

Mesoscale phenomena of air-sea-mountain interaction on the lee of the Alps

by

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For the prediction of the various aspects of the calamities which threaten the historical city of Venice, its lagoon and its coast, the understanding of the local processes of natural and antropic origin is not sufficient.

The boundary conditions from the local to the regional scales must be known progressively.

Whilst the methods for short-term (6-9 hours) prediction of floods in Venice have been perfected for practical use in timely alarm systems in the city, there is a need for medium term (12 - 24 hours) prediction.

The problem therefore becomes a meteorological one, involving phenomena of meso and regional scales.

Cyclogenesis and frontogenesis in the North Western Mediterranean, caused by orographic barriers of central Europe (Pyrenees and Alps) and possibly by air-sea interaction in the Ligurian Sea, extending often to the Provençal and Tyrrhenian Sea, are responsible for about 30 % of the floods in Venice and for many inland precipitations and floods.

An approach to the study of these mesoscale phenomena has been made (Summer School on Mesoscale Meteorological Phenomena Venice - August/September 1973) and preliminary models are in progress.

The aspects of this approach are illustrated with a few slides.

The study leads to a proposal for a GARP subprogram on 'Air Flow over and around Mountains' which is being considered by JOC of GARP.

The oceanographic aspect of the project is discussed and a proposal for a collaboration between oceanographers and meteorologists is made.

