## Contacts

PRIMAVERA is a collaboration between 19 leading European research and technology organisations with complementary expertise in climate science, climate change modelling, and high performance computing. The project is led by the Met Office and the University of Reading. For more information about PRIMAVERA, visit our website www.primavera-h2020.eu or contact the team below:


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**www.primavera-h2020.eu**


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## Partners

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Royal Netherlands Meteorological Institute
Ministry of Infrastructure and the Environment
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predictia
INTELLIGENT DATA SOLUTIONS

# PRIMAVERA

**PRIMAVERA is an EC Horizon 2020 project producing state-of-the-art high resolution models and projections for use in climate risk assessments**


## Benefits

Improved representation of large-scale climate circulation e.g. ENSO and Euro-Atlantic blocking

Improved characteristics of high impact features such as tropical cyclones and storm tracks

Better differentiation of small scale atmospheric processes, e.g. convective rainfall

Greater confidence in future global projections

Better understanding of historic climatic variability

Actionable climate information for planning and adaptation

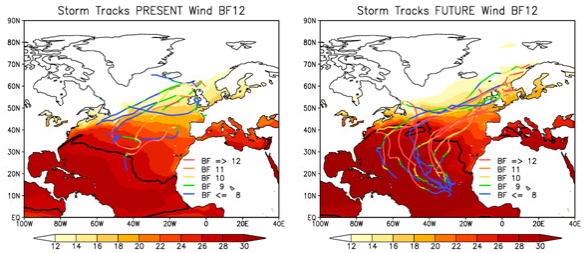
**www.primavera-h2020.eu**

**May 2016**

## Features

**PRIMAVERA** will deliver a new generation of global high-resolution (25km or finer) climate models capable of simulating and predicting regional climate with unprecedented fidelity benefitting governments, policy makers and society.

High resolution climate models will increase confidence in future projections for operational and policy decision making, and will inform national and international strategies for climate change adaptation and disaster risk reduction.




*Tracks and strength (Beaufort scale) of hurricane-force storms at 25km resolution*. Left: present day, right: future. The ocean colour presents SST (ºC).*

Controlled experiments will assess atmosphere only (AMIP) and fully coupled atmosphere-ocean models of the climate system to produce more robust projections of future climate (1950-2050). Aerosol concentrations rather than emissions will be constrained to reduce the spread between models and better understand processes.

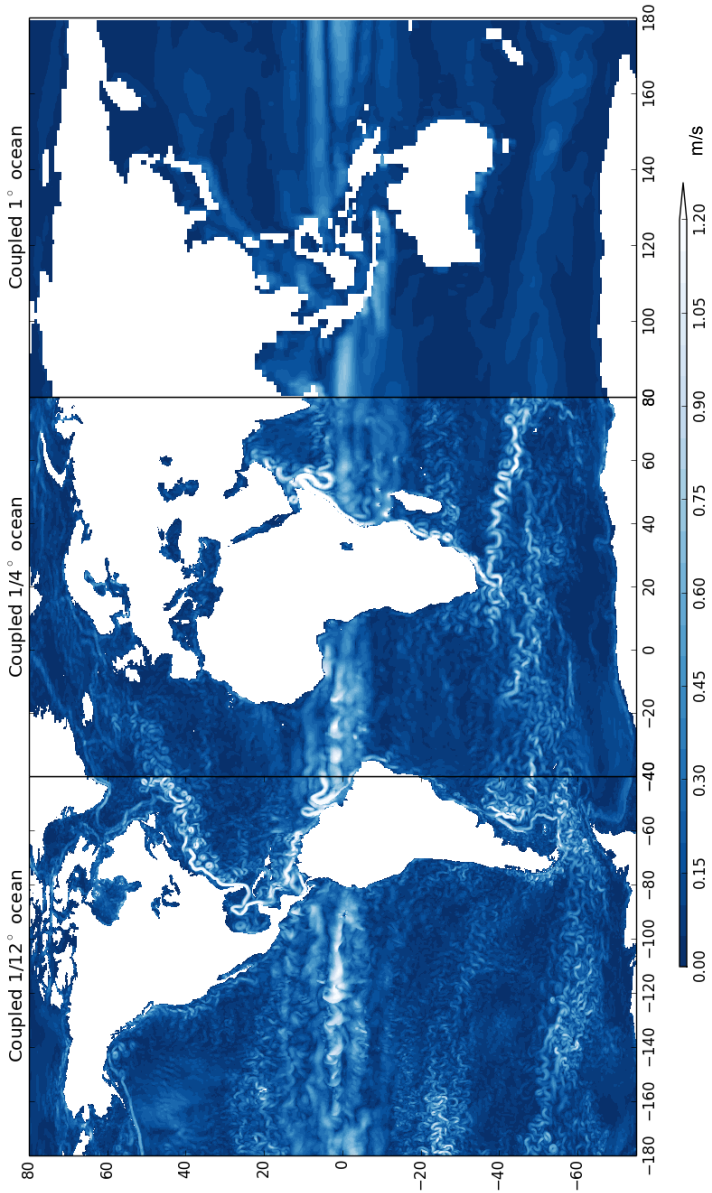
**PRIMAVERA** promises improved representation of important large scale climate circulations such as the El Niño Southern Oscillation (ENSO), tropical instability waves, Euro-Atlantic blocking, as well as ocean currents. Increased resolution especially improves the modelling of features with potentially severe impacts such as tropical cyclones. Small-scale and sub-grid atmospheric processes will also be better resolved, for example convective rainfall, essential for assessing the magnitude and impacts of precipitation extremes.

** Haarsma, Reindert J., et al. "More hurricanes to hit western Europe due to global warming." Geophysical Research Letters 40.9 (2013): 1783-1788.*

## High Resolution Models

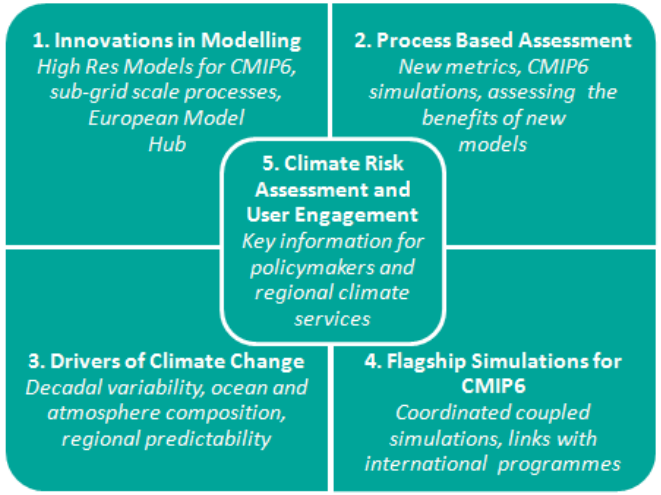
*Ocean surface currents at three different resolutions (from left to right): 25km (1/12º), 60km (1/4º) and 130km (1º).*

** Data comes from HadGEM3-based global coupled (atmosphere-ocean/ sea-ice) model.*




## Themes

There are five interlinked research themes (see figure). At its core will be a set of flagship high resolution simulations made possible by the latest high power computing facilities and a new European modelling hub. The experiments will generate new process-based metrics to systematically investigate the role of model resolution. These simulations will contribute to climate risk assessments and provide key information for policy makers and governments.




An important part of the PRIMAVERA project is the engagement with end-users and stakeholders from key European sectors, such as, transport, energy, agriculture, health, and insurance. The goal of the engagement is to identify user needs for relevant and actionable climate data and information. The users will have a chance to influence a second set of model simulations which will focus on better representing specific climate processes found to have large impacts on the participating sectors.

Models and data will be shared with related European projects to maximize benefits and promote consistency in methods and results.