



OCEAN CURRENT BEHAVIOUR: GUYANA/CARIBBEAN CURRENTS

**ENHANCING OFFSHORE E & P REGIONAL CAPACITY:
OPERATIONAL AND ENVIRONMENTAL SAFEGUARDS**

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DEFINITION OF OCEAN CURRENT



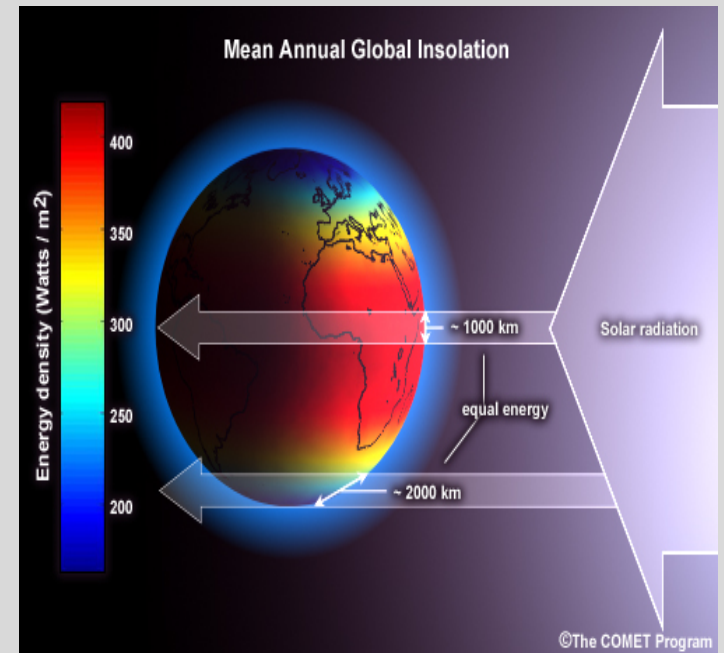
- An ocean current is any more or less permanent or continuous, directed movement of ocean water that flows in one of the Earth's oceans.
- Surface currents (wind driven)
- Deep ocean Currents (Temperature and density driven)



FORMATION OF SURFACE OCEAN CURRENTS.



- ❑ Differential heating between poles and equator.
- ❑ Winds are formed that blow from the poles towards the equator.
- ❑ Coriolis force causes the wind to turn to the right in the northern hemisphere and left in the left in the southern hemisphere.





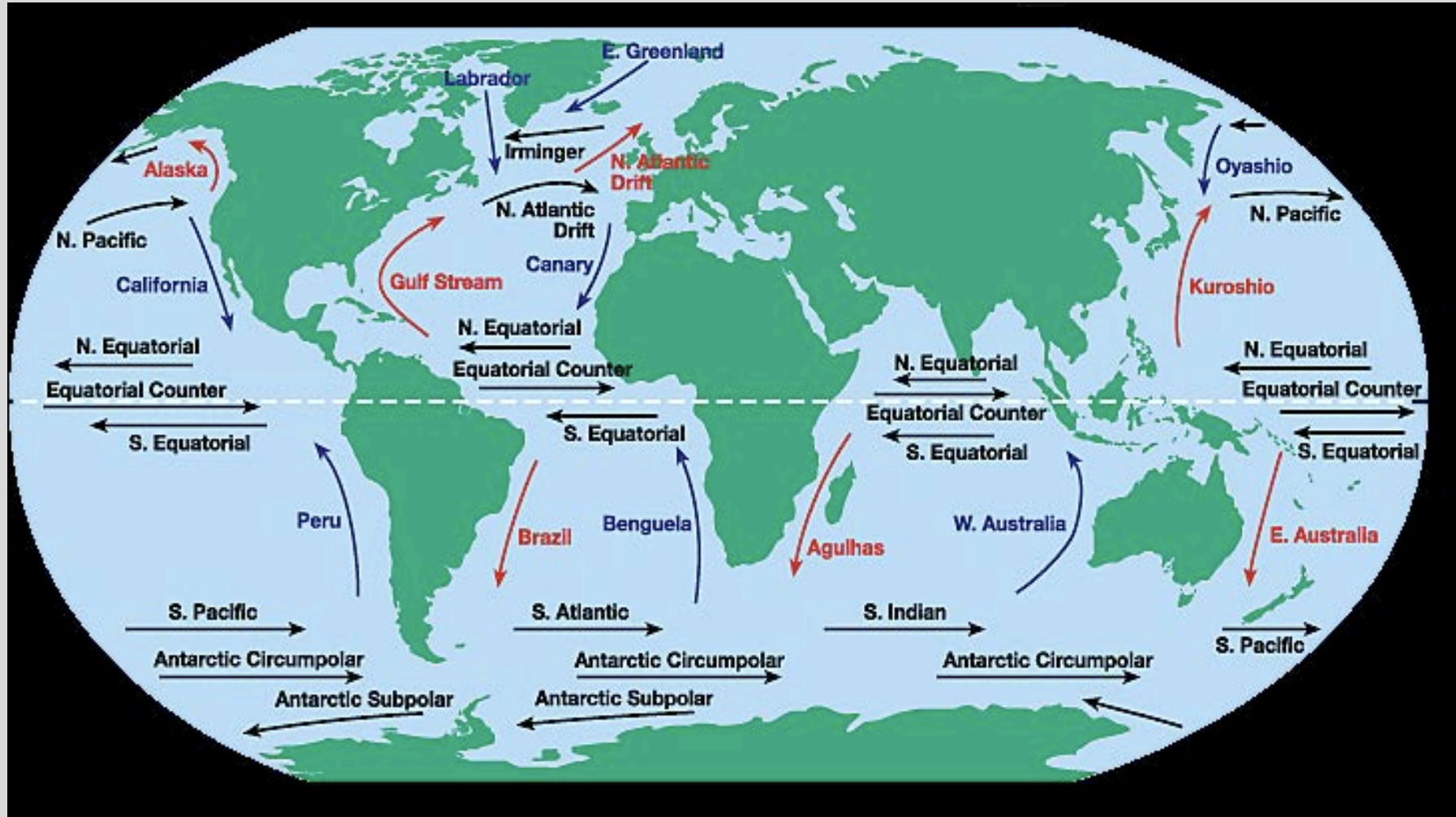
FORMATION OF SURFACE OCEAN CURRENTS.



- Friction between the wind and water's surface causes the water to move at an angle to the direction of the wind.
- Continents deflects the wind driven water pole-wards and equator-wards in the west and east of the ocean basin.
- The formation of the principle Gyres.



GYRES AND MAJOR CURRENTS





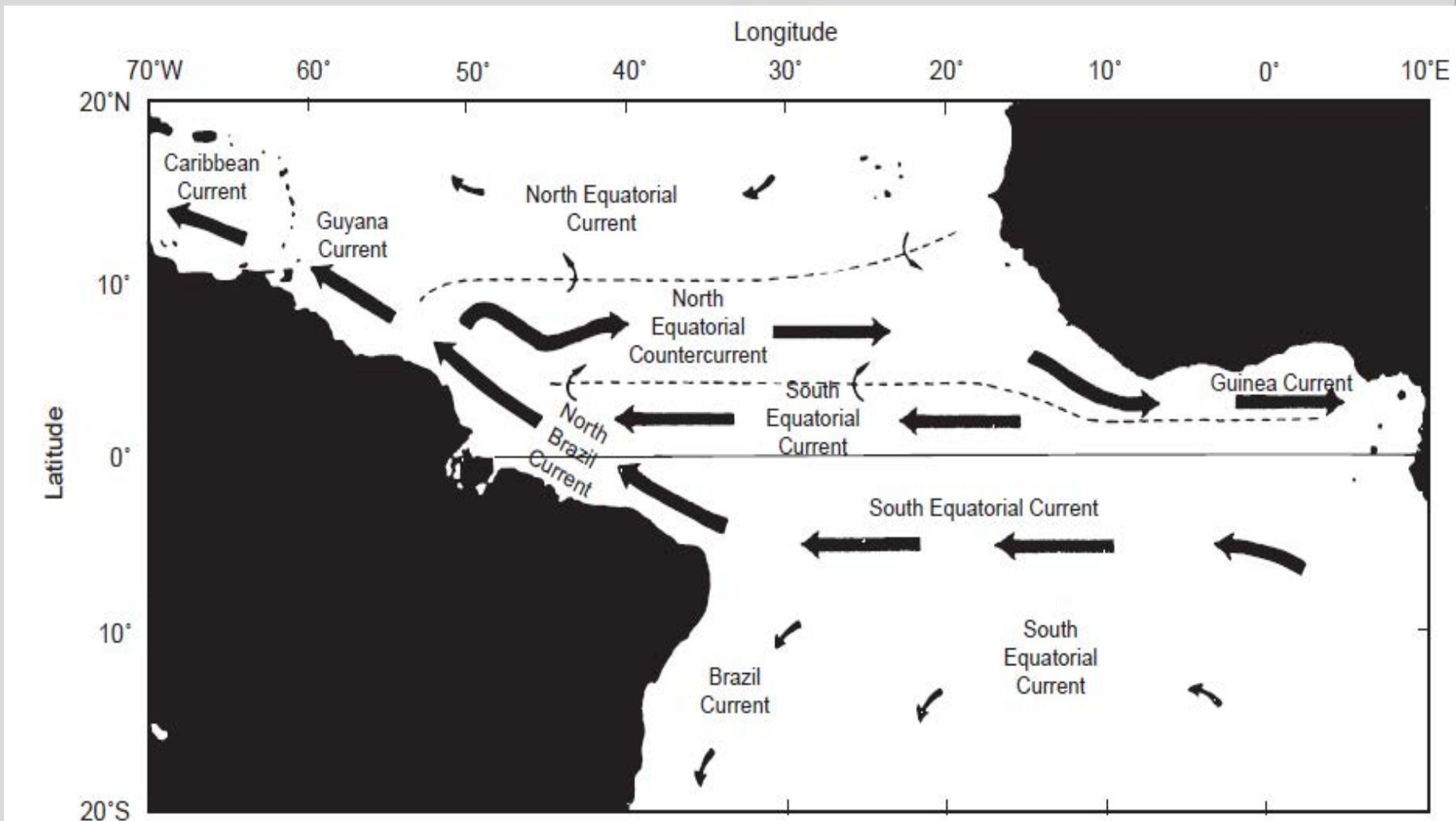
ORIGEN OF THE GUIANA/ CARIBBEAN CURRENTS



- South Equatorial Current**
- Brazil Current**
- Northern Brazil Current**
- Guiana Current**
- North Equatorial Counter-current***
- North Equatorial Current.**
- Caribbean current.**



ORIGEN OF THE GUIANA/ CARIBBEAN CURRENTS





CHARACTERISTICS OF THE GUIANA CURRENT



- Warm current
- Flows north-westward
- Flow 10 Sv
- Average Speed 40 – 50 cm/s
 - ✓ Range 30 cm/s
- Meanders with wavelengths of 500 to 600 km



CHARACTERISTICS OF THE GUIANA CURRENTS



- Extends about 550 Km offshore
- Strongest (January to June)
- Weakest (July to December)



CHARACTERISTICS OF THE CARIBBEAN CURRENT



- Warm current
- Flow 26-33 Sv
- Average Speed 30 - 40 cm/s
 - ✓ Maximum 60 - 70 cm/s



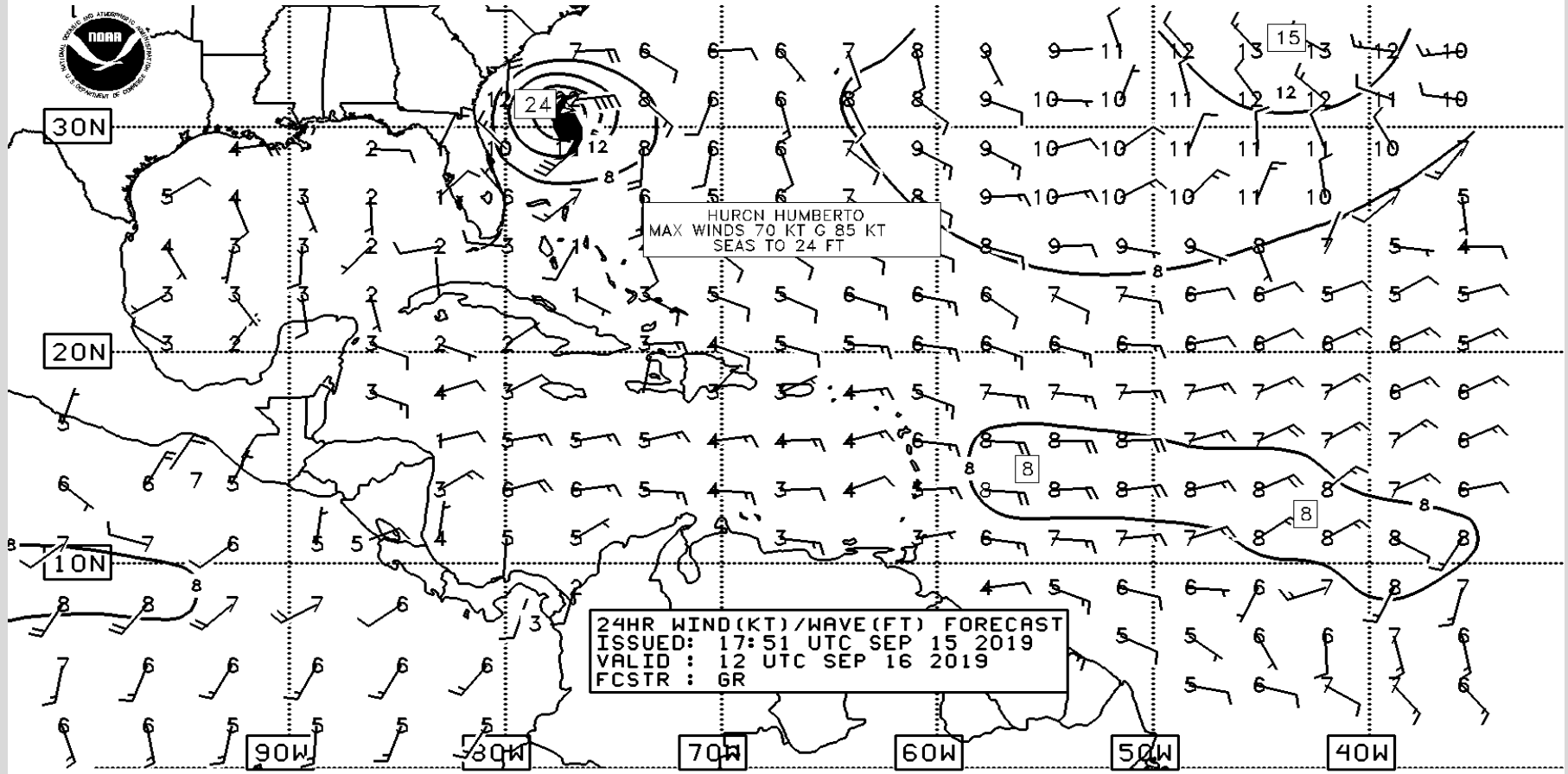
FACTORS THAT CAN ALTER BOTH CURRENTS



- Large rivers**
 - ✓ **Amazon**
 - ✓ **Orinoco**
 - ✓ **Essequibo***
- Synoptic weather systems**
 - ✓ **Tropical Waves**
 - ✓ **Tropical Storms/Cyclones/Hurricanes**
- Astronomical tides.**
 - ✓ **Mixed**



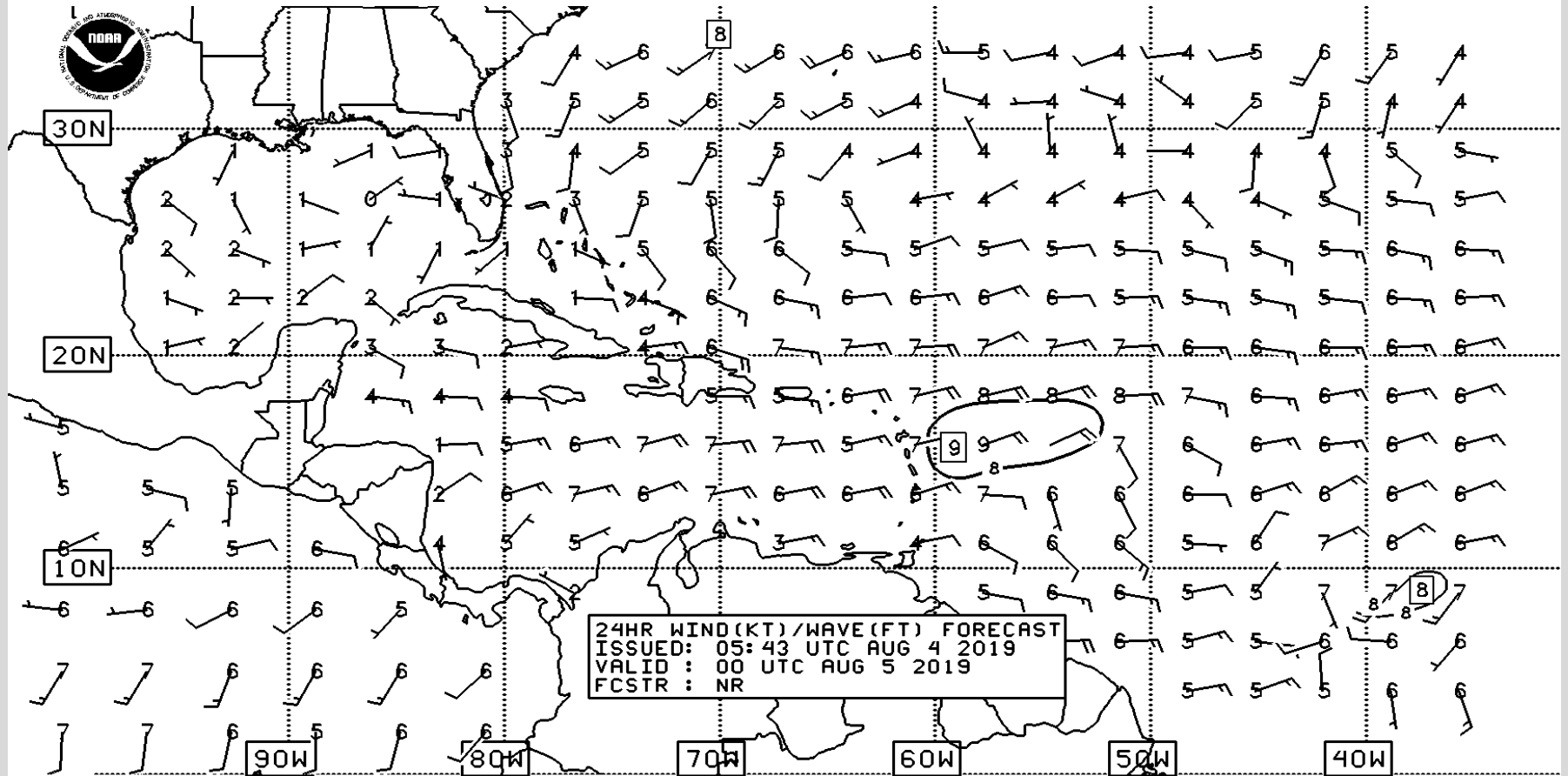
FACTORS THAT CAN AFFECT BOTH CURRENTS



NWS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
SIG WAVE HT IS SHOWN (THE AVG HT OF THE HIGHEST 1/3 OF THE WAVES)



FACTORS THAT CAN AFFECT BOTH CURRENTS



NWS/NHC/TROPICAL ANALYSIS AND FORECAST BRANCH
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THANK YOU