**REACCH Year 5 and 6 REEport Milestone Appendix**

***Objective 1. Create a theoretical framework that integrates biophysical and socioeconomic aspects of regional cereal production systems under current and projected climate scenarios. (lead Antle)***

This objective has entailed coordinating and integrating several modeling frameworks to provide synthetic modeling platforms. These include downscaled historical and projected climate models for the region, a process-based crop model and an economic model to assess resulting economic impacts and incentives for adoption. Milestones focused on developing model products suitable for the desired synthesis. Fourteen of the original milestones and deliverables have been completed and three remain to be completed. Of those remaining, one has been developed as the project continued; this one and one other are 50% complete, requiring effort during the requested extended period.

***Completed or projected to be completed by scheduled end of project***

M1.1a: Downscaled climate scenarios incorporated into transdisciplinary framework

M1.1b: Ag census and other data identified and prepared for economic analysis

M1.2a: GCMs selected and different scenarios evaluated

M1.1c: Develop socio-economic scenarios

M1.2c: Current systems parameterized for TOA-MD model

M1.3a: Calibrated CropSyst model linked to climate and socio-economic models

M1.3b: Adapted cropping systems characterized for economic models

D1.2: Historical gridded surface metrological data at scales needed or agroecological models

D1.3: GCM output translated to scales needed for agroecological modeling

D1.4a: Simulation of cropping system performance in a GIS framework

D1.4b: Parameterization of TOA-MD model for current and adapted systems

D1.5a: TOA-MD evaluation of system adoption given market and incentive scenarios

D1.5b: Empirical analysis tradeoffs from the economic impact technology assessment

***Requiring effort during the requested no-cost extension year, % of effort remaining and projected month of completion***

M1.2b: Cropping systems investigated under alternative climate and policy scenarios, 50% completed, target for completion Oct. 2016

D1.5d\*: Prepare and report results from the TOA-MD analysis of climate change impacts and adaptation, 50% completed, target for completion, Jan. 2017

D1.1.3: Annual Reporting for Objective 1, Jan. 2017

***Explanation***

These activities require completion of multiple modeling exercises before intended integration can be completed, most of which will not be completed until late in Year 5. This will require effort into Year 6. Annual reporting has been completed each year of the project and will be completed at termination, Month 12 of the extension (Feb. 2017). The milestone (M1.2b) and deliverable (D1.5d) to be completed will address several requisite areas for project completion: (1) Acquisition of critical data, (4) Culminating outputs for producers and other stakeholders, and (5) Novel cross-project synthesis.

***M = milestone and D = deliverable; \* = substantially modified or added since project inception***

***Objective 2. Establish a baseline and monitor changes in soil carbon and nitrogen levels and GHG emissions related to mitigation of and adaptation to climate change in the region’s agriculture. (Lamb)***

This objective includes all monitoring of GHG emissions using eddy flux towers and chambers, water and wind erosion measurements at established sites. The work has proceeded according to plan, but will benefit from continuation of some activities during Yr 6 to improve reliability of measurements. Four of the original milestones and deliverables have been completed and six remain to be completed. Of these all are approximately 80% complete in that the instruments took time to become operational, delaying expenditures for their operation that can be used to obtain data records close to the original intended sample period.

***Completed or projected to be completed by scheduled end of project***

M2.1 GHG field monitoring network initiated and continued in Yrs 1-4

M2.1a Tower flux site and chamber based operations and analysis initiated

M 2.1b Wind erosion measurements and analysis

M2.3 Water erosion measurements and analysis initiated and continued in Yrs 1-4

***Requiring effort during the requested no-cost extension year, with projected month of completion***

M2.1 GHG field monitoring network, 80% completed, target for completion, Dec. 2016.

M2.1a Tower flux site and chamber based operations and analysis, 80% completed, target for completion, Dec. 2016.

M2.3 Water erosion measurements and analysis, 80% completed, target for completion, Dec. 2016.

M2.4 GHG field monitoring and integrated analyses, integrated assessments, 80% completed, target for completion, Dec. 2016.

D2.5 GHG emission regional baseline completed, alternative scenarios assessed, 80% completed, target for completion, Dec. 2016.

D2.1.3 Annual reporting, Objective 2, Jan, 2016

***Explanation***

Although effort towards listed milestones have been completed through Yr 4, as planned, we are requesting authorization to continue working on these into Yr 6 to ensure reliability of inferences that can be drawn from the longer observational period. Some measurements pertain to rotational systems and interannual variability has been noted by reviewers of submitted manuscripts. In summary, Water, sediment, and carbon transport measurements will continue at both the direct-seed and conventional tillage field sites as well as the basin scale at the Palouse River gauging station in Hooper, WA (M2.3). These baseline data will be used for model assessment and development of the WEPP soil erosion model. Collaboration with Obj. 3 is extending the carbon transport modeling work to the entire region, which will include both current assessments and future projections. Atmospheric flux measurements of CO2 and H2O will continue on an automated basis at four flux towers and data from these operations will be processed and archived monthly. N2O flux measurements using a combination of chamber and tower methods at the Cook (no-till) and Clark (till) sites will be in continuous operation during Year 6. M2.4 and D2.5 depend on outputs from M2.1, M2.3 and will be completed during Yr 6. Annual reporting (D2.1.3) has been completed each year of the project and will be completed at termination (Feb. 2017). The milestones and deliverables to be completed will address primarily critical area (1) Acquisition of critical data, but will be necessary for the other four critical areas

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***Objective 3. Determine the effects of current and potential alternative cropping systems on GHG emissions and carbon, nitrogen, water, and energy budgets as well as local and regional farm income impacts using models and replicated field trials. (lead Pan)***

This objective includes the majority of the agronomic assessments in the project. Performance of several alternative cropping systems is being assessed by monitoring 15 experiments over the study region for comparative assessment of alternative agronomic adaptation and GHG mitigation practices in wheat-based systems. Alternatives include alternatives for improving soil C sequestration, water and N use efficiency in specific AEZs include high crop residue production and standing stubble management, crop diversification and intensification with oilseeds and legumes, N fertilizer accounting, accurate N rate predictions, and precision management. Crop and soil measurements for soil water, N and C, crop growth and development are standardized. Of the four milestones associated with this objective all are approximately 80% complete in that initiation of the experiments was sufficiently delayed to necessitate an additional year to capture the intended full rotational cycles

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D3.4 Alternative cropping systems assessed, linked to biophysical and socio-economic modeling, 80% completed, target for completion, Feb-Aug, 2016

M3.1 Cropping alternatives and associated C, N, water measurements, 80% completed, target for completion, Feb-Aug, 2016

M3.2 Analyses of NUE, WUE, C, energy and delivery of initial inputs for modeling, 80% completed, target for completion, Dec. 201

D3.1.3 Annual Reporting for Objective 3, Jan. 2017

***Explanations***

Cropping systems being studied are multi-year rotations; the final year will allow incorporation of full cycles of rotation into the modeling and analysis. Specifically, D3.4 - Life cycle assessment of comparative analysis of four management variables on GHG reductions, MS preparation Sep. – Nov.; submission, Jan 2017. M3.1 requires completion of 2015 Yr 1-5 data compilation; manuscript submission anticipated Nov 2016 -Feb, 2017; results will contribute to overarching encompassing REACCH MS (see Obj. 9). The analysis for M3.2 cannot be performed until measurements, including those in Obj. 2 are completed, and these are continuing into Yr 6. Annual reporting (D3.1.3) has been completed each year of the project and will be completed at termination, Month 12 of the extension (Feb. 2017). The milestones and deliverables to be completed will address all five requisite areas for project completion.

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***Objective 4. Determine social and economic factors influencing agricultural management, technology adoption, and development of policy to improve production efficiency while mitigating greenhouse gas emissions. (lead Capalbo)***

Work in this objective as four main thrusts: A longitudinal survey of 47 growers across the study region, a general public survey targeting climate action and policy-oriented groups, a regional grower survey to assess perception / adaptation strategies for pests and weeds, perceived climate change risk, and Extension strategies to support mitigation efforts among growers (D4.5a,b), an on line software package (AgTools) that guides producers in climate change related decisions. Three of the original milestones and and one deliverable have been completed. Six require completion in Yr 6, including one that was added as the project matured, and ranging from 0% to 80% completion by the scheduled end of the project.

***Completed or projected to be completed by scheduled end of project***

D4.5a Spatial representation of adoption likelihood incorporating socioeconomic variability

M4.1a Longitudinal and key informant interviews following AEZ strata (1) Y1-5

M4.1b (Sociological Framework) Compilation of literature for overall framework and a) outline of data analyses and b) scenario workshop design

M4.1c Completion of survey data collection, analytical preparation and methodological weighting

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D4.5a Spatial representation of adoption likelihood incorporating socioeconomic variability (II), 70% completed, target for completion, Dec. 2016.D4.5a}[M6.2]

D4.5b Socio-geographic functions for N, water, energy use shifts due to crop, policy, climate, 20% completed, target for completion, May/June.

M4.1a Longitudinal and key informant interviews following AEZ strata, 80% completed, target for completion Aug/Sept, 2016.

M4.1c (cont.) Completion of survey data collection, analytical preparation and methodological weighting, 80% completed, target for completion Aug. 2016

D7.4.2 Project impact evaluation (formerly in Obj. 7), 0% completed, completion target, Jan. 2017

D4.6\* Decision support tools for economic analysis, 20% completed, completion target, Nov. 2016

D4.3.3 Annual reporting for Objective 4 (coordinated with Obj. 7), Jan 2017

***Explanations***

Two surveys will have been conducted covering approximately 1000 producers across the region. The first was completed in Yr 2, the second will be completed in Yr 5 (D4.5a). Analysis will include comparisons between sample years. Sampling was stratified by AEZ and has been analyzed to reflect differences across the region; Longitudinal interviews have been completed; analysis and write-up will continue into Yr 6 (M4.1a ); The project impact assessment (D7.4.2) cannot be performed until after most project activities have been completed; This output (D4.6) will summarize the use of decision support tools to capture the changes in net returns and environmental outcomes that may result from changes in management practices and will use results from Obj 1 and downscaled climate projections to parameterize the changes in key variables that influence net returns. REACCH growers who are participating in Obj 4 longitudinal interviews will also have access to the decision support tool. Annual reporting (D4.1.3) has been completed each year of the project and will be completed at termination of the no-cost extension year. These milestones and deliverables directly address two requisite areas for project completion: *(1) Acquisition of critical data, and (4) Culminating outputs for producers, and indirectly contribute to three others: (2) Completion of key publications*, *(3) Ensuring data legacy*, and *(5) Novel cross-project synthesis.*

***M = milestone and D = deliverable; \* = substantially modified or added since project inception***

***Objective 5. Anticipate and develop approaches to climate-related changes in crop protection requirements and the effects of beneficial biota within cropping systems. (lead Burke)***

Work in this objective includes regional surveys of key pests and beneficials as baselines for the region and to detect climate related differences in distributions, experimental work to assess responses of these organisms to projected climate stressors. In the course of the work one objective was discarded as not feasible, given the eventual plot sizes for most of the work on alternative production systems. Other work was initiated on the invasion dynamics of a newly discovered invasive pest in the region and, on recommendation of steering committee, to initiate work to incorporate pests and diseases into the crop models. Three original milestones and one newly added milestone have been completed or will be completed by the scheduled end of project. Four deliverables will require effort in Yr 6.

***Completed or projected to be completed by scheduled end of project***

M5.1 Assess climate related vulnerabilities to pests and beneficial organisms

M5.2 Predictions of climate related changes in pests, diseases, weeds and beneficial organisms

M5.3 Earthworm survival and reproduction as related to soil moisture and temperature

M5.5\* Assess the extent of invasion by a newly discovered exotic aphid species in the region and its response to abiotic and biotic stresses

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D5.5a Assessment of climate adaptation and mitigation on selected pests and beneficials, 40% complete, completion target, Nov. 2016

D5.5b Recommendations for climate-related changes in biota to producers and scientists, 40% complete, completion target, Nov. 2016

D5.5\* Incorporate responses of a key pest into process based simulation models of wheat growth in the region, 40% complete, completion target,.

D5.1.3 Annual Reporting for Objective 5, Aug. 2016

***Removed***

M5.5a Comparative analysis of pressure from key insects, pathogens and weeds in alternative systems

***Explanations***

Although assessments of climate change effects have been ongoing and several publications have resulted from this work, an overarching synthetic publication on biota within the system is in progress with expected completion in Yr 6, culminating D5.5a. This will be accompanied by an article or chapter in the producers’ Handbook (see Obj. 7) to address D5.5b. With encouragement from our advisory panel, we have undertaken new deliverable D5.5, to incorporate pest injury into CropSyst to generate process-based projections of effects of pests under projected climate change, including elevated CO2. This has required modeling and chamber experiments. Poster presentations at professional meetings have already been produced. Work should be completed in Yr 5 and papers produced early in Yr 6. One milestone was dropped (M5.5a) because of constraints of relatively small plot sizes in our experiments in Obj. 3. Even relatively large plots (100 x 50) preclude meaningful assessments of alternative systems on pests, weeds and diseases. Annual reporting (D5.1.3) has been completed each year of the project and will be completed at termination, Month 12 of the extension (Feb. 2017). The work to be completed in Yr 6 address requisite areas for project completion 1 – 4, and will contribute to requisite area (5), Novel cross-project synthesis.

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***Objective 6, Education: Introduce innovative agricultural approaches to climate change mitigation and adaptation into K-12, undergraduate and graduate curricula to prepare citizens and professionals for climate related challenges and defining agriculture’s role in providing food, energy and ecosystem services. (lead Johnson-Maynard)***

This objective has pursued coordinated efforts to produce curricula for K-12 applications in the region, promote undergraduate research engagement with climate change and agriculture, through a summer intern program, and graduate education across the project that has promoted integration. Nine deliverables and one milestone will be completed by the scheduled end of the project. Highlights include training or partial training of more than 40 graduate students, summer internships for 60 undergraduate students recruited nationally, annual summer workshops for the region’s high school agriculture and science teachers and participation by all fully supported students in collaborative projects focused on primary or secondary education, or extension. One deliverable (D6.3c) was modified from a graduate course on C and N cycles to an on-line module. One deliverable (D6.3) was removed because it required collaboration with the other two NIFA Climate CAPs, which proved unworkable. Some of the effort and support for this was reallocated to D6.1c (summer interns). Remaining work will finalize K-12 classroom materials

***Completed or projected to be completed by scheduled end of project***

D6.1 K-12 teacher survey analyzed

D6.2a Multi-institution. Course materials on agriculture and climate change prepared

D6.2a.a Course materials on agriculture and climate change prepared

D6.2b Formation of interdisciplinary teams based on research themes

D6.3c\* Graduate level course on carbon and nitrogen cycle

D6.5a Webinar on C and N cycling for non-physical science grad students

D6.3c Graduate level course on spatial statistics that covers AEZ concept

D6.2 Introductory classroom materials developed

M6.2 K-12 teacher training

D6.1c\* Undergraduate summer internship program, all years

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D6.1b K-12 professional, classroom materials developed, 90% complete, target, May 2016

D6.3a Classroom activities developed from project results, May 2016, 90% complete, target for completion, May 2016

D6.1.3 Annual reporting for Objective 6

***Removed***

D6.3 Exchange programs with CAP and LTER sites, undergrad. summer courses, Y3-5

***Explanations***

Classroom materials have been developed and promulgated but are being improved for dissemination. K-7 activities are being used this summer at the McCall Outdoor Science School in McCall Idaho. These will be prepared for dissemination early in Yr 6, five (confirm) graduate students, recruited late in the project, will continue into Yr 6 and receive some funding. D6.3a will require some effort into Yr 6 for dissemination. Curriculum units paralleling REACCH projects have been created on project processes, as results are not currently available this portion cannot occur until other objectives have shareable results. M6.2 (teacher training) Will be completed 7-2-15, but teachers will be piloting and reporting on the units they taught into the fall and spring. Annual reporting (D6.1.3) has been completed each year of the project and will be completed at termination, Month 12 of the extension (Feb. 2017). These activities will primarily address requisite areas *(2) Completion of key publications, and (4) Culminating outputs for producers and other stakeholders.*

***M = milestone and D = deliverable; \* = substantially modified or added since project inception***

***Objective 7. Incorporate stakeholder perspectives and needs in research design and translation of science into policy and practice that is effective for climate change mitigation and adaptation through enhanced extension networks and capacities. (lead Kruger)***

This objective covers all extension related activity in the project. Efforts have been directed to communicating to producers through workshops and at producer related activities and meeting, generating extension related publications, blogs, webinars and instructional videos pertaining to project activities. Coordination with other objectives has been extensive in order to provide material for extension, and to involve graduate and undergraduate students in extension activities. One milestone and six deliverables have been completed. Additional work is required to complete one other milestone and six deliverables. The extension components of the project were originally planned for greater effort near project completion to maximize the impact of all of the information developed throughout the project.

***Completed or projected to be completed by scheduled end of project***

D7.1.2 Develop and implement stakeholder communications plan

D7.2 Extension faculty lead hired; develop virtual community of stakeholders

D7.3.1 Hire Extension faculty coordinator

D7.3.2 Establish Community of Practice within extension

D7.4.1 Stakeholder surveys

M7.1 Stakeholder communication plan, interactive website, CoP within eXtension

D7.1.1 Coordinate Stakeholder Advisory Committee

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D7.2.1 Develop and provide content for interactive website, 50% complete, target, Jan 2017

M7.2 Develop Extension products for dissemination to stakeholders, 50% complete, target for completion, Jan 2017

D7.2.2 Develop Extension publications, presentations, and tools for stakeholders, 50% complete, target for completion, Jan 2017

D7.3.3/M7.3 Develop and train a virtual community of stakeholder educators (Extension Education Network), Dec. 2016

D7.3.4 Funding to Extension network for product development and demonstrating, 60% complete, target for completion, Jan 2017

D7.3 Extension publications, tools to disseminate preliminary results to stakeholders, Jan 2017

D7.1.3 Annual reporting for Objective 7

***Explanations***

Work on the interactive website (D7.2.1) is ongoing, but some content awaits input from across the project. Many deliverables from the project and project minigrant program will be incorporated into the REACCH Conservation Handbook (D.7.3). Training of a community of educators (D7.3.3) will be completed in Yr 5, with a final training activity for Extension educators in Yr 6, and reporting completed in Yr 6. A final training activity for Extension educators will also occur in Yr 6. Expected completion of the Extension network will be mostly complete by end of Yr 5, but may require reporting activities in Yr 6. The primary output under D7.3 will be the REACCH Conservation Handbook, 13-chapter publication providing research synthesis and management guidance to farmers for all aspects of conservation farming related to REACCH. Chapters are in various stages of completion and most should be ready be beginning of Yr 6. Annual reporting (D7.1.3) has been completed each year of the project and will be completed at termination, Month 12 of the extension (Feb. 2017). These activities will address the requisite area *(4) Culminating outputs for producers and other stakeholders.*

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***Objective 8. Develop the regional capacity for continued, long-term research, education, and extension efforts to mitigate and adapt to climate change (lead Gessler)***

This objective is devoted broadly to ensure that the infrastructure is established to enable longer term efforts to support research, extension and education towards sustainability of cereal production systems in the inland PNW. The primary effort has been to develop the project’s cyberinfrastructure, including the data management policies, data storage and archiving capacity, and portals for uploading, downloading and manipulating data during the project and after its completion. Two major deliverables have been completed that constitute establishment of the cyberinfrastructure and data policies. Seven deliverables are from 50-90% complete and require work into the requested no-cost extension year.

***Completed or projected to be completed by scheduled end of project***

D8.2a Data management implementation initiated (environmental data manager hired)

D8.2d Interface for researchers and stakeholders created

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D8.1 CI assessment, legacy data migration, data management policy created, followed, 70% completed, target date for completion, Jan 2017

D8.2b Data management implementation, 90% completed, target date for completion, Jan 2017

D8.2c Implementation project control, 90% completed, target date for completion, 60% completed, target date for completion Jan 2017

D8.2d Interface for researchers and stakeholders transition to support beyond project, 60% completed target date for completion, Oct. 2016

D8.3 Improve and maintain cybercollaborative support, 90% completed, target date, Jan 2017

D8.5b\* On-line and mobile decision support tools, 50% completed, target date, Jan 2017

D8.5c\* Data transition plan, 90% completed, target date for completion, Aug 2017

***Explanations***

During Yr 6, the focus will be on activities to ensure ongoing support of data management efforts, data archiving and data accessibility after termination of the project (D8.5c; transitioning data/servers/interface from the REACCH project to the Northwest Knowledge Network Unit at the UI). This activity affects many of the deliverables of Objective 8, including D8.1, D8.2b, c, d, 8.3, which is why these are listed for completion in Yr 6. While the data management policy has been in place since Yr 1 and is being used (D8.1), legacy data migration was down prioritized to focus our effort on new incoming data. Our effort on D8.5c is actively linked to the new USDA focus on development of the USDA National Agricultural Library repository for which the USDA ARS LTAR will also be a component. Specific activities will include data management training and education, staging and production server organization, web portal administration support, data interoperability with other CAP grants and NAL repository evolution (D8.2). Deliverable 8.5b (mobile support tools) has expanded in its vision since project inception as the technology for this aspect of data utilization has expanded and we have developed new capabilities. This work is being undertaken in collaboration with other sources of funding (ED’s PROJECT NUMBER). The data transition plan (D8.5c) includes server transition, application and systems transition, web interface transition, data policy transition from REACCH to NKN, project management archiving (Central Desktop project management software, a REACCH contracted external project management system). Attention will be given to supporting ongoing efforts of the NW Climate Hub and NW LTAR site that will be part of the REACCH legacy. These efforts address requisite areas *(1) Acquisition of critical data, (3) Ensuring data legacy.*

***M = milestone and D = deliverable; \* = substantially modified or added since project inception***

***Objective 9. Address climate change effects with a transdisciplinary research focus to enable researchers stakeholders, students, the public, and policymakers to acquire a more holistic understanding of how agriculture is interrelated with climate change. (lead Eigenbrode)***

This objective includes activities for project coordination and management to ensure transdisciplinary collaboration, including that involve broader integration in scholarship and outreach across the project. Two milestones and seven deliverables have been completed or will be completed by the scheduled end of the project. Seven deliverables will require some additional effort during the requested no-cost extension. Although not reflected in specific milestones and objectives, Yr 6 effort will be coordinated to maximize D8.5b]project legacy through activities to be sustained after termination, especially the NW Climate Hub and LTAR.

***Completed or projected to be completed by scheduled end of project***

D9.2a Structured process of identifying and implementing project-wide improvements

D9.5a International conference on cereal production in semiarid regions under climate change

D9.1a Complete first regional cropping systems simulation run

M9.2/M9.3a Cross Cutting theme: AEZ databases developed

D9.1c Develop a denitrification and nitrification models

D9.5b/M9.2a Systems modeling: TOA-MD performance outcomes for climate scenarios, AEZ

D9.5c/M9.2b LCA theme: global warming potential of current and projected cereal systems in IPNW

D9.5f\* Pest and disease modeling: formulate disease model, complete insect damage model for future climate for selected sites

***[***

***Requiring effort during the requested no-cost extension year, with projected month of completion***

D9.1 Annual project meetings and other project-wide workshops and integration activities, 90% completed, target Jan 2017

D9.5a Special issue of a journal, international conference, 0% completed, target, Sep. 2016

D9.5f\* Complete projection of disease damage as a function of future climate for selected sites, 50% completed, target, Dec. 2016

D9.1b Compare gridded-based vs. ground based weather & crop simulations, 50% completed, target, Dec. 2016

D9.5f\* Formulate and apply a process based weed model, 10% completed, target, Jan 2017

D9.5e/ M9.2d Policy theme: interaction with policy makers and development of science-based policy, 40% completed, target, Dec. 2016

D9.2 Projectwide assessment, 90% completed, target, Jan 2017

D9.5g\* Synthetic publications, 25% completed, target, Nov 2016 (3)

***Explanations***

Projectwide coordination will be required during the Yr 6 no-cost extension. These will include periodic all project integration calls focused on coordinating efforts on the remaining deliverables for all project objectives listed in this no-cost extension request (D9.1). A final all-project meeting is not planned but a field day for stakeholders (Obj. 7) will require participation across the project. Projectwide assessment will include a final assessment of the entire effort. The international conference, which will take place in Nov. 2015, will result in a special issue of a prominent international journal. Editorial work on that special issue will be required (D9.5a). Some of the project wide integrating modeling efforts have required data acquisition that precluded completion until this final year (D9.1b, D9.5g). Project communication with policymakers will be a special effort during Yr 6 (D9.5e/M9.2d). A final project-wide assessment will be required at the end of the no-cost year. As the project has matured, multi-authored cross-cutting, synthetic publications have become feasible and the team will be pursuing those during Yr 6 (D9.5g). A All of these efforts specifically address requisite areas: (2) Completion of key publications, (4) Culminating outputs for producers, (5) Novel cross-project synthesis.

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