



# Training event on Atmospheric Composition Data Exploitation Introduction Part1

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**IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System**  
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-  
Mission 4 "Education and Research" - Component 2: "From research to business" - Investment  
3.1: "Fund for the realisation of an integrated system of research and innovation infrastructures"

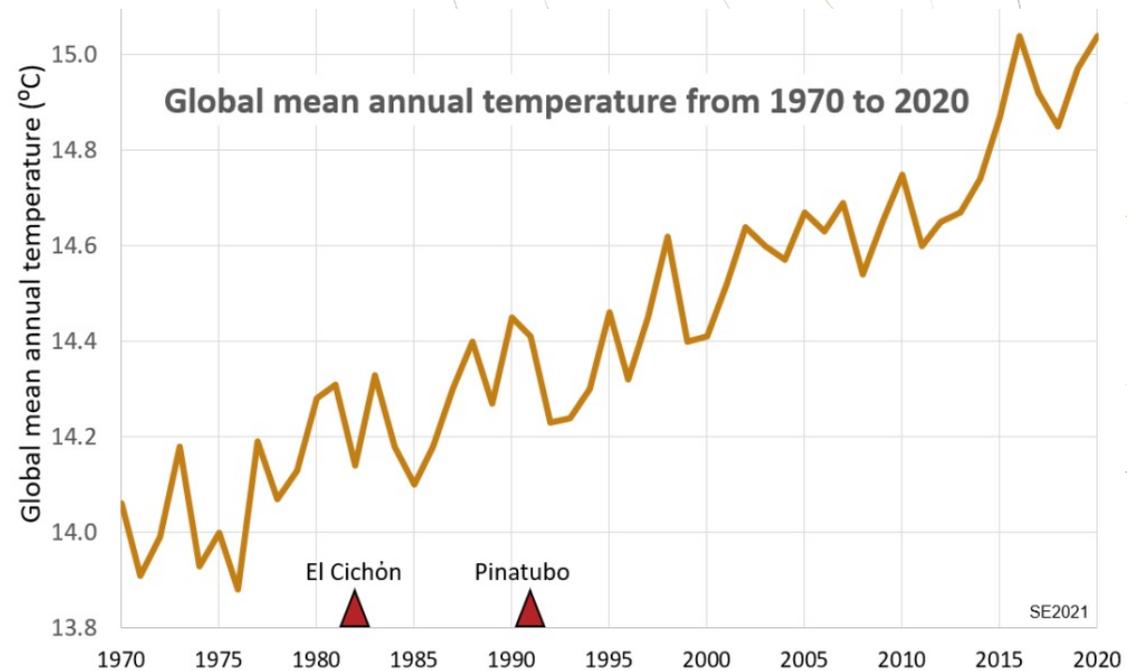


# The Atmosphere: a complex interconnected system

Local source can impact atmospheric balance at global level

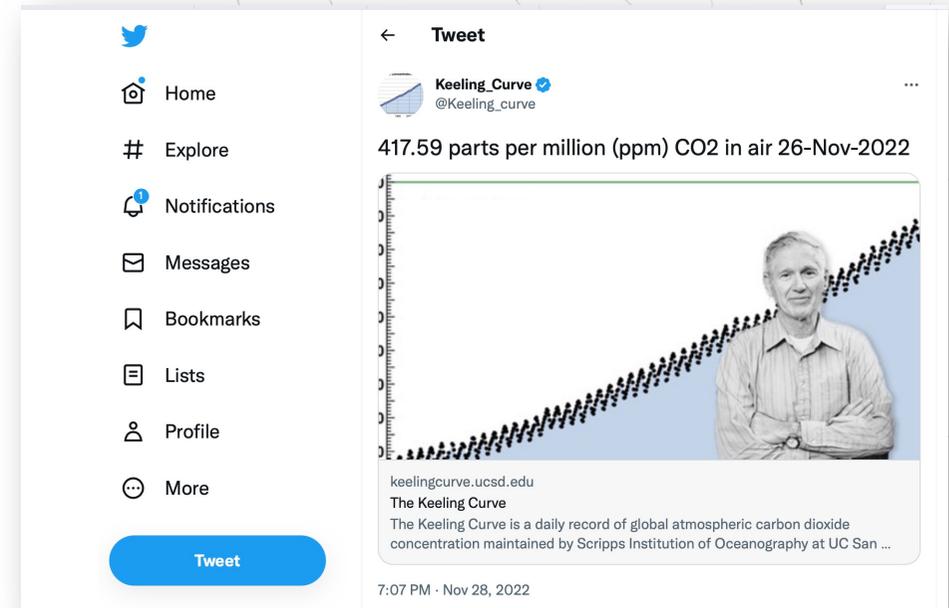
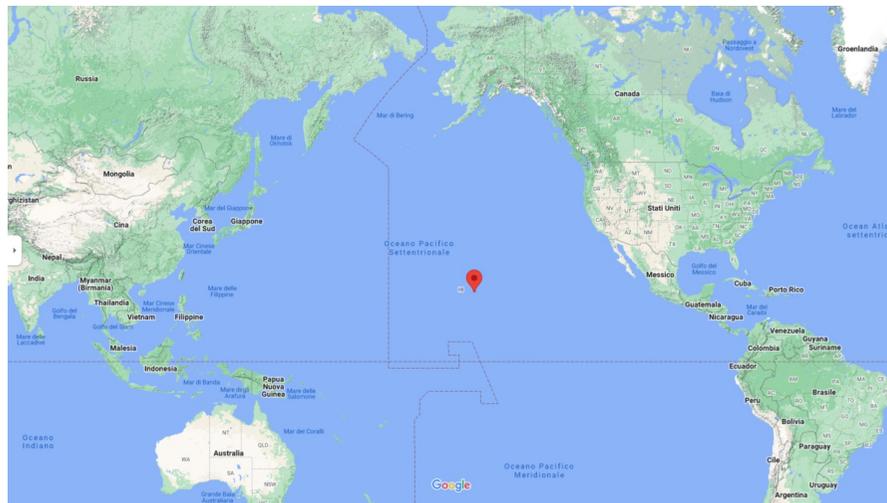


Pinatubo eruption Philippines 1991



# The Atmosphere: a complex interconnected system

Observations in a remote island can reveal global issues like increasing CO<sub>2</sub>



<https://gml.noaa.gov/obop/mlo/>

# The Atmosphere: a complex interconnected system

Atmospheric monitoring and investigation is one of the first topics on which international coordinated efforts have been done



## World Meteorological Organization

It was initiated from International Meteorological Organization (IMO) in 1873, established in ONU framework in 1950.

**Atmosphere is not locally confined but global**

# The Atmosphere: a complex interconnected system

PRESS RELEASE

5 October 2021

## The Nobel Prize in Physics 2021

The Royal Swedish Academy of Sciences has decided to award the Nobel Prize in Physics 2021 *“for groundbreaking contributions to our understanding of complex physical systems”*

with one half jointly to **Syukuro Manabe** and the other half to **Giorgio Parisi**

**Klaus Hasselmann**

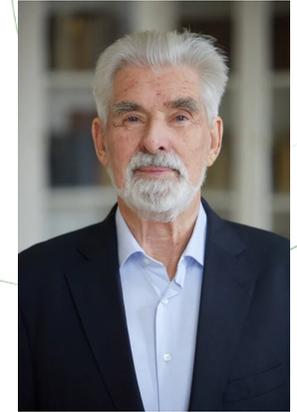
Princeton University, USA      Max Planck Institute for Meteorology, Hamburg, Germany      Sapienza University of Rome, Italy

*“for the physical modelling of Earth’s climate, quantifying variability and reliably predicting global warming”*

*“for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales”*

### Physics for climate and other complex phenomena

Three Laureates share this year’s Nobel Prize in Physics for their studies of chaotic and apparently random phenomena. Syukuro Manabe and Klaus Hasselmann laid the foundation of our knowledge of the climate. His methods have been used to prove that the increased temperature in the atmosphere is due to human emissions of carbon dioxide.



Our world is full of complex systems characterised by randomness and disorder. One complex system of vital importance to humankind is Earth’s climate

The Atmosphere: a complex interconnected system



**Adding knowledge through observations and data is the way toward a better understanding**

This ITINERIS training aims to provide some tools and knowledge for accessing data and exploitation tools.

## Training Pillars

### Day #1

#### Intro

Ground based  
data  
ACTRIS &  
ICOS

### Day #2

Models  
data  
WMO &  
Copernicus

### Day #3

Satellite  
data  
ESA &  
EUMETSAT

## Training Pillars

**Day #1**  
**Intro**

**Ground based  
data  
ACTRIS &  
ICOS**



**Markus Fiebig**  
**Head of ACTRIS DC**  
**In Situ Unit**



**Alex Vermeulen**  
**Director Carbon portal**  
**ICOS**

 **ITINERIS**

*Remote*

## Training Pillars

**Day #1**  
**Intro**

**Ground based  
data  
ACTRIS &  
ICOS**

+

**Lise Eder Murberg**  
**ACTRIS VRE**

*Remote*



**Claudio Dema**  
**ACTRIS ARES DC unit**  
(Aerosol REmote Sensing)

 **ITINERIS**

## Training Pillars



Sara Basart  
WMO  
Scientific  
Officer

*Remote*



*Remote*  
Chris Stewart  
(ECMWF)  
Copernicus Training  
& Knowledge Transfer Officer

**Day #2**

**Models  
data  
WMO &  
Copernicus**



Mark Parrington  
(ECMWF)  
Copernicus Services  
Department

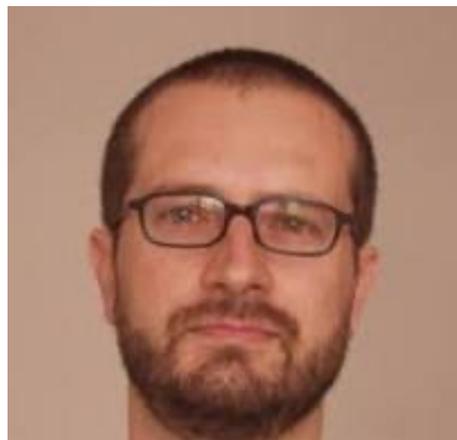
*Remote*

## Training Pillars



Federico Fierli  
Training officer  
EUMETSAT

Paolo Castracane  
Manager of ESA  
EVDC project



Day #3

Satellite  
data  
ESA &  
EUMETSAT



# THANKS!

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Ministero  
dell'Università  
e della Ricerca

