

# Crew rotation and passenger connections spread flight delays

February 12 2013

---

A study led by researchers of the Spanish National Research Council and the University of the Balearic Islands asserts that crew rotation and passengers connections systematically spread flight delays due to a domino effect. The work, that proposes a new methodology to assess the degree of air traffic congestion, is published on the latest issue of *Scientific Reports*.

The study, based on data collected by the [Federal Aviation Administration](#) of the United States, provides a tool to evaluate airlines planning and confirms that air [traffic congestion](#) is a collective phenomenon. Researchers have already applied to patent the method.

Víctor Martínez Eguiluz, CSIC researcher at the Institute for Cross-Disciplinary Physics and Complex Systems (IFISC), a joint research Institute of CSIC and the University of the [Balearic Islands](#), asserts: "Flight delays have a great cost for both airlines and passengers, and not only economic but also environmental. Understanding how delays propagate allows us to evaluate the different schedules and flight management protocols to mitigate the effects of delays before implementing them in reality".

## A predictive model

Scientists have analyzed the FAA available data on each aircraft, their arrival and departure times (both actual and scheduled) over a year. By

analyzing punctuality data and comparing the results with the predictions of their model, they have identified the factors that propagate flight delays. CSIC researcher explains: "This analysis allowed us to globally characterize the degree of air traffic congestion and the spread of primary delays. Subsequently, we have proposed a model of air traffic based on data".

CSIC researcher adds: "It has practical implications to the extent that, as a model calibrated with data, it has a predictive capability. Applications are related to the development of a tool that predicts the degree of congestion in an air [traffic network](#), to assess a priori the robustness of an airline schedule, and the air system response under different scenarios marked, for instance, by weather phenomena".

Provided by Spanish National Research Council

Citation: Crew rotation and passenger connections spread flight delays (2013, February 12)  
retrieved 20 April 2024 from <https://phys.org/news/2013-02-crew-rotation-passenger-flight.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.