

6 Ship's Meteorological Station

6.1 Weather and Meteorological Conditions During Leg M 40/1 (J. Sußebach)

METEOR left Hamburg on October 28th 1997. During this and the following days a high pressure zone extended from England to Northern and Eastern Europe. It influenced the way through the German Bight, the southwestern North Sea, the English Channel and the Biscay by weak to moderate winds mainly from easterly directions.

During the night to November 2nd, near the coast of Portugal a frontal trough affected the ship with thundery rain and strong easterly winds force 7 Bft veering to southwesterly directions later. The Strait of Gibraltar was passed on November 3rd. Later on westerly winds supported the speed of the ship in the western Mediterranean. Near the coast of Tunisia and in the Strait of Sicily strong southeasterly winds force 6 partly 7 Bft were observed on November 6th and 7th, veering to westerly directions on November 8th.

From November 8th until November 19th METEOR operated at the southern edge of the Ionian Sea. The first part of this period was influenced by high pressure with good weather. On November 13th a gale center moved from the southeastern Tyrrhenian Sea to the southern Adriatic Sea. It affected the ship with southerly, later westerly winds force 7 partly 8, gusts 9 Bft. The following days until November 19th the weather was characterized by low pressure influence with a lot of showers, but only winds force 2 to 5 Bft.

On November 20th strong southerly winds force 6 Bft were observed. METEOR sailed to the area about 100 nautical miles southsouthwest of Crete. The ship operated here until November 25th. During this period mainly good weather predominated. Only on November 23rd a gale center moving from the southern Tyrrhenian Sea to the southern Ionian Sea affected the ship with strong southeasterly winds force 6 to 7 Bft.

From November 26th until November 28th METEOR stayed in the area about 33°N and 25°E (south of Crete). During these days weak winds were blowing. On November 27th the wind was temporarily calm.

On November 29th METEOR was on the way to Piraeus passing the western edge of Crete. At this day a small gale center developed in the southern Aegean Sea. It moved southeastwards and caused increasing northerly to northeasterly wind up to force 7 Bft with gusts 8 Bft during forenoon and afternoon. Later on the wind decreased.

METEOR arrived in Piraeus in the morning of November 30th 1997.

6.2 Weather and Meteorological Conditions During Leg M 40/2 (J. Sußebach)

On December 3rd METEOR left Piraeus. The fair weather in the beginning deteriorated rapidly due to a frontal system approaching from the west. During the afternoon and at the following day it caused gusty southwesterly winds force 6 to 8 Bft near the island of Milos where we stayed until December 7th. On December 5th and 6th high pressure influence with weak winds predominated. During the night to December 7th a gale center near the Peloponnes caused

increasing easterly winds up to force 8 Bft. At noon of this day the wind decreased close to the low center to force 4 Bft for a short time and turned to northwest. Towards evening it turned to north increasing up to force 8 to 9 Bft. The temperature sank from 18° Celsius in the warm air before to 13° Celsius in the cold air later.

On December 8th METEOR sailed to the sea area about 80 nautical miles west of Crete where we stayed until December 11th. The weather was characterized by mainly weak winds, fair intervals and some rain showers.

On December 11th we sailed to the island of Santorini. On this and the following day the weather was good. During December 13th and 14th southwesterly winds up to force 6 Bft brought moist and mild air with some rain and temperatures up to 18° Celsius. In the early morning of December 15th, a coldfront crossed our area with a thunderstorm and gale gusts from southwest.

On December 16th METEOR sailed to the island of Kos. After a short stay we sailed back to the island of Milos on December 17th. Meanwhile, a strong high developed over western Russia with a ridge extending to Western Greece. Under its influence northwesterly later northeasterly winds force 5 to 7 Bft brought cool and cloudy air to the Aegean Sea. It caused the lowest temperatures of our cruise with 8 to 9° Celsius on December 18th and 19th.

On December 20th and 21st weak to moderate southerly winds brought warm and dry air to our area with temperatures of up to 17° Celsius. During the night to December 22nd a coldfront crossed us with increasing winds up to force 7 Bft turning from south to southwest. During day the wind remained strong and gusty. In the evening of December 22nd we left Milos. On the way back to Piraeus the westerly wind decreased.

In the morning of December 23rd METEOR arrived at Piraeus.

6.3 Weather and Meteorological Conditions During Leg M 40/3 (H.-J. Möller)

At the beginning of the cruise a great low moved from Albania to the Ukraine. Therefore a southwesterly airflow with 6 to 7 Bft resulted. A weaken trough crossed the Aegean Sea at the night to December 30th 1997 and the wind veered to northwest. At this day the pressure rising started over central and southeast Europe. The result was a great and strong high centered over Greece and Turkey with calm at the Aegean Sea for many hours on January 1st and 2nd 1998. The high pressure zone weakened rapidly. Merely over Turkey an anticyclone survived.

In the meantime a low formed at the Ionian Sea. It moved to Egypt. A further low followed at the night to January 4th when some showers and thunderstorms were observed near Crete. Afterwards the pressure rised particularly over North Africa resulting in westerly winds with force 6 Bft for a time.

On January 7th a high pressure wedge extending from Spain to Hungary moved southeast and a secondary high over Turkey originated.

A short-period change was suggested on January 9th when a coldfront wave over Ukraine deepened slowly and began to move southsoutheastwards to Syria. The coldfront itself passed Crete and METEOR in the morning of January 11th. The direction of the wind changed from northwest to northnortheast and the force increased rapidly from 5 Bft to 8 Bft. Also the air

temperature dropped from 16°C to 13°C. After two hours the wind decreased to 6 to 7 Bft. On January 12th the low went finally eastward, so that a high over the Ionian Sea gained influence. The wind backed to northwest and dropped noticeably. The high and its wedge moved slowly eastward with the result of a high pressure zone extending from Egypt to Rumania. The last days of the cruise were determined by calm or light and variable winds.

6.4 Weather and Meteorological Conditions During Leg M40/4 (H.-J. Möller)

At the beginning of the cruise the weather was dominated by a great low with its center over the northern Ionian Sea. Its cold front crossed the area south of Piraeus with wind up to Bft 7 and heavy rainshowers. On January 22nd a new low formed at the Aegean Sea and moved slowly to Turkey. Rain showers moved at its south side eastward. On January 23rd, evening the change of weather conditions was suggested by a line of heavy thunderstorms and showers of little hail. Backside the wind veered to northwest and decreased considerably, because a wedge of high pressure moved from Bulgaria southward. At the same time a low formation began in the western Mediterranean Sea. The low moved eastward to the Ionian Sea without deepening. An anticyclonic northeast storm produced a high swell in the Ionian Sea at the afternoon of January 26th. During the following night the center of the low was situated northwest of METEOR with little pressure fall. Heavy showers and thunderstorms were observed. After midnight the low changed the position a little. When it was situated southwest of METEOR, a storm from northeast began to develop up to Bft 9 with gusts up to Bft 11. Because of only a little eastward moving of the depression the storm persisted in the Ionian Sea until the evening of January 27th. Few miles north at the leeward side of South Greece the wind decreased to Bft 5 to 6 first and Bft 3 to 4 later. On January 28th the low moved to Cyprus and a wedge of high pressure developed at the central Mediterranean Sea. With its eastward moving the light to moderate winds changed from northwest to northeast at the night to January 30th.

From now a series of lows came free from a great stationary cyclone west of Portugal. Some of them moved over the northern Sahara eastward, the most adopted the eastnortheastward way to Italy. The first one moved on February 1st from the Balears via Tyrrhenian Sea to South Italy. On its front side the southeastern wind increased to Bft 6 to 7 at the Ionian Sea. The backside northwestern wind decreased from Bft 5 to light and variable winds in a high pressure wedge which followed rapidly at February 2nd. A further low moved at the track eastwards the following night. Also the southeastern wind increased to Bft 6 at the Tyrrhenian Sea. During the track to the Strait of Bonifacio the wind changed to northeast by decreasing rapidly at the morning of February 4th. At this time the low was situated directly south of the vessel at the northern part of Sardinia, from where it moved slowly eastward by deepening the pressure. The final result at its backside was a heavy increasing wind up to Bft 9 at noon. Wind sea up to 4 meter and a northerly swell up to 3.5 meter were observed. Few waves grew up to 6 meter. After the passing of the low centre a continuous rising of the pressure began, with the result of decreasing wind down to Bft 5 until evening. At the morning of February 5th a sudden pressure rising caused a rapid increasing wind up to Bft 8. The pressure rising expanded all over southwestern Europe and the western part of the Mediterranean Sea while the low moved to the eastern part of the Mediterranean Sea. Therefore a still high pressure situation appeared on February 6th and survived until February 8th. In the meantime a low developed west of Morocco with a warmfront extending to the

Algerian coast. Together with the high a strong pressure gradient over South Spain resulted. Therefore the wind increased up to Bft about 7 at the Alboran Sea at the end of the voyage.