How Will the next eruption in Tenerife affect aviation?

#ShareEGU20

Alberto Prieto[1,2], Luca D'Auria[1,2], Giovanni Macedonio[3], Pedro A. Hernández[1,2], William Hernández[1,2]

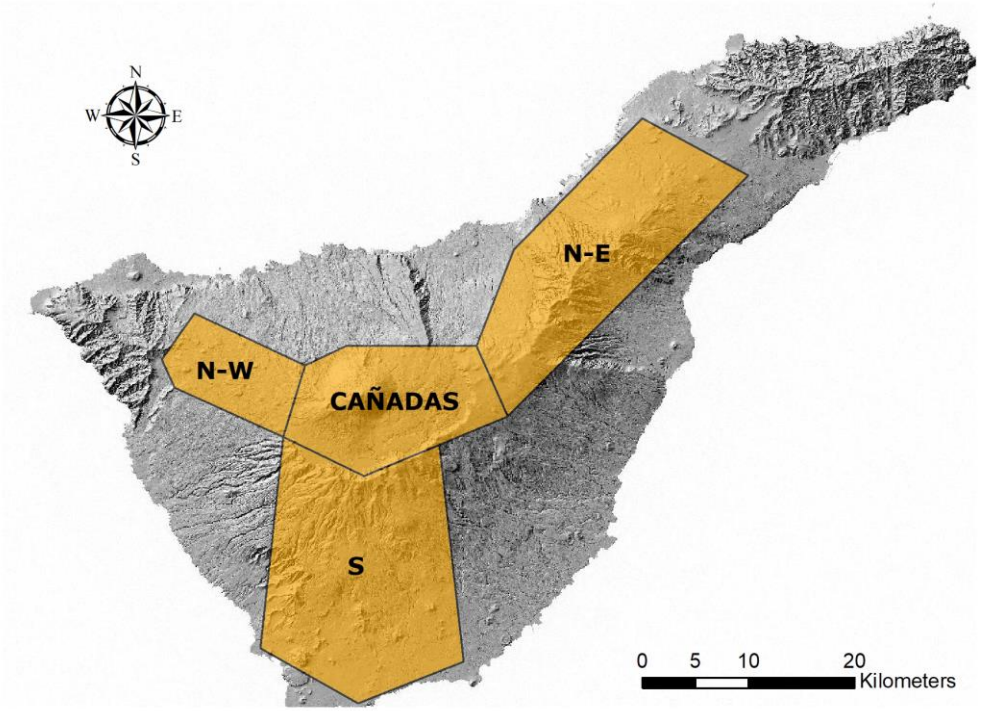
[1] Instituto Volcanológico de Canarias (INVOLCAN), [2] Instituto Tecnológico y de Energías Renovables (ITER)
[3] Istituto Nazionale di Geofisica e Vulcanologia (INGV)

Introduction

- The aim of this work is to know how aviation would be affected by a possible eruption in Tenerife.
- A large set of FALL3D numerical models of small-magnitude eruptions in Tenerife have been developed using supercomputing facilities of Teide-HPC.
- Based on data of historical eruptions in Tenerife, Kernel Density Estimation (KDE) have been used to estimate the probabilistic impact of similar eruptive scenarios.

Historical Eruptions in Tenerife

Last 10.000 years eruptions: 19 (N-W), 18 (CAÑADAS), 5 (N-E) and 0 (S).



VolRiskMac

MAC 2014-2020 Cooperación Territorial

How Will the next eruption in Tenerife affect aviation?

EGU General Assembly 2020

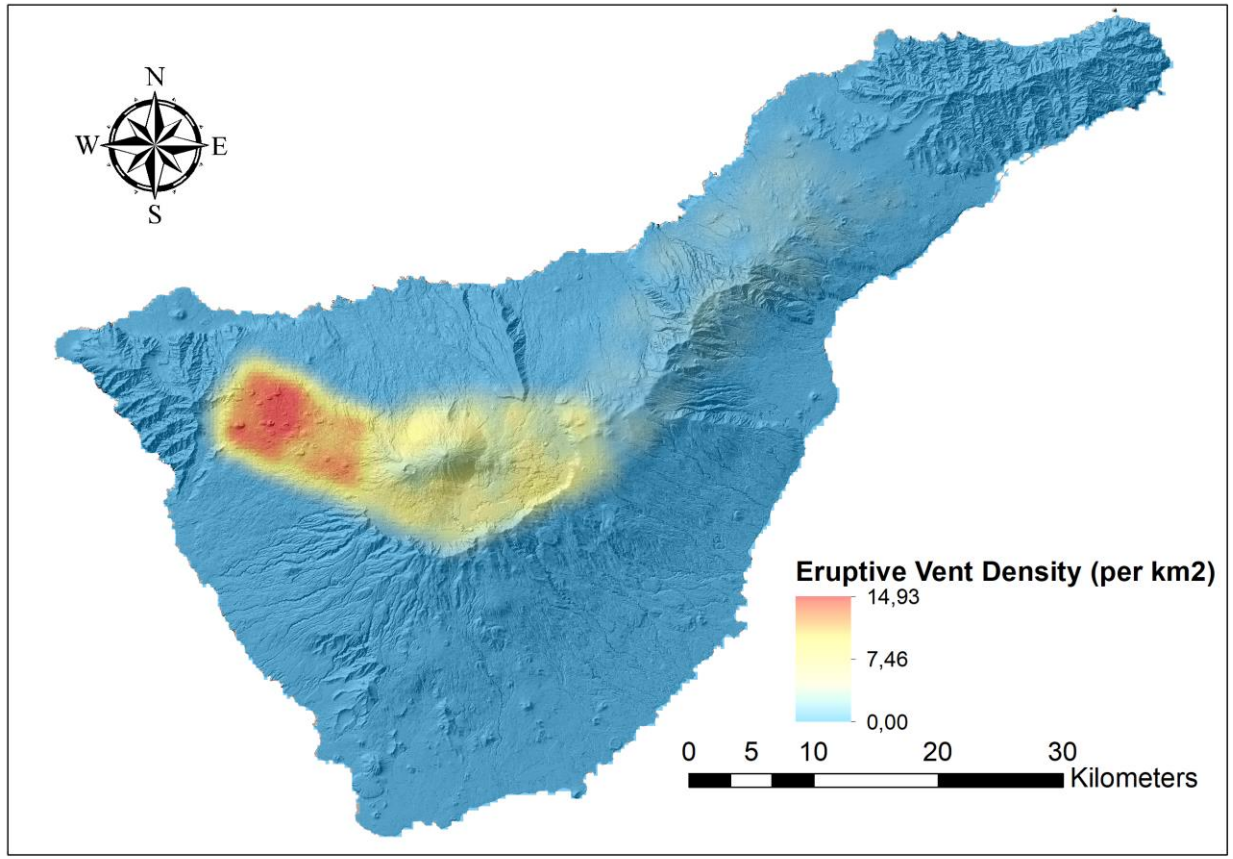
#ShareEGU20

Alberto Prieto[1,2], Luca D'Auria[1,2], Giovanni Macedonio[3], Pedro A. Hernández[1,2], William Hernández[1,2]

[1] Instituto Volcanológico de Canarias (INVOLCAN), [2] Instituto Tecnológico y de Energías Renovables (ITER)
[3] Istituto Nazionale di Geofisica e Vulcanologia (INGV)

Vent Opening Probability

- The figure shows Kernel Density Estimation of vent opening probability on the basis of known Holecene vents.
- It's shows that the most probable location of future volcanic activity is on the North-West dorsal and, in lesser proportion, in the Las Cañadas area.
- We realized about 2550 numerical simulations to estimate the impact of volcanic ash dispersion and fallout on the civil air traffic.



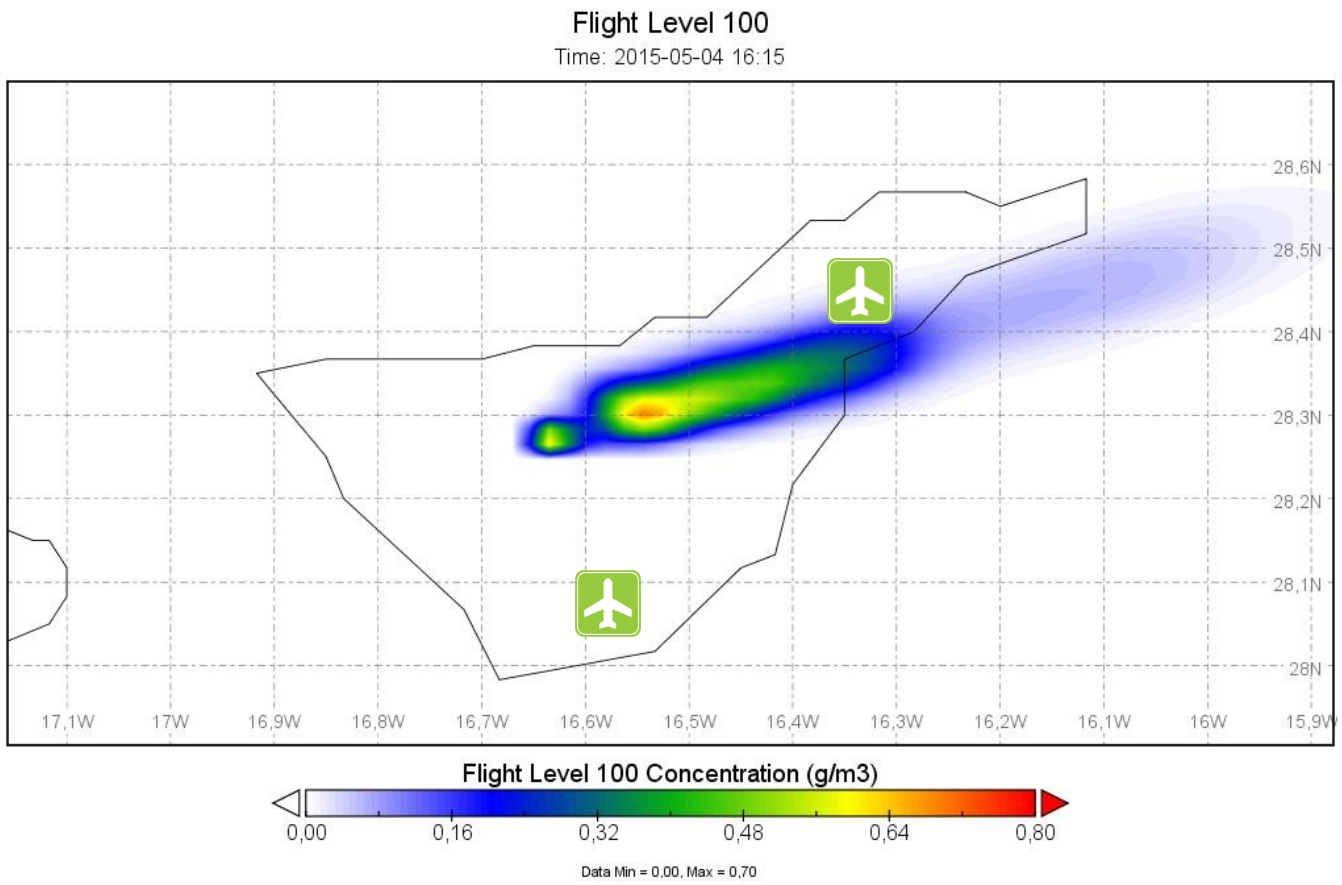
INVOLCAN Instituto Volcanológico de Canarias
ITER
INGV
Interreg Fondo Europeo de Desarrollo Regional
TFinnova
MEDI Marco Estratégico de Desarrollo Insular
CAN Fondo de Desarrollo de Canarias
Gobierno de Canarias

How Will the next eruption in Tenerife affect aviation?

#ShareEGU20

Alberto Prieto[1,2], Luca D'Auria[1,2], Giovanni Macedonio[3], Pedro A. Hernández[1,2], William Hernández[1,2]

[1] Instituto Volcanológico de Canarias (INVOLCAN), [2] Instituto Tecnológico y de Energías Renovables (ITER)
[3] Istituto Nazionale di Geofisica e Vulcanologia (INGV)



Numerical Modelling

- More than a thounsand small-magnitude eruptions in Tenerife have been modelled using FALL3D.
- Statistical evaluation of ash dispersion and fallout have been carried out.
- ERA-Interim re-analysis meteorological data from ECMWF database were coupled with our modelling.
- On the left, an example of ash concentration model for an eruption in Las Cañadas.