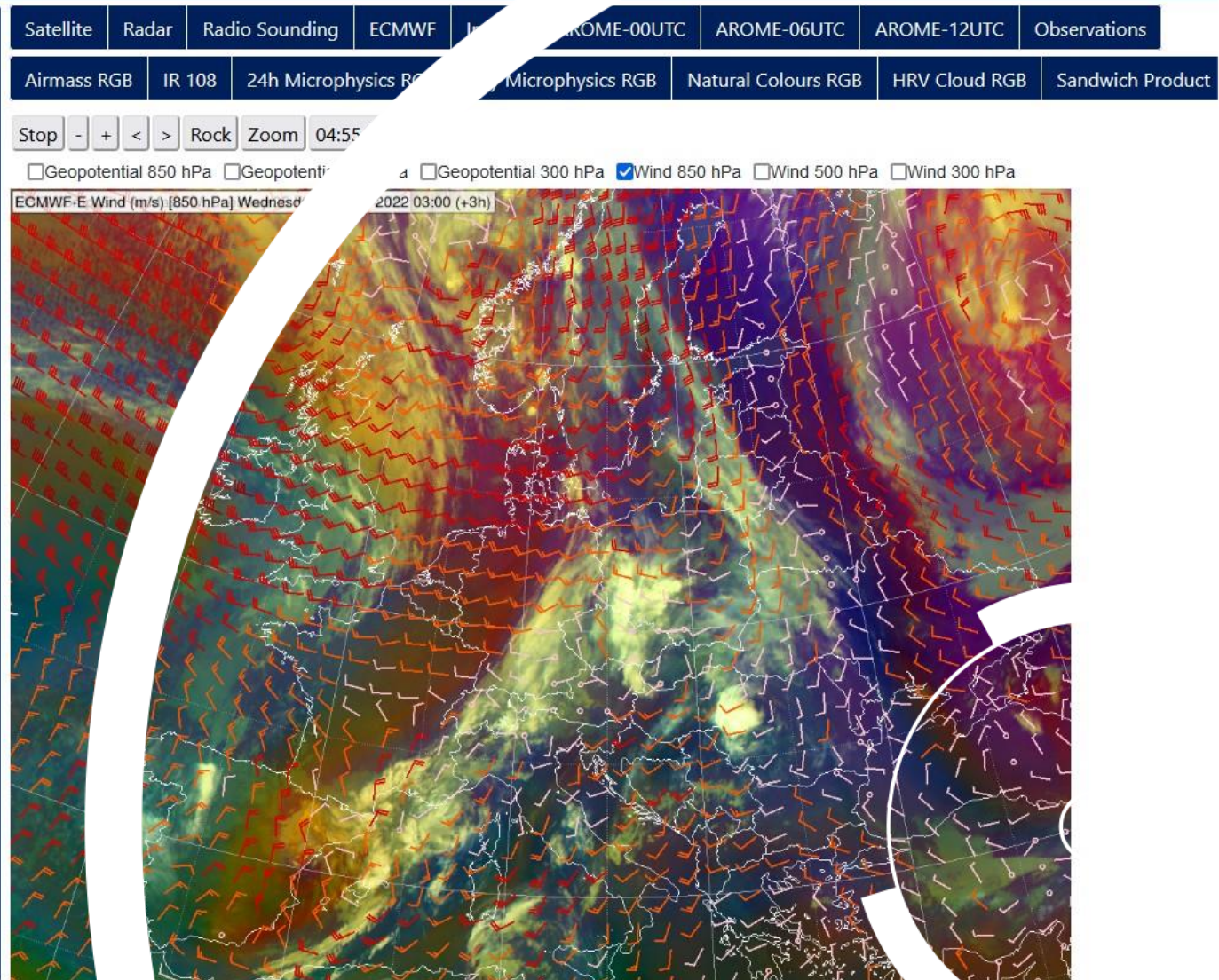


# Meteorological Simulator for Training

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CALMet XVI – CONECT 3  
Florence, Italy

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1. What is a simulator? Why using simulator in training?
2. Simulator example – what does a simulator offer to a trainee
3. EUMETSAT SIM Builder
4. How to build a simulator – Try it yourself here in Firenze!



## To start :

- Before starting, please team up with one or two colleagues if you so wish... and then:
- Download and unzip the test dataset at Conference Website (Tuesday 1400-1500 CET)



sampledata\_new.zip



# What is a simulator?

A meteorological simulator presents a weather situation, that meteorologist investigates by using the given meteorological data, preparing forecasts while the time goes on and more data comes in.







# Why using simulators in training?



- Gives an opportunity for meteorologists to:
  - work with a real data for a real case,
  - to prepare forecasts and
  - verify them.
- More engaging learning experience than just by viewing a case study presentation.
- For the meteorological trainers and assessors, the simulators offer a way to:
  - assess the participants' competencies,
  - to help the participants practice in a safe environment the correct procedures during high impact weather events.
- An important part of simulation is to offer an authentic working environment, where the data flows in nearly the same way it does in an operational environment.



# Existing SLM resources

<https://eumetrain.org/simulators>

## SIMULATORS



### Northern Adriatic, Rijeka - simulator of severe precipitation event

Forecasting severe precipitation events presents significant challenges, as exemplified in this simulator. The presence of a deep trough spanning a wide area complicates predictions, especially when...



### Hurricane Ophelia

Hurricane season usually starts in June and lasts until November, so it was not particularly strange for a hurricane to form in the North Atlantic basin on October 9th 2017, especially in such a...



### Winter Weather in Central Europe

Many winter weather phenomena represent a potential danger, like cold outbreak, heavy snow, ice and freezing rain. Extreme weather conditions can cause infrastructural damage and transport problems,...



### Kupa-Korana Hydro Simulator

This simulator is more complex than the other ones, because it is not only a meteorological simulator but also involves a hydrological component. Here you can see how the weather predictions and...



### Convection in Carpathian Basin

The time from April to October is the most favorable part of the year for convection in Europe. Different types of convective systems may occur during that period, such as single and multi-cell storms...



### Fog simulator

Fog and low stratus phenomena can occur at many different places on the globe and at different times of year and day. It's a difficult measure not only to forecast but also to monitor and can have a...



### Springtime weather at Riga airport

Aviation simulator - New! The months of April and May are the months were in Baltic countries there can be quite a variety of weather. Late snow and blizzards or some heavy precipitation due to fronts...



# Existing SIM resources

<https://training.tools.eumetsat.int/sims/index.htm>

## Simulators

Below you can view or download a number of simulators. A brief description is provided for each simulator. If you choose to view the simulator it will run directly in a new window in your browser. Alternatively, you can download the simulator as a zipped file. Once unzipped on your computer the simulator is viewable in your browser.

Run the Sim	Download Sim
<ul style="list-style-type: none"><li>• <a href="#">Baltic+ 2025 SIM</a> A simulation over Poland and adjacent areas. Nighttime convection case (MTG data).</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">IMTR Simulator Series - Morocco case</a> A simulation over Morocco and adjacent areas. A dust case event.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">IMTR Simulator Series - Gulf of Guinea case</a> A simulation over Gulf of Guinea focusin on convection.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">IMTR Simulator Series - Sudan case</a> A simulation over Sudan introducing a Dust case challenge.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">IMTR Simulator Series - Lesotho case</a> A simulation about a cold season case in southern parts of Africa.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">IMTR Simulator Series - TC Chineso</a> A simulation over South-west Indian Ocean focusing on Tropical Cyclone forecasting.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Aviation Sim</a> A simulation over east Sudan concentrating on aviation hazards.</li></ul>	<a href="#">Download</a>

<ul style="list-style-type: none"><li>• <a href="#">Kuwait Sim</a> A simulation in Kuwait concentrating on fog.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Lake Victoria Sim</a> A simulation in the Lake Victoria area concentrating on aviation hazards associated with severe convection.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">West Africa Sim</a> A simulation in West Africa concentrating on aviation hazards associated with severe convection.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Latvia Sim</a> A simulation in the Baltic as a deep depression passes over the area.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Baltic 2018 Sim</a> A simulation over the Baltic States convection in cold airmass.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Baltic+ 2019 SIM</a> Heavy Rain case in Baltic States August 2017</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Baltic+ 2022 SIM</a> Spring Low Cloud Forecasting challenge over Baltic States 2022</li></ul>	
<ul style="list-style-type: none"><li>• <a href="#">Baltic+ 2023 SIM</a> Winter strong wind case over the Baltic Sea</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Baltic+ 2024 Simulator</a> Convective summer storm passing the Baltic region.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Nomek 2015 Sim</a> A simulation over Denmark/Southern Sweden as a deep depression passes over the area.</li></ul>	<a href="#">Download</a>
<ul style="list-style-type: none"><li>• <a href="#">Nomek 2018 Sim</a></li></ul>	<a href="#">Download</a>





Satellite

Synop

Radar

ECMWF

ECMWF\_Indecies

AROME\_20230804\_00UTC\_RUN

AROME\_20230804\_06UTC\_RUN

AROME\_20230804\_12UTC\_RUN

AROME\_20230804\_18UTC\_RUN

24h microphysics RGB

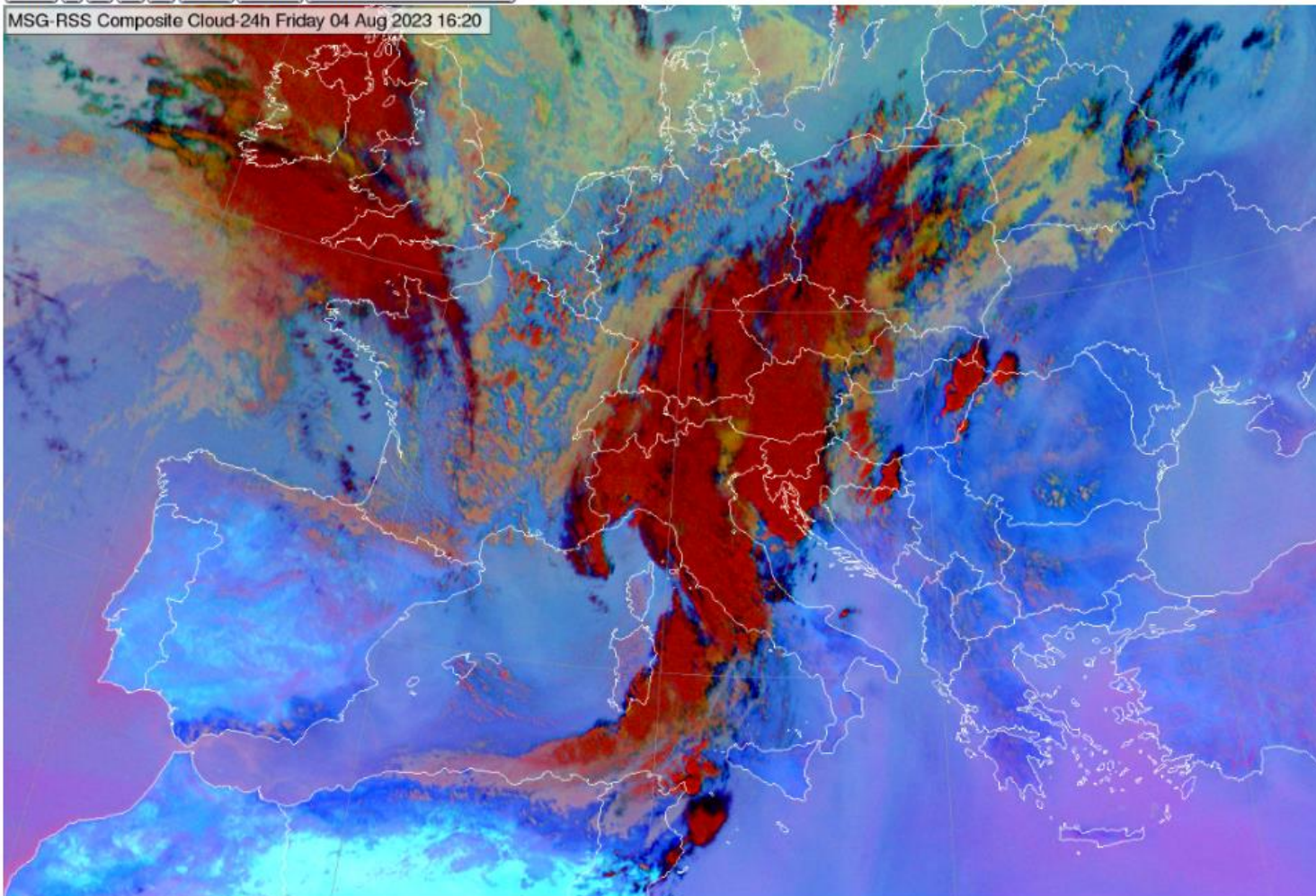
Airmass

IR10.8

HRV Cloud RGB

Stop - + < > Rock Zoom 04/08/2023 16:20 UTC

MSG-RSS Composite Cloud-24h Friday 04 Aug 2023 16:20



04/08/2023 PM

Tasks

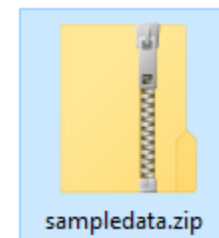
Overview





# Let's test building a SIM together!

1. Use the test dataset you downloaded in the beginning
2. Open SIM builder:  
<https://sims.trainhub.eumetsat.int/welcome>
3. Following the instructions, we walk through the building process of a SIM together.
4. The sample case deals with a weather situation over Central Europe on 25 May 2022.





 Welcome

 Define splash screen

 Define data types

 Define tasks

 Download

## Welcome

### Create a simulator

Select this option if you would like to create a new simulator from scratch

Create a new simulator

or

### Modify a simulator

Select this option if you would like to modify an existing simulator



Please upload your simulator model file





### To Remember:

- SIM builder is openly available
- No login needed
- Lightweight solution - you will not need to upload and download images when working on Simulator Creator
- We are happy to help you 1:1, when needed.