EMS Annual Meeting Abstracts
Vol. 15, EMS2018-137, 2018


# The study of the inflight data from the sailplane flights to determine a better forecast of the Atmospheric Boundary Layer used for soaring

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The forecast of the thermals initiation and their development in the Atmospheric Boundary Layer is very important for sailplane flights. This study aims to analyze the conditions of thermals appearance and their characteristics, in order to improve the forecast. For this purpose we used the data from several cross-country sailplane flights from the National Cross-Country Championship held at Craiova Airfield (Romania) between 9th and 18th August 2017. The flights were recorded with a flight recorder mounted in several sailplanes. These inflight recordings provide us information on the sailplane's speed, position and its altitude, allowing us to analyze the height of the thermals (updrafts) and in consequence the height of the Atmospheric Boundary Layer. We also used every day radio-soundings from the HYSPLIT model (NOAA platform) to see the vertical structure of the Atmospheric Boundary Layer. In addition, the maps from the Regional Atmospheric Soaring Prediction model (RASP) showing the forecast thermal convection regions were used in our analysis. In the data analysis we also have taken into account that the sailplane's medium flight speed during the entire flight task was an important indicator of a good thermal condition (updraft's strength). We compared the inflight data obtained from the sailplane flights and radio-soundings with the forecast of the model, regarding thermal convection region and its strength, in order to check the model's accuracy. These comparisons have shown differences of 20-25 percent for each day, sometimes even 50 percent, in the detriment of the heights of the Atmospheric Boundary Layer and of the thermal zones forecasted. Therefore, an analysis for many more sailplane flights, in the same synoptic context, is necessary to decide how the forecast of thermal convection can be improved.