

Research Next Steps from Initial Training of Pilots and Air Traffic Controllers in Weather-Related Decision Making using Probabilistic Hazard Information Display Project

PROJECT AT-A-GLANCE

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RELEVANCE TO TECHNICAL TRAINING AND HUMAN PERFORMANCE

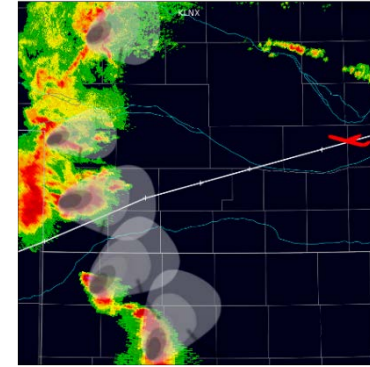
- This project examines whether scenario-based training and probabilistic hazard information (PHI) can have a positive impact on weather-related decision-making of controllers and GA pilots. This includes planning during an occurrence of severe weather, interpretation of radar information, and finally dissemination of that information.

STATEMENT OF WORK

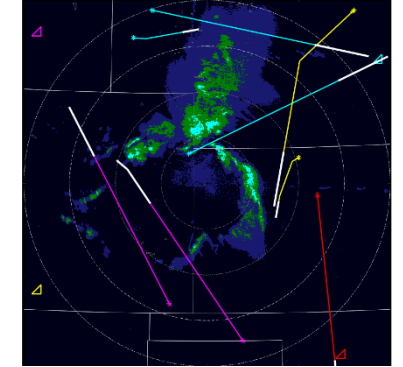
- Determine if scenario-based simulation with enhanced weather modeling can bridge gaps in weather-related training by studying GA pilot and ATC decision-making when encountering an occurrence of severe weather.
- Use historical weather data files from an aircraft incident to create radar images that imitate what is used by GA pilots and en-route controllers.
- Use flight simulator with weather data incorporated to capture pilot decision-making.
- Use computer program developed to imitate the en-route controller environment to capture ATC decision-making.

April 16-17, 2019
The Ohio State University

Developed GA Pilot and En-Route ATC Radar Images



GA Pilot Radar with Probabilistic Hazard Information



Decision-Making of ATC Participant after Scenario Training

STATUS

- Currently conducting human-subject experiments with Kent State University Bachelor of Science in Aeronautics, Air Traffic Control (AT-CTI program) students and licensed pilots.

FUTURE WORK

- Integrate the en-route controller computer program with the flight simulator. This will allow for pilot/controller experiments where a pilot participant controls the aircraft on the flight simulator and an ATC participant follows the flight in real-time on the controller screen.
- Develop multiple scenarios based on known weather hazards that pilots and controllers encounter.

Publications, Presentations & Awards

- Publications:

Pierson, E., Ling, C., Alshaqah, A., James, J., Wang, S. (2019). Design of air traffic control weather related training program. *20th International Symposium of Aviation Psychology*, Dayton, OH, May 7-10, 2017.

Alshaqah, A., Ling, C., Pierson, E., Wang, S. (2019). Factors affecting air traffic controller's weather dissemination to pilots. *20th International Symposium of Aviation Psychology*, Dayton, OH, May 8-11, 2017.

- Presentations:

20th International Symposium on Aviation Psychology (above publications)

- Awards:

- Submitted to Secretary of Transportation's RAISE Awards (decision pending)