

LOW-COST, FAST DEPLOYMENT MULTI-SENSOR OBSERVATIONS OF THE 2021 CUMBRE VIEJA ERUPTION

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- The concept

- Cumbre Vieja
-

- Monitoring experiments
-

- Results
-

- conclusions
-

Volcanic areas are usually remote and inaccessible and only 30% of active volcanoes have instrumentation to monitor their activity (MacGuire et al 1995)

Alternative monitoring approach

- ✓ Low-cost
- ✓ Fast to deployment
- ✓ Wireless
- ✓ Plug and play
- ✓ Cloud computing
- ✓ Web based information serve



PROYECTO
VolRiskMac II

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2021 Cumbre Vieja eruption – La Palma, Canary Islands

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excellent test site for a proof of concept





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1st experiment - October 2021

- The concept

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Sensor assembly set :

- ✓ CO₂
- ✓ PM10
- ✓ PM2,5
- ✓ Temperature
- ✓ Humidity
- ✓ Pressure

Communications:

- ✓ GSM

Power:

- ✓ Power grid connected
- ✓ Autonomous power





1st experiment - October 2021

- The concept
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Communications:

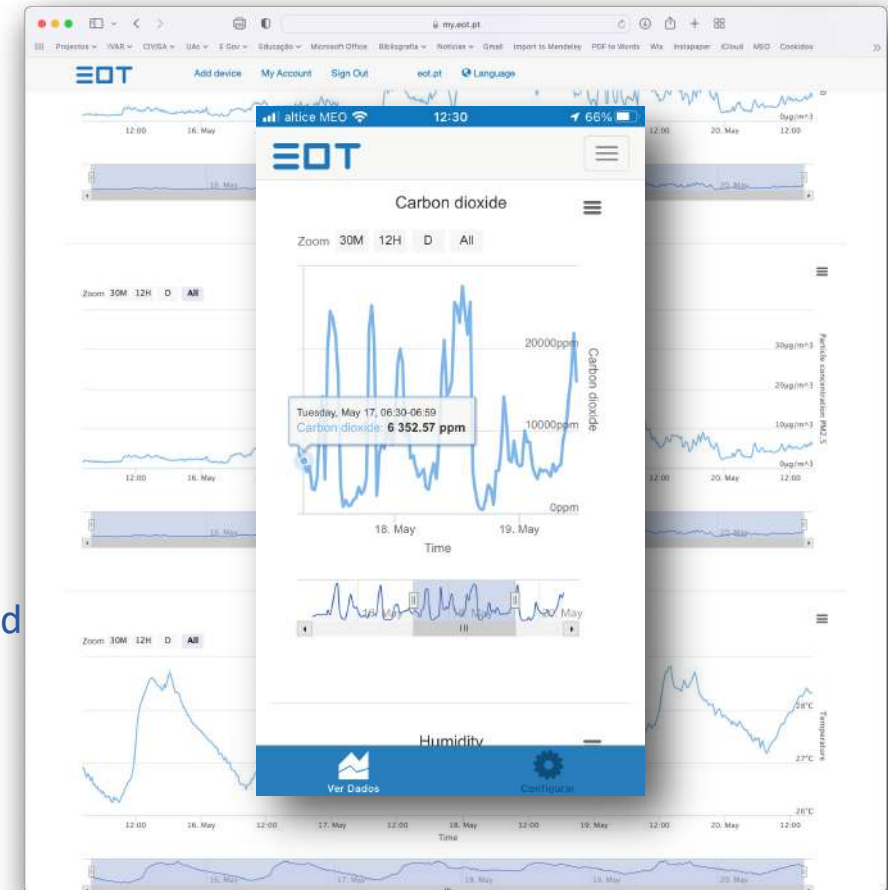
- ✓ GSM

Equipment:

- ✓ Power grid connected
- ✓ Autonomous power

Real time data display:

- ✓ Web
- ✓ App





1st experiment - October 2021 Deployment

- The concept

- Cumbre Vieja

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2nd experiment - December 2021

- The concept
-

- Cumbre Vieja
-

- **Monitoring experiments**
-

- Monitoring data
-

- conclusions
-

- The
-

- The

Sensor assembly set :

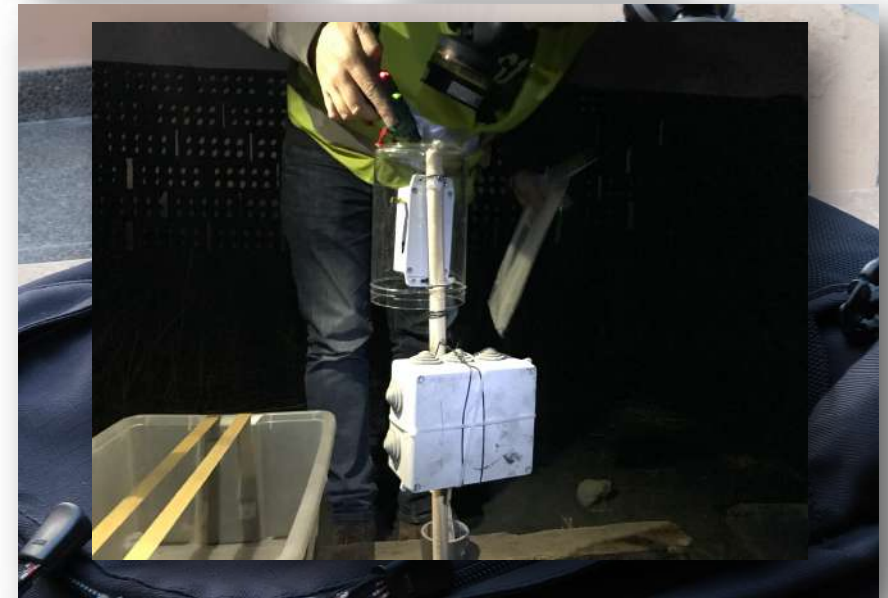
- ✓ SO₂
- ✓ CO₂
- ✓ PM10
- ✓ PM2,5
- ✓ Temperature
- ✓ Humidity
- ✓ Pressure

Communications:

- ✓ GSM

Equipment:

- ✓ Power grid connected
- ✓ Autonomous power





2nd experiment - December 2021 Deployment

- The concept

- Cumbre Vieja

- **Monitoring experiments**

- Results

- conclusions



2nd experiment - December 2021

- The concept
-

- Cumbre Vieja
-

- Monitoring experiments

- Results
-

- conclusions
-

Marine experiment:

- ✓ Buoy

Communications:

- ✓ LORA

Buoy assembly set :

- ✓ Hydrophone





2nd experiment - December 2021

- The concept

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Balloon experiment:

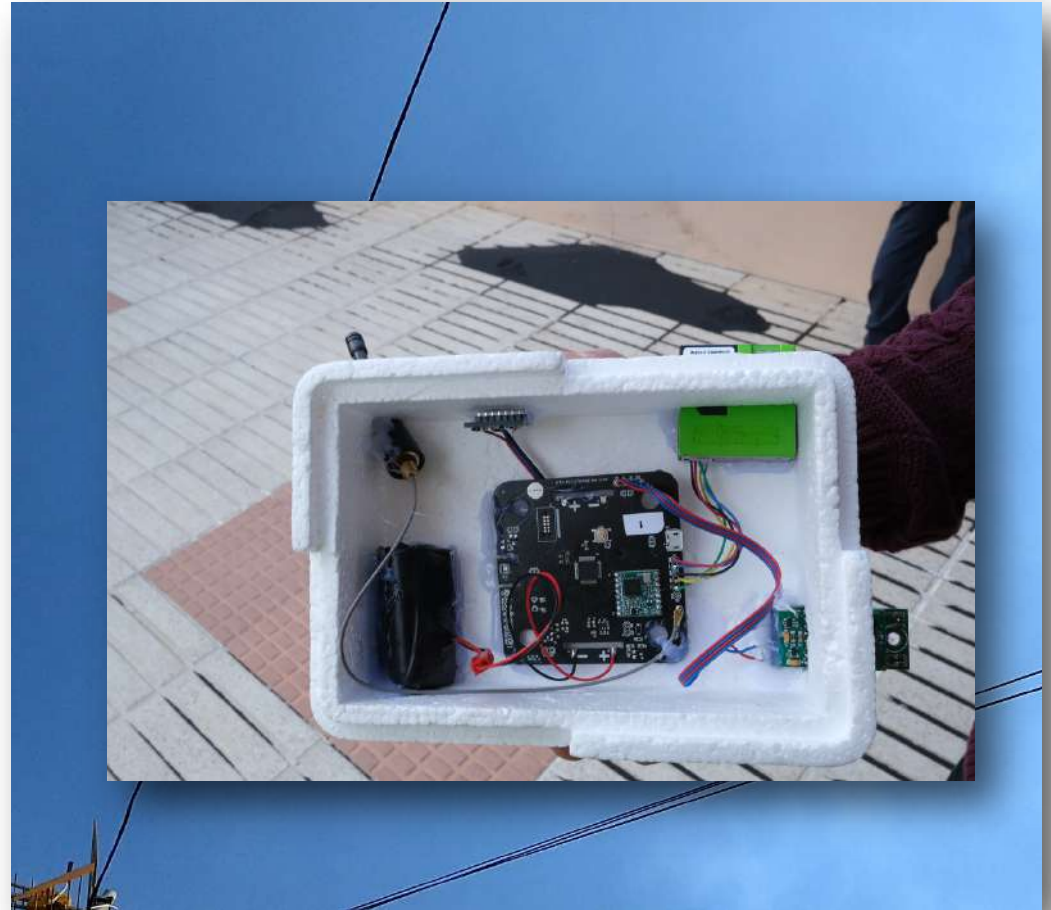
- ✓ Balloon

Communications:

- ✓ LORA

Sensor assembly set :

- ✓ SO₂
- ✓ CO₂
- ✓ PM10
- ✓ PM2,5
- ✓ Temperature
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- ✓ Pressure





Development

- The concept
- Cumbre Vieja
- Monitoring experiments
- **Results**
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- Enclosure protection
- Autonomy
- Communication





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➤ Valuable data

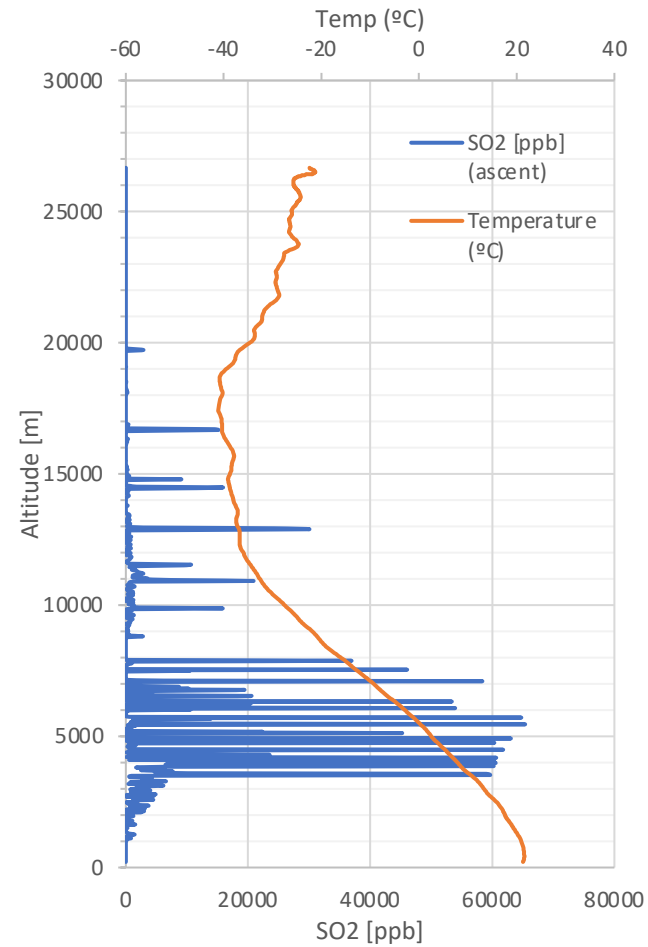




Usability

- The concept
- Cumbre Vieja
- Monitoring experiments
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➤ Valuable data





Usability

- The concept

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➤ Efficient

➤ Effective

➤ User friendly

➤ Extremely fast

➤ Valuable data



THANK YOU