

EXTRA

FOR CHILDREN AND TEENAGERS ACROSS EUROPE

ACTIVITIES

the
sky
in
me

ANAIS TONDEUR
JRC EUROPEAN COMMISSION

#1

DETERMINE THE POINT OF EMISSION OF THE CARBON BLACK PARTICLES IN THE AIR YOU BREATHE

Connect to [NOAA Hysplit trajectories](#) online set up:

Select from HYSPLIT-WEB

Run HYSPLIT Trajectory Model

Compute archive trajectories

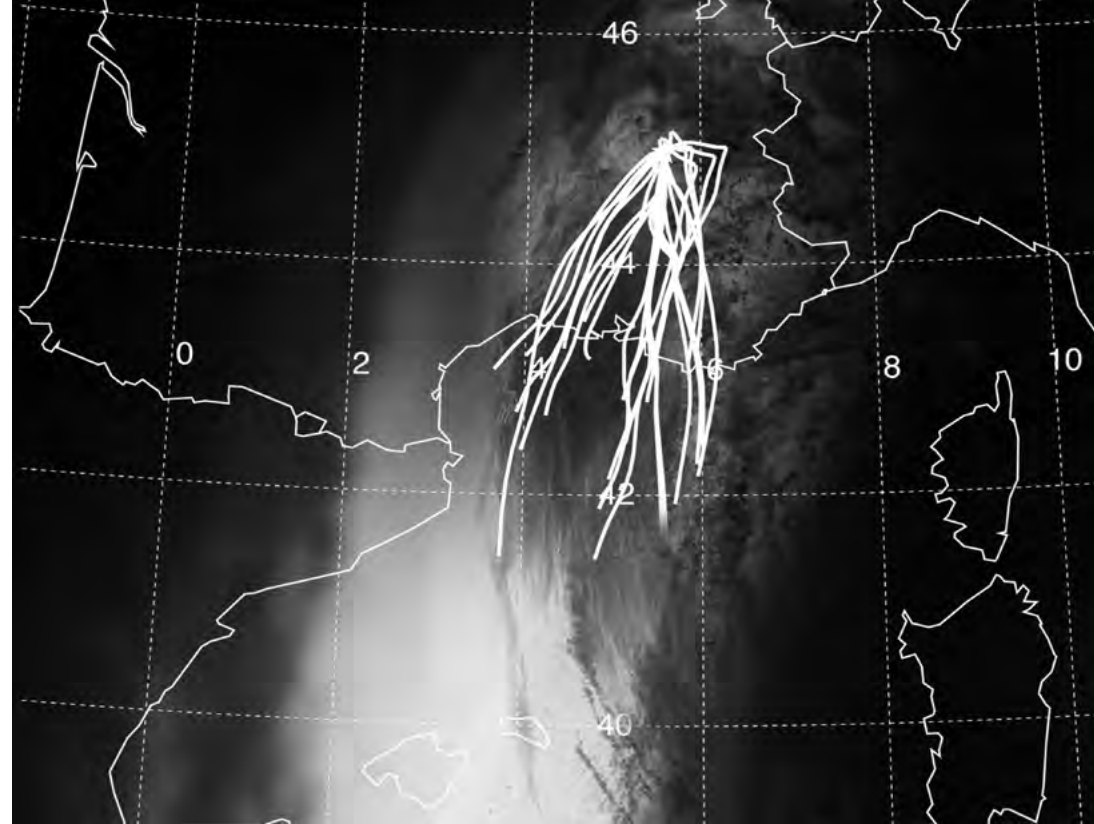
Select 1 trajectory, type = normal.

You can later also try 'Ensemble', this will result in a 'bunch' of trajectories all arriving nearly at the selected spot, but with slightly different starting points.

This shows in fact the uncertainty related to the actual trajectory. In other words, it is not possible to determine with 100% accuracy where the air came from when it arrived at the endpoint.

Choose the meteorology dataset that will be used to calculate the trajectory. If you want to look at Europe, you'll need a global dataset like GDAS 1degree, GDAS 0.5 degree.

Define the spot for which you want to calculate the trajectory. Type in the coordinates (for example 45.81 N, 8.63 E)



Trajectories of carbon black particles crossing Trièves, France, 21 September 2020

Go to the next page:
Choose an archived meteo file

Set Model Run Details:

- Backward (as you search where the air came from)
- Match the date
- Run time: a time of more than 5 days (120 hrs) is not very meaningful although in principle you can go back as far as 315 hrs.
- Start trajectory every 0 hrs.
- Level one height: in principle the station's sample tube is taking the air from an altitude of 5m above ground level (AGL)
You can provide up to 3 levels, e.g. 10m, 20m, 30m to see how sensitive the result is. You will get 1 to 3 trajectories, arriving at each of the defined final altitudes.
- define output (for example choose Google Earth)

Press [request trajectory]

Patience until a table appears with links to the output results (in pdf).

Observe the trajectories followed by the carbon black particles which crossed your country, your town, your room, your body.

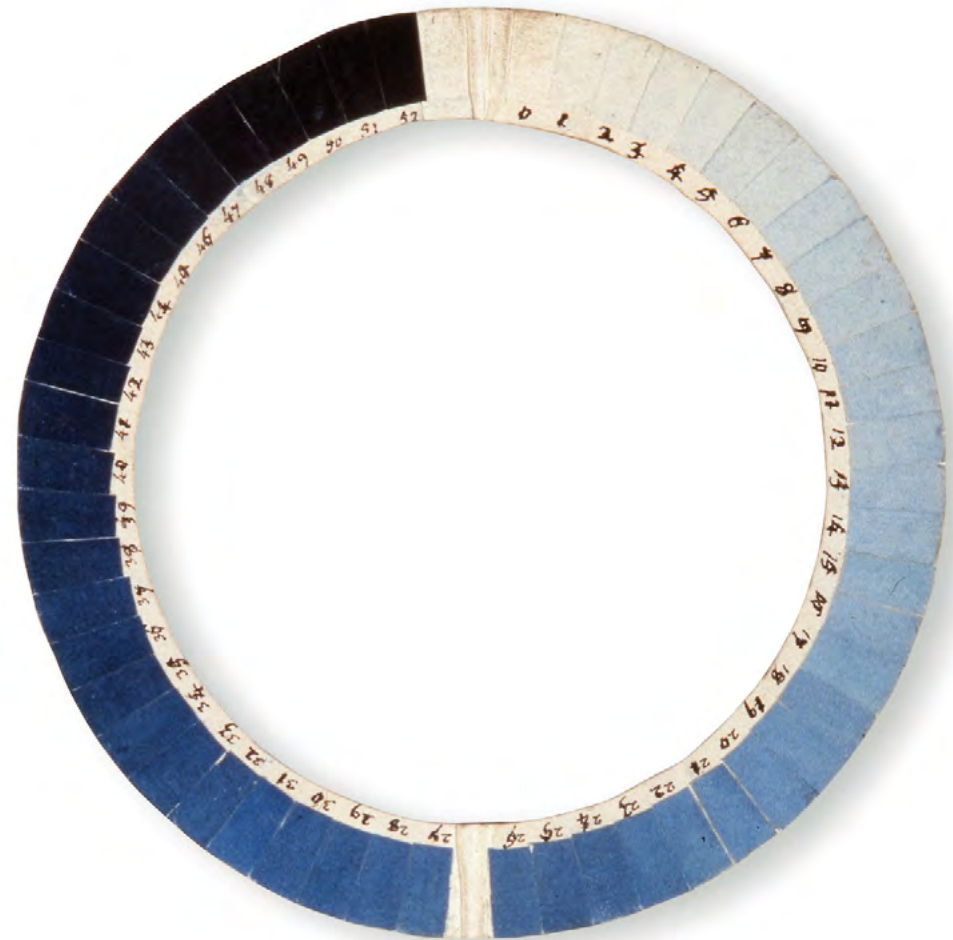
#2

THE STATE OF THE SKY

As 18th century Swiss scientist Horace-Bénédict de Saussure did, exercise your attention to the atmosphere by observing the variations of the states of the sky:

DEPICT THE BLUENESS OF THE SKY

- ° On a heavy weight strip of paper (minimum 200gr) mix watercolours to depict the colour of the sky on the day of your observation
- ° Write the date on the back
- ° Hang the painted strip
- ° Repeat the same protocol every day or so for as long as you can
- ° Send us views of your productions to Parliamentofclouds@gmail.com

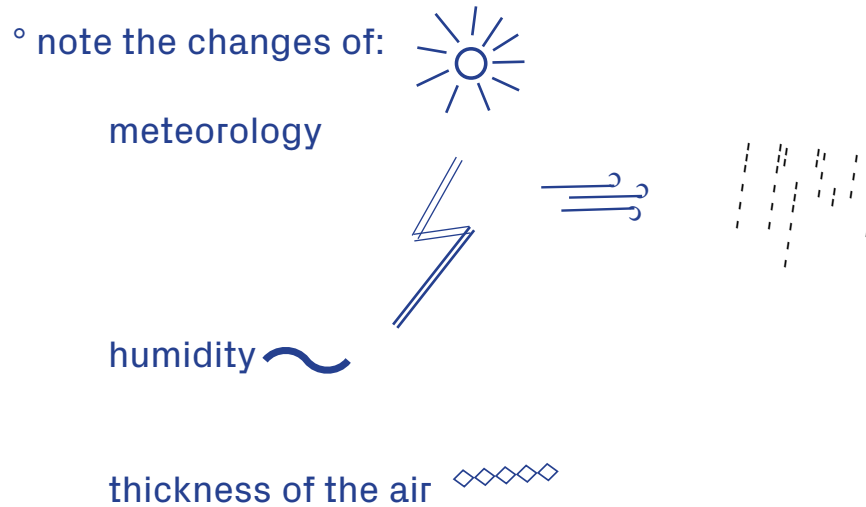


#3

SKY JOURNAL

On a set period of time, developp a sky journal.
On strips of paper of the same format

° describe your perception of the weather



° choose or invent a symbol 
indicate the importance of phenomenon's presence

° gather all your notes in a box

° send us views of your productions to
Parliamentofclouds@gmail.com

SKY JOURNAL

DATE

HOW IS THE SKY TODAY ?

HOW DO YOU FEEL IN THE ATMOSPHERE TODAY ?

.....

.....

.....

.....

.....

“nous ne sommes pas les habitants de la terre ;
nous habitons dans l’atmosphère”.

“we are not the inhabitants of the earth;
we live in the atmosphere”.

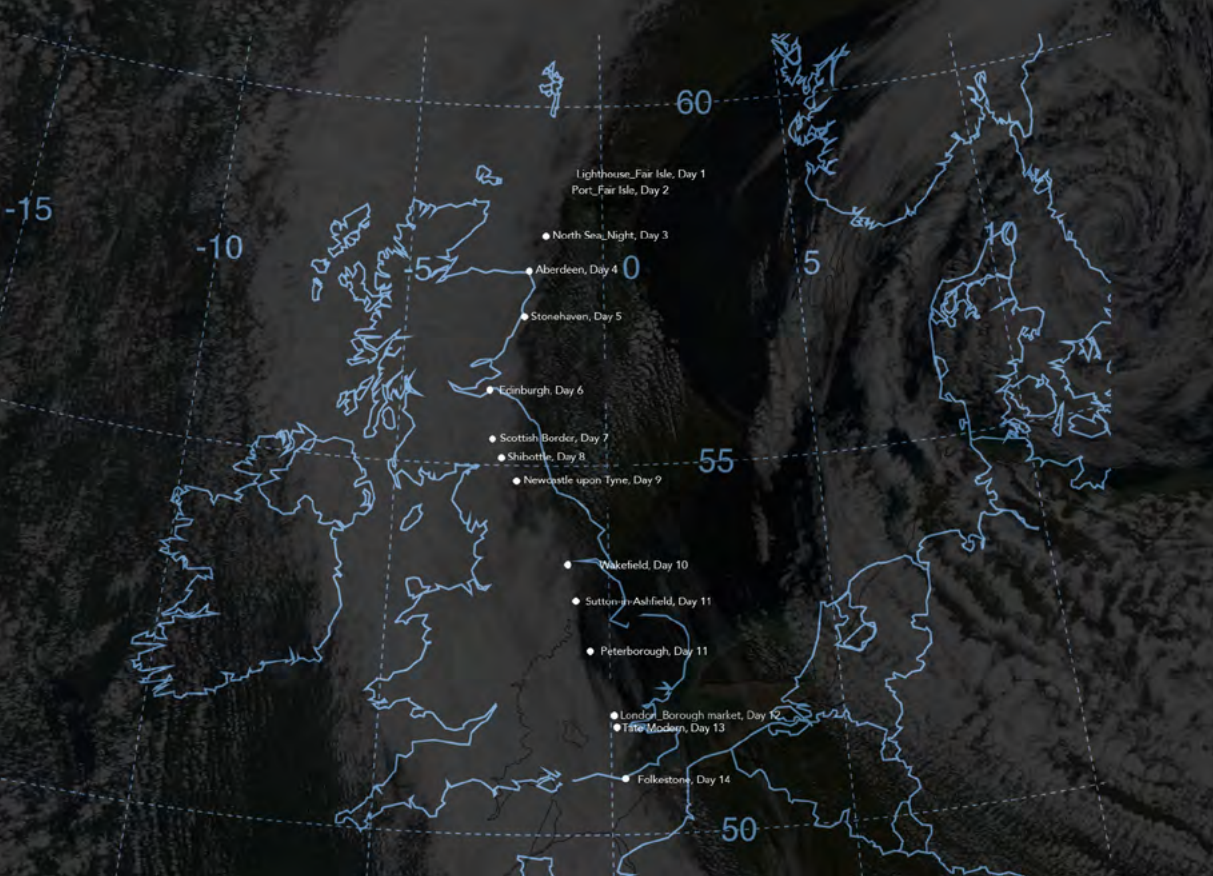
Emanuele Coccia

#4

EXPLORE THE FIRST CARBON BLACK PHOTOGRAPHIC PROTOCOL

The first series of carbon black photographs was developed as part of JRC Resonance II's program. The protocol was tested in a 15 days expedition on the trail of a meteor, a grain of black carbon spit out by contemporary human activities. Our equipment on the expedition was composed of helmets crowned by a little camera, through which we crystallized each day's journey in a photograph taking a unique point of view: that of the skyline.

Our walking device was also supplemented with breathing masks through which we trapped the carbon black particles we encountered and later transformed into ink used to print the photographs of the expedition. In fact, black carbon is a collateral form of soot, used for centuries as the primary component of Indian ink. The photographs of this project are thus composed of a percentage of ink composed from the particles filtered on the corresponding part of the expedition.



From Medieval Latin, the term meteor (meta: by means of) and aeiro: : to lift, to raise, to heave, to raise up) refers to celestial phenomena. Clouds, rainbow, hail or comet, this matter in aerial suspension forms the core of our investigation. Yet, the meteor of which we followed the trail is a particle spit out by human activity: a grain of black carbon. Spectral dusts of our industrialised societies, black carbon particles are produced from the incomplete combustion of coal, lignite, heavy oil or biomass. They result from our transport and industrial activities, households or even from the erosion of our roads and the abrasion of tyres. These pollutant particles disperse with the wind. They drift in a few days along atmospheric currents and fall several hundred kilometres away from their point of emission.

Some are regularly found on the white crust of the Arctic where they play a significant role in the melting of the ice. Like every black object they easily warm up in sunlight, transfer their heat to snow and ice, indirectly participating in the global rise of sea level.

Moreover, this particulate matter of less than $2.5 \mu\text{m}$ (in aerodynamic diameter) knows no limit between inside and outside. Associating everyone and everything in an unbound meddling, they enter our bodies, penetrate the membrane of our lungs, reach the deeper folds of our brains, flow with our blood cells and trigger deaths. According to the World Health Organisation, several million of persons die per year just by breathing the outside air, not taking into account the diseases these pollutants provoke. Is it their invisible, intangible and even inodorous presence that does not prompt us to react? In contrast to carbon dioxide, whose lifetime spans over several decades black carbon remains in the atmosphere for only a few weeks. Reducing its emission would drastically diminish this sanitary tragedy and immediately slow down the warming rate of the planet, and to a large extent, the rapid change of the Arctic.

This project was realised with the atmospheric scientists Rita Van Dingenen, Jean-Philippe Putaud and their colleagues, sharing expertise and imaginaries through which we constructed the possibility of these narratives and planned the expedition. Our endeavour with this project was to give consistency to the dangers we create, addressing the consequences on the environment and human health of what comes down as a choice of society .

Trajectory of a black carbon particle on May 17th 2017 and the expedition which followed on its trail. The particle 's journey was retraced through NOAA Hysplit Model Backward Trajectory



Detail_Fair Isle, View from the expedition, Pigment Inkjet Print on Hahnemühle paper, 36x24cm



Detail_Tate Modern, View from the expedition, Pigment Inkjet Print on Hahnemühle paper, 36x24cm

Our story began on one of the northernmost island of Scotland, on the remote reef of Fair Isle. Despite the absence of industries, despite the little number of vehicles and heated households, as the wind blows southwest, the sixty islanders suffer from suffocation. That is how, early spring, doctors came to discover a grain of black carbon in a fold of the heart of the birdwatcher's daughter.

Through the embodied perspective of this character we invented, we unravelled the journey of the anthropic meteor, which irrupted inside her body. We travelled back the point it was emitted from the exhaust of a ship on the English Channel, in the southern edge of the North Downs.

We could retrace the precise itinerary of this particle by means of atmospheric backward trajectory models and the analyses of anthropogenic emission of air pollutants that the European Commission makes each day. This abstract trajectory line leads us to a journey of 837 miles by foot, ferry, fishing boat, bus and car.

We wandered through the desolate moorland of Fair Isle, on the edge of its vertiginous cliffs, home of Puffins, Siberian Passerines, Guillemots, Fulmars, escaping by an air's breath the attacks of great Skuas.

We sailed through the tormented meeting line of the Atlantic Ocean and the North Sea, walked through the coal field of Northumberland, over mountains and hills, pastures and fields, crossed the border of Scotland and England. We traversed the historical town of Edinburgh, the suburban areas of Nottingham, Leeds, Sutton-in-Ashfield, London and Borough market, a few days after the June tragedy. To eventually reach the harbour of Folkestone.



Fair Isle Light house
23.05.2017
Level of PM2.5: 2,1 µg/m³



Fair Isle harbour
26.05.2017
Level of PM2.5: 12,2 µg/m³



North Sea
27.05.2017
Level of PM2.5: 13,8 µg/m³



Aberdeen
28.05.2017
Level of PM2.5: 2,64 µg/m³



Stonehaven
29.05.2017
Level of PM2.5: 5,88 µg/m³



Edinburg
30.05.2017
Level of PM2.5: 8,18 µg/m³



Shilbottle
01.06.2017
Level of PM2.5: 4,94 µg/m³



Scotland-England Border
02. 06.2017
Level of PM2.5: 5,16 µg/m³



Newcastle-upon-Tyne
03.06.2017
Level of PM2.5: 6,21 µg/m³



Wakefield
04.06.2017
Level of PM2.5: 4,94 µg/m³



Sutton-in-Ashfield
05.06.2017
Level of PM2.5: 5,16 µg/m³



Peterborough
06.06.2017
Level of (PM2.5): 1,75 µg/m³



Borough Market
07.06.2017
Level of PM2.5: 4,56 µg/m³



Tate Modern
07.06.2017
Level of (PM2.5): 4,85 µg/m³



Folkestone
10.06.2017
Level of PM2.5: 1,89 µg/m³

**ANTI BLACK CARBON MASKS USED
EACH DAY OF THE EXPEDITION**



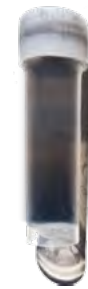
Fair Isle Light house
23.05.2017
Level of PM2.5: 2,1 $\mu\text{g}/\text{m}^3$



Fair Isle harbour
26.05.2017
Level of PM2.5: 12,2 $\mu\text{g}/\text{m}^3$



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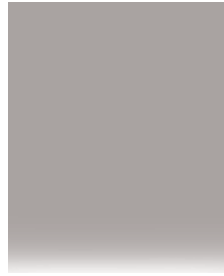


Tate Modern
07.06.2017
Level of (PM2.5): 4,85 $\mu\text{g}/\text{m}^3$



Folkestone
10.06.2017
Level of PM2.5: 1,89 $\mu\text{g}/\text{m}^3$

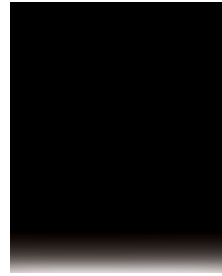
**BLACK CARBON PARTICLES EXTRACTED
FROM EACH MASK OF THE EXPEDITION**



Fair Isle Light house
23.05.2017
Level of PM2.5: 2,1 µg/m³



Fair Isle harbour
26.05.2017
Level of PM2.5: 12,2 µg/m³



North Sea
27.05.2017
Level of PM2.5: 13,8 µg/m³



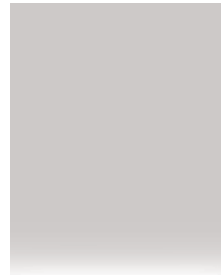
Aberdeen
28.05.2017
Level of PM2.5: 2,64 µg/m³



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Level of PM2.5: 5,88 µg/m³



Edinburg
30.05.2017
Level of PM2.5: 8,18 µg/m³



Shilbottle
01.06.2017
Level of PM2.5: 4,94 µg/m³



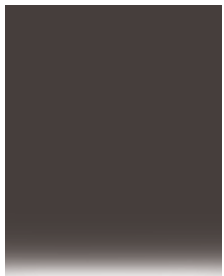
Scotland-England Border
02. 06.2017
Level of PM2.5: 5,16 µg/m³



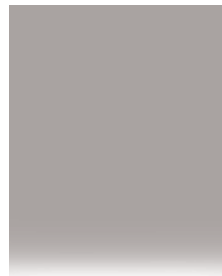
Newcastle-upon-Tyne
03.06.2017
Level of PM2.5: 6,21 µg/m³



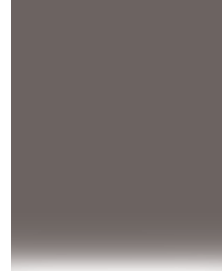
Wakefield
04.06.2017
Level of PM2.5: 4,94 µg/m³



Sutton-in-Ashfield
05.06.2017
Level of PM2.5: 5,16 µg/m³



Peterborough
06.06.2017
Level of (PM2.5): 1,75 µg/m³



Borough Market
07.06.2017
Level of PM2.5: 4,56 µg/m³



Tate Modern
07.06.2017
Level of (PM2.5): 4,85 µg/m³



Folkestone
10.06.2017
Level of PM2.5: 1,89 µg/m³

**PRINT TESTS INTENSITY OF BLACKS ACCORDING
TO THE LEVEL OF BLACK CARBON**



Injection of the black carbon ink in the cartridge
to print the sky of the third day of the expedition
2 Pigment Inkjet Prints on Hahnemühle paper, 24x36cm



Fair Isle Lighthouse, 23 May 2017, Carbon Black Level (PM2.5): 2,12 $\mu\text{g}/\text{m}^3$, Carbon Ink Print, 100x150cm









Edinburgh, 30 May 2017, Carbon Black Level (PM2.5): 8,18 $\mu\text{g}/\text{m}^3$, Carbon Ink Print, 100x150cm









ANAIS TONDEUR

French artist based in Paris.

She creates narratives and speculative investigations through which she seeks to establish new alliances between human and other than humans: plants, rocks, air or water. To this end, she develops a renewal of our modes of perception, and explores, beyond the separation of nature and culture, ways of disrupting the grand narrative of the Anthropocene.

In collaboration with geologists, oceanographers, physicists, philosophers and anthropologists, her research protocols have led her on expeditions in the tracks of black carbon particles, in the Chernobyl exclusion zone, across the Atlantic Ocean or along the borders that separate the great tectonic plates. She was artist in residence at the JRC as part of RESONANCE II festival during which she developed Carbon Black Protocol.

She has presented her work in international institutions such as the Centre Pompidou, Frac Provence-Alpes-Côte d'Azur (France), Spencer Museum of Modern Art (USA), Nam June Paik Art Center (Seoul), etc...



SciArt project, JRC-European Commission

The SciArt project is the art and science programme of the Joint Research Centre of the European Commission.

In a bi-yearly cycle comprising a Summer School, a Festival at the JRC, and a Museum Exhibition, Resonances – the SciArt project’s flagship initiative - brings together scientists, artists and policy makers to discuss matters of concern from various points of view, not only to the JRC and the European Commission but also more widely to society.

The Joint Research Centre (JRC) is the European Commission’s science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. The SciArt project integrates art and artistic practices in the JRC’s multidisciplinary work on an equal footing.



CARANO FOR CHILDREN FOUNDATION

The “Carano 4 Children” foundation focuses on support to children via art & science, and operates on a strict non-profit basis as well as on the basis of the following key principles:

The Foundation’s activities focus on positive and clear impact for the benefit of children. The Foundation focuses on two main groups:

- to help children in need – primarily orphans, abandoned children, children in hospitals, children in refugee camps – to overcome post-traumatic stress with education in art & science;
- to enable children – primarily across Europe – to develop their potential in art & science, with adequate stimuli, focus on Science Technology Engineering Arts and Mathematics (STEAM) skills, and providing them adequate visibility and recognition.

The beneficiary projects are selected via open and transparent calls, designed in partnership with the foundation, focused on addressing well-identified needs, implementation is made in cooperation with selected partners active on the field and adopting a child safeguarding policy in line with best practices.

The Foundation promotes international and multilateral policies – such as the UN Convention on the Rights of the Child – and EU values and principles – such as rule of law, human rights, transparency, governance, equality, solidarity, universal education.

Under the patronage of:



REGIONE PUGLIA

Joint Research Center
SciArt project

organised by the “Carano 4 Children” foundation, in partnership with



Il Setticlavio



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parliamentofclouds@gmail.com