Is Convection Nowcast Good Enough to Mitigate Problems in Air Traffic Management?

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Air Traffic Management (ATM) is a common name for all systems assisting aircraft on its journey. Two main ATM activities are Air Traffic Control (ATC)—in charge of aircraft separation, and Air Traffic Flow Management (ATFM)—in charge of airspace capacity planning. Because every air traffic controller can handle limited number of airplanes at once, every airspace and ATM sector has certain traffic capacity. The main goal of ATFM is to evenly distribute air traffic load over space and time. Warm season deep moist convection challenges this goal, because widespread storms of great vertical extent cause large air traffic detours and congestion of airspace around convectively active areas, increasing workload on air traffic controllers. For that reason, precise and accurate short range forecasts of convective coverage and cloud tops are essential for tactical planning and flow planning in ATM, and are of great importance for flight safety in general.

To address some of these issues, in 2016 and 2017, Croatia Control meteorological division tested a new forecast product for ATM—Convection Nowcast. ATM Convection Nowcast (ATCoN) is a graphical forecast of deep moist convection horizontal and vertical coverage of ATC sectors. It is manually generated by forecasters, using ingredients-based methodology and remote sensing data.

During the testing period in convective season, in the same format as original nowcast, verification data was generated using IR satellite images and lightning detection data. At the end of the testing period, forecasts were compared to observations in order to answer two key questions:

1. How good is forecast of convective coverage and

2. how good is forecast of convective cloud tops?

Usual verification measures were used in this process. This poster presents details about the ATCoN product and verification results for the testing period in 2016 and 2017.