



FACCE-MACSUR

MACSUR Phase 1 Final Administrative Report (public release)

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Instrument:	Joint Programming Initiative
Topic:	Agriculture, Food Security, and Climate Change
Project:	Modelling European Agriculture with Climate Change for Food Security (FACCE-MACSUR)
Start date of project:	1 June 2012
Duration:	36 months
Theme, Work Package:	Hub 3
Deliverable reference num.:	D-H3.3
Deliverable lead partner:	Thünen Institute
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Confidential till:	—

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1.0	First Release	2015-09-01
1.1	Public release (confidential section on funding removed), editorial corrections	2015-09-25



MACSUR - FIRST PHASE REPORT

*to be filled in and submitted
by the MACSUR coordinator
to ptj-faccejpi@fz-juelich.de until 01.09.2015*

A – General data

Project Title	Modelling European Agriculture with Climate Change for Food Security		
Acronym	FACCE MACSUR		
Official Start (dd/mm/yy)	01/06/2012	Expected End (dd/mm/yy)	31/05/2015
Signature date of the Consortium Agreement:	12/06/2013		
Total cost of the project (in k€; this is the sum of the individual project costs for each partner)	8'028 k€		
Total spent funding “in cash” until 31/05/2015 (in k€; this is the sum of the in cash funding spent for each partner)	5'993 k€		
Total “in kind” spent until 31/05/2015 (in k€; this is the difference between the project costs and the spent funding)	2'035 k€		
Total “in kind” contribution (in k€; this is the difference between the project costs and the granted funding)	649 k€		
Total number of Person-Months contributed to MACSUR	1460.26 PM		
Total number of “in kind” Person-Months	657.58 PM		

B - Outputs of MACSUR (max. 1 page)

Please provide all lists in Annex

1.Number of articles in peer reviewed international journals and submitted manuscripts	278
1a. Of which, joint publications	172
2.Number of contributions in books	22
3.Number of other publications	21
4.Number of input to policy makers (estimated)	11
5.Number of oral and poster presentations in scientific congresses	480
6.Number of organized major international congresses	8
7.Number of press, radio, TV, and internet appearances	20
8.Number of new external grant and total amount of new external grant money, the application resulting from MACSUR activities	9 17'416'972 €
9.Number of supervised theses	20
10.Number of joint patents (between partners or resulting from project)	2
11.Number of new collaborations (subset of group or group asking for additional (new) funding)	13
12.Number of scientific acknowledgements (Prizes, honorary doctorates, memberships in scientific academies, major international duties, etc.)	3
13.Data access: number of new datasets or data/model assets generated in MACSUR (provide in the annex explanations on the storage: is this centralised or in each group? capture data sharing and evidence for this)	>12
14.Number of other activities (please list them by categories in the annex)	13

C – Networking (max. 2 pages)

Please provide relevant lists in Annex

1. Number of theme or cross-theme meetings (list in annex)	10
2. Number of consortium meetings (whole MACSUR; list in annex)	8
3. Number of workshops (list in annex)	7
4. Was the coordination across themes sufficient/satisfactory/adequate? Why? What is the potential for improvement?	
<p>a) During phase 1, we achieved an in-depth understanding of the requirements for cross-Theme coordination and different approaches applied in the Themes. We satisfactorily managed to streamline coordination towards similar organisational structures, used similar formats for inventories and descriptions of available models, agreed on common core climate and socio-economic scenario assumptions for modelling activities, and jointly set research priorities. This resulted in a wealth of joint scientific publications, training workshops, and new collaborations (funded and unfunded) with scientists and institutions within and outside the knowledge hub.</p> <p>b) We adequately accomplished this through the following:</p> <ul style="list-style-type: none"> • Monthly (on average) meetings (physical or online) among Theme and Hub coordinators • Distribution of Theme newsletters (bi-monthly) to all MACSUR members • Attendance of Theme representatives at other Theme meetings • Close collaboration on joint tasks (e.g. stakeholders, uncertainty, scaling methods, metadata exploration, regional pilot studies) and in specialist meetings <p>c) Potential for improvement most likely lies in, and may be realized, for example, through:</p> <ul style="list-style-type: none"> • Introduction of additional cross-cutting tasks that require close interaction among co-leaders from different Themes – specifically, in areas such as developing a position paper for MACSUR; further operationalization and intensification of stakeholder involvement, tackling and further harmonizing the work on uncertainty and risk analysis, scaling methods, scenario development and the development of efficient ways of sharing information across Themes and tasks. This might require strengthening of the organisation structure of the knowledge hub, as by the recently established Project Leadership Team composed of topical and managerial leaders. Moreover, strengthening the network could be facilitated by allocating more responsibilities to task leaders. • A considerable period of time is necessary to align interests and approaches for the development and implementation of WPs and tasks in order to create a coherent project structure and facilitate knowledge exchange; all partners ought to be actively involved in this process to ensure they have ownership and understand the overall purpose of activities. The planning period was better for phase 2 than phase 1 but not yet ideal. • Stronger interaction between researchers from different Themes at events or cross-thematic publications organized by other Themes with explicit invitations to other Themes to participate. • Addressing more prominently and intensively cross-theme topics in the MACSUR Hub Newsletter 	
5. Was the integration of work packages sufficient/satisfactory/adequate? Why? What is the potential for improvement?	
<p>Overall, engagement varied because, for example, the financial resources of teams were limited in terms of carrying out research and travelling to workshops and conferences.</p> <p>Within all Themes, regular WP leaders meetings (on-line and in person), task and WP level workshops and information sharing with partners through extended minutes and the documentation of meetings facilitated good internal integration of activities. Regular newsletters were produced and shared by CropM, LiveM and TradeM. Across Themes, bilateral visits /exchanges of visiting scientists within WPs and frequent (mutual) invitations of guest speakers from the MACSUR pool to national conferences furthered integration and raised awareness of activities.</p> <p>Within CropM, integration of the six WPs, (C1-C4 on scientific excellence; C5 on capacity building and C6 on case studies impact assessment) was excellent. Integration was achieved by monthly WP leaders meetings; bi-weekly meetings of CropM co-leaders and additional meetings for planning workshops and numerous joint publications, PhD student supervisions and joint interactions (meetings/publications) with other networks such as AgMIP, CCAFS, etc.; WP-specific workshops (with one or more WPs involved; 3-4 per year); exchange through extended minutes/ documentation of meetings</p>	

and workshops; PhD courses (two per year) with input from various WPs, and joint organisation and execution of the CropM international symposium and workshop at Oslo, Feb. 2014 (120 participants of which the majority was from CropM – but also other theme-representatives plus AgMIP and CCAFS scientists participating in key roles e.g. session chairs, keynotespeakers); Newsletter to all CropM and hub members (bi-monthly to quarterly) – bilateral visits/exchange of visiting scientists within WPs and frequent (mutual) invitations of guest speakers from CropM to national conferences.

As the research communities involved in LiveM are very disparate (grassland modellers, animal disease modellers, farm-scale modellers etc.) all contacts and exchanges of information through MACSUR represent important strides in understanding. Workshops and task engagement brought WP members together to a greater extent. Integration within LiveM has facilitated the production of joint publications, reports and contributions to international conferences. In Oct. 2014, LiveM organised the Livestock and Grassland Modelling and Research Colloquium (hosted by BC3 in Bilbao, Spain) at which representatives of all three Themes along with invited guests from the Global Research Alliance, EAAP and the Animal Task Force shared their research and were involved in constructive group discussions on the role of the MACSUR knowledge hub and approaches to better integration.

In TradeM a tight integration – linking advancements in science, application in pilot studies, trans-disciplinary approaches including stakeholders, and interaction and capacity building for researchers - is under way. This is convincingly demonstrated in the regional case studies (one of which was featured in *Nature*), which bring together TradeM with CropM and LiveM researchers to investigate region-specific agricultural challenges through an integrated trans-disciplinary approach. While such effort does not comprise all research groups at the same intensity, big strides have been made in achieving more even involvement. Variable involvement is mainly due to variations in the (limited) financial resources available in different countries. Better integration was achieved by regular personal interaction between researchers who have not been aware of each other previously. TradeM intends to organize at least two workshops per year. The substantial contributions of time and efforts of the partners organizing such workshops creates a network where actually "work" is done. Such workshops have stimulated more consistency in modelling (e.g. shared baseline scenario; model input parameters, etc.) to enhance comparability of integrated regional assessments and other studies in the various partner countries; workshops also helped to initiate enhanced model linkages.

There are several areas in which improvements could be achieved:

- The project structure needs to include more interlinking tasks with specific outcomes requiring collaboration between WPs and avoid creation of artificial structural barriers.
- Some partners had no access to funding even for travel to meetings, which hinders their involvement and reduces their level of 'buy-in' to project objectives – this constraint needs to be overcome.
- Meetings across themes outside regular workshops to further build cohesion within the diverse community of agricultural modellers.
- Organisation of events that have reach beyond the MACSUR network and beyond science.
- Regularly updated presentations of findings, suitable and relevant for farmers' organisations and ministries.
- Allocating/generating more funding resources for exchange of scientists and (PhD) students among partners/WPs

6. Equality of engagement of all research teams involved in the theme

Engagement varied due to, for example, the huge differences in available financial resources of the teams for carrying out research /participating in workshops and conferences (travelling and fees).

7. Number of links to national projects or facilities (list in annex)	1
8. Number of links created to other EU or international groups (list in annex)	7
9. Number of stakeholder interactions (list in annex)	28
10. Did any partner join at a later stage? Who?	
1. Walloon Agricultural Research Centre, Belgium	
2. MTA Centre for Ecological Research, Hungary	
3. International Institute for Applied Systems Analysis, Austria	
4. EURAC Research, Italy	
5. Center for Ecology and Hydrology, United Kingdom	

D - Capacity building (max. 1 page)

Please provide relevant lists in Annex

1.Number of trained scientists¹	622
1a. In the frame of workshops (multiple participations included)	452
1b. As PhD students	10
1c. In the frame of mobility actions (multiple participations included)	150
2.Number of training workshops (list in annex)	9
3.Number of specialist workshops (list in annex)	10
4.Number of established scientific staff (list in annex)	49
5.Was the collaboration between countries sufficient/satisfactory/adequate?	
Yes	
6.Did the project provide opportunities for partners/scientists to become part of the international community of researchers in this field or to further strengthen their own role?	
Yes	
7.Number of research communities in the themes (list in annex)	12

¹ Including 2 B.Sc. and 8 M.Sc.

E - Project coordination and management (max. 2 pages)

Please quantify where possible

1.Number of deliverables performed (please provide list with due date and delivery date in annex)	106
2.Number of milestones achieved (please provide list with due date and achievement date in annex)	78
3.Definition of, and agreement on, procedures and annually updated plans of work	
Yes.	
4.How could the administrative burden of theme-leaders and project coordinators be reduced?	
<ul style="list-style-type: none"> • Help through qualified coordination support staff (incl. their funding) would be most effective • Better quality and easy to use conference organisation software (better than current conventional packages ...) • Infrastructure for efficient shared document workflow • If we cannot refrain from double reporting (national level and FACCE level, then a common format should be used or be accepted) 	
5.Was there a written research consortium agreement?	
Yes: http://macsur.eu/images/download/CA%20with%20Annexes%20FINAL%20small.pdf	
6.How was the quality of the call procedure? (MACSUR2-preparation)	
6a.Was the submission process appropriate?	
Generally appropriate; one short-coming was that forms were provided in locked Microsoft-Word format that could not be worked on in track-change mode by several people	
6b.Was the call office available for questions?	
Yes	
6c.Was the information given clear?	
Yes	
7.Which challenges did you face, from an organizational perspective?	
<ul style="list-style-type: none"> • Tight timelines for composing a large scientific project • Very heterogeneous administrative setup of partners groups in the various countries, e.g. funding periods • The double function of the knowledge hub as a networking and research instrument provides challenges for the legal arrangements for intellectual property in MACSUR. For example, knowledge created by members within MACSUR with „in-kind“ funding from other projects cannot be shared easily with the whole community; confidential or licensed external data obtained by one MACSUR member (or even the hub) cannot be shared with all MACSUR members without additional negotiations with the data owner because the consortium agreement forbids one member to act on behalf of other members due to concerns of the involved institutes about liability of misappropriated intellectual property. • The double nature of the knowledge hub with decentralised funding requires a difficult balance between bottom-up driven decisions by consensus, imposed by the structure, and top-down directions necessary for quick progress and co-ordinated research activities. This could be partially addressed by putting some money into a central funding pool; decision-making on prioritization of hub activities would also be made easier if there were more clearly expressed expectations of knowledge hub output by the GB. Clear focus and adequate funding of hub structures is vital to ensuring and facilitating effective inter-disciplinary collaboration, which often requires neutral brokers to help frame and arbitrate the nature and rules of co-working. • Unexpected /unplanned (and therefore non-funded) trips for presentations to GB and SAB and StAB. • Existing national funding rules not adapted to novel conditions/requirements of a "knowledge hub" 	

8. Which areas could be improved, from an organizational perspective?

- The structure of MACSUR1 with a Hub and Themes was appropriate in MACSUR1 for establishing stronger ties within the Themes (especially LiveM and TradeM) but made it harder to knot ties across Themes. Therefore, in MACSUR2 more emphasis will be given to cross-Theme links.
- Within the short time available for preparing the proposal of MACSUR1, activities have been planned without knowing the actual funding for partners and their contributions. The reliance on in-kind funds seems to have been over-optimistic in several cases. With the decentralised funding structure of a JPI it would be advisable to revise the planned activities according to the actual funding provided before the implementation of MACSUR2. This would have required earlier national funding decisions (March 2015) – or a revision of workplans at the onset of MACSUR2.
- Funding for some Hub and Theme activities (meeting organisation, internet presence, dissemination activities, stakeholder engagement, travelling scholarship for students) could come from the countries of the coordinators, from a money pool that each country contributes to, or from higher fees per participant of workshops and conferences. The latter option, however, makes the planning of events very difficult because the number of participants is not known in advance.
- Funding level of activities must be commensurate with the Governing Board's, the Scientific Advisory Board's, and the Stakeholder Advisory Board's expectations for research, stakeholder involvement, capacity building and networking. "In-kind funding" is often constrained by purpose, time, space or legal conditions and cannot be allocated or redistributed by the coordinators.

9. In which areas and by what means can FACCE JPI assist MACSUR in its progress?

- Establish/maintaining a database of partners during the call process for later use by the hub coordinators
- Provision/administration of central funds for meetings, travelling/stipends
- Requiring a common start date of the project from the funders
- Provisions for partners from non-FACCE members to join (as implemented later)
- Projects involving many members need to invest a proportionally greater share of time and personnel to organisation, project management, and internal communication than smaller projects. Funding agencies must be aware of the need of funding of organisational tasks within a knowledge hub.
- Institutional administrators are still confused about how a knowledge hub is financed. Maybe a flyer targeted at institutional administrators produced by FACCE JPI jointly with the funding organisations might help.
- Evaluation criteria and metrics for future knowledge hubs should be available before or during their planning for guidance when decisions involving trade-offs are necessary.
- The reporting requirements and formats should be co-ordinated among countries and FACCE. MACSUR members must report to national funding agencies, MACSUR/FACCE, and usually to their institution. FACCE should be able to obtain financial reports through the involved funding organisations. A central FACCE database for outputs that can accept the standard bibliographic RIS format (works also for conferences etc.) as interface would reduce tedious manual work (and errors). This database could also be used for the reporting to national agencies. Import and export links to academia.edu, researchgate, orcid.org, researcherid.com would be a plus.

F - Impact of MACSUR (max. 3 pages)

Please quantify where possible

1. To what extent is MACSUR influencing planning and setting priorities for national programmes?

National programmes benefit from contributions of MACSUR in various ways:

- MACSUR results are published in international journals where they are eventually picked up by national administrators.
- MACSUR coordinators are invited by the FACCE GB (with national representatives) to provide overviews of results and identify the contributions of MACSUR to policy support in the participating countries.
- National, FACCE and EU representatives attend scientific meetings (in Europe and elsewhere) where MACSUR results are presented by MACSUR members.
- MACSUR reports are sent to the FACCE Knowledge Hub Evaluation Board for passing on to the GB, SAB, and StAB.
- Meetings, workshops and congresses organized in the context of MACSUR are frequently attended by representatives administering national programmes. The direct dialogues between them and other participants of the scientific events are likely shaping national programmes as well.
- Some partners of MACSUR are part of national boards involved in national programming. Their work therefore contributes directly to setting priorities in national programmes.
- Some partners of MACSUR have met frequently with national representatives on bilateral basis (GB members, etc.) or multi-laterally (national sector level research and ministries) in small groups (national meetings) among others on MACSUR progress – such dialogue directly results in setting priorities in national programmes.

2. To what extent is MACSUR influencing FACCE-JPI and the update of FACCE Strategic Research Agenda (SRA)?

MACSUR has no means or direct channels to influence SRA. But there are many indirect ways of exerting an influence:

- MACSUR results are published in international journals where they are eventually picked up by national administrators.
- MACSUR coordinators are invited by the FACCE GB (with national representatives) to provide overviews of results.
- Through his role a member of the FACCE-JPI scientific advisory board (SAB) a MACSUR steering committee member channels experiences from MACSUR into the SAB and hence the formulation of the SRA
- National, FACCE and EU representatives attend scientific meetings where MACSUR results are presented by MACSUR members.
- MACSUR reports are sent to the FACCE Knowledge Hub Evaluation Board for passing on to the GB, SAB, and StAB.
- Greater engagement by FACCE-JPI through attendance at theme and hub-level conferences could help to cement strong communication, guide effective and timely inputs into the SRA update, and provide the FACCE-JPI governing board with a clearer understanding of the benefits and challenges relating to the knowledge hub and similar networking approaches.

3. Main overlaps and gaps identified between research groups/countries during the MACSUR preparation and implementation/Potential for alignment

Overlaps:

- there are many and intended thematic overlaps, e.g. identifications of adaptation strategies in the different regions / countries under consideration;
- there are other intended overlaps, like the work on models, sometimes even the same model
- the spread of best practice and greater engagement between themes in relation to developing community-wide capacity building resources (for example on-line training for modellers and for agricultural professionals) will be an important aspect of MACSUR2, and is required to produce a more joined up and collaborative approach across all three themes in this area.

Gaps:

- there is not an equal distribution of scientist of the disciplines involved with access to funds across

countries or regions - in some countries only economists are funded;

- many livestock researchers engaged in MACSUR are located in the UK and receive no additional funding for MACSUR research;
- Further improvements (with funding) are needed to bridge the gap between science and business and policy making - the traditional channels of knowledge transfer are not sufficiently developed yet to make this possible

4. Main achievements, outcomes, outputs, etc... which would not have been possible without MACSUR

Among the main achievements and outcomes which would not have been possible without MACSUR are:

- Awareness of who is active in the area of CC impacts on agriculture.
- Integrated view of CC impacts on agriculture across disciplines and scales.
- Development of a research agenda for improving existing models and working on new models.
- Collaborative papers.
- Exchange of ideas, concepts, and theories between researchers.
- Understanding of data/model demands of other disciplines.
- Communication with stakeholders on models.
- Capacity building among the partners involved.
- Create synergies among research in the participating countries.
- Establishment of a network in Europe that is on par with other international networks.

5. To what extent did MACSUR generate project outcomes contributing to solving problems relevant to tackling the societal challenge of FACCE-JPI?

- Awareness of broader implications of CC and policies in agriculture by including constraints and buffer mechanisms from socio-economy.
- Contributions to external publications (EEA, AgMIP, GB, scientific papers) by MACSUR members.
- Development of recommendations to effectively anticipate projected climate change effects on food security
- Presents in public media to highlight progress and challenges for addressing societal challenges of FACCE-JPI
- Interactions with regional, national and international stakeholders on MACSUR results to address challenges of FACCE-JPI

6. Progress towards alignment of research in the field of MACSUR among the countries involved

A major objective of MACSUR is to promote an alignment of research between partner countries without sacrificing diversity and innovative new ideas and concepts. This is achieved by various means:

- Alignment of research by developing scenarios in international teams and identification of a common focus of research topics,
- work on joint papers across different nationalities, in particular work on publications with case studies from various countries;
- international comparison of methodologies and performance of models, development of resources (data, presentation),
- establishing contacts between stakeholders across countries
- the development of joint research proposals with partners from other countries that would otherwise not be accessible;

7. MACSUR contribution to the FACCE vision: **“An integrated European Research Area** addressing the challenges of Agriculture, Food Security and Climate Change to achieve sustainable growth in agricultural production to meet increasing world food demand and contributing to sustainable economic growth and a European bio-based economy while maintaining and restoring ecosystem services under current and future climate change”

MACSUR is contributing significantly to major elements of the vision of FACCE, including:

- the establishment of a vibrant community of international researchers committed to improve existing models and to develop new approaches to be able to deliver answers to challenging questions in a quantitative manner;
- MACSUR partners have developed a clear focus on climate change and food security and works actively to improve interaction between researchers and stakeholders of various fields;
- MACSUR partners have further improved models that capture all aspects of a bio-economy under changing climate condition.

8. MACSUR contribution to the FACCE SRA Core Theme 1

MACSUR has contributed in various aspects to several elements of Core Theme 1. Among them by

- promoting and facilitating interdisciplinary dialogue that forms the basis of quantitative integrated analyses,
- establishing links between models across disciplines by defining protocols, interfaces and sets of coherent scenario assumptions,
- partners of MACSUR have been involved in international/global efforts to compare model assumptions and results,
- the activities in various networks made available data that were previously not accessible to the international scientific community.

9. To what extent is MACSUR leveraging European competitiveness in the field of MACSUR internationally, international relevance and impact of MACSUR?

- European competitiveness and relevance has improved in various ways.
- A major value added is the establishment of a network across national borders in the EU and beyond (Norway, Israel).
- By building a platform for many disciplines across many countries it was possible to reap network effects.
- The international visibility of MACSUR is confirmed by the partnership agreement with AgMIP .

Annexes to sections B – E

B Output	2
B1. Articles in peer reviewed international journals and submitted manuscripts	2
B2. Contributions in books.....	14
B3. Other publications.....	15
B4. Input to policy makers	17
B5. Oral and poster presentations in scientific congresses	17
B6. Organized major international congresses	44
B7. Press, radio, TV, and internet appearances.....	45
B8. New external grant and total amount of new external grant money, the application resulting from MACSUR activities	45
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B13. Data access: new datasets or data/model assets generated in MACSUR (provide in the annex explanations on the storage: is this centralised or in each group? capture data sharing and evidence for this).....	47
B14. Other activities (listed by categories).....	47
C Networking	48
C1.Theme or cross-theme meetings	48
C2.Consortium meetings (whole MACSUR)	49
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C8. Links created to other EU or international groups	50
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D Capacity building	51
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D3. Specialist workshops	52
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D7. Research communities in the themes	53
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E1. Deliverables performed	55
E2. Milestones achieved	57

B Output

B1. Articles in peer reviewed international journals and submitted manuscripts

- Abadie, L.M., I.Galarraga, A. B. Milford and G. W. Gustavsen 2015. Achieving Emission Reduction Targets by Changing Eating Habits in Norway. (under revision)
- Allan Catherine, Nguyen Phuoc Lai, Seddaiu Giovanna, Wilson Ben, Roggero Pier Paolo (2013). Integrating local knowledge with experimental research: case studies on managing cropping systems in Italy and Australia. *ITALIAN JOURNAL OF AGRONOMY*, vol. 8, p. 108-116, <http://dx.doi.org/10.4081/ija.2013.e15>
- Angulo, C., Gaiser, T., Rötter, R. P., Børgesen, C. D., Hlavinka, P., Trnka, M., & Ewert, F. (2014). 'Fingerprints' of four crop models as affected by soil input data aggregation. *European Journal of Agronomy*, 61, 35-48. <http://dx.doi.org/10.1016/j.eja.2014.07.005>
- Angulo, C., Rötter, R.P., Lock, R., Enders, A., Fronzek, S. & Ewert, F. (2013). Implication of crop model calibration strategies for assessing regional impacts of climate change in Europe. *Agricultural and Forest Meteorology*, 170, 32-46.
- Angulo, C., Rötter, R.P., Trnka, M., Pirttioja, N., Gaiser, T., Hlavinka, P. & Ewert, F. (2013). Characteristic 'fingerprints' of crop model responses to weather input data at different spatial resolutions. *European Journal of Agronomy*, 49, 104-114.
- Asseng S, Ewert F, Martre P, Rotter RP, Lobell DB, Cammarano D, Kimball BA, Ottman MJ, Wall GW, White JW and others. Rising temperatures reduce global wheat production. *Nature Clim. Change* 2015;5(2):143-147., <http://dx.doi.org/10.1038/nclimate2470>
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- Baker, Alison; Ceasar, S. Antony; Palmer, Antony J; Paterson, Jaimie B.; Qi, Wanjun; Muench, Stephen P.; Baldwin, Stephen A. REPLACE, REUSE, RECYCLE: IMPROVING THE SUSTAINABLE USE OF PHOSPHORUS BY PLANTS. Breeding plants to cope with future climate change., <http://dx.doi.org/10.1093/jxb/erv210>
- Balkovič J, van der Velde M, Schmid E, Skalský R, Khabarov N, Obersteiner M, Stürmer B, Xiong W. 2013. Pan-European crop modelling with EPIC: Implementation, up-scaling and regional crop yield validation. *Agric Syst* 120: 61–75., <http://dx.doi.org/10.1016/j.agsy.2013.05.008>
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B4. Input to policy makers

- Austrian MACSUR Stakeholder Workshop. Vienna, Austria. From 24.05.2013 to 24.05.2013 (TradeM). Goal: stakeholder participation. Attendance: 15. Organised by WIFO, Austrian Institute of Economic Research. distributed among participants, available upon request
- Climate-change impacts on farming systems in the next decades:— why worry when you have CAP? A FACCE MACSUR workshop for policymakers. Brussels, Belgium. From 06.05.2015 to 06.05.2015 (Hub). Goal: Stakeholder interaction and learning. Attendance: 40. Organised by Thünen Institute. <http://ojs.macsur.eu/index.php/Reports/issue/view/7>
- Colloque du réseau Agriculture - Changements Climatiques. Arlon, Belgium. From 20.05.2015 to 20.05.2015 (LiveM/CropM). Goal: conference/networking. Attendance: 35. Organised by Université de Liège. <http://www.macsur.ulg.ac.be/projet-macsur/20-mai-2015/>
- Köchy, M.: MACSUR. Poster presentation at »GAP nach 2013 und weitere Analysen der agrarökonomischen Institute des Thünen-Instituts«. 09.12.2013 (Hub)
- MACSUR (Banse, Ewert, Brouwer, van Middelkopp, Roggero, Lotze-Campen, Köchy): Climate-change impacts on farming systems in the next decades:— why worry when you have CAP? MACSUR workshop for policymakers, Brussels, Attendance: 45. 06.05.2015 (Hub/LiveM/CropM/TradeM)
- Palatnik, R.R.: Meeting with chief economist of the Israeli Ministry of Agriculture Dr. Yael Kahal to define policy scenarios for the project analysis. 09.04.2014 (TradeM)
- Paljonko lisämaasta kannattaa maksaa? (How much to pay for additional farmland?). Nivala, Finland. From 26.11.2013 to 26.11.2013 (TradeM). Goal: Stakeholder information. Attendance: 37 participants, mostly farmers, and 4 researchers. Organised by MTT. <http://www.metla.fi/hanke/7515/index.htm>
- Pohjois-Savon maatalouden sopeutuminen ilmastonmuutokseen ("Agricultural adaptation to climate change in North Savo region"). Kuopio, Finland. From 20.11.2014 to 20.11.2014 (TradeM, LiveM, CropM). Goal: Stakeholder interaction. Attendance: 35. Organised by MTT. http://www.mtt.fi/modags/modags_KuopioSeminar.html
- Wilson, A.: ANIHWFA Foresight Workshop on Disease Driver Prioritisation. 2014-04-02 to 2014-04-03 (LiveM)
- Wilson, A.: STAR-IDAZ workshop on Meeting Future Research Needs on Infectious Diseases of Animals and Zoonoses. 2014-06-17 to 2014-06-20 (LiveM)
- Workshop "Adaptation strategies of Italian agricultural systems to climate change", Cagliari, Italy in the context of Agrosceinari-Macsur.. Cagliari, Italy. From 19.06.2013 to 19.06.2013 (CropM/LiveM/TradeM). Goal: Meeting with Stakeholders including regional and national policy makers. Attendance: 150. Organised by University of Sassari.

B5. Oral and poster presentations in scientific congresses

- Acutis M., Bellocchi G. – Briefing on CropM-LiveM model intercomparison protocol – JPI FACCE MACSUR CropM and LiveM cross-cutting activity Helsinki, Finland – From 06.06.2013 till 07.06.2013 – (CropM)
- Ahmadi BV, Thomson S, Shrestha S and Stott AW. – Predicting the implications of CAP reform using a bio-economic modelling approach – 133rd EAAE seminar "Developing Integrated and Reliable Modeling Tools for Agricultural and Environmental Policy Analysis", Crete, Greece – From 15.06.2013 till 16.06.2013 – (LiveM)
- Angelova D. – The state-contingent approach to production and choice under uncertainty: usefulness as a basis for economic modeling – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancements', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/233>
- Audsley, E. – CLIMSAVE interactive platform for climate change impacts in Europe – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancements', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/251>
- Audsley, E. – The results of applying the CLIMSAVE (TradeM+CropM+LiveM) model to the regional case studies – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/> (TradeM)
- Ayalon, O. – Welcome Address of the Director Natural Resource and Environmental Research Center – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 – <http://www.macsur.eu/> (TradeM)
- Bannink, A. – Application of a Tier 3 approach for estimating enteric fermentation in dairy cows: Advantages and disadvantages – International Livestock Modelling and Research Colloquium, Bilbao, Spain – From 14.10.2014 till 15.10.2014 – <http://www.livem2014bilbao.com> (LiveM)
- Bannink, A. – Trade-offs of N-reducing dietary measures on enteric methane emission and phosphorus excretion in lactating cows – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://macsur.eu/index.php/events/macsur-science-conference> (LiveM)

- Banse M. – FACCE-JPI Achievements to date: MACSUR – FACCE-JPI 3-year Anniversary Date – From 22.10.2013 till 22.10.2013 – (Hub)
- Banse M. – What drives meat consumption? Combining cross-country analysis with an applied trade model – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-3>
- Banse M., Köchy M. – Opportunities for collaboration: MACSUR – 4th Annual AgMIP Workshop, New York, USA – From 28.10.2013 till 30.10.2013 – (Hub)
- Banse, M. – MACSUR (Modelling European Agriculture with Climate Change for Food Security) – LIAISE Annual Meeting, Tallinn, Estonia – From 25.03.2013 till 28.03.2013 – (Hub)
- Banse, M. – MACSUR European experience in addressing the complexity of climate impact research in agriculture: Lessons for replication elsewhere – Global Forum on Climate Change, Food Security and Trade, FAO, Rome – From 03.06.2014 till 04.06.2014 – (Hub)
- Banse, M., Köchy, M. and Tiffin, R. – MACSUR – A European network of crop, livestock and trade modelling activities for assessing impacts of climate change on food security – United Nations Convention to Combat Desertification 2nd Scientific Conference, Bonn, Germany – From 09.04.2013 till 12.04.2013 – http://2sc.unccd.int/fileadmin/unccd/upload/documents/Extended_Abstracts.pdf (Hub)
- Baranowski P., Krzyszczak J., Sławinski C. – Multifractal analysis of chosen meteorological time series to assess climate impact in field level – MACSUR CropM International Symposium and Workshop: Modelling climate change impacts on crop production for food security, Oslo, Norway – From 10.02.2014 till 12.02.2014 – (CropM)
- Baranowski P., Krzyszczak J.R., Sławiński C.F. – Self-similarity analysis of chosen agro-meteorological time series – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/181>
- Baranowski P., Mazurek W., Pastuszka-Wozniak J. – Supervised classification of bruised apples on the base of hyperspectral imaging data. – 10th International Conference on Agrophysics – From 05.06.2013 till 07.06.2013 – http://www.ipan.lublin.pl/uploads/sekretariat/ica_book_of_abstracts_all.pdf (CropM)
- Baranowski P., Sławinski C., Krzyszczak J. – Short presentation of partner's P139 involvement in CropM – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – (TradeM/CropM)
- Baranowski, P., Jaromir Krzyszczak, Cezary Sławiński – Multifractal analysis of meteorological time series to assess climate impact on chosen regions of Europe – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – (CropM)
- Barber HM, Gooding MJ, Semenov MA (2014) – Improving modelling of wheat responses to high temperature stress under climate change. – XIII ESA congress, Debrecen, Hungary – From 25.08.2014 till 29.08.2014 – (CropM)
- Barnes A., Shrestha S., Thomson S., Toma L., Mathews K., Sutherland L.A. – Comparing visions for CAP reforms post 2015: Farmer intentions and farm bio-economic modelling – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/180>
- Bartley D. – Do modellers dream of electric sheep? – Practical to mathematical and back again. – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/215>
- Baum Z. – The Economic Impact of Water Scarcity Under Diverse Water Qualities and Desalination Policies: The Case of Israel – TradeM International Workshop on Economics of Integrated Assessment Approaches for Agriculture and the Food Sector – From 25.11.2014 till 27.11.2014 – (TradeM)
- Baum, Z. – Assessing the impact of climate change on agriculture and a water economy with a diverse mix of water types – the Israeli case study – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/> (TradeM)
- Baum, Z., R. R. Palatnik – Assessing the Impact of Climate Change on the Israeli Water Economy via a Linked CGE and Farm-Level Model – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 – <http://www.macsur.eu/> (TradeM)
- Bellocchi G., Martin R., Shtiliyanova A., Ben Touhami H., Carrère P. – Vul'Clim – Climate change vulnerability studies in the region Auvergne (France) – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/209>
- Bellocchi G., Rivington M., Acutis M. – Deliberative processes for comprehensive evaluation of agro-ecological models – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/193>

- Bellocchi, G., Acutis, M., Ferrise, R., Rivington, M. – Fuzzy-logic based multi-site crop model evaluation – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – (CropMLiveM)
- Bellocchi, G., Ehrhardt, F. – Collaborations with initiatives and projects outside MACSURAgMIP – Grassland & Livestock – International Livestock Modelling and Research Colloquium, Bilbao, Spain – From 14.10.2014 till 16.10.2014 – http://www.livem2014bilbao.com/archivo/ficheros/Thursday16/11-LiveMBilbao_AgMIP.pdf (LiveM)
- Ben touhami, H., Bellocchi, G. – Bayesian calibration of the Pasture Simulation model (PaSim) to simulate emissions from long-term grassland sites: a European perspective – Livestock, Climate Change and Food Security, Madrid, Spain – From 19.05.2014 till 20.05.2014 – (LiveM)
- Ben Touhami, H., Lardy, R., Klumpp, K., Bellocchi, G. – Bayesian calibration of the Pasture Simulation model (PaSim) to simulate emissions from long-term European grassland sites: a case study at Laqueuille (France) – Greenhouse Gases & Animal Agriculture 2013, Dublin, Ireland – From 23.06.2013 till 26.06.2013 – <http://www.ggaa2013.ie/> (LiveM)
- Biewald A. – Ethical aspects in the economic modeling of water policy options – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-6>
- Biewald A. – The development of cereals and oilseed production until 2050 under different socioeconomic conditions in Finland – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/236>
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- Topp K. – Synergies and trade-offs of adaptation and mitigation on dairy farms – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-67>
- Twardy S. – Contamination of surface water bodies with biogenic substances, taking into account the impact of agriculture in the Western Carpathians. – Baltic Deal at Malopolska - training workshops for counselors within the Baltic Deal project. Agricultural Advisory Centre Malopolska. Karniowice, Poland. – From 25.07.2012 till 25.07.2012 – <http://www.modr.pl/index.php?wyd=210> (CropM)
- Twardy S. – The ecological potential - sustainable development of rural areas in the Carpathians. – Third International Mountain Forum entitled Innovation in Mountainous Regions. Zakopane, Poland. – From 10.10.2012 till 12.10.2012 –

http://www.forumgorskie.pl/archiwum/art_577_iii_miedzynarodowe_forum_gorskie_10__12_pazdziernika_2012_roku.html?page=1 (LiveM/CropM)

- Twardy S. – The usefulness of the research results conducted on the permanent grasslands for carrying out the pro-environmental management in mountain areas. – Priorities of sustainable rural development 2014-2020 in the light of scientific research. Institute of Technology and Life Sciences at Falenty, Poland. – From 25.04.2013 till 26.04.2013 – <http://www.itep.edu.pl/konferencje/index.php?id=ko20130425> (CropM)
- Twardy S., Kopacz M. – Comparison of Concentrations and Loads of Macronutrients Brought with Precipitation and Leaching from the Soil Profile – VII Conference on Environmental Protection and Engineering - Sustainable Development held at AGH University of Science and Technology in Krakow – From 26.06.2014 till 27.06.2014 – <http://szkola.imir.agh.edu.pl/konferencja/?n0=referaty> (LiveM/CropM)
- Twardy S., Kopacz M. – Sustainable and durable development of mountain areas. – Workshops in 8 secondary schools - in accordance with the Project implementation schedule. – From 09.05.2014 till 28.05.2014 – (LiveM/CropM)
- Van den Pol-van Dasselaar A. – Stakeholder consultation on functions of grasslands in Europe – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/271>
- Van den Pol-van Dasselaar A., Bellocchi G., Hutchings N., Olesen J., Saetnan E. – AnimalChange – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/190>
- Van Middelkoop, J. – Livestock and feed production, especially dairy and beef – "Climate-change impacts on farming systems in the next decades — why worry when you have CAP?" A FACCE MACSUR workshop for policymakers, Brussels – From 06.05.2015 till 06.05.2015 – <http://macsur.eu/index.php/events/macsur-workshop-for-policymakers> (LiveM)
- Van Middelkoop, Jantine – Promoting climate mitigation on agricultural and forest land through the CAP – Workshop European Commission Brussels – From 06.03.2015 till 06.03.2015 – <http://capmetaworkshop.aeasolutions.co.uk/> (LiveM)
- Ventrella D. – Climate change impact on green and blue water consumptive use for winter durum wheat and tomato cultivated in Southern Italy – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-70>
- Ventrella D., Giglio L., Charfeddine M., Castellini M. 2012. – Effects of climate change on soil fertility of a typical cropping system of Southern Italy. (Ed. Fred Stoddard, Pirjo Mäkelä), ISBN 978-952-10-4323-9, 480-481. – 12th Congress of the European Society for Agronomy Helsinki, Finland – From 20.08.2012 till 24.08.2012 –
- Ventrella D., Giglio L. – Regional analysis of climate change impact and adaptation strategies for winter durum wheat and tomato yield cultivated in Southern Italy – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/177>
- Ventrella D., Giglio L. 2013. – Green and blue water for the cultivation of tomato in Puglia. Patron Editore Bologna. 105-106. ISBN 978-88-555-3235-8. – Convegno "Agrometeorologia per la sicurezza ambientale ed alimentare. Firenze, 4-6 Giugno. – From 04.06.2013 till 06.06.2013 –
- Ventrella D., Giglio L., Charfeddine M. – Climate change and nitrogen fertilization for winter durum wheat and tomato cultivated in Southern Italy – 18th Nitrogen Workshop. The nitrogen challenge: building a blueprint for nitrogen use efficiency and food security – From 30.06.2014 till 03.07.2014 – <http://www.initrogen.org/node/199> (CropM)
- Ventrella D., Giglio L., Charfeddine M. 2014. – Climate change and nitrogen fertilization for winter durum wheat and tomato cultivated in Southern Italy. – Lavoro accettato per gli Atti del "18th Nitrogen Workshop", Lisbona. – From 30.06.2014 till 03.07.2014 –
- Viaggi, D. – Cross-cutting results of session 3 on cross-theme studies – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/TradeM>
- Virkajärvi, P. – Northern Savo, Finland – "Climate-change impacts on farming systems in the next decades — why worry when you have CAP?" A FACCE MACSUR workshop for policymakers, Brussels – From 06.05.2015 till 06.05.2015 – <http://macsur.eu/index.php/events/macsur-workshop-for-policymakers> (LiveM)
- Vosough Ahmadi B, S Shrestha, S G. Thomson, A P. Barnes and A W. Stott – Health, welfare and profitability in Scottish sheep farms: assessing the impacts of CAP 2015 reforms – 88th Annual Conference, Paris, France – From 09.04.2014 till 11.04.2014 – (TradeM)
- Vosough, Ahmadi B.; Shrestha S., Barnes A., Özkan Ş. – Impacts Of Common Agricultural Policy 2015 Reforms On Animal Health And Welfare Of Scottish Dairy Herds – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 08.04.2015 – (TradeM)
- Wacker., F. – International Cooperation, World Food Affairs – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/TradeM>

- Waldemar Bojar – WP1 tasks – tasks of WP1 package – The first meeting of the TradeM Steering Committee – From 05.09.2012 till 05.09.2012 – <http://macsur.eu/index.php/internal-documents/func-startdown/30/> (TradeM)
- Walkiewicz A., Brzezinska M. – Methane oxidation in forest and fertilized soils – 12th International Workshop for Young Scientists "BioPhys Spring 2013". Lublin, Poland. – From 21.05.2013 till 23.05.2013 – <http://bps2013.ipan.lublin.pl/uploads/biopys-2013.pdf> (CropM)
- Wallach, D., Mearns, L. O., Asseng, S., Rötter, R. P. – Using ensembles of models in climate and crop modelling. – XIII ESA congress, Debrecen, Hungary – From 25.08.2014 till 29.08.2014 – (CropM)
- Wang E et al. – Causes for uncertainty in simulating wheat response to temperature. – MACSUR CropM International Symposium and Workshop: Modelling climate change impacts on crop production for food security, Oslo, Norway – From 10.02.2014 till 12.02.2014 – (CropM)
- Weihermüller L. – AgroC – Development and first evaluation of a model for carbon fluxes in agroecosystems – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/184>
- Wilson A.J., Gubbins S. – Modelling interactions between climate and livestock pathogen transmission – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/275>
- Wilson, Anthony – Introduction and purpose of meeting – Workshop: Modelling interactions between climate and livestock pathogen transmission – From 22.01.2014 till 22.01.2014 – <http://www.research.pirbright.ac.uk/intent/macsur/workshop/> (LiveM)
- Witzke, P., Frank, S., Zimmermann, A., Havlík, P., Ciaian, P. – The impact of climate change on food security – results from a European perspective – First International Conference on Global Food Security, Noordwijkerhout, The Netherlands – From 29.09.2013 till 02.10.2013 – (TradeM)
- Wolf P., Holz K. – LandPaKT – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/240> (LiveM)
- Woolnough S. – Climate Modelling and Sub-seasonal to Seasonal Prediction: Opportunities and Challenges – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-71>
- Wu, L, A. P. Whitmore – Using SPACSYS to analyse the interaction between plant and environment in a systems approach – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 – <http://www.macsur.eu/> (TradeM)
- Yin X. – Effects of climatic factors, drought risk and irrigation requirement on maize yield in the northeast farming region of China over 1961 to 2010 – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-72>
- Zander P. – Scenarios of regional agricultural land use under climate change for 4 case study regions in Northern Germany – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – <http://ojs.macsur.eu/index.php/Reports/article/view/SP5-73>
- Zander P., Schuler J., Porwollik V., Hecker J.-M. – Modelling approach and first results on irrigation as climate change adaptation strategy of the project NaLaMa-nT – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/269>
- Zander, P. – Modelling regional land use and climate change adaptation strategies in NorthernGermany – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 – <http://www.macsur.eu/> (TradeM)
- Zander, P., J.-M., Hecker, J. Hufnagel, V. Porwollik, N. Svoboda – Modelling regional land use and climate change adaptation strategies in Northern Germany – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/> (TradeM)
- Zavalloni M., Marconi V., Viaggi D., Raggi M. – Climate change adaptation: a farm level model to assess investment decisions in water storage – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancemen', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/232>
- Zavalloni M., Raggi M., Viaggi D. – Economic analysis of Water Harvesting Reservoirs with Internal Water Reallocation: a Case Study in Emilia Romagna, Italy. – Italian Society of Economists, SIE 54th annual conference. Bologna, Italy – From 24.10.2013 till 26.10.2013 – <http://www.siecon.org/online/en/convegni/2013-54ma-rsa-bologna/> (TradeM)
- Zavalloni M., Raggi M., Viaggi D. – Water markets for climate change. – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate

- change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 –
- Zhao G., Hoffmann H., Van Bussel L. et al. – Weather data aggregation's effects on simulation of cropping systems: a model, production system and crop comparison – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancements', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/196>
- Zimmermann A. – Exploring yield gaps in the EU, concept and data – FACCE MACSUR Mid-Term Scientific Conference 'Achievements, Activities, Advancements', Sassari, Italy – From 01.04.2014 till 04.04.2014 – <http://ocs.macsur.eu/index.php/Hub/Mid-term/paper/view/226>
- Zimmermann, A. – Yield trends and variability in the EU – MACSUR Conference 2015 "Integrated Climate Risk Assessment in Agriculture & Food", Reading – From 08.04.2015 till 10.04.2015 – (LiveM)
- Zimmermann, A., Britz, W., Adenauer, M., Heckeley, T. – Food Security Assessment with CAPRI – MACSUR TradeM workshop: "Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security", The Natural Resource and Environmental Research Center (NRERC), University of Haifa, Israel – From 03.03.2013 till 05.03.2013 – <http://www.macsur.eu/> (TradeM)
- Zimmermann, A., Witzke, P. – MACSUR-TradeM Baseline Scenario in CAPRI – MACSUR TradeM Workshop on Global Food Security Challenges – European Research approaches. Leibniz Centre for Agricultural Landscape Research (ZALF), Möncheberg, Germany – From 18.11.2013 till 20.11.2013 – <http://www.macsur.eu/> (TradeM)
- Żyłowska, K., Nieróbca, A., Kozyra, J., Syp, A. (2014) – Climatic condition for yielding of maize in Poland in the period 1971-2010. – MACSUR CropM International Symposium and Workshop: Modelling climate change impacts on crop production for food security, Oslo, Norway – From 10.02.2014 till 12.02.2014 – http://www.macsur.eu/images/eventlist/meeting_docs/CropM_Oslo_Symposium_Abstract_Book.pdf (CropM)

B6. Organized major international congresses

- Soil Minimum Tillage Systems, 7th International Symposium. Cluj-Napoca. From 02.05.2013 to 03.05.2013 (CropM). Goal: Conservative tillage systems: minimum tillage and no-tillage. Research systems for soil, water and carbon preservation. Technological alternatives in conservative agriculture system. Research priorities concerning soil tillage, land improvement and environmental protection. Attendance: 120. Organised by Conservative tillage systems: minimum tillage and no-tillage. Research systems for soil, water and carbon preservation. Technological alternatives in conservative agriculture system. Research priorities concerning soil tillage, land improvement and environmental protection. . <http://www.usamvcluj.ro/SMDT/symposium2013/index.php>
- CropM International Symposium and Workshop: Modelling climate change impacts on crop production for food security. Oslo, Norway. From 10.02.2014 to 12.02.2014 (CropM). Goal: Knowledge exchange and networking Attendance: 120. Organised by MTT Finland in cooperation with the Norwegian partners. <http://macsur.eu/index.php/international-symposium-and-workshop>
- Breeding Plants to Cope with Future Climate Change. Leeds. From 16.06.2014 to 18.06.2014 (CropM). Goal: Dissemination and discussions Attendance: 101. Organised by University of Leeds.
- AgMIP Wheat Workshop. Clermont-Ferrand, France. From 24.06.2014 to 26.06.2014 (CropM). Goal: Conference/networking/report on progress of AgMIP-Wheat Attendance: 73. Organised by INRA / University of Florida / University of Bonn.
- International Livestock Modelling and Research Colloquium. Bilbao, Spain. From 14.10.2014 to 16.10.2014 (LiveM). Goal: Conference/networking Attendance: 50. Organised by BC3 / Aberystwyth University / Wageningen University. <http://www.livem2014bilbao.com/>
- TradeM International Workshop, Economics of integrated assessment approaches for agriculture and the food sector. Hurdalsjøen, Norway. From 25.11.2015 to 27.11.2015 (TradeM). Goal: Knowledge exchange and networking. Attendance: 33. Organised by Norwegian Agricultural Economics Research Institute (NILF). <http://macsur.eu/index.php/tradem/2015-03-09-10-38-26>
- MACSUR Conference 2015: Integrated Climate Risk Assessment in Agriculture and Food. Reading, UK. From 08.04.2015 to 09.04.2015 (Hub). Goal: Knowledge exchange and networking Attendance: 120. Organised by Reading University. <http://ojs.macsur.eu/index.php/Reports/issue/view/8>
- Soil Minimum Tillage Systems, 8th International Symposium. Cluj-Napoca. From 25.06.2015 to 26.06.2015 (CropM). Goal: Conservative tillage systems: minimum tillage and no-tillage. Research systems for soil, water and carbon preservation. Technological alternatives in conservative agriculture system. Research priorities concerning soil tillage, land improvement and environmental protection. Attendance: 80. Organised by Conservative tillage systems: minimum tillage and no-tillage. Research systems for soil, water and carbon preservation. Technological alternatives in conservative agriculture system. Research priorities concerning soil tillage, land improvement and environmental protection. . <http://www.usamvcluj.ro/SMDT/symposium2015/index.php>

B7. Press, radio, TV, and internet appearances

Agra-Europe: vTI koordiniert neues Forschungsprojekt 'Macsur' in Agra-Europe 35/12, p. 26. 27.08.2012 (Hub)

BBC World Service: Radio interview with A. Wilson on bluetongue control for Science in Action. 24.10.2014 (LiveM)

BBC Radio 4 : Costing the Earth: Outbreak, Radio interview with A. Wilson. 21.03.2012 (LiveM)

Bojar, Waldemar: Website of the UTP Description of the project MACSUR goals and progress in the tasks realization. 01.12.2013 (TradeM)

DEPI News - Grampians: Spanish student in Horsham to study capsicum pests. Thursday, October 16, 2014. Department of Environmental and Primary Industries. 16.10.2014 (CropM)

HR3: Interview with M. Köchy on 'Alle Wetter' HR3 German public TV. 03.09.2012 (Hub)

Julien Minet: Publication of a website about FACCE and MACSUR activities in Belgium, with a blog about conferences and events related to topics of MACSUR. (CropM, LiveM)

KlimAktiv: Forscher ergründen Zusammenhänge zwischen Klimawandel und Ernährung' by KlimAktiv gGmbH. 27.08.2012 (Hub)

La Nuovo Sardegna, 2013, Cambiamenti climatici, esperti da tutto il mondo. La Nuovo Sardegna 2014-04-01.

NDR Info: Wie wirkt sich der Klimawandel auf die Landwirtschaft aus?' Radio interview with Dr. Martin Banse on NDR Info show "logo!". 05.10.2012 (Hub)

Palatnik, R.: Call for TradeM workshop in Haifa, Israel on the website of EAERE-European Association of Environmental and Resource Economists. 01.02.2013 (TradeM)

Regjo: Klimafolgen für Lebensmittel. Regjo. Das Regional-Journal für Südostniedersachsen. 05.2012, p. 52. 01.10.2012 (Hub)

Rolinski, S., Biewald, A.: Studio Campus of the regional radio station (science meets journalism). 18.02.2014 (TradeM)

Kronenzeitung: Expertenforum: Nachhaltige Landwirtschaft - Erfolge sind da, der Weg ist aber noch lang (sustainable agriculture - success is there but there is still a long way to go). Contribution of F. Sinabell. 2014-03-22 (TradeM)

Kronenzeitung: Expertenforum: Wie höhere Produktivität im Agrarsektor der Wirtschaft nutzt (Benefits of a productive agricultural sector for the economy). Contribution of F. Sinabell. 2014-06-07 (TradeM)

Śliwka, J.: W Europie szerzą się nowe genotypy Phytophthora infestans, organizmu powodującego zarazę ziemniaka - a popular science article in Ziemiak Polski, in Polish. 01.06.2013 (CropM)

Sobkowiak, S., Śliwka, J. : Grzyby z rodzaju Fusarium powodujące suchą zgniliznę bulw ziemniaka - a popular science article in Ziemiak Polski, in Polish. 01.12.2013 (CropM)

MACSUR Homepage: <http://macsur.eu>

MACSUR on Facebook: <https://www.facebook.com/pages/FACCE-MACSUR>

MACSUR on Twitter: <https://twitter.com/faccemacsur>

B8. New external grant and total amount of new external grant money, the application resulting from MACSUR activities

Adaptation in Austrian cattle and milk production (ADAPT-CATMILK). Austrian Climate Research Programme research grant. Partners: WIFO, BOKU, University Cranfield, Thünen Institute (TradeM, reported by Martin Schönhart, 20.05.2014, 247'113 €)

AGROSCENARI – Scenari di adattamento dell'agricoltura italiana ai cambiamenti climatici (CropM, reported by M. Köchy, 18.12.2013, 8'143'268.70 €)

IC-FAR — Linking Long Term Observatories with Crop Systems Modeling For a better understanding of Climate Change Impact, and Adaptation Strategies for Italian Cropping Systems. National Project funded by the Ministry of Education, University and Research, linked with MACSUR (CropM, reported by M. Köchy, 09.07.2013, 868'000 €)

Integrated modelling of Nordic farming systems for sustainable intensification under climate change (CropM, reported by M. Köchy, 10.07.2013, 661'912 €)

New research project "Metrics, Models and Foresight for European Sustainable Food and Nutrition Security (SUSFANS)" funded by the European Commission, 2015-2019 (TradeM, reported by Andrea Zimmermann, 02.07.2015, 5'299'993.64 €)

New research project "Pathways linking uncertainties in model projections of climate and its effects (PLUMES)" funded by the Academy of Finland, 2014-2018 (CropM, reported by Stefan Fronzek, 02.07.2015, 989'707 €)

Research project with some partners involved in MACSUR funded by the Belgian Federal Science Policy (BELSPO): Modelling and Assessing Surface Change impacts on Belgian and Western European climate (MASC) (CropM, reported by Julien Minet, 20.05.2014, 1'196'978 €)

Transferencia científico-tecnológica para evaluación del impacto del cambio climático en los sistemas agrarios de Ecuador y los recursos hídricos (CropM, reported by M. Ruiz-Ramos, 21.05.2015, 10'000 €)

B9. Supervised theses

- Angulo, C. (2014) Scaling methods in using crop modelling for climate impact assessment. University of Bonn Germany. PhD thesis. (CropM)
- Bulak, P. (in progress) Effect of abiotic stresses on activity of selected antioxidant enzymes in wheat. Institute of Agrophysics of the Polish Academy of Sciences. PhD thesis. (CropM)
- Curnel (2015) Satellite remote sensing priorities for better assimilation in crop growth models: winter wheat LAI and grassland mowing dates case studies - <http://hdl.handle.net/2078.1/160968>. Université Catholique de Louvain (UCL). PhD thesis. (CropM, LiveM)
- Dumont, B., (2014) Uncertainty linked to crop modelling in order to develop decision support tools. 193 p. <http://orbi.ulg.ac.be/handle/2268/164963>. Gembloux Agro-Bio Tech, University of Liege. PhD thesis. (CropM)
- Högner, K. (2013) Improving the methodology for global agricultural water availability and identifying hot spots for potential dam sites in East-Africa. Potsdam Institute for Climate Impact Research. M.Sc. thesis. (TradeM)
- Kondracka, K. (in progress) Effect of combined drought and heat stress on wheat growth. Institute of Agrophysics of the Polish Academy of Sciences. PhD thesis. (CropM)
- König, H. (2013) Operationalising sustainability impact assessment of land use scenarios in developing countries : a stakeholder-based approach with case studies in China, India, Indonesia, Kenya, and Tunisia. <http://opus.kobv.de/ubp/volltexte/2013/6367/>. Leibniz-Zentrum für Agrarlandschaftsforschung e.V. PhD thesis. (TradeM)
- Matoga, W. (in progress) Extensive sheep grazing in terms of the mountain pastures protection. Institute of Technology and Life Science at Falenty. PhD thesis. (LiveM)
- Mula, L. (2014) Adaptation scenarios of Mediterranean forage systems to climate change. <http://eprints.uniss.it/9500/>. University of Sassari. PhD thesis. (LiveM)
- Nikolic, U. Soy bean production in Serbia - actual situation and production outlook. Started January 2014. Institut für nachhaltige Wirtschaftsentwicklung, BOKU Vienna. M.Sc. thesis. (TradeM)
- Paas, W. (2013) Impacts of climate change and socio-economic drivers dairy farms in 'the Baakse Beek', the Netherlands. . Plant Production Systems Group, Wageningen University. MSc. thesis. (CropM)
- Patuszka, T. (in progress) The impact of soil physical properties modified by post-fermentation sludge on GHG emission. Institute of Agrophysics of the Polish Academy of Sciences. PhD thesis. (CropM)
- Purola, T. (in progress). Using farm level modelling to analyse adaptation of Nordic farming systems to climate variability and change. University of Helsinki (PhD thesis).
- Schäfer, A.S. (2014) Landwirtschaftliche Erträge und ihre ökonomischen Einflussfaktoren. Institute for Food and Resource Economics, University of Bonn. B.Sc. thesis. (TradeM)
- Schmidt, C. (2013) Die Rolle der landwirtschaftlichen Primärproduktion bei der Gewährleistung globaler Ernährungssicherung. University of Bonn. B.Sc. thesis. (TradeM)
- Schürkmann, A. (2013) Estimating the benefit-cost ratio of infrastructural measures to increase water supply for irrigation on a global scale. Potsdam Institute for Climate Impact Research. M.Sc. thesis. (TradeM)
- Seifried, A. A.Soy bean production in Austria - actual situation and production potential in a climate change scenario. Started January 2014. Institut für nachhaltige Wirtschaftsentwicklung, BOKU Vienna. M.Sc. thesis. (TradeM)
- Świerk, W (2012) Changes in the quality of surface water bodies against the background of the implementation of the sustainable development program of rural areas in the catchment. Institute of Technology and Life Science at Falenty. PhD thesis. (CropM)
- Walkiewicz, A. (in progress) Effect of soil-water conditions on methane oxidation in agricultural soils. Institute of Agrophysics of the Polish Academy of Sciences. PhD thesis. (CropM)
- Zhou, Z. (2013) Improving a grass yield model to assess impacts of climate change on grass yields around 2050 at plot level in the Dutch region Baakse Beek. Plant Production Systems Group, Wageningen University. MSc. thesis. (CropM)

B10. Joint patents (between partners or resulting from project)

- Smoroń S. 2012. Patent application entitled "The mobile set lifting - weight". Declaration No.: P.401855 submitted to the Polish Patent Office. (CropM, LiveM)
- Twardy S, Kopacz M. 2012. Device for measuring the precipitation water leaching from a soil profile. Patent No. P.389892 granted by the Polish Patent Office. Decision of 14.08.2012. (CropM)

B11. New collaborations (subset of group or group asking for additional (new) funding)

- Coordination of a joint proposal in the Joint Programming Initiative "Agriculture, Food Security and Climate Change (FACCE-JPI)". Phase II <http://www.chil.org/profile/spanish.macsur/main> (Partners participating: MTT Agrifood Finland, University of Bonn, INRA France, Polytechnical University of Madrid) (TradeM, reported by Anne Biewald, 15.05.2014)
- Coordination of Spanish participation in the Joint Programming Initiative "Agriculture, Food Security and Climate Change (FACCE-JPI)". Phase I <http://www.chil.org/profile/spanish.macsur/main> (CropM, TradeM, LiveM, reported by M Ruiz-Ramos, 09.07.2013)

Coordination of Spanish participation in the Joint Programming Initiative "Agriculture, Food Security and Climate Change (FACCE-JPI)". Phase II <http://www.chil.org/profile/spanish.macsur/main> (CropM, TradeM, LiveM, reported by M Ruiz-Ramos, 09.07.2013)

FACCE-ERA-NET+ on Climate Smart Agriculture: Joint application, Project Acronym: NEMANICHE - Predicting and testing climate change-induced range shifts in phytopathogenic nematodes in the European agricultural biosphere; date to be decided, September 2014. (TradeM, reported by C.Hoffmann, 20.05.2014)

H2020 SFS18-2015. FairFarm. Stage-2-proposal submitted June 2015. MACSUR partners EURAC, Thünen Institute, James Hutton Institute and non-MACSUR members. (Hub, reported by M. Köchy, 08.07.2015)

JPI- FACCE- SURPLUS. Coordination of a joint application "Towards sustainably intensified and resilient production systems in European Agriculture. Prospects for integrating dairy and bioenergy production systems (DAIRYENERGY)", submitted 04.03.2015. MACSUR partners from Norway, Belgium, Italy. (CropM, reported by Lillian Øygarden, 28.06.2015)

Norwegian partners participating in 3 submissions with partners in MACSUR to the call FACCE/ERANET+ Climate Smart Agriculture (CropM, TradeM, reported by Lillian Øygarden, 26.05.2014)

Setting-up of a regional network related to FACCE and MACSUR in Wallonia, Belgium (see www.facce.be) (CropM, LiveM, reported by Julien Minet, 09.07.2013)

Soy Bean Production in the River Danube Basin. Research proposal submitted to the Austrian Climate Change Research Program ACRP. (TradeM, reported by Franz Sinabell, 10.09.2013)

Submission of a research project within the Belgian partners involved in MACSUR to a Belgian national funding scheme. Unfortunately rejected. (CropM, LiveM, reported by Julien Minet, 09.07.2013)

Submission of two research projects with partners involved in MACSUR and private partners to the call FACCE/ERANET+ Climate Smart Agriculture (LiveM, reported by Julien Minet, 20.05.2014)

Submission to Norwegian Research council (April 2014) application involving MACSUR partners Norway, MTT Finland, Potsdam (CropM, TradeM, reported by Lillian Øygarden, 26.05.2014)

Technical efficiency and challenges of the agricultural sector in Austria and New Zealand. Research proposal submitted to the Austrian Chamber of Agriculture (TradeM, reported by Franz Sinabell, 10.05.2014)

B12. Scientific acknowledgements (Prizes, honorary doctorates, memberships in scientific academies, major international duties, etc.)

Porter, John (2014) Lead author of IPCC AR5-WG2 Chapter on food security (CropM)

Sinabell, Franz (2012) nominated by AUSTRIA to the Steering Committee of the High Level Panel of Experts on food security and nutrition (HLPE), which will provide regular inclusion of structured expertise as an important input to the reformed Committee on World Food Security (CFS). (TradeM)

Kersebaum, Kurt Christian (Leibniz Centre ZALF (Muencheberg, Germany), selected by Soil Science Society of America for this years' L.R. Ahuya Agricultural Systems Modeling Award (CropM)

B13. Data access: new datasets or data/model assets generated in MACSUR (provide in the annex explanations on the storage: is this centralised or in each group? capture data sharing and evidence for this)

Sinabell, F., March 2014, CAPRI data set for the analysis of the baseline scenarios within TradeM (TradeM). Stored centrally.

Data may be published and deposited in AgriMod (<http://agrimod.org>), the Open Data Journal of Agricultural Research (<http://odjar.org>), created by MACSUR members and the GeoNetwork Archive at University of Aarhus. 11 Datasets in the GeoNetwork Archive will be publicly available once the corresponding data use agreements have been confirmed. JANSSEN, Sander et al. (2015) Operational database for storing and extracting data. FACCE MACSUR Reports 6, D-C2.2, Available at: <http://ojs.macsur.eu/index.php/Reports/article/view/D-C2.2>. Date accessed: 26 Aug. 2015. Many more data sets have been created and are stored decentrally but have not been reported.

B14. Other activities (listed by categories)

B14a New technologies

Hansen, J.G. et al. (2014). MACSUR CropM database. Data catalogue. <http://agro.au.dk/macsur-catalog> (CropM)

Hansen, J.G. et al. (2014). MACSUR data visualization platform, <http://agro.au.dk/macsur-toolbox> (CropM)

Jorgenson J., Janssen, S. (2013) Working with SEMAGROW to provide data hosting/publishing system using Open Journal Systems (Hub, CropM)

Jorgenson, J.S., Kersebaum, K.C., Kollas, C. et al. (2014) Software for the evaluation and classification of data sets for modelling. (Hub, CropM)

Kersebaum (during 2013-14) Integration of the HERMES crop growth sub-module into the AMBAV system of the German Weather Service (DWD). (CropM)

Klosterhalfen et al. (2014). AgroC: An agroecosystem model (CropM)
 Ruiz Ramos M, Mínguez and Rodríguez, 2014. AGROCLIMA-SSP v.2.0 (Software, scientific support to policies tool, delivered to Spanish administration, in Spanish). (CropM)
 Semenov M (during 2013-14) Incorporation of the CMIP5 climate projections in to the ELPIS dataset of local-scale climate scenarios for Europe. (CropM)
 Trnka et al (2014). Software AgriCLIM expert system for automatic calculation of agroclimatic indicators in Europe – version for wheat (CropM)

B14b Various

Jorgenson, J. (2013) Attended AgMIP development sprint in Wageningen June 19-21, and initiated collaboration efforts regarding model and dataset integration that will encourage the use of standardised protocols and formats. (Hub)
 Slawinski, C. (2013) Starting a new experiment in south-east of Poland for gathering highest quality data for calibration and validation of crop models including climate change (CropM)
 Twardy, S. (2013) Under the Project there are gathered data and other information (current and historical) on changes in grass biomass production taking into account the elevation of land above sea level and diversified slope exposures. These materials will be used for a dissertation and developed in the form of scientific publications. Also there is collected data on the quantity and quality of biomass depending on the differentiated frequency of sward use. (CropM, LiveM)
 Wallach, D., Rivington, M., Mearns, L. O., Antle, J. (2014). MACSUR CropM Report on Characterizing and Quantifying Uncertainty: D C4.1.2. A framework structure to integrate improved methods for uncertainty evaluation, and protocols for methods application. (CropM)

C Networking

C1.Theme or cross-theme meetings

CropM WP leaders meeting .
 Bonn, Germany. From 12.06.2012 to 13.06.2012 (CropM). Goal:Planning of CropM in MACSUR1
 Attendance: 12. Organised by University of Bonn. internal minutes
 CropM WP leaders meeting. Schiphol, Netherlands. From 25.02.2013 to 25.02.2013 (CropM). Goal:Regular Meeting for update and further planning Attendance: 14. Organised by University of Bonn, LAP. internal minutes
 MACSUR - CropM workshop, Work Packages 1, 2 and 4. From 06.05.2013 to 07.05.2013 (CropM).
 Goal:Planning Attendance: 27. Organised by CropM - MACSUR.
 Global Food Security Challenges – European Research approaches: Case studies in MACSUR TradeM.
 Müncheberg, Germany. From 18.11.2013 to 20.11.2013 (TradeM). Goal:Exchange of MACSUR activities, engagement of stakeholders, discussion of test cases across themes and modules Attendance: 70.
 Organised by ZALF (Hannes König, Katharina Helming). <http://www.macsur.eu/index.php/downloads/hub-newsletters/file/MACSUR%20Hub%20Newsletter%202013-06%252Epdf>
 CropM WP leaders meeting. Berlin, Germany. From 04.12.2013 to 04.12.2013 (CropM). Goal:Regular Meeting for update and further planning Attendance: 13. Organised by University of Bonn, LAP. internal minutes
 CropM WP leaders meeting. Sassari, Italy. From 02.04.2014 to 02.04.2014 (CropM). Goal:Regular Meeting for update and further planning Attendance: 8. Organised by University of Sassari. internal minutes
 CropM WP leaders meeting. Florence, Italy. From 14.11.2014 to 14.11.2014 (CropM). Goal:Regular Meeting for update and further planning Attendance: 13. Organised by University of Florence. internal minutes
 CropM WP leaders meeting. Reading, UK. From 09.04.2015 to 09.04.2015 (CropM). Goal:Regular Meeting for update and further planning Attendance: 11. Organised by University of Reading. internal minutes
 LiveM Leaders meeting and theme review.. Reading, UK. From 16.09.2013 to 17.09.2013 (LiveM). Goal:To develop future plans, review progress and identify challenges Attendance: 12. Organised by LiveM, Led by Aberystwyth University.
 Exploring new ideas for trade and agriculture model integration for assessing the impacts of climate change on food security. Haifa, Israel. From 03.03.2013 to 05.03.2013 (TradeM). Goal:Review and discussion of the models involved in analyzing the effects of climate change on food security. Introducing innovative ideas that combine economic models with crops and livestock models Attendance: 100. Organised by NRERC - Natural Resource and Environmental Research Centre, University of Haifa, Israel.
<http://macsur.eu/index.php/files/MACSUR%20TradeM/TradeM%20Workshop%20Haifa%202013>

C2. Consortium meetings (whole MACSUR)

Project Steering Committee meeting. Bonn, Germany. From 11.06.2012 to 12.06.2012 (CropM). Goal: Planning. Attendance: 7. Organised by University of Bonn.

MACSUR Kickoff Workshop. Berlin, Germany. From 15.10.2012 to 16.10.2012 (Hub). Goal: Planning, networking. Attendance: 140. Organised by Thünen Institute. <http://ojs.macsur.eu/index.php/Reports/issue/view/1>

Project Steering Committee meeting. The Hague, Netherlands. From 18.02.2013 to 19.03.2013 (Hub). Goal: Planning. Attendance: 10. Organised by LEI.

MACSUR Cross-Theme Workshop: Regional Pilot Studies and Scenarios. Braunschweig, Germany. From 05.06.2013 to 07.06.2013 (Hub). Goal: Agreement on scenarios and case studies. Attendance: 30. Organised by Thünen Institute. <http://www.macsur.eu/images/reports/RegionalPilotStudiesWorkshop.pdf>

Project Steering Committee meeting. Reading, UK. From 17.09.2013 to 18.09.2013 (Hub). Goal: Planning. Attendance: 10. Organised by Reading University.

FACCE-MACSUR Mid-Term Scientific Conference – 'Achievements, Activities, Advancement'. Sassari, Sardinia, Italy. From 01.04.2014 to 04.04.2014 (Hub). Goal: Presentation of results to stakeholders, planning, capacity building, networking. Attendance: 120. Organised by Thünen Institute and University of Sassari. <http://ocs.macsur.eu/index.php/Hub/Mid-term>

Project Steering Committee meeting. The Hague, Netherlands. From 04.09.2014 to 05.09.2014 (Hub). Goal: Planning. Attendance: 10. Organised by LEI.

Workshop on Within Theme and Cross-cutting Activities for MACSUR2. Reading, UK. From 10.04.2015 to 11.04.2015 (Hub). Goal: Planning and networking. Attendance: 100. Organised by Reading University. <http://ojs.macsur.eu/index.php/Reports/issue/view/8>

C3. Workshops

1st meeting for Coordination of Spanish participation in the Joint Programming Initiative "Agriculture, Food Security and Climate Change (FACCE-JPI)". Phase I. Spain. From 15.03.2012 to 15.03.2012 (). Goal: Planning. Attendance: 14. Organised by CEIGRAM, Technical University of Madrid, Spain. <http://www.chil.org/profile/spanish.macsur/main>

2nd meeting for Coordination of Spanish participation in the Joint Programming Initiative "Agriculture, Food Security and Climate Change (FACCE-JPI)". Phase I. Spain. From 26.09.2012 to 26.09.2012 (CropM/LiveM/TradeM). Goal: Planning. Attendance: 16. Organised by CEIGRAM, Technical University of Madrid, Spain. <http://www.chil.org/profile/spanish.macsur/main>

A seminar on presenting the objectives of FACCE-JPI MACSUR project and discussing the participation of the Institute of Agrophysics PAS in this project (cooperation between partners: 139, 158, 162). Poland. From 29.10.2012 to 29.10.2012 (CropM). Goal: Internal networking. Attendance: 40. Organised by Institute of Agrophysics Polish Academy of Sciences.

TradeM International Workshop on " Exploring New Ideas for Trade and Agriculture Model Integration for Assessing the Impacts of Climate Change on Food Security. Haifa, Israel. From 03.03.2013 to 05.03.2013 (TradeM). Goal: Knowledge exchange and networking. Attendance: 100. Organised by Univesity of Haifa. <http://nrerc.haifa.ac.il/images/stories/macsur%20haifa%20workshop%20agenda%20final.pdf>

A series of one-day meetings between partners 139, 158, 162 concerning realization of tasks in CropM module.. Lublin, Poland. From 20.03.2013 to 29.05.2013 (CropM). Goal: Planning. Attendance: 6. Organised by Institute of Agrophysics Polish Academy of Sciences, Lublin, Poland.

Meeting of the TradeM and CropM partners on common research carried out for contribution to MACSUR goals.. Lublin, Poland. From 15.05.2013 to 15.05.2013 (TradeM, CropM). Goal: Planning. Attendance: 5. Organised by University of Technology and Life Sciences in Bydgoszcz, Institute of Agrophysics Polish Academy of Sciences in Lublin, Poland.

An integrative analysis of the Austrian agri-environmental program - observations and options for improving its effectiveness. Lincoln University. From 26.6.2014 to 26.06.2014 (TradeM). Goal: Networking. Organised by Lincoln University and F. Sinabell.

C7. Links to national projects or facilities

New collaborations with directorates of 8 secondary schools where workshops and trainings for 8*20=160 students of secondary schools were conducted. There were distributed instructional materials prepared in advance. (CropM, LiveM, reported by S. Twardy, 22.05.2014)

C8. Links created to other EU or international groups

AgMIP, Memorandum of Understanding signed 2014-02-19 (Hub, reported by M. Köchy, 27.05.2014)
Collaboration with agricultural, meteorological agencies and Escuela Politécnica Nacional from Ecuador to develop a research line on agricultural impacts and adaptation to climate change, with focus on water resources (CropM, reported by M. Ruiz-Ramos, 21.05.2015)
Eol written with WUR to the FACCE SURPLUS call (CropM, reported by A. Whitmore, 26.05.2015)
Global Research Alliance's Animal Health and Greenhouse Gas Emissions Intensity Network and MACSUR's Task on Animal Health and Greenhouse Gas Emissions organising a joint workshop for MACSUR 2 (LiveM, reported by Ş. Özkan, 29.05.2015)
Information on MACSUR2 structure sent to JRC (Hub, reported by M. Köchy, 08.07.2015)
Initiation of collaboration between LiveM and SOLID (Sustainable Organic and Low Input Dairying project) (LiveM, reported by R. Kipling, 2013)
Working with SEMAGROW to provide data hosting/publishing system using Open Journal Systems, following attendance at the SEMAGROW meeting in Wageningen June 17-18, 2013 (Hub, reported by J. Jorgenson, 20.06.2013)

C9. Stakeholder interactions

Banse, M.: Participation in Global Forum on Climate Change, Food Security and Trade, FAO, Rome. 03.06.2014 (Hub)
Bojar, W., Bieganski, J., Depta, P.: Potential synergic effects between MACSUR models and the UTP team other models. SYNERGIC EFFECTS ARE ADDRESSED to STAKEHOLDERS:FARMERS, POLITICIANS, SELF GOVERNMENT AGENDAS, e.g. devoted problem of development of farmer cooperation within the EU countries. (TradeM)
Daugaard, T.: Coordinated by the www.dnmark.org research alliance a series of workshops are organized with local farmers about scenarios for future farming, and methods are reviewed together with other similar methods applied in MACSUR. (LiveM)
Harstad, O.M.: Udfordringer for husdyrproduktion i et fremtidig klima (Challenges for livestock production under changing climate) Bioforsk conference 2014. (National meeting-research, stakeholders,media). 05.02.2014 (LiveM, CropM)
Höglind, M. : Europeisk landbruk i et klima i endring- MACSUR (European agriculture under changing climate - Macsur). Bioforsk Conference 2014. (National conference-research-stakeholders-media). 05.02.2014 (CropM)
Jayet, P.A.: Developments and prospects of farm-level modelling for post 2013 CAP impact analysis. EU Commission, Brussels. 06.06.2012
Köchy, M., Banse, M.: Meeting with Junge DLG (Young German Farmers Ass.) on climate change impacts on farming incomes. Braunschweig, 30 pers. 06.03.2015 (Hub)
Lotze-Campen, H.: Meeting with German MP Groneberg on the topics of agriculture, climate change and agricultural economy. Berlin, Germany. 14.05.2013 (TradeM)
Minet, J.: Presentation of MACSUR activities at the international agricultural event "Foire de Libramont 2013". 30.07.2013 (CropM, LiveM)
Minguez, I., Ruiz-Ramos, M.: Workshop at the Spanish Agency of Meteorology, on Meteo and Climate Services for Agriculture. Presentation "Crop models and climate projections". 30.05.2013 (CropM)
Palatnik, R.R.: Meeting with the chief scientist of the Israeli Ministry of Agriculture Dr. Perel to report on the progress of the project and to check the possibility of Israeli cooperation in Stage II of MACSUR. 24.04.2014 (TradeM)
Roggero, P.P.: Two meetings (December 13, 2013; January 15, 2014) with the governing board of the Arborea Farmers' Cooperative and some associates were organized aiming to develop further common understanding on the kind of adaptive strategies suitable at local level, using modelling outcomes as boundary object to engage dialogue with stakeholders. These activities were developed also in the context of regional innovation projects that are strongly linked to some key issues of LiveM and that represent a complementary process to feed the MACSUR follow-up with new scenarios in the context of ongoing regional pilot studies. 15.01.2014
Roggero, P.P.: Several interviews to different stakeholders (experts, technicians, professionals, "ordinary people", etc.) aiming to investigate their perception about climate change and the impacts generated by their activities on this change. These interviews were synthesized in video-spots that were broadcasted during the MACSUR mid-term meeting held in Sassari on 1-4 April 2014. . (CropM/LiveM)
Roggero, P.P.: The NRD-UNISS team actively participated to local events and activities organised by different local actors (Cooperatives, Local Committees, Council etc.) in the regional pilot study area. This participation aimed at both extending the Macsur exploration of the local dynamics, and contextualizing and better framing NRD-UNISS research through a bidirectional communication pathway. (CropM/LiveM)
Roggero, P.P.: P62 is interacting with the Italian Ministry of Agricultural Food and Forestry Policies to create the pre-conditions for a MACSUR-Italy follow-up. A high level meeting will be held shortly to invite policy makers to recognize the relevance of the knowledge hub in the context of supporting adaptive responses for Italian agriculture. (CropM, LiveM, TradeM)

Roggero, PP.: Workshop "Adaptation strategies of Italian agricultural systems to climate change", Cagliari, Italy in the context of Agrosenari-Macsur. Meeting with Stakeholders including regional and national policy makers. 150 participants. 19.06.2013 (Hub)

Ruiz-Ramos, M.: Workshop at the Ministry of Economy and Innovation, Spanish Institute of Agricultural Research. Presentation "The Spanish participation in MACSUR". 22.04.2013 (CropM)

Ruiz-Ramos, M.: Workshop at the Spanish Office on Climate Change. Presentation "Agroclima: Escenarios climáticos, impactos, evidencias, vulnerabilidades y sistemas agrarios". 29.01.2014 (CropM)

Schönhart, M., Schmid, E., Sinabell, F.: Regional Pilot Case Study Mostviertel – AT. Projektpräsentation und –diskussion FACCE MACSUR. WIFO Wien. 24.03.2014 (TradeM)

Sinabell, F.: JPI FACCE Knowledge Hub Modelle zur europäischen Landwirtschaft. Projektpräsentation und –diskussion FACCE MACSUR. WIFO Wien. 24.03.2014 (TradeM)

Sinabell, F.: Agrarzukunft 2030 – nationale und internationale Trends – ein Ausblick unter Unsicherheit (Agriculture 2030 - national and international trends - an outlook under uncertainty). Agrarforum Exklusiv, Amt der OÖ Landesregierung, Linz. 02.06.2013 (TradeM)

Sinabell, F.: Herausforderungen an die österreichische Agrarwirtschaft (Challenges for the Austrian agricultural sector). Studientag Umweltpädagogik, Hochschule für Agrar- und Umweltpädagogik, Wien. 15.01.2013 (TradeM)

Sinabell, F.: Entwicklung der Landwirtschaft - nationale und internationale Trends (Agricultural development - national and international trends) Wintertagung Fachschule Mistelbach, Mistelbach. 13.01.2013 (TradeM)

Sinabell, F.: Bulle oder Bär? Trends an den internationalen Märkten (bull or bear - trends on global markets). 60. Wintertagung, Fachtagung Unternehmen Bauernhof, Wieselburg. 13.01.2013 (TradeM)

Slawinski, C.: Seminar for polish funding agencies regarding the participation of polish teams in MACSUR2. 24.06.2014 (CropM/TradeM)

Trnka, M.: Presentation of MACSUR to policymakers at "Agricultural research and food security – Outlook to Horizon 2020 and beyond Czech contribution to common European effort". 05.06.2014 (CropM)

Twardy, S.: Organic fertilizers management and low-cost pro-environmental pastoral economy in mountain areas. Meeting with stakeholders in Grywałd (Poland, the Krościenko community). 25.07.2012 (LiveM, CropM)

Twardy, S.: The rational management of mountain pastures under conditions of low-cost means of agricultural production. 22.07.2014 (LiveM, CropM)

D Capacity building

D2. Training workshops

The art of crop modelling. Quantifying crop growth in face of global food security and climate effects through modelling tools. From 04.03.2013 to 08.03.2013 (CropM). Goal: Training of PhD students Attendance: 30. Organised by Wageningen UR.

A beginners seminar on „Ecological Modelling“. From 05.08.2013 to 08.08.2013 (CropM). Goal: Training Attendance: . Organised by Estonian University of Life Sciences.

Modeling climate effects on crops and cropping systems. From 23.09.2013 to 29.09.2013 (CropM). Goal: Training of PhD students Attendance: . Organised by Aarhus University.

MACSUR modelling workshop "Working with dynamic crop models". From 19.05.2014 to 23.05.2014 (CropM). Goal: Training Attendance: 34. Organised by ZALF.

Model oriented field experiments for climate change impact assessment. From 10.11.2014 to 13.11.2014 (CropM). Goal: Training of PhD students Attendance: 25. Organised by University of Florence.

Dynamic land use optimization under global change, University of Natural Resources and Life Sciences; training by Uwe Schneider (Hamburg University). From 11.03.2013 to 15.03.2013 (TradeM). Goal: This course taught applied mathematical programming for the assessment of land use decisions, policies, and impacts and concentrated on the formulation and interpretation of related optimization models. Attendance: 10. Organised by Institute for Sustainable Economic Development at University of Natural Resources and Life Sciences, Vienna. Students within and outside MACSUR, mainly TradeM, received training in applied programming modelling including development of interfaces to LiveM and CropM themes.

International workshop on "Modelling European Agriculture with Climate Change for Food Security". From 23.03.2014 to 26.03.2014 (TradeM). Goal: training graduated and PhD students as well as stakeholders Attendance: 25. Organised by University of Haifa and Zalf, Germany. internal minutes

International workshop: Sustainability assessment of land use scenarios: what needs to be considered and how can it be done?. Haifa, Israel. From 23.03.2014 to 26.03.2014 (TradeM). Goal: Understand formalized processes of decision making as well as decision makers needs for evidence. 2. Provide training on integrated modeling/assessments. For this purpose the Framework for Participatory Impact Assessment (FoPIA) was introduced to provide an integrated and well-established method that guides experts and/or decision makers through a policy impact assessment while emphasizing: (i) the development of scenarios, (ii) the analysis of the regional sustainability context, (iii) assessment of possible policy impacts and sustainability trade-offs. The case study dealt with the biosphere reserve of Ramat Menashe. . Attendance:

16. Organised by NRERC- Natural Resource and Environmental Research Center, University of Haifa, Israel and ZALF, Germany. The participants submitted working papers with academic literature review and scientific analysis of biosphere reserve of Ramat Menashe.

Integrated land use modelling; Training, held by Mathias Kirchner, Hermine Mitter, Ewin Schmid, Martin Schönhar. From 07.04.2014 to 11.04.2014 (TradeM). Goal: The module aimed at strengthening skills in advanced land use optimization modelling by integrating disciplinary concepts, data, methods and scenarios. The students shall be able to build bottom-up land use optimisation models at farm to landscape scale as well as at regional to global scale and to perform integrated impact analysis of climate change, trade, and policy on agricultural land use, production and environment. Attendance: 11. Organised by Institute for Sustainable Economic Development at University of Natural Resources and Life Sciences, Vienna. Students within and outside MACSUR, mainly TradeM, received training in applied programming modelling including development of interfaces to LiveM and CropM themes.

Integrated Land use Modelling. Vienna. From 20.04.2015 to 25.04.2015 (TradeM). Goal: Training of PhD students. Attendance: 10. Organised by BOKU.

D3. Specialist workshops

Joint modelling workshop LiveM - TradeM. Aberystwyth, UK. From 18.11.2013 to 18.11.2013 (LiveM). Goal: To develop mutual understanding of interests and plan future collaborative interactions. Attendance: 10. Organised by LiveM, Aberystwyth University.

CAPRI Graphical User Interface (GUI) training.. Berlin, Germany. From 18.11.2013 to 18.11.2013 (TradeM). Goal: To enable participants to extract data from the CAPRI model. Attendance: 10. Organised by WIFO.

Modelling interactions between climate and livestock pathogen transmission, Pirbright, UK. UK. From 22.01.2014 to 22.01.2014 (LiveM). Goal: To review the state of the art in disease modelling and develop ideas for collaborative activities. Attendance: 20. Organised by LiveM, Pirbright Institute.

Carbon turnover modelling, development, validation and application. Lublin, Poland. From 10.12.2014 to 10.12.2014 (CropM). Goal: Useful information for PhD students. Attendance: 16. Organised by Institute of Agrophysics of the Polish Academy of Sciences.

TradeM International Workshop, Securing Food Using Non-Conventional Water Sources. Haifa, Israel. From 24.02.2015 to 24.02.2015 (TradeM). Goal: Knowledge exchange and networking. Attendance: 70. Organised by University of Haifa.

<https://drive.google.com/folderview?id=0B4oPwB7wQMT9fVTQndXY3piekVzcU9Oa1ppOV9kbUFFv3JuVml0ZExPWUizWFJMMGFPT2s&usp=sharing>

Modelling climate impacts on water and energy use in European irrigated agriculture . Cranfield. From 05.05.2015 to 07.05.2015 (CropM). Goal: Training. Attendance: 13. Organised by Cranfield University.

Modelling interactions between climate and livestock pathogen transmission, Pirbright, UK. From 22.01.2014 to 22.01.2014 (LiveM). Goal: To review the state of the art in disease modelling and develop ideas for collaborative activities Attendance: 20. Organised by LiveM, Pirbright Institute.

Modelling capacities for agricultural policy support in Europe. From 05.06.2012 to 05.06.2012 (TradeM). Goal: Knowledge exchange Attendance: 22. Organised by Trade-M-ZALF, LIAISE, EC-JRC.

CAPRI Graphical User Interface (GUI) training. From 18.11.2013 to 18.11.2013 (TradeM). Goal: To enable participants to extract data from the CAPRI model Attendance: 10. Organised by WIFO.

TradeM International Workshop, Securing Food Using Non-Conventional Water Sources. From 24.02.2015 to 24.02.2015 (TradeM). Goal: Knowledge exchange and networking Attendance: 70. Organised by University of Haifa.

<https://drive.google.com/folderview?id=0B4oPwB7wQMT9fVTQndXY3piekVzcU9Oa1ppOV9kbUFFv3JuVml0ZExPWUizWFJMMGFPT2s&usp=sharing>

D4. Established scientific staff

<i>Institute</i>	<i>Persons</i>	<i>Full-time equivalents</i>
Aarhus University	17	88.79
European Academy of Bolzano	1	3
Forschungszentrum Jülich	1	12
INRA	1	24
Norwegian University of Life Sciences	1	20
PIK Potsdam	5	18.05
Technical University of Madrid (UPM)	1	18
Thünen Institut	3	52
Université de Liège	1	28.8
University of Bonn	2	14
University of Milan	2	24
University of Reading	1	33
ZALF	2	40
IBERs. Aberystwyth University. UK	1	24
IHAR-PIB. Młochów. Poland	3	10
INRA. France	1	9
MTA Centre for Ecological Research. Hungary	1	6
NRERC. University of Haifa. Israel	2	48
University of Tuscia. Viterbo. Italy	1	18
Total	49	490.64

D7. Research communities in the themes

Names of research communities	Level of research community (national, regional, European, international)	Description of interaction
CropM: Modelling crop rotations	International	Workshops, joint papers
CropM: Data quality evaluation and labelling for modelling	International	Workshops, joint papers with AgMIP, public available software tool
CropM: Scaling	International	Workshops, joint papers
CropM: Impact response surface analysis	International	Workshops, joint papers
CropM: Model-aided crop ideotyping	International	Workshops, joint papers
CropM: Tree cropping systems.	International	Review papers, joint papers
CropM/LiveM/TradeM: Regional case studies	Regional, European	Knowledge exchange, workshop at the midterm conference and the stakeholder workshop in Brussels

Names of research communities	Level of research community (national, regional, European, international)	Description of interaction
LiveM: Livestock disease research and modelling	European (with plans for linkage with GRA)	Initial workshop in Pirbright, UK, to discuss the state-of-the-art in the field; exchanges of information and knowledge between Italian, Norwegian and Spanish modelling groups in this area. Identification and initial contact with international institutes active in this area
LiveM: Permanent grassland modelling	International	Collaborative efforts developing protocols for model evaluation and inter-comparison (uncalibrated and calibrated runs) and completion of exercises in these areas; Input (and leadership regarding methods employed) to AgMIP grassland group activities Linkage of community and joint activities with grassland modellers in CropM theme
LiveM: Farm-scale modellers	European	Knowledge exchange, inventory of models, model inter-comparison exercise, Joint workshop with TradeM and progress towards assessment of state-of-the-art in farm-scale modelling of livestock systems in Europe
TradeM: AGMIP	International	TradeM workshop announced in AGMIP
TradeM: AGMIP	International	Joint book plan

E Project coordination and management

E1. Deliverables performed

Deliverable ID	Description	Month planned	Month achieved
D-H1.1	Review of the opportunities for using cloud computing	2013-05	2013-03
D-H1.2	Review of models and methods, together with Themes	2013-09	2015-09
D-H1.3	Review of upscaling methodologies	2014-05	— ¹
D-H1.4	Report on model integration approaches	2015-04	— ¹
D-H2.1/D-C6.1	Overview of case studies	2015-05	2015-07
D-H2.2/D-C6.3	A strategic map for the engagement with national/EU policy maker on adaptation and mitigation	2015-05	⇒D-C6.3
D-H2.3/D-C6.4	Final version: Strategic map for the engagement of the agri-food chain	2015-05	⇒D-C6.4
D-H2.4/D-C6.5	A strategy for the dissemination outputs at the national, EU and global levels	2012-12	2013-07
D-H3.1	FACCE MACSUR Website	2015-05	2015-05
D-H3.2	Definition of clear responsibilities	2012-11	2012-11
D-H3.3	Regular Progress Reports	2015-05	2015-05
D-H3.3	Progress report M8	2013-01	2013-03
D-H3.3	Progress report M14	2013-08	2013-06
D-H3.3	Progress report M20	2014-02	2014-06
D-H3.3	Progress report M32	2015-01	2014-09
D-H3.3	Final report	2015-05	2015-08
D-H3.4	Dissemination of the outputs of the network-activities and facilitating collaboration with other relevant European and international organizations and networks	2015-05	2015-05
D-H3.5	Administrative tasks and reports	2014-06	2013-06
D-C0.1	CropM website	2012-06	2012-06
D-C0.2	Regular (3-monthly) newsletters	2015-05	2015-06
D-C0.3	Report about the strategy for future research	2015-01	2014-12
D-C1.1	List of identified crops and related models	2012-07	2013-02
D-C1.2	Data classification and criteria catalogue for data requirements	2012-08	2013-04
D-C1.3	Data format for model in- and output	2012-11	2013-04
D-C1.4	Refined model evaluation methods and protocols	2014-05	2014-06
D-C1.5	Results of uncalibrated model runs available	2013-11	2014-05
D-C1.6	Model inter-comparison for calibrated models	2015-03	2015-01
D-C1.7	Regional data set for model inter-comparison	2014-07	2014-12
D-C2.1	Final set of compiled experimental data available	2015-05	2015-05
D-C2.2	Operational database for storing and extracting data	2013-11	2015-01
D-C2.3	Protocol for empirical data analyses finalised	2013-07	2013-05
D-C2.4	Reports on field experimental network meetings	2015-05	2015-07
D-C2.5	Empirical analysis on crop-weather relationships	2015-05	2015-06
D-C2.6	Online web tool for data visualisation	2014-11	2015-06
D-C3.1	Review of scaling methods for different purposes	2014-10	2014-10
D-C3.2	Inventory of data and data sharing mechanism for model linking and scaling exercises	2014-07	2015-07
D-C3.3	Report of scaling methods that have been compared in case studies	2015-01	2014-12
D-C3.4	Report on the comparison of model linking protocols in different test cases	2015-01	2015-02
D-C4.1.1	Defined terms and typology of uncertainty	2012-09	2013-05
D-C4.1.2	Framework structure to integrate improved methods for uncertainty evaluation, and protocols for methods application	2013-05	2014-07
D-C4.1.3	Estimates of crop responses to climate change with quantified ranges of uncertainty	2014-05	2015-07
D-C4.1.4	Communication strategy for uncertainty	2014-11	2014-12
D-C4.2.1	Standardised methods and protocols based on current best practices to conduct sensitivity analysis	2014-09	2014-12
D-C4.2.2	Identification and quantification of differences between models	2014-10	2014-12
D-C4.2.3	Quantified evidence of error propagation	2015-05	2015-06
D-C4.2.4	Information to support input data quality and model improvement	2015-05	2015-06
D-C4.3.1	State-of-the-art scenarios from climate model ensemble simulations (CMIP5) for local/regional applications	2014-09	2014-09

¹ Principal researcher with long-term illness

Deliverable ID	Description	Month planned	Month achieved
D-C4.3.2	Local-scale daily climate scenarios	2015-01	2014-09
D-C4.3.3	Evaluation of future diurnal variability and projected changes in extremes of precipitation and temperature and their impacts	2015-05	2015-07
D-C4.4.1	A versatile method for combining probabilistic projections of future climate with crop model sensitivity and uncertainty analysis	2014-05	2014-07
D-C4.4.2	Further development and operationalization of method for overlaying probabilistic climate projections with impact response surfaces	2014-11	— ¹
D-C4.4.3	Evaluation of different approaches for probabilistic assessment of climate change impacts on crop production	2015-05	2015-06
D-C4.5.1	Concepts and methods developed for probabilistic evaluation of a number of alternative adaptation options	2015-02	2015-07
D-C4.5.2	Development, operationalization and evaluation of method for probabilistic evaluation of different adaptation options	2015-01	2015-02
D-C4.5.3	Ultra-high yielding wheat ideotypes optimized for future climate change	2015-05	2015-02
D-C4.5.4	High yielding and resilient barley and maize ideotypes suited to future climates	2015-05	2015-02
D-C5.1	Report on inter-institute exchanges	2015-05	2015-06
D-C5.2	Report of crop and other modeling courses	2015-05	2015-06
D-C5.4	Internet course implementation	2014-11	2014-11
D-C5.3	Report on internet course in crop physiology	2015-01	2015-06
D-C6.1/D-H2.1	Overview of case studies	2015-05	2015-07
D-C6.3/D-H2.2	A strategic map for the engagement with national/EU policy maker on adaptation and mitigation	2015-05	2015-07
D-C6.4/D-H2.3	A strategic map for the engagement with the agri-food chain	2015-05	2015-07
D-C6.5/D-H2.4	A strategy for the dissemination outputs at the national, EU and global levels	2012-11	2013-07
D-L0.1	Agreed co-ordination structure and processes for operation of LiveM	2012-08	2013-05
D-L1.1	Identified relevant datasets	2012-11	2013-06
D/M-L1.2.1	Dataset completed	2013-05	2013-05
D/M-L1.2.2	Analysis of inter-annual and seasonal variations of productive, reproductive and health data	2014-05	2014-10
D/M-L1.2.3	Relationships between (THI) and dairy cow performances established	2015-05	2015-01
D-L1.3	Identified datasets	2013-05	2013-05
D-L1.4.1	Report on the desired meta-data for C-sequestration inventories	2014-05	2014-05
D-L1.4.2	List of sources of C-sequestration data identified within Europe	2014-10	2014-09
D-L1.4.3	Inventory of C-sequestration dataset meta-data established and available online	2015-05	2014-06
D-L1.5	Identified uncertainties in climate change prediction	2013-05	2013-06
D-L2.1.1	A list of models and modelling teams is available	2013-11	2013-10
D-L2.1.2	Datasets classification and criteria for data requirements	2013-11	2013-10
D-L2.2	Model evaluation protocols	2014-05	2014-06
D-L2.3	Results of uncalibrated model runs	2014-04	2014-06
D-L2.4	Model inter-comparison	2015-05	2015-06
D-L3.1	Internet database is operational	2013-09	2014-06
D-L3.1.2	Report on data collection for running and testing farm-scale models	2015-04	2014-07
D-L3.2	Report on farm modelling methodologies	2014-05	2014-07
D-L3.3	Review of the applicability and effectiveness of mitigation and adaptation measures	2015-01	2015-01
D-L4.1	Review of regional scale models in the EU, and the methods commonly used when modelling outcomes of the implementation of climate change mitigation policies	2013-09	2015-06
D-L4.2	Report on stakeholder involvement methodologies	2015-05	2015-04
D-L4.3	Report on multidisciplinary approaches, contribution to Hub report	2015-05	2015-04
D-T0.1	TradeM website	2012-06	2012-10
D-T0.2	Clear definition of responsibilities, roles of the partners, an agreement on quality criteria	2013-05	2012-11
D-T0.3	Regular (6-monthly) progress report after the kick-off-meeting, each workshop and the congress	2015-03	2015-05
D-T0.4	Presentations, papers, data, and results of (amended) models	2012-08	2015-05
D-T1.1	Factsheets of the models	2012-07	2012-09
D-T1.2	Scenario report	2012-09	2013-06

¹ Principal researcher on maternity leave

Deliverable ID	Description	Month planned	Month achieved
D-T1.3	Model results and comparison of model outputs	2013-08	2015-04
D-T1.4	Description and analysis of price data consistent with AGMIP scenario	2013-11	2015-04
D-T2.1	Climate dependent yields	2014-05	2015-07
D-T2.2	Updated data base	2014-05	2014-04
D-T2.3	Climate dependent equilibrium model. Report on model with open source computer code.	2014-11	2015-07
D-T2.4	Integration possibilities and eventual contrasts with up-scaling activities in other networks	2015-05	2015-07
D-T2.5	Prototype of stochastic equilibrium model of the food system. Report on model with open source computer code	2015-05	2015-04
D-T3.1	Most relevant aspects of climate change in hot-spot analysis	2013-01	2013-07
D-T3.2	Report identifying storylines and scenario to be the basis for simulations in each hot-spot area	2013-03	2013-07
D-T3.3	Identification of models to be applied in each hot-spot area	2013-07	2013-11
D-T3.4	First round of simulations: Report	2014-12	2014-11
D-T3.5	Workshop for discussion of simulation results	2014-05	2014-04
D-T3.6	Workshop for discussion of political insights from simulation results	2014-11	2014-11
D-T3.7	Workshop to present the results stemming from the new round of simulations	2015-01	2015-04
D-T3.8	Publication of a book summarising the obtained research results	2015-05	2014-06
D-T4.1	Curriculum for training course on policy impact assessment	2013-11	2014-06
D-T4.2	Curriculum for training course on agricultural production and environmental modelling with GAMS	2014-01	2013-03

E2. Milestones achieved

Milestone ID	Description	Month planned	Month achieved
M-H1.1	Improved integrated modelling activities	2014-11	2014-09
M-H1.2	Advanced achievements in modelling activities	2015-01	2015-04
M-H2.1/H3.1/C6.1	Kickoff meeting	2012-08	2012-10
M-H2.2/M-C6.2	Engagement meetings with national and EU policy actors	2015-05	2015-05
M-H2.3/M-C6.3	Engagement meetings with the agri-food chain sector	2015-05	2015-05
M-H2.4/M-C6.4	A portfolio of dissemination outputs at the national, EU and global level	2015-05	2015-05
M-H2.5	Publication of a book summarising the obtained research results	2015-05	2015-09
M-H3.1	Kickoff meeting of FACCE MACSUR	2012-08	2012-10
M-H3.2	FACCE MACSUR progress workshop among theme coordinators	2012-10	2012-10
M-H3.3	Workshop M8	2013-01	2013-06
M-H3.4	Workshop M14	2013-09	2013-09
M-H3.5	Mid-term Workshop (Workshop M20)	2013-05	2014-04
M-H3.6	Final Science Conference (Workshop M36)	2015-05	2015-04
M-H3.7	Final Stakeholder Congress	2015-05	2015-05
M-C0.1	CropM Kickoff (M2)	2012-08	2012-10
M-C0.2	CropM Progress workshop (M13)	2013-06	2013-05
M-C0.3	CropM Progress workshop (M25)	2014-06	2014-02
M-C0.4	CropM Final workshop (M36)	2015-05	2015-04
M-C1.1	Protocol for model inter-comparison	2012-11	2012-11
M-C1.2	Model inter-comparison of uncalibrated results	2013-11	2014-05
M-C1.3	Model inter-comparison of calibrated results and sensitivity	2014-08	2014-06
M-C1.4.1	Common workshop on model evaluation	2015-05	2014-02
M-C1.4.2	Special issue of a scientific journal on model evaluation	2015-05	— ¹
M-C1.5	Model inter-comparison at regional scale	2015-05	2015-07
M-C2.1	First set of compiled experimental data	2012-12	2012-12
M-C2.2	Data scheme of database finalized	2013-05	2013-05
M-C2.3	Protocol prepared and made available	2012-11	2012-11
M-C2.6	Description of visualisation tools	2013-09	2014-10
M-C3.2	Decision on data sharing mechanism for scaling and model linking exercises	2013-05	2013-05
M-C3.3	Decision on test cases, aims and upscaling methods to be compared	2013-05	2013-05
M-C3.4	Decision on test cases, aims and models to be linked	2013-05	2013-05

¹ not sufficient contributions

Milestone ID	Description	Month planned	Month achieved
M-C4.1.1	Kick-off workshop on the state-of-the-art on uncertainty analysis for crop models	2012-11	2012-11
M-C4.1.2	Consensus on typology and defined terms, and desired end products	2013-01	2013-01
M-C4.1.3	Framework structure, including communication strategy	2013-05	2013-05
M-C4.2.1	Kick-off workshop on the state of the art concerning sensitivity analysis for crop models	2012-11	2012-10
M-C4.2.2	Methods and protocols for sensitivity analysis, including responses to CO2 and extreme temperatures and water stress	2013-05	2013-05
M-C4.2.3	Quantified evidence of uncertainty within and between crop models provided by sensitivity analysis	2014-11	2014-11
M-C4.3.1	Accessible probabilistic projections, monthly TEMP and PRECIP changes grid-based (25x 5) over Europe	2013-05	2012-10
M-C4.3.2	Climate scenario workshop to present and evaluate local-scale daily climate scenarios based on the LARS-WG	2014-05	2013-06
M-C4.4.2	Evaluation workshop on probabilistic impact assessment methods (with regional cases)	2015-05	2015-05
M-C4.5.1	Session on impact uncertainty as part of overall CropM results workshop	2015-01	2015-04
M-C5.1	Scientific exchanges initiated	2012-11	2012-11
M-C5.2	Crop modeling courses initiated	2012-11	2013-03
M-C5.3	Internet course initiation	2013-02	2013-02
M-C6.1	Kickoff meeting to discuss the case and pilot studies to be utilised	2012-08	2012-10
M-C6.2/M-H2.2	Engagement meetings with national and EU policy actors	2015-05	2015-05
M-C6.3/M-H2.3	Engagement meetings with the agri-food chain sector	2015-05	2015-05
M-C6.4/M-H2.4	A portfolio of dissemination outputs at the national, EU and global level	2015-05	2015-05
M-L0.1	Annual reports on progress within the Theme	2015-05	2015-07
M-L1.3	List of required variables and parameters	2012-05	2014-03
M-L1.4	List of papers and reports to be reviewed	2014-05	2014-05
M-L1.5	List of uncertainties based on results of workshops	2013-05	2013-06
M-L2.1	A minimum dataset for models is defined	2013-05	2013-06
M-L2.2	Workshop: protocol for model evaluation	2013-05	2014-02
M-L2.3	Indicators of model performance are identified and calculated	2015-05	2014-06
M-L3.1	Review of farm models and active farm modelling groups	2013-05	2013-05
M-L3.1.2	Workshop to discuss data collection for testing farm-scale models	2014-09	2014-10
M-L3.2	Workshop to discuss farm modelling methodologies	2013-11	2014-10
M-L3.3	Workshop to discuss modelling the effect and effectiveness of climate-related policy measures applied at the farm scale	2014-05	2014-10
M-L4.1	Workshop on regional scale models	2013-05	2014-10
M-L4.2	Workshop on stakeholder involvement methodologies	2014-05	2014-04
M-L4.3	Stakeholder workshops on multidisciplinary approaches	2014-11	2014-10
M-T0.1	Kickoff meeting (M2)	2012-07	2012-09
M-T0.2	Workshop (M6)	2012-11	2012-10
M-T0.3	Workshop (M12)	2013-03	2012-03
M-T0.4	Workshop (M18)	2013-11	2013-11
M-T0.5	Workshop (M24)	2014-07	2014-04
M-T0.6	Workshop (M30)	2015-01	2014-11
M-T0.7	Congress (M36)	2015-05	2015-04
M-T1.1/M-T0.1	Start-up workshop	2012-08	2012-09
M-T1.2	First results of existing models	2012-11	2013-03
M-T1.3	Assessments of existing models	2013-06	2013-06
M-T2.1	Improved integrated modelling activities	2014-11	2014-11
M-T2.2	Advanced achievements in modelling activities	2015-05	2015-04
M-T3.1	Decisions taken regarding the simulations in each hot-spot area.	2013-12	2013-12
M-T4.1	Training course on policy impact assessment announced	2014-01	2013-11
M-T4.2	Training courses on policy impact assessment finalised	2015-02	2014-03
M-T4.3	Training course on agricultural production and environmental modelling with GAMS announced	2014-01	2013-01
M-T4.4	Training courses on agricultural production and environmental modelling with GAMS finalised	2015-02	2015-04