

Trial climate services for industry An overview

SECLI-FIRM Stakeholder Workshop, 15 June 2020



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The Added Value of Seasonal Climate Forecasting for Integrated Risk Management

	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21
Month number	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Task 1																					
Co-design of																					
operational service																					
Task 2																					
WS to optimise																					
service design																					
Task 3																					
Delivery of non-																					
operational service																					
Ds & Ms							MS4.1 D4.	1 D4.2								D4.3 (interim)				D4.3

Work so far

- Agreement on the use of 'trial climate service' within the SECLI-FIRM project
- The delivery methods for the case studies have been decided, following further discussion with industry users
- Detailing the co-design of the trial climate services
 - Documenting the engagement and interactions with industry partners
 - Sharing ideas with other project partners
 - How the industry decision making processes are being incorporated into the co-design
- Considering the approach to evaluation of trial climate services
- Understanding the wider opportunities presented by the case studies

Delivery methods										
	Demonstrator	Visualisation	Briefing document	Teleconference / webinar	Post-processed data (relevant indicators)	Training (with WP5)				
CS1	✓	✓			~	✓				
CS2	✓	✓			~	✓				
CS3	✓	✓			~	✓				
CS4	✓	✓			✓	✓				
CS5	✓	✓			~	✓				
CS6		✓			✓	✓				
CS7		~			×	~				
CS8			✓	✓	×	✓				
CS9		\checkmark		\checkmark	✓	\checkmark				











Grant Agreement

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The Added Value of Seasonal Climate Forecasting for Integrated Risk Management

What do these services look like and how have they evolved?

Case studies 1-5 (multiple organisations)

- A number of discussions and engagements have shaped the trial comate service
- An interactive process of co-production has seen:
 - the demonstration of the C3S ECEM demonstrator (by WEMC)
 - followed by identification of additional features that can allow integration of forecast data into Enel's decision making processes
- Further necessary functionality has also been identified in this co-design process, including:
 - Improvements to user interface
 - Portability across platforms
 - Improved granularity of data



Snapshot of SECLI-FIRM climate trial service for Enel with selection of spatial resolution on European cities and plot of temperature forecasts for Rome, Italy.



Case study 6 (KNMI and TenneT)

M-**AvFIRM**

 The co-design of sub-seasonal forecasts has been achieved through frequent email, face-to-face meetings and user workshops, to:

- Gain a clearer understanding of the meteorological data that is important
- Ensuring that the visualisation of the weather and climate data is in a format that can be understood by end users (plot to the right)
- Ensure that there is a seamless transition from short/medium range forecasts to sub-seasonal forecasts



Two plots of probabalistic forecasts of sea level to demonstrate different ways of displaying equivalent information.





Case study 7: Met Office and Shell

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- Case study 7 has benefitted from extensive knowledge sharing (via frequent e-mail, face-to-face meetings and user workshops)
- The iterative nature of the developments has been documented, which charts the evolution of the proposed visualisation:
 - from a simple table of the probability of non-exceedance to a plot of the deviation of probability of exceedance for key industry thresholds
- The latest visualisation supports the decisions defined in a typical offshore industry decision tree
- A detailed workplan for the remainder of the project will ensure milestones are met









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Case Study 8: Met Office and National Grid

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Met Office nationalgridESO



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Case Study 9: Met Office and Thames Water

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- Has benefitted from extensive engagement Stakeholder engagement meetings are highlighted in blue (left) on the timeline and the key tasks involved in the development of the service in grey, the ongoing supporting science can also be seen in orange (right).
- The current forecasting tool only extends 14 days ahead and it is deterministic
- Currently trialling integration of probabilistic information and how these can be translated into easy decisions

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METEO

FRANCE

• Depends largely on risk adversity



Project – kick off meeting: Identify aspects of water companies decision making that could be extended further if we can build trust in longer range data



Evaluation of the SECLI-FIRM trial services

Some lessons/possible approaches from the 'ECEM stakeholder' paper



Original research article

Advancing climate services for the European renewable energy sector through capacity building and user engagement

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TRL 2: technology concept formulated TRL3: experimental proof of concept TRL4: technology validated in TRL5: technology validated in a relevant industrial environment TRL6: technology demonstrated in a relevant industrial environment TRL7: system prototype demonstration in an operational environment TRL8: system complete and qualified TRL9: actual system proven in operation environment



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What do we mean/understand by **co-design**, **co-production** and **co-evaluation**?

Need to distinguish between evaluation of the:

- ❑ Actual process of co-production e.g., quality and effectiveness of the stakeholder engagement and relationship (building trust, sustainability)
- Outputs and outcomes:
 - Outputs: quality of the data/information are they credible, legitimate and salient?
 - Outcomes: e.g. narrowing the usability gap, capacity building, market development





Key points

- The use of Technology Readiness Levels (TRL) in real time, rather than retrospectively, could be useful to measure progress against achieving an operational system
- The use of timelines serves as evaluation of the co-production of trial climate services
 - Keeps things fairly high-level and removes the burden from industry partners, i.e. no need for formal user surveys at this point
- Need to ensure that evaluation is focussed on real-time applications
- Evaluation needs to be independent of the ability to forecast a single season
 - E.g. just one winter forecast within the project
 - Needs to focus on the opportunities it could present with skill levels and economic value that has been determined in other work packages





Cross-fertilisation

There are multiple examples of the benefits of cross-fertilisation in the project

- Case studies 6 and 7 have been closely aligned to ensure that information is shared across the these offshore energy services
- Case studies 7 and 9 have also benefited and represent an example of cross-sector learning (offshore energy and water sectors)
 - The application of weather patterns to a specific high impact variable, significant wave height or peak water demand, share many similarities
 - As case study 7 has taken a lead, some of the wider application has emerged, greatly benefitting case study 9





How trial climate services can help your industry management decisions A discussion

SECLI-FIRM Stakeholder Workshop, 15 June 2020





Question 1:

Could these types of services be valuable to you/your organisation?

How does weather influence your organisation?

How far in advance do you think you could reliably make weather-dependent decisions?





Question 2:

How relevant are these solutions to you/your organisation?

How would the services need to change to be valuable to you?

How portable are they?

Are they too bespoke?

