Airport Environmental

Presented to: REDAC Subcommittee on Airports
By: Lauren Vitagliano
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Airport Environmental

Research Co-Sponsored by:

• FAA Office of Airports, Planning and Programming
  – Planning and Environmental Division (APP-400)
• FAA Office of Environment and Energy
  – Noise Division (AEE-100)

Airport Environmental Research Purpose:
Explore ways to improve the environmental performance of airports while continuing to support community needs for efficient access to transportation services. This research develops effective analytical capabilities, such as data integration and digital tools, to improve airport decision making on infrastructure development plans. Consideration of sustainability, climate change, and resilience factors is needed to better integrate plans for effective outcomes. The users of these research products are FAA Environmental Protection Specialists, airports operators and industry stakeholders.
# Airport Environmental Current Projects

## Environmental

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
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<tbody>
<tr>
<td>Geospatial Environmental Map Tool (AppMap)</td>
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<td>Future Climate Scenarios for Runway Length</td>
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<tr>
<td>* Resilience at Vulnerable NPIAS Airports with Climate Change and Severe Weather</td>
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<th>FY21</th>
<th>FY22</th>
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<td>320K</td>
<td>1.2M</td>
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FAA AppMap

Centralized geospatial mapping tool to improve internal workflow, streamline planning/environmental process and support NEPA reviews.

PHASE I – OCT 2017-DEC 2018
• Prototype

PHASE II – DEC 2018-SEPT 2019
• All Tier 2 and remaining Tier 1 datasets
• Enhancements from Phase I
• Management of large datasets and search functionalities
• CATEX query
• Updated NPIAS queries from DW
• Test & publish AppMap

PHASE III – SEPT 2019-APR 2020
• Complete Data/Query Functionality
• Automatic CATEX Query
• Statistics Tool
• Coordinate with Field Offices
• User Guide/System Documentation

PHASE IV – OCT 2020
• Continue to engage stakeholders on the use of AppMap
• Continue Phase III enhancements/updates

PHASE IV – AUG 2020
• Complete incorporation of new data into AppMap
• Complete data resource analysis
• Enhance Querying capabilities

PHASE V – MAY 2021
• Upgrade AppMap to 3D-based platform
• Move AppMap into the EIM
• Link or incorporate IFP EPFT with AppMap to help with CATEX’s
FAA AppMap

Development Updates

- New Data – Tree Growth Eco-Regions
- Enhance querying capabilities – IFR Access
- Enhance User Interface
FAA AppMap http://appmap.faa.gov
FAA evaluates runway length needs for civil airports using Advisory Circular (AC 150/5325-4B), which contains the runway length requirements for airplanes for a range of weights, runway conditions, temperatures, and airport elevation.

Future environmental changes in precipitation patterns (wet or dry) and average high temperatures might effect key inputs that were used to evaluate runway length.

A thorough understanding of future climate trends and their effect on aircraft performance are needed with an update to the AC’s methodology.
Airport Environmental Research
Future Climate Scenarios for Runway Length

• Reviewed National Climate Assessment’s Climate Resilience Toolkit

• Historical data analyzed

• Adjustment to AC was tested with case studies for 30 busiest airports
Airport Environmental Research

*New Research*

Resilience at Vulnerable NPIAS Airports with Climate Change and Severe Weather

Duration – 5 year study (at least)
Budget - $1.5mil (to start)
Support – Volpe Research Center
Airport Environmental Research
Resilience at Vulnerable Airports

Background

- **Flooding** - 13 of the Nation’s 47 largest airports have at least 1 runway within reach of moderate to high storm surge.
- **Permafrost Collapse** – AK relocated 1 airport, others in danger
- **Climate Change** – “sunny day” flooding
- **Sea Level Rise** – Micronesia needs near term solutions

Plans are needed to address short-medium term and long term scale.
Airport Environmental Research
Resilience at Vulnerable Airports

EXECUTIVE ORDERS

EO 14008 of January 27, 2021 – Tackling the Climate Crisis at Home and Abroad


*Mandate development of climate action plan and evaluation of flood risks.*
Airport Environmental Research
Resilience at Vulnerable Airports

Purpose

• Develop prioritized, risk-based recommendations for how FAA and airport operators can address climate change and severe weather impacts.
• Develop tools that will help FAA determine which airports are the most vulnerable

FAA/AEE Climate Action Plan submittal to U.S. Department of Transportation (March 11, 2021): “The FAA does not currently have a formalized process in place to evaluate facilities.”
FAA Role in Micronesia

• FAA currently provides technical, navigational, airspace and AIP funding support for airports under the Compacts of Free Association and in American Samoa.
• Compacts apply to the Federated States of Micronesia (FSM), Republic of the Marshall Islands (RMI), and Palau.
  • These three are the Freely Associated States (FAS)
MAJURO INTERNATIONAL AIRPORT

U.S Army Kwajalein Atoll Garrison, Ronald Reagan Ballistic Missile Test Site (USAKA)

PAGO PAGO INTERNATIONAL AIRPORT
Airport Environmental Research
Resilience at Vulnerable Airports

Work Plan

1. Inventory Airport-Related Vulnerable Assets
2. Incorporate Resilience Data into Existing FAA Tools (AppMapp, ATO NISIS)
3. Complete System-Level Studies of Vulnerable Airports
4. Conduct Case Studies at Specific Airports
5. Develop Framework for a Sustainability Resilience Pilot Program
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Resilience at Vulnerable Airports

Work Plan – Inventory Airport Related Vulnerable Assets

- ID and prioritize the regions where flooding and erosion are most likely to trigger asset damage and operational loss of use.
- Apply climate scenarios over one or most scales (10, 20, 30, 40, years) based on National Climate Assessment hazard info
- Delineate airport-related assets in regions exposed to flooding/erosion due to permafrost loss
Work Plan – Incorporate Resilience Data into Existing FAA Tools

• ID Tools and datasets to add resilience-related data; NAS Integrated Status Insight System (NISIS)
• ID data gaps for future research - prepare recommendations about the types of resilience data that are useful to integrate into FAA tools
• Develop approach for integration
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Resilience at Vulnerable Airports

Work Plan – Complete System-Level Studies of Vulnerable Airports

• Alaska, Micronesia – to ID airports for further case study.

*multiple high-risk airports where collaboration between various levels of government & military is critical*
Work Plan – Conduct Case Studies at Specific Airports

• Screening criteria for additional case studies – factors like:
  – elevated spending, diverse locations, resilience strategy, hub/GA/freight, applicability to airports nationwide

• Perform case studies based on the above ranking criteria.
  – Analysis
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Resilience at Vulnerable Airports

Work Plan – Develop Framework for a Sustainability Resilience Pilot Program

• Best practices for Pilot program framework.
• Would assist airports with conducting resilience pilots in repeatable and effective manner.
• Would address projected impacts over varying timescales and scenarios
Next Steps:

• Complete contracting – FY21
• Initial Project Management Plan – 30 days NTP
• Work Plan – 60 days NTP
Questions?

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