

INTRODUZIONE AL PROGRAMMA COPERNICUS

Focus sul Copernicus Atmosphere Monitoring Service

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Atmosphere Monitoring

24 Ottobre 2025, Università degli Studi di Roma "Tor Vergata", Roma



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Atmosphere
Monitoring

COPERNICUS ATMOSPHERE MONITORING SERVICE

CAMS è uno dei sei servizi di informazione tematici forniti dal programma di osservazione della Terra Copernicus dell'Unione Europea.

Servizi gratuiti e aperti orientati all'utente.



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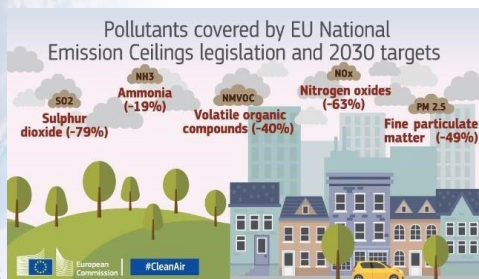
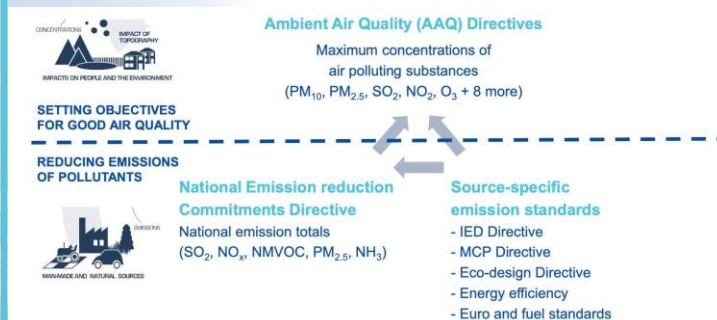




COPERNICUS ATMOSPHERE MONITORING SERVICE

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CAMS fornisce informazioni coerenti e di qualità controllata relative alla composizione chimica dell'atmosfera → direttive europee e accordi internazionali.



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AIR QUALITY OBSERVATIONS



MODELLING



OUTPUTS



1. Monitoring the current situation

- Air quality
- Solar radiation
- Greenhouse gases
- Fire emissions

2. Forecasts for the next few days

- Global
- Europe

3. Tools to explore further

- Emissions and impact of reductions
- Origins of pollution
- Annual air quality assessments

USERS

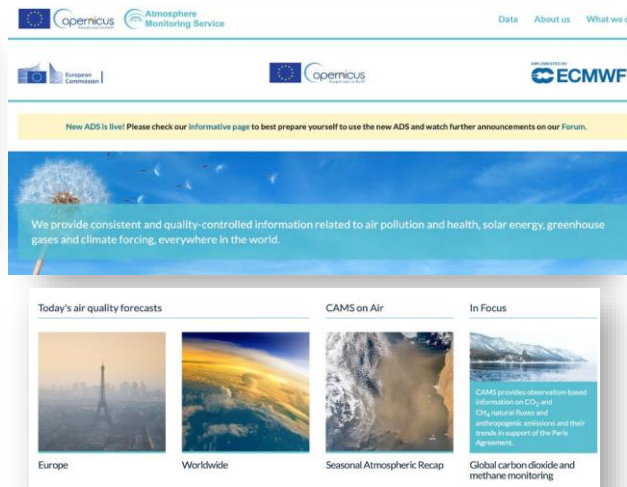
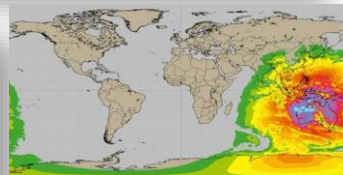
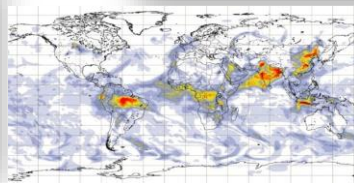
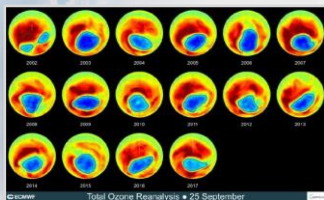
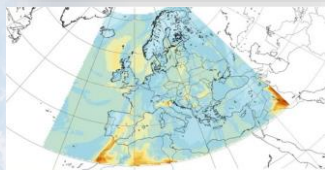
- Industry
- Businesses
- Government and policymakers
- Scientific community
- The public

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CAMS PORTFOLIO

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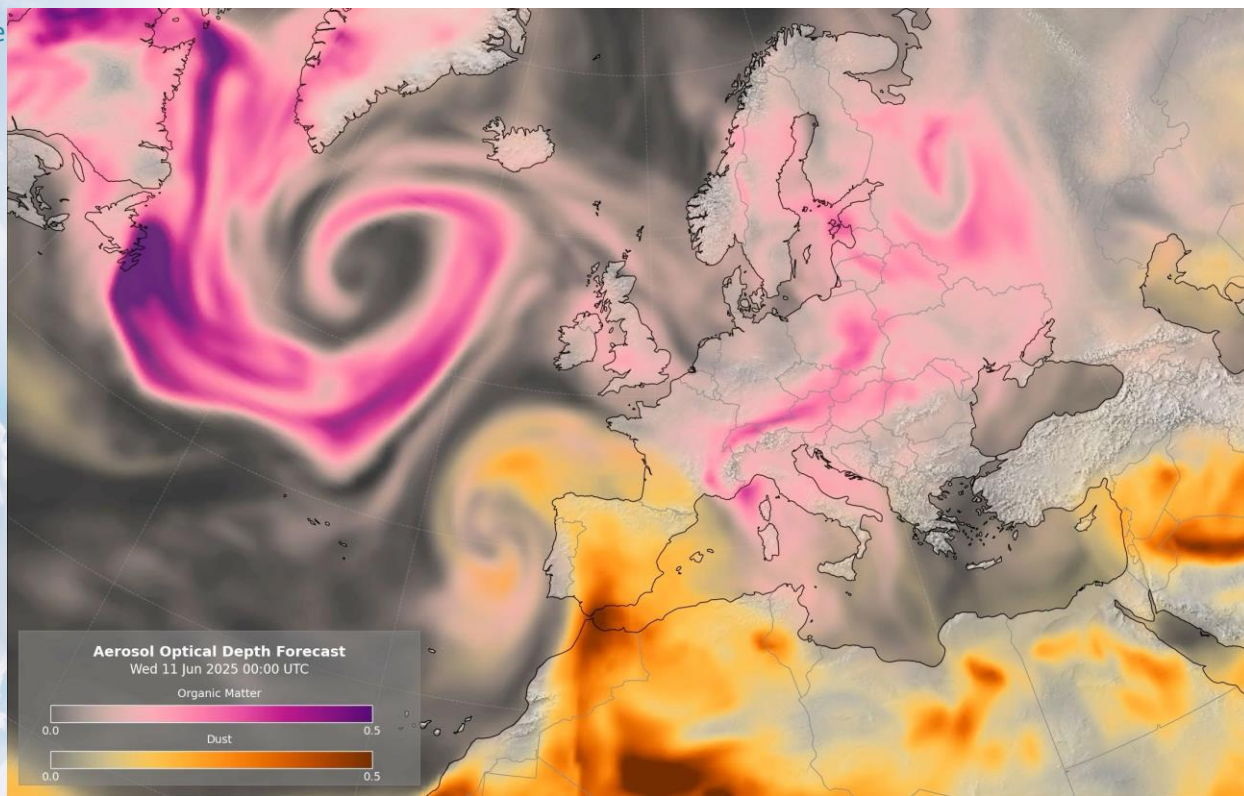
Prodotti informativi aperti e gratuiti basati sull'osservazione della Terra:

- composizione atmosferica globale,
- strato di ozono,
- qualità dell'aria europea,
- emissioni e flussi superficiali dei principali inquinanti e gas serra,
- radiazione solare



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CAMS globale: monitoraggio degli eventi di inquinamento atmosferico



IFS-COMPO

11-15 giugno 2025

L'Europa sotto l'influenza
degli incendi boschivi del
Nord America e delle
tempeste di sabbia del
Sahara

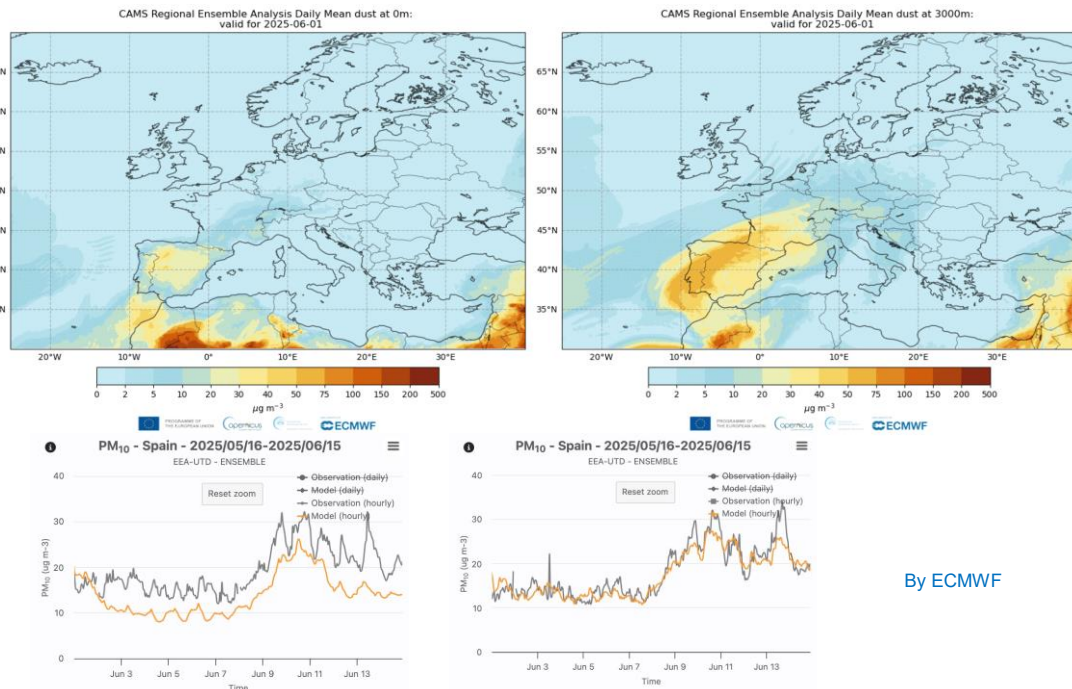
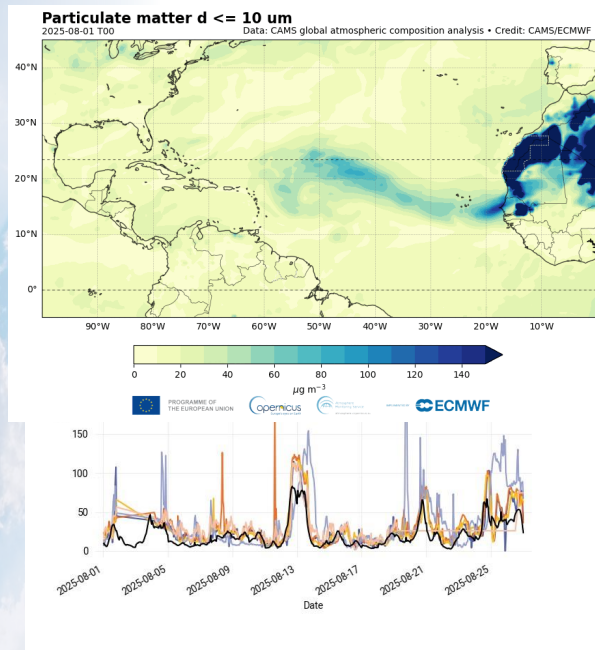
By ECMWF (Sebastian Steining, Miha Razinger,
Mark Parrington)



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CAMS EU: monitoraggio degli eventi di inquinamento atmosferico

Eventi di intrusione di polveri sahariane monitorate in Europa e trasporto a lungo raggio attraverso l'Oceano Atlantico + impatto sulle concentrazioni di PM



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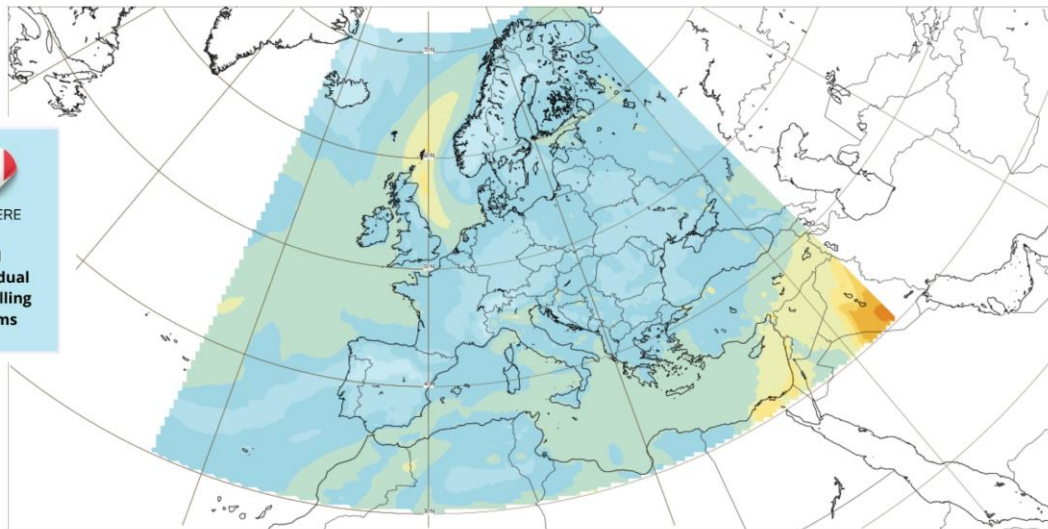
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CAMS EU: previsioni giornaliere della qualità dell'aria

Base time: Thu 23 October 2025 Valid time: Sat 25 October 2025 (+71h) Parameter : PM10 Area : Europe Model : Ensemble median Height level : Surface
Statistic type : Daily average



Coordinato da Meteo France

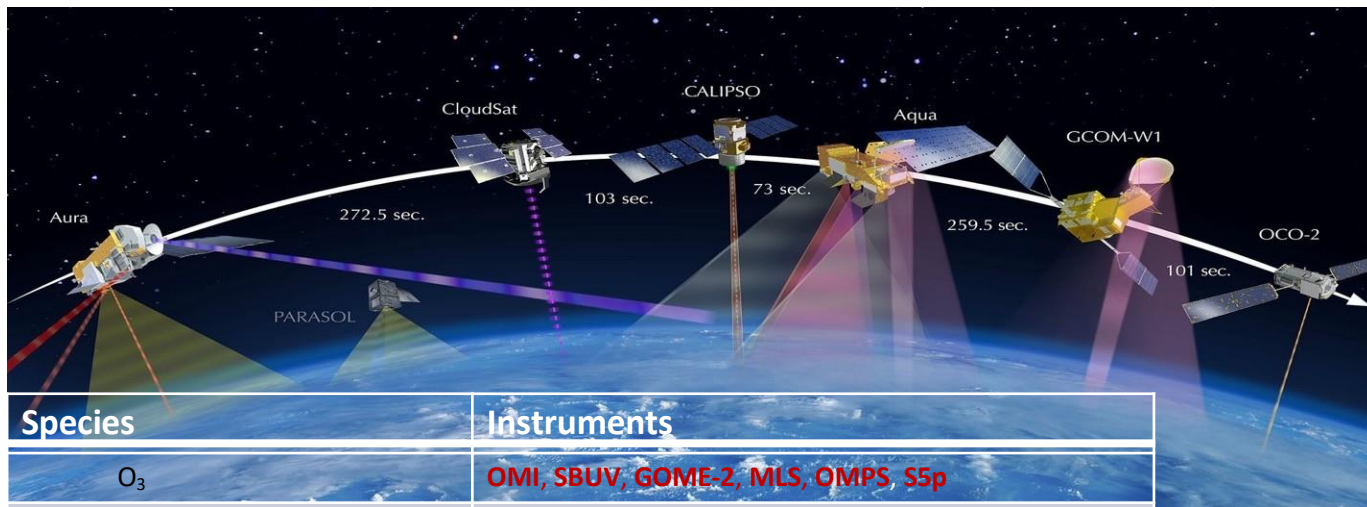




SATELLITI IN CAMS

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CAMS utilizza i dati di osservazione della Terra provenienti da numerosi satelliti per analizzare la composizione dell'atmosfera e le condizioni meteorologiche.



Species	Instruments
O ₃	OMI, SBUV, GOME-2, MLS, OMPS, S5p
CO	IASI, MOPITT, S5p
NO ₂	OMI, GOME-2, S5p
SO ₂	OMI, GOME-2, S5p
Aerosol	MODIS, PMAp, VIIRS, S3
CO ₂	GOSAT, OCO-2
CH ₄	GOSAT, IASI, S5p
GFAS fire emissions	MODIS, SEVIRI*, VIIRS, Sentinel-3, GOES-E/W*, HIMAWARI-8*

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CONTRIBUTI DA EO

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IASI-NG
3MI
Sentinel-5

Dati S5p -> gradualmente
nel sistema operativo di
previsione globale.
Test CAMS Feedback ->
miglioramenti
significativi nella qualità
dei dati.

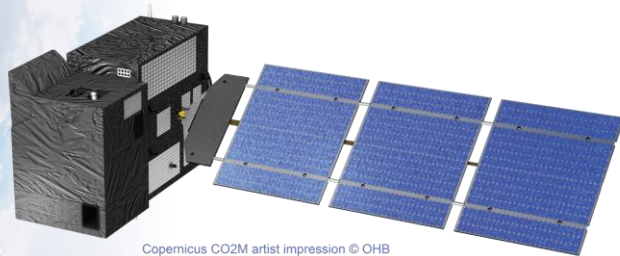
Satellite A

MetOp-SG-A



 **EUMETSAT**

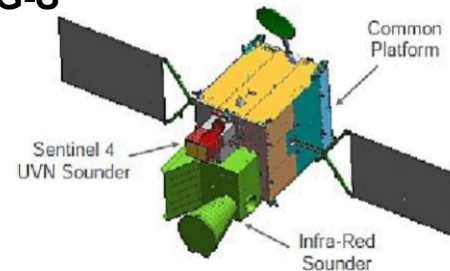
 **esa**



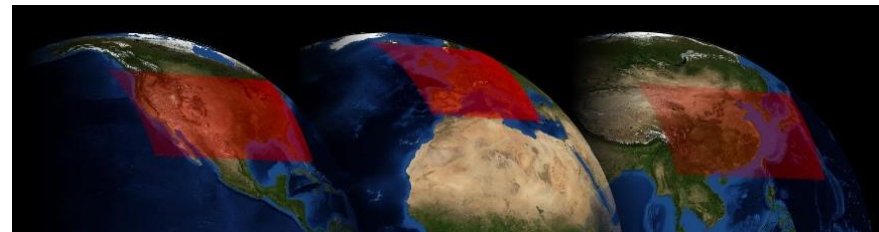
Copernicus CO2M artist impression © OHB

**Copernicus Emission
Monitoring &**

MTG-S



IRS
Sentinel-4

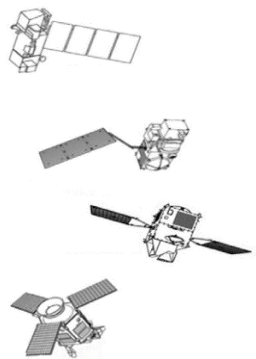


By ECMSF



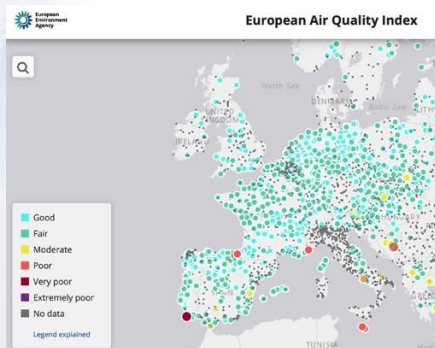
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DAI DATI AL SERVIZIO AGLI UTENTI



Dati satellitari

da satellite (>90 strumenti) e
in situ (normativa e ricerca)

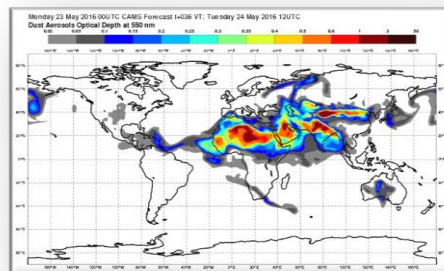




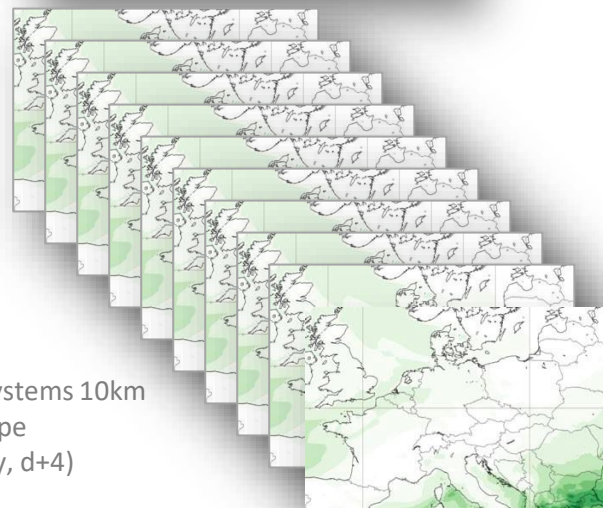
DAI DATI AL SERVIZIO AGLI UTENTI

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Detailed tropo.
and **strato.**
chemistry,
40km Globe
(twice daily,
d+5)



Processo di **data
assimilation e modelling
systems**

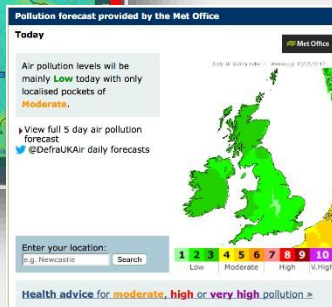
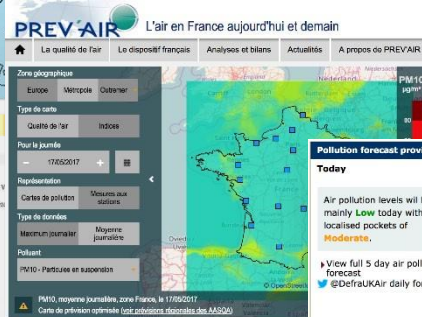
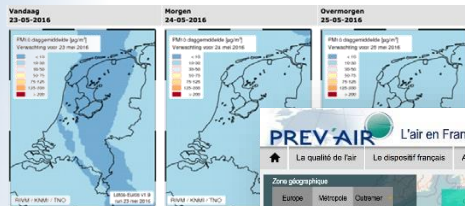


11 systems 10km
Europe
(daily, d+4)



DAI DATI AL SERVIZIO AGLI UTENTI

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Utenti CAMS
>33500
(~3200 routine)



Fattore di moltiplicazione (200Mil+)

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ACCESSO AL SERVIZIO CAMS

<https://atmosphere.copernicus.eu/>

← ↻ 🔒 <https://atmosphere.copernicus.eu>

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New ADS is live! Please check our [informative page](#) to best prepare yourself to use the new ADS and watch further announcements on our Forum.

We provide consistent and quality-controlled information related to air pollution and health, solar energy, greenhouse gases and climate forcing, everywhere in the world.

Carbon Monitor and CAMS team up to provide up-to-date CO₂ emissions estimates for Europe

Monitoring anthropogenic carbon dioxide (CO₂) and its emissions is a challenging but vital task to mitigate global warming. The Copernicus Atmosphere Monitoring Service (CAMS) and Carbon Monitor collaborate to provide near-real time daily CO₂ emission estimates for six activity sectors in the European Union and United Kingdom through the CAMS website.

Explore the Activity-based anthropogenic emissions section of the website.

[Read more](#)

<https://atmosphere.copernicus.eu>



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COPERNICUS THEMATIC HUB

<https://health.hub.copernicus.eu>

HEALTH HUB

Copernicus Health Hub: the link between
Earth Observation, Environmental
Information and Health

<https://energy.hub.copernicus.eu>

ENERGY HUB

Copernicus Energy Hub: Connecting
environmental data and Earth Observations
to the green energy transition

UNICO PUNTO DI ACCESSO

Riunire tutte le attività operative di
Copernicus relative alla salute in
modo semplice e intuitivo.

FACILE ACCESSO

Facile accesso alle informazioni e ai
set di dati gratuiti relativi alla salute
forniti da Copernicus

MOSTRARE E ISPIRARE

Use case: come i dati possono
essere utilizzati e ispirare nuovi usi

COLLABORAZIONE

Punto unico di accesso per i
feedback e le richieste degli utenti e
per incoraggiare la collaborazione





NATIONAL COLLABORATION PROGRAMME
ITALIAN INITIATIVE



Atmosphere Monitoring

Grazie per l'attenzione

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