Plunging Breaker

Occur w/ Moderate to Steep sloping Beaches

Ocean Eddies

Independent circulations of cold or warm water

Generally found on either side of strong currents such as the Gulf Stream or Kuroshio

Used tactically by submarines because of the sound propagation differences that exist inside and outside the eddie circulations

Four Major Ocean Sediments

Terrigenous

Pelagic

Glacial Marine

Volcanic

Tropical Depression

An organized system of clouds and thunderstorms with a defined, closed surface circulation and maximum sustained winds of less than 34 knots

Pressure

Sound Speed increases 2 feet/second for every increase in depth of 100 feet

Dominant controller of speed below 1000 feet in the ocean

Wave Height

The vertical distance from the crest of a wave to the trough of the wave

Small Craft Warning

Winds Sustained at 18-33 knots

Forecasted for harbors and inland waters

Air Mass

Body of Air over a Large Area

Takes on characteristics of the Underlying Surface

Temperature and Moisture Characteristics are the Same

Spilling Breaker

Occur w/ Gentle Flat Beaches

Flood

The current that flows toward the shore with a rising tide

Wind Direction

Average direction from which wind is blowing

Tropical Cyclone Conditions of Readiness - TCCOR

TCCOR 5 - Destructive winds are possible within 96 hours

TCCOR 4 - Destructive winds are possible within 72 hours

TCCOR 3 - Destructive winds are possible within 48 hours

TCCOR 2 - Destructive winds are anticipated within 24 hours

TCCOR 1 - Destructive winds are occurring or anticipated within 12 hours

3 Types of Currents

Open Ocean

Littoral

Rip

Defense Meteorological Satellite Program - DMSP

LEO, Polar Orbiting Satellites

6 satellites in orbit

Geostationary Operational Ent'l Satellites - GOES

24/7 Coverage over the same Geographic Region

Monitors weather systems and storms

4 GOES Satellites in Orbit

Surging Breaker

Occur w/ Very Steep Sloping Beaches and are dangerous for Landing Craft

Bioluminescence

The types are sheet, spark, and glowing ball.

Most bioluminescence in the oceans is sheet-type

Spark-type displays are created by large numbers of crustaceans

Glowing ball displays are seen most frequently in warmer waters. Luminescent jellyfish cause many glowing-ball displays

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3 Thermal Layers of the Ocean

Mixed/Surface Layer

Thermocline

Deep Layer

Littoral Longshore Currents

Caused by Waves Approaching the Beach at an Angle

Increase Velocity with Increased Breaker Heights

Steep Beaches have stronger currents

Cold Eddy

Cold Eddies form on the south side of the Gulf Stream and maintain a counterclockwise circulation

Tropical Storm

A distinct rotation must exist around the central area of low pressure and wind speeds must be between 34 and 63 knots. At this point the tropical storm is given a name.

Salinity

Sound Speed increases 4 feet/second for every increase in salinity of 1ppt

Effects are greatest for Ocean water in areas of high evaporation and high influxes of fresh water

Warm Front

Replaces Colder Air

Gale Warning

Winds Sustained at 34-47 knots

Forecasted for harbors, inland waters, ocean areas, installations, and air fields

Relative Humidity

Percentage of the amount of water in the air compared to how much water can actually be held based on temperature & pressure

the Nautical Almanac

Contains the following data tabulated at hourly intervals to a precision of 0.1 arc minute: the Greenwich hour angle and declination of the Sun, Moon, and navigational planets; the Greenwich hour angle of Aries; positions of the navigational stars; rise and set times of the Sun and Moon for a range of latitudes

Mixed/Surface Layer

Isothermal Temperature with Depth

From the ocean surface to about 1500 feet

Temperature

Primary Controller of Sound Speed in the top 1000 feet of the ocean

Sound Speed increases 6 feet/second for an increase in 1 degree centigrade

Ocean Fronts

Interface btwn 2 Water Masses of Different Temperatures and Salinities

Storm Warning

Winds Sustained at 48 knots and greater

Forecasted for harbors, inland waters, ocean areas, installations and airfields

3 Breaker Types

Spilling

Plunging

Surging

the Astronomical Almanac

Contains precise ephemerides of the Sun, Moon, planets, and satellites, data for eclipses and other astronomical phenomena for a given year

Hurricane/Typhoon

Wind speeds must be at least 64 knots

Polar Operational Ent'l Satellites - POES

A.K.A. TIROS-N Satellites

Collects Data Globally

There are 6 POES Satellites in orbit

Wind Speed

Average rate of air motion

Measured in nautical miles/hour or Knots

Cold Front

Displaces Warm Air at the Surface

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Restricted Visibility

Prevailing Visibility falls below 7 Nautical Miles or 10 Statute Miles

Warm Eddy

Warm Eddies form on the north side of the Gulf Stream and drift into the colder waters of the Labrador Current maintaining their clockwise rotation

Sea Waves

Also known as wind waves, are waves generated by the wind in the local area

Wave Period

The time it takes for a complete wave cycle (crest to crest or trough to trough) to pass a given point

Open Ocean Currents

Major Currents like the Gulf Stream and Kuroshio

5 Major Ocean Provinces

Continental Shelf

Continental Slope

Continental Rise

Ocean Basins

Mid-Ocean Ridges

Bathythermograph - BT

The measurement and recording of subsurface water temperature at various depths

BT data is the critical factor in determining the sound velocity profile (SVP) of a particular ocean area

Thunderstorms - TS

Formed when cumulous clouds grow into cumulonimbus clouds

Thermocline

Describe by its rapid decrease in temperature with depth from the layer above it

Rip Currents

NOT Associated w/ Tides

Caused by return flow of water from the beach

Form at the end of a beach where land juts out into the water

Fog

Suspension of small water droplets or ice crystals in the air that reduces visibility at the surface

METOC & GEOINT

METOC data is a layer of Geospatial Intelligence and is critical to planning and operations in the joint environment

Swell Waves

Waves that have moved away from the area in which they were formed

Fronts

Transitions between two Air Masses

Ebb

The current that flows away from the shore with a falling tide

Severe Thunderstorm Warning

TS are w/in 10NM or an hour away

Gusts of 50 kts or Greater = 3/4" Hail and/or Tornadoes

Tropical Rainfall Measuring Mission-TRMM

Joint venture btwn NASA and Japanese Nat'l Space Development Agency

Research the water cycle in the atmosphere

Nat'l Polar Orbiting Ent'l Satellite System-NPOESS

Will Replace the POES and DMSP

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