# Meeting Brief

Action Items

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| **Actions** | **Responsible Parties** |
| Remove draft watermark from May General Meeting Summary and post as final on the website.  | Regine Miller |
| Send to ACCG Administrator and facilitator clarifying email on soil moisture.  | Paul Ullrich |
| Agendize Bureau of Land Management (BLM) Community Forest Agreement Committee for July general meeting.  | Admin WG |
| Connect Megan Layhee with Eldorado and Stanislaus National Forest LiDAR data. | Chuck LofflandRay CablayanKellin Brown |
| Conduct follow up discussion with CHIPS regarding definition of living wage and other community and economic benefits. | Tania Carlone |

# Summary

## Modification and/or approval of agenda and May 2020 Meeting Summary.

## There were no modifications to the agenda. The May General Meeting summary was adopted as final with no changes and is to be posted on website.

**PRESENTATION AND DISCUSSIONS**

**Presentation and discussion: The Future of Forests in the Face of Climate Change.**

Dr. Paul Ullrich introduced himself as an Associate Professor at University of California Davis who models historic events and is funded by the US Department of Energy. Dr. Ullrich defined a storyline event and stated that the historical drought of 2012-2016 is an example storyline event which can be duplicated in a model to better understand how climate change will impact potential future droughts. He presented this model [here](https://climate.ucdavis.edu/Ullrich-ACCG-FutureCaliforniaDrought.pdf) and has authored a related [research article](https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2018EF001007).

California climate is Mediterranean, with a distinct dry season in summer and wet season in winter. The majority of the precipitation is received in winter, or December-February. One can separate these seasons into an analysis to see how the winter and summer seasons are changing.

In California, precipitation mostly comes in the form in atmospheric rivers which is a scientific term that describes a narrow, long filament of moisture that comes in off of the Pacific Ocean, is carried into California and responsible for dumping major precipitation and impacting the windward side of the Sierra Nevada. Atmospheric rivers are responsible for 30% to 40% of the state’s annual rainfall. The historic record shows non-atmospheric precipitation has been fairly consistent, however the number of atmospheric rivers received, determines whether or not the state is in a drought year.

Due to the lack of atmospheric rivers, the state was in a drought from 2012 to 2016. The accumulated rain debt in October 2016 was equal to one year of average precipitation. The 2016 to 2017 winter was unusually wet which broke records for precipitation and eventually the drought. An unusually wet season such as this is referred to as a whiplash event. Dan Swane published a paper that shows whiplash events, where the state goes from an unusually dry year into an unusually wet year, are becoming more common.

From 2012 to 2016, there was a continuous series of abnormally low precipitation, followed by an extreme precipitation year. This was accompanied by abnormally high temperatures, affecting a tendency to not receive snow in the Sierra Nevada, with rain instead quickly running off and flowing downhill. This is referred to a snow drought. As a consequence of the snow drought, forests did not have water resources to sustain through dry summer season and responded poorly.

2011 was abnormally wet year, followed by a mild drought in 2012 which persisted and resulted in an extreme drought. The 2012-2016 drought was the most severe the state has ever experienced on record and when using tree ring proxies for the past 1,500 years. There is a suspicion that we are entering a new extended drought condition due to anthropogenic impacts.

Dr. Ullrich went on to describe pressure anomalies. He stated that in 2012 to 2014, there was a ridiculously resilient ridge which is a ridge formed through a series of high pressure events that blocks atmosphere moisture from entering California, resulting in extended dry conditions. The ridge persisted over several years. Evidence suggested the persistent ridges will occur more often in the future, and that understanding how common ridges are is key to understanding how often California will experience droughts.

In 2014, there was an exceptional drought that extended throughout California and spread throughout the west. In 2015, there was low precipitation, but not abnormally low. This year was associated with a snow drought in the Sierra Nevada resulting in less snow pack overall and a subsequent summer season with insufficient soil moisture. By October 2015, there were exceptional drought conditions that extended across nearly the entire State. These dynamics are repeatable. One can lock in the dynamical conditions and change thermodynamics (increased temperatures) to simulate future droughts and determine the impact climate change has on an analogous drought under future conditions.

Dr. Ullrich stated his analysis took into account the total amount of precipitation received in major watersheds that fed major reservoirs across the central valley and Sierra Nevada, and modified temperatures at the boundaries of each region and sea surface temperatures while keeping relative humidity the same for the simulations.

The results of the simulations show most of the temperature changes are 1 to 1.2oC. In winter and summer, there are higher temperature increases occurring at higher elevations, or elevation-dependent warming. Due to the loss of snow pack, there is an increased amount of energy absorbed by the soil surface, driving up temperatures at higher elevations.

There is also an increased number of extreme temperature days in the Central Valley primarily in the Tulare Basin and desert region. Normally this region experiences 40 extreme temperature days; the simulation shows that by 2040, there is an expected increase in extreme temperature days of 50%. By comparison, the simulations do not show an increase in extreme temperature days in the Sierra Nevada.

The analysis showed a 5% increase in total precipitation per degree Celsius, with most of that occurring in the northern half of the state regardless of drought conditions or not, and very little altitude-dependence. Dr. Ullrich stated that the increase in total precipitation will not be enough to change the projected rain deficit. He went on to state that there was a tendency to see an increase in moisture in the northern part of state and increase in drier conditions in the southern part of the state. If relative humidity stays the same and temperatures increase, we expect to see more precipitation overall.

* A participant asked if the simulations shown are comparable to other studies (e.g., UCRM or MIROC)? Dr. Ullrich replied that there is a large spread in the precipitation models used, but they all generally show similar trends through 2050 with a divergence in results using different models after 2050.

Dr. Ullrich’s analysis shows that the number of dry days increases more in dry years than in wet years, demonstrating precipitation concentrated into fewer days. There is a generally positive increase in extreme precipitation days across the state, leading to the wet years becoming wetter, dry years becoming drier.

There are changes observed in seasonality, with the wet season becoming wetter in general, and dry season becoming drier in general leading to increased seasonality. So, even though there is a 5% increase in precipitation in Sierra Nevada, the precipitation will be concentrated into shorter periods with drying in the spring and fall, and more peaked-ness. However, because of increased temperatures, the increased precipitation does not translate to increased snowpack. The Snow Water Equivalent (SWE) shows a continued declined in amount of snow. The simulations show declines of 16% to 30% snowpack across the Sierra Nevada resulting in net loss of 7.1 MAF. By 2070, there may be one year where there is 0% snowpack because of inability to accumulate snow.

There is a strong elevation dependence, with rising temperatures more strongly impacting lower altitude snowpack. A cutoff is observed at 6,000’ elevation, with relative average snow pack retained above 6,000’. The loss of snowpack leads to elevation-dependent enhancement of temperature signal in DJF and JJA and drives a loss of soil moisture which is key to maintaining forests. This leads to extreme summertime drying in the mountain region with the most dramatic impacts in the Sierra Nevada and Great Basin regions. Dry years will have the greatest impact on forests.

The loss of snowpack leads to extreme summertime drying in the Sierra Nevada. The simulations show increased soil moisture in winter and decreased soil moisture in summer, with the increased soil moisture in winter insufficient to counter the extreme summer drying.

There is an increase in water loss due to evapotranspiration in winter through spring driving drying conditions in the summer. The water is expelled from the environment by the end of May, with June to September associated with extreme stress.

Dr. Ullrich’s concluding points were:

* The pseudo-global warming methodology is effective for modeling the impacts of modified thermodynamics on the climatology of particular periods over relatively small regions.
* Analysis of California’s 2012-2016 drought period in light of climate change allowed an understanding of what a drought over the midcentury 2042-2046 period would look like.
* The results of this analysis are useful for future drought planning.
	+ Temperatures during the drought period are expected to be 0.8-1.4°C higher in the Central Valley, and 1.2-2.0°C higher in the mountainous regions and interior.
	+ Extreme temperature days (>40°C) expected to increase by 50% in the Central Valley.
	+ Average water year precipitation through the mountains are expected to increase by approximately 5% across all years with no significant change in precipitation expected elsewhere.
	+ More extreme precipitation days are expected (0.5 days in dry years, 1 day in wet years).
	+ Peak total Snow Water Equivalent (SWE) water volume are expected to diminish between 16% to 30% across the five water years from 32.6 MAF to 25.5 MAF, a net loss of 7.1 MAF or 22%.
	+ Average JJA soil moisture in dry years is reduced by 1-2% at higher elevations.
* A participant offered that tree ring drought records show that there were persistent, decades-long dry drought periods. What Dr. Ullrich has presented is prudent and a reflection of the 2012-2016 drought. If one recognizes there were much worse extended drought periods in the past, then all of this presented is potentially a drop in the bucket, compared to the severity of what has already happened in the Sierra Nevada.

Dr. Ullrich responded that the mega drought events (see Cook et. al. paper) of the 1100s and 1300s, showed prolonged periods of dryness. The intensity associated with those events has significant uncertainty. They are believed to be mild dry conditions that occurred over a long period of time. These long drought periods are different than short drought periods because of climatic shifts. It is possible for a mega drought to occur. Since the 1800s, California has been in an abnormally wet period and its ecosystems reflect that. Mega droughts tend to be slow growing, persisting of dry conditions and slower shifts that the ecosystems have time to respond to. The 2012-2016 drought came on suddenly, so the ecosystem and many institutions were unable to react to it effectively. We need to consider the potential for short term dramatic shifts and/or long term gradual shifts. Anthropogenic effects on temperatures is making the conditions even worse.

* A participant noted that the RWD report of 2015 suggested snowpack loss at 50% by 2060 and was curious whether that jives with Dr. Ullrich’s work, and would like clarification on historic soil moisture. Dr. Ullrich stated he would send a clarifying email given the lack of time.

Dr. Ullrich discussed the Forest Drought Stress Index (FDSI), showing a strong correlation between forest stressors (wildfire, bark beetle dead tress) and the FDSI.

He shared that his work has informed a [Public Policy Institute of California (PPIC) paper](https://www.ppic.org/publication/managing-drought-in-a-changing-climate-four-essential-reforms/) on managing drought in a changing climate. The paper focused on long-standing management practices (including logging methods and decades of wildfire suppression) that have led to dense, dry forests susceptible to insects, disease, and increasingly intense wildfires. Hotter temperatures and more variable precipitation have made conditions worse. Extreme wildfires are likely to increase, potentially leading to the conversion of thousands of acres of conifer forest to shrublands, and harming air quality, water quality, habitat, recreation, and rural economies. The paper highlights that in order to adapt to climate trends and reduce the risk of severe wildfires, major changes in forest management by federal and state governments, in cooperation with local agencies and landowners are required.

***Discussion***

* Based on this study, should future forest management aim to reduce the density of the forests? Dr. Ullrich replied that he is not a forest manager but that this is a reasonable strategy because it reduces competition for limited water resources and reduced severity of associated wildfires.
* Are the forests going to become dryer if logging intensified to reduce the draw on the water? Dr. Ullrich replied that it depends on how much moisture is retained in the soil overall. Presumably, any mechanism that allows liquid precipitation (winter rainfall) to be retained over the summer season will be able to mitigate some of the effects of increased temperatures by reducing competition for soil moisture and increased evapotranspiration. The biggest issue in the Sierra Nevada is a dramatic decline in snow.
* This simulation has implications for Pacific fisher management in the southern Sierra Nevada, where conifer forests have experienced 50-75% die offs. There is a lot of evidence that just within the current period, the information presented will have significant effects on wildfire and the ecosystem.

**Presentation and discussion: Preliminary update on the SLAWG mapping tool.**

Megan Layhee presented the SLAWG’s process and initial results to develop the project mapper tool and where the SLAWG is headed with the project prioritization.

Megan first reviewed the [project mapper framework](https://acconsensus.org/wp-content/uploads/2019/11/07-DRAFT-Fuels-Reduction-Project-Mapper-Prioritization-Tool-Development-Framework-Diagram.pdf). She explained that she first compiled completed, in-progress and planned fuel reduction project data within the ACCG landscape into an interactive map (aka the Project Mapper). She then went on to compile and rank a variety of assets such as for each project (e.g., communities, critical infrastructure, critical habitat, and existing vegetation). Next, Megan overlaid modeled fire hazard data and ranked assets to determine where the highest-valued assets are most at risk within the ACCG landscape. She stated that there is a lot of information available, largely from USFS, which provides a sense of where on the ACCG the group should hone in to determine where the risk of future fire is inevitable.

Megan plans to take the project inventory, assets, and fire risk to then generate a project priority list. She will combine different spatial data sets which the ACCG has determined are important and perhaps ranked, then develop a priority list. The data and project priority list will be dynamic depending on the availability of new data.

Megan presented the draft [Project Mapper](https://acconsensus.org/wp-content/uploads/2019/11/08-Fuels-Reduction-Project-Mapper-v.06.10.2020.pdf) to the group. She explained she is trying to create a map where fuel reduction-related projects have occurred or are planning to occur within the ACCG landscape using polygon and polyline data so far. She stated that there are different ways to showcase information spatially and view an attribute window with project specifics.

Megan demonstrated to the group the [Project Inventory](https://storymaps.arcgis.com/stories/23a5d20b831f495b9a998073b835431b), which she also referred to as the ARCGIS Story Map, and explained that the inventory shows what work has occurred within a defined relevant timeframe. She explained that she is still working to define the inventory parameters, such as how old of projects should be available for view on the project mapper or fuel reduction projects in need of maintenance. Megan hopes the SLAWG can determine how it wants to define maintenance intervals or condition status of individual projects to assist in this work.

Megan outlined her next steps including compiling and ranking high value assets and resources to help develop the prioritization tool, using input from the SLAWG and full ACCG. This may include compiling and ranking asset types, communities, WUI, critical infrastructure, cultural sites, national wild and scenic river segments, vegetation types, canopy cover, fuel type, etc. Megan has accumulated a lot of data already for the ACCG to use in its prioritization. She will overlay modeled fire hazard data and assign priority areas for future work. Megan expects to have a product and mapper available to the ACCG by the end of this year.

***Discussion***

* A participant noted that this is an exciting new tool and asked if Megan was able to get fire history data used for the Mokelumne Avoided Cost Analysis (MACA) from the Forest Service, specifying that there is also extensive soil data in that same study.
* Another participant offered that this is impressive work and asked if we can make use of LiDAR data in this process, and stated it would be helpful to see if there has been an example of LIDAR being used in a similar capacity. Megan replied that the Stanislaus National Forest has LiDAR data available and that she has been put in touch with folks to be able access it. The Eldorado National Forest also has LiDAR data but Megan does not have access to it. The SLAWG has to decide whether that is data that will be useful for the end goal.
	+ Several members discussed helping Megan obtain LiDAR data from both the Eldorado and Stanislaus National Forests.
* A participant asked if special software will be needed to view the maps and data. Megan replied that the ACCG will need an organization to allow the ACCG to host their ARC GIS map on their online account but that any member of the public can open the map and click on the data attribute table without an ARC GIS license. She went on to state that a license will be needed to update the mapper and make future changes.

**Seeking consensus approval of** [**revised Memorandum of Agreement**](https://acconsensus.org/wp-content/uploads/2019/11/09-ACCG-MOA-Admin-WG-Review-Draft-v.-5-14-20.docx)**.**

Tania reviewed the revised Memorandum of Agreement (MOA) transmittal which outlines the document’s context, and her original request for comments by June 1. Tania received replies from a couple of people who reviewed the MOA but did not have comments. She asked the group if they have reviewed the MOA and have suggested changes or questions, and how they would like to proceed.

Tania asked the group for a yes/no on whether or not they have reviewed the MOA. Based on the group’s response, Tania pushed seeking consensus approval of the MOA to the July general meeting agenda. She set a deadline of July 1 to review and comment on the MOA and stated she will distribute the document to the group one more time.

## UPDATES

## Administrative Work Group Update

Regine Miller stated that the group has focused on the revised MOA and is beginning to work on the Outreach, Communication and Engagement Plan. The Admin WG did consider meeting face to face but ultimately recommends that the full group meets by Zoom in July. Tania Carlone encouraged participants to read the WG summaries as a primary vehicle to update the ACCG.

**Planning Work Group Update**

**Socioeconomic ad hoc committee.** Shane Dante presented that the ad hoc group brought to the Planning WG a proposal to integrate community and economic benefits into the Project Submission Form. Shane reported positive feedback but is still in the process of discussing certain elements of the proposal, specifically related to clarifying what is meant by a living wage, local, and a few other elements. Tania stated she will follow up with CHIPS, as advised by the Planning WG, to receive input on how CHIPS defines living wage.

* One participant explained that The ACCG spent a lot of time defining local which should be in the meeting minutes, and that the Sierra Institute’s report compares how groups define local.

**Monitoring Work Group Update**

Helen Loffland stated the group discussed monitoring for pre-commercial thinning and variable density planting areas within CHIPS’ Wildlife Conservation Board grant for the Upper Mokelumne Forest Restoration project. The group has discussed monitoring methods to use and is refining the key monitoring questions which include how heterogeneity in the stands and cover changes with treatment. The group is drafting a monitoring plan which will come before the full ACCG for input.

**BLM Community Forest Agreement Committee**

Shane Dante stated that committee discussed what voices needed to be part of the conversation, in addition to the ACCG, including recreational interests, ranchers and Native American tribes. There was disagreement within the committee about the need for the Community Forest Agreement to be under the ACCG and whether it is necessary to add additional bureaucracy as compared to the decentralized approach that has been used so far. The next steps are to schedule another meeting to discuss a draft Memorandum of Understanding (MOU) draft by CHIPS’ attorney and to review example documents from the ‘Inimim Forest in Nevada County.

Steve Wilensky stated that there needs to be more time set aside for this at the next meeting, and that there were rather different views among those who met. The differences are unlikely to be resolved so it will be important get input at the July meeting on how to proceed. He would like to put it on the July general meeting agenda for discussion.

* A participant encouraged the committee the committee to discusse those questions that were previously identified at the last General Meeting, further noting questions about grant funding and fiscal agent responsibilities for the proposed effort. Steve replied that these issues have been raised and the committee is considering different options.
* The facilitator suggested that when thinking about the potential to form this group it is important to think about how to engage the broader audience of stakeholders. Steve replied that this is critical because the ACCG, in its current configuration, includes some of the stakeholders within and around but not all and it is essential to provide an opportunity for all stakeholders to participate in the Community Forest conversations.

## Roundtable

John Buckley: The Yosemite Stanislaus Solutions (YSS) forest collaborative group has worked since the fall of 2019 to respond to Barnie Gyant’s request for where they want treatments done and what do they want done. YSS developed a proposal for the Bridge Project which includes a large slice of the Stanislaus River watershed. John stated that there is an overlapping desire to do a project that would utilize a different type of fire modeling approach and would use a strategy that was first incorporated in the Rocky Mountain region, similar to the SLAWG process. Within the next two weeks, the Stanislaus NF plans to release a scoping notice for the SERAL project, or Social and Economic Resilience Across the Landscape. The project includes a wide range of treatments across 117,000 acres of which 92,000 acres are NF lands. SERAL is the single largest project ever put forward for the Stanislaus NF. It would include non-native invasive weed control and eradication, a broad network of fuel breaks, strategic roadside and defensible space treatments, and restoration thinning and biomass. The public will be able to comment on the project after the scoping notice goes out. If anyone wants more detail, contact John.

Liz Meyer-Shields: The South Fork Mokelumne River project is close to being completed, with 14 large piles of slash recently masticated. The Cal Am Team has done a tremendous amount of work on the project. The Mother Lode Field Office is moving into Phase 2 of re-opening, including limited re-opening that relies heavily on telework but does allow for field work to occur. The office is now in fire restrictions for the summer and has re-opened recreation facilities including day use and one campground on South Yuba for casual use.

Ray Cablayan: The Stanislaus NF, including the Calaveras Ranger District, is ramping up to open recreation, including campgrounds. However, it will not be business as usual and they cannot open all of their campgrounds. Matt Hilden is retiring end of July. Carinna Robertson is currently on detail on the Miwok District but helping with the ACCG on behalf of the Calaveras District. Becca Sands is expected to begin sometime in July so the District will have two fuels people. The Stanislaus NF is now on PL5 which is very early; fire activity is beginning to pick up. The Cabbage Patch timber sale going on right now as well as construction of the Black Springs Campground. CHIPS will perform work in the meadows once the campground work is complete.

Michael Pickard: The Sierra Nevada Conservancy (SNC) will not be having a competitive grant round this summer. With the limited Proposition 68 funds, the SNC’s new mode is to accept applications through a directed process. Applicants will work directly with Michael to develop a proposal, he will then submit proposals up the chain of command for review and decision. The SNC’s focus will be on prescribed fire for the next one to two years. Michael suggested looking at updated grant guidelines to see what projects might work from the ACCG.

Katherine Evatt: The state budget passed by the legislature was broad and didn’t include information specific to the Pine Grove youth ward camp. She stated there is still time to express support for the camp and offered to provide the email addresses to where to send statements of support for the camp.

Ben Solvesky: The Natural Resource Conservation Service (NRCS) has funding batches for EQUIP. There are 17 forestry projects to be funded in the NRCS’ three county area, which includes much of the ACCG focus area. There are nine additional projects to be funded in a second batch of funding.

Chuck Loffland: The Amador Range District staff is now able to conduct limited field work and has experienced a dynamic situation with COVID.

Regine Miller: CHIPS has begun to implement its Upper Mokelumne Forest Restoration project, with crews working off of CHIPS’ PPP loan both on the WCB project. CHIPS was awarded $1M implementation grant from the SNC for View 88 fuel reduction work which involves preparing the landscape for prescribed fire as a maintenance tool along the Highway 88 fuel break.

Michael Jow: There are broader efforts on the Stanislaus NF through the SERAL project. Jason Kuiken or Michael himself will be sending out briefing paper shortly, with formal scoping expected to start by the end of June.

# Meeting Participants

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| **Name** | **Affiliation** | **Time Committed to Meeting** |
| John Heissenbuttel | Cal Am, Amador FSC | 3.0 |
| Katherine Evatt | Foothill Conservancy | 3.0 |
| Gwen Starrett | ACCG Member, Citizens Climate Lobby | 3.0 |
| Michael Pickard | Sierra Nevada Conservancy | 3.0 |
| Regine Miller | Calaveras Healthy Impact Product Solutions | 3.0 |
| Rich Farrington | Upper Mokelumne River Watershed Authority | 3.0 |
| Elizabeth Meyer-Shields | Bureau of Land Management, Mother Lode Field Office | 3.0 |
| Greg Suba | Sierra Forest Legacy | 3.0 |
| Kellin Brown | Calaveras Ranger District | 3.0 |
| John Buckley | Central Sierra Environmental Resource Center | 3.0 |
| Gerald Schwartz | East Bay Municipal Utility District | 3.0 |
| Ray Cablayan | Calaveras Ranger District | 3.0 |
| Marc Young | Amador Ranger District | 3.0 |
| Megan Layhee | Consultant to Landmark Environmental and UMRWA | 3.0 |
| Steve Wilensky | Calaveras Healthy Impact Product Solutions | 1.5 |
| Chuck Loffland | Amador Ranger District | 3.0 |
| Shane Dante | Foothill Conservancy | 3.0 |
| Helen Loffland | Institute for Bird Populations | 3.0 |
| Matt Hilden | Calaveras Ranger District | 3.0 |
| Sue Holper | ACCG Member | 3.0 |
| Carinna Robertson | Calaveras Ranger District | 3.0 |
| Ben Solvesky | Natural Resource Conservation Service | 3.0 |
| Paul Ullrich | University of California, Davis | 1.5 |
| Thurman Roberts | Sierra Nevada Alliance, Calaveras Healthy Impact Product Solutions | 2.0 |
| Michael Jow | Stanislaus National Forest | 1.5 |
| Tania Carlone | Consensus Building Institute (Facilitator) | 3 |