SUPERTYPE | Text |
| B_FORM_TYPE | Text |
| B_FORM_SUBTYPE | Text |
| B_FORM_HEIGHT | Text |
| B_FORM_COMMENTS | Text |
| B_FORM_FEATURES | Text |
| B_MAT_SUPERTYPE | Text |
| B_MAT_TYPE | Text |
| B_MAT_SUBTYPE | Text |
| B_MAT_COMMENTS | Text |
| B_MAT_FEATURES | Text |

- Some Datasets contain additional layers (Change Mapping, Ice Features)
- 16 Datasets across Canada – 10 in Atlantic Canada, 6 Arctic.
- Features are mapped primarily from oblique aerial video. Additional sources are satellite imagery, vertical or oblique photos, and ground surveys.
- Data entry is performed in ArcMap 9.3 using an in house custom tool. Entry tool must be updated to run in ArcGIS 10.x



CIS Data Structure



CIS Data Entry

CIS Toolbar



Target Layer
(Zone)

Entry Tool

A screenshot of the 'Coastal Information System Attribute Entry' dialog box. The title bar reads 'Coastal Information System Attribute Entry' and 'Foreshore_Features'. The dialog is divided into several sections:

- General:** NTS Map Sheet(s) [10 44 6500 63 200], Unit Number [3114], Source [video], Source Date [1992-09-28], Mapper [B.McGuire], Operator [B.McGuire], Quality Control [], Source Quality [poor], Source Comments [].
- Material Attributes:** Supertype [unconsolidated], Type [clastic], Subtype [sand_pebble], Features [].
- Form Attributes:** Supertype [unconsolidated], Type [beach], Subtype [fringing], Height [], Features [driftwood].
- Line Event:** FROM Measure [505454], TO Measure [507036].

Buttons include 'Clear Material Features', 'Clear Form Features', 'Change Mapping (Optional)', 'Clear Change Mapping', 'OK', and 'Cancel'. A red arrow points from the 'Target Layer (Zone)' text to a red line on a map in the background.

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CIS Data Coverage – 16 Datasets



- Develop a CIS for local/regional project areas
- Currently in separate geodatabases
- Would like to consolidate into the CanCoast framework for analysis

1 – PEI – North Shore

4 – Nova Scotia

HRM
Lunenburg
Shelburne
Pictou

3 – Newfoundland

Bonavista
SE Avalon
W Musgrave

2 – Labrador

Voisey's Bay
Lake Melville

6 – Arctic

Beaufort Sea
Cape Parry
Banks Island
Coronation Gulf
Clyde River
Queen Maud Gulf –
(Not Shown)