

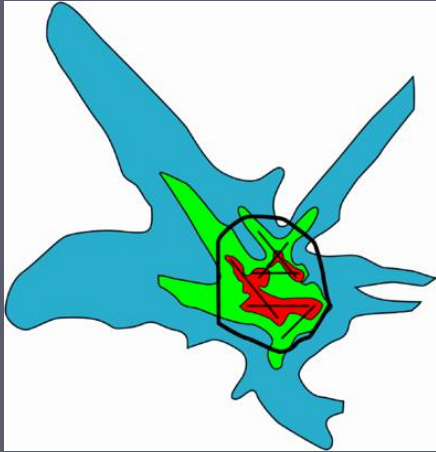


# Environmental Impacts and Mitigation

Rappertour: Lourdes Maurice – FAA

Session Chair: Cesare Bernabei – CEC DG TREN

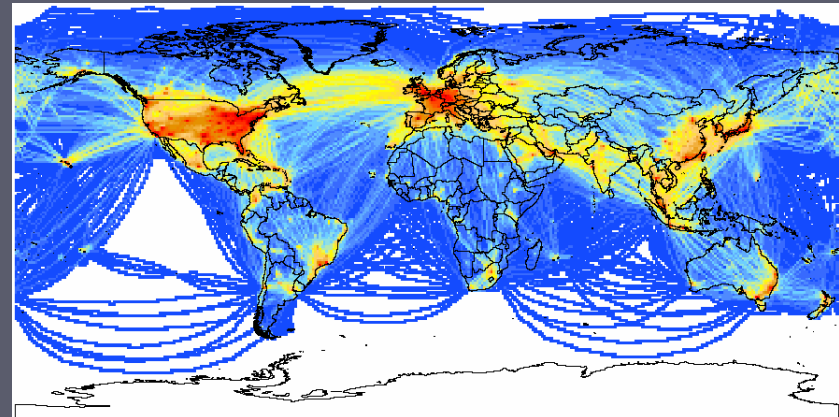
# Aviation Environmental Challenges



Community Noise Impacts



Air Quality



Global climate



Water Quality

Thursday, July 14, 2005

# Presentations



- ▶ SOURDINE II Assessment Aspects of Noise Abatement Procedures - NLR
- ▶ Human Factors Implications of Continuous Descent Approach Procedures for Noise Abatement in Air Traffic Control – MIT
- ▶ Variability of Contrail Formation Conditions and the Implications for Policies to Reduce the Climate Impacts of Aviation – Imperial College
- ▶ Environmental Tradeoffs Assessment Around Airports – ENVISA/EUROCONTROL

# Presentation Themes



- ▶ Environmental issues are a major concern that must be addressed to increase capacity
- ▶ Greenhouse gas emissions a growing area of focus
- ▶ Must consider tradeoffs
- ▶ Collaboration Critical

# Capacity



- ▶ Operations an attractive nearer term opportunity to mitigate environmental impacts – **Continuous Descent Approach** receiving widespread attention
- ▶ **Noise traditional focus** – must consider safety, capacity, cost/benefit, emissions implications
- ▶ **Acceptability key** – must consider acceptability by both pilots and air traffic controllers
- ▶ Must understand **user needs** and develop technologies to facilitate transition
- ▶ **Analytical tools** needed to assess impacts
- ▶ **Implementation** a major challenge – requires global approaches

# Greenhouse Gases



- ▶ Aviation contributes 3.5% of global GHG emissions – **likely to grow in context of other sources**
- ▶ **Significant uncertainties** surround relative contributions from various emissions
- ▶ **Temporal and spatial** uncertainties make assessment challenging
- ▶ Impact could be mitigated by **operational procedures** – but must carefully consider cost/benefit and tradeoffs
- ▶ Policy decisions need to be **informed by science**
- ▶ Science needs to be informed by **operational requirements**

# Tradeoffs



- ▶ Tradeoffs between noise and emissions and amongst emissions recognized, but **not generally considered** in policy decisions
- ▶ ICAO and others **recognize the importance of addressing** tradeoffs in the future
- ▶ **Monetizing impact** key to future inform mitigation policies
- ▶ **Tools for assessing tradeoffs** are in their infancy and require further development and validation

# Collaboration

- ▶ Successful research efforts generally entails a multi-disciplinary, multi-organizational approach
- ▶ Environment is a global problem requiring global solutions
- ▶ Need to strengthen international research ties in environment



# Future Directions



- ▶ Robust analyses of **capacity and economic impact** of environmental mitigation actions
- ▶ Robust treatment of **interrelationships**
- ▶ **International ties** between research efforts critical to success
- ▶ Increase ties between **science and operations**
- ▶ Need to consider **alternative sources of energy**  
But, are radical changes (like hydrogen) feasible?