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Multiple Comments

1. In addition to the development and analysis of multi-decadal downscaled climate projections, the solicitation should consider allowing for the development of several â€œstress caseâ€ or â€œstorylineâ€ projections that examine how specific historic extreme events would manifest current or future climate conditions. For example, a recent study (Ullrich et al., 2018) examined what the 2012-2016 would look like in the context of the projected climate of 2050, with higher temperatures, absolute humidity, and more extreme precipitation events. Similar approaches have been or could be applied to examine atmospheric rivers events, fire conditions, etc. This approach can offer a useful complement to multi-decadal projections since it allows stakeholders to understand how known events are expected to become more extreme in the future and allows scientific resources to be directed at a close examination of the events types most of interest to stakeholders. Given the goal of serving both â€œtop-downâ€ and â€œbottom-upâ€ approaches to using projections to support decision-making, choosing a handful of stakeholder-informed stress cases or storylines could be a useful approach.

2. Land use and ladcover change can significantly alter climate conditions at local to regional scales. For instance, irrigation in CAâ€™s Central Valley likely has a regional cooling effect (see Huang et al., 2016), urban areas create local heat islands, and changes in urban morphology can enhance or diminish the effect of climate warming on exposure to heat waves and associated building energy demands for cooling (Vahmani et al., 2019).
Since global climate models do not consider multiple future land use for each RCP and often do not represent urban land uses in much detail, this solicitation might consider developing several future land use projections for the state of CA and examining the importance of these factors for downscaled climate projections. It might be possible to develop a generalized methodology for modifying downscaled projections for alternative land use scenarios.

3. Many users of climate information report that it is difficult to understand how credible the projections are for specific phenomena at specific temporal and spatial scales. Inclusion of meta-data about the accuracy of projections for user-informed metrics of interest in the data platform seems like a very valuable potential outcome of this solicitation.

4. Stakeholder engagement can inform not just the analysis of projections and creation of a data platform, but also the generation and selection of projections themselves through the identification of user-relevant metrics, extreme event types of interest, and through bottom-up vulnerability analysis to inform which climate phenomena to examine in more detail. This argues for close coordination among the engagement activities, projection development, analytics, and data platform design.

References:

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Huang, X., P.A. Ullrich (2016), Irrigation impacts on California's climate with the variableâ€□resolution CESM, JAMES, https://doi.org/10.1002/2016MS000656

Vahmani, P., A.D. Jones, C.M. Patricola (2019), Interacting implications of climate change, population dynamics, and urban heat mitigation for future exposure to heat extremes, ERL, https://doi.org/10.1088/1748-9326/ab28b0