European Market for Climate Services

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Welcome

By Peter Stegmaier, University of Twente

Climate services are still a niche phenomenon. Service innovations tend not to be utterly smooth in the beginning. There is still a lot of experimentation with user practices, business models, products, regulatory structures, infrastructure, and technology, which makes it hard for them to compete on the market against established services or forms of 'strategic intelligence' (the latter we call 'incumbent regime').

The specific market itself might even be not yet fully developed - or very small and already dominated by the few services that were able to establish themselves in their niches. Newcomers will thus hardly gain a share, but rather have to find their own niches. Especially when innovations include sustainability promises, market niches and user demands may not be ready yet, since the innovations may differ radically from the prevailing. Moreover, clever niche management will require to link niches at some point.

To explore climate services-related trends and processes that can have a potential to foster niche development, we carried out an explorative study (see next page) on the EU niche governance and procurement of innovation for climate services in global context, emerging (soft) standards, conventions, and ethical frameworks. We looked into neighbouring niche developments (e.g. ecosystem services, climate engineering, platform capitalism with FinTechs and InsurTechs), into relevant technological innovations (e.g. block chain, online information brokerage, internet of things, citizen sciences).

GOVERNANCE OF MARKETS WTH CLIMATE SERVICES

By Peter Stegmaier, University of Twente

The Financial Stability Board's (FSB) 'Task Force Climate-related Financial Disclosure' (TCFD) recommends a framework to analyse, evaluate, and disclose their climate risks. This is not necessarily aiming at preventing climate change, only, but also encouraging organisations to identify climate-related opportunities. The EU High Level Expert Group on Sustainable Finance indicates there is also a top-down legal framework being developed around various aspects of a 'sustainable' European economy.

On incumbent regime level, we looked into innovation policies, consultancy, weather services, law, climate sciences, and economic frameworks; and finally also scanned into broader landscape developments, such as political discontinuation and economic divestment from fossil fuels, exits from climate governance, high-performance computing, social movements, knowledge demands, the blurring of design and use in many areas of governance, technology, science, and consumption, as well as into experiences with non-use and resistance.

We have developed a typology of climate services along which we can imagine and discuss the prospective shaping of climate services at an early enough stage of a development (when modifications are still possible) through "constructive dialogues" between all relevant actors in a given field/sector.

From the analysis, we also derived suggestions for the case studies, workshops, and final integration of results, about how to overcoming major barriers for matching demand and supply gaps in climate services:

Climate services as 'strategic intelligence': Climate issues address problems that are dealt with in arenas whose complexity and variation is growing. Issues are negotiated in multi-actor settings and on multiple levels of governance and business. Services need to offer insights that can serve explorative and analytic approaches, as well as allow for specialist and integrated use.

Limitations of sectoral focus: On top of sectoral analyses it is relevant to identify cross-sectoral, sub-sectoral, trans-sectoral or even non-sectoral phenomena that might already have or win impact on climate services markets in the future.

Roles of technology for climate services market building: Technology and sciences play a crucial role for climate services in multiple ways: e.g. as instruments of research, as service infrastructure, and as means of communication. Climate services need to observe and probe novel technoscientific trends and possibilities in order not to lose contact with innovation trends and to use amplifying effects.

Role of organisations and institutions: Existing ways in which business or public organisations work, which could be users of climate services, need to be taken into account, such as formal barriers to using climate services and informal ways of collaborating even across departmental boundaries. The same is true for institutional enablers and barriers, like rules, procedures, standing practices, and instruments policy-making and management.

Allowing for a variety of climate services: Specialized, tailored services provided by climate experts receive most attention, but also climate services integrated in management consulting, policy consulting or engineering consulting, climate services shared by knowledgeable users, climate services embedded in technology-based consumer services, as well as packaged in insurance products and other risk management service products should be considered in the interaction with stakeholders.

Be careful with labels: Whatever 'climate services' could be, may in its the actual context of use not be called 'climate services'. What at the end of the day counts as 'climate services' may in practice figurate in many different terms and practices (e.g. linked to 'resilience', 'climate adaption', 'risk assessment', to name a few), depending on what justifies paying attention to climate issues in a given context. It even may in some way or another be connected to other kinds of services, advice, or intelligence, only making sense in combination with other bodies of knowledge.

Anticipating the end of subsidies: Providers, purveyors, and users of climate services need to develop plans to become independent of subsidised projects (getting out of the protected space), while public procurement might remain an important segment of the market.

Trade-off between ecological and economic targets: Climate intelligence by climate services may lead to more sustainable management and policy, but not necessarily; it could also foster stra-

tegies that push the limits of avoiding climate protection until profitability can no longer be claimed.

Non-use and resistance: User-related service innovation will have to analyse carefully what leads actors not to use climate services or to even reject them. Resistance is a common feature of change and innovation processes, which cannot be reduced to deficiency or an involuntary act, but rather could, at closer inspection, turn out to be perfectly rational, voluntary, and capable. In sensitive areas, for instance, every link to "climate" or other environmental issues may be avoided in order not to raise further leading questions.

See EU-MACS Deliverable 1.4 for more detail.

STAKEHOLDER PERSPECTIVE

Interview with Mr Esko Kivisaari, Deputy Director of Finance Finland, a finance sector association in Finland.

by Adriaan Perrels and Robin Hamaker-Taylor

FMI and Acclimatise recently discussed the final recommendations from the High-Level Expert Group (HLEG) on Sustainable Finance with a member of the HLEG. Mr. Kivisaari's colleague, Elina Kamppi, an adviser at Finance Finland, joined as well.

The HLEG on Sustainable Finance was convened by the European Commission in 2016, as part of its efforts to reform the Capital Markets Union. 20 experts from academia, civil society, and the finance sector, coupled with observers from European and international institutions comprised the Group. The Commission tasked the Group with providing recommendations aiming to help deliver an EU strategy on sustainable finance. The HLEG released its final recommendations to the Commission on 31st January, 2018, which will inform the Commission's strategy on sustainable finance, and its wider efforts to create enabling conditions for the EU to meet its targets under the Paris Agreement and goals of the 2030 Agenda for Sustainable Development.

Mr Kivisaari explained there is a growing recognition in Europe and in the Commission that, 'especially after the financial crisis, there is a problem of connecting finance to the real economy,' highlighting the Commission's desire to align the goals and incentives of the financial system to Europe's goals such as the Paris Agreement.

The core recommendations

Mr Kivisaari and Ms Kamppi were quick to highlight the interconnected nature of the recommendations, which should very much be seen as a package. No one recommendation is more important than the others, and the Group worked over 2017 to propose an interim set of recommendations and gather feedback on these. Through this active engagement with actors across the financial system, the Group refined their recommendations down to a tightly woven set of eight core recommendations, which are as follows:

1. Establish and maintain a common sustainability taxonomy at the EU level
2. Clarify investor duties to better embrace long-term horizon and sustainability preferences
3. Upgrade disclosure rules to make sustainability risks fully transparent, starting with climate change
4. Key elements of a retail strategy on sustainable finance: investment advice, ecolabel and socially responsible investment minimum standards
5. Develop and implement official European sustainability standards and labels, starting with green bonds
6. Establish 'Sustainable Infrastructure Europe'
7. Governance and Leadership
8. Include sustainability in the supervisory mandate of the European Supervisory Authorities and extend the horizon of risk monitoring

The interviewees indicated several of the important changes the HLEG recommendations will help to materialise. A core element is the expansion of fiduciary duty. Kivisaari explains, 'previously fiduciary duty has been interpreted primarily taking care of economic benefits of asset owners; in the future, asset managers, banks, and insurers, need to ask the preferences of clients and make it clear what are the sustainability dimensions of making certain investment decisions'. Another important change the recommendations target, is helping

the sector to prioritise which areas need financing, such as green bonds. Specifically, Kivisaari explains, taxonomies and standards, should help clarify 'what do you really need to have in place to call your bond green'. The recommendations should also bring about an important change for prudential regulators who can target policies to make it possible to finance sustainable areas in a more efficient way, noted Kivisaari.

A further set of cross cutting recommendations is provided in the HLEG final report, as well as a set of targeted recommendations for various segments of the sector such as banking, insurance, and pension funds. The final set of recommendations can be accessed by clicking here.

What do the HLEG recommendations mean for climate services?

The HLEG's recommendations stop short of prescribing the use of climate data and information, nor do they include an explicit focus on physical climate risks. Kivisaari confirmed that the HLEG emphasis was addressing the urgency of climate change, which is for example reflected in the HLEG's focus on expanding the flow of capital for low-carbon investments. Indeed, the rising interest in the financial sector is so far mainly concerned with the mitigation side of climate change (i.e. 'green investment'), and much less with physical climate risks, with the exception of the indemnity insurance sector. Yet, Ms Kamppi ensured that 'discourse has developed toward risk awareness of climate change impacts. There is better understanding of climate risks as a financial risk', which is a crucial step in managing those risks via climate services.

Climate change jargon: transition and physical risks in the TCFD final recommendations

Transition risks - Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change.

Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations.

Physical risks - Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations'

financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.

The HLEG recommendations have the potential to continue to evolve how the financial services sector perceives physical climate change risks, first and foremost by encouraging a longer time horizon than is typically considered. Furthermore, the recommendation on climate risk disclosure (recommendation 3) builds on the voluntary Task Force on Climate Related Disclosure (TCFD) recommendations, highlighting the momentum being gained by analysis and disclosure of climate risks in the finance sector. The analysis and disclosure of climate risks – both physical and transition – will be a keystone of the climate services market in Europe. Finally, as the HLEG recommendations become codified into the Commission's strategy and potentially incorporated into legislation aimed at ensuring a more sustainable finance system in Europe, the demand for climate data and information to underpin these requirements will certainly grow.

Are there early signs of implementation?

Kivisaari mentions pension funds, notably Finnish pension funds, as being in the forefront of a systematic approach towards reducing the carbon content of their investments. He adds that the green bonds market is growing rapidly. Kamppi underlines that there are and have been explorations on disclosure practices in European member states, as well as among companies and organisations.

Challenges underlie such disclosure and reporting. Kivisaari elaborates that standards around such reporting can be a double-edged sword. Standardisation is necessary for the sake of comparability and transparency, but can be cumbersome and expensive. Kivisaari explains the question around disclosure of climate risks is now 'how to make it simple enough to make it not overly costly and understandable to users of this information'. Straightforward yet reliable and properly scoped indicators will require a lot of research. Despite progress by some financial institutions in Europe, the sector as a whole has a lot of progress to make to integrate sustainability principles in its processes and systems.

What kind of follow-up can be expected?

The European Commission is 'committed to taking these ideas forward,' stated Kivisaari, who

expected a quick and positive reaction to HLEG's recommendations. To that end, just under two months after the HLEG recommendations were released, the Commission has proposed its EU strategy on sustainable finance. Published on 8th March 2018, the Action Plan on financing sustainable growth sets out a roadmap for further work and upcoming actions for the financial system. On 22nd March, the Commission will hold a high level conference to discuss this Action Plan.

The actions set out in the Action Plan mirror the HLEG recommendations, they are nevertheless not a mere copy of the HLEG recommendations. The actions include:

• Establishing a common language for sustainable finance, i.e. a unified EU classification system – or taxonomy – to define what is sustainable and identify areas where sustainable investment can make the biggest impact.

• Creating EU labels for green financial products on the basis of this EU classification system: this will allow investors to easily identify investments that comply with green or low-carbon criteria.

• Clarifying the duty of asset managers and institutional investors to take sustainability into account in the investment process and enhance disclosure requirements.

• Requiring insurance and investment firms to advise clients on the basis of their preferences on sustainability.

• Incorporating sustainability in prudential requirements: banks and insurance companies are an important source of external finance for the European economy. The Commission will explore the feasibility of recalibrating capital requirements for banks (the so-called green supporting factor) for sustainable investments, when it is justified from a risk perspective, while ensuring that financial stability is safeguarded.

• Enhancing transparency in corporate reporting: we propose to revise the guidelines on non-financial information to further align them with the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD).

The European Parliament will set out their positions on the HLEG report in their own report, which is also due shortly.

REPORTS FROM PAST EVENTS

JPI Climate Expert Workshop on Social Sciences and Humanities (October 2017): insights from Venice (Italy) by Jörg Cortekar, Helmholtz-Zentrum Geesthacht, Zentrum für Material- und Küstenforschung GmbH, Germany

On the 30th and 31st of Oct. the JPI Climate Action Group on Social Sciences and Humanities invited to its first Expert Workshop. The workshop was co-organised by and hosted in the CMCC premises in Venice. The aim of this Action Group is to develop a strategy and formulate research questions that allow a better integration of social sciences and humanities (SSH) in the climate services community. The SSH community includes, among others, sociology, philosophy, political sciences, geography or economics. These scientific communities are, depending on the domain, more or less integrated in climate services related research. Nevertheless, there are questions remaining that require a better connection between the different disciplines. Jörg Cortekar from the Climate Service Centre Germany (GERICS) took part in discussions as an invited expert.

The aim of the workshop was to initiate a dialogue with the European Social Sciences and Humanities (SSH) community who is involved in research supporting climate services. The workshop brought together 33 experts from social sciences, national research, climate change, academia and educational institutions to promote active collaboration in supporting climate services and investigate possible further European coordination. Topics discussed were how to promote the range of SSH perspectives within CS research, how to better attract SSH researchers into the CS research domain and how to improve inter-and trans-disciplinary research in support of climate services and innovation?

This first expert workshop of this JPI Climate Action Group marks the starting point of a continuous process to better integrate natural and social sciences and humanities perspectives. First ideas on how this could be achieved is to take societal challenges as an entry point as these challenges are usually broad enough to attract different scientific disciplines working jointly on societal relevant issues. Also, the identification and integration of scientific champions that do have insights and a scientific standing in both communities could be a way to highlight the importance of an integration of the different scientific communities. Both approaches could help to identify and define relevant research

questions to be addressed to the social sciences and humanities community.

Two years passed since the publication of the EU Roadmap on Climate Services. This month, ERA4CS held a workshop (Synergies, Gaps and Challenges workshop) in Brussels to examine the progress made and to discuss the enduring bottlenecks. Organised in partnership by Natural Environment Research Council (NERC), Environment Protection Agency (EPA) Ireland, and the Ministry of Education, Universities & Research (MIUR) Italy, the workshop set the stage for presenting work in progress and reflect on the outstanding challenges and evidence gaps.

Some twenty-five-experts attended the workshop and engaged in discussion on how to advance user-driven and science-informed climate services in Europe. Participants said innovation was a key for tackling the three challenges identified in the Roadmap: enabling market growth, building the market framework and enhancing the quality and relevance of climate services.

Climate Services projects workshop and networking event (29-30 November 2017, Brussels): what a speed-date in Climate Services look like
by Francesca Larosa, Euro-Mediterranean Centre on Climate Change (CMCC), Venice, Italy

In late November 2017, the world of Climate Services met in Brussels to exchange knowledge, interact and boost their resources. The event (followed on Twitter under #climateservices17) brought together partners from more than forty projects, funded by Horizon 2020 programme and JPI-Climate ERA4CS. The objective of the meeting was to facilitate dialogue and discussions of mutual interest, as well as to identify synergies and cooperation opportunities with other projects.

Partners had the chance to attend a diversified range of activities, spanning from oral and poster presentation to networking opportunities. The event primarily focused on two main priorities:

• The role of user-centered Climate Services throughout the co-development process;

• The recent findings around the emergence of a related market as a key research and innovation priority identified by the EU and supported by a number of initiatives (including EU-MACS).

On the first day, leading experts presented the Climate Services landscape, both in terms of project activities and market opportunities. Carlo Buontempo (Copernicus Climate Change Service, C3S) gave a talk on the Copernicus Sectoral Information System, stating that the Copernicus data store will "open its doors soon". Helen Spence-Jackson (EU Affairs lead at Climate-KIC) reinforced the "crucial role of climate information to help businesses preventing and facing risks". Together with MARCO, EU-MACS consortium, represented by the project coordinator Prof. Adriaan Perrels (FMI), highlighted the main results from already completed Working Packages.

On November, the 30th partners had the chance to engage in a "speed-date" networking event: every participant representing a project had 90 seconds to introduce herself, the project and a short summary of areas of expertise and influence. Therefore, partners were able to know more about what others are developing before starting one-to-one conversations. In fact, in the second part of the morning each project met other interested ones in bilateral meetings, deepening the opportunities of present and future collaboration.

The event, organised by the Executive Agency for SMEs (EASME) in cooperation with JPI-Climate successfully increased cooperation and visibility of project activities. Participants also welcomed three newly-born Climate Service-related projects: MED-GOLD. SECLI-FIRM and S2S4E, funded under the call SC5-01-2017. Inputs from the meeting will be used in the next EU Framework Programme on Research and Innovation.

EU-MACS workshop on climate services in the tourism sector (September 2017, Graz, Austria) by Dr. Andrea Damn, JOANNEUM RESEARCH Forschungsgesellschaft mbH, Centre for Climate Energy and Society (LIFE)

In September 2017, a workshop with stakeholders from the Austrian tourism industry took place in Graz, Austria. By bringing together different types of stakeholders – ski lift operators, local tourism associations, public administration, as well as climate service providers and intermediaries – requirements and needs for climate services (CS) in the tourism sector were discussed, based on an initial portfolio of existing CS and previous findings from interviews. The morning session was based on the Constructive Technology Assessment approach, coordinated by the University of Twente. Four climate market scenarios formed the basis of discussions and offered a set of specific viewpoints to consider scenarios of using CS. In the afternoon session, coordinated by UnternehmerTUM, the

participants discussed two typical business cases; one specifically with regards to ski lift operators' views and one regarding the situation and demands of local tourism organisations. Here, the Value Proposition Canvas method was applied.

The discussions in the workshop and prior interviews showed that, if tourism stakeholders are not directly heavily dependent on snow, then climate has not been a real issue and CS as support is not (yet) considered highly relevant. Even many tourism businesses that are highly snow dependent are still reluctant to look into climate issues for several reasons. Addressing climate risks is a complex issue that requires resources outside of one's daily business. Hence, if the economic pressure and suffering is not high yet, business managers choose other priorities over looking into climate issues. A lack of long-term risk management further hinders tourism businesses in considering the use of CS. Many stakeholders indicated that they have rather short planning horizons and thus showed more interest in weather services and seasonal products than services related to climate change. Dealing with weather variability and the use of weather services could increase the interest in climate services, though, and probably leverages CS uptake. Overall, tourism businesses are often not aware of existing CS and in particular the benefits of using them. As experiences show, best-practice examples lead to demand for similar analyses from others.

Upcoming initiatives and call for papers

How businesses can benefit from hydrology forecasts

London, 8-9 May 2018. Applications are open for a workshop at ECMWF exploring how businesses can benefit from hydrology forecasts. It is a unique opportunity for businesses to meet the Global Flood Awareness System (GloFAS) development team and influence the future shape of its hydrological services and forecasting products. The Global Flood Awareness System (GloFAS) couples state-of-the art weather forecasts with a hydrological model and with its continental scale set-up it provides downstream countries with information on upstream river conditions as well as continental and global overviews. GloFAS is currently providing global overviews of upcoming flood events (up to 30 days ahead) and of high and low flow (up to 4 months ahead) in rivers across the world. The workshop agenda includes real-life case studies from guest speakers and structured activities to discover and prioritise future service provision.

Application deadline: 30 March 2018.

More information here:

Climate-KIC Pioneers into practice 2018

The Pioneers into Practice (PoP) Programme is a prominent activity within Climate-KIC's portfolio of Education activities. Climate-KIC PoP is a European professional learning programme, aimed at developing high-level innovation skills for the low-carbon economy. Individuals from a range of different backgrounds are pooled together to build knowledge and skills on the dynamics and management of system innovation for the transition towards a more sustainable society.

Pioneers follow a journey of approximately eight months, learning about the System Innovation approach, exploring the role of Business models and stepping out their comfort zones. Pioneers are selected at national level and they are paired with hosts organisations.

Apply by April 15th, https://pioneers.climate-kic.org/how-to-apply

Call for papers: Special issue: *The Fifth International Conference on Climate Services, ICCS5 - Learning from Success and Failure*

Call for papers for a special issue of Climate Services journal, devoted to selected full papers from the Fifth International Conference on Climate Services, ICCS5. Editors invite all contributing authors from ICCS5 to submit full-paper versions of the abstracts accepted and presented at the conference, as well as authors of papers that are of general interest within the conference themes. The full papers must be submitted through the Elsevier Editorial System (http://ees.elsevier.com/ dam). When submitting your paper, be sure to specify that the paper is a contribution for „Special Issue: ICCS5" and select the article type, when prompted,

S.I.: ICCS5. The deadline for submission of full papers is April 1st, 2018. All accepted papers will be published online individually before print publication.

PhD Programme in Climate Change Sciences and Management @Ca' Foscari

Ca' Foscari University of Venice. The PhD programme in Science and Management of Climate Change is a joint initiative between Ca' Foscari University of Venice, the Euro-Mediterranean Center on Climate Change (CMCC) and Istituto Nazionale di Oceanografia e Geofisica Sperimentale (OGS). The PhD programme offers a 4-year fully funded scholarship, including one year of full-time coursework, with worldwide research opportunities and connections to a broad international network of top-level universities and research centers in the field, as well as placement in highly renowned institutions afterwards. The programme is conducted entirely in English. See for more information bit.ly/2pqB1c2. Apply before Thursday, April 26th, 2018, 13:00 CEST. More information at this link: http://www.unive.it/pag/20822/

#UEF2018 "Using ECMWF's Forecasts"

London, 5-8 June 2018. Workshop is open to all ECMWF forecast users. The 2018 theme provides an opportunity for participants to showcase innovative ideas, for example weather applications, forecast products or diagnostics tools. It will also provide a framework where participants can share their experiences with ECMWF data and provide feedback on ECMWF products. Apply before 27 Apr 2018 https://events.ecmwf.int/event/84/registrations/

#OpenDataHack2018

London, 9–10 June 2018. A hackathon weekend dedicated to exploring the potential of open climate data. Anyone interested in the use of climate data and tools is invited to sign up for this event, taking place at ECMWF on Saturday and Sunday 9–10 June 2018. The challenge is on for developers and data enthusiasts to show what they can do with information from the Copernicus Climate Data Store being built as part of the Copernicus Climate Change Service. Register until Sunday, 20 May 2018. More information at this link: https://events.ecmwf.int/event/79/

Copernicus Climate Change Service 2nd General Assembly

Berlin, 24 - 28 September 2018. The event is meant for providers, users and potential users. It will offer the possibility for participants to network and organise side meetings, and 25-27 September is dedicated to the plenary assembly. The General Assembly will (i) provide updates on the latest developments to the service; (ii) gather and share user requirements and feedback on the service so far and its various proof-of-concept activities; (iii) share the knowledge and experience of the current C3S providers across the various components of the Service; (iv) facilitate networking and brainstorming sessions for the climate change community in the context of an operational C3S.
Registration opens mid-March 2018

More information at this link: https://climate.copernicus.eu/events/c3s-2nd-general-assembly

General Assembly of the European Geosciences Union @Vienna , Apr 8-13 2018

The EGU General Assembly 2018 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. The EGU is looking forward to cordially welcoming you in Vienna.

UPDATES ON EU-MACS ACTIVITIES

Working Package 2 – contribution from Robin Hamaker-Taylor (Acclimatise)

Work Package 2, which examines climate service provision and needs in the financial services sector, has progressed with its engagement the sector. A further set interviews and targeted exercises, coupled with a thematic analysis will allow Acclimatise and FMI to develop a set climate service use scenarios. We will we synthesise the motivations for climate service use into a handful of user profiles, and from there lead these hypothetical users toward certain categories of climate services. The idea is to provide useful information for members of the FS sector who are early on in their use of climate services - a sort of pathway for them to relate to which could guide their future climate service procurement. Providers of climate services can also use these pathways to better develop more relevant climate service products. Work Package 2 will finalise these efforts by April 2018.

RECENT PUBLICATIONS

Vaughan, C., Dessai, S., Hewitt, C., Baethgen, W., Terra, R., Berterretche, M. (2017). Creating an enabling environment for investment in climate services: The case of Uruguay's National Agricultural Information System. Climate Services, 8, 62-71. https://doi.org/10.1016/j.cliser.2017.11.001

An understanding of the factors that enable climate service investment is important for the development of climate services at local, national and international levels. This paper investigates the context in which Uruguay's Ministry of Livestock, Agriculture and Fisheries invested in and developed its National System of Agriculture Information (SNIA), a national-level climate service for the agriculture sector. Using qualitative research methods, the paper uses key documents and 43 interviews to identify six factors that have shaped the decision to invest in the SNIA: (1) Uruguay's focus on sustainable agricultural intensification; (2) previous work on climate change adaptation; (3) the modernization of the meteorological service; (4) the country's open data policy; (5) the government's decision to focus the SNIA on near-term (e.g., seasonal) rather than long-term climate risk; and (6) the participation of key individuals.

Giuliani, G., P., & Bley, D. (2017). Spatially enabling the Global Framework for Climate Services: Reviewing geospatial solutions to efficiently share and integrate climate data & information. Climate Services, 4, 61–64. dx.doi.org/10.1016/j.cliser.2016.11.003

In November 2016, the Paris Agreement entered into force calling Parties to strengthen their cooperation for enhancing adaptation and narrowing the gap between climate science and policy. Moreover, climate change has been identified as a central challenge for sustainable development by the United Nations 2030 Agenda for Sustainable Development. Data provide the basis for a reliable scientific understanding and knowledge as well as the foundation for services that are required to take informed decisions. In consequence, there is an increasing need for translating the massive amount of climate data and information that already exists into customized tools, products and services to monitor the range of climate change impacts and their evolution. The aim of this paper is to review the state-of-the-art geospatial technologies that can support the delivery of efficient and effective climate services, and enhancing the value chain of climate data in support of the objectives of the Global Framework for Climate Services. The major benefit of spatially-enabling climate services is that it brings interoperability along the entire climate data value chain. It facilitates storing, visualizing, accessing, processing/analyzing, and integrating climate data and information and enables users to create value-added products and services..

Golding, N., Hewitt, C. & Zhang, P. (2017). Effective engagement for climate services: Methods in practice in China. Climate Services, 8, 72-76. https://doi.org/10.1016/j.cliser.2017.11.002

Engagement between providers and users is well acknowledged as one of the most fundamental activities in the provision, development and use of climate information for decision-making, or climate services. Yet there is little guidance in the literature on the most effective methods of engagement and demonstration of these methods. Here we present experiences of effective engagement between providers and users to understand the climate information requirements of decision makers in China; and to engage users more fully in the design, development, and delivery of climate services. We find value in the three methods of engagement explored here (passive engagement, interactive group activities, focused relationships), and share insights for when it may be most appropriate to use each method. We also highlight the challenges associated with each method, and the barriers and enablers to successful engagement drawn from these experiences. We further suggest how these conclusions have a much wider relevance and may be used to inform planning of engagement activities in other contexts.

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CONTACTS: www.eu-macs.eu – Twitter: @EUMACS_H2020 –
Editor: Francesca Larosa
www.eu-macs.eu