

TEMPO experiment : Airborne measurements

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A cold patch north-east of the Bonifacio Strait has been observed during the TEMPO experiment (Santoleri and Guymer 1989, Viola 1989) from NOAA infrared images, as well from aircraft and ship measurements.

This patch indicates the presence of a cyclonic eddy corresponding to a region of cold water, which several authors attributed to forcing by the wind tunneled from the Bonifacio Strait, in particular during the Summer (Krivosheya and Ovchinnikov 1973).

The German Polar-4 aircraft of the Alfred Wegener Institute was equipped with the Rotating Antenna C-Band Scatterometer (RACS) and a KT-4 infrared radiometer, to evaluate the wind field (Wismann 1989) and the sea surface temperature over the experimental area.

Simultaneous measurements of the normalized radar cross section and of the radiometric sea surface temperature were performed for nine flight missions between September 28 and October 10, 1989.

The measurements of the thermal structure of the sea surface obtained by KT-4 and NOAA satellite show a high correlation although the absolute values measured show a difference of 2° C, between the two platforms.

Fortunately due to the meteorological condition the formation and the evolution of the cold eddy could be observed by the NOAA images. Infact strong westernly wind were blowing before the campaign started. The wind tunnelling and the divergence flux, responsible for the eddy cooling could only be observed two times during the campaign. As an example in Fig. 1 is presented the flight performed on October 7 when the wind speed was up to 10 m/s from West.

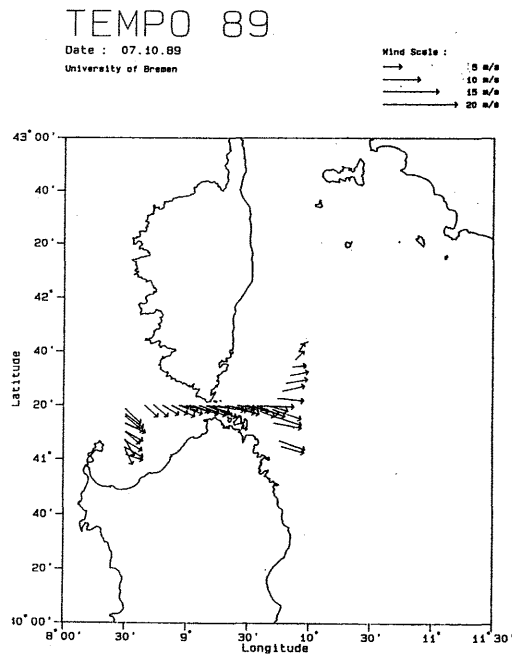


Figure 1

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Problems and Applications of Satellite Scatterometer Wind Data on the Mediterranean Sea

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The experience achieved in using the Seasat scatterometer data in the Mediterranean Sea is presented focusing on both meteorological and oceanographic (storm surge) applications.

The general problem of scatterometer validation in small basins is also discussed in describing the methodology and giving examples applied to the Adriatic Sea. Implications for the ERS-1 mission are then considered.

Finally, the problem of wind retrieval is outlined according to the results of the experimental ESA C-band campaigns and of the more recent theoretical formulations of the equation linking the Normalized Radar Cross Section to the wind speed and direction.