EMS Annual Meeting Abstracts,
Vol. 6, EMS2009-467, 2009
9th EMS / 9th ECAM

9th EMS Annual Meeting
9th European Conference on Applications of Meteorology
High resolution meteorology
- applications and services

Online interactive meteorological self-briefing for soaring flights in isolated and aligned lift

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Soaring flight depends highly on the availability of atmospheric updrafts. In recent years operational weather predictions for soaring have reached a temporal and spatial resolution which permits the planning and optimization of soaring flight tasks under various types of lift. GPS based recorded flight data is routinely used to check the quality of the forecasts.

Pilots access the predicted weather in an online self-briefing system. In a first step a weather browser presents the regional soaring forecast on a map and a barogram which are both dynamically linked by user actions. A point is seleted on the map (xy) or the barogram (zt) by moving the mouse pointer. The map (xy) is interactively updated when moving the pointer across the barogram (zt) - and vice versa. The map displays regional weather elements like the potential flight distance for the selected (zt), the barogram shows the predicted development of updrafts and clouds for the selected region (xy). Pilots easily and quickly identify regions with conditions suitable for soaring flight.

Pilots can then define a tentative flight route by clicking waypoints on the map. Every time a leg is added, the flight plan for the tentative task is updated based on the predicted updrafts and the aerodynamical performance of the glider to be used. The task speed is calculated for a range of departure times and the departure time for the best speed is displayed instantly. The meteorological flight plan for the selected departure time is visualized on both the barogram and the map. The task length is conveniently optimized by draging waypoints across the map in order to adjust the length of the considered flight route to the predicted duration of updrafts. Updrafts can be isolated or aligned (e.g. lift in convective rolls, ridge lift, or wave lift) and their spatial distribution affects the cruising speed of gliders.

After the flight the trace is routinely downloaded from the GPS flight recorder and uploaded to a web server for participating in online contests. Flight data available on the web server is readily imported into the same weather browser used before the flight for self-briefing. Flight traces are visualized in the browser on the map and the barogram. The recorded altitude trace is displayed with the predicted updrafts in the background in order to verify the predicted height of the updrafts and the convective clouds. Additionally, the predicted climb rates are used to simulate the progression of the glider along the recorded flight track. Such simulations demonstrate the skill in predicting climb rates for soaring flights with operational numerical weather models.

Flight plans for soaring in isolated and aligned lift can be obtained with state of the art prediction models and flight planning tools.