



Nowcasting of Convective Cells over Mediterranean Basin

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The aim of the project is the individuation of convective cells over the Mediterranean area with the conjunction use of satellite data (from METEOSAT satellite) in the IR and WV channels and lightning data.

We will use GCD (Global Convective Diagnostic) algorithm developed at Aviation Weather Center (AWC) of NOAA. The GCD is based on the idea that a deep convective cloud will not have any significant moisture above it. Then infrared sensor and water vapor sensor will read the same temperature. For passive clouds, such as cirrus blow off, there will be moisture generated by the original cloud that will advect down wind. The moisture should stay at the same level while the cloud particles will be slowly falling to a lower level with a slightly warmer temperature. Hence for passive clouds there should be a slight temperature difference between the water vapor channel and the infrared channel.

This technique works quite well at identifying active deep convection and can be applied to all the world's geostationary satellites. However it does not always agree with lightning sensors. Low topped convection with lightning will be missed. The GCD technique only requires that there be vertical motions near the top of the troposphere while lightning generation requires that there be at least a 7 m/sec updraft in the vertical column to support the charge separation, and large amount of liquid water content in the charging zone. We will extend the capabilities of GCD using lightning data. The new product will be validate over different cases in the central Italy using the C-band polarimetric radar of ISAC-CNR Rome.