World Meteorological Organization

RA IV HURRICANE COMMITTEE

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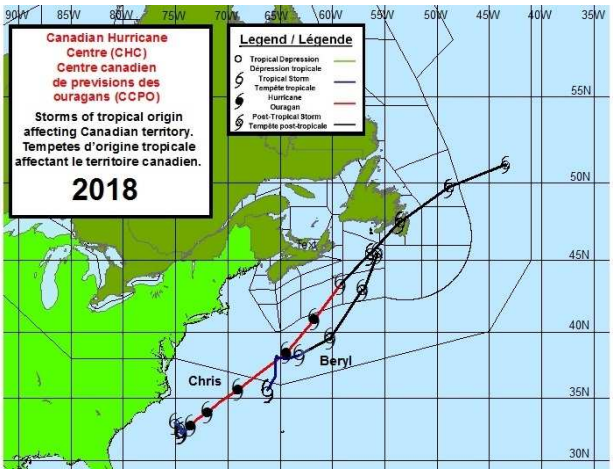
AGENDA ITEM 3: **REVIEW OF THE 2018 CYCLONE SEASON**

AGENDA ITEM 3.2: **COUNTRY REPORTS**

AGENDA ITEM NO.3.2(5): **CANADA**

Reports of hurricanes, tropical storms, tropical disturbances and related flooding during 2018

Seasonal Track Map for 2018



The 2018 Atlantic Hurricane Season generally had minimal impact on Canadian territory. The Canadian Hurricane Centre tracked two storms; Beryl and Chris. Sub-Tropical Storm Beryl had little impact on Canada. However, Post-Tropical Storm Chris had some impact to the offshore marine areas as well as wind and rain over southeastern Newfoundland.

The following is a summary of the two events of tropical origin that were tracked by the CHC in 2018.

Post-Tropical Storm Beryl

Storm and Synoptic History

Tropical Storm Beryl formed from a tropical wave in the central Atlantic Ocean on July 5. The storm continued to intensify and became a hurricane early on July 6. However, Beryl

weakened on July 7 due to increasing vertical wind shear and by 1200 UTC on July 8 had degenerated into a tropical wave. The wave continued to move west-northwestward and by July 10 moved over the southeastern Bahamas without redeveloping. The remnants of Beryl then moved northward and northeastward and then on July 13, a surface low formed about 300 nautical miles (555 km) west-northwest of Bermuda. Beryl regenerated by 1200 UTC on July 14 as a subtropical storm. On July 15, Beryl moved northeastward over cooler water and became post-tropical by 0000 UTC on July 16. During the morning of July 17, Beryl lost a closed circulation and became a trough just south of Newfoundland.

Conditions and Impacts

Post-Tropical Storm Beryl weakened enough prior to entering Canadian marine areas that winds stayed below gale-force. In addition, tropical moisture directly related to Beryl didn't affect southeastern Newfoundland. Therefore impacts to Canadian territory were minimal from Beryl.

The CHC issued only 3 bulletins on Beryl.

Hurricane Chris

Storm and Synoptic History

Tropical Depression Three formed from a non-tropical low pressure system off the coast of North Carolina on July 6. Tropical Depression Three was slow to strengthen as the circulation was elongated. On July 8, the system was upgraded to Tropical Storm Chris while remaining nearly stationary off the coast on North Carolina. Gradual intensification continued and late on July 10 Chris reached hurricane strength and began to move in a general northeastward direction. The storm reached its maximum strength early on July 11 as a category 2 hurricane. However, the storm began to weaken as it tracked northeastward later that day and by 0900 UTC on July 12, the storm weakened below hurricane strength and began extratropical transition. Later on July 12, Chris became post-tropical and made landfall on the southern Avalon Peninsula early that evening. Post-Tropical Storm Chris moved rapidly off to the northeast on the morning of July 13 and impacts from the storm rapidly ended.

Conditions and Impacts

Post-Tropical Storm Chris caused some impact to the marine areas southeast of Nova Scotia and south of Newfoundland. Hurricane-force and storm-force winds were forecast and likely occurred over portions of the offshore waters. Strong winds and large waves were measured by offshore buoys south of Nova Scotia and Newfoundland. In addition, heavy rain and strong winds affected southeastern Newfoundland.

Summary of wave heights and winds offshore:

Banquereau Bank: Maximum wind 114 km/h, Waves 9.1 m with a peak wave of 15.7 m
Placentia Bay Buoy: Waves 7.3 m with a peak wave of 11.0 m
Red Island Buoy: Waves 4.5 m with a peak wave of 7.0 m.

Summary of land based wind gusts in km/h:

Cape Pine…105
Bonavista…102
Pools Island...102
Ferryland…96
Sable Island…91
St. Pierre and Miquelon…80
Burgeo…76

Summary of rainfall amounts in millimetres:

Sable island…113.6
Gander Airport…76.4
Bonavista…62.1
St. Lawrence…30.5
St. Pierre and Miquelon…29.4

The CHC issued 20 bulletins on Chris.

Two Storms not Tracked by CHC but had some Impact on Atlantic Canada

There were two storms that affected Atlantic Canada that were not tracked by CHC. These two storms were Leslie and Michael.

Hurricane Leslie

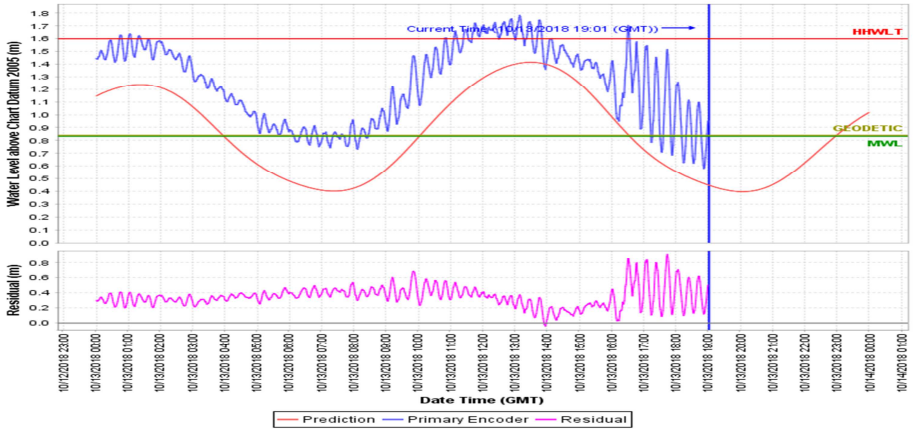
Leslie remained well to the southeast of Atlantic Canada and didn't have any direct impact to Canadian territory. However, it produced large ocean swell waves that affected the entire east Coast of North America. Messaging about large long period swells and potential for rip currents was issued in the marine weather statement from the Atlantic Storm Prediction Centre as well as the Newfoundland and Labrador Weather Office on October 4, 5, and 6. The following wave heights were recorded from buoys offshore of Nova Scotia on October 5:

B44137 (East Scotian Slope)……..….3.3m with a peak wave of 6.6m
B44150 (West Scotian Slope)……..…..….3.8m with a peak wave of 6.3m
B44258 (just outside Halifax Harbour)…….…..…...2.0m with a peak wave of 3.4m

Post-Tropical Storm Michael

Hurricane Michael made landfall near Mexico Beach, Florida on October 10 as the third most intense hurricane on record to make landfall in the United States. After landfall, Michael weakened to tropical storm strength as it tracked across the southeastern United States. Shortly after leaving the east coast of the United States near Chesapeake Bay early on October 12, Michael underwent extratropical transition and became post-tropical shortly after it moved into the Atlantic Ocean during the morning of October 12.
In advance of moving in to Canadian territory, Michael became post-tropical and was represented well within the dynamical models. Therefore, the CHC did not track this storm in a formal matter. However, Post-Tropical Storm Michael moved through the offshore marine areas of Canada producing gale and storm-force winds near its track. Heavy rain associated

with PT Michael occurred over the Avalon Peninsula. In addition, there was evidence that Post-Tropical Storm Michael produced a phenomenon known as a meteotsunami when the storm moved from deep water off the Scotian shelf to the shallow waters of the Grand Banks. This is a tsunami-like sea wave which is generated when rapid changes in barometric pressure cause the displacement of a body of water.,. Water level oscillations measured at a tide gauge in St. Johns Harbour indicated that a meteotsunami occurred. The following depiction is of water level data from St. Johns tide gauge.



Meteotsunami waves began approximately 1600 NDT.

Coordination and Communications Efforts

- As in previous seasons, a comprehensive communications plan was rolled out to prepare Canadians for the 2018 hurricane season. A media technical briefing was held just prior to the start of the season to remind Canadians that they need to prepare for hurricanes.

- A series of in-person hurricane briefings designed for emergency managers were held in all eastern Canadian provinces. Additionally a webinar version of this briefing was held for some key stakeholders.

- During each storm requiring attention from the CHC, the media were primarily interested in the impacts and effects of the storms while they were tracking well south of Canadian territory. Due to the fact that impacts were low to Canadian territory, media interest specific to Canada was relatively low.

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