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ENVIRONMENTAL ASSESSMENT FOR NORTHWESTERN PACIFIC MARINE CLIMATE MARCH-APRIL 1999

1. Synoptic Situation:

High pressure sets up over the Central Pacific, north of the Hawaiian Islands and over Siberia. Low pressure systems, with their associated trailing cold fronts, typically track northeastward from Siberia, over the Japanese islands and into the Gulf of Alaska.

2. Winds:

Winds between the Hawaiian Islands and Hong Kong are predominately northeast to east-northeasterly from Hawaii to Luzon, in the northern Phillipines. Winds become more easterly through the Luzon Channel and off the coast of China.

Winds average 10 to 15 kts from Hawaii to approximately 130 E, then increase to 10 to 20 kts through the Luzon Channel. Winds along the coast of China may increase to gale force periodically due to 'cold surges' off the Asian mainland. These surges of cold air occur about every five days during the winter Northeast monsoon as cold air builds up over Siberia. This cold air periodically breaks free and moves south-southeastward through the East China Sea and into the South China Sea, producing extensive cloudiness, stormy precipitation and short, high seas south of Taiwan. Seas may build as high as fifteen to twenty feet over the coastal shelf along the coast of China and Vietnam due to shoaling.

3. Precipitation and Visibility:

Between Hawaii and the Phillipines the weather is typically good due to the predominate high pressure over the region. Skies are generally clear to broken. Precipitation is associated with cumulus convection over the region and usually falls at night, due localized instability produced by the radiational cooling of the cloud tops.

Over the extreme western Pacific conditions are more extreme however. Although the mean storm track in the region is farther to the north over Japan, precipitation is produced by the periodic cold surges which move over the region. These surges bring cold, dry air down from the Asian continent over the warm Kuroshio current, which flows northward in the Western North Pacific basin. Surface heating of this cold, dry air produces significant air mass instability, generating extensive cloudiness and precipitation along the coast of China and Vietnam. Visibilities associated with this weather is generally poor.

4. Temperatures:

Temperatures are very moderate. Surface air temperatures average 20 to 25 C in March and increase to 25 to 28 C in April.

5. Surface Currents:

Surface currents in the Western Pacific are driven by the synoptic wind patterns. The high pressure over the Central Pacific produces a westerly setting current in March, averaging 0.25 to 1.3 kts south west of Hawaii out to about 135 E. The current then turns northwesterly, averaging 0.3 kts southeast of Taiwan, and increasing to 1.1 kts to the northwest in the Luzon Channel. In April currents have the same direction, however decrease from 20% to 50% in strength due to the weakening of the Central Pacific High.

6. Tropical Storms:

Tropical storms do not usually affect the region during this period of the year, averaging only 1 storm every one to two months. Tropical storms which are produced are typically formed southeast of Guam and track either northwestward through the Phillipines and into the South China Sea, or recurve west of Guam and move to the north, then to the northeast into the the mid-latitude storm track.

The 1999 season may prove to be more active than usual however due to the present La Nina situation along the coast of Peru. This situation is typified by colder than normal sea surface temperatures occurring along the coast of Peru in the Eastern Pacific. This produces stronger than normal high pressure in the Eastern Pacific, strong tropical easterly winds, warmer than normal sea surface temperatures in the eastern Pacific and subsequent deeper than normal low pressure in the Western Pacific. This situation is more conducive to the development of tropical cyclones in the western Pacific.