

Comité d'Océanographie chimique

LANDSAT-1 MSS DATA AS A TOOL TO STUDY MARINE PHENOMENA

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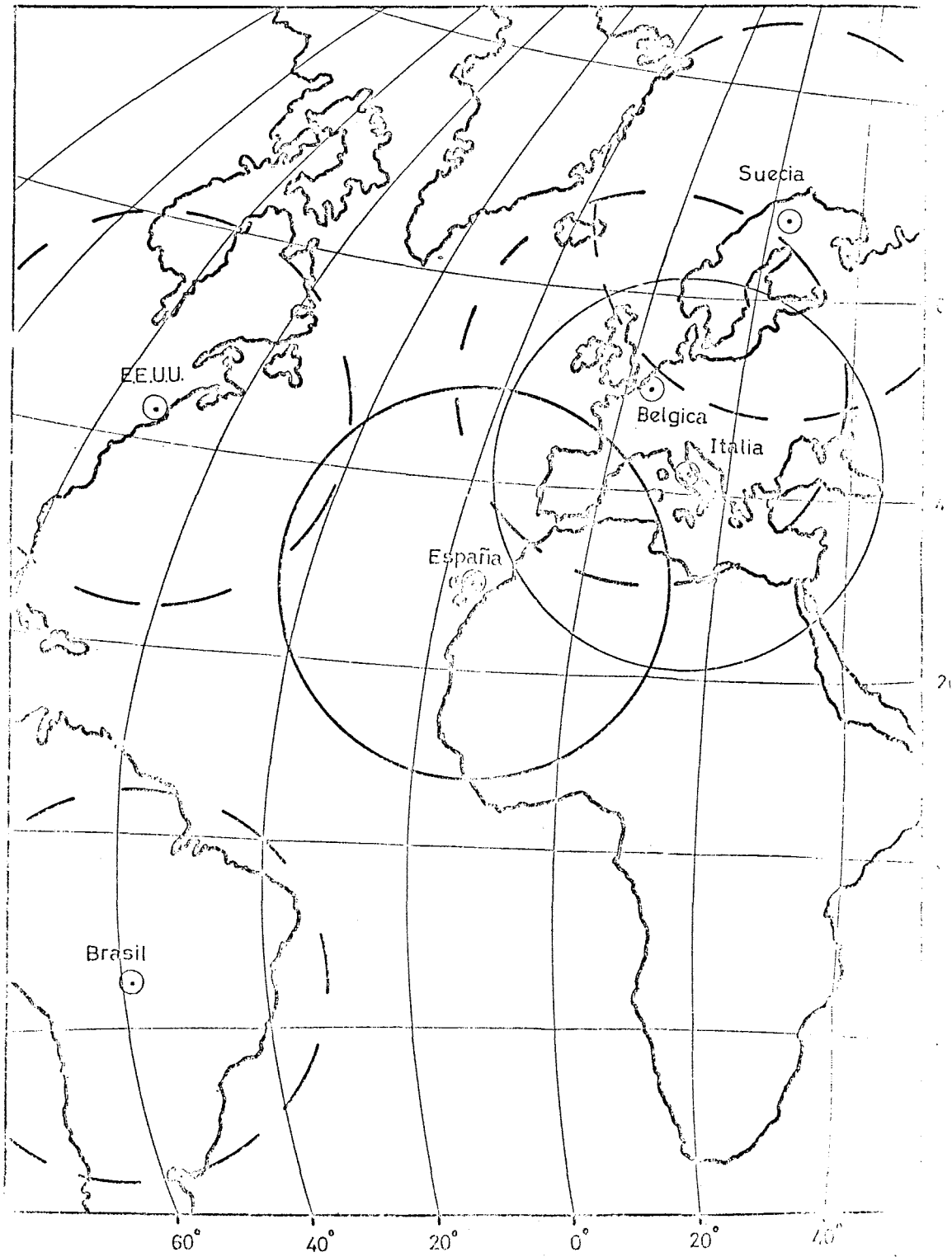
Abstract: An example of the applicability of LANDSAT MSS imagery to solve some oceanographical problems is shown. Preliminary results are in good agreement with the ground-truth measurements that have been undertaken. The use of a mathematical algorithm of the MSS channels enhances the distinction between chlorophyll and suspended sediments.

Résumé: Un exemple d'application des images du scanner multispectral du LANDSAT pour résoudre quelques problèmes océanographiques est montrée. Les résultats préliminaires obtenus avec la méthode optique sont d'accord avec les mesures pris sur place. L'utilisation d'un algorithme mathématique des canaux 4 et 5 du MSS améliore la séparation entre la chlorophylle et les sédiments en suspension.

The LANDSAT Multispectral Scanner channels four and five are well suited to detect large area phenomena generally overseen by direct ship onboard measurements. The spectral reflectivity of fresh-water sources in the marine environment and of suspended sediments as well as chloro-

phyll are similar on the referred channels. An attempt has been made to distinguish between the three of them by using a linear combination followed by a rationing of both channels. The mathematical algorithm $\frac{MSS4 - MSS5}{MSS4} \times K$ seems to be a good approximation to enhance the differences between them.

Treating the computerized imagery of both channels by analogical methods like DIAZO and AGFACONTOUR, good results are obtained. The algorithm used is well suited to distinguish fresh-water sources from sea water. Different values of the above mentioned expression enables the distinction of different pollution sources. The distinction between chlorophyll and suspended sediments needs from the aid of ground-truth measurements and is foreseen to be possible by varying slightly the algorithm.



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Discussion

Lapique G. (France) : Is it not necessary to have also in situ samplings for absolute measurements enabling a calibration of your charts ?

Ballester A.N. : Yes, of course and this is what we are doing now.

Sommenfeld P. (Canada) : The patterns shown offshore Spain strike in a SE or ESE direction, or almost at right angles to the prevailing longshore current. Is the current too deep below the surface to be picked up by the satellite camera ? That is, are surface waters stationary or subject to other forces than the ocean currents ?

Ballester A.N. : There was a strong wind from N-NW three days before.

Dejak C. (Italy) : How many bits of information per surface unit can you have ? What the cost ? Is it possible to have functions (like temperature, for instance) directly from photographs ?

Ballester A.N. : That depends on the display system chosen. The system display is very simplified and economic and the best suited for laboratories starting to study this kind of problems.

Leftić L. (Yugoslavia) : What is the highest resolution in meters ?

Ballester A.N. : About 300x300 m. I hope to get 80x80 m as resolution unit.