The Marine Observer

A quarterly journal

April 2000

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THE MARINE OBSERVER

A quarterly journal prepared by
The Met. Office Observations–Voluntary (Marine) branch

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Contents

COVER PHOTOGRAPH: Glaciated cumulonimbus, Berbice River, Guyana on 1 October 1999. Photographed by I.C. Oke.

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LONDON: THE STATIONERY OFFICE

Annual Report of the Observations–Voluntary (Marine) branch for 1999

1 — Voluntary Observing Fleet (VOF)

At the end of 1999 the United Kingdom Voluntary Observing Fleet (VOF) numbered 551 vessels comprising:

- **453 'Selected' ships** which transmit weather messages using the full SHIP code and are equipped with complete sets of meteorological instruments and stationery. These vessels are currently operating in all ocean regions;
- **43 'MARID' ships** which transmit information on sea water temperatures together with non-instrumental weather observations, and which operate on the UK coastal or near continental areas;
- **16 'Auxiliary' ships** which are requested to transmit limited observations. Such ships will normally be equipped with their own instruments and generally operate in areas where observation data is in short supply;
- **39 Offshore units** comprising both fixed and mobile rigs. These units report in the SHIP code and operate on the UK continental shelf.

The UK voluntary fleet as a whole constitutes part of the WMO Voluntary Observing Ships scheme, which currently comprises approximately 6,900 of the world's merchant vessels.

Ships recruited to work in the 'Selected' category carry a precision aneroid barometer, a marine barograph and a marine screen containing dry- and wet-bulb thermometers; for recording sea-water temperature they also carry a sea-water bucket with thermometer, or are fitted with distant reading equipment. 'MARID' ships are equipped with the necessary tested thermometers and their contribution is vital for the prediction of fog and, in appropriate meteorological conditions, icing. The offshore units provide data from the North Sea oil fields and other areas of exploration in UK waters. Anemometers are not used by the UK VOF, the surface wind speed and direction being estimated from the sea state.

Vessels engaged in all classes of observing continue to be serviced by a team of seven Port Met. Officers (PMOs) and support staff based at principal ports around the country, whilst the offshore units are coordinated by an Offshore Adviser based in Aberdeen. The PMOs and the Offshore Adviser regularly visit vessels and installations to offer advice and to check instruments. The PMOs also liaise with their counterparts around the world through the Manager Marine Observations in Bracknell, so strengthening international cooperation and encouraging more ships to become involved with observing. PMOs also visit ships of other countries' fleets, if required, to assist observing personnel. To improve electronic communications with the port offices work is currently in hand to provide each office with a dedicated desktop computer allowing access to the Bracknell computer network.

2 — Logbooks

The number of meteorological logbooks received in 1999 was 648 compared to last year's total of 747, a reduction due in part to the increased use of TurboWin computer programs for coding up ship observations. The logbook data undergo a series of computer quality control checks before they are stored for use in such areas as marine climatology and climate research; the logbooks are stored in the National Meteorological Archive, at Bracknell.

Observations noted on the 'Additional Remarks' pages of ships' met. logbooks continue to be welcomed and as many as possible are published in *The Marine Observer*. Such reports are copied to relevant consulting experts who voluntarily give their time and knowledge to comment upon sightings made at sea.

3 — TurboWin

At the end of 1999, the number of UK Selected ships and rigs equipped with lap-top computers loaded with The Royal Dutch Meteorological Institute's TurboWin software had increased to 46. A further 11 ships and 26 offshore installations had access to TurboWin, or the earlier Turbo1 version software, through their own ship computers. With its 200 built-in quality control checks, TurboWin automatically codes meteorological observations from the data entered by observers, and the observation can then be downloaded to floppy disks for subsequent transmission ashore to Bracknell through the Inmarsat-C and thence onto the Global Telecommunications Network. The computerised logs of coded observations are also routinely downloaded by the visiting PMOs so that the information may be utilised for climatological purposes.

4 — MOSS

The number of ships fitted with Meteorological Observing System for Ships (MOSS) has declined further and there are now only six ships remaining which are fitted with this equipment.

5 — Inmarsat Sat–C

During the course of the last year dedicated Inmarsat Sat–C communication systems linked to TurboWin lap-top computers were installed on three ferries operating in UK coastal and near continental waters, i.e. the *European Pathfinder*, *European Envoy*, and the *Elk*. A further system was installed on board the *CanMar Pride* for use in connection with the new ASAP system.

6 — ASAP

The UK Automated Shipboard Aerological Programme (ASAP), which had been discontinued in the early 1990s, was revived in July when the *CanMar Pride* (Canada Maritime Services Ltd) undertook the first operational voyage between the UK and Montreal (as part of the vessel's normal Thamesport-Antwerp-Le Havre-Montreal round trip route). A 10-ft container (adapted to house the radiosonde balloon launcher) together with the associated computer systems and antennae were installed on board by The Met. Office during the first half of 1999. After a few start-up problems were resolved, successful upper air soundings were made under the supervision of Geoff Allen who undertook three round trip voyages to prove the system, and to train the ship's staff in its operation.

7 — International activities

The Office continued to monitor international marine matters and was represented at the WMO Commission for Marine Meteorology (CMM) Working Group meeting in Athens, in March. The meeting undertook an in-depth review of the present status and recent evolution of the Voluntary Observing Ship (VOS) scheme.

With respect to ASAP systems the Manager Marine Observations attended a meeting held in Oslo in April to discuss the operational and financial aspects of the Ekofisk ASAP station, whilst in September/October the Head of OV(M) attended the Eleventh session of the WMO ASAP Coordinating Committee (ACC) in Norrkoping, Sweden.

In November, branch representatives attended a project meeting of the newly formed Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM). The purpose of this new project is to establish a Voluntary Observing Ships subset to provide high quality data for global climate studies. An ambitious action plan for the project was agreed and provisional commitments were made by several countries, including the UK, to participate and contribute observing ships. More details of this project will be included in *The Marine Observer* as it unfolds.

8 — National activities

On 30 June the Maritime and Coastguard Agency (MCA) assumed the responsibility for providing meteorological Maritime Safety Information, previously provided by the BT coast radio stations. As a consequence of this change, and in view of the formal implementation of the Global Maritime Distress and Safety System (GMDSS) in February a number of BT coast radio stations have now closed and the future of the remainder seems uncertain. This inevitably created difficulties for those coastal ships which are not equipped with satellite communications systems and which may no longer be able to transmit their observations through the traditional route. These difficulties are being addressed and, pending a solution, BT advised in December that they would continue to welcome OBS messages via their remaining HF, MF and VHF stations (see 'Noticeboard' item on page 88 of this issue for more details).

Branch representatives have also participated in several briefing meetings held at the MCA offices in Southampton to assist in the development of UK positions at meetings of IMO Sub-Committees overseeing both marine radiocommunications and navigational matters.

9 — Branch activities

Visitors to the OV(M) branch included, on 17 August, a representative from The Maersk Company who was researching for an article for that company's house magazine; while in October, Michael Myrsilidis from the Hellenic National Meteorological Service visited several areas of operation within The Met. Office, and the branch was pleased to demonstrate its activities to him both at Bracknell and at the Port Met. Office at Southampton.

A camera crew also visited in July to film material from The Met. Office for a BBC2 television series, whilst the branch also provided assistance to design consultants undertaking research for the National Maritime Museum in September.

Klaus Hedegaard from the Danish Meteorological Institute and manager of the Eumetnet E–ASAP programme visited the branch in September during which time he was taken to Thamesport to see the progress made in installing the new UK ASAP.

In December the Deputy Editor gave a presentation to the Royal Naval Birdwatching Society (RNBWS) on the history of *The Marine Observer*, and on our plans for its future. RNBWS representatives have been the consulting experts on both land and sea bird observations since the early 1950s and it is hoped that this mutually beneficial relationship will continue.

Throughout the year branch staff continued to field a variety of enquiries from the general public, shipping organisations, etc., including a call from a representative of Northlight Productions who was researching whirlpools for a Channel 4 television programme.

10 — Marine Publications

Regrettably, production of the new edition of the brochure *Weather Services for Shipping* was halted early in the year, at proof stage, following major amendments occasioned by the proposed closure of certain BT coast radio stations. It was decided to hold further development of the brochure until the situation was clarified and, in the interim, the possibility of producing a joint publication with the MCA is being investigated.

Other publications currently undergoing changes include *Meteorology for Mariners* which is being substantially revised by Martin Stubbs (formerly the Head of the Central Forecasting Office) with a view to publishing a new edition in the coming year, the *Ship's Meteorological Logbook* and the *Dew-point tables*. Reprints of the latter publication have been based upon photocopied material which, over the years, has become too corrupt for further reproduction, and the tables have therefore had to be entirely reconstructed.

The *State of SEA booklet* was reprinted following increased demand, and was produced in colour for the first time, pending the development of a new edition; the need for a new edition was brought about by the age and physical condition of the photographic material used for the illustrations hitherto. Since this useful publication is produced for the sole benefit of mariners, it was hoped that UK VOF observers would want to contribute photographs for use in the new edition. Accordingly, *The Marine Observer* issues for January and April 2000 carried notices requesting contributions, with a cut-off date of 31 July 2000. The *Ships' Code and Decode Book* was also reprinted to maintain stocks, and a reprint of the *Ships' Code Card* is currently in hand.

Arrangements were put in place to update the style and presentation of *The Marine Observer*, commencing with the January 2000 edition. Further changes will be made throughout the three remaining issues for the year.

11 — Awards

Presentations of barographs to long-serving shipmasters were made at Bracknell on 4 October. At the invitation of the Head of Observations–Voluntary (Marine), the presentations were made to three of the nominees by Peter Ewins, the Chief Executive of The Met. Office; the fourth nominee, prevented by an unsympathetic sailing schedule from attending the occasion, will receive his award at a future date.

Following normal practice concerning those with shorter observing careers, 300 nominations for Excellent Awards for 1998 were drawn from the names of Masters, Principal Observing Officers and Radio Officers contributing to meteorological logbooks received in that year, the contents of which were assessed as being of the highest quality. Letters of notification were sent at the beginning of

August, with the despatch of book awards commencing shortly afterwards as nominees responded. The titles selected for this round of awards were *Collins Atlas of the World* and *Savage Seas*, supplemented by unclaimed titles carried over from the previous award year (1997). At the end of 1999 the number of processed awards was 200 while responses were still awaited from the remaining nominees (see page 67 of this issue for more details).

On average about 77 awards remain unclaimed each year. In accordance with new arrangements brought in with the 1997 awards, books remaining unclaimed at 30 April 1999 were carried forward to the supply of titles available for the next round of awards. Claims for 1997 received after this date were honoured by a certificate marking excellence in voluntary weather observing; to date three certificates have been despatched.

The Marine Observers' Log comprises observations of interest and value contributed by weather observers primarily from the UK Voluntary Observing Fleet. Responsibility for each item rests with the contributor although texts may be subject to amendment at the discretion of the Editor.

All temperatures are degrees Celsius unless otherwise stated, and barometric pressure is given in millibars (mb), although the standard international unit is the hectopascal (hPa) which is the numerical equivalent.

Line squall — North Pacific Ocean — 22 April 1999

m.v. *Maersk Stafford*. Captain R.M. Banton. Balboa to Kaohsiung. Observers: R. Pierce, 3rd Officer and L. Carbonilla, Watchman.

The vessel was west of the Hawaiian Islands at 1925 UTC steering 273° at 15.4 knots, when a cloud formation ahead was noted to change rapidly, showing signs of developing into a heavy front. It was at a low altitude throughout the passage, and the depth of cloud was 200–300 feet while the total cloud cover was 6–7 oktas of stratocumulus at a height of approximately 2,000–3,000 feet.

The front was very truncated and showed a pronounced tumbling effect at its leading edge. A good radar echo was apparent throughout, corresponding with that of the front/squall formation. No rain was observed.

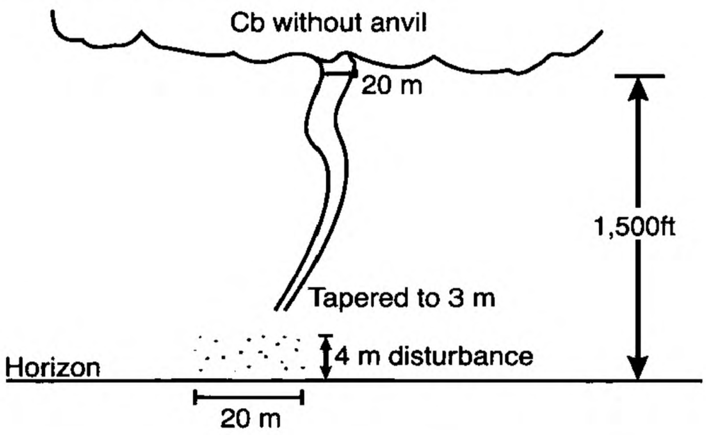
The pressure immediately before its passage over the ship was 1017.1 mb, but during passage it fell to 1015.7 mb while afterwards the pressure rose gradually to 1016.5 mb. Before the cloud passed, the wind was NE'ly, force 3, and there was then a steady increase to NE'ly, force 6. The phenomenon was noted at 17° 47.1′ N, 133° 59.4′ W and, from development to transit of the cloud, the time taken was approximately 10–15 minutes.

Waterspout — Indian Ocean — 27 June 1999

m.v. *Sachem*. Captain D.C. Kettlety. Jeddah to Beira. Observers: D. Dumont, 3rd Officer and P. Lazell, 2nd Officer.

The vessel was nearing the northern end of the Moçambique Channel when a waterspout was sighted at 1210 UTC. The spout had formed below a cumulonimbus cloud (no anvil) with a base at 1,500 feet, and was approximately

20 m in diameter at the point where it was joined to the cloud. As indicated in the sketch, the waterspout showed a kink near the top, and then tapered away to an approximate diameter of 3 m. Below this, the final portion was lost in surface spray and disturbance that was some 4 m deep, and at the surface the disturbance was about 20 m across.



The waterspout maintained its form and intensity for 15 minutes before quickly dissipating. At the time of observation, the sea-water temperature was 26.0°, air temperature 27.2°, wet bulb 23.2° while the wind was SSW'ly, force 5.

> **In brief:** A waterspout was sighted 3.5 n mile west of the *Mark-C* on 1 May 1999 when the vessel was at 37° 41′ N, 09° 30′ W. The spout formed under the southern edge of an extensive cumulonimbus cloud (with anvil) based at 1,500 feet. It showed as a sharply defined hollow tube, which created violent agitation up to a height of about 5 m above sea level even though the spout appeared to be incomplete. Captain J.W. Jackson estimated that the diameter of the waterspout at its base, when complete, was 12 m, and the noted that the spout remained visible for seven minutes before seeming to withdraw back into the cloud.

Fog — North Atlantic Ocean — 9 May 1999

m.v. *British Harrier*. Captain C. Gaukroger. Sullom Voe to LOOP. Observers: Captain Gaukroger, S.P. Moss, 2nd Officer and G. Villuarel, AB.

At 1530 UTC the visibility was reducing slowly owing to showers of rain and also drizzle; the sea temperature was 12.5°, the air temperature was 15.5° and the wet-bulb reading was also 15.5°. Once the showers had cleared, the visibility reduced further to 150 m owing to fog, and conditions remained that way for about 45 minutes as the vessel continued on its heading of 235°. During this time the sea and air temperatures were unchanged.

The fog then began to dissipate and as it did so the sea temperature increased, rising to 13.1° by the time the visibility had reached 5 n mile. The visibility increased further, as did the sea temperature which reached 17°. A strong southerly set was then experienced and this increased the vessel's speed from 14 knots to 15 knots; at the same time 15° of helm had to be applied to counteract the set. By this time the air temperature was 18.2° while the wet-bulb reading was 17.6°.

The vessel's position was 44° 30′ N, 41° 10′ W and, according to the routeing chart it should have been clear of the cold Labrador current but this was obviously not the case.

In brief: A tide rip lying south-west to north-east was noticed by A. Somerton, Mate and G. Petrini, Seaman on 15 May 1999 when the *Cordella* was in position 59° 55.7′ N, 06° 46.5′ W; there were small waves on the near side of the rip but the sea was smooth on the other side. The sea temperature was 9.8° before crossing the rip, and brown seaweed with 'tropical' grasses was noted in the rip line. After crossing the line, the sea temperature was found to be 10.5° and the air smelled 'sweet'. An increase in the air temperature was also noted when the vessel crossed the rip at 1647 UTC.

The Gulf Stream — Western North Atlantic — 4 April 1999

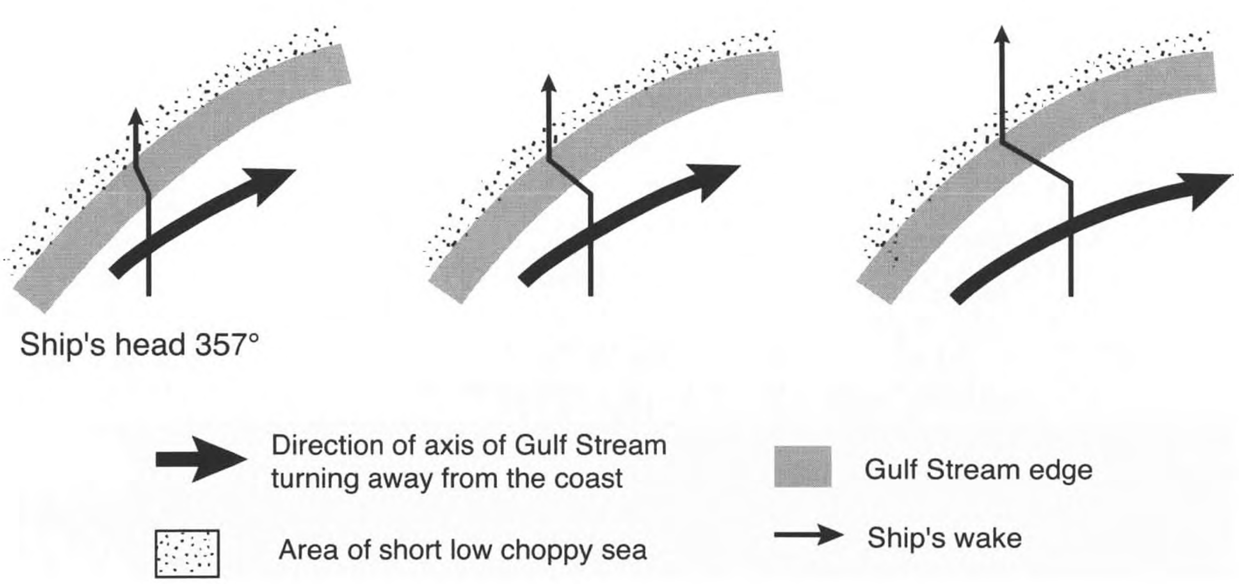
m.v. *Havkong*. Captain C. Payton. Tampa to Savannah. Observers: Captain Payton, N.J. Blacker, 2nd Officer, D. McCue, Cadet and L. Buchanan, Cadet.

The ship's course around the Florida Keys and up the east coast of Florida had been laid off to maximise the influence of the Gulf Stream. At 1600 UTC the western edge of the Gulf Stream was clearly observable approximately 3 n mile away on the port beam as the ship followed a course of 357°.

The current was observed to follow exactly the curve of the 100-fathom line as shown on the Admiralty chart; the sea next to the inner edge of the Gulf Stream was markedly short and choppy while the water of the current at that edge had a smooth, slightly oily and flowing appearance.

As the ship cut through the edge of the current in position 30° 36.2′ N, 80° 02′ W, the ship's head was pushed 10° off course to starboard before returning to its original heading, and the ship was rolling noticeably having been quite steady.

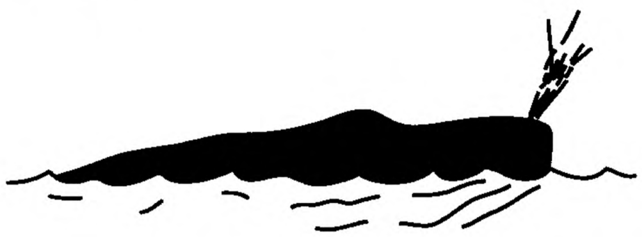
Looking astern, the difference in the rate of water movement was clearly visible. As shown in the sketches, the wake was rapidly distorted by the faster-moving waters of the Gulf Stream. The sea temperature dropped by 3° in 20 minutes while the ship's speed also dropped dramatically from 21.2 knots to 16.8 knots; after a further 10 minutes, the speed was down to 15.5 knots.



Whales — Moçambique Channel — 10 May 1999

m.v. *British Resource*. Captain T.L. Cullen. Cape Town to Fujairah. Observers: J. Galshan, 3rd Officer and D. Marshall, Electrician.

It was a sunny morning and there was a following wind of force 4 as the vessel transitted the Moçambique Channel on a course of 028° at 13.5 knots. Whilst the observers were listening to the BBC World Service, two whales were sighted off the port bow at 0630 UTC.



Upon closer inspection, the whales [one of which is shown in the drawing] seemed to be travelling very close to each other in a north-easterly direction. They were 5-6 m in length, dark-grey in colour with a low dorsal fin. The whales passed about 2 cables off before they dived showing no flukes. At the time of the sighting, the vessel was in position 23° 58′ S, 36° 47′ E and the sea-water temperature was 24.5°.

Note. Although the observers did not identify their whales, we think that they were most likely to have been Sperm Whales on account of the 'box-shaped' head and obviously forward-pointing blow shown in the drawing.

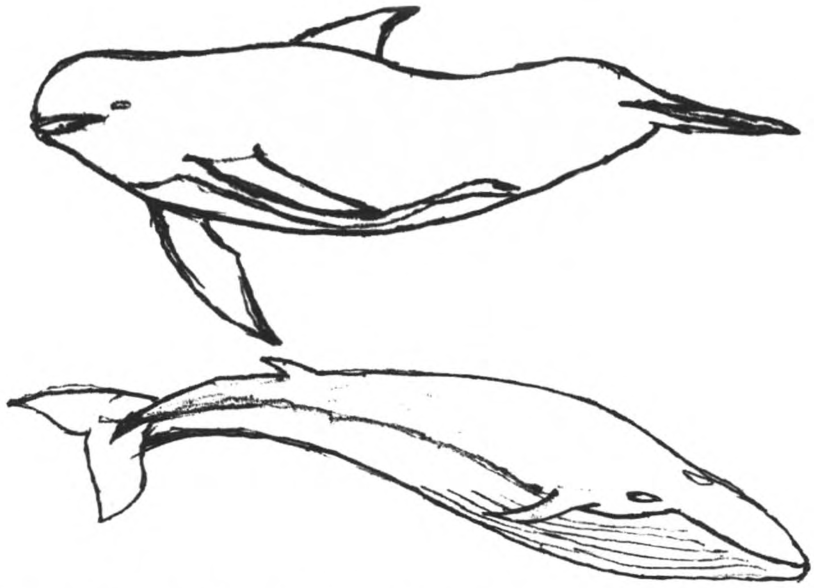
In brief: On 29 April 1999 a breaching whale was sighted from the *Elk* by R. Jones, 2nd Officer and S. Holding, Chief Officer at 1600 UTC. The whale, which was not identified, was about 10 m long with a dark or black upper body and very distinct white undersides; it also had a long thin mouth/nose area. It was leaping with its full length clear of the water then falling onto its back or side, doing this six or seven times as the vessel passed. The ship's position was 55° 36.5′ N, 02° 11.3′ E.

In brief: Unidentified dolphins were passed by the *Maersk Surrey* in position 36° 16.2′ N, 03° 42.4′ W on 11 May 1999. Second Officer J.M. Daly spotted two about a mile off the port beam, appearing to be basking in the sun while approximately four more were seen swimming near by. The dolphins were 2–3 m long over all.

Whales — North Atlantic Ocean — 20–31 May 1999

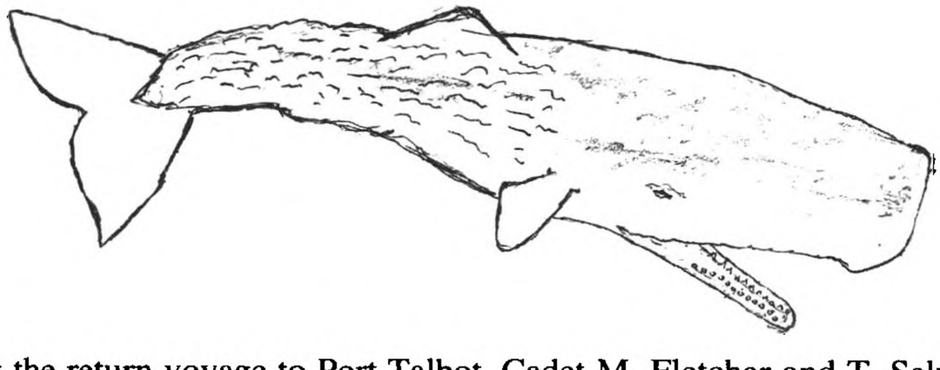
m.v. *Western Bridge*. Captain I.C. Gravatt. Observers: Captain Gravatt and members of ship's company.

Whilst on passage from Port Talbot to Port Cartier, Chief Officer S. Chase and 3rd Officer M. Antony sighted approximately 10–15 whales at 2115 UTC on 20 May 1999. The whales were 400 m from the vessel and were dark in colour. They were travelling slowly eastwards on the surface; two lay on their sides with one flipper pointing upwards for quite some time before righting themselves and continuing on their way. At best they were identified as a group of Melon-headed Whales; the sketch indicates what was seen.



The ship's course was 260° at 15.5 knots, and its position was 46° 36′ N, 41° 50.5′W; the wind was WSW'ly, force 2 and there was a rippled sea with a low swell.

Four days later when the vessel was at anchor off Port Cartier, 2nd Officer D. Dassanayake, in addition to the observers of the 'melon-headed' whales watched a single Minke Whale swimming close inshore, frequently breaking the surface of the water, the whale is shown in the drawing. The same whale also entered the harbour when the vessel was alongside, and was noticed swimming close to the grain berth. Apparently, a whitefish species known as Copkin runs close inshore, and the Minke Whales feed on them, sometimes chasing the fish into the harbour to corner them.



During the return voyage to Port Talbot, Cadet M. Fletcher and T. Selvam, AB were among those who spotted a Sperm Whale about 0.5 n mile from the vessel at 3 points on the port bow on 31 May. The whale was swimming on a course of 070° and frequently broke the surface of the water to breathe. It was 15–20 m long, its body had a 'corrugated' look about it (see sketch) and there was a small sharply pointed 'fin' on the top of the mid-section.

The whale came as close as 1 cable from the vessel, being undeterred by it, but then turned around to a south-westerly course, remaining on the surface. The observation was made in calm conditions, there being only light airs, and the ship's position was 50° 12′ N, 16° 00′ W.

Whales and dolphins Eastern North Atlantic May–June 1999

f.p.v. *Norna*. Captain M.C.J. Jewell. Barra Head towards Stanton Banks. Observers: Captain Jewell, M.P. Donnelly, Chief Officer and Miss K. Hughes, supernumerary.

Whilst heading towards Stanton Banks on a south-westerly course at 8 knots a Humpback Whale accompanied by three Whitebeak Dolphins was sighted astern at 1929 UTC. The vessel's course was reversed and the whale with its escort approached slowly; at distance of about 300 m the whale, which was about 10 m long, jumped completely clear of the water. *Norna* continued to follow the whale, heading north at about 3 knots, and approached to within 50 m with propellers declutched; the dolphins then left the whale for a moment to swim under the bow. After about 25 minutes, the vessel continued on passage to the south.

Several days earlier, about 10 Pilot Whales had been spotted on 15 May at 57° 44.8′ N, 09° 51.8′ W, and a further 12 were seen at 59° 08.6′ N, 07° 21.8′ W on the 18th. On board the vessel during the patrol of 15–31 May was Miss Kelly Hughes, from the National Resources Institute (University of Greenwich), who spent a great deal of time whale watching and kept extensive records of all whales and dolphins seen.

In June, what appeared to be a family group of Killer Whales was spotted on the 16th moving southwards in rough seas and heavy swell. The pod, sighted at 60° 25′ N, 04° 28′ W, seemed to be made up of one bull with a very tall fin, two or three smaller adults and there were also two very small fins belonging to calves or juveniles.

Another Humpback Whale was seen on the 28th at 0620 near the 200-m line west of St Kilda. It was about 10 m long and its flukes were about 3 m across; as the vessel approached to within 300 m of the whale, it "went deep" and so *Norna's* course was resumed. At 1830, when patrolling the 200-m line west of the Butt of Lewis, another single Humpback Whale was sighted; it was of similar size and behaved in a similar fashion to the one seen earlier in the day.

In brief: Several whales were observed on 22 May 1999 at a distance of one mile by L.M. Rainford, 2nd Officer on the *Colombo Bay*. They were breaking the surface and blowing frequently. One individual was very active, frequently lobtailing and causing large splashes, and also breaching fully before landing on its side. The whales, seen off the southern coast of Portugal (36° 22′ N, 07° 45′ W), were about 4 m long, and jet-black with small fairly well-defined dorsal fins and rounded bodies. They were thought to be perhaps either Long-finned Pilot Whales or False Killer Whales.

Bird North Sea 13 May 1999

m.v. *Matco Clyde*. Captain S.W. Turner. Le Havre to Buckie anchorage. Observer: W.B. Godsell, 3rd Officer.

When the vessel was in position 55° 15.5′ N, 00° 26.9′ E, 60 n mile from land, a kestrel was sighted resting on the port side bridge wing at 1530 UTC. Approximately 30 cm long, 'he' was of a chestnut colour with dark, almost black, speckles. His chest was of a lighter shade but with the same speckles on display.

The bird did not seem unduly concerned by the Third Officer's presence, simply flying to the starboard bridge wing at 1540 to settle in a similar position. Five minutes later, the kestrel took off and flew in a westerly direction towards land. No other smaller birds were observed at this time.

The wind at the time of the sighting was SW'ly, force 1 or 2, and the cloud cover was 3 oktas of stratocumulus.

In brief: Two small schools of dolphins were observed on 10 June 1999 from the *British Hawk* by Captain K.E. Peacock, G. Reaich, Chief Officer, T. Kawalski, 3rd Officer and Cadet M. Tucki. The dolphins were dark-grey in colour, about 1.5 m long, and were in position 23° 47′ N, 88° 26′ W heading south-west.

In brief: On 3 May 1999 three grey-coloured sharks were sighted by Extra Second Officer S. Mathews whilst the vessel *Vine* was in the South China Sea on passage from Tubarao to Kaohsiung. The sharks were about 1.5 m long and were on the port side roughly a cable away; they moved very fast in the same general direction away from the vessel; their dorsal fins were seen continuously for some time. The ship's position was 05° 35.2′ N, 109° 53.6′ E, heading 025° at 12.5 knots.

Bird Mediterranean Sea 25 May 1999

m.v. *Seki Pine*. Captain P.W. Jackson. Tyne to Barcelona. Observers: Captain Jackson, A. Howard, CPO and ship's company.

The vessel was in the western Mediterranean, between Corsica and France, when the bird shown in the photograph on page 65 arrived in the CPO's cabin. It caused not a little consternation, rushing around the cabin at a great rate of knots using both wings and very long legs to maintain momentum as it appeared to be leaning forward at a dangerous angle during movement.

The bird was taken in hand by the Master (a member of the Royal Naval Birdwatching Society) and was closely examined, it was a wondrous thing — a 'first'!

It was obviously a 'crake', but which one? Its body length from bill to tail was 20 cm, but its legs (at 14 cm not including the toes) almost doubled the measurement. The bill was quite short and dark-grey in colour, the legs dark-brown. The crown and upper neck were a chestnut colour while the back and upper wings were a rich chestnut heavily streaked and spotted with black, white and brown markings. The sides of the throat were a 'faded' blue-grey colour and the underbody was horizontally barred with chestnut and white — very distinctive. It was this last feature which led to the bird being provisionally identified as a juvenile Baillon's Crake because, when referring to *Birds of Europe*, published by Larousse, nothing else appeared similar.

When the photograph was taken, the bird was held firmly but not tightly as it was very active and 'peckish' (the photograph appears to indicate a squeeze taking place, but this was not so). After release, the bird remained with the ship, flying about it for an hour before subsequent departure in a northerly direction; on one occasion it was noted to take off after a short run on its very long legs.

Later, when the photograph had been assessed by experts, the bird was positively identified not as a Baillon's Crake but a Corncrake (*Crex crex*).

At the time of the bird's arrival on board, the vessel was 26 n mile from the north-western end of Corsica, the dry-bulb temperature was 21°, the wind was SW'ly, force 4, and it was a sunny day.

In brief: Whilst the *R.R.S. Charles Darwin* was engaged in a seismic survey in the mid-Atlantic, in position 56° 37.6′ N, 21° 36.5′ W, two sunfish were observed by Captain G.M. Long and much of the ship's company. The fish passed down the port side of the vessel just under the surface, swimming on their sides. When they neared the vessel's own 'fish' (the precision echo sounder transducer) they submerged and went on their way. The ship's heading was 226° at 5 knots, the wind was WNW'ly, force 3 and the sea temperature was 11.9°.

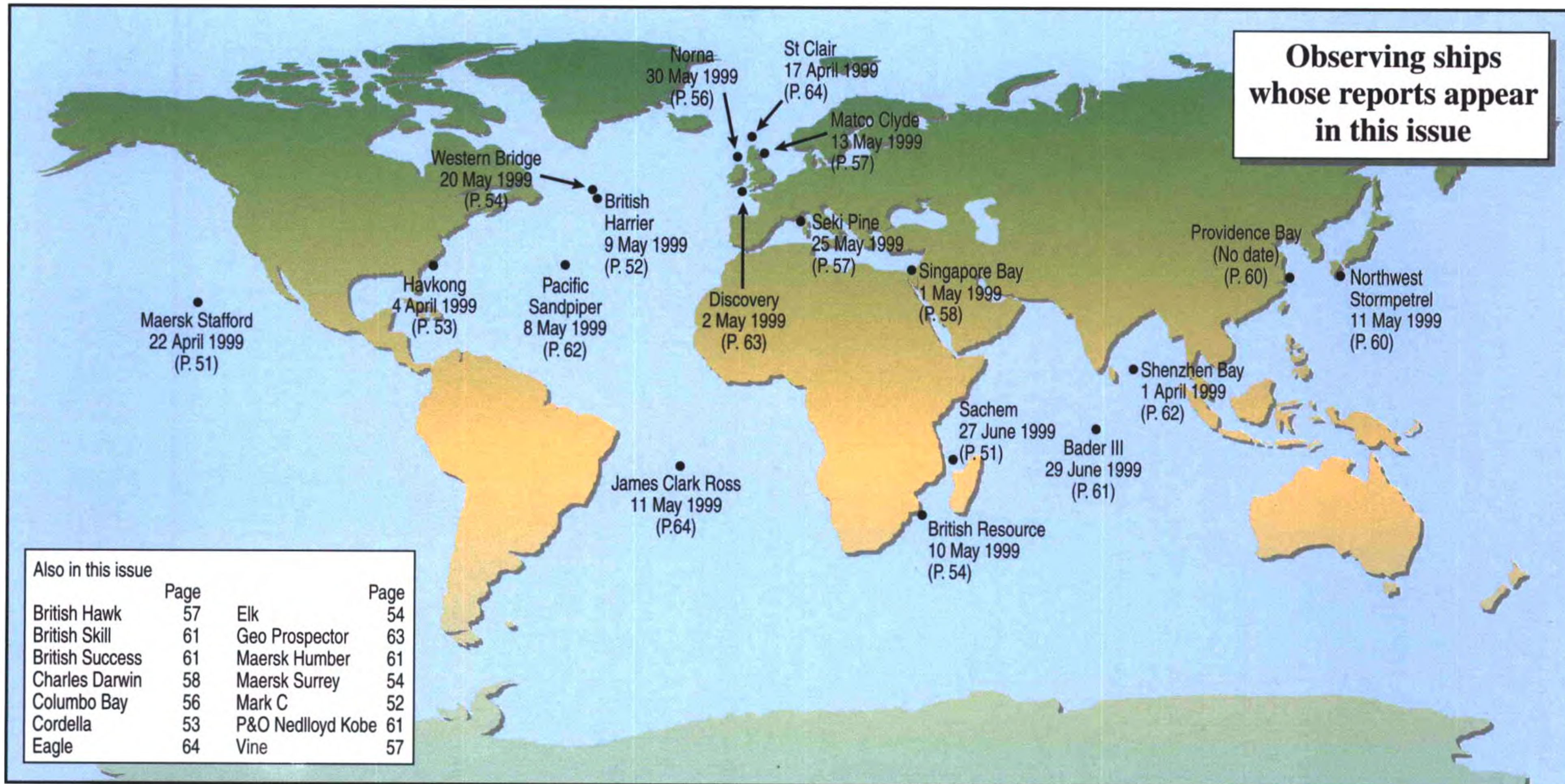
Note. The date of this sighting was not given.

Discoloured water — Suez Canal — 1 May 1999

m.v. *Singapore Bay*. Captain J.G.W. Dixon. Suez Canal, northbound. Observers: Captain Dixon, M. Barraclough, 1st Officer and D. Sevens, 2nd Officer.

Approximately 0.6 n mile south of El Tina signal station, a very distinct change in the water colour could be seen; this was a 'hard' line not a gradual change. The water changed colour from the normal blue-green to dark-brown or red. As the vessel passed through the line, its wake remained blue-green which indicated that the darker water was on the surface only.

In the water at the leading edge of the dark-coloured area there were numerous seabirds such as gulls and terns. When asked, the pilot said that the discolouration had been happening occasionally over the previous 10 days, and that it was most unusual.


Observing ships whose reports appear in this issue
Norna 30 May 1999 (P. 56)
St Clair 17 April 1999 (P. 64)
Matco Clyde 13 May 1999 (P. 57)
Western Bridge 20 May 1999 (P. 54)
British Harrier 9 May 1999 (P. 52)
Seki Pine 25 May 1999 (P. 57)
Singapore Bay 1 May 1999 (P. 58)
Providence Bay (No date) (P. 60)
Northwest Stormpetrel 11 May 1999 (P. 60)
Havkong 4 April 1999 (P. 53)
Pacific Sandpiper 8 May 1999 (P. 62)
Discovery 2 May 1999 (P. 63)
Maersk Stafford 22 April 1999 (P. 51)
Shenzhen Bay 1 April 1999 (P. 62)
Sachem 27 June 1999 (P. 51)
Bader III 29 June 1999 (P. 61)
James Clark Ross 11 May 1999 (P.64)
British Resource 10 May 1999 (P. 54)
Also in this issue
Page
British Hawk 57
British Skill 61
British Success 61
Charles Darwin 58
Columbo Bay 56
Cordella 53
Eagle 64
Page
Elk 54
Geo Prospector 63
Maersk Humber 61
Maersk Surrey 54
Mark C 52
P&O Nedlloyd Kobe 61
Vine 57

Bioluminescence — Western North Pacific — 11 May 1999

m.v. *Northwest Stormpetrel*. Captain H. Begg. Heading south from Japan. Observers: Captain Begg, C. Easthaugh, 1st Officer and J. Dlask, 2nd Officer.

When the vessel was east of Wakayama, heading south, a clear line of bioluminescence was seen at 1110 UTC at a distance of approximately 2 n mile, stretching for about one mile; the line was incredibly bright and about 300 m wide. As the vessel passed through this line the whole ships' side was illuminated, the effect looking quite spectacular; the First and Second Officers agreed that it was the brightest and largest amount of bioluminescence they had ever seen.

At the time the ship was in position 33° 18′ N, 137° 18.5′ E steering a course of 218° to make good 199° owing to the Kuroshio current running at 4 knots.

Note 1. Dr Peter Herring, of the Southampton Oceanography Centre, said:

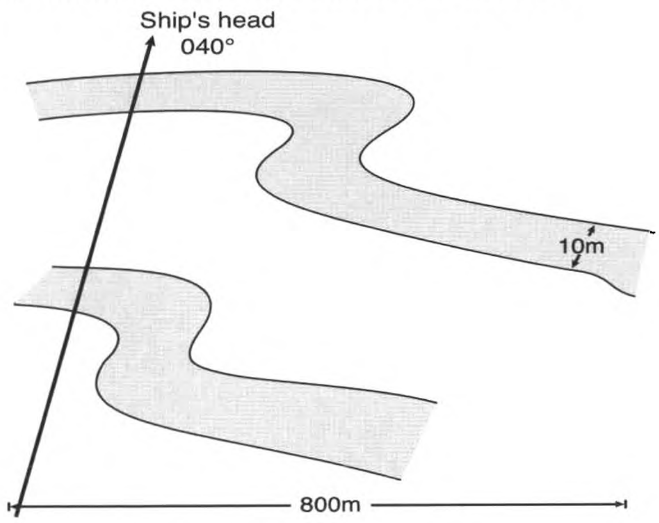
"This sounds like a long band of dinoflagellates, probably *Noctiluca*, a species which occurs in 'blooms' in waters in the area. It floats when the water is calm, accumulates as a thick surface layer and is spectacularly luminescent, as reported here (see pictures in *The Marine Observer*, 68, pp. 19–25). Any turbulence sets off flashes from the millions of cells, and a bow wave or wake is particularly effective. In more normal circumstances, the flashing of these organisms inhibits small crustaceans from eating them."

Note 2. The *Northwest Stormpetrel* is a Selected Ship reporting for the Australian Voluntary Observing Fleet.

Bioluminescence — East China Sea — Date not given

m.v. *Providence Bay*. Captain D. Bachelor.

Two bright bands of bioluminescence were observed ahead of the vessel at about 1400 UTC. As shown in the sketch, the bands were clearly defined about 10 m wide and 800 m long; they were a bright blue-white colour but there were also areas outside them which were milky in appearance. The sea-water temperature at the time was 22.5°, and no motion of the bands was noticed.



Vivid luminosity showed in the bow wave and the wake whilst the vessel was crossing the bands but this soon disappeared after the vessel had passed through them. Two more instances of bow wave luminosity were experienced in the following two hours. The ship's course was 040° at 22 knots, and the sighting was made at 28° 23.4′ N, 123° 28.7′ E.

In brief: Between 1400 and 1800 UTC on 22 May 1999, an adult female Great Frigatebird was sighted fishing along side the *Maersk Humber*, or resting on the vessel. Third Officer L.A. Jenkins and Cadet W. Wallace, who observed the bird during their watch, believed it had arrived from the south-west. The ship's position when the bird was first noticed was 21° 16′ N, 108° 37′ W.

In brief: Bioluminescence in the East China Sea was observed from the *British Skill* at 1119 UTC on 19 April 1999 by Captain B. Pritchard and Second Officer N. Haysom. The sea-water temperature was 15.5°, the wind was NNW'ly, force 3, and the luminescence occurred in the bow wave.

Lunar halo — Indian Ocean — 29 June 1999

m.v. *Bader III*. Captain K.G. Fonseka. Aqaba to Fremantle. Observers: M. Tiu, 3rd Officer and M. Evangelista, 2nd Officer.

At 1400 UTC a halo around the moon was observed. The area within the halo was blue while the inner edge of the halo itself was slightly brown in colour, the rest of it being bright white.

Upon taking the altitude of the moon, it was measured as 60°, bearing 119°. The halo lasted until 1854 but then faded. The weather conditions at the time were: air temperature 25°, wet bulb 23.5°, pressure 1014.6 mb; the cloud cover was 7 oktas comprising patchy altocumulus and altostratus with cirrostratus above them.

Note. The *Bader III* is a Selected Ship reporting for the Australian Voluntary Observing Fleet.

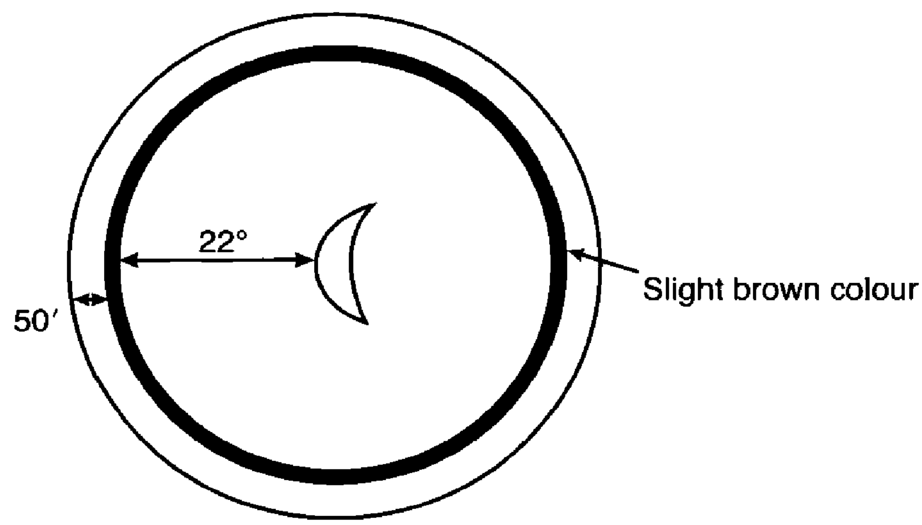
In brief: On 10 June 1999 whilst the *P&O Nedlloyd Kobe* was off the coast of Algeria on passage between Le Havre and the Suez Canal, a strange greenish glow was observed along both sides of the vessel at 0215 UTC, and also in its wake. The luminescence trailed behind the vessel for about 100 m, and lasted for about an hour. After this time it was left behind.

In brief: Whilst the *British Success* was in the Arabian Sea on 3 June 1999, the water colour was noted to be a very green colour, particularly off the coast of Oman. Later in the day, when Third Officer T. Forrest was listening to the BBC World Service programme 'Science in Action' it was explained that this phenomenon was caused by chlorophyll in small organisms.

Lunar halo — Indian Ocean — 1 April 1999

m.v. *Shenzhen Bay*. Captain M. Watts. Singapore to Rotterdam. Observers: Captain Watts, T.B. Leyland, 3rd Officer, S.W. Capes, 2nd Officer, A. Norwood, SM1 and P. Dollery, SM1.

Whilst the vessel was in position 06° 02.1′ N, 90° 27.8′ E when crossing the Bay of Bengal, a lunar halo was observed at 1450 UTC. It was a complete 360° ring of width 50′ encompassing the moon, and was approximately 22° from it as shown in the sketch; no other additional haloes or arcs were noted. The moon's altitude at the time was about 60° and it was bearing 105°.



The halo was formed in the thin veil of cirrostratus that covered the sky. A slight 'brownish' colouration was observed on the inner edge of the ring, and the halo was visible until about 1800 when the cirrostratus dissolved.

Solar halo — North Atlantic Ocean — 8 May 1999

m.v. *Pacific Sandpiper*. Captain T. Greig. Cristobal to Barrow-in-Furness. Observers: J.P. Gaskin, 2nd Officer, C. Brockbank, Radio Officer and L. Johnson, Cadet.

The sun was shining through high altitude cirrostratus cloud and produced a clearly visible halo at about 1700 UTC. The halo, which had a radius in excess of 22°, made a continuous circle, and showed the full spectrum of colours whilst the inner 'mass' of the halo appeared bluish-white. The halo was visible for about two hours.

Note. Although these three reports are of unremarkable halo phenomena, they serve to illustrate how commonly cirrostratus forms the source of observations of optical effects caused by refraction of light through the ice crystals of which it is composed. This is the best cloud in which to look for halo phenomena, but other ice clouds can also produce them, such as fall streak cirrus, virga from altocumulus floccus, contrails, and the anvil tops of cumulonimbus. Carefully looked for, they can be seen on about one day in two, even if only fleetingly.

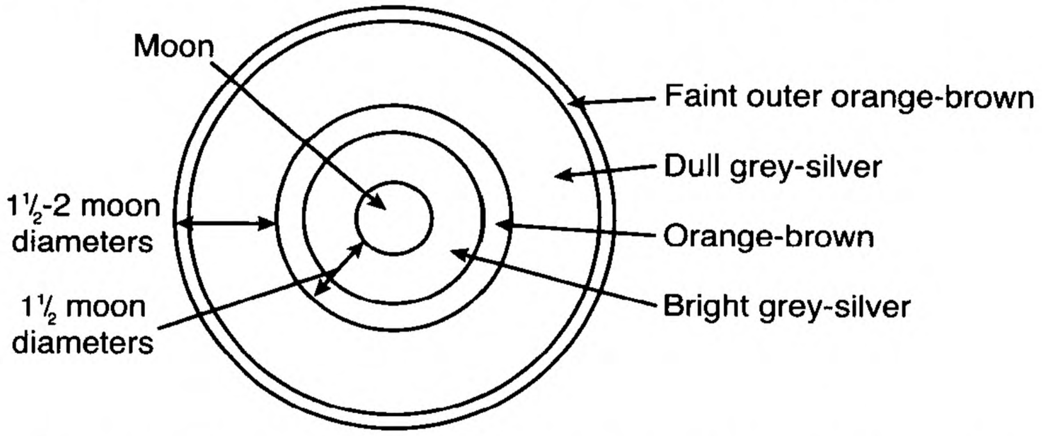
In brief: Significant volcanic activity from Mount Cameroon was watched by observers on board the *Geo Prospector* on the nights of 5 April and 14 April 1999 when the vessel was anchored at 03° 54′ N, 09° 10.6′ E.

Eruptions and flowing lava were clearly seen on both occasions; on the latter night the wind was noted to be stronger than usual from the north-west and there was also an increase in the air temperature.

Corona — English Channel — 2 May 1999

C.L.S.D.V. Discovery. Captain D. Young. Las Palmas to Dover. Observer : M. Fitrzyk

A lunar corona was sighted at 2300 UTC when the vessel was on a heading of 050° about 7 n mile north-west of Pointe de Creach. As shown in the sketch there were distinct rings or circles surrounding the moon. First there was a bright grey-silver area; this was followed by an orange-brown ring and then another grey-silver ring, which was duller than the first one but slightly wider.



By 0200 on the 3rd a faint orange-brown band was just visible encircling the outer grey-silver area but it was about half the width of the inner coloured band. The outer coloured ring and silver-grey area had faded by 0230 while the inner bands had become much paler by this time. The corona was no longer visible by 0245. The cloud type appeared to be cirrostratus not exceeding 45°.

Note. The report describes a corona, and this is supported by the sketch which indicates the formation of the aureole around the moon (the first silver-grey ring surrounded by a red-brown ring) and then the outer rings to form the full corona. In bright light conditions it would be realised that the two "outer rings" would be a single band showing the full spectrum with red on the outside, but as with the observation of halo phenomena at night, the human eye does not detect many colours at the 'blue' end of the spectrum in low light conditions.

The report states that cirrostratus was apparently the cloud type in which the corona formed; this is unlikely since this cloud comprises ice crystals which employ refraction of light rays through them to produce optical phenomena, whereas the corona is formed in or at the edge of water-based clouds by diffraction.

Meteor — South Atlantic Ocean — 11/12 May 1999

R.R.S. James Clark Ross. Montevideo to Ascension Island. Observers: R. Kilroy, 2nd Officer and A.M. Bowen, Lookout.

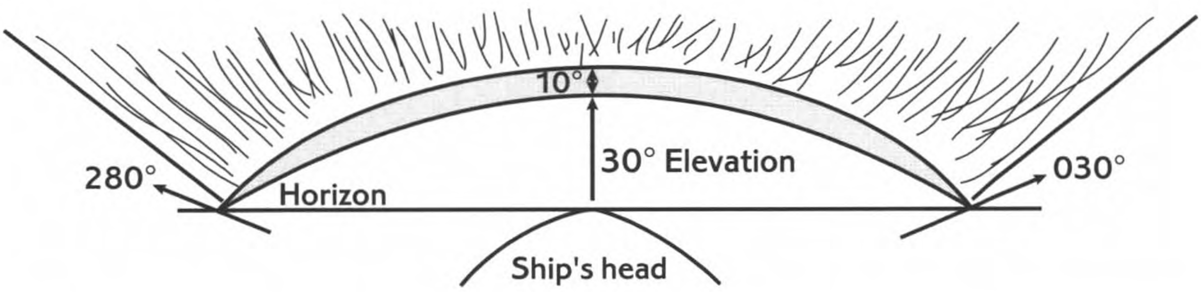
An unusually slow but bright 'shooting star' was seen at 0258 UTC on a bearing of about 356°. It left little in the way of a trail, burning out in two bright and distinct bursts of light which were brighter than anything else in the sky. These lights were estimated by both observers to be of similar intensity to that of a lightning flash which might be seen from an electrical storm 10–15 n mile away.

The vessel's course and speed were 039° at 11.5 knots, and the sighting was made from 17° 24′ S, 21° 40.1′ W.

Aurora borealis — North Sea — 16/17 April 1999

m.v. St Clair. Captain N. Barnes. Aberdeen to Lerwick. Observer: E.G. Mackay, Chief Officer.

A milky-white arc was seen along the horizon between 0100 and 0230 UTC on the night of 16/17 April 1999, see sketch. The bearing of the arc's highest point was approximately 010°, while its ends bore 280° and 030°. The elevation of the outer edge of the arc at its highest point was 40° and, at this part, the arc was 10° deep. Pulsating finger-like rays could be seen emanating from the arc.



Weather conditions at the time were: dry-bulb temperature 4.5°, wind NW'ly, force 5/6, the cloud cover was 4 oktas and the visibility was 12 n mile or more. The ship's heading was 006° in position 59° 05′ N, 01° 23′ W.

Note. This report was passed to Ron Livesey, Director of the Aurora Section of the British Astronomical Association, who said, "This was the night of a significant auroral and magnetic storm due to a solar wind shock wave impact. The aurora was well seen from Scotland and later from North America as the Earth rotated under the active aurora. Rays were reported to reach the zenith in the early morning, as noted by meteorological office staff at Kirkwall, while the aurora covered most of the sky in North Dakota, as noted by Jay Brausch at Glen Ullin."

In brief: A lunar halo was first noted by Third Officer D. Grunoy at 2200 UTC on 28 May 1999 whilst the *Eagle* was on passage from the Antilles to Bonny. It was a complete ring around the moon, and had a radius of approximately 23°; it was white in colour and very 'blurred' in appearance. The halo was still visible at 0100 on the 29th, the moon's altitude being 65° by that time.

Scene at sea

Captain P.W. Jackson

A Corncrake (*Crex crex*) which visited the *Seki Pine* on 25 May 1999 whilst the vessel was in the Mediterranean Sea. (More details on page 57.)

Captain P.W. Jackson

A European Bee-eater (*Merops apiaster*) making a colour-coordinated appearance with the *Seki Pine* on 8 May 1999, in position 41° 43′ N, 03° 55′ E. The observers had never before seen this species on board during many years of travelling in the region; the bird arrived on the bridge wing at about 1000 UTC and fearlessly 'posed' for photographs.

Sea temperatures in the Gulf of Tehuantepec

Early in December 1999 Captain Andrew Ward e-mailed The Met. Office (Observations–Voluntary (Marine)) whilst his vessel, the *Dominica* (Interocean Ugland Management AS) was in the Gulf of Tehuantepec working her regular run between California, Ecuador and Guatemala. Captain Ward had a query for us. What was the explanation of the following phenomenon?

On several voyages, marked changes of sea temperature had been observed in the gulf, on each occasion accompanied by different states of tide and wind direction. The observations below are typical of the phenomenon, and were made on 1 and 2 December 1999 when the vessel's heading was 287° at 20 knots.

Date and time (UTC)		Position	Sea temperature
1 Dec.	1430	14° 05′ N, 92° 35′ W	29.2°
	1730	14° 21′ N, 93° 48′ W	25.5°
	2030	14° 40′ N, 94° 48′ W	20.0°
	2100	14° 44′ N, 95° 00′ W	18.0°
	2300	14° 56′ N, 95° 42′ W	18.0°
2 Dec.	0230	15° 19′ N, 97° 00′ W	29.2°

Not having an answer immediately to hand, we contacted colleagues in the Ocean Applications section, and Chris Gordon (Manager of Global and Sea-ice modelling) told us that this marked variation in temperatures has been observed in satellite data as well as actual sea-surface temperature observations. Although no satellite image is available for the period in question, the image shown in Figure 1 is for 21 January 1989, and it seems that this phenomenon happens quite regularly. The blue colours show cold water, and red warm; there is an 8° change between the cold and the warm.

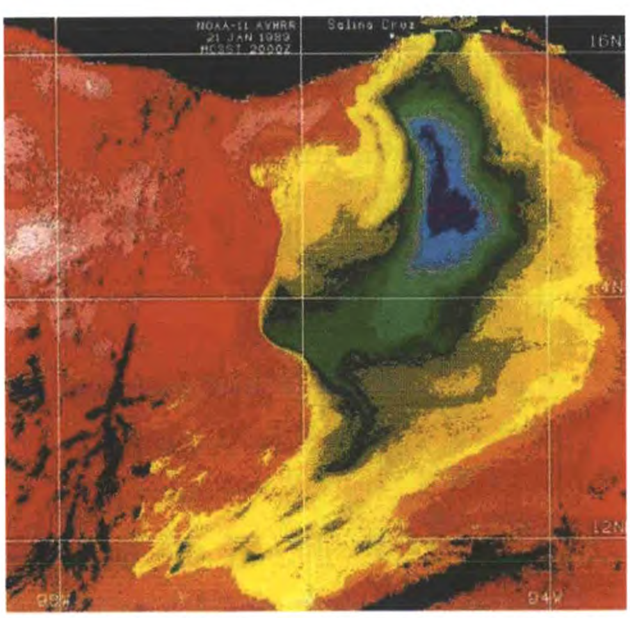


Figure 1. Satellite image showing sea temperature variation.

As to why the phenomenon occurs, it probably happens when strong winds blow across the isthmus separating the Gulf of Mexico from the North Pacific Ocean. The mountain ranges of Central America prevent contact between the two sides below about 2,000 m, but at Tehuantepec a narrow pass allows the pressure on the Gulf of Mexico side to be relieved in the form of a wind blowing out towards the Pacific. The wind can be strong for several days but occurs intermittently according to conditions on the northern side of the isthmus. The overall effect can be likened to a jet of air blowing into quiet conditions.

The ocean's response is very marked; a drop in the surface temperature of up to 8° in 12 hours can occur owing to currents generated by the wind, particularly vertical upwelling currents which cause cold water to be drawn up and mixed with the warmer surface layer.

It is probable that when notable changes in the sea-surface temperature occur in the region indicated by the positions of the *Dominica*, there may well have been strong offshore winds blowing 12–24 hours earlier.

Acknowledgement

We hope this explanation answers the question, and our thanks go to Chris Gordon for his assistance in producing it.

Editor's note. We are always pleased to receive e-mails from observers. News, views and your non-meteorological observations can all be mailed to: *obsmar@meto.gov.uk*

'Excellent' Awards for 1998 — unclaimed awards

In August 1999 Masters and observing officers nominated to receive awards in recognition of excellent voluntary weather observing during 1998 were notified by post of their selection, and their names were subsequently published in the October 1999 edition of this journal.

At the time of going to press we have received claims from approximately two-thirds of the 300 nominees concerned. The closing date for the receipt of claims, 30 April, fast approaches, and the following list gives the names of all those who were included in the 1998 round of awards but who have yet to contact us. This list should be considered the 'final call' since the selection process for the next round of awards will commence shortly.

Observers are reminded that claims dated after the cut-off point will be honoured by an award not in the form of a book, but by the issue of a certificate in recognition of an excellent standard of weather observation work.

Captains: A.J. Clarke, E. Czapelski, E. Fransson, M.J. Heffer, P.A. Miley, J.J.Millar, B.C. Pritchard, A.K. Rangi, S.M. Ross, J.W. Scarisbrick, Y. Sharma, J.A. Smeeton, A.P. Talbot.

Observing Officers: F. Abarintos, L. Abarquez, A.H. Alday, E. Almeida, J. Almeida, D.C. Alwis, J. Aquilino, R. Aurora, T. Bailey, R.S. Baldisimo, I.C. Beaton, J.C. Bennett, A.W. Blance, B. Brown, A.T. Buchan, D.S. Canceran, S.R. Cloutte, J.D. Crasto, G.J. Culkin, J.M. Davis, R.M. De Castro, K.A. Desai, P.D. Dewan, P.D. Dhule, K.S. Dowden, E.E. Erispe, J. Evalle, S.A. Fernandez, D.A. Grennan, S.J. Gyasi, M. Haque, C.C. Heil, K. Henderson, H. Herath, K. Klyvcharez, N. Kumar, Lau Hill Chu, D.B. Lemon, F.B. Longanilla, K.F. MacDonald, R. Marcos, K.M. Matthews, W.U.C. Mendis, F.F. Mercado, G.S.G. Millar, M.V. Miranda, A.J. Morton, M.L. Mullins, D. Murray, T.W. Noronha, A. Onasis, J.E. Parnaby, F.R.Patel, B.G. Patnakar, J. Pearson, D.E. Peroy, B.K. Quayson, J.A. Richardson, P.A. Rock, G.B. Rodrigo, J. Salgado, J. Samaramash, R. Sayomac, P. Seaney, D.A. Selvido, M. Shahadah, F.R. Shaikh, R. Sim, D.S. Sime, C. Sivakumaran, K. Sridhar, J.R.T. Svalle, J. Tabisaura, B.D. Tucker, S.G. Vaswani, A.C. Villas, J. Virgilio, P. Williams.

Anyone named above should contact us as soon as possible so that their award can be processed; either write to the address given at the front of this journal or contact any UK Port Met. Office. Alternatively, ring our offices on +44 (0)1344 855656, or fax +44 (0)1344 855921, or e-mail *obsmar@meto.gov.uk*. Your Discharge Book or Seaman's Book number will be required, together with an address to which the award can be sent.

Editor's note. Some observers may, on occasion, question the value of their observations in these days of satellites and automation. They may perhaps feel that their observations are destined for a 'black hole' once they have been transmitted into the ether. The following article is intended to dispel such fears and to emphasise the continuing importance of quality weather observations to modern forecasting.

The value of ship data in Numerical Weather Prediction

By R.K. Dumelow and M.J. Bader
(The Met. Office, Numerical Weather Prediction Division)

Introduction to Numerical Weather Prediction

Modern weather forecasting depends largely on the use of mathematical models that describe the motions of the atmosphere that produce the weather. These models comprise sets of equations which give the rate at which the atmospheric variables (pressure at mean sea level (PMSL), wind, temperature and humidity) change. Solving these equations requires a huge number of numerical calculations. Forecasting using such 'models' is called Numerical Weather Prediction (NWP).

Observations at the Earth's surface and aloft provide a three-dimensional picture of the state of the atmosphere at a particular time. This snapshot, called the 'analysis', is used as a starting point for running the numerical forecast. Thus, information from observations forms a key part of the forecasting process.

Distribution of marine observations

For producing global forecasts, it is necessary to know about the weather over the entire planet. There are many sources of information: weather balloons are launched throughout the world mainly from land areas, commercial aircraft report weather observations during flight, and satellites observe the weather from space. However, over the oceanic areas there are few sources of directly measured observations. Figure 1 shows a typical global distribution of ship reports at 0000 UTC. The figure shows that reports are made mostly within the main shipping routes, particularly in the North Atlantic and North Pacific Oceans, while fewer reports are received from tropical areas, and fewer still from the Southern Hemisphere. The value of these reports depends not only on their wide geographical distribution, but also on how often they are taken. A typical global distribution at 1200 UTC (not shown) is similar to that at 0000 UTC, giving consistency of reporting between midnight and midday.

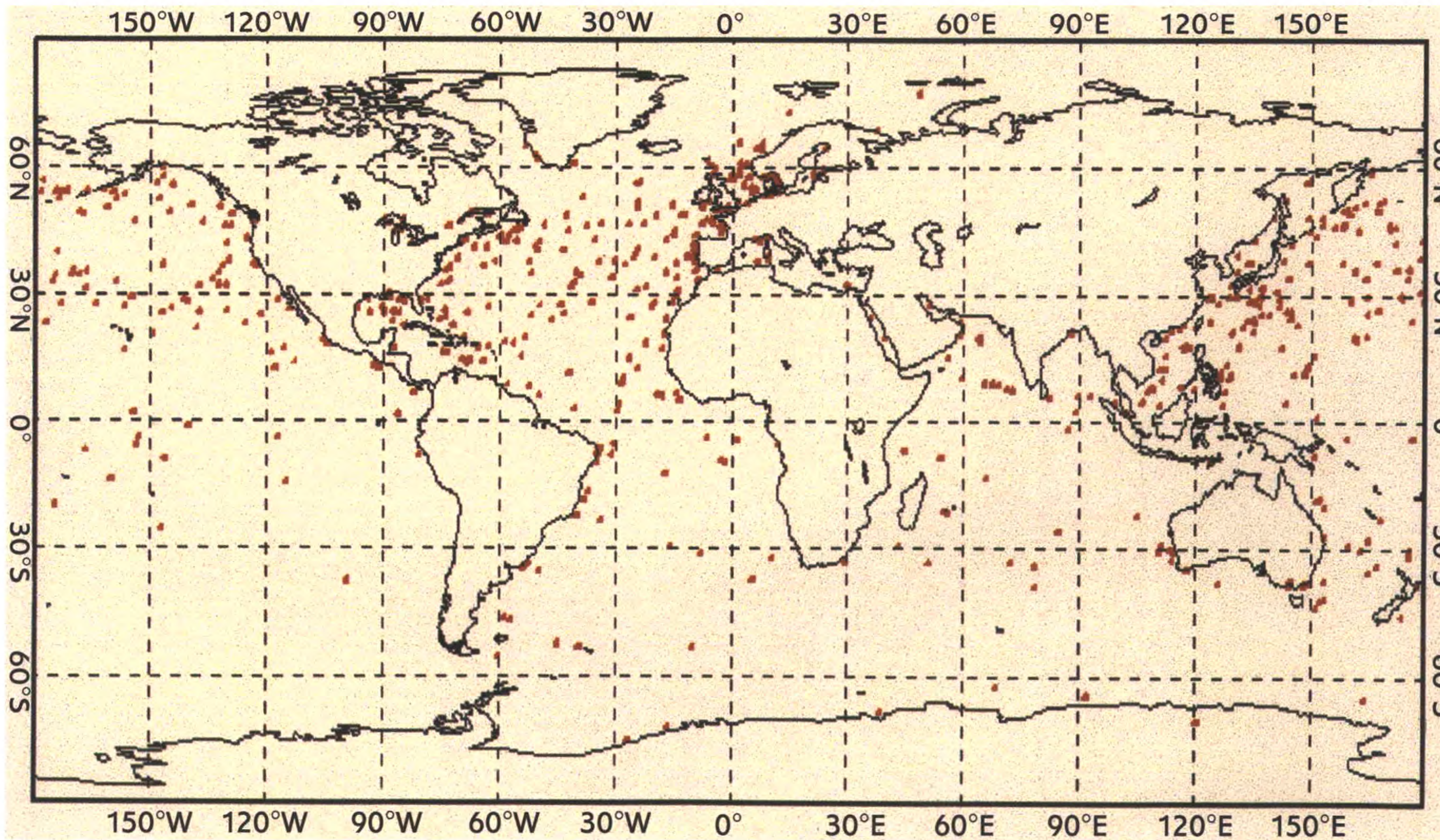


Figure 1. A recent example (on 21 December 1999) of the global distribution of ship data at 0000 UTC. Red dots indicate ship positions.

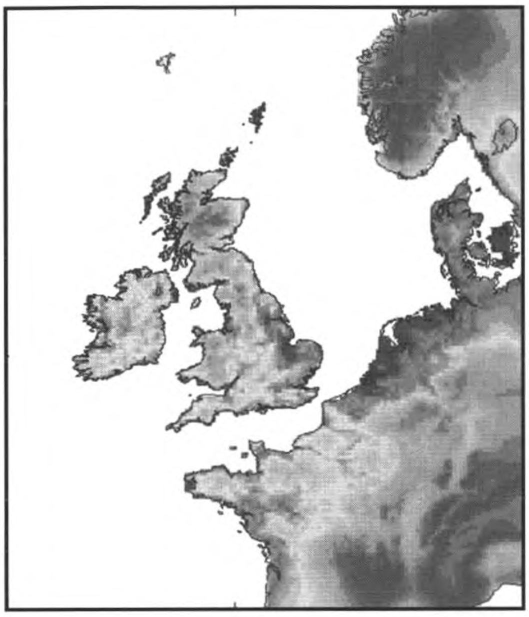


Figure 2. The Met. Office mesoscale model domain.

In addition to running a global model, The Met. Office runs a high-resolution, limited area forecast model (called the 'mesoscale' model) that provides detailed forecasts for the UK and surrounding area (Figure 2). This model ideally requires higher resolution observational data (approximately 75 km spacing) in order to provide an initial representation of the small-scale features that the model forecasts. Figure 3 shows a typical distribution of surface marine data around the UK. These reports come predominantly from ships, but also from moored buoys, and fixed platforms such as oil rigs. Although this density of reporting is much higher than the global average (Figure 1), it is still below that considered necessary to provide the optimal analysis for the mesoscale model. All existing and any new data that can be obtained from near the UK are thus considered valuable for providing the best possible analysis for the mesoscale model.

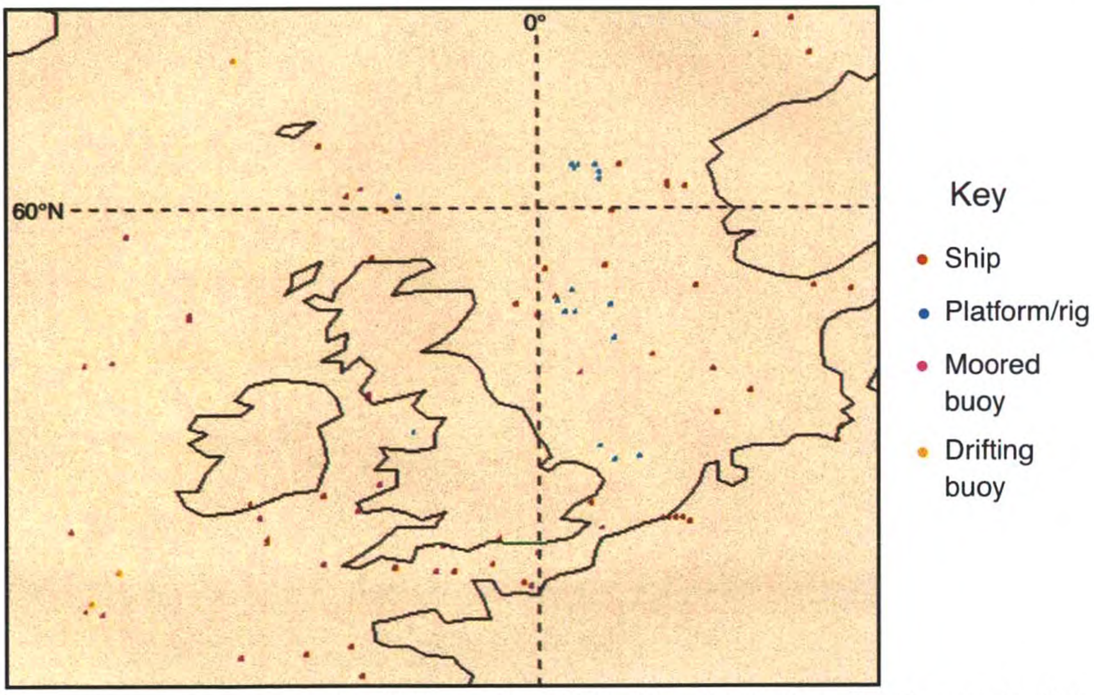


Figure 3. A recent example (on 21 December 1999) of the distribution of surface marine data around the UK area at 0000 UTC, showing the positions of ships, buoys and platforms.

Method of observational data receipt and monitoring

The flow of information between ships and NWP is illustrated schematically in Figure 4. Reports from the UK Voluntary Observing Fleet are received at Bracknell where they are stored, along with observations from other ships and sources, in a computer database called the Meteorological DataBase (MetDB). Ship observations are extracted from the MetDB and are subject to quality control checks prior to use in NWP. The PMSL and wind observations are then used directly to influence the analysis for the forecast run. The forecasts produced by NWP models are sent to the National Meteorological Centre (NMC) where shipping forecasts are among the many products.

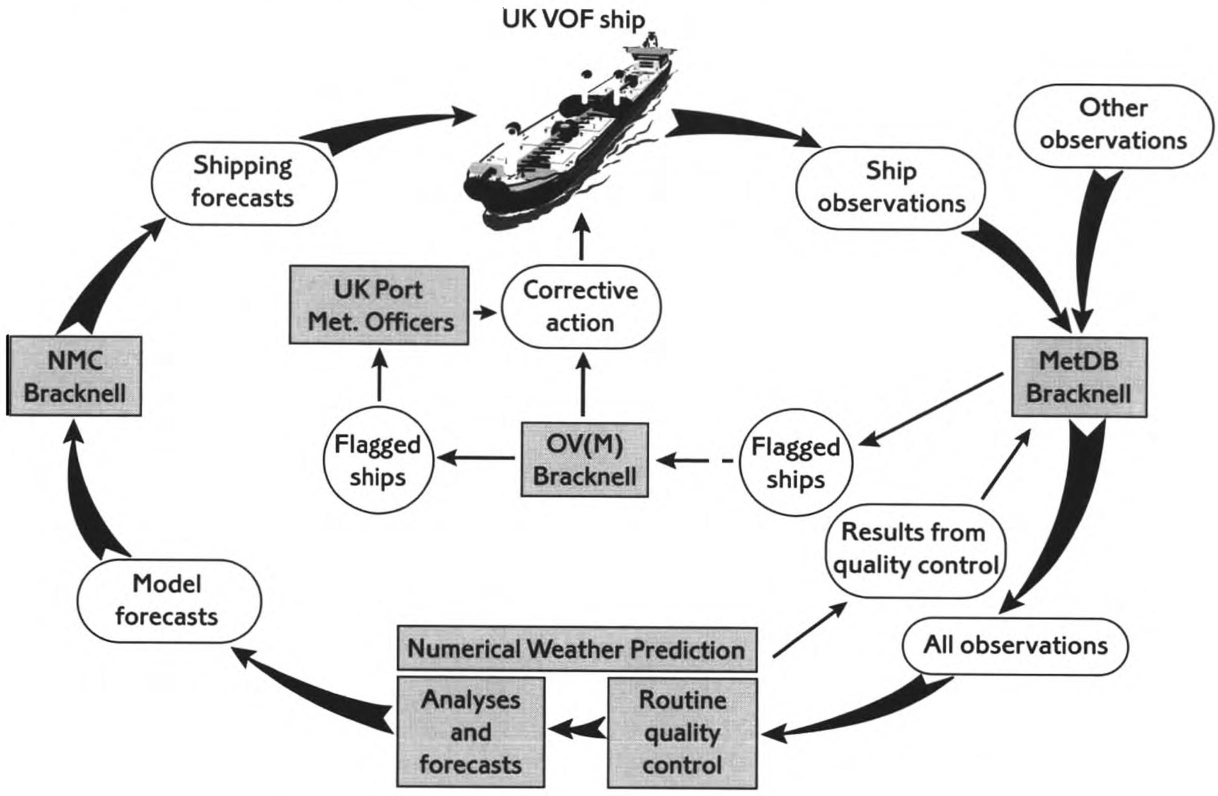


Figure 4. A schematic diagram showing the flow of data between a ship and The Met. Office, Bracknell.

Results from the routine quality control of ship data are stored in the MetDB and examined on a monthly basis. Those ships whose data are consistently 'flagged' by quality control checks as being outside acceptable limits are prevented from being used in analyses and consequently cannot influence forecasts. However, those ships whose observations of PMSL have a persistent bias are not rejected but have a correction applied before being used.

The names of ships whose data have been flagged are listed and passed to the Observations–Voluntary (Marine) branch (OV(M)), who may contact the relevant vessel(s) directly, or distribute the list to UK Port Met. Officers. They can check individual ships, when in UK ports, to investigate whether there are problems with the siting or calibration of any meteorological instruments, or with the transmission of the reports to Bracknell. The monitoring of ship reports thus forms an important part of the forecasting process; it provides an opportunity to improve the accuracy of observations, resulting in more accurate forecasts.

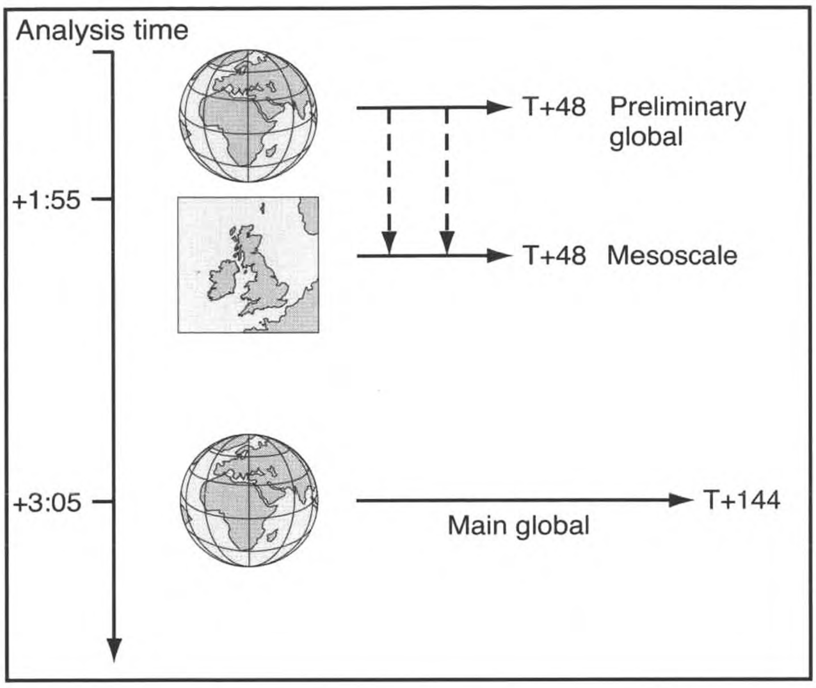


Figure 5. Data cut off times for mesoscale and global model runs. The 'Preliminary global' run (analysis times 00, 06, 12, 18 UTC) provides forecasters with initial, short-range guidance and supplies information to the mesoscale model. The 'Main global' (analysis times 00 and 12 UTC) produces longer range forecasts. (After *NWP Gazette*, September 1999.)

Given tight schedules for the production of forecasts, it is vital that ship reports are quickly despatched and stored in the MetDB. The latest times of receipt for observations to be used in both global and mesoscale models are shown in Figure 5. These 'data cut off' times are the times at which the model run starts, and so are the latest times at which ship reports must be received by the MetDB if they are to influence a given forecast run. However, reports received later than the cut off times are still important because they influence later forecasts and may also be used as the 'truth' against which to verify the quality of forecasts.

Overall benefit of ship data

In order to assess the extent to which ship reports benefit forecasts, a numerical forecast model may be re-run *without* the ship data in the analysis and compared with the forecasts in which the ship data are included. Some experiments have been performed in which all ship data are taken out globally, and some in which groups or even isolated reports are removed. In order to sample a wide variety of weather types, periods from different seasons have been selected for these experiments. Evidence of the impact of ship observations from different parts of the world is given in the following studies.

(a) Global impact

Atlas (1997) carried out a study in which all the data from ships (and drifting buoys) were eliminated from analyses during a 30-day period in July 1993, and six five-day forecasts were run. Results showed that the effect of losing the surface marine data was to degrade the forecast quality of PMSL by one-quarter to half a day, on average, at forecast ranges up to five days in both the Northern and Southern Hemispheres. (Thus for a half-day degradation, a 24-hour forecast run from an analysis excluding the surface marine data was no better than a 36-hour forecast run from an analysis with the data included.) Since ship data typically account for 50–60 per cent of all surface marine data, it can be inferred that at least half of the benefits seen in Atlas's study were attributable to observations from ships.

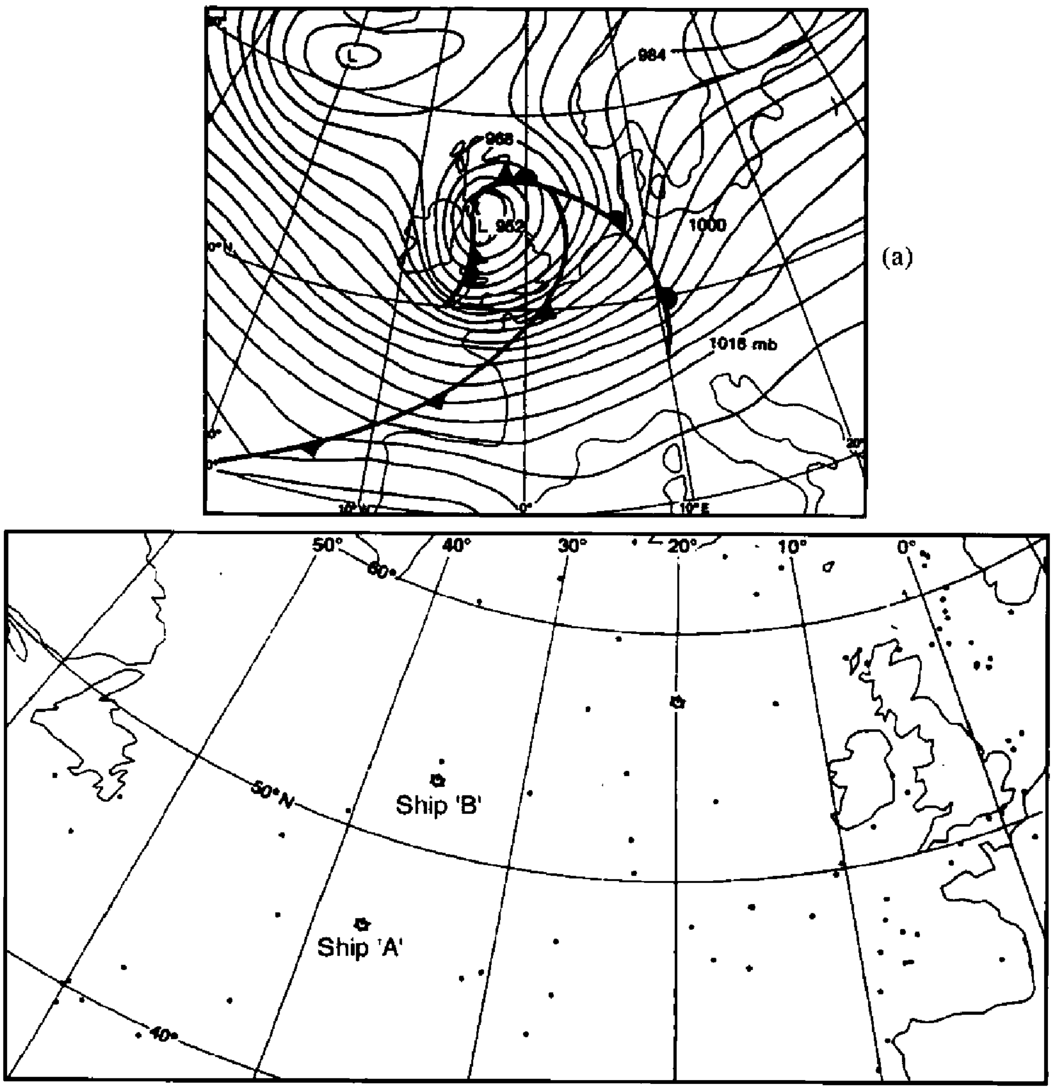


Figure 6. (After Heming, 1990.) (a) Analysis of observed PMSL (mb) for 1200 UTC on 25 January 1990. (b) Distribution of surface and upper-air marine observations at 1200 UTC on 24 January 1990 marked by dots and stars respectively.

(b) Impact over the North Atlantic and Western Europe

Case 1: 'Burns Day Storm'

The mean impact of observations averaged over many forecasts, very often hide specific cases in which ship data can have a significant effect on the outcome of a forecast. For example, upper air data from weather balloons launched from ships considerably improved forecasts by The Met. Office for the 'Burns Day Storm' of 25 January 1990 (Heming, 1990). The depression responsible (Figure 6(a)) produced gale force winds over most parts of England and Wales. Mean wind speeds exceeded 50 knots in many coastal areas and gusts of over 90 knots were reported.

A re-run of the 24-hour forecast for this storm, with the upper air data from two ships ('A' and 'B') removed from the analysis (Figure 6(b)), produced a depression with a central pressure 8 mb shallower than the operational forecast that ran from an analysis that used the ship data (compare Figure 6(c)(i) and (ii)). The forecast PMSL pattern resulted in winds, particularly over the south-west of the UK, that were stronger in the forecast with the two ships' observations than without.

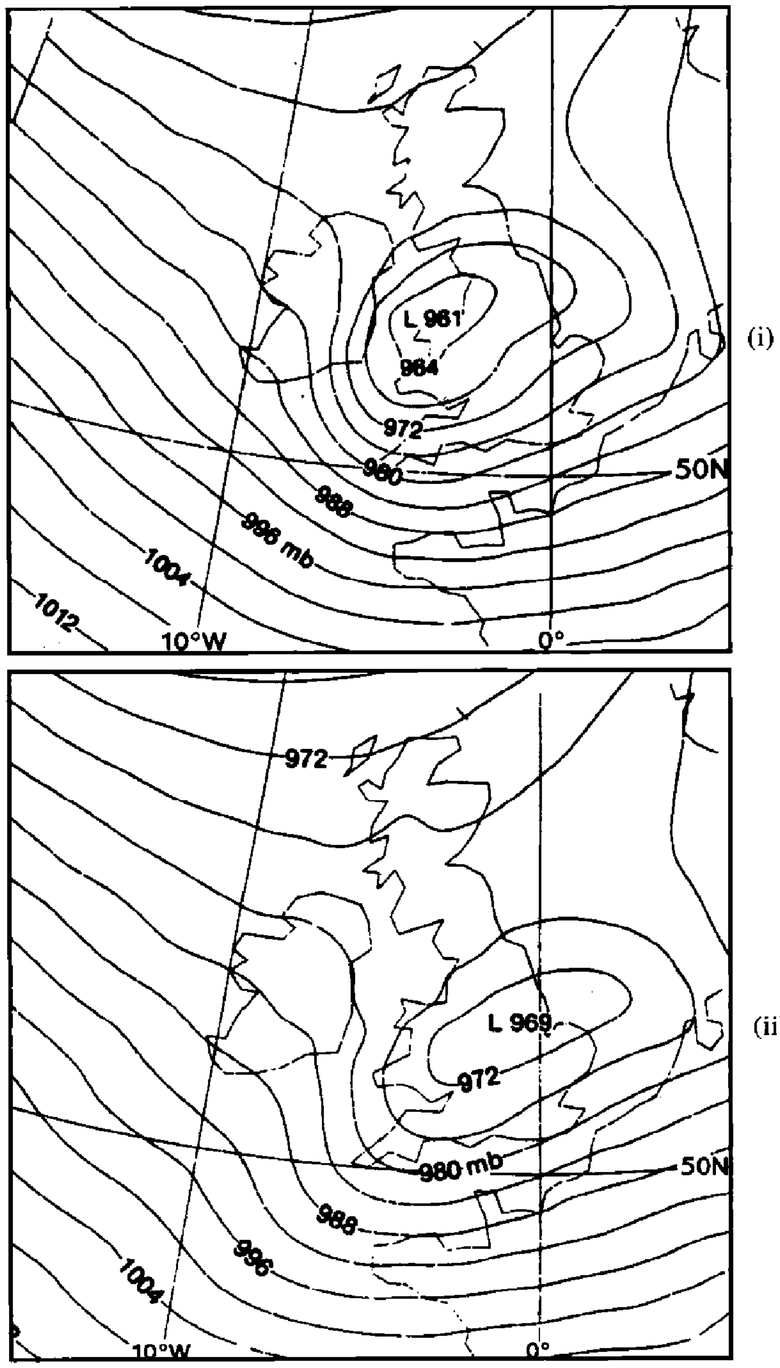


Figure 6. (Contd.)

(c) 24-hour forecast of PMSL (mb) for data time 1200 UTC on 24 January 1990: (i) with Ship 'A' and Ship 'B', and (ii) without Ship 'A' and Ship 'B'.

Case 2: Newfoundland re-analysis

The effect of a ship's surface observations alone can be dramatic if the ship happens to be in a 'synoptically sensitive area' where, for example, a low pressure system is forming. Sienkiewicz (1990) showed an example of how ships near Newfoundland gave important information to forecasters about the analysis of a developing depression. Mainly as a result of an observation of PMSL from the ship *Atlantic Compass*, the operational analysis of a depression changed dramatically. At 0000 UTC on 3 July 1989, the central pressure of the low was analysed as 1009 mb (Figure 7(a)). With the benefit of the ship's observation that was taken six hours later, the central pressure was reduced to 970 mb (Figure 7(b)). As a result of this re-analysis, storm warnings were issued.

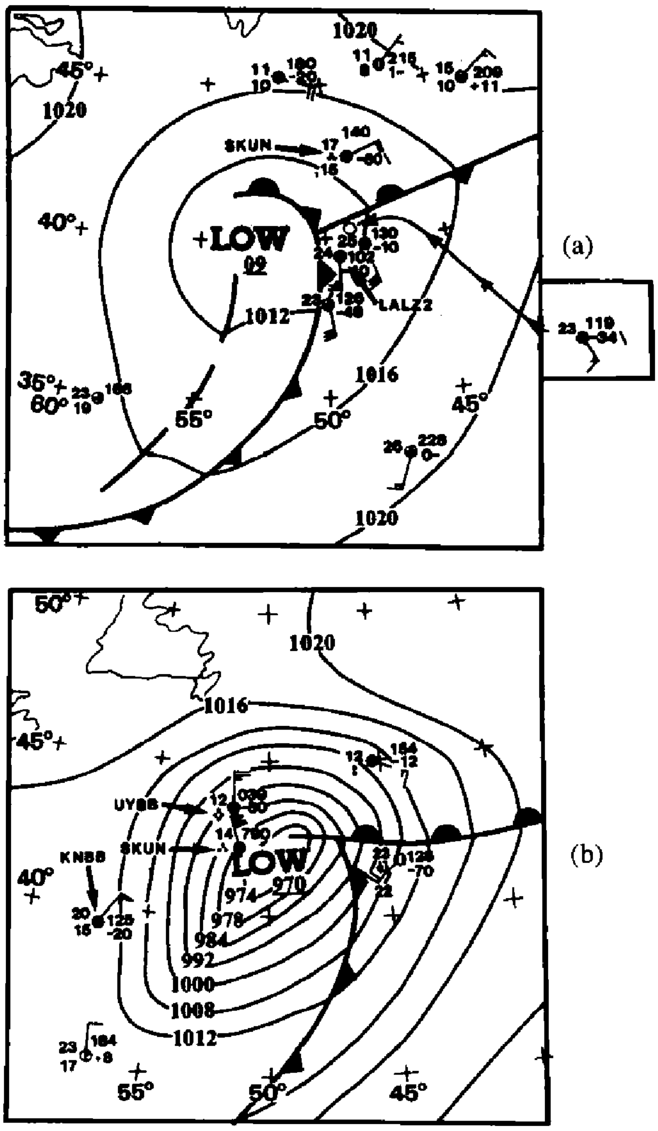


Figure 7. PMSL analyses (mb) on 3 July 1989 near Newfoundland. (Sienkiewicz, 1990.)

(a) 0000 UTC. An additional ship report is plotted to the right of the chart to avoid overcrowding the data. The *Atlantic Compass* has call sign SKUN and is reporting a pressure of 1014.0 mb.

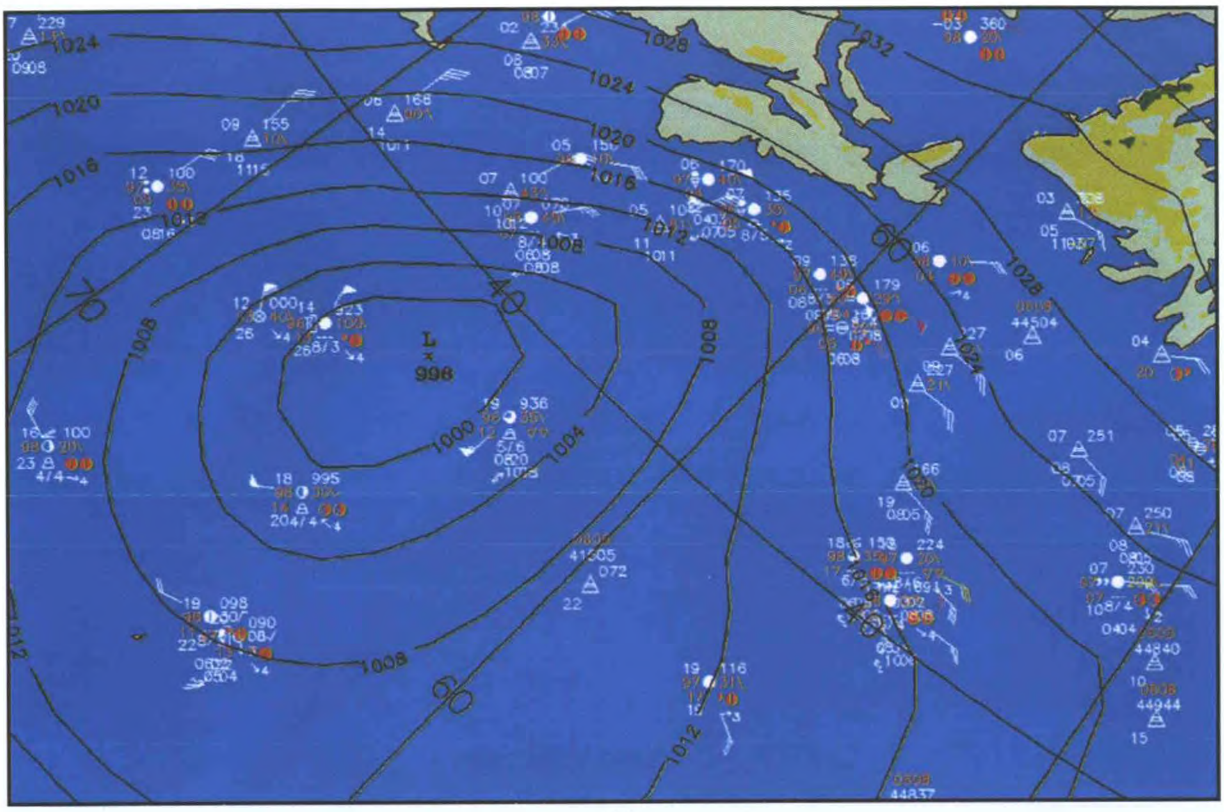
(b) 0600 UTC, with report of 979.0 mb from *Atlantic Compass*.

Note. The variable isobar interval in (b).

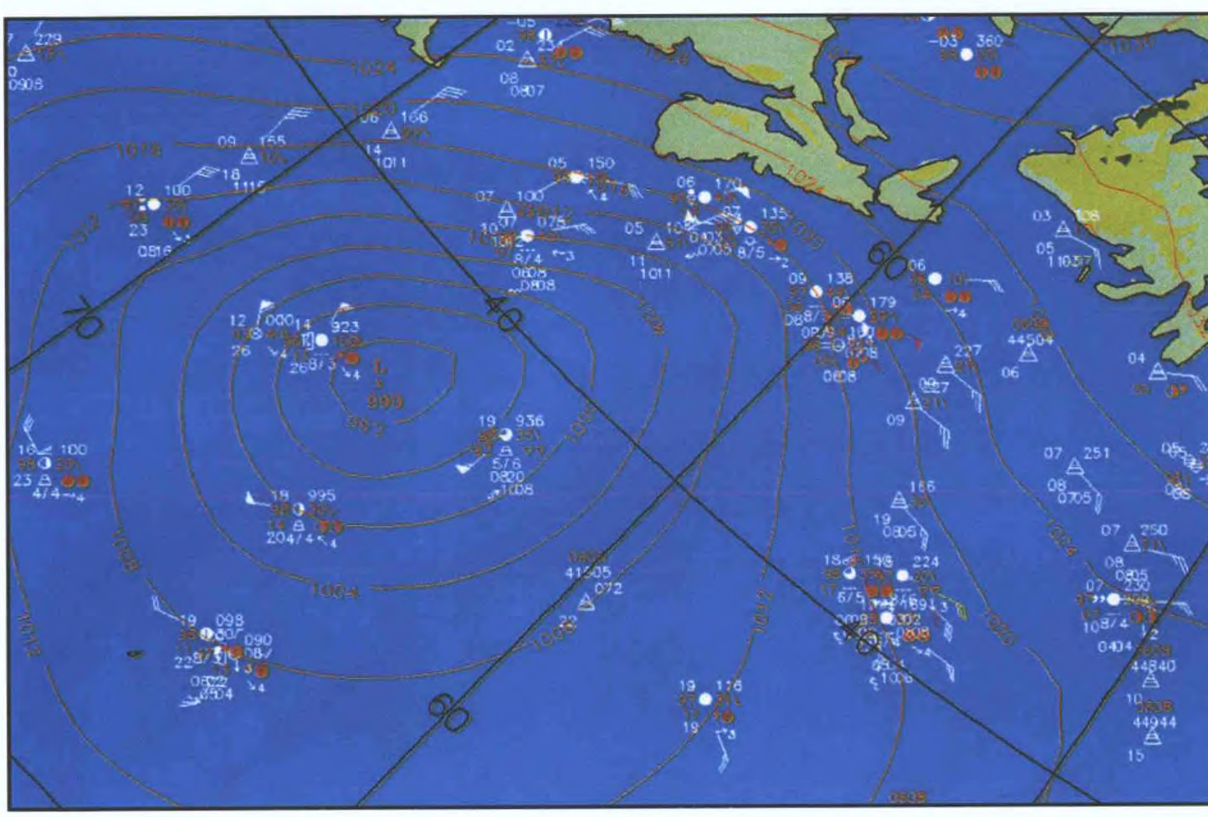
Since 1989 there have been improvements in the accuracy and availability of other data (such as satellite data), as well as the mathematical techniques used for producing the analyses for model forecasts. Therefore, an individual ship report is less likely to have such a dramatic effect on a model analysis over the North Atlantic. However, recent examples showing the importance of surface ship data for NWP are readily obtainable, as the following example testifies.

Case 3: Recent Atlantic storm

The 6-hour forecast from The Met. Office global model, starting from an analysis valid at 0000 UTC on 1 December 1999 and verifying six hours later, showed a depression with a centre of 996 mb (Figure 8(a)). At about the same time, surface reports from ships in the positions shown in Figure 8(a) were received at Bracknell, and were used in the 0600 UTC analysis (Figure 8(b)). It can be seen, by comparing these figures, that including these ship reports lowered the central pressure of the depression by 6 mb. Consequently, the 12-hour forecast of near-surface winds run from the 0600 UTC analysis (Figure 8(c)), correctly produced stronger winds, especially to the south and south-west of Nova Scotia, compared with the 18-hour forecast run from the 0000 UTC analysis (Figure 8(d)) which was valid at the same time.



(a)

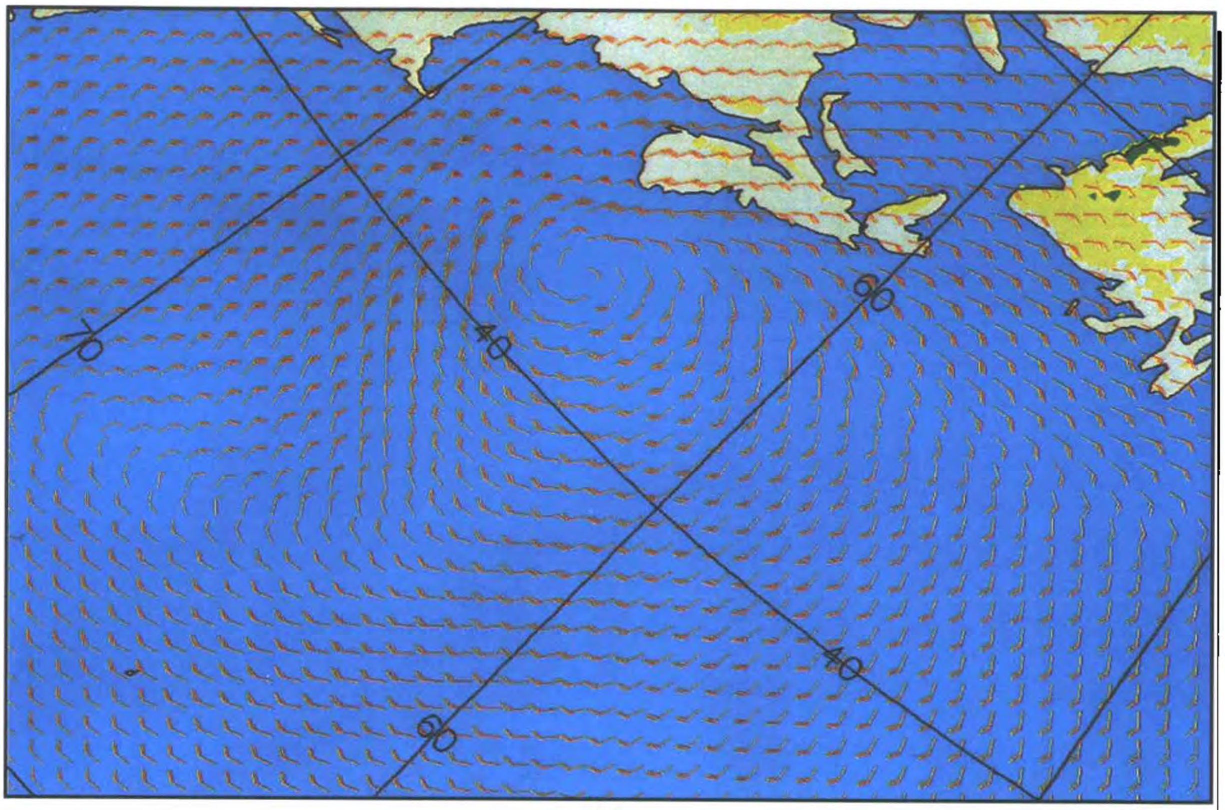


(b)

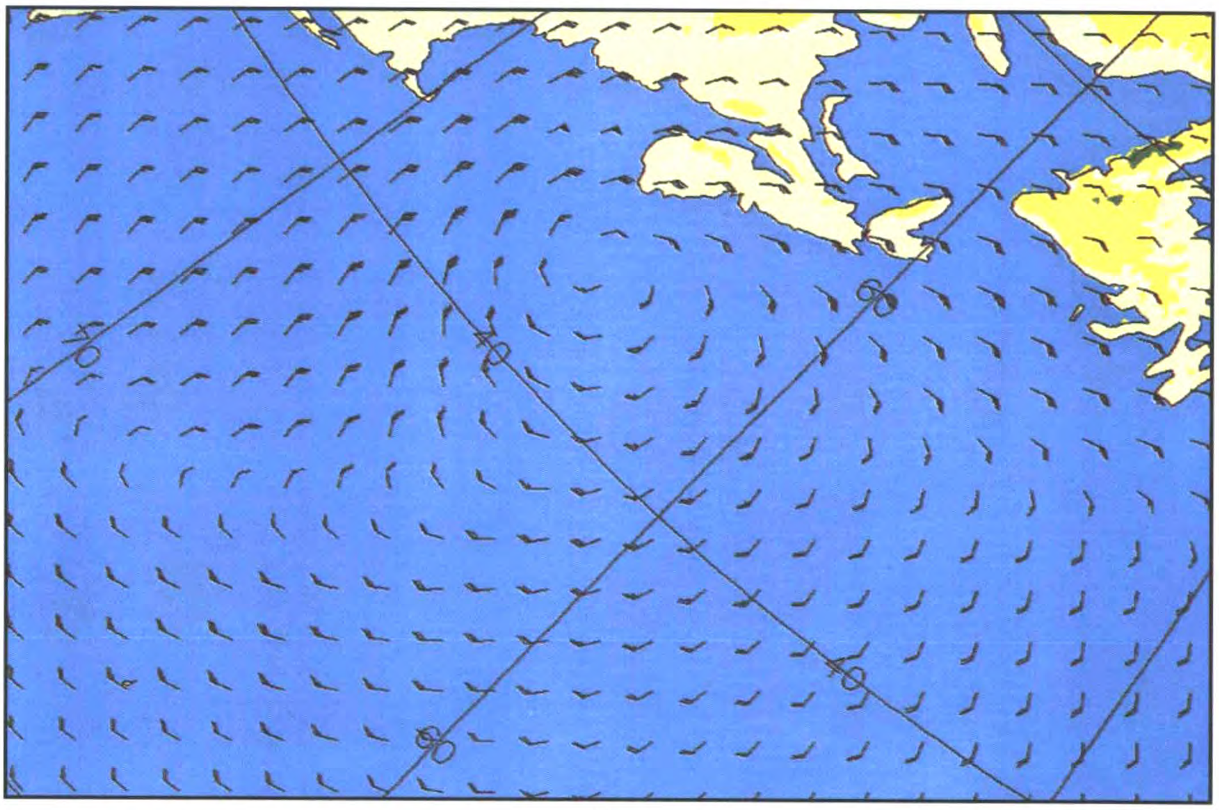
Figure 8. Analyses and forecasts of the depression over the North Atlantic on 1 December 1999. (Courtesy M.V. Young)

(a) 6-hour forecast of PMSL (mb) from 0000 UTC. Observations plotted are valid for 0600 UTC.

(b) PMSL (mb) analysis for 0600 UTC with the same observations as in (a). Note that the analysis has deepened the depression in order to fit the pressures reported by the ships.



(c)



(d)

Figure 8. (Contd.)

(c) 12-hour forecast of near-surface winds from the 0600 UTC analysis.

(d) 18-hour forecast of near-surface winds from the 0000 UTC analysis. Note that the winds are plotted at twice the spacing shown in (c).

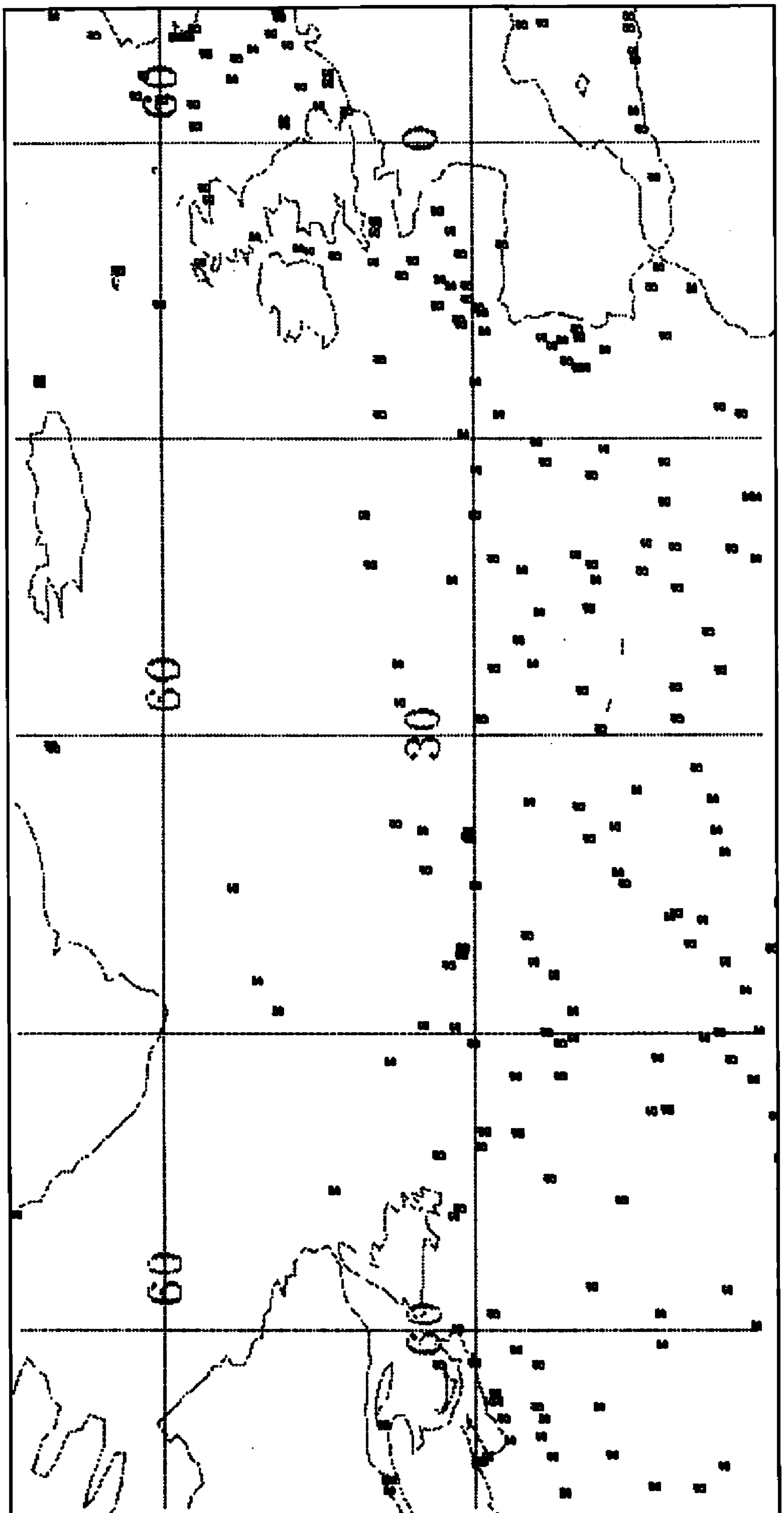
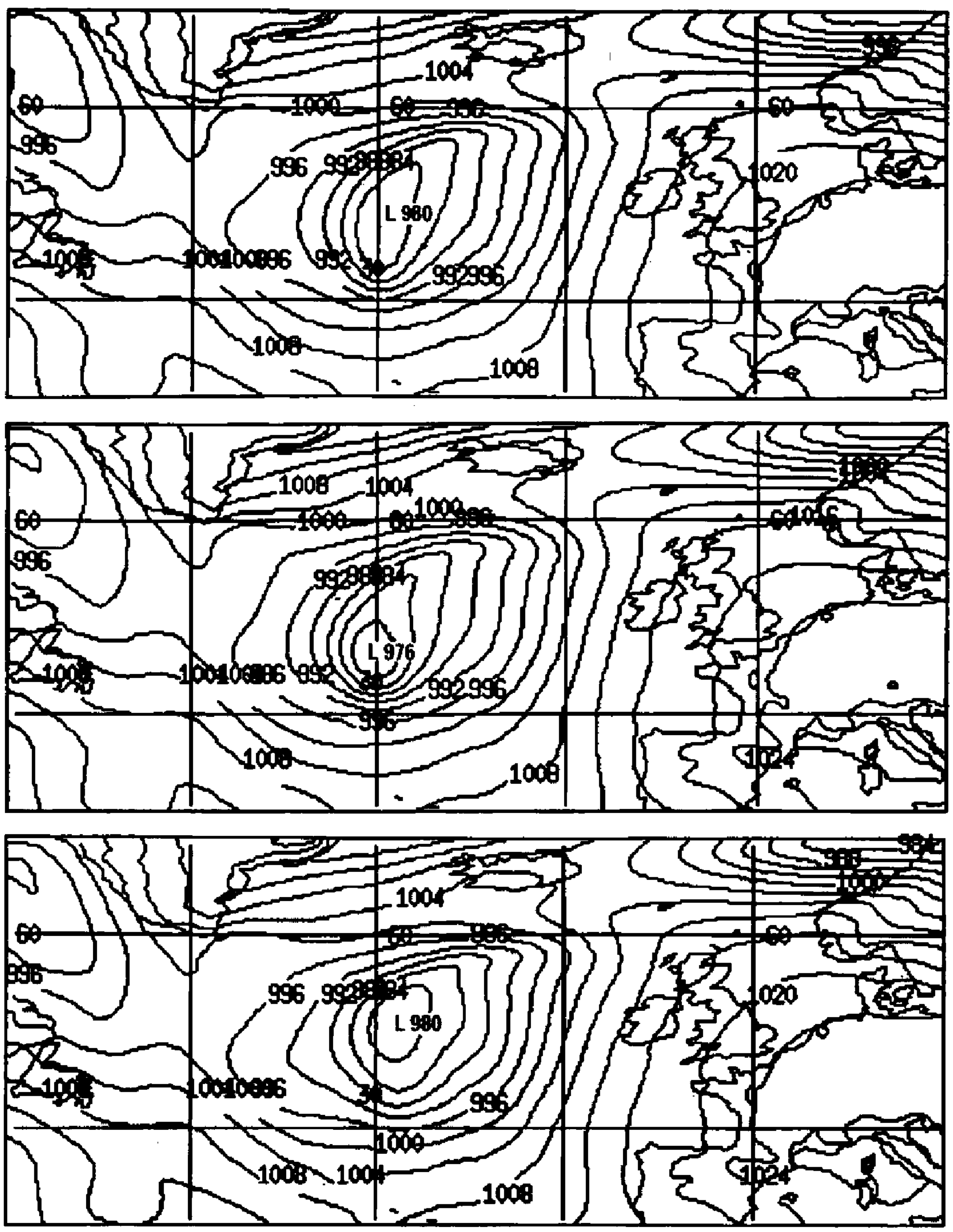


Figure 9(a). Location of surface ship data at 1800 UTC on 14 January 1997. 'S' denotes the positions of the ships. (Courtesy S. R. Anderson)

Case 4: Fronts and Atlantic Storm Track Experiment (FASTEX)

Another case which directly illustrates the benefit of a group of surface ship reports on forecasts over the North Atlantic arose during the FASTEX. For this experiment, during January and February 1997, extra observations were made over part of the North Atlantic. Studies were then carried out to ascertain the effect of these observations on forecasts (Anderson, 1998). In one such study, the benefit of observations on selected forecasts of PMSL was determined using analyses with data from different observation types over the North Atlantic and western Europe in the six hours preceeding the start of each forecast. For the case presented, three 18-hour forecasts are shown using analysis: (i) with ships' observations only, (ii) with all observation types, (iii) with no observations. The ships' positions (over the North Atlantic) are shown in Figure 9(a).



(i)

(ii)

(iii)

Figure 9(b). 18-hour forecasts of PMSL (mb) valid at 1200 UTC on 15 January 1997 using (i) ship surface observations only, (ii) all observations, (iii) no observations. (Courtesy S.R. Anderson)

The forecast using ships' observations alone produced a deep depression at 30 degrees west (Figure 9(b)(i)) which was similar in position to the forecast using all observations (Figure 9(b)(ii)). In both cases the depression was more accurately positioned, with a stronger pressure gradient on its southern flank, than the forecast from the analysis using no observations (Figure 9(b)(iii)). In fact, a statistical computation showed that the forecast using the ships' data alone gave as much as 62 per cent of the benefit compared with the forecast using all observation types. This example clearly shows the benefit of ship observations.

(c) Impact over the Southern Hemisphere

The evidence presented so far has concentrated on the benefit of ship data in the Northern Hemisphere. The value for Southern Hemisphere forecasting should not be underestimated. For example, when forecasting for the Australian region, it is important to obtain a good analysis of depressions over the surrounding seas. Although satellite imagery can give guidance to forecasters on the location of depressions, it is considered that "ship observations can be particularly valuable in identifying the intensity of such features", and although ship observations in the Southern Hemisphere are widely scattered (see Figure 1), "... even isolated surface pressure observations allow considerable detail of the synoptic pattern to be identified." (Courtesy T.Hart).

Case 5: Sydney to Hobart yacht race, 1998

Mariners sailing the southern oceans are particularly prone to experiencing unexpected, extreme weather events like those during the 1998 Sydney to Hobart yacht race off the south-east coast of Australia. There were few observations of winds and, more particularly, of the extreme sea conditions for the immediate race area. However, additional observations were recorded (but not available in real-time), in the logs of ships in neighbouring waters, including some of the race boats. These observations added extra detail about the extent of the strongest winds.

Concluding remarks

Weather observations provide starting conditions for forecasts using NWP models. Observations from ships are one of the few sources of directly measured observations of the weather at sea, where data are generally sparse.

The evidence described in this paper shows that observations from ships improve forecasts globally for up to a few days ahead and also more locally by improving analyses of weather systems which lead to much better forecasts of extra-tropical depressions, in particular. Such evidence has been taken into account, for example, when proposing additional data over the Atlantic Ocean as part of the redesign of the European Observing Network (Gerard, 1999). Ships' observations would form an important part of the enhancement.

Observations from ships of the UK Voluntary Observing Fleet will therefore continue to provide a vital input to successful weather forecasts.

Acknowledgements

The authors would like to thank Martin Young, National Meteorological Centre, The Met. Office, for providing the recent Atlantic storm case (Case 3), and Terry Hart, Australian Bureau of Meteorology, for providing information about the Sydney to Hobart yacht race (Case 5).

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Heming, J.T., 1990. The impact of surface and radiosonde observations from two Atlantic ships on a numerical weather prediction model forecast for the storm of 25 January 1990. *Meteorological Magazine*, 119, pp. 249–259.

Sienkiewicz, J.M., 1990. An example of the importance of ship observations. *Weather and Forecasting*, 5, pp. 683–687.

Note. * EUCOS (EUMETNET Composite Observing System). EUMETNET (European Meteorological Network)

Postbag

Marine 'scum'

The vessel was on passage from Dalrymple Bay, Queensland, Australia to Antwerp by the north Australian route and the Suez Canal. On passage in the Indian Ocean at position 00° 44′ S, 91° 09′ E on 2 June 1999 at 1000 LMT we started passing through an area of water with a scum having a dense oil appearance.

Captain R. W. Lawrie

This was silver/green in colour and it concentrated along the ship's side, showing a shiny appearance. The density of the film increased as we travelled along and was quite thick in areas. The ship passed through the surface scum for 35 miles and it appeared to stretch far to the horizon on each side of the vessel.

This was not the usual appearance of tanker washings, which you occasionally see at sea and anyway, this was an extensive area of continuous scum and also a different colour. The area of the surface film was something that we had never seen before.

The sea temperature was 30°, the air temperature was 31°, the wind was SE'ly, force 3 and there was a southerly swell of 2 metres.

Captain R.W. Lawrie. Master, m.v. *Loire Ore*. (Non-observing vessel.)

Editor's note. When we sent Captain Lawrie's letter to Dr Peter Herring, of the Southampton Oceanography Centre, to ask his opinion on this observation, he told us, "The photo is excellent but I still don't know which organism is involved. I can be confident it is (or was) some kind of phytoplankton (single-celled photosynthetic marine organsims), perhaps accumulated in windrows, but I don't know which one. It sounds from the description as if it could have been an oily decay product from a dead or dying 'bloom' of these organisms. The luminous phenomenon known as a 'milky sea' is believed to be caused by luminous bacteria growing on scums of this type, and can extend to the horizon".

Book Reviews

Maritime Weather and Climate, First Edition, by William J. Burroughs and Norman Lynagh. 170 × 250 mm, *illus*. pp. xvi + 212. Published by Witherby Publishers 32–36 Aylesbury Street London EC1R 0ET. ISBN: 1 85609 166 X. Price: £35.00.

This 212-page book is a welcome compilation of recent advances in marine meteorology and climatology over the last few years. The content bridges a gap between material one finds in the standard textbooks and in the scientific literature that has been published in the various learned journals over the last few years. Both authors are well qualified as between them they have considerable expertise in meteorology and climatology. By clearly indicating that this is a First Edition the authors have acknowledged that the content will need updating from time to time due to the rapid improvements in computer resources and observational techniques, and the ever-changing customer requirements.

The authors have teased out those aspects of the subject which are of most relevance to the safe and efficient operation of shipping. Hence they have concentrated on how to apply meteorological knowledge to exploit the services available to the shipping industry with particular focus on the impact of new technologies, services, and the emerging understanding of how the climate functions. The book is aimed at three main groups of readers: to provide ships' masters and crew with the basic information to make improved decisions on how to optimise day-to-day sailing, to provide shipping operators with a better understanding of the challenges that the weather poses for the continuing efficient and safe operation of their vessels, and to provide the insurance industry with a wider appreciation of the risks that weather and climate change presents for shipping and offshore installations now and in the future. There is no attempt to cover in detail the technicalities of emerging technologies such as the vast improvements in the observational field in the use of satellites, drifting and moored buoys, and the greatly improved results in forecast reliability as the continually improving computer resources are exploited. Rather, the objective of this book is to provide an accurate, balanced presentation of where these various activities have got to and to provide guidance on how to approach the avalanche of services that is being marketed to maritime industries.

The book can be looked upon as a digest of information as it contains just 228 pages of text and figures, but there are many references to published work that can be followed up if more detail is sought. Individual chapters address 'Basic Meteorology', 'Climatology', 'Climate change', and the 'Practical Application of advice and the Assessment of risk'. Two chapters are devoted to the forecast process, 'Weather Forecasting', and 'Observing the weather and interpreting forecasts'.

The former is concerned with forecasting on the global scale and the use of computers and satellites in the ongoing daily process of numerical prediction. The other chapter then deals with observations, the basic data needed for the forecasting process, but then goes on to discuss the interpretation of forecasts and gives some insight into medium-range forecasts and seasonal forecasts. However, both these chapters should be considered as one unit. For example, one would expect to find the use of ensemble forecasts (techniques currently being incorporated into forecast guidance issued by The Met. Office) discussed either under 'Numerical Weather Prediction' or under the section on medium-range forecasts whereas one finds the information under the sub-heading 'Forecasting performance'

The book is well endowed with figures, some 57 all told, but the reader is left to guess the subject of the one colour illustration, that on the front cover. The reader may also find the legend on many of the figures within the book difficult to read especially charts depicting mean values. Warts aside, this book is a welcome addition to the literature for those who wish to keep up with advances in marine meteorology and climatology, but who do not have the time to keep abreast of the output in the more scientific journals. Over all, the book has a relaxed style — a book to read rather than study.

Martin W. Stubbs

Ship Stability for Masters and Mates, Fifth Edition by Captain D.R. Derrett, revised by Dr C.B. Barrass. 234 mm × 156 mm, *illus*, 447 pp. Published by Butterworth Heinemann Linacre House Jordan Hill Oxford OX2 8DP. ISBN: 0 7506 4101 0. Price: £25.00.

For many prospective Masters and Mates (the reviewer included) stability is one of the more difficult subjects to grasp when preparing to sit written examinations for Certificates of Competency, requiring as it does feats of mental gymnastics and the memory of arcane formulae. It is encouraging therefore to discover that the latest edition of this publication continues the tradition of its antecedents in providing a clear and well structured path through the intricacies of this complex subject.

The book's objectives are clearly stated in the introduction by Dr C.B. Barrass, who has revised Captain Derrett's original text to reflect recent developments within the shipping industry. These objectives primarily address the needs of Marine Officers but also those of students of maritime studies, naval architecture and ship technology. In many respects these objectives are amply met, and to some extent may even be exceeded in that the resultant text is also likely to provide a valuable reference source for other organisations such as consultants charged with preparing intact ship stability manuals, and perhaps also for those administrations and classification societies required to formally approve them. This is compounded, to some extent, by the fact that the title of the publication undersells its content, in that the latter chapters also cover structural strength aspects.

Whilst the new edition provides the right depth of knowledge required for passing MCA examinations, it is slightly regretted, however, that its scope does not fully address the practical implications with which the modern deck officer will be faced once on board. Intact stability manuals and their associated hydrostatic data can come in a wide variety of formats depending on the approval authority and ship type, and it may be helpful if a future edition of this worthy publication could append some example departure and arrival conditions with associated curves of statistical stability, e.g. for a high-sided container ship with superimposed wind heeling moments. Similarly, practical examples of an actual inclining experiment may be helpful to attending officers.

It is also felt that in view of recent stability-related shipping casualties more emphasis might have been placed upon the operational dangers associated with, for example, free surface effects in slack tanks or on car decks, rather than concentrating on the requisite calculations. In addition it would have been helpful to make reference to the internationally agreed standards, such as IMO Resolution A 749(18), upon which current intact ship stability requirements are based, and which will be referred to in most modern stability manuals.

Notwithstanding these suggestions the book is well presented in black and white with clear diagrams and comprehensive appendices. Related exercises at the end of each of its 44 chapters allow the student to assess his/her level of competence in each of the topics addressed, and are supported by specimen examination papers and tips on how to pass exams. New additions, such as a table of representative characteristics including block coefficients for different ship types, also help to put the subject in context.

'*Ship Stability for Masters and Mates*' is recommended reading for all deck officers and would make a valuable addition to the ship's reference library.

S.C. North
Deputy Editor

Noticeboard

Inmarsat–C Land Earth Stations accepting 'Code 41' messages (ships' weather observations)

Atlantic Ocean Region–East

Station name	*Country*	*ID No.*
Aussaguel	France	121
Burum (Station 12)	Netherlands	112
Goonhilly	United Kingdom	102
Raisting	Germany	115
Southbury	United States	101
Thermopylae	Greece	120
Eik	Norway	104 (Special access code: 61 OBS)

Atlantic Ocean Region–West

Station name	*Country*	*ID No.*
Burum (Station 12)	Netherlands	012
Goonhilly	United Kingdom	002
Southbury	United States	001
Eik	Norway	004 (Special access code: 61 OBS)

Indian Ocean Region

Station name	*Country*	*ID No.*
Aussaguel	France	321
Burum (Station 12)	Netherlands	312
Perth	Australia	322
Raisting	Germany	333
Thermopylae	Greece	305
Sentosa	Singapore	328
Eik	Norway	304 (Special access code: 61 OBS)
Yamaguchi	Japan	303

Pacific Ocean Region

Station name	*Country*	*ID No.*
Perth	Australia	222
Santa Paula	United States	201
Sentosa	Singapore	210
Yamaguchi	Japan	203
Burum (Station 12)	Netherlands	212

Bracknell (GFA) radio facsimile schedule (as at 21 October 1999)

Frequency (kHz):

2618.5	1800–0600	F3C 10 kW
4610	24 hours	(White +400 Hz}
8040	24 hours	(Black –400 Hz)
14436	24 hours	
18261	0600–1800	

Map F. Scale 1:20 000 000 (Polar Stereographic)
Area: 69° N, 111° W–37° N, 50° E and 34° N, 55° W–19° N, 10° E

Chart	*Transmission time*		*Speed/IOC*
Surface analysis	0341 (00)	0941 (06)	120/288
	1541 (12)	2141 (18)	
24-hour surface prognosis	0440 (00)	1042 (06)	120/288
	1641 (12)	2241 (18)	
48-hour surface/1000–500 mb prognosis	0806 (00)	2222 (12)	120/288
72-hour surface/1000–500 mb prognosis	0812 (00)	2230 (12)	120/288
96-hour surface/1000–500 mb prognosis	2333 (12)		120/288
120-hour surface/1000–500 mb prognosis	2340 (12)		120/288

Map D. Scale 1:30 000 000 (Polar Stereographic)
Area: 29° N, 158° W–29° N, 63° E and 08° N, 85° W–08° N, 05° E

Chart	*Transmission time*	*Speed/IOC*
Northern Hemisphere surface analysis	0818 (00)	120/288

Map G. Scale 1:20 000 000 (Polar Stereographic)
Area: 38° N, 114° W–60° N, 32° E and 19° N, 77° W–30° N, 09° E

Chart	*Transmission time*		*Speed/IOC*
Sea state (wave) analysis	0929 (00)	2012 (12)	120/288
24-hour sea state (wave) prognosis	0935 (00)	2018 (12)	120/288
48-hour sea state (wave) prognosis	1010 (00)	2152 (12)	120/288

Map A. Scale 1:5 000 000 (Polar Stereographic)
Area: 67° N, 35° W–70° N, 15° E and 46° N, 19° W–48° N, 05° E

Chart	*Transmission time*	*Speed/IOC*
British Isles sea surface temperature analysis	1412	120/288

Map E. Scale 1:10 000 000 (Polar Stereographic)
Area: 57° N, 96° W–71° N, 71° E and 38° N, 48° W–46° N, 13° E

Chart	*Transmission time*	*Speed/IOC*
Isotherms and sea ice conditions	1602	120/576

Text

	Transmission time	*Speed/IOC*
Extended North Atlantic inference	1031	120/576
Schedule	1622	120/576
General notices	1630	120/576

'The Big Number'

Many new telephone numbers will become fully operational on 22 April as a result of national reorganisation of the numbering system by BT. The Port Met. Offices at Cardiff and Southampton are affected by the changes; observers are reminded that the details are:

Cardiff: Telephone 029 2022 1423, fax 029 2022 5295. When dialing from outside the UK, telephone +44 29 2022 1423 Fax +44 29 2022 5295.

Southampton: Telephone 023 8022 0632, fax 023 8033 7341. When dialing from outside the UK, telephone +44 23 8022 0632, fax +44 23 8033 7341.

State of SEA booklet

As stated in the January edition (page 42), a new edition of the booklet is planned, and we remind observers that the opportunity exists for them to help create it by sending in colour pictures of seas in all conditions. Most formats (except 'polaroid') will be acceptable, including digital. All images will be acknowledged, and a prize will be sent to those photographers whose pictures are used. Send your pictures direct to the Editor's address, or through any UK Port Met. Officer. Digital images can be e-mailed, if preferred, to: obsmar@met.gov.uk

Include the following information with your work, but do not write on the reverse \of pictures:

Ship name
Observer's name and contact address
Date, time and position of ship
Estimated wind speed and direction
Estimated wind wave height
Details of any swell(s) present

The closing date for receipt of your pictures is 31 July 2000.

Transmission of observations via BT coast radio stations

We are fully aware of the ongoing problems being experienced by coastal vessels which are not equipped with satcoms and which, as a consequence of the planned closure of BT coast radio stations, are unable to transmit their weather observations to Bracknell.

Whilst the closure of Portishead Radio and the other BT coast radio stations is still anticipated, BT advises that OBS messages from ships will continue to be accepted, and welcomed, via their HF, MF and VHF stations. These stations will remain open pending the outcome of an OFTEL (Office of Telecommunications) investigation into the matter. If OFTEL agree to the intended closure of Portishead Radio, then it is likely the whole family of BT coast stations will cease at the same time. It has been announced that at least one full month's notice will be given of closure when a decision is reached.

Portishead Radio operates a Maritime HF SSB service on channels **410** (4384/4092 kHz), **816** (8764/8240 kHz), **1224** (13146/12299 kHz), **1602** (17245/16363 kHz), **1801** (19755/18780 kHz) and **2206** (22711/22015 kHz) and will accept OBS messages on any of these channels (Portishead frequency/ship frequency). Portishead will still accept OBS messages via HF W/T and via its HF radio-telex service.

The current BT network of coast stations is given in the table. Note that the service area for VHF is approximately 35 nautical miles and for MF 150 nautical miles.

Main station	*Other stations in group*	*MF Coast/Ship frequencies*	*VHF*
Wick Radio		2705/2524 (Ch E)	
Stonehaven Radio		1856/2555 (Ch I)	Ch 26
Humber Radio		2684/2002 (Ch R)	Ch 26
	Grimsby		Ch 27
	The Wash		Ch 85
Thames			Ch 2
Niton Radio			Ch 28 and 64
	Celtic		Ch 24
	Burnham		Ch 25
	Ilfracombe		Ch 5
Landsend Radio		2782/2111 (Ch W)	Ch 27
	Scillies		Ch 64
	Start Point		Ch26 and Ch 60
Portpatrick Radio		1710/2135 (Ch Y)	Ch 27
	Oban		Ch 7
	Islay		Ch 25
	River Mersey		Ch 28
	Anglesey		Ch 26
	Cardigan Bay		Ch 3
Hebrides		1866/2534 (Ch Z)	
	Lewis		Ch 5

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