

THE METOC GUIDE : AN INTERACTIVE DIGITAL ENVIRONMENTAL BRIEFING PACKAGE TOOL

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Abstract

"You need an Environmental Briefing Package Tool (EBPT) for preparing briefings, don't you ? - So, do it yourself with the METOC Guide !"

The METOC Guide is a database products viewer which can be used to prepare METOC briefings. It contains a geo/metoc statistic and climatology library and gives users the ability of tailoring their own EBP.

This tool was commissioned by the French Navy. Frigates, submarines, ops centers and schools have been fitted with the METOC Guide on portable PCs running under Windows NT. The various types of information (Hydrography, Oceanography, Meteorology, Acoustics and Geophysics) can be superimposed on the screen by the operator, and can be used for PowerPoint® presentations. Digital publications in HTML format (atlases, regional and subject matter briefing packages, descriptions of products) and Computer-Assisted Learning (CAL) software constitute the training part of the METOC Guide.

The METOC Guide is not only dedicated to Navy operational use. It is also targeted towards Navy developers that may be either in the process of, or planning for Navy tactical decision aid, command and control systems, training or simulation systems, or any other application that requires access to meteorological and oceanographic databases.

The METOC Guide is considered by the SHOM as the first step, and plans to include Additional Military Layers (AML).

1. METOC GUIDE Software Development

The METOC Guide runs on an IBM-compatible personal computer, under Microsoft® Windows-NT. The second version has just been released to the French Navy last December, the third one is planned for release at the beginning of 2001.

The main goals are to provide to the warfare community :

- statistics and climatology ;
- environmental documentation ;
- computer-assisted learning software.

The METOC Guide contains information from several scientific disciplines, such as meteorology, oceanography, hydrography, acoustics and geophysics.

Meteorological statistics on up to nine parameters, and radar ducts are displayable. Storm tracks, hydrometeor data, airport climatology and altitude data are planned to be included in the third version.

For oceanography, atlases, cut-off frequencies, hydrological profiles, ... are available. In acoustics shipping traffic, ambient noise, ; and in hydrography, wrecks are included.

Various environmental documentation is linked with the data. The METOC Guide allows the preparation of environmental briefing packages or subject matter briefing packages.

Lastly, Computer-Assisted Learning software allows the user to learn or revise certain basic concepts (sea breeze, icing, radar propagation, acoustics, ...).

2. METOC GUIDE climatology samples

The graphical user interface (GUI) is map-based for statistics and climatology. Users select a region of interest from a world map (Figure 1), choose an item and one parameter and some of its characteristics (period, depth, ...) (Figure 2), then data are displayed on the screen (Figure 3).

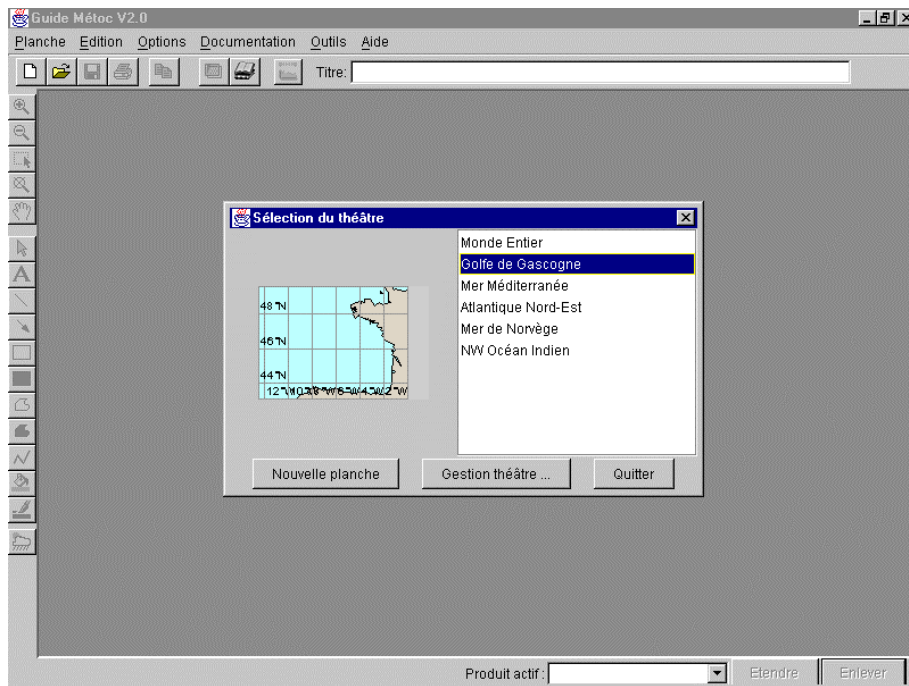


Figure 1 : METOC Guide Menu, The User Selects a Region

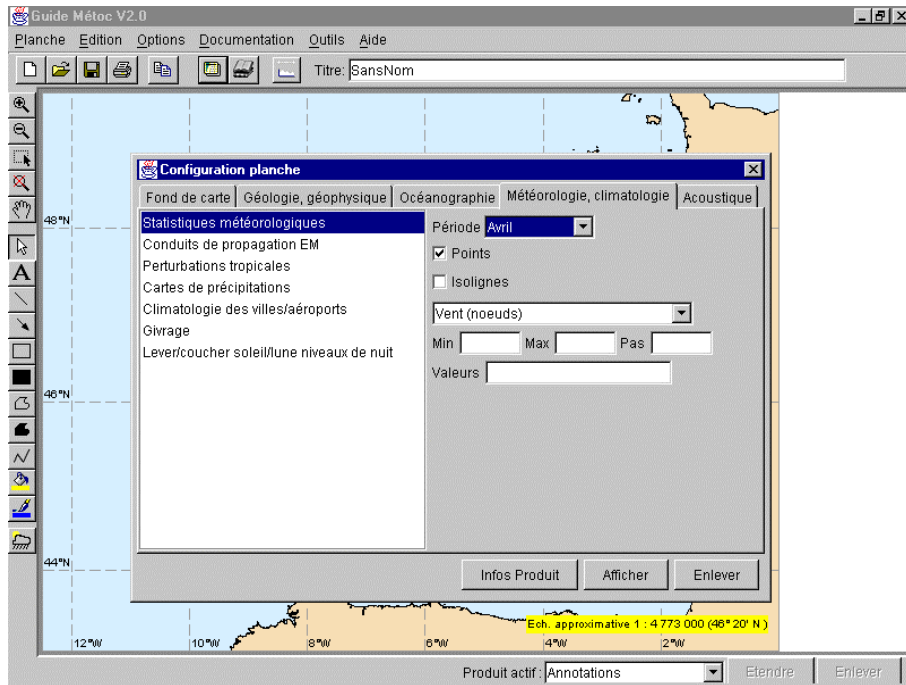


Figure 2 : Meteorological Data and Some of its Characteristics May Be Selected

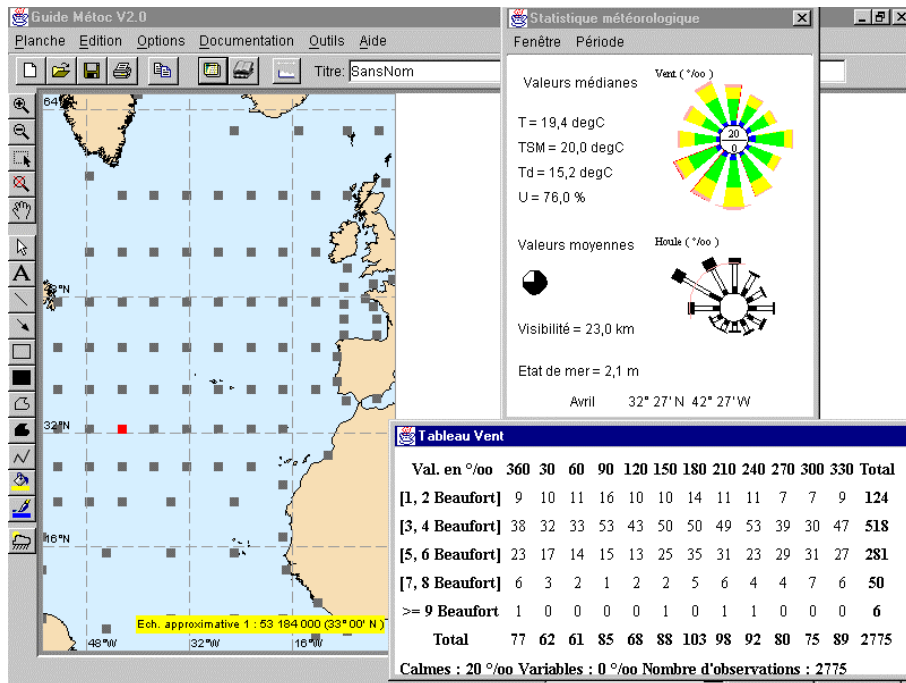


Figure 3 : Sample of Various Meteorological Data Displayed

If the user has any difficulties understanding any symbols or information, he may access descriptions of the products (Figure 4).

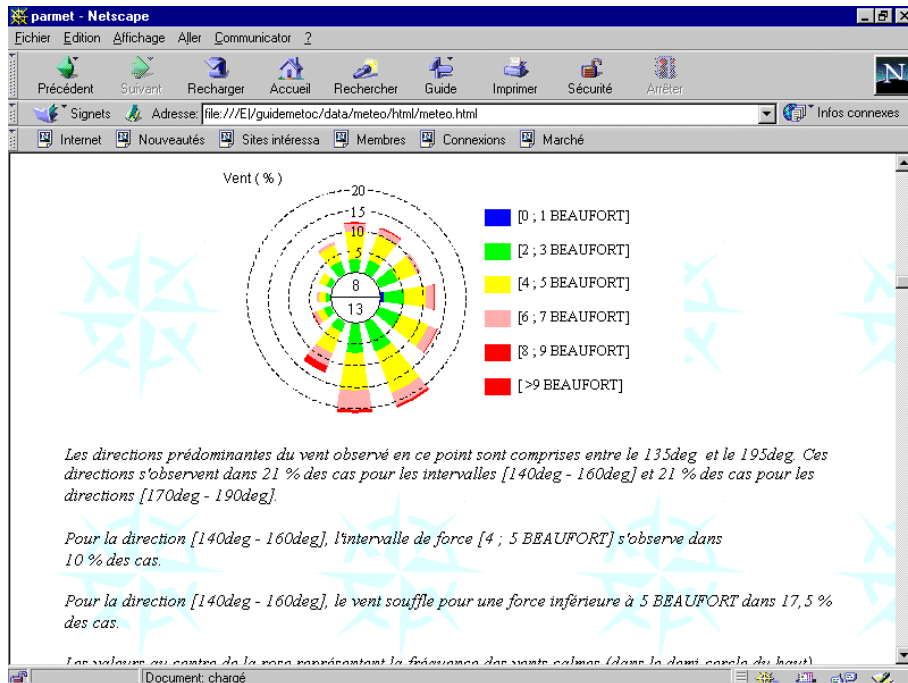


Figure 4 : Descriptions of Products Are Easily Accessible in HTML Format

Information on Atmospheric radar propagation ducts are also available, giving statistical information such as frequencies, median, first and last quartiles for evaporation, surface-based, and ducts aloft for all oceans (Figure 5).

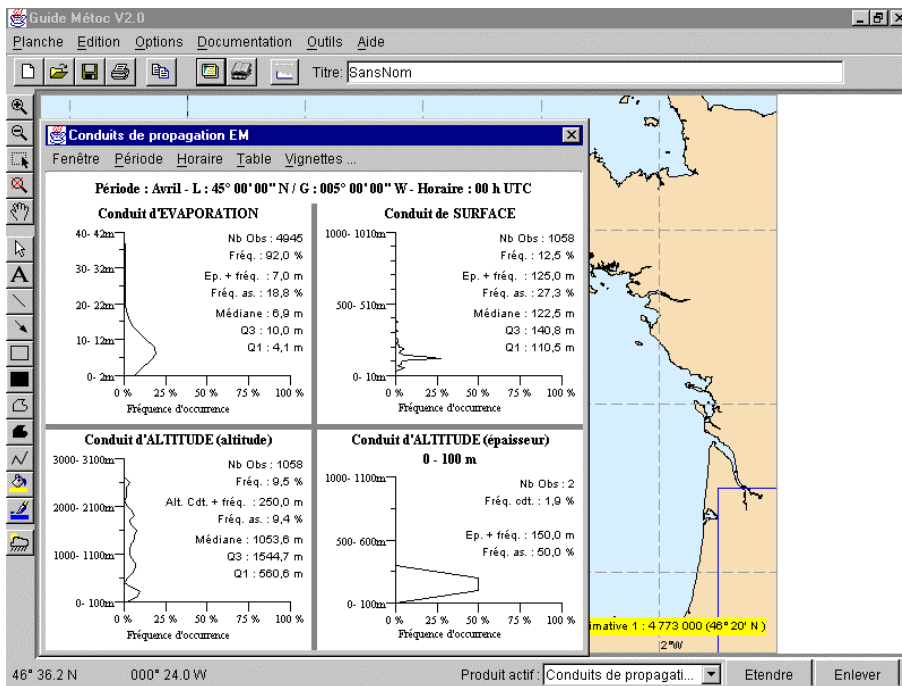


Figure 5 : Radar Duct Statistics Example

It is also possible to superimpose various types of information on the output . Figure 6 shows a sample with meteorological and oceanographic data superimposed.

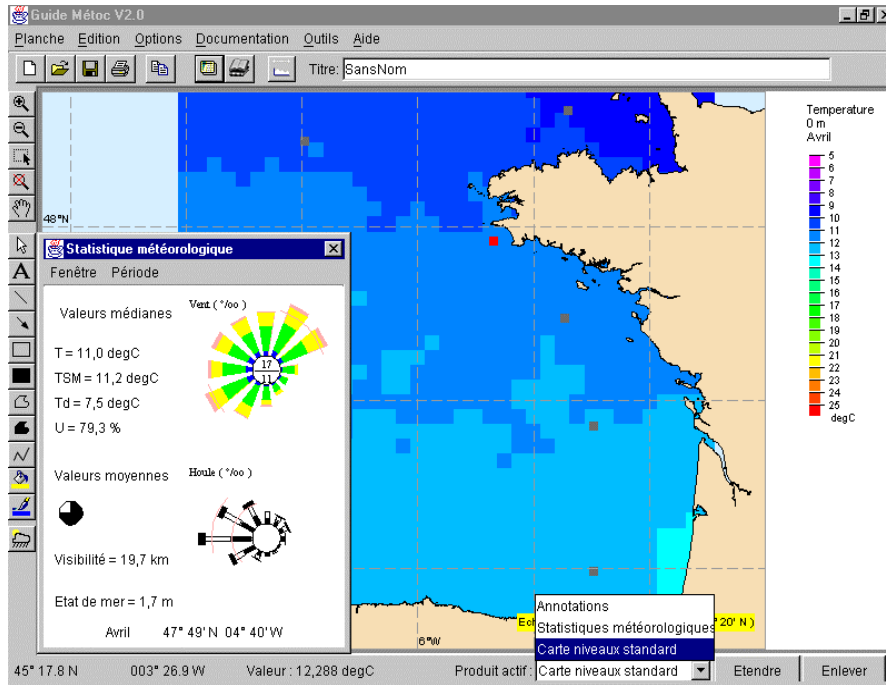


Figure 6 : Example of Meteorological and Oceanographic Data Superimposed

3. METOC Guide Documentation

Digital documentation is obtained directly from the same GUI that is used to prepare EBPs or subject matter briefing packages from the synopsis of the documentation (Figure 7). He may choose a regional BP (Figures 8 and 9), or a subject matter briefing package. The documentations is usually presented in an edited and shortened version, and in HTML format. The screen is cut out in three variable size windows. Within the first one, the user reads the synopsis of the documentation selected, the second one displays the text with icons. By clicking the icon, the figure or image is displayed with the normal size within the third window (Figure 8 and following).

Environmental Briefing Packages (EBP) provide the “state of the art” knowledge of the environment for area of Interest (AOI) and describe effects of geophysics, meteorology, physical oceanography, acoustics, human activities, ... on operations and detail OPS consequences for Anti Submarine Warfare (ASW) and Anti Air Warfare (AAW). Various regions of the world are already available within the METOC Guide : West Portugal, Bay of Biscay, the Persian Gulf and the Gulf of Oman, Alboran Sea and Algerian Basin, Adriatic Sea and Tunisia-Sicilia-Saraigna. The Gulf of Cadiz and the Canary Islands are in progress.

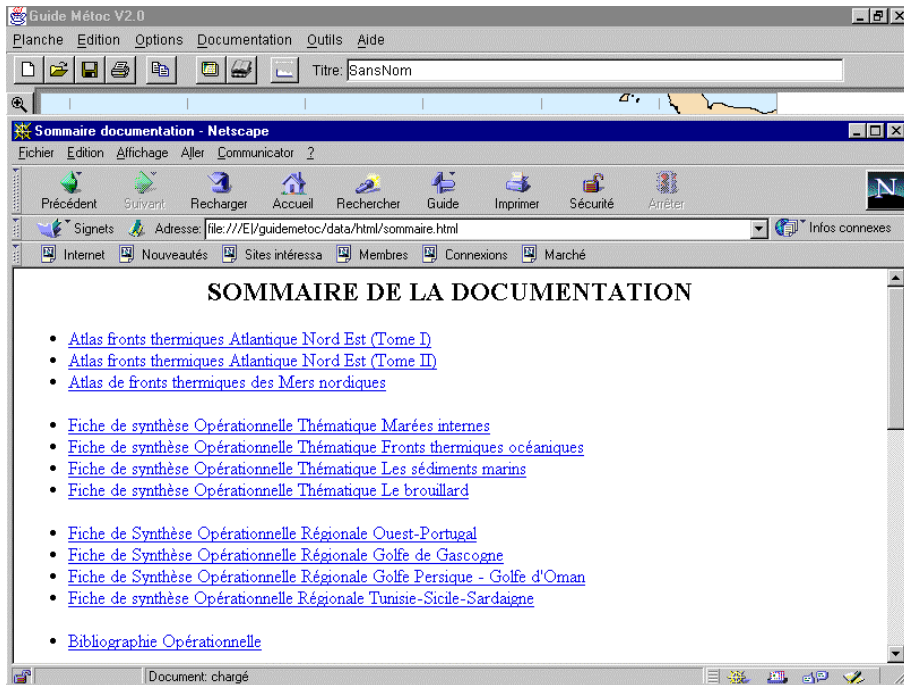


Figure 7 : Synopsis of All the Digital Documentations Available

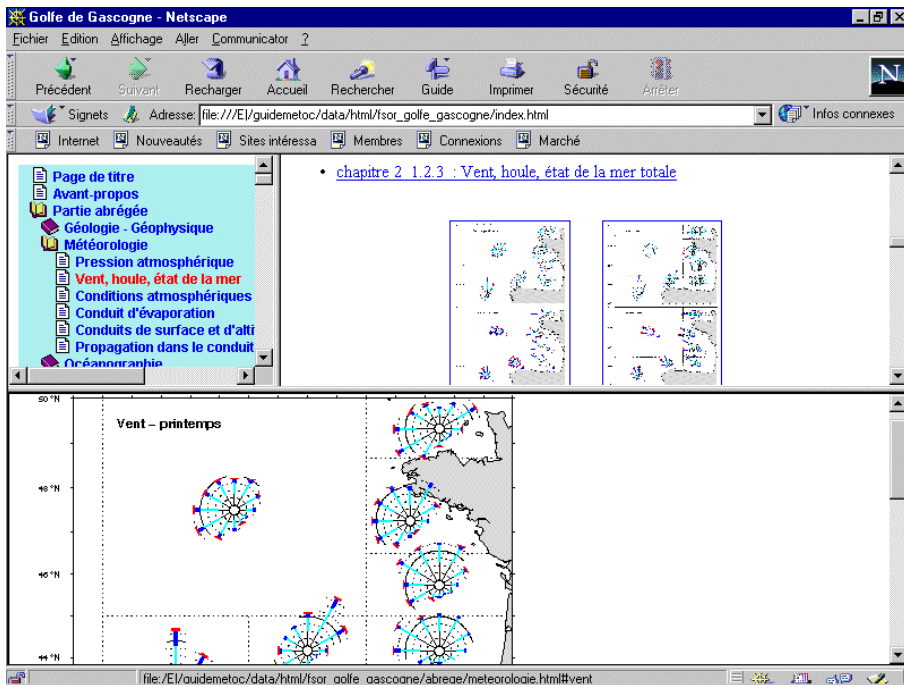


Figure 8 : Biscay Bay Wind Climatology Within an EBP

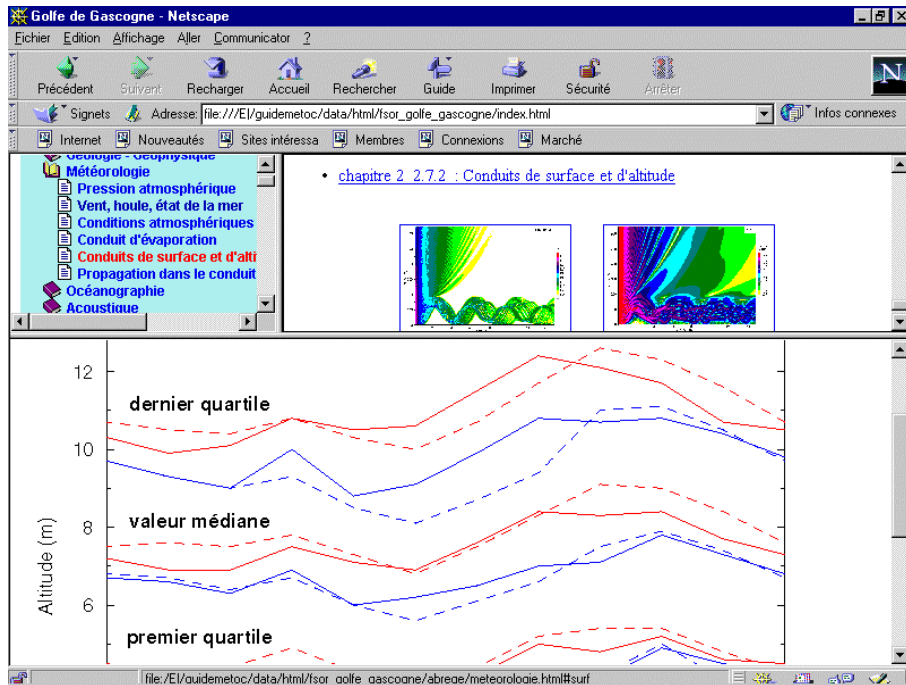


Figure 9 : Radar Duct Information and Radar Impacts Within an EBP

The subject matter briefing packages (SMBP) have the following breakout :

- Definition, description, existing conditions (Figures 10 and 11)
- State of knowledge (Figure 12)
- Measurement methods (Figure 13)
- Operational and system impacts
- Tactical advices (Figure 14)

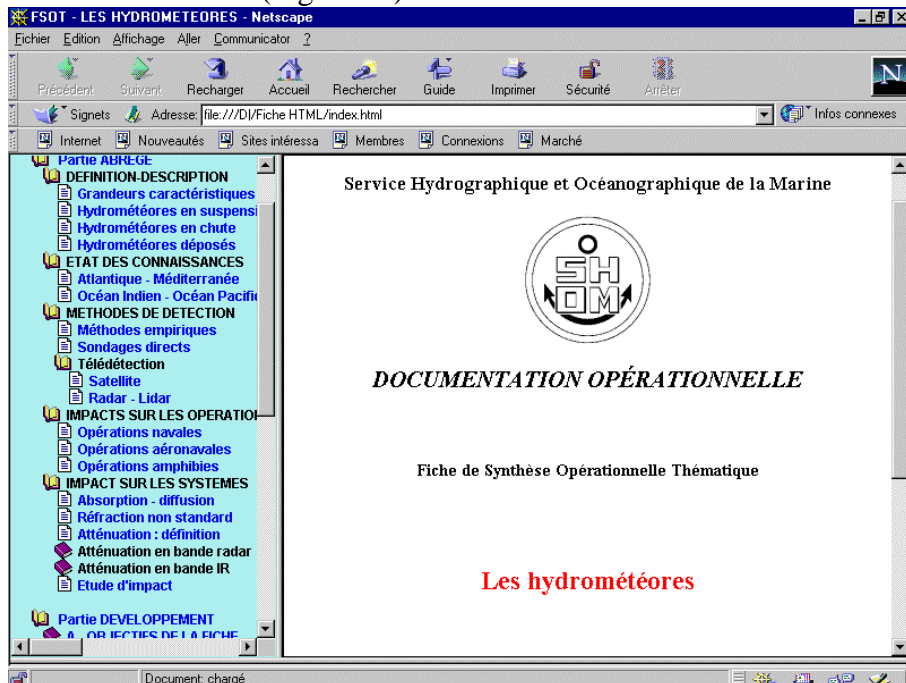


Figure 10 : The Hydrometeors Subject Matter Briefing Package Example

As an example of a subject matter briefing package, the subject of “hydrometeors” will be used. This example represents a new type of product for METOC support.

§ *Definition and description of the phenomenon* : After introductions from basic meteorology (jet-stream, Coriolis, tropical or extra-tropical storm genesis, monsoon, ...), the entirety of hydrometeors are described with their general frequencies and their geographic distributions.

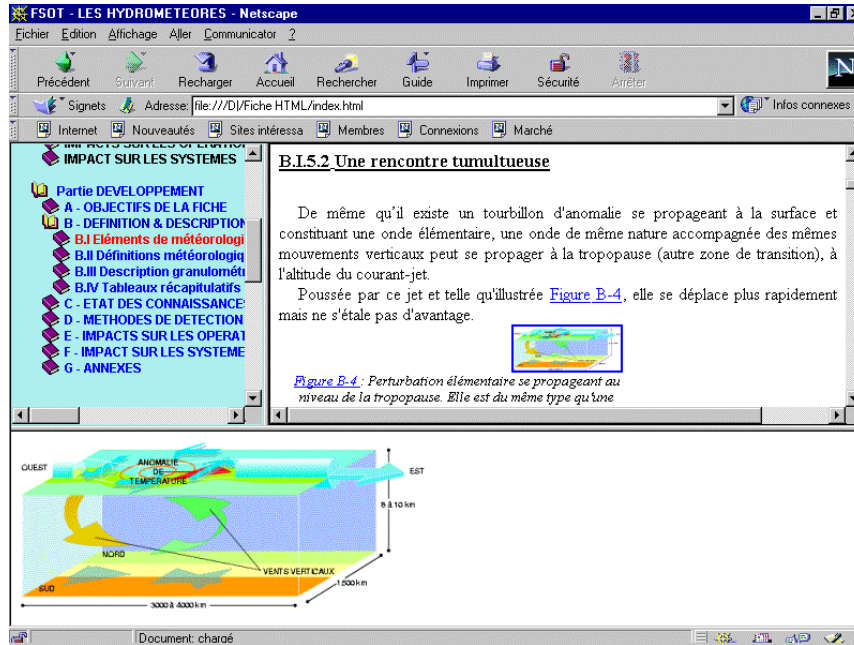


Figure 11 : The Hydrometeors Subject Matter Briefing Package – New Theory of Storm Genesis

§ *State of knowledge* : A brief climatological description was written for the various oceanic basins, describing visibility, cloudiness and precipitation

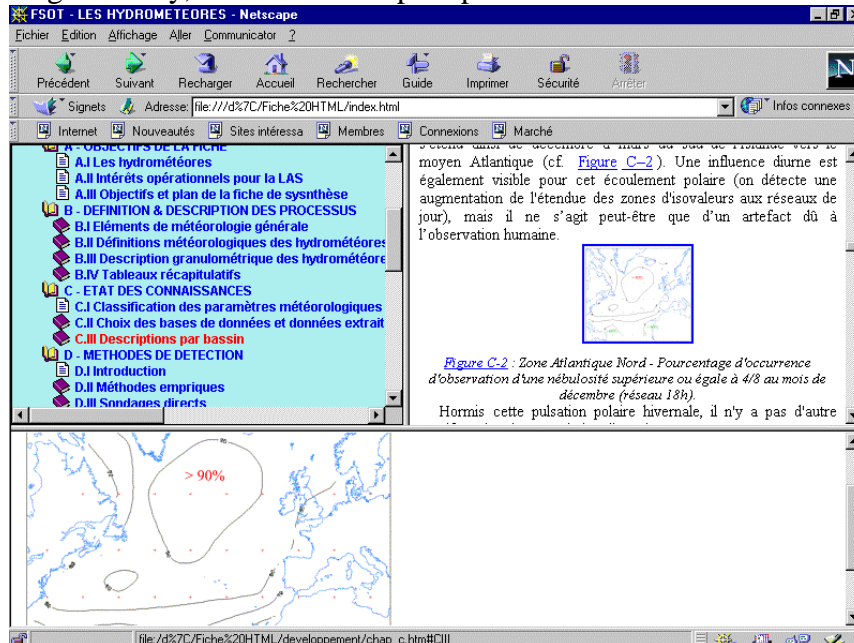


Figure 12 : The Hydrometeors Subject Matter Briefing Package – Cloudiness Climatology in the Atlantic

§ *Detection methods* : Various measurement methods, direct or indirect, allow a good description of the hydrometeors : sounding by balloon or SSBC, Lidar, Satellite (SSM/I, METEOSAT, ...), ...

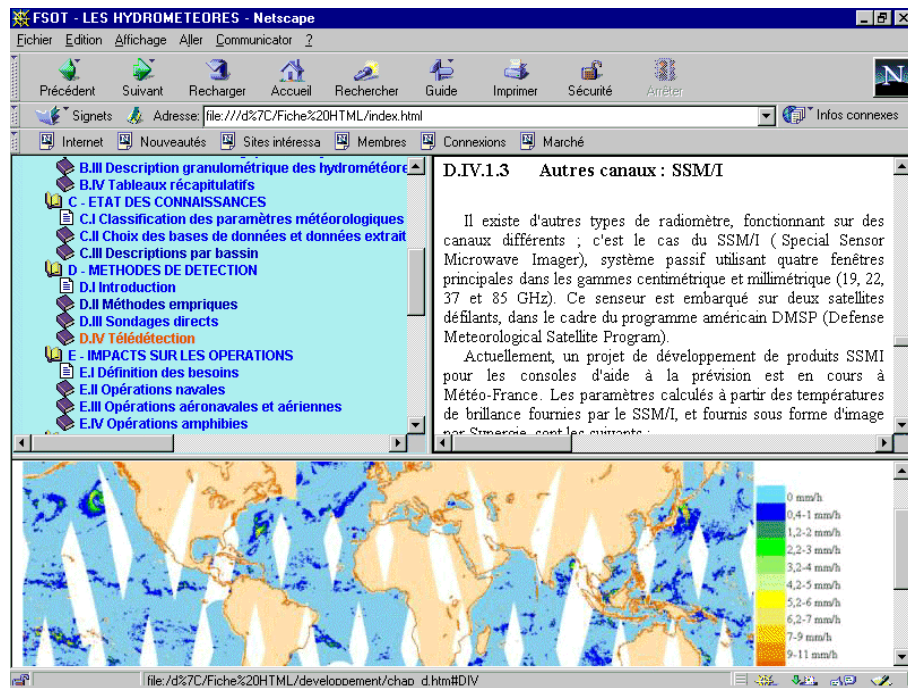


Figure 13 : The hydrometeors Subject Matter briefing Package – SSM/I Provides a Good Geographic Coverage of the Distribution of the Precipitating Areas

§ *Impact on systems* : Different meteorological situations are studied and their impact on radar propagation analyzed

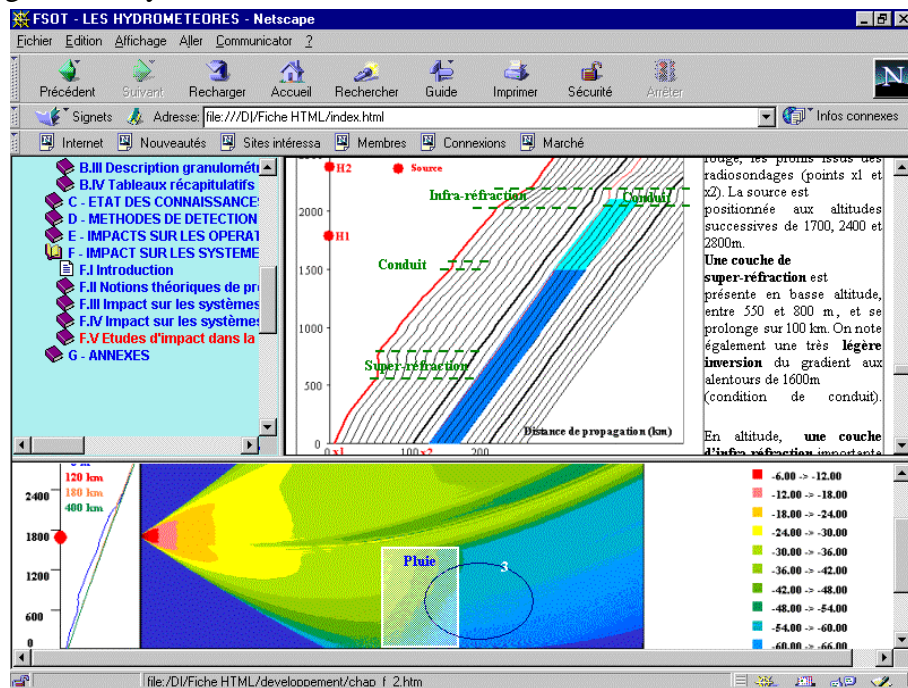


Figure 14 : The hydrometeors Subject Matter Briefing Package – Impact of Rain on Radar Propagation Is Studied

Various environmental parameters have been described : thermal front, internal waves, fog, sea bottom features, eddies, hydrometeors.

The subject matter briefing package on atmospheric propagation is in progress.

4. Computer-Assisted Learning

This software, developed by students in meteorology or various official organizations, are stand-alone and run independently of the METOC Guide. Nevertheless, they are provided on the same CD-Rom. Exercises provide a brief recall on definitions and basic information on specific environmental subjects.

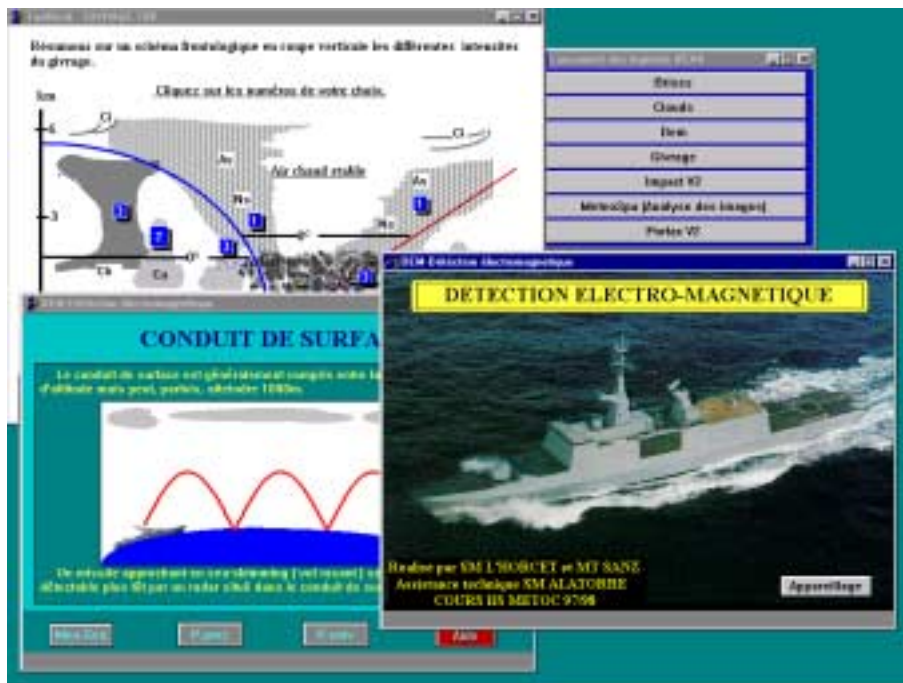


Figure 15 : Various Examples of CAL Output (Icing and Duct), Using software available within the METOC Guide CD-Rom

5. Data sources

The METOC Guide uses only external databases mainly from Shom, Météo-France, DCN or public ones.

CAL software is provided by the French Navy Metoc School, French Air Force, and Météo-France.

6. Conclusions

The METOC Guide has been developed to support tactical operations planning. The METOC Guide provides statistical and climatological environmental data. Various operational impacts may be viewed and studied using a modern GUI and attractive output.

The third version is nearly finished, but current thinking is to develop a METOC Guide-NG, which would add Additional Military Layers.

7. Acknowledgement

The authors would like to express their special thanks to René Cormier (DRC at AFRL/VSBL) for his assistance in the translation of the text.