Request for Research Funding for FY 2020-2021			
Requesting Office	Aviation Office	**Priority**	1 of 1
Proposed Title	Counting Airport Operations Using Aircraft Transponder Signals and/or Aircraft Automatic Dependent Surveillance-Broadcast (ADS-B) Data		
Justification	Accurate estimates of daily and annual aircraft operations at airports (e.g., approaches, landings, takeoffs, departures, low approaches, touch-and-go landings, etc.), including the types of aircraft conducting the operations, provide critical information used in airport planning, environmental analysis, funding, project justification, and staffing, to name a few. For airports with an air traffic control tower, the aircraft operations are collected and reported by the tower controllers. Florida has 129 public-use airports, of which only 9 have a full-time operating control tower, 38 have a part-time operating control tower, and 82 do not have a control tower. Estimates of aircraft operations at the 38 airports with part-time towers during the hours the tower is not operating and estimates of aircraft operations at all 82 airports without a control tower are inaccurate and unreliable. This issue has been the subject of several studies (see Existing Work section below), however, there has yet to be identified an acceptable and cost-effective solution. This proposed research project would explore the feasibility of using optimally placed receiving equipment combined with specialized computer programming that would capture aircraft transponder and/or ADS-B equipment signals to record aircraft operations. For example, a specific aircraft's location/altitude profile (as recorded using its transponder/ADS-B signals) in relation to a known airport's location, could be used to indicate a type of operation at that airport (e.g., landing, takeoff, etc.).		
Impact	The results of this project could result in the application of a new technology for the collection of accurate estimates of aircraft operations. Accurate aircraft operations information is a critical component for airport sponsors, the FAA, and the FDOT for airport planning and for making prudent airport project prioritization and funding decisions.		
Affected Offices	Aviation Office (Aaron Smith, Andy Keith, Nick Harwell) District Aviation Coordinators (D1: Kristi Smith and Wendy Sands; D2: Kyle Coffman and Donna Whitney; D3: Quinton Williams and Vanessa Strickland; D4: Lauren Rand and Laurie McDermott; D5: Allison McCuddy; D6: Dionne Richardson; D7: Raymond Clark and Michael Brown)		
Existing Work	DOT/FAA/TC-19/43, _Technology Assessment to Improve Operations Counts at Non-Towered Airports_ (November 2019) ACRP Problem Statement: 105 _Counting airport operations from Automatic dependent surveillance-broadcast (ADS-B) data_ Status: Submitted to ACRP IdeaHub 2 years ago, stage changed from Industry Evaluation to Idea Collection 1 year ago. Not sure when or if this similar proposal will receive ACRP approval and funding. Purdue University, Research Foundation News, _New data collection technology may help small airports improve operations counts, increase FAA funding_ (July 23, 2018) FDOT Aviation and Spaceports Office, C9M07 Task Work Order #24, _Operations Counting at Non-Towered Airports Assessment – Phase II_ (July 24, 2017) FDOT Aviation and Spaceports Office, C9M07 Task Work Order #15, _Operations at Non-Towered Airports Methodology Development – Phase 1_ (August 29, 2016) ACRP Synthesis 4: _Counting Aircraft Operations at Non-Towered Airports_ (Summer 2016) ACRP Report 129: _Evaluating Methods for Counting Aircraft Operations at Non-Towered Airports_ (Completed 11/28/2014)		
Keywords Used In Existing Work Search **(Cannot leave blank)**	Airport, Aircraft, Operations, Counting, Aircraft Transponder, Aircraft Automatic Dependent Surveillance-Broadcast, ADS-B, Mode C, Mode S, Airport Planning, Airport Funding, Noise Impacts, Administration, Environment, Policy		
Related Contracts (Give contract numbers)	N/A		

Funding Request	$50,000	**Anticipated Duration**	1 Year
Project Manager	Nick Harwell	**Contracting Method**	Contract with University, ideally a University with an Aviation Program (e.g., Embry Riddle Aeronautical University, Florida Institute of Technology, etc.)
Urgency	Score 1-5 1= highest, most immediate need 2	Obtaining accurate metrics on the number and type of operations conducted at airports without an operating control tower has been a long-term deficiency throughout the entirety of the aviation community. Project prioritizations and funding decisions can be vastly improved if supported by data that accurately reflects the activity levels and types being conducted at airports. Without accurate and validated data, these prioritization and funding decisions will continue to be influenced by low confidence information.	
Implementability	Score 1-5 1=greatest likelihood of and proximity to implementing results 2	The results of this research project may identify products or services that could be procured to evaluate a limited number of airports for a limited timeframe to determine the degree of accuracy of collecting airport operations data. Follow-on implementation of the services would be scalable, depending on budget and airport coverage desired, and could include funding support from interested partners (e.g., the FAA and the Florida Airports Council – FAC).	

Project Benefits (Succinct, complete explanation)

This proposed research project would explore the feasibility of using optimally placed receiving equipment combined with specialized computer programming that would capture aircraft transponder and/or ADS-B equipment signals to record aircraft operations. For example, a specific aircraft's location/altitude profile (as recorded using its transponder/ADS-B signals) in relation to a known airport's location, could be used to indicate a type of operation at that airport (e.g., landing, takeoff, etc.).

Collecting accurate estimates of daily and annual aircraft operations at airports (e.g., approaches, landings, takeoffs, departures, low approaches, touch-and-go landings, etc.), including the types of aircraft conducting the operations, would provide critical information used in airport planning, airport project prioritization, funding justification, environmental analysis, staffing, etc.

Project Benefits (Select all that apply and explain)	Quantifiable Benefits (units, dollars, etc…if applicable)	Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits
o Materials Enhancement		
o Materials Savings		
o Time Savings		
o Lives Saved/Injuries Prevented		
o Other (Explain)		Stronger and more meaningful project prioritization and grant funding request justification statements where the measure of airport operations is relevant. Changes in the amount of FAA Airport Improvement Program (AIP) grant funding (https://www.faa.gov/airports/aip/). Feedback from airport sponsors and District Aviation staff regarding improvements to process of ranking/prioritizing airport projects. Inclusion and/or strengthening of confidence in the use of forecast airport operations data in the Airport Master Planning process.

*Comments should explain and support urgency, financial benefit, and implementability scores