

8 FEBRUARY 2003 : WEATHER AND SAILING - Royal Meteorological Society/Royal Institute of Navigation Meeting

Adrian Stead: Can meteorology win races?

Weather helps to win races - there is no doubt about it. The ability to sail on the best wind shift in the best available windspeed means the boat should finish the race as fast as it can. Whether you are racing around the globe and predicting the path of weather systems or worried about the wind trends on a 18 mile, 2 hour race, interpreting the weather is key in your tactical decisions. I want to talk to you about weather in the Americas Cup and my experiences as Tactician on 'White Lightning' - GBR 70 - in the GBR Americas cup challenge, racing in the changeable Hauraki Gulf of Auckland NZ.

George Rawlinson: Weather related incidents

George will give an RNLi perspective on the relationship between weather conditions and incidents at sea. This includes both extreme weather incidents and those that occur in moderate conditions. Some historical background will be given along with an assessment of the human factors involved in weather related incidents.

Kim Fisher: Navtex

Navtex – a system involving radio broadcasts of navigational and meteorological information.

Tim Thornton: Weather on the internet

A real-time demonstration of weather information available on the internet.

David Houghton: Meteorological preparations for competitions

Years before, learn the basics – wind strategy and practise the basics – every event is useful; the meteorology of wind shifts, bends and bands is the same the world over. Every event, every venue provides experience of the behaviour of the wind which contributes to ones understanding and appreciation of what influences it and how signs of change may be recognised.

Weeks before, study the venue; its published typical weather patterns, weather data (climatology), especially wind statistics. The best source book is the Admiralty Pilot for the area. Study also its topography and think about the various influences of e.g. hills, valleys, cliffs, rivers. Think through the likely pattern of development of sea/land breezes for all possible gradient wind direction categories.

Previous 1 to 2 weeks, follow the evolution of the weather over the area in terms of the movement, development and decay of highs and lows, ridges and troughs, using the daily weather map. Practice interpretation of the weather map by writing down each day what wind speed and direction you would expect over the event area for the period of racing. Try to obtain some actual wind measurements each day, and compare them with your predictions.

Morning of race, study the latest weather map and any available forecast and write down your conclusions regarding the most likely wind and its evolution during the race. Don't forget to take a bearing on the movement of any low cloud – your best guide to the

gradient wind over the area.

Sailing to the start, Record the wind shift pattern. Look for signs of sea breeze development, changes in water temperature, etc. Refresh your memory from check list of other factors to be considered; change in gradient wind, change in land temperature, coastal convergence/divergence, atmospheric stability.

On the first beat, Which side is paying? Why? Will it be the same the next time round?

Nick Ashton: Weather services for sailors

The Met Office is the National Meteorological Service of the United Kingdom, and is a leading member of the World Meteorological Organisation, with an international reputation in both numerical modelling and climate research. We have a complete global forecast capability and our numerical modelling suites are handled by the vast computing capability of the Cray-T3E series supercomputer. We supply a wide range of weather information to the marine community, ranging from general, readily available information, through mass media such as television and radio and more detailed commercial services such as MetFax and MetWeb, together with direct consultancy facilities. Through the MCA, and working closely with them, we supply information to the marine community to meet the requirements of SOLAS – principally the "core" forecast services of the Shipping Forecast and Gale Warnings – and other services which are commissioned by the MCA, such as the Inshore Waters forecast. These forecasts are now available through a wide number of systems, from traditional telephone and fax, specialised output such as Navtex, and more modern means such as web and e-mail.

Simon Keeling: Weather forecasts – a sailors choice

As more and more weather information is made available to sailors, it's important that sailors understand the origins of such forecasts. In this short talk Simon Keeling explains the workings of his independent weather forecasting company, and gives an insight as to how he thinks all sailors can benefit from the weather services on offer.

Dr John Thornes: The accuracy of coastal weather forecasts

In 1896 an employee of the Met Office, F Gaster, published a paper in the Quarterly Journal of the Royal Meteorological Society entitled 'Weather Forecasts and Storm Warnings: How they are prepared and disseminated'. In this paper he claimed that the accuracy of storm warnings had improved from 79.3% in 1885 to 93.0% in 1894 averaging out at 85%. One hundred and three years later in 1999 I published a paper (with Esther Proctor) in Weather magazine entitled: 'Persisting with Persistence: The Verification of Radio 4 Weather Forecasts' in which we found that using the Met Office's own scoring system the accuracy of their Radio 4 forecasts was 85%. What has happened over the 103 years? Surely we would have expected the accuracy to have improved? The measurement of forecast accuracy will be examined in detail in this paper and also which regions of the UK get the best forecasts and which forecast elements are forecast with the most accuracy?

Vincent Geake: Measuring wind from yachts.

Vincent will be talking about the issues around wind measurement from yachts.

Inaccuracies are introduced into these measurements for several reasons: due to

limitations in the number and nature of existing sensors, errors caused by the location of the sensors, and distortions of the wind field locally to the sensors. Attempts to correct for these errors in application software are considered, and ways to process the sensed data to provide the desired information required by sailors - to achieve the ideal 'effective wind' sensor.

Mike Brettle: Twisted winds and yacht sails.

I am going to talk about what meteorologists know about wind direction in the atmospheric boundary layer and whether this is relevant to yachtsmen. Meteorology is an observational science and the ultimate arbiter of reality is real observations properly carried out and recorded. I will take a hard line view on this. I will use a basic model of wind to explain how friction effects wind speed and especially direction near the surface. This is not as simple as it is often presented and I will introduce the effects of the temperature structure of the air and the temperature of the surface and illustrate this with real data. Wind direction is 'twisted' over the height of the boundary layer, which can be kilometres thick, because of these effects and an interesting question is whether there is any significant twist within a few metres of the surface itself, say over the height of a yacht mast. This is an issue where yachtsmen might be in a position to detect something missed by meteorologists who themselves still do not have a clear and consistent view. This is because of the efforts often made by yachtsmen to trim their sails with a certain amount of twist which may make them sensitive to any twist in the true wind over the height of their masts. I will give some possible explanations for twisted winds at the surface such as friction or tidal streams. There is not a lot of data available on wind direction near the surface but I will present some to show there is a real and measurable effect. On a positive note, some of this could be predicted, which might give a well prepared sailor an advantage, on a more sceptical note the atmosphere is turbulent and sail trim is even less of an exact science than meteorology.

Note. I have a reference list for anyone who wants to look into this subject further.

Mike Molyneux: Giving sailors the odds – probabilities in meteorological advice
Since the Olympics in Barcelona it has been possible to use locally measured wind data to provide Sailors, Coaches and Forecasters with detailed briefing information. The aim is to give the UK a head start in local knowledge, which would normally require many years to develop. One of the themes of the products is the inclusion of probability information - so that it can be judged in the light of other racing factors.

Jim Allen: Weather planning for a channel crossing

As a yachtsman I am very pleased to be a meteorologist. Over the years it has been of great interest to discover the views on weather, both actual and forecast, of many members of the yachting fraternity. Putting this knowledge and my own experiences of Channel ventures together the aim is to help you benefit from the experience of others. By discussing a number of actual circumstances, routines are developed which should make passage planning both interesting and helpful and the actual passage more "enjoyable". Perhaps some are thinking that as a weatherman I would not cross the Channel in bad weather, so what conditions does his experience cover? Well I'll own up to an interest in racing as well as cruising and I well remember our Met Office Team

representing the MOD in the overnight Civil Service Channel Race from Southsea to Cherbourg; it was great fun in that northerly Gale Force 8. Yes I've crossed in everything from dead calm to gale force 8, from good visibility to fog and from rain to sunshine. And very glad of the experience!