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List of Abbreviations

AEC Advisory Expert Committee

CA Consortium Agreement

COP Conference of Parties (annual UN climate conference (UNFCCC); COP24 was in Katowice)

CS Climate Service

C3S Copernicus Climate Change Service

DoA Description of Actions

Dn.m Deliverable no. m from WPn

EB Executive Board

ECCA European Climate Change Adaptation conference

EGU European Geosciences Union

ESA European Space Agency

GA General Assembly
GAG Grant Agreement

ICLEI Local Governments for Sustainability (Global association)

IPCC Intergovernmental Panel on Climate Change

PMH Project Management Handbook
SISC Italian Society for Climate Science

TCFD Task Force on Climate-related Financial Disclosures (of the Financial Stability Board)

UNEPFI United Nations Environmental Programme Financial Initiative

UNFCCC United Nations Framework Convention for Climate Change

WP Work Package (WPn – Work Package no. n (1-7))

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1. INTRODUCTION

1.1 The study

To support further product development and effective widespread uptake of climate services, as a means to boost mitigation of and adaptation to climate change as well as capabilities to cope with climate variability, the European Commission has included several actions in its current research programme Horizon 2020 (H2020). Essentially these actions follow from the logic to implement the European Research and Innovation Roadmap for Climate Services (cf. European Commission, 2015)

EU-MACS and its twin project MARCO deal with analysis of the climate services market. In addition demonstration calls were launched on the added value of climate services for supposedly high value added sectors with hitherto little uptake of climate services (SC5-01-2016-2017), while other actions focus more on networking activities interlinking to better connect relevant players, such as the Coordination and Support Action (SC5-05b-2015) called Climateurope. In addition the ERANET for climate services (ERA4CS) is a programme that contains both testing of particular types of climate services in selected sectors and exploration of suitable climate service types for selected sectors.

An extremely important sub-programme in H2020 is the COPERNICUS Climate Change Service (C3S) programme, which aims to generate a very comprehensive coherent and quality assured climate data set meant to support mitigation and adaptation planning, implementation and monitoring. In due course, also coping capabilities of (current) climate variability are addressed.

In this framing, EU-MACS – European Market for Climate Services – will analyse market structures and drivers, obstacles and opportunities from scientific, technical, legal, ethical, governance and socioeconomic vantage points. The analysis is grounded in economics and social sciences, embedding innovation theories on how service markets with public and private features can develop, and how innovations may succeed.

1.2 The scope and remit of this report

This is the second and final report on the dissemination activity in EU-MACS, with particular emphasis on the second period 1.11.2017 - 31.12.2018. It follows the structure of the Communication and Dissemination Plan (D6.1). We first discuss in Chapter 2 the logic of the Communication and Dissemination Plan. Subsequently we discuss activity and performance per medium (Chapter 3), as well as attendance and activities per event (Chapter 4).

•	Web-site	§3.1
•	Twitter	§3.2
•	Newsletter	§3.3
•	Other means of communication	§3.4
•	Attendance of 3 rd party events (conferences, workshops, fairs)	§4.1
•	Events organized by EU-MACS partners	§4.2
•	Communication in the legacy period – web-site	§ 5. 1
•	Communication in the legacy period – science outreach	§5.2

The first 12 months are reported in more detail in Deliverable 6.3. Furthermore, Deliverable 6.7 reports on the research related stakeholder interaction process and how the originally planned series of workshops was adapted to the feasibility boundaries of each focus sector. Deliverable 6.8, which was originally meant to report on the final seminar, which was nevertheless replaced by a series of final events.

2. THE LOGIC OF THE COMMUNCIATION PLAN

The communication and dissemination activities of EU-MACS aimed to:

- Raise general awareness about the project and its output [website; brochures, leaflets]
- Support recruitment and engagement of stakeholders fit for participation in the explorations in WP2-WP4, especially in the first part of the project [outreach during events, blog, newsletter]
- Inform stakeholders from the target use sectors, finance, tourism and urbn planning about the
 achievements in the project, notably in the second part of the project [website, newsletter, outreach
 during events (leaflets)]
- Aim for high transparency and accessibility of the project output [website, policy briefs, peer reviewed articles]
- Try to monitor and evaluate interest in the project [web site visits, surveys]

The premise has been that initially the emphasis lies on general awareness raising about the existence of the project, and to start to build up contacts with relevant user segments and with service providers. Subsequently, we seek for more interaction with focus sectors, both via the WP2-WP4 efforts, but also more generally in order to increase feedback from these groups regarding our activities. The latter aspects were especially sought after in 2018 when we intend to present results at events of the focus sectors, and via other media oriented to these sectors. The last six months of the project the interaction with climate service providers and purveyors, and with relevant policy makers is meant to intensify in order to assess their views on the feasibility of the recommendations derived from the user oriented assessments.

Stakeholder categories where distinguished between those belonging to the focus sectors of WP2-WP4, and other stakeholders, as well as by way of engagement (as planned action in WP2-WP4; otherwise via surveys and interviews; via other EU-MACS information channels and outreach activities). The numbers of stakeholders approached in WP2 and WP3 amounts to over 150 actors, whereas the number of stakeholders that actually engaged in interviews and/or workshops or explorations amounts to about 110 actors altogether. In addition, a significant number of stakeholders active in the climate services product chain were engaged in WP1; in the survey 163 respondents (D1.1) and in various interviews ~50 (D1.1, D1.2, D1.3). In WP5 a series of 8 interviews was held on the climate service development pathway in (mostly) public expert organisations (D5.2), as well as a survey, aimed at private consultancy based climate services providers, where 4 out of 20 responded (D5.2). In addition stakeholders were approached as part of outreach activities at conferences and similar events, and Newsletter interviews.

3. ACTIVITY AND PERFORMANCE PER MEDIUM

3.1 Web site

A visual summary of web-site use in 2018 is presented below in figure 1. The average number of visits per week initially continued at the autumn level of 2017. After the ICLEI conference late April 2018 and the webinar mid-May ((see list in Ch.4) the number of visits starts to rise. Also tweets on the web-based surveys and new reports seem to have lifted traffic. Especially the availability of the guidance ('protocols') for specific sectors seemed have raised the amount of paging through the website. In figure 2 (next page) is shown that especially FAQ pages for tourism (D3.2) and the living lab guidance for cities (D4.2) caused extra paging, in addition to (additions to) the output section with downloadable reports.

The series of events from the end of September until mid-December (see list in Ch.4), supported by tweeting and web-news, caused a stepwise further increase the number of visits.

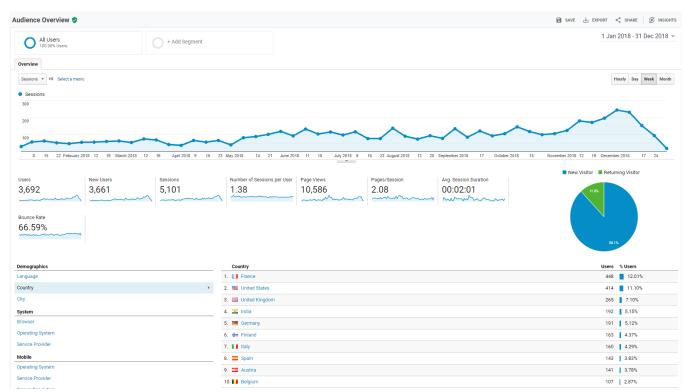
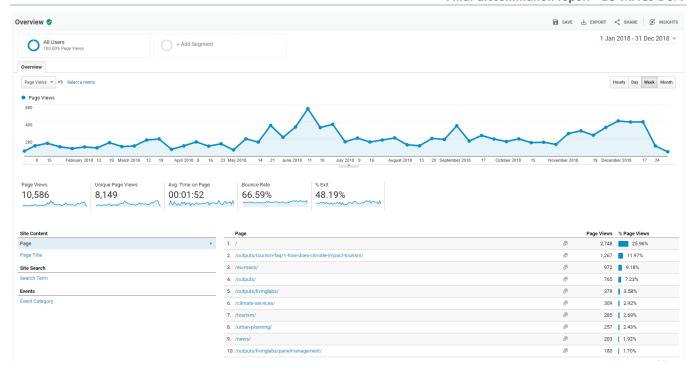


FIGURE 1. SUMMARY STATISTICS OF EU-MACS WEBSITE VISITS IN 2018



During the last 14 months of the project there have been 8 news items published in the News section of the project web site. All but one of these items had to do with activities or outcomes of the EU-MACS project. The reduction has to do with reduced input from partner organisations or third parties. 11 events were announced in the second period. Only one blog was added in the second period. To some extent the lower intensity has supposedly to do with more attention for twitter as a quick means to draw attention to project activity.

3.2 Twitter

Since 10.12.2017 EU-MACS has a Twitter account (@EUMACS H2020).

The Twitter account has been used to raise visibility of the EU-MACS project, drawing attention to EU-MACS activities and statements at events as well as to output visible at the EU-MACS website. It was also used to raise additional interest in filling in online surveys. As of January 2019 the Twitter account will be used only occasionally, mainly in relation to new publications on the web-site (incl. project based peer reviewed articles). This practice will end in 2020.

Statistics:

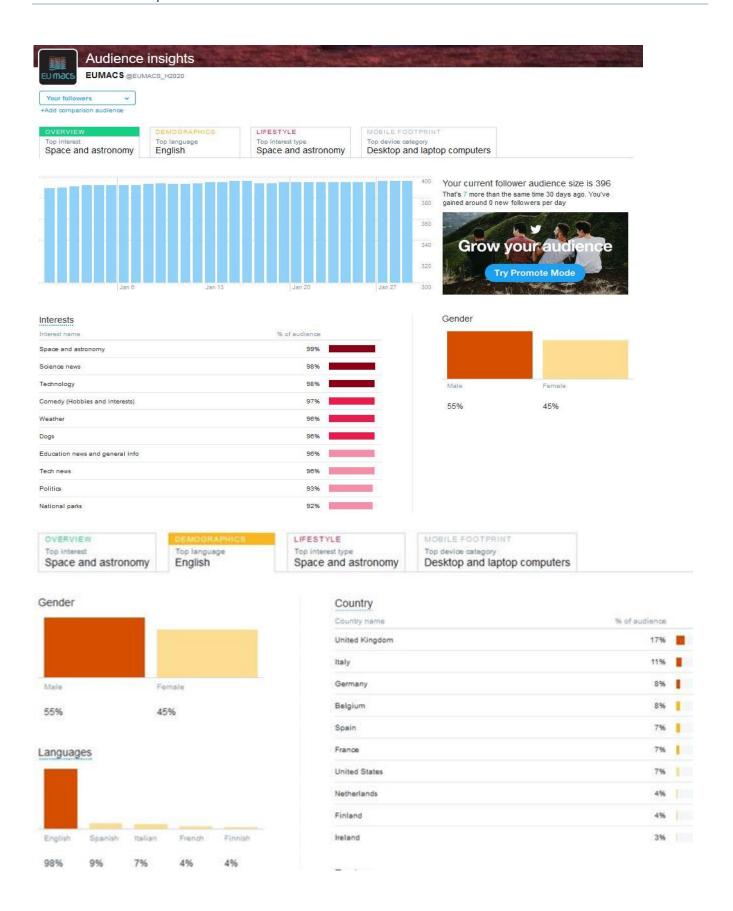
No. of Tweets: 376 (by 31.10.2017) 613 (by 31.12.2018)

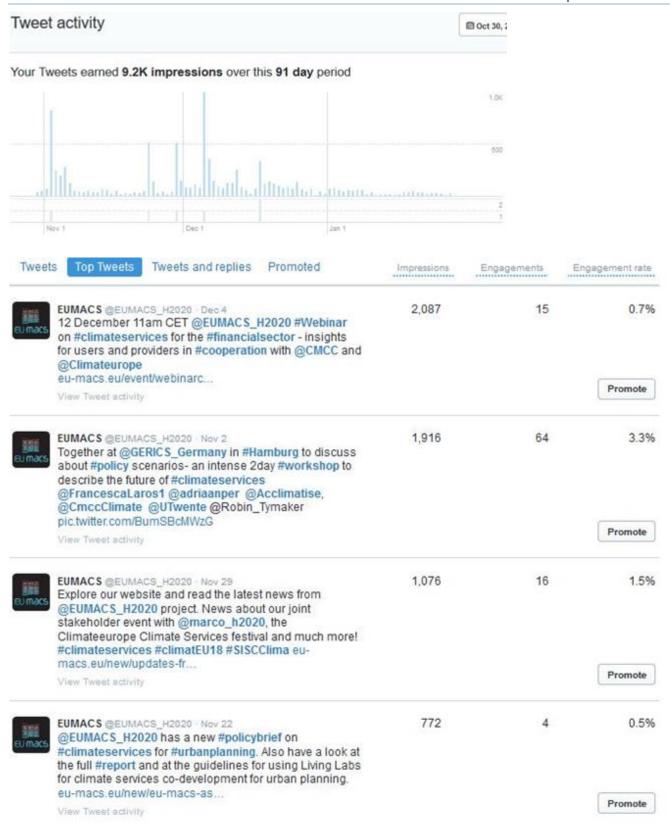
No. of Followers: 260 (by 31.10.2017)
 398 (by 31.12.2108)

(of which approx. $\frac{2}{3}$ organisations, projects and such like)

No. of Likes: 600 (by 31.10.2017) 896 (by 31.12.2018)

The figures on the next page provide further insight in the backgrounds of tweet readers, and peaks in interest in tweets. The geographical spread of attention for the tweets seems quite evenly spread over Europe. Topic connections seem mostly logic, with the exception of 'dogs'.





A selection of tweets from 2018 is shown (in D6.3 a selection from 2017 is shown). Also tweets of others referring to EU-MACS are included.







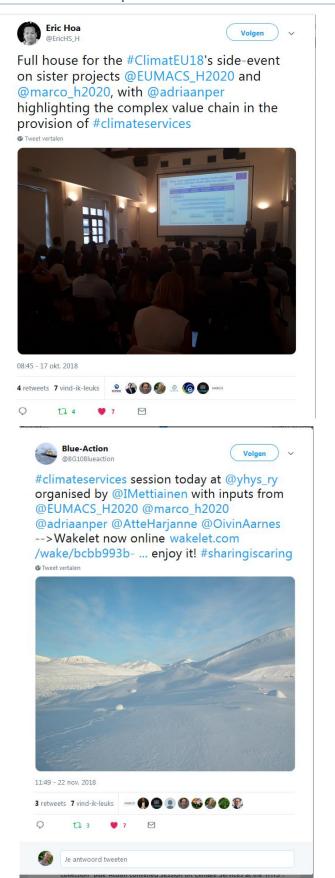


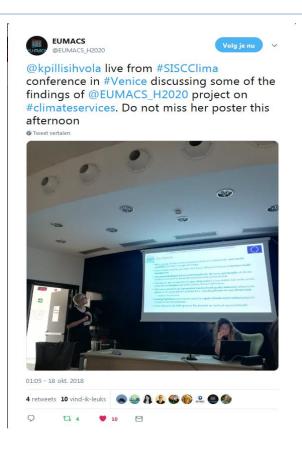


















3.3 Newsletter



During the project $\frac{3 \text{ newsletters}}{3 \text{ newsletters}}$ were issued. As regards the 4th Newsletter, originally due in autumn 2018, was decided to merge it with the 5th Newsletter and issue a combined number when the project is concluded.

Originally 1078 contacts received the newsletter, after screening of distribution list and checking for consent in connection with the EU GDPR the number reduced to 1016.

3.4 Other means of communication

In the second period only one blog was added. The goal was to also get other voices heard next to the ones that can be found already via many outlets. Yet, a blog is relatively demanding to make and hence it was hard to convince our contacts to write a blog, whereas it is unsure how many readers it will actually attract. In this respect the use of interviews in the Newsletter appeared to be more successful to attract also new voices in addition to more known ones in the field of climate services, such as financial sector representatives in the 3rd newsletter and a private sector downstream climate services consultant in 4th one.

Even though nowadays the emphasis in dissemination is in web-based and twitter based messages the use of leaflets and also printed versions of the newsletter in conferences appeared to be still a welcome extra means of information for the project. Altogether we estimate to have handed out about 350 - 400 brochures. Also paper versions of the policy briefs for tourism and urban planning have been used in a few autumn events at a modest scale. In this respect it seems recommendable to bring paper versions of the policy briefs and the last newsletter to ECCA 2019.

4. ATTENDANCE IN OWN AND THRID PARTY EVENTS

4.1. Attendance of third party events

EU-MACS partners attended 17 events during the the 2nd period of the project, adding to the 17 events of the 1st period. Standard format event reports were made of most of these events, with the aim to promote sharing of new information and possibly relevant contacts. These reports were uploaded to the common workspace of the project. The shaded part in the table below refers to the 2nd period.

During the entire project between $4000 \sim 4500$ people have been reached through the participation in these events. About 1000 participated in the sessions where EU-MACS presentations were held, whereas also about $350 \sim 400$ brochures were picked up at different events. Sessions with EU-MACS presentation having 50 or more attendants were realized in ECCA2017, Climate Innovations Summit, UNEP FI General Assembly, IPCC Cities, Copernicus C3S GA, and the Climateurope Festival. Presented material can be found on the EU-MACS web-site (http://eu-macs.eu/outputs/ --> Brochures&Leaflets and --> Presentations).

Event	names, party	dates	poster	paper pres.	session org.
ICCS5 - Cape Town SA	Atte Harjanne FMI	28.2 - 2.3 2017	X; flyers		
COPERNICUS C3S 1st GA - Toulouse	Adriaan Perrels FMI 7.3 - 8.3 2017 flyers networking; SECTEUR				
Climateurope Festival – Valencia	Adriaan Perrels	5.4 – 6.4	Х	Х	
European Geosciences Union (EGU) - GA, Vienna	Andrea Damm JR	28.4 2017		Х	
ECCA 2017 (incl. own session jointly with MARCO)	Francesca Larosa CMCC Karoliina Pilli-Sihvola FMI Adriaan Perrels FMI Jörg Cortekar	5.6 - 8.6 2017	X X X		X X X
Open Innovation 2.0, Cluj Romania	Ines Vaittinen ENoLL	12.6-14.6 2017	Х		
European GEO Workshop - Helsinki	Adriaan Perrels & Athanasios Votsis FMI	20.6.2017			Х
Open Living Lab days, Krakow Poland	Paolo Aversano ENoLL	29.8-1.9 2017	flyers		Х
European Meteorological Society Annual Conference Dublin	Adriaan Perrels FMI	5.9 - 7.9 2017		X (2x)	
Climate Innovation Summit Milan (Climate-KIC)	Adriaan Perrels FMI	30.10 2017		panel disc.	

Event	names, party	dates	poster	paper pres.	session org.
Group on Earth Observation (GEO) Week Washington D.C.	John Firth, Acclimatise	natise 23-27. 10. 2017			Х
Global Adaptation and Resilience (GARI) Working Group 2017 kick off meeting New York USA	John Firth, Acclimatise 21 .1. 2017				Х
Innovate4Climate Barcelona (WP2)	Robin Hamaker (Acclimatise)	18.5. 2017			Х
Green Equities Conference London	Robin Hamaker, Laura Canevari (Acclimatise)	14.9. 2017			X
UNEPFI General Assembly Geneva	Robin Hamaker, Richenda Connell, John Firth (Acclimatise)	21.10. 2017		X	Х
Bank of England and TCFD conference - London	Robin Hamaker, Richenda Connell, John Firth, Laura Canevari (Acclimatise)	31.10 - 1.11. 2017			х
IPCC Cities – Edmonton (Ca) joint dedicated session on climate services	Adriaan Perrels (FMI) 05-07. 03.2018			X	X
Finnish Ski Area Association Board Meeting	Atte Harjanne (FMI)	20.3.2018		Х	
European Geosciences Union (EGU) - GA, Vienna	Atte Harjanne (FMI)	1113.4.2018		X (2x)	
STePS Research Days 2018 — Enschede (NL)	Peter Stegmaier & Klaasjan Visscher (UT)	18.04.2018		X	
Österreichischer Klimatag 2018 - Salzburg	Andrea Damm (JR)	23-25. 04.2018	Х		
Resilient Cities 2018 — Bonn Own EU-MACS session: 4 short presentations + mini-workshop	R. Giordano (CNR-IRSA), A. Perrels (FMI), AEC members Fini and Kankaanpää*	26-28. 04.2018		X	X
Adaptation Futures 2018 - Cape Town	Laura Canevari (Acclimatise)	18-21. 06.2018		X	
9 th International Congress on Environmental Modelling & Software, Forth Collins (USA)	Raffaele Giordano, Raffaella Matarrese (CNR- IRSA)	24-28. 06.2018		Х	X
Sustainable Finance Conference - Stockholm	Adriaan Perrels (FMI)	20.08.2018	flyers		

Event	names, party	dates	poster	paper pres.	session org.
OpenLivingLab Days 2018 - Geneva	lnes Väittinen (ENoLL)	22-23. 08.2018	flyers	Х	
Styrian Climate and Energy Forum – Challenges of a tourism region under climate change – Schladming (AT)	Judith Köberl 05.09.2018			X	
19th International CINet conference - Dublin	Peter Stegmaier & Klaasjan Visscher (UT)	10.09.2018		Х	
Copernicus Climate Change Services (C3S) — 2 nd General Assembly — Berlin (plenary twin presentations MARCO & EU-MACS)	Adriaan Perrels (FMI) [Thanh-Tam Le & Eric Hoa — MARCO]			Х	
Climateurope 2 nd Festival — Belgrade (own session - presentations MARCO & EU-MACS)	Adriaan Perrels (FMI); Jaroslav Mysiak (CMCC) [Thanh-Tam Le & Eric Hoa — MARCO]	17-19. 10.2018	x	x	
The ESA Earth Observation Phi week - Rome	lnes Väittinen (ENoLL)	15.11.2018		Х	
The Finnish Society for Environmental Social Science (YHYS) annual meeting — joint session with H2020 BLUEGROWTH on climate services — Rovaniemi (Fi)	Atte Harjanne, Adriaan Perrels (FMI)	20-21. 11.2018	flyer	х	
UNFCCC COP24 Katowice — EU pavilion Session on climate services (H2020/JPI projects)	Adriaan Perrels (FMI); [Eric Hoa (MARCO) Jaroslav Mysiak* (CMCC)] *) session organizer	05.12.2018		х	

4.2. Attendance of own EU-MACS events

Next to the research related workshops for WP3 and WP4, the project had three stakeholder oriented events, the joint kick-off with MARCO (incl. AEC members), the seminar in Helsinki (also incl. AEC members), and the joint stakeholder event in Berlin in 2018. In the 2nd period several internal workshops were held. The first one in Brussels (2017) dealt with innovations, user engagement in WP2-WP4, and identification of obstacles, and had some guest speakers related to these themes. The second internal workshop, jointly organized with MARCO, was held in Munich in 2018 and aimed to prepare for the common synthesis report (D5.3). The last one, held in Hamburg in autumn 2018, dealt with scrutinizing the climate services scenarios. The webinars in May and December 2018 turned out to be very effective, not only by numbers of attendants, but also by received questions afterwards, and by the raised visitor number of the website. The cooperation with CMCC and with Climateurope regarding facilitation and marketing of these webinars certainly contributed to the effectiveness as well.

The shaded part in the table below refers to the 2nd period.

Type of meeting	date	names, party	Deliverable
Kick-Off jointly with MARCO - Paris (incl. plenaries, AEC, GA, EB)	23-24.11 2016	all parties represented; AEC members Anderson, Bessembinder, Girardoni, Niemisalo; joint sessions with MARCO consortium	D7.1 - D7.3 NL1
GA meeting - Helsinki	19.6.2017	all parties represented; MARCO coordinator present part of the time; total audience ${\sim}45$	D7.4
EU-MACS seminar Helsinki	19.6.2017	All partners represented; 3 AEC members; stakeholders from focus sectors; CS providers	NL1
AEC meeting - Helsinki	19.6.2017	All parties represented; AEC members Girardoni, Kankaanpää, van der Grijn, (Bessembinder by video)	D7.5
WP4 workshop - Helsinki	20.6.2017	CNR-IRSA, FMI, UT, ENoLL; 6 stakeholders from Helsinki region	D4.1; NL2
WP3 workshop - Graz	26.09.2017	JR, UTUM, UT; 10 stakeholders from Austrian tourism sector	D3.1
WP4 workshop - Bologna	01.12.2017	ENoLL, CNR-IRSA, Bologna stakeholders	D4.1; D4.2
Internal workshop - Brussels	01.12.2017	All partners, 1 AEC member Bessembinder, speakers Dicky Whiteaker (Oasis Hub), Alexander Flesjø Christiansen (DNV-GL)	D2.1; D3.1 D5.1-D5.2; Webinar 16.05.2018
WP4 workshop - Helsinki	07.03.2018	ENoLL, CNR-IRSA, FMI, Helsinki stakeholders	D4.1; D4.2
WP5 synthesis workshop with MARCO – Munich (U_TUM)	11/12.07. 2018	All partners, except ENoLL and CNR-IRSA from EU-MACS + Climate-KIC, LGI, Kmatrix, and Smith Innovation from MARCO + 1 AEC member; 9 external experts	D5.3; D5.4

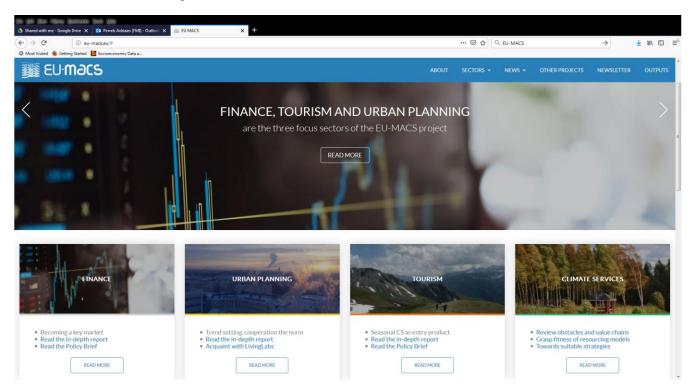
Joint stakeholders meeting MARCO/EU-MACS - Berlin	28.09.2018	All partners from EU-MACS + C-KIC, LGI from MARCO + 2 AEC members + external stakeholders	D5.3; D5.4; D5.2
Internal workshop on climate service scenarios, Hamburg (HZG GERICS)	31.10 – 1.11.2018	J. Cortekar (HZG GERICS), R. Hamaker-Taylor (Acclimatise), F. Larosa (CMCC), A. Perrels (FMI), P. Stegmaier (UT), R.Giordano (CNR IRSA; remote)	D5.2
Webinar on blockchains for quality assurance in CS - facilitated by CMCC	16.05.2018	Speaker: Tommi A. Vuorenmaa (Raleigh) Discussants: Carlo Buontempo (C3S), Jesse M. Keenan (Harvard University) ~ 150 attendants	Website
Webinar on CS for the finance sector - facilitated by CMCC	12.12.2018	Speaker: Robin Hamaker-Taylor (Acclimatise) ~ 130 attendants	Website

5. COMMUNICATION IN THE LEGACY PERIOD

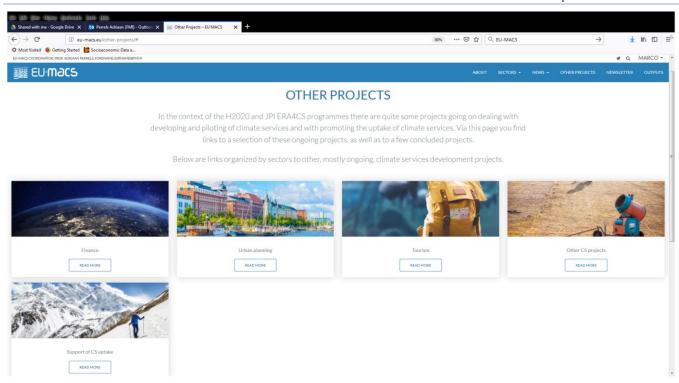
After the active period of the project, especially in 2019 and early 2020, still a reasonable amount of interest may be expected regarding the output of the project. The adapted website aims to make it easier to find the different types of output by user sector. We also try to offer some degree of continuity by offering a page with links to ongoing projects. Last but not least the output of the project will still grow during 2019, thanks to the publishing of various peer reviewed articles, especially those in the special issue of the journal Climate Service – to be expected May/June 2019.

5.1. Website

The website has been adapted to better reflect expected use of the website after completion of the active period of EU-MACS at 31.12.2018. The landing page is remodelled allowing visitors to more straightforwardly go to their area of interest. There is no need any more to emphasize on-going actions or upcoming events, instead visitors can more directly be guided to several types of output (report based deliverables, protocols, etc.). Also other output such as presentations and articles can be found and downloaded. The streaming of both webinars can also watched on-line.



Furthermore a new page (screen dump on next page) is added with links to other projects on climate services (most of them still ongoing) and a few available products.



5.2. Science outreach

A so-called news article was published in August 2018 in the journal Climate Services. The Resilient Cities 2018 conference offered the option for a short paper published in the on-line proceedings in August 2018. Furthermore, in the thematic issue on natural hazards and climate change of a Dutch economists' bi-weekly magazine (ESB) a short paper was published on possible consequences of strict segregation of public and private provision of climate information.

- Hoa, E., Perrels, A., Le, T.T. (2018). From generating to using climate services How the EU-MACS and MARCO projects help to unlock the market potential, Climate Services, Vol. 11, pp 86-88 https://doi.org/10.1016/j.cliser.2018.08.001
- Perrels, A., Giordano, R., Ignatius S., Fini, G. (2018). Urban climate services prerequisites and tools for their effective use, <u>Resilient Cities 2018 online congress proceedings</u>
- Perrels, A., (2018), Gratis informatie over natuurrisico's (Free information about natural hazards),
 Economisch Statistische Berichten, Vol.103, no.4759, pp.116-118

With the journal Climate Services has been agreed to make a special issue with articles based on work carried out in MARCO and EU-MACS. The articles are currently at several stages of review and revision. A few are ready or almost ready for publication. We expect to have the entire special issue ready in the second part of May or in June. The following EU-MACS based articles are expected (articles with asterisk *, are also based on input from MARCO):

 Damm, J. Köberl, P. Stegmaier, E. Jimenez, A. Harjanne, The market for climate services in the tourism sector — An analysis of Austrian stakeholders' perceptions *, https://doi.org/10.1016/j.cliser.2019.02.001 (online)

- R. Giordano, K. Pilli-Sihvola, I. Pluchinotta, R. Matarrese, A. Perrels, Urban adaptation to climate change: Climate Services for supporting collaborative planning, (revised version returned for 2nd review)
- F. Larosa, J. Mysiak, Business models for Climate Services: an analysis (under revision)
- Perrels, T.T. Le, E. Hoa, How much unnoticed merit is there in climate services? * (in preparation expected submission by mid-March)
- P. Stegmaier, K.J. Visscher, Matching Supply and Demand: Articulating Business Model Alternatives for Climate Services Innovation (under revision)
- P. Stegmaier, R. Hamaker-Taylor, E. Jimenez, Reflexive climate service infrastructure relations (in preparation)

In addition we are aware of other planned and realized article submissions to other journals. At least the following is committed:

 Urban Climate (special issue): Perrels et al, Tools and interaction formats to facilitate uptake of climate services for cities

All these publications are open access. The publication links are and will be listed in the output page of the project website.

There will be a presentation based on EU-MACS in the ECCA 2019 conference.