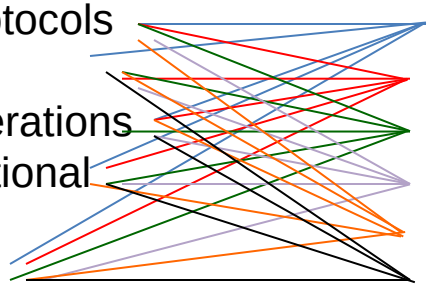
Winds And Aviation Operations:
Degrees of Freedom in Considering Relevant Domains

Wind Conditions drive:

- Significant safety needs / protocols
- Airport / airspace capacity
- Achievability of NextGen operations
- Pilot, ATC, ATM, AOC operational decision-making
- Ground and cockpit actions



Meteorological Phenomenology:

- Surface wind speed, gusts
- Surface wind direction
- Wind shifts
- Low-level(s) wind shear
- Microbursts / Macrobursts
- Steering / Flight-level / Jet stream winds

Translated, Wind-Induced Operational Considerations (Sample)

- Runway configuration, taxi queue management
- Crosswind / tailwind impacts, constraints
- Airport capacity (degraded operations)
- Wind compression
- Jet stream optimization / avoidance (fuel management, schedules)

NAS Operations / Decision Support / TMIs Accountable To Winds (Sample)

- Trajectory-based Operations / Time-based Metering (TBFM)
- Required Time of Arrival (RTA)
- Interval Management (IM)
- Runway Configuration Management (RCM)
- Wake Turbulence Mitigation for Departures (WTMD)
- Airport Acceptance Rate (AAR) Setting / Capacity Utilization
- Optimized Oceanic “Nat tracks” Utilization

- **Affects operations for all phases of flight**
- **Safety / efficiency impact for commercial and GA operations**
- **Large temporal and spatial domain ranges**

Winds Panel Discussion Focus Today

- **Wind Constraints and Opportunities – AOC perspective**

  Tom Lloyd – Manager, Meteorology & Route Optimization, JetBlue Airways

- **Isolating / Predicting Wind Conditions Conducive to Operationally Significant Wind Compression Events**

  Colleen Reiche, Senior Scientist, AvMet Applications

  (Research sponsor: FAA NextGen Weather Office – ANG-C6)

- **Wind Needs for NextGen Operations**

  Tom Reynolds, Assistance Group Leader, Air Traffic Control Systems, MIT Lincoln Laboratory

  (Research Sponsor: FAA Weather Technology in the Cockpit (WTIC) program, ANG-C6)