## Secili -/vFIRM

## Sharing Climate Services Experiences between the EU SECLI-FIRM project and in the USA

www.secli-firm.eu

SECLI-FIRM: An EU H2020 project

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## **Sharing Climate Services Experiences**

#### AGENDA

Introduction Lesley Penny (UEA) 5 min

Promoting the integration of seasonal climate forecasts in the water sector to help mitigate stress events in the supply - demand balance Katie Chowienczyk (Met Office) 12 min

Complementing the U.S. Public Sector's Climate Services: The role of Machine Learning and Cloud Computing Carlos F. Gaitan, (Benchmark Labs)

**12 min** 

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SECLI-FIRM is an EU H2020 project titled The Added Value of Seasonal Climate Forecasting for Integrated Risk Assessment

SECLI-FIRM is promoting the integration of seasonal climate forecasts into energy and water applications



### **Case Studies**

Nine case studies where we assess the value of using a seasonal forecast

	Case Study	Climate events	Geography	Sectoral impact	Co-designers
í	CS1	Heat Wave 2015, and other similar extremes	Southern Europe	Energy –Thermal electricity plant cooling, demand model uncertainty	<b>ENEL</b> , ENEA, EURAC, KNMI
Italy	CS2	Dry Winter 2015-16 and other similar extremes	Northern Italy	Energy –Hydroelectric power production	<b>ENEL</b> , KNMI, ENEA, EURAC, Alperia
	CS3	Strong Winds March 2016 and other similar extreme	Southern Italy	Energy – Wind power production	<b>ENEL</b> , ENEA, KNMI, UEA
l &	CS4	Extreme Winds 2014- 15 and other similar extremes	Spain	Energy – Wind power production and balancing	AWS, MO, ENEL
Spain Calom	CS5	Strong El Niños	South America	Energy – Hydroelectric power production and other RE	<b>AWS</b> , UEA, AES Chivor, Celsia, ENEL
	CS6	Low Winds	North Sea	Energy – Offshore operations and maintenance planning	TenneT, KNMI



Case Study	Climate events	Geography	Sectoral impact	Co-designers
CS7	Severe climate events in 'shoulder' months	North Sea	Energy – Offshore operations and maintenance planning	Shell, MO
CS8	Anomalous winter conditions	UK	Energy – Winter electricity demand	National Grid, MO
CS9	Dry Spring and Summers	UK	Water – Water use restrictions	Thames Water, MO

eurac

research



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# SECLI

# Value assessment of seasonal forecasts

A value assessment is performed for each case study showing how the decision differs



A control case only utilises climatological conditions based on historical averages, while a test case also considers individually optimised and tailored state-of-the-art probabilistic seasonal forecasts



# SECLI

# Close interaction with users to build decision trees

Work with end users to develop a decision tree for each case study



### Understanding the decision tree process helps to assess the value



# SECLI

## Wind and wave height prediction for offshore operations & management

Decision tree for an offshore case study with the decision mapped to the seasonal climate  ${\bf A}$  information

#### **Decision making**

- This climate service supports the decisions defined in a typical offshore industry decision tree
- The visualisation is kept simple to allow flexibility in adapting the service and its delivery





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### Climate visualisation tool for energy trading

SECLI-FIRM is developing different ways to deliver climate services, from simple data delivery to online visualisation tools

Map and graph view

Met Office



#### **Mobile version**

• Identical to desktop tool but with adapted functionalities



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### Case Study Flyers



Case study 2 Dry winters in northern Italy d energy generation Martin Party States

Focus: Heat waves in southern Europ for energy generation and demand

**Boosting decision making** 

The main objective of his case study is to illustrate the beau products for the identification of extreme summer heat a

How can FNFL effectively measure the risks The seasonal forecasting context

in case shully focuses as exercised forecasts of surface learge-brane surveys seeling such as as several in Taby in July 2015.

Sectoral challenges and opportunities

FIRM



Focus: A mild, dry winter 2015/16 due

pressure system over the Mediterrane

This case shally focuses to measured forecasts of precipitation francesis of craciolation and anow particulity and to forecast

- Power price management and hedging of generation position

Prediction of gas price movements is a context of the hydrosise

Optimizing affic anty in hydrogener production management (A

Roosting decision making

The seasonal forecasting context

principal and proceedings and the same and ice.

Sectoral challenges and opportunities

**SECLi** 



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find strength variability in Italy

France - the impacts on energy general Focus: During thesfirt days of March 201 variability in the wind regime over Italy he stain objective of his case shuly is to illustrate the baselik roducts to identify winter conditions in the Alpa and Apacating synoptic systems over the Mediterran implications for supply-demand balance How can ENEL and Alparia effectively stanage the risks associ

Roosting decision making

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**Boosting decision making** The seasonal forecasting context The main objective of this case shally is to illustrate the beautily of roducia lo pradici assense oroducijos is markala wilh bish pas why increase on assessed interaction of shows

ingo in the time compling of such evenin that is standy also even if deventuation of experient featurents will be investigated Sectoral challenges and opportunities

 Power price management and hedging of generation politics – w ويعاجبه لمحمد البري ومز مجاويكون بمبري البثير بالقابي مشم





Case study 4

ergy generation

igh/low winds in Spain and

Focus: Sustained high and low wind s











**Boosting decision making** Focus : Strong El Niños in a South Ameri mix planning

#### **Boosting decision making**

The stain objective of this case study is to iteratuals the benefit products to predict the expected errowst of the of the helf o are As a complementary study, the case study will estimate how on a lecturologies can be achieved in Colombia. This could help to o auch as strong III Nilos when relying on a single energy source.

The seasonal forecasting context

This case shuly focuses as demonstrating the impact of using as big utilizer with a large proposition of hydro power in their position Sectoral challenges and opportunities

To clearline internation resources during FI Nido-La Nida event To buy local lash options is advance at lossy prices to compass

To design a failed average site adapted to the total climate variable SECL



for maintenance

For offshow maintenance pleasing materophysical parameter height and mean wave period are important. This case the forecasis of wind (at 10m m) to 100m height), and wave (a

This case shull use and an list and sales offered and

makes in a strengthed lines have all the sheet

Sectoral challenges and opportunities

conditions in the North See, from a climate

FIRM

Focus: North Sea wind and

Case study 7

nergy logistics: wind and wave

Acres 1

This will be Musical all from the point of view of the Associations to be operations such as those involving drilling, large infrastructure installation and the second second

Sectoral challenges and opportunities - The expense of working in the offshore new inversest places equals a radius supply chain costs, such as those valued to vasual charter as afficult sparsition  $\phi$  and  $g_{\rm c}$ 

At present, the application of the intent weather actions di industry in traditionally very conservative, with farihed a culture, or even climate projections and interconnections.

#### Optimizing the actualizing of vessel hire and perso operations and maintaneous planning.





Focus: The use of seasonal forecasts

The main objective of this case study is to itself the baselik of a baller could's the UK window mean electricity demand and wind on

This case study locuses on demonstrating the impact of using sessor circulation forecast information for the United Kingdom (UK) Natio

Sectoral challenges and opportunities

The climate forecasts will be translated into every information, to

The grid astrock has a cashed role to play in the failure among stic. National Grid is morting to mast autolicus too carbon among large has people who use lines, and its immedies ways to analysis the r

Grid Operator

Roosting decision making

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want his farmed

The seasonal forecasting context



Focus : The use of seasonal forecasts for water manageme to identify periods of stress to the supply-demand balance

#### Roosting decision making

The sector industry case studies will explore the application of associated forecasting to identify periods of above to the LIK explorational behavior. These associated against a may highlight thronic or acute periods of always around associate and, while held block the spontaneous measurement of the sector system and has experience of the community through explorational.

#### The seasonal forecasting context

This case study will septers has ability to identify periods of chronic stream (protonged as can sirely high derivated directly althoutables or consumption). Claritationgically, have not acclude conditions indicates of all y and the transfers, or drought conditions, or period in the stream date to be transfers indicates resear-points (sequentized, and conditions areas predicted at associat francesia), a second high to be the derivated conditions areas indicated or and frances areas in the stream date to be transfers. The derivative measurement of the stream date of the stream date

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#### Sectoral challenges and opportunities

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He timely identification of optimized risks, we will ass

Aband of each winley, the UK grid openator must estimate the dam particular focus on park electricity demand. This is to ensure there. ECL By identifying potential risks to the system aband of the sill radius balancing scale over the winter period. FIRM



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Events, reports, contact details

#### http://www.secli-firm.eu/case-studies/







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# **V**-AvFIRM

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### Thank you for attending

For more information visit our website:

www.secli-firm.eu

#### Or find us on social media:

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