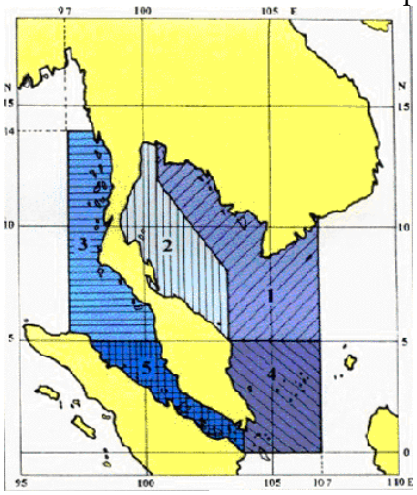
National Report

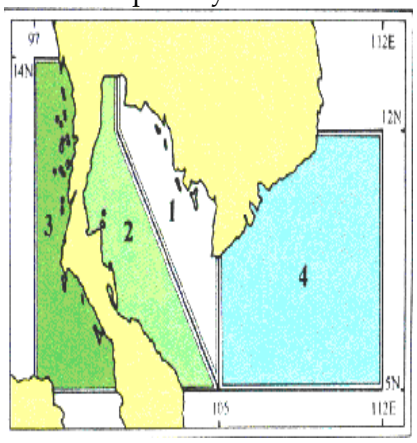
The importance of meteorology for more advanced navigation has been recognized since it was introduced to Thailand for the first time by the Royal Thai Navy. Somehow, safety in all weather conditions is the most desirable factor sought after by hectic ferry and barge operations for both domestic and international trades as well as related industries which are the foundation of the national prosperity nowadays. For that reason, the TMD provides the marine meteorological services to serve international shipping, marine fisheries, oil-drilling industry, water transportation, and offshore recreation.

Marine weather forecasts for shipping are issued twice a day at the TMD's Headquarters in Bangkok.



They contain warnings of wind forces at the sea surface level and above, a synopsis of significant meteorological features, and 24-hour forecasts of weather and sea states of 5 marine areas in the Gulf of Thailand and the Andaman Sea. The Boundaries of areas used in weather bulletins for merchant shipping and coastal weather are shown on the left. These forecasts are broadcasted via NAVTEX, an international broadcasting system for disseminating navigational information by the coastal radio broadcasting stations for ships plying in the region.

Once a tropical cyclone entered the tropical cyclone warning areas under the responsibility of Thailand

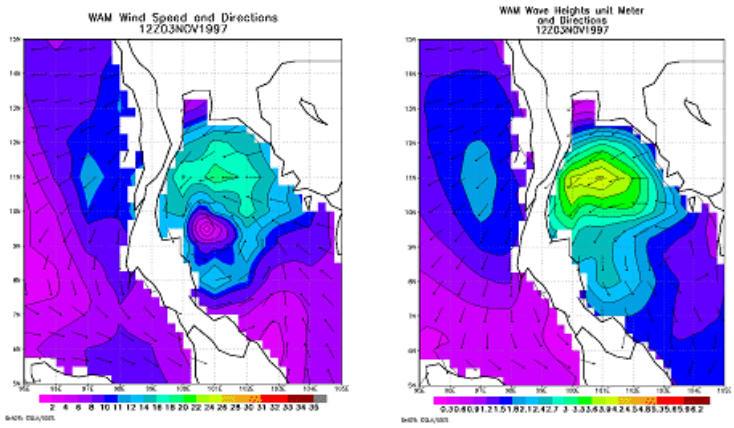


(bounded by the latitudes 5 °N and 14 °N and the longitudes 97 °E and 112 °E) as shown in the left figure, the TMD issues additional warnings for shipping at the 3-hourly intervals giving detailed information on the location, intensity, and forecast movement of the tropical cyclone together with wind and wave conditions associated with it. Such information is also broadcasted by NAVTEX.

Weather bulletins for coastal waters in the Gulf of Thailand and the Andaman Sea are prepared 6 times a day and broadcasted by local radio stations. They contain warnings of strong winds, fog and hazardous weather, 24-hour forecasts of wind, significant weather, sea state as well as a further outlook for the next 24 hours for 7 fishing areas along the coasts of the Gulf of Thailand and the Andaman Sea. The latest weather reports from selected coastal and island stations are also included in the bulletins.

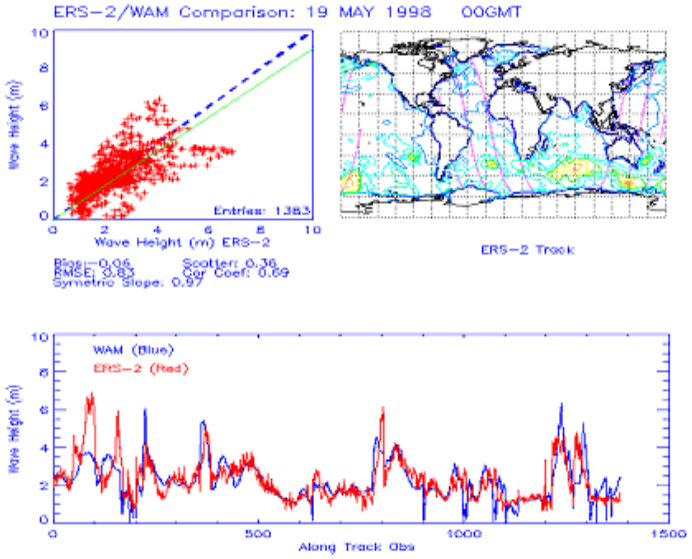
In addition, the forecasts are cautiously issued to meet the special users' needs. Specialized forecasts of weather and sea states up to 7 days ahead are made available, upon request, to oil rigs operating in the offshore waters of the Gulf of Thailand and the Andaman Sea. Since 1997, the Marine

Meteorological Center (MMC) has been using numerical wave models as supportive tools for specialized forecasting service to forecast wave conditions over the Gulf of Thailand, the South China Sea, and the Andaman Sea as shown on the right. Figure (A) illustrates wind field at 10 meters winds from NOGAPS while Figure (B) depicts significant wave height from the WAM model which is developed at MMC.

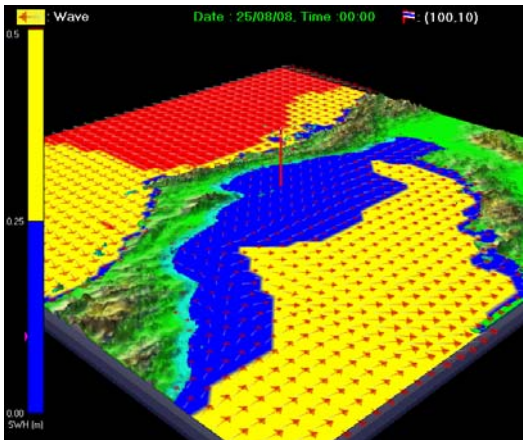


(A) (B)

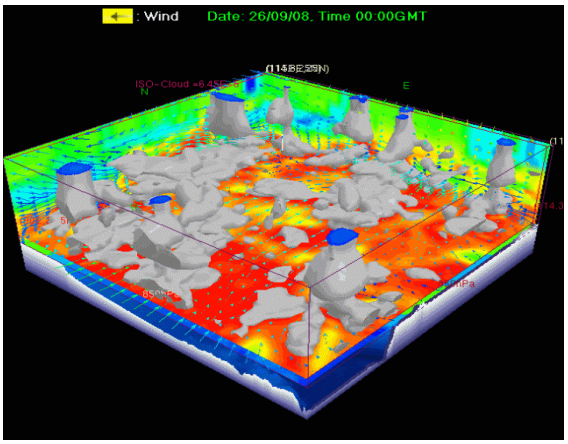
Once the ocean wave model output was obtained, it is compared with satellite data and it was reasonable as shown below.



Besides, the MMC has been developing the VirtualWeather3D and VirtualWave3D Program as tools to present the results from the wave and weather forecasts into the virtual displays of which the examples can be seen below.



VitualWave3D



VirtualWeather3D

In case of oil spills in the Gulf of Thailand and the Andaman Sea, special 12-hour forecasts of wind, weather, state of sea, wave height, sea surface temperature, storm surge, and abnormal tidal currents will be issued and dispatched to any requiring agencies which are in charge with this type of disasters.

The Thai Meteorological Department (TMD) has discussed and coordinated with the Marine Department about inviting the locally-registered ocean liners under its responsibility to become the members of the VOS Scheme and perform voluntary ships' weather observations. In order to respond the TMD's request, the Marine Department has forwarded such invitations to the owners of ocean liners.

In the past, the TMD's marine meteorological officers had gained an experience to perform the ship's weather observation on a research ship in order to obtain additional data for the sea areas where no weather stations are available. In addition, the TMD's marine meteorological officers had an opportunity to visit Hong Kong Observatory during 8th – 11th April, 2008 in order to observe its marine meteorological activities, particularly for the ship checking visits. The TMD's marine meteorological officers learnt from the meteorological officers of the institute about the ship registration (including how to fill the enrolment forms to join the VOS Scheme) and checking visits procedures which has not been put into practice in Thailand before.

Currently, the enrolment to become the members of the VOS Scheme has just begun in Thailand. Since the TMD has been asked about the weather observation procedure on board from the owners of ocean liners, it has planned to provide a training course on "Ships' Weather Observation" for those who have become the members of the VOS Scheme later on.

From what mentioned above, it can be clearly seen that the VOS Scheme in Thailand must be based on the close cooperation between 2 governmental units: the TMD (responsible on observing; analyzing; and forecasting the weather) and the Marine Department (in charge of the ships registration and control nationwide).